MASTER
PRODUCT CATALOG







ALLIED MACHINE & ENGINEERING

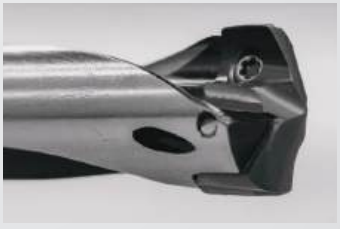
www.alliedmachine.com

DRILLING
PRODUCT CATALOG









ALLIED MACHINE & ENGINEERING

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Drilling Overview Guide

Product		Length-to-Diameter Ratio	Material					
			P	M	K	N	S	H
GEN3SYS® XT Pro	11.00 mm - 35.00 mm 0.4331" - 1.3780"	3xD, 5xD, 7xD, 10xD, 12xD	●	●	●	●		
GEN3SYS® XT	11.00 mm - 35.00 mm 0.4331" - 1.3780"	Stub, 3xD, 5xD, 7xD	●	●	●	●	◐	○
T-A Pro®	9.50 mm - 47.80 mm 0.3739" - 1.8820"	Stub, 3xD, 5xD, 7xD, 10xD, 12xD, 15xD	●	●	●	●	●	
GEN2 T-A®	9.50 mm - 114.48 mm 0.3739" - 4.5070"	1xD to 28xD	◐	◐	◐	◐	◐	
T-A®	9.50 mm - 114.48 mm 0.3739" - 4.5070"	1xD to 28xD	◐	◐	◐	◐	◐	◐
High Performance	24.60 mm - 127.00 mm 0.9688" - 5.0000"	—	◐	◐	○	◐	○	
Universal	24.60 mm - 215.90 mm 0.9688" - 8.5000"	—	○	◐	○	○	○	
APX™ Drill	33.00 mm - 101.60 mm 1.2991" - 4.0000"	3xD, 5xD, 8xD, 10xD	●	◐	●	◐	○	
4TEX® Drill	12.00 mm - 47.00 mm 0.4724" - 1.8504"	2xD, 3xD, 4xD	●	●	●	◐	●	◐
Revolution Drill®	47.63 mm - 101.60 mm 1.8750" - 4.0000"	1xD, 2.2xD, 2.5xD, 3.5xD, 4.5xD,	●	●	●	◐		○
Opening Drill®	50.80 mm - 142.75 mm 2.0000" - 5.6200"	—	●	●	●	◐		○
BT-A Drill	12.98 mm - 47.80 mm 0.5110" - 1.8820"	—	●	◐	●	◐	○	

● Best ◐ Better ○ Good

Drilling Overview Guide

Machining Application				
General Purpose	High Penetration	Deep Hole	Large Diameter	Industry Specific
●	●	●		
●	●			
○	●	●	○	
●	○	●	●	
●	○	●	●	
●		◐	●	
●		◐	●	
◐		●	●	
●	◐			
○	◐		●	
○	◐		●	
	◐	●		●

● Best ◐ Better ○ Good

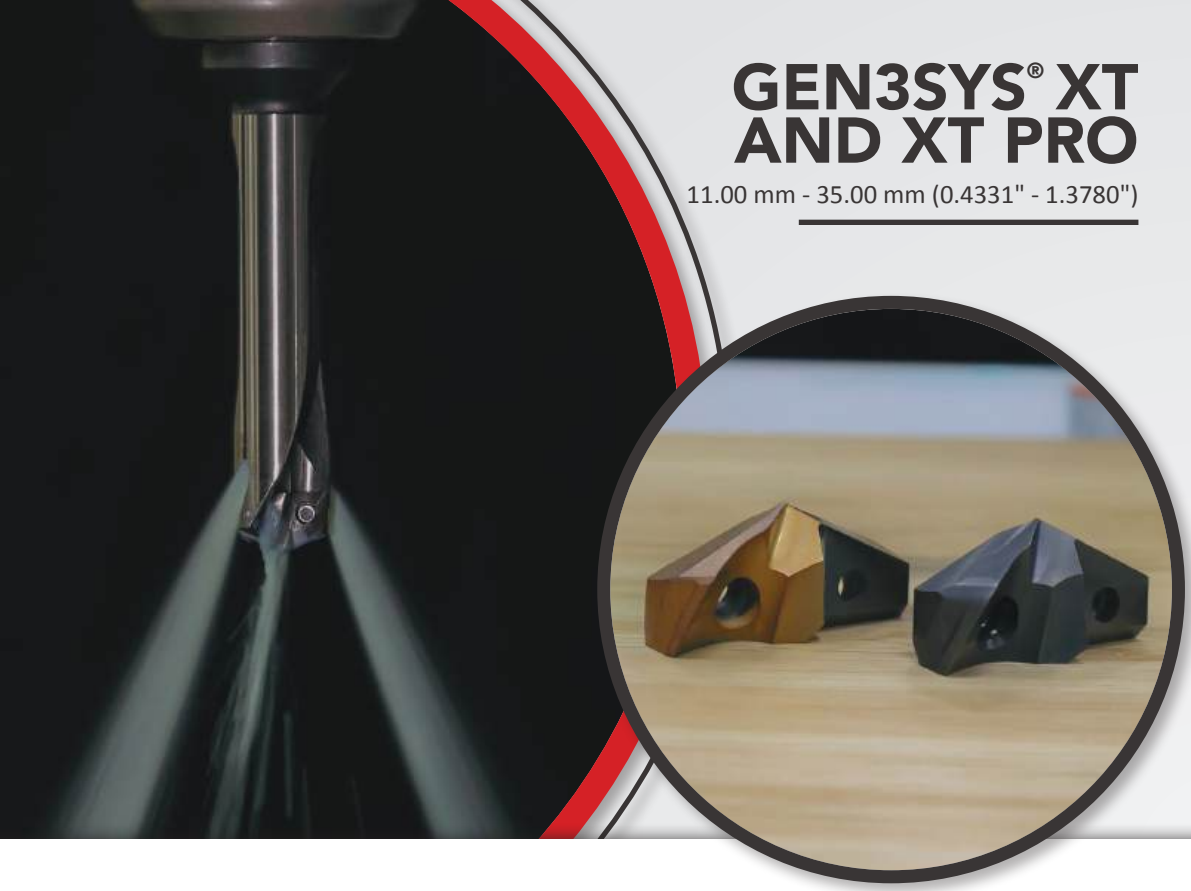
SECTION

A20

GEN3SYS® XT & XT Pro

GEN3SYS® XT AND XT PRO

11.00 mm - 35.00 mm (0.4331" - 1.3780")



GEN3SYS® XT and XT Pro

The GEN3SYS XT and XT Pro replaceable insert high penetration drilling system has been designed to provide high-speed production machining beyond the capabilities of the T-A® drilling system. The product offering consists of various grades, geometries, and coatings available to suit the most demanding applications.

Conceived from the outset as the ultimate high performance drilling solution, the GEN3SYS XT drill range is incredibly versatile. Incorporating both straight and helical fluted tool holder options across the range, as well as through coolant for maximum material removal, GEN3SYS XT not only gives outstanding performance from day one, but it can also be reground for extended life and economy.

The Next Generation of Drilling

- Excellent chip control.
- Improves hole quality and surface finish.
- Provides maximum durability and stability.

Applicable Industries

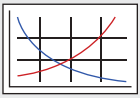
- Aerospace
- Agriculture
- Automotive
- Defense
- General Production
- Heavy Equipment
- Hydraulics
- Marine
- Oil and Gas
- Renewable Energy/ Energy
- Tool, Mold, and Die

Reference Icons

The following icons will appear throughout the catalog to help you navigate between products.



Setup / Assembly Information
Detailed instructions and information regarding the corresponding part(s).



Recommended Cutting Data
Speed and feed recommendations for optimum and safe drilling.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

WARNING means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

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13 Series: 13.00 mm - 13.99 mm (0.5118" - 0.5511") 21
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WHY SHOULD YOU
GO WITH THE **PRO**?
GEN3SYS® XT **Pro**





- Increase your penetration rates
- ISO-specific geometries
- Improved chip evacuation
- Increased coolant flow to the cutting zone
- AM420 coating increases heat resistance
- AM440 coating increases abrasion resistance

THAT'S WHY YOU SHOULD
GO WITH THE **PRO**.

Case Studies

XT Pro: P (steel)

Project Profile:	Forged 8640
Tooling Solution:	GEN3SYS XT Pro: P (steel) Geometry

The Problem:

Previously, the customer was using a competitor drill running at the following parameters:

- 127 m/min (415 SFM)
- 0.23 mm/rev (0.009 IPR)
- The tool drilled a 17.25 mm diameter hole to a 20 mm depth
- Tool life = **1,000 holes**

The Solution:

Allied Machine recommended the GEN3SYS XT Pro with P (steel) geometry.

- **Insert** = XTP17-17.25

The tool ran at the following parameters:

- 127 m/min (415 SFM)
- 0.23 mm/rev (0.009 IPR)
- The tool drilled a 17.25 mm diameter hole to a 20 mm depth
- Tool life = **2,100 holes**

The Advantage:

The GEN3SYS XT Pro increased the tool life from 1,000 holes to 2,100 holes.

Bottom Line: ***Doubled the tool life***

The **PROOF** is in the **NUMBERS**

Competitor Insert Tool Life
(number of holes = 1,000)



XT Pro Insert Tool Life
(number of holes = 2,100)





2x ***INCREASE*** in tool life

HOLDER DESIGN



Drill deeper holes

The XT Pro holders are available up to 12xD.

▶ ***This lets you take advantage of the XT Pro insert benefits in deep hole applications.***

Increase your tool life

The coolant configuration increases coolant flow and directs additional coolant to the cutting zone.

▶ ***This increases tool life with all XT Pro inserts.***

Case Studies

Competitive Test

TEST RESULTS

Project Profile:	Competitive Testing in 4150 Steel
Tooling Solution:	GEN3SYS XT Pro: (P) steel geometry

The Parameters:

- Hole Diameter = 19 mm (0.748")
- Depth of Cut = 38.1 mm (1-1/2")
- Coolant = 300 PSI
- Speed = 1583 RPM
- Feed = 563 mm/min (22.16 IPM)

The Results:

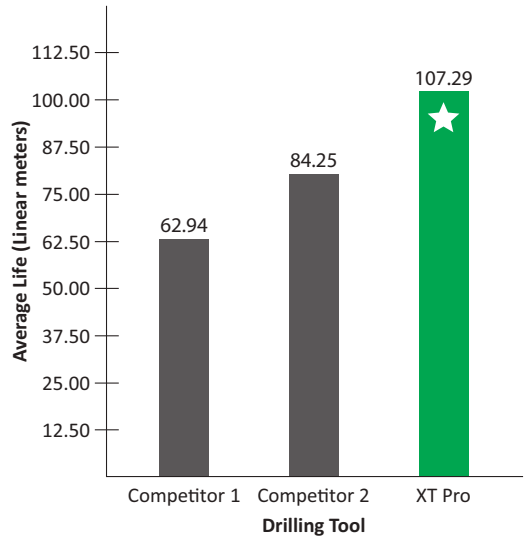
When run at the listed parameters, here is how the three different tooling solutions performed:

Competitor 1 = 2478 total linear inches
Competitor 2 = 3317 total linear inches
GEN3SYS XT Pro = **4224** total linear inches



Average Tool Life

Test Results Drilling in 4150 Steel





Case Studies

XT Pro: K (cast iron)

CASE STUDY

Project Profile:	Ductile/Nodular Iron
Tooling Solution:	GEN3SYS XT Pro: K (cast iron) geometry

The Problem:

Previously, the customer was using a competitor drill:
- Solid carbide drill
- Tool life = **65 holes**

The Solution:

Allied Machine recommended the GEN3SYS XT Pro with K (cast iron) geometry.
The tool ran at the following parameters:
- Hole Diameter = 9/16"
- Coolant = None
- Speed = 117 m/min (390 SFM)
- Feed = 0.20 mm/rev (0.008 IPR)
- Tool life = **390 holes**

The Advantage:

The GEN3SYS XT Pro increased the tool life from 65 holes to 390 holes.
Bottom Line: ***6x the tool life***



There's More to the **Advantage** Than Tool Life

The XT Pro replaceable tip system provides other benefits in addition to the increase in tool life over the solid carbide drill:

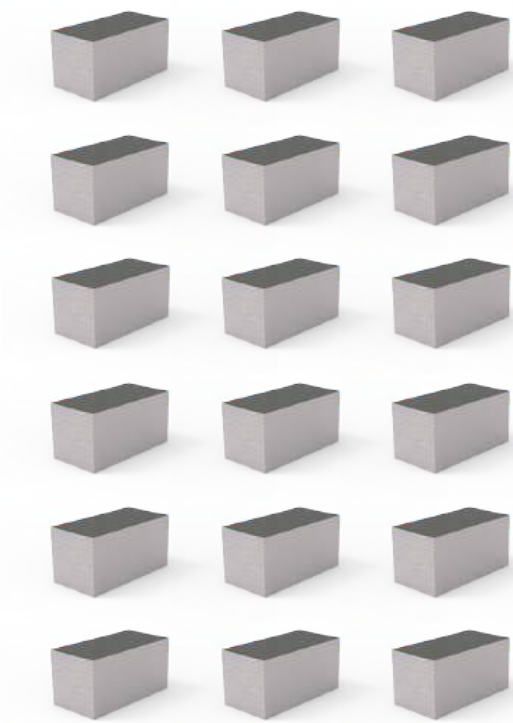
- Because only the insert needs changed when it reaches the end of its life, the XT Pro eliminates the need to re-establish tool lengths, which reduces setup times.
- Further benefit in setup is also seen as the tool only needs changed one time for every six of the customer's current method.
- Without the need for regrinds, the customer's stock of tooling is reduced by eliminating the need for float inventory to cover regrind lead time.

The **PROOF** is in the **NUMBERS**

Competitor Tool Life
(number of holes = 65)



XT Pro Tool Life
(number of holes = 390)

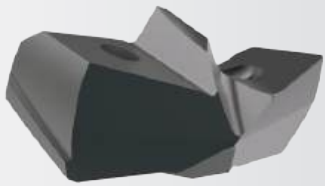


INCREASE in
6x tool life

Drilling System Information

GEN3SYS XT Pro

GEN3SYS XT Pro Drill Inserts



Advanced Design Capabilities

The advanced XT Pro insert combines a coating and geometry specifically designed to achieve optimal results in ISO material drilling applications. With quick connectivity to existing GEN3SYS drill insert holders, the XT Pro insert can be interchanged with previous XT inserts with ease, resulting in minimal setup times so you can immediately increase your productivity.

XT Pro Inserts Connect with:



XT Pro holders



GEN3SYS holders

P - Steels

- Designed to provide increased penetration rates and tool life in steel applications.
- Superior geometry and edge provides excellent chip control.
- Allied's multilayer AM420 coating increases heat resistance and improves tool life.



K - Cast Irons

- Uniquely designed for cast/nodular iron applications.
- Geometry includes a corner radius for improved hole finish and heat dispersion.
- Allied's multilayer AM440 coating provides increased abrasion resistance and tool life.



M - Stainless Steels*

- Designed for all 300 series, 400 series, super duplex stainless steels, and other hard-to-machine materials in the ISO M group.
- Geometry optimized for improved chip formation while drilling at high penetration rates.
- Substrate chosen to provide balance of toughness and wear resistance in difficult applications.
- Allied's AM460 coating provides industry-leading tool life in stainless steels.

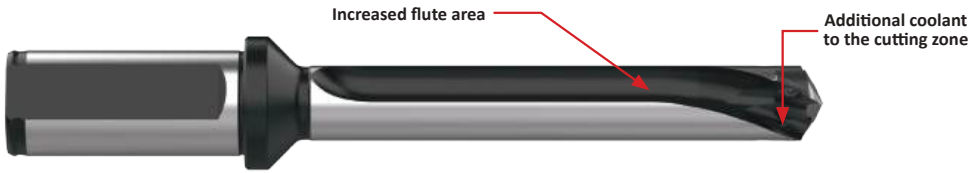


N - Nonferrous Materials

- Designed for applications in aluminum, brass, and copper.
- The geometry yields excellent chip control in these softer materials.
- TiN coating gives the versatility to run in a variety of materials while reducing buildup.



***Available in 12-32 series only.**



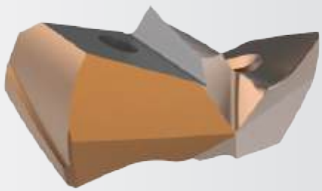
XT Pro Drill Holders

			**3xD, 5xD, 7xD, 10xD, 12xD**
Straight flutes	Enhanced coolant inlets improve the coolant flow	Provides increased insert life	Available in 3xD, 5xD, 7xD, 10xD, and 12xD

Drilling System Information

GEN3SYS XT

GEN3SYS XT Drill Inserts



High Penetration Drilling Solutions

The unique geometry of the XT inserts provides excellent chip control. They are designed to increase hole quality, surface finish, and true position when compared to other competitive products. The helical margin design provides maximum durability and stability.

XT Inserts Connect with:



XT Pro holders | GEN3SYS holders

Standard Geometry

- Designed with corner and cutting edge enhancements to deliver more reliability, durability, and productivity.
- Increases penetration rates and tool life.
- Available in K35 (C1) or K20 (C2) carbide.



LR - Low Rake Geometry

- The toughest XT geometry available.
- Designed for harder steels and less than ideal machining applications.
- Available in K35 (C1) or K20 (C2) carbide.



CI - Cast Iron Geometry

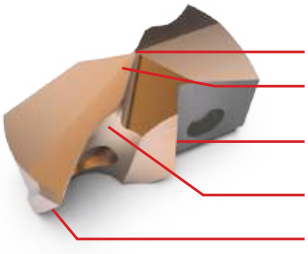
- Increases durability and tool life in ductile, nodular, and grey cast irons.
- Available in K20 (C2) carbide.



AS - Stainless Steel Geometry

- Designed with a specific geometry to provide unmatched chip control and tool life in austenitic and PH stainless steels, as well as high temperature alloys such as Inconel®, Hastelloy®, and titanium alloys.
- Available in K20 (C2) carbide.

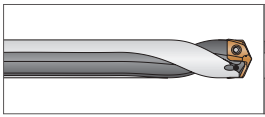




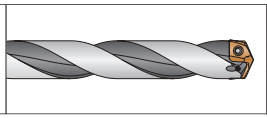
Coating	Features / Benefits
AM300®	• Increased heat resistance over AM200® coating. • Up to 20% increased tool life over AM200 coating. • Provides superior tool life at high penetration rates.



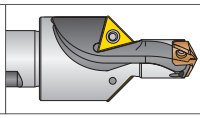
GEN3SYS Holders



Straight flutes



Helical flutes

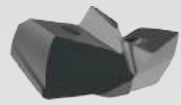


Drill / chamfer style

Stub, 3xD, 5xD, 7xD

Available in stub, 3xD, 5xD, and 7xD

Insert Comparison and Assembly Information

		 XT Pro Inserts	 XT Inserts
Recommended for increased productivity		✓	
ISO-specific geometry/coating combination		✓	
Connects with XT Pro holders		✓	✓
Connects with GEN3SYS holders		✓	✓



Step 1:
Align the flats on the GEN3SYS XT insert with the flats on the ears of the holder.



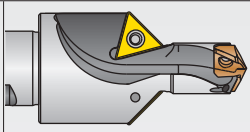
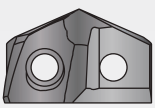
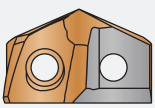
Step 2:
Slide the insert into the precision ground locating pocket on the holder. The insert should not be turned, rotated, or twisted for locking purposes. The holder pocket and locating pads on the insert assure optimum fit and repeatability.



Step 3:
Apply a generous amount of E-Z Break® (provided in the packaging) onto the supplied TORX® Plus screws.

Tighten the TORX Plus screws to the recommended torque value specified in the catalog by series. A preset torx driver is available to assure that the proper torque is applied.

Holder Comparison and Overview

		 XT Pro Holders	 GEN3SYS Holders
Recommended for increased productivity		✓	
Straight flute		✓	✓
Helical flute			✓
Drill/chamfer option			✓
Available in 12xD length	12XD	✓	
Connects with XT Pro inserts		✓	✓
Connects with XT inserts		✓	✓

XT Pro Holders



Straight Flute

GEN3SYS Holders



Straight Flute



Helical Flute



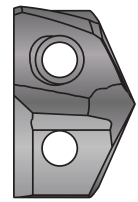
Drill/Chamfer

Product Nomenclature

GEN3SYS XT Pro Drill Inserts

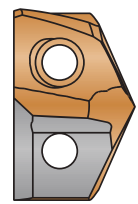
XT	P	11	–	11.00
	ISO Material	**Series**		**Diameter (mm)**
	P = Steel	**11** **16** **24**		For complete list of ranges by series, see table below.
	M = Stainless steel*	**12** **17** **26**		
	K = Cast iron	**13** **18** **29**		
	N = Nonferrous	**14** **20** **32**		
		15 **22**		

*Available in 12-32 series only.



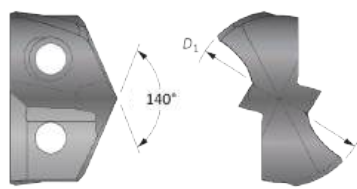
GEN3SYS XT Drill Inserts

7	C2	12	P	–	.484	CI
	Material	**Series**	**Coating**		**Diameter**	**Geometry**
	C1 = K35 (C1)	**11** **16** **24**	**P** = AM300®		**13** = Metric (mm)	**Blank** = Standard
	C2 = K20 (C2)	**12** **17** **26**			**.515** = Decimal (in)	**CI** = Cast iron
		13 **18** **29**			**0017** = Fractional (in)	**LR** = Low rake
		14 **20** **32**				**AS** = Stainless steel
		15 **22**				



Reference Key

Symbol	Attribute
D_1	Insert diameter



Regrinding and Recoating

The GEN3SYS XT and XT Pro drilling system is so cost efficient that it eliminates the need for regrinding and recoating. However, if you choose to have your drill inserts reground, it is critical that it be done by Allied Machine. Any slight deviation in performance due to an improperly reground drill insert will more than offset any benefit from regrinding. Using our service ensures that the best tool performance is maintained in your production process. When returning tools for regrinding, please package tools carefully to avoid damage during shipment. Returning drill inserts for regrinding in their original packaging will help avoid damage during shipment. Drill inserts reground by Allied Machine are repackaged and clearly identified as “Allied Regrind” to avoid any confusion with new tools.

Series & Body Diameters

Series		11 Series	12 Series	13 Series	14 Series	15 Series	16 Series	17 Series
								
Insert Ø	mm	11.00 - 11.99	12.00 - 12.99	13.00 - 13.99	14.00 - 14.99	15.00 - 15.99	16.00 - 16.99	17.00 - 17.99
	inch	0.4331 - 0.4723	0.4724 - 0.5117	0.5118 - 0.5511	0.5512 - 0.5905	0.5906 - 0.6298	0.6299 - 0.6692	0.6693 - 0.7086
Holder								
Shank Ø	mm	16.00	20.00	20.00	20.00	20.00	20.00	20.00
	inch	0.625	0.750	0.750	0.750	0.750	0.750	0.750

Product Nomenclature

GEN3SYS XT and XT Pro Drill Holders

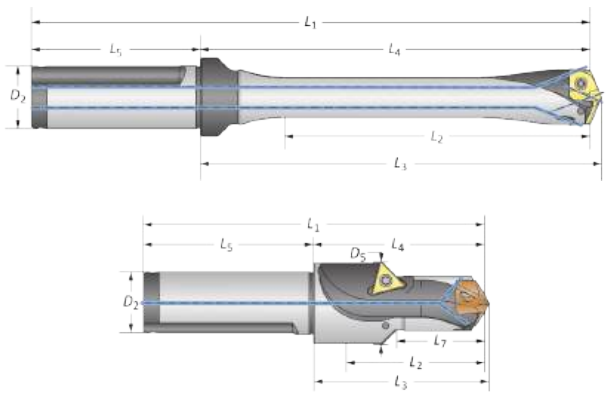
HXT	03	12		S	–	20		FM
Holder	Drill Length	Series		Flute		Shank Diameter		Shank Style
6 = XT standard **HXT** = XT Pro	**01** = Stub (XT standard only.) **03** = 3xD **05** = 5xD **07** = 7xD **10** = 10xD ⚠ (XT Pro only.) **12** = 12xD ⚠ (11-26 series - XT Pro only.)	**11**	**22**	**S** = Straight **H** = Helical **C45** = Drill/Chamfer* (Both helical and drill/ chamfer options available for XT standard only.) *Drill/chamfer is available in stub length only.		Metric (mm) **16** = 16 mm **20** = 20 mm **25** = 25 mm **32** = 32 mm **40** = 40 mm	Imperial (in) **063** = 0.625" **075** = 0.750" **100** = 1.000" **125** = 1.250" **150** = 1.500"	**FM** = Flanged metric (with flat) **CM** = Cylindrical metric (no flat) **F** = Flanged (with flat) **C** = Cylindrical (no flat)
		12	**24**					
		13	**26**					
		14	**29**					
		15	**32**					
		16						
		17						
		18						
		20						

Holder Ordering Information

The series designator (11 series, 12 series, etc.) in the top corner of each page is for your reference when ordering. Please refer to these series designators when placing an order. For example, a 12 series drill insert only fits into a 12 series holder.

Reference Key

Symbol	Attribute
D_2	Shank diameter
D_5	Step diameter (drill/chamfer)
L_1	Overall length
L_2	Drill depth
L_3	Holder reference length
L_4	Holder body length
L_5	Shank length
L_7	Step length (drill/chamfer)
P_1	Rear pipe tap (GEN3SYS)



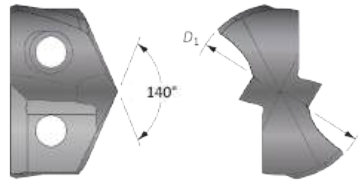
⚠ **WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A20: 89** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

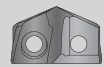
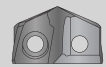
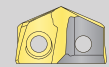
Series		18 Series	20 Series	22 Series	24 Series	26 Series	29 Series	32 Series
								
Insert Ø	mm	18.00 - 19.99	20.00 - 21.99	22.00 - 23.99	24.00 - 25.99	26.00 - 28.99	29.00 - 31.99	32.00 - 35.00
	inch	0.7087 - 0.7873	0.7874 - 0.8660	0.8661 - 0.9448	0.9449 - 1.0235	1.0236 - 1.1416	1.1417 - 1.2597	1.2598 - 1.3780
Holder								
Shank Ø	mm	25.00	25.00	25.00	25.00	32.00	32.00	**XT:** 40.00 **XT Pro:** 32.00
	inch	1.000	1.000	1.000	1.000	1.250	1.250	1.500

11 Series: 11.00 mm - 11.99 mm (0.4331" - 0.4723")

GEN3SYS XT Pro Inserts





Insert			Carbide		
					
D_1 mm	D_1 inch	Fractional Equivalent	Part No.	Part No.	Part No.
			P	K	N
11.00	0.4331	—	XTP11-11.00	XTK11-11.00	XTN11-11.00
11.11	0.4374	7/16	XTP11-11.11	XTK11-11.11	XTN11-11.11
11.20	0.4409	—	XTP11-11.20	XTK11-11.20	XTN11-11.20
11.30	0.4449	—	XTP11-11.30	XTK11-11.30	XTN11-11.30
11.40	0.4488	—	XTP11-11.40	XTK11-11.40	XTN11-11.40
11.50	0.4528	—	XTP11-11.50	XTK11-11.50	XTN11-11.50
11.51	0.4531	29/64	XTP11-11.51	XTK11-11.51	XTN11-11.51
11.60	0.4567	—	XTP11-11.60	XTK11-11.60	XTN11-11.60
11.70	0.4606	—	XTP11-11.70	XTK11-11.70	XTN11-11.70
11.80	0.4646	—	XTP11-11.80	XTK11-11.80	XTN11-11.80
11.91	0.4689	15/32	XTP11-11.91	XTK11-11.91	XTN11-11.91

Inserts sold in multiples of 1.

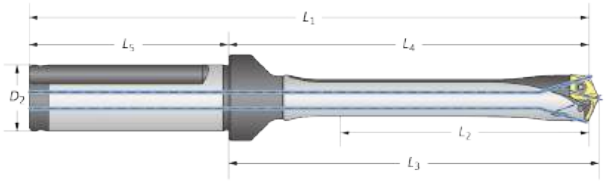
A20: 71 - 86
Key on A20: 2
A20: 7 - 10

Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	11.25 mm, steel, 11 series = use Part No. **XTP11-11.25**
Imperial:	0.4430", steel, 11 series = use Part No. **XTP11-11.25**

11 Series: 11.00 mm - 11.99 mm (0.4331" - 0.4723")

GEN3SYS XT Pro Holders





	Flute	Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Part No. With Flat	Part No. Cylindrical
m	Straight	3xD	36.0	62.6	64.7	112.7	48.0	16	HXT0311S-16FM	HXT0311S-16CM
		5xD	60.0	86.6	88.6	136.7	48.0	16	HXT0511S-16FM	HXT0511S-16CM
		7xD	83.9	110.6	112.6	160.6	48.0	16	HXT0711S-16FM	HXT0711S-16CM
		10xD	119.9	146.6	148.6	196.6	48.0	16	⚠ HXT1011S-16FM	⚠ HXT1011S-16CM
		12xD	143.9	170.5	172.6	220.6	48.0	16	⚠ HXT1211S-16FM	⚠ HXT1211S-16CM
i	Straight	3xD	1.416	2.457	2.537	4.412	1.875	5/8	HXT0311S-063F	HXT0311S-063C
		5xD	2.361	3.401	3.481	5.356	1.875	5/8	HXT0511S-063F	HXT0511S-063C
		7xD	3.305	4.345	4.425	6.300	1.875	5/8	HXT0711S-063F	HXT0711S-063C
		10xD	4.721	5.761	5.841	7.716	1.875	5/8	⚠ HXT1011S-063F	⚠ HXT1011S-063C
		12xD	5.665	6.705	6.785	8.660	1.875	5/8	⚠ HXT1211S-063F	⚠ HXT1211S-063C

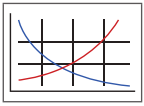
Connection Accessories

 Insert Screws	 Insert Driver	 Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
71843-IP6-1	8IP-6	8IP-6TL	8IP-6B	50 N-cm (4.4 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A20: 86** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A20: 71 - 86
Key on A20: 2



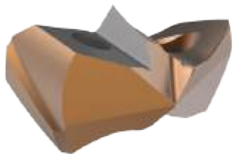
A20: 7 - 10

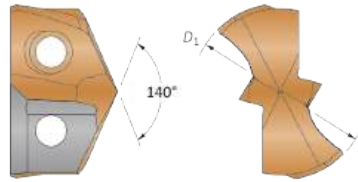


m = Metric (mm)
i = Imperial (in)
Screws sold in multiples of 10.

11 Series: 11.00 mm - 11.99 mm (0.4331" - 0.4723")

GEN3SYS XT Inserts





Substrate	Insert D_1 mm	Insert D_1 inch	Insert Fractional Equivalent	Carbide Part No. Standard	Carbide Part No. Low Rake	Carbide Part No. Cast Iron	Carbide Part No. Stainless
K35 (C1)	11.00	0.4331	—	**7C111P-11**	**7C111P-11LR**	—	—
	11.11	0.4375	7/16	**7C111P-0014**	**7C111P-0014LR**	—	—
	11.50	0.4528	—	**7C111P-11.5**	**7C111P-11.5LR**	—	—
	11.51	0.4531	29/64	**7C111P-.453**	**7C111P-.453LR**	—	—
	11.91	0.4688	15/32	**7C111P-0015**	**7C111P-0015LR**	—	—
K20 (C2)	11.00	0.4331	—	**7C211P-11**	**7C211P-11LR**	**7C211P-11CI**	**7C211P-11AS**
	11.11	0.4375	7/16	**7C211P-0014**	**7C211P-0014LR**	**7C211P-0014CI**	**7C211P-0014AS**
	11.50	0.4528	—	**7C211P-11.5**	**7C211P-11.5LR**	**7C211P-11.5CI**	**7C211P-11.5AS**
	11.51	0.4531	29/64	**7C211P-.453**	**7C211P-.453LR**	**7C211P-.453CI**	**7C211P-.453AS**
	11.91	0.4688	15/32	**7C211P-0015**	**7C211P-0015LR**	**7C211P-0015CI**	**7C211P-0015AS**

Inserts sold in multiples of 1.

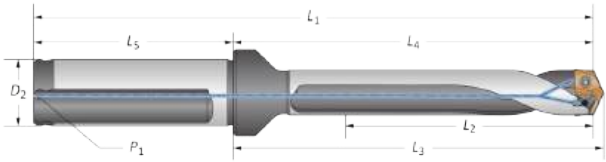
A20: 71 - 86
Key on A20: 2
A20: 7 - 10

Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	11.25 mm, C2, cast iron, 11 series = use Part No. **7C211P-11.25CI**
Imperial:	0.4430", C2, stainless, 11 series = use Part No. **7C211P-.4430AS**

11 Series: 11.00 mm - 11.99 mm (0.4331" - 0.4723")

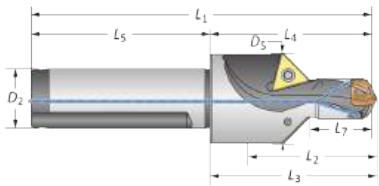
GEN3SYS Holders





Flute		Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No. With Flat	Part No. Cylindrical
Straight		3xD	35.9	62.6	64.7	112.7	48.0	16	1/16 BSPT	**60311S-16FM**	—
		5xD	59.9	86.6	88.6	136.7	48.0	16	1/16 BSPT	**60511S-16FM**	—
		7xD	83.9	110.6	112.6	160.6	48.0	16	1/16 BSPT	**60711S-16FM**	—
Helical		Stub	15.9	42.6	44.7	92.7	48.0	16	1/16 BSPT	**60111H-16FM**	—
		3xD	35.9	62.6	64.7	112.7	48.0	16	1/16 BSPT	**60311H-16FM**	**60311H-16CM**
		5xD	59.9	86.6	88.6	136.7	48.0	16	1/16 BSPT	**60511H-16FM**	**60511H-16CM**
		7xD	83.9	110.6	112.6	160.6	48.0	16	1/16 BSPT	**60711H-16FM**	**60711H-16CM**
Straight		3xD	1.414	2.457	2.537	4.412	1.875	5/8	1/16 NPT	**60311S-063F**	—
		5xD	2.358	3.401	3.481	5.356	1.875	5/8	1/16 NPT	**60511S-063F**	—
		7xD	3.302	4.345	4.425	6.300	1.875	5/8	1/16 NPT	**60711S-063F**	—
Helical		Stub	0.623	1.666	1.746	3.621	1.875	5/8	1/16 NPT	**60111H-063F**	—
		3xD	1.414	2.457	2.537	4.412	1.875	5/8	1/16 NPT	**60311H-063F**	**60311H-063C**
		5xD	2.358	3.401	3.481	5.356	1.875	5/8	1/16 NPT	**60511H-063F**	**60511H-063C**
		7xD	3.302	4.345	4.425	6.300	1.875	5/8	1/16 NPT	**60711H-063F**	**60711H-063C**





Series	Step D_5	Step L_7	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Part No.	Chamfer Insert
11	24.13	16.5	14.1	42.3	44.3	92.4	48.0	16	**60111C45-16FM**	**TCMT-110204**
11	0.9500	0.650	0.554	1.666	1.746	3.621	1.875	5/8	**60111C45-063F**	**TCMT-110204**

Connection Accessories

Insert Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
71843-IP6-1	8IP-6	8IP-6TL	8IP-6B	50 N-cm (4.4 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A20: 71 - 86

Key on A20: 2

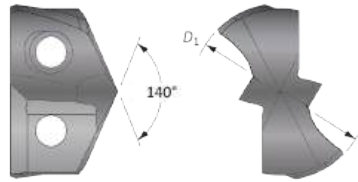
A20: 7 - 10

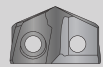
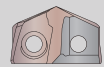
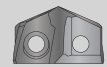
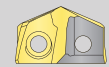
Ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

12 Series: 12.00 mm - 12.99 mm (0.4724" - 0.5117")

GEN3SYS XT Pro Inserts

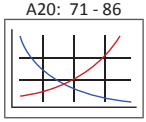




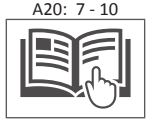
Insert			Carbide			
						
D_1 mm	D_1 inch	Fractional Equivalent	Part No.	Part No.	Part No.	Part No.
			P	M	K	N
12.00	0.4724	—	XTP12-12.00	XTM12-12.00	XTK12-12.00	XTN12-12.00
12.10	0.4764	—	XTP12-12.10	XTM12-12.10	XTK12-12.10	XTN12-12.10
12.20	0.4803	—	XTP12-12.20	XTM12-12.20	XTK12-12.20	XTN12-12.20
12.30	0.4843	31/64	XTP12-12.30	XTM12-12.30	XTK12-12.30	XTN12-12.30
12.40	0.4882	—	XTP12-12.40	XTM12-12.40	XTK12-12.40	XTN12-12.40
12.50	0.4921	—	XTP12-12.50	XTM12-12.50	XTK12-12.50	XTN12-12.50
12.60	0.4961	—	XTP12-12.60	XTM12-12.60	XTK12-12.60	XTN12-12.60
12.70	0.5000	1/2	XTP12-12.70	XTM12-12.70	XTK12-12.70	XTN12-12.70
12.80	0.5039	—	XTP12-12.80	XTM12-12.80	XTK12-12.80	XTN12-12.80
12.90	0.5079	—	XTP12-12.90	XTM12-12.90	XTK12-12.90	XTN12-12.90

Inserts sold in multiples of 1.

A20: 71 - 86
Key on A20: 2



A20: 7 - 10

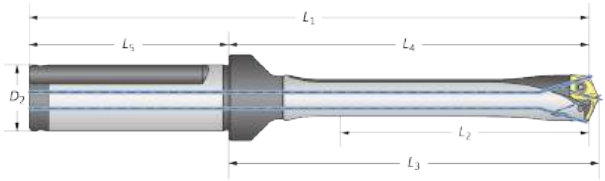


Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	12.25 mm, steel, 12 series = use Part No. **XTP12-12.25**
Imperial:	0.4823", steel, 12 series = use Part No. **XTP12-12.25**

12 Series: 12.00 mm - 12.99 mm (0.4724" - 0.5117")

GEN3SYS XT Pro Holders





Flute		Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Part No. With Flat	Part No. Cylindrical
ⓜ	Straight	3xD	39.0	66.6	68.8	118.8	50.0	20	HXT0312S-20FM	HXT0312S-20CM
		5xD	64.9	92.6	94.8	144.8	50.0	20	HXT0512S-20FM	HXT0512S-20CM
		7xD	90.9	118.5	120.8	170.8	50.0	20	HXT0712S-20FM	HXT0712S-20CM
		10xD	129.9	157.5	159.7	209.7	50.0	20	⚠ HXT1012S-20FM	⚠ HXT1012S-20CM
		12xD	155.9	183.5	185.7	235.7	50.0	20	⚠ HXT1212S-20FM	⚠ HXT1212S-20CM
ⓘ	Straight	3xD	1.534	2.619	2.706	4.736	2.030	3/4	HXT0312S-075F	HXT0312S-075C
		5xD	2.557	3.642	3.729	5.759	2.030	3/4	HXT0512S-075F	HXT0512S-075C
		7xD	3.580	4.665	4.752	6.782	2.030	3/4	HXT0712S-075F	HXT0712S-075C
		10xD	5.114	6.200	6.287	8.317	2.030	3/4	⚠ HXT1012S-075F	⚠ HXT1012S-075C
		12xD	6.137	7.223	7.310	9.340	2.030	3/4	⚠ HXT1212S-075F	⚠ HXT1212S-075C

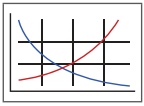
Connection Accessories

 Insert Screws	 Nylon Locking Screws	 Insert Driver	 Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
7247-IP7-1	7247N-IP7-1	8IP-7	8IP-7TL	8IP-7B	84 N-cm (7.4 in-lbs)

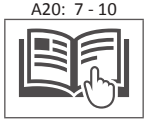
*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A20: 86** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A20: 71 - 86
Key on A20: 2



A20: 7 - 10

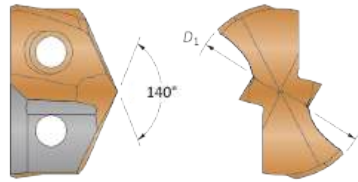


ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

12 Series: 12.00 mm - 12.99 mm (0.4724" - 0.5117")

GEN3SYS XT Inserts

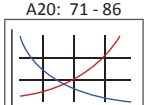




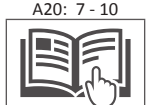
Substrate	Insert D_1 mm	Insert D_1 inch	Insert Fractional Equivalent	Carbide Part No. Standard	Carbide Part No. Low Rake	Carbide Part No. Cast Iron	Carbide Part No. Stainless
K35 (C1)	12.00	0.4724	—	**7C112P-12**	**7C112P-12LR**	—	—
	12.30	0.4844	31/64	**7C112P-.484**	**7C112P-.484LR**	—	—
	12.50	0.4921	—	**7C112P-12.5**	**7C112P-12.5LR**	—	—
	12.70	0.5000	1/2	**7C112P-0016**	**7C112P-0016LR**	—	—
K20 (C2)	12.00	0.4724	—	**7C212P-12**	**7C212P-12LR**	**7C212P-12CI**	**7C212P-12AS**
	12.30	0.4844	31/64	**7C212P-.484**	**7C212P-.484LR**	**7C212P-.484CI**	**7C212P-.484AS**
	12.50	0.4921	—	**7C212P-12.5**	**7C212P-12.5LR**	**7C212P-12.5CI**	**7C212P-12.5AS**
	12.70	0.5000	1/2	**7C212P-0016**	**7C212P-0016LR**	**7C212P-0016CI**	**7C212P-0016AS**

Inserts sold in multiples of 1.

A20: 71 - 86
Key on A20: 2



A20: 7 - 10

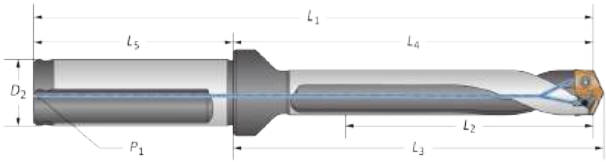


Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	12.25 mm, C2, cast iron, 12 series = use Part No. **7C212P-12.25CI**
Imperial:	0.4823", C2, stainless, 12 series = use Part No. **7C212P-.4823AS**

12 Series: 12.00 mm - 12.99 mm (0.4724" - 0.5117")

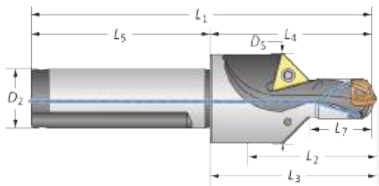
GEN3SYS Holders





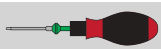
	Flute	Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No. With Flat	Part No. Cylindrical
m	Straight	3xD	39.0	66.6	68.8	118.8	50.0	20	1/8 BSPT	**60312S-20FM**	—
		5xD	65.0	92.6	94.8	144.8	50.0	20	1/8 BSPT	**60512S-20FM**	—
		7xD	91.0	118.5	120.8	170.8	50.0	20	1/8 BSPT	**60712S-20FM**	—
	Helical	Stub	15.7	43.2	45.4	95.5	50.0	20	1/8 BSPT	**60112H-20FM**	—
		3xD	39.0	66.6	68.8	118.8	50.0	20	1/8 BSPT	**60312H-20FM**	**60312H-20CM**
		5xD	65.0	92.6	94.8	144.8	50.0	20	1/8 BSPT	**60512H-20FM**	**60512H-20CM**
		7xD	91.0	118.5	120.8	170.8	50.0	20	1/8 BSPT	**60712H-20FM**	**60712H-20CM**
i	Straight	3xD	1.535	2.619	2.706	4.736	2.030	3/4	1/8 NPT	**60312S-075F**	—
		5xD	2.558	3.642	3.729	5.759	2.030	3/4	1/8 NPT	**60512S-075F**	—
		7xD	3.581	4.665	4.752	6.782	2.030	3/4	1/8 NPT	**60712S-075F**	—
	Helical	Stub	0.618	1.702	1.789	3.819	2.030	3/4	1/8 NPT	**60112H-075F**	—
		3xD	1.535	2.619	2.706	4.736	2.030	3/4	1/8 NPT	**60312H-075F**	**60312H-075C**
		5xD	2.558	3.642	3.729	5.759	2.030	3/4	1/8 NPT	**60512H-075F**	**60512H-075C**
		7xD	3.581	4.665	4.752	6.782	2.030	3/4	1/8 NPT	**60712H-075F**	**60712H-075C**





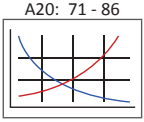
	Series	Step D_5	Step L_7	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Part No.	Chamfer Insert
m	12	24.77	18.0	15.5	43.2	45.4	95.5	50.0	20	**60112C45-20FM**	**TCMT-110204**
i	12	0.9750	0.709	0.610	1.702	1.789	3.819	2.030	3/4	**60112C45-075F**	**TCMT-110204**

Connection Accessories

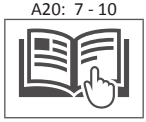
 Insert Screws	 Nylon Locking Screws	 Insert Driver	 Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
7247-IP7-1	7247N-IP7-1	8IP-7	8IP-7TL	8IP-7B	84 N-cm (7.4 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A20: 71 - 86
Key on A20: 2



A20: 7 - 10

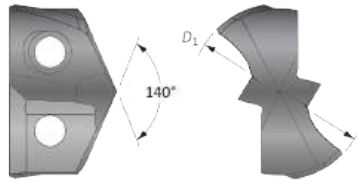


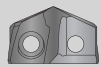
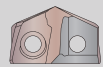
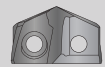
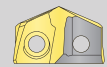
m = Metric (mm)
i = Imperial (in)
Screws sold in multiples of 10.

13 Series: 13.00 mm - 13.99 mm (0.5118" - 0.5511")

GEN3SYS XT Pro Inserts





Insert			Carbide			
						
D_1 mm	D_1 inch	Fractional Equivalent	Part No.	Part No.	Part No.	Part No.
			P	M	K	N
13.00	0.5118	—	XTP13-13.00	XTM13-13.00	XTK13-13.00	XTN13-13.00
13.10	0.5157	33/64	XTP13-13.10	XTM13-13.10	XTK13-13.10	XTN13-13.10
13.20	0.5197	—	XTP13-13.20	XTM13-13.20	XTK13-13.20	XTN13-13.20
13.30	0.5236	—	XTP13-13.30	XTM13-13.30	XTK13-13.30	XTN13-13.30
13.40	0.5276	—	XTP13-13.40	XTM13-13.40	XTK13-13.40	XTN13-13.40
13.49	0.5311	17/32	XTP13-13.49	XTM13-13.49	XTK13-13.49	XTN13-13.49
13.50	0.5315	—	XTP13-13.50	XTM13-13.50	XTK13-13.50	XTN13-13.50
13.60	0.5354	—	XTP13-13.60	XTM13-13.60	XTK13-13.60	XTN13-13.60
13.70	0.5394	—	XTP13-13.70	XTM13-13.70	XTK13-13.70	XTN13-13.70
13.80	0.5433	—	XTP13-13.80	XTM13-13.80	XTK13-13.80	XTN13-13.80
13.89	0.5469	35/64	XTP13-13.89	XTM13-13.89	XTK13-13.89	XTN13-13.89

Inserts sold in multiples of 1.

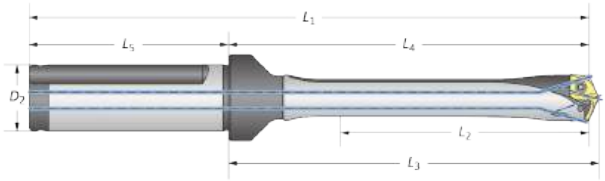
A20: 71 - 86
Key on A20: 2
A20: 7 - 10

Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	13.25 mm, steel, 13 series = use Part No. **XTP13-13.25**
Imperial:	0.5217", steel, 13 series = use Part No. **XTP13-13.25**

13 Series: 13.00 mm - 13.99 mm (0.5118" - 0.5511")

GEN3SYS XT Pro Holders





Flute		Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Part No. With Flat	Part No. Cylindrical
Straight		3xD	42.0	69.3	71.5	121.5	50.0	20	HXT0313S-20FM	HXT0313S-20CM
		5xD	70.0	97.3	99.5	149.5	50.0	20	HXT0513S-20FM	HXT0513S-20CM
		7xD	97.9	125.3	127.5	177.5	50.0	20	HXT0713S-20FM	HXT0713S-20CM
		10xD	139.9	167.3	169.5	219.5	50.0	20	⚠ HXT1013S-20FM	⚠ HXT1013S-20CM
		12xD	167.9	195.2	197.4	247.4	50.0	20	⚠ HXT1213S-20FM	⚠ HXT1213S-20CM
Straight		3xD	1.652	2.725	2.812	4.842	2.030	3/4	HXT0313S-075F	HXT0313S-075C
		5xD	2.754	3.827	3.914	5.944	2.030	3/4	HXT0513S-075F	HXT0513S-075C
		7xD	3.855	4.929	5.016	7.046	2.030	3/4	HXT0713S-075F	HXT0713S-075C
		10xD	5.508	6.582	6.669	8.699	2.030	3/4	⚠ HXT1013S-075F	⚠ HXT1013S-075C
		12xD	6.609	7.684	7.771	9.801	2.030	3/4	⚠ HXT1213S-075F	⚠ HXT1213S-075C

Connection Accessories

Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
7247-IP7-1	7247N-IP7-1	8IP-7	8IP-7TL	8IP-7B	84 N-cm (7.4 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A20: 86** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A20: 71 - 86
Key on A20: 2

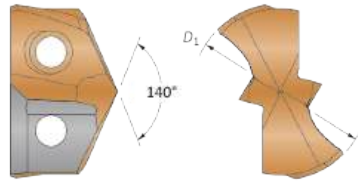
A20: 7 - 10

ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

13 Series: 13.00 mm - 13.99 mm (0.5118" - 0.5511")

GEN3SYS XT Inserts





Substrate	Insert D_1 mm	Insert D_1 inch	Insert Fractional Equivalent	Carbide Part No. Standard	Carbide Part No. Low Rake	Carbide Part No. Cast Iron	Carbide Part No. Stainless
K35 (C1)	13.00	0.5118	—	**7C113P-13**	**7C113P-13LR**	—	—
	13.10	0.5156	33/64	**7C113P-.515**	**7C113P-.515LR**	—	—
	13.50	0.5313	17/32	**7C113P-0017**	**7C113P-0017LR**	—	—
	13.50	0.5315	—	**7C113P-13.5**	**7C113P-13.5LR**	—	—
	13.89	0.5469	35/64	**7C113P-.546**	**7C113P-.546LR**	—	—
K20 (C2)	13.00	0.5118	—	**7C213P-13**	**7C213P-13LR**	**7C213P-13CI**	**7C213P-13AS**
	13.10	0.5156	33/64	**7C213P-.515**	**7C213P-.515LR**	**7C213P-.515CI**	**7C213P-.515AS**
	13.50	0.5313	17/32	**7C213P-0017**	**7C213P-0017LR**	**7C213P-0017CI**	**7C213P-0017AS**
	13.50	0.5315	—	**7C213P-13.5**	**7C213P-13.5LR**	**7C213P-13.5CI**	**7C213P-13.5AS**
	13.89	0.5469	35/64	**7C213P-.546**	**7C213P-.546LR**	**7C213P-.546CI**	**7C213P-.546AS**

Inserts sold in multiples of 1.

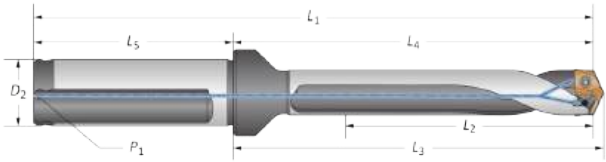
A20: 71 - 86
Key on A20: 2
A20: 7 - 10

Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	13.25 mm, C2, cast iron, 13 series = use Part No. **7C213P-13.25CI**
Imperial:	0.5217", C2, stainless, 13 series = use Part No. **7C213P-.5217AS**

13 Series: 13.00 mm - 13.99 mm (0.5118" - 0.5511")

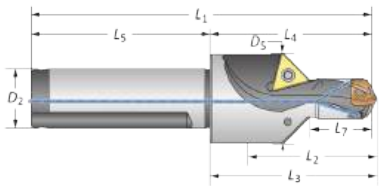
GEN3SYS Holders





	Flute	Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No. With Flat	Part No. Cylindrical
m	Straight	3xD	42.0	69.3	71.5	121.5	50.0	20	1/8 BSPT	**60313S-20FM**	—
		5xD	70.0	97.3	99.5	149.5	50.0	20	1/8 BSPT	**60513S-20FM**	—
		7xD	98.0	125.3	127.5	177.5	50.0	20	1/8 BSPT	**60713S-20FM**	—
	Helical	Stub	15.7	43.0	45.2	95.2	50.0	20	1/8 BSPT	**60113H-20FM**	—
		3xD	42.0	69.3	71.5	121.5	50.0	20	1/8 BSPT	**60313H-20FM**	**60313H-20CM**
		5xD	70.0	97.3	99.5	149.5	50.0	20	1/8 BSPT	**60513H-20FM**	**60513H-20CM**
		7xD	98.0	125.3	127.5	177.5	50.0	20	1/8 BSPT	**60713H-20FM**	**60713H-20CM**
i	Straight	3xD	1.653	2.725	2.812	4.842	2.030	3/4	1/8 NPT	**60313S-075F**	—
		5xD	2.755	3.827	3.914	5.944	2.030	3/4	1/8 NPT	**60513S-075F**	—
		7xD	3.857	4.929	5.016	7.046	2.030	3/4	1/8 NPT	**60713S-075F**	—
	Helical	Stub	0.619	1.691	1.778	3.808	2.030	3/4	1/8 NPT	**60113H-075F**	—
		3xD	1.653	2.725	2.812	4.842	2.030	3/4	1/8 NPT	**60313H-075F**	**60313H-075C**
		5xD	2.755	3.827	3.914	5.944	2.030	3/4	1/8 NPT	**60513H-075F**	**60513H-075C**
		7xD	3.857	4.929	5.016	7.046	2.030	3/4	1/8 NPT	**60713H-075F**	**60713H-075C**





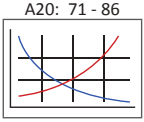
	Series	Step D_5	Step L_7	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Part No.	Chamfer Insert
m	13	25.78	19.5	15.7	43.0	45.2	95.2	50.0	20	**60113C45-20FM**	**TCMT-110204**
i	13	1.0150	0.768	0.618	1.691	1.778	3.808	2.030	3/4	**60113C45-075F**	**TCMT-110204**

Connection Accessories

Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
7247-IP7-1	7247N-IP7-1	8IP-7	8IP-7TL	8IP-7B	84 N-cm (7.4 in-lbs)

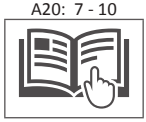
*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A20: 71 - 86



Key on A20: 2

A20: 7 - 10

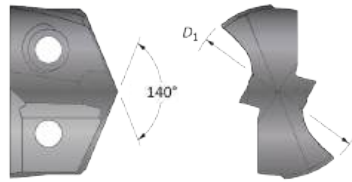


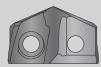
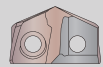
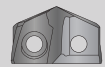
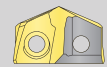
m = Metric (mm)
i = Imperial (in)
Screws sold in multiples of 10.

14 Series: 14.00 mm - 14.99 mm (0.5512" - 0.5905")

GEN3SYS XT Pro Inserts

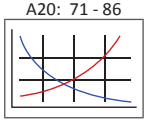




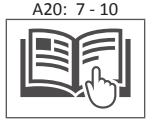
Insert			Carbide			
						
D_1 mm	D_1 inch	Fractional Equivalent	Part No.	Part No.	Part No.	Part No.
			P	M	K	N
14.00	0.5512	—	XTP14-14.00	XTM14-14.00	XTK14-14.00	XTN14-14.00
14.10	0.5551	—	XTP14-14.10	XTM14-14.10	XTK14-14.10	XTN14-14.10
14.20	0.5591	—	XTP14-14.20	XTM14-14.20	XTK14-14.20	XTN14-14.20
14.29	0.5626	9/16	XTP14-14.29	XTM14-14.29	XTK14-14.29	XTN14-14.29
14.40	0.5669	—	XTP14-14.40	XTM14-14.40	XTK14-14.40	XTN14-14.40
14.50	0.5709	—	XTP14-14.50	XTM14-14.50	XTK14-14.50	XTN14-14.50
14.60	0.5748	—	XTP14-14.60	XTM14-14.60	XTK14-14.60	XTN14-14.60
14.68	0.5780	37/64	XTP14-14.68	XTM14-14.68	XTK14-14.68	XTN14-14.68
14.80	0.5827	—	XTP14-14.80	XTM14-14.80	XTK14-14.80	XTN14-14.80
14.90	0.5866	—	XTP14-14.90	XTM14-14.90	XTK14-14.90	XTN14-14.90

Inserts sold in multiples of 1.

A20: 71 - 86
Key on A20: 2



A20: 7 - 10

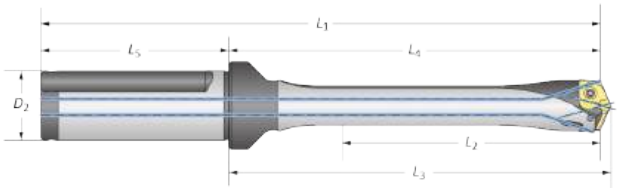


Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	14.25 mm, steel, 14 series = use Part No. **XTP14-14.25**
Imperial:	0.5610", steel, 14 series = use Part No. **XTP14-14.25**

14 Series: 14.00 mm - 14.99 mm (0.5512" - 0.5905")

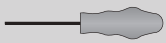
GEN3SYS XT Pro Holders





Flute		Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Part No. With Flat	Part No. Cylindrical
Straight		3xD	45.0	72.4	75.0	125.0	50.0	20	HXT0314S-20FM	HXT0314S-20CM
		5xD	74.9	102.4	104.9	154.9	50.0	20	HXT0514S-20FM	HXT0514S-20CM
		7xD	104.9	132.3	134.9	184.9	50.0	20	HXT0714S-20FM	HXT0714S-20CM
		10xD	149.9	177.2	179.8	229.8	50.0	20	⚠ HXT1014S-20FM	⚠ HXT1014S-20CM
		12xD	179.9	207.2	209.8	259.8	50.0	20	⚠ HXT1214S-20FM	⚠ HXT1214S-20CM
Straight		3xD	1.770	2.847	2.948	4.978	2.030	3/4	HXT0314S-075F	HXT0314S-075C
		5xD	2.950	4.028	4.129	6.159	2.030	3/4	HXT0514S-075F	HXT0514S-075C
		7xD	4.131	5.208	5.309	7.339	2.030	3/4	HXT0714S-075F	HXT0714S-075C
		10xD	5.901	6.979	7.080	9.110	2.030	3/4	⚠ HXT1014S-075F	⚠ HXT1014S-075C
		12xD	7.081	8.160	8.261	10.291	2.030	3/4	⚠ HXT1214S-075F	⚠ HXT1214S-075C

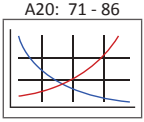
Connection Accessories

 Insert Screws	 Nylon Locking Screws	 Insert Driver	 Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
7247-IP7-1	7247N-IP7-1	8IP-7	8IP-7TL	8IP-7B	84 N-cm (7.4 in-lbs)

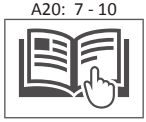
*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A20: 86** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A20: 71 - 86
Key on A20: 2



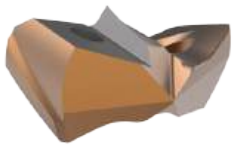
A20: 7 - 10

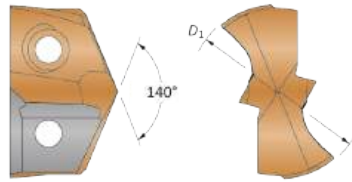


ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

14 Series: 14.00 mm - 14.99 mm (0.5512" - 0.5905")

GEN3SYS XT Inserts





Substrate	Insert D_1 mm	Insert D_1 inch	Insert Fractional Equivalent	Carbide Part No. Standard	Carbide Part No. Low Rake	Carbide Part No. Cast Iron	Carbide Part No. Stainless
K35 (C1)	14.00	0.5512	—	**7C114P-14**	**7C114P-14LR**	—	—
	14.29	0.5625	9/16	**7C114P-0018**	**7C114P-0018LR**	—	—
	14.50	0.5709	—	**7C114P-14.5**	**7C114P-14.5LR**	—	—
	14.68	0.5781	37/64	**7C114P-.578**	**7C114P-.578LR**	—	—
	14.80	0.5827	—	**7C114P-14.8**	**7C114P-14.8LR**	—	—
K20 (C2)	14.00	0.5512	—	**7C214P-14**	**7C214P-14LR**	**7C214P-14CI**	**7C214P-14AS**
	14.29	0.5625	9/16	**7C214P-0018**	**7C214P-0018LR**	**7C214P-0018CI**	**7C214P-0018AS**
	14.50	0.5709	—	**7C214P-14.5**	**7C214P-14.5LR**	**7C214P-14.5CI**	**7C214P-14.5AS**
	14.68	0.5781	37/64	**7C214P-.578**	**7C214P-.578LR**	**7C214P-.578CI**	**7C214P-.578AS**
	14.80	0.5827	—	**7C214P-14.8**	**7C214P-14.8LR**	**7C214P-14.8CI**	**7C214P-14.8AS**

Inserts sold in multiples of 1.

A20: 71 - 86
Key on A20: 2

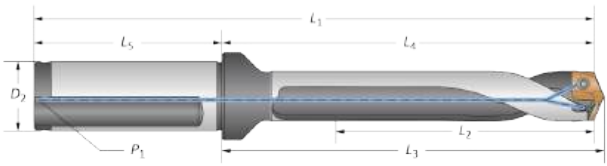
A20: 7 - 10

Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	14.25 mm, C2, cast iron, 14 series = use Part No. **7C214P-14.25CI**
Imperial:	0.5610", C2, stainless, 14 series = use Part No. **7C214P-.5610AS**

14 Series: 14.00 mm - 14.99 mm (0.5512" - 0.5905")

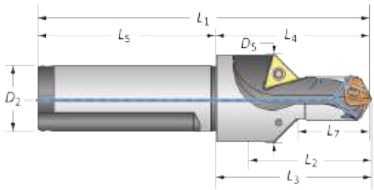
GEN3SYS Holders





	Flute	Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No. With Flat	Part No. Cylindrical
m	Straight	3xD	45.0	72.4	75.0	125.0	50.0	20	1/8 BSPT	**60314S-20FM**	—
		5xD	75.0	102.4	104.9	154.9	50.0	20	1/8 BSPT	**60514S-20FM**	—
		7xD	105.0	132.4	134.9	184.9	50.0	20	1/8 BSPT	**60714S-20FM**	—
	Helical	Stub	17.3	44.6	47.2	97.2	50.0	20	1/8 BSPT	**60114H-20FM**	—
		3xD	45.0	72.4	75.0	125.0	50.0	20	1/8 BSPT	**60314H-20FM**	**60314H-20CM**
		5xD	75.0	102.4	104.9	154.9	50.0	20	1/8 BSPT	**60514H-20FM**	**60514H-20CM**
		7xD	105.0	132.4	134.9	184.9	50.0	20	1/8 BSPT	**60714H-20FM**	**60714H-20CM**
i	Straight	3xD	1.772	2.847	2.948	4.978	2.030	3/4	1/8 NPT	**60314S-075F**	—
		5xD	2.952	4.027	4.128	6.158	2.030	3/4	1/8 NPT	**60514S-075F**	—
		7xD	4.133	5.208	5.309	7.339	2.030	3/4	1/8 NPT	**60714S-075F**	—
	Helical	Stub	0.681	1.756	1.857	3.887	2.030	3/4	1/8 NPT	**60114H-075F**	—
		3xD	1.772	2.847	2.948	4.978	2.030	3/4	1/8 NPT	**60314H-075F**	**60314H-075C**
		5xD	2.952	4.027	4.128	6.158	2.030	3/4	1/8 NPT	**60514H-075F**	**60514H-075C**
		7xD	4.133	5.208	5.309	7.339	2.030	3/4	1/8 NPT	**60714H-075F**	**60714H-075C**





	Series	Step D_5	Step L_7	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Part No.	Chamfer Insert
m	14	26.67	21.0	17.1	44.6	47.2	97.2	50.0	20	**60114C45-20FM**	**TCMT-110204**
i	14	1.0500	0.827	0.672	1.756	1.857	3.887	2.030	3/4	**60114C45-075F**	**TCMT-110204**

Connection Accessories

Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
7247-IP7-1	7247N-IP7-1	8IP-7	8IP-7TL	8IP-7B	84 N-cm (7.4 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

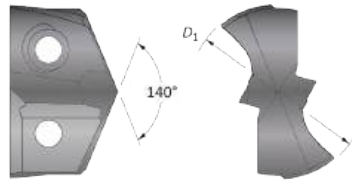
A20: 71 - 86
Key on A20: 2
A20: 7 - 10

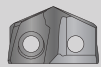
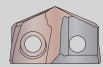
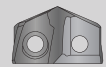
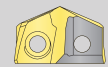
m = Metric (mm)
i = Imperial (in)
Screws sold in multiples of 10.

15 Series: 15.00 mm - 15.99 mm (0.5906" - 0.6298")

GEN3SYS XT Pro Inserts





Insert			Carbide			
						
D_1 mm	D_1 inch	Fractional Equivalent	Part No.	Part No.	Part No.	Part No.
			P	M	K	N
15.00	0.5906	—	XTP15-15.00	XTM15-15.00	XTK15-15.00	XTN15-15.00
15.08	0.5937	19/32	XTP15-15.08	XTM15-15.08	XTK15-15.08	XTN15-15.08
15.20	0.5984	—	XTP15-15.20	XTM15-15.20	XTK15-15.20	XTN15-15.20
15.30	0.6024	—	XTP15-15.30	XTM15-15.30	XTK15-15.30	XTN15-15.30
15.40	0.6063	—	XTP15-15.40	XTM15-15.40	XTK15-15.40	XTN15-15.40
15.48	0.6094	39/64	XTP15-15.48	XTM15-15.48	XTK15-15.48	XTN15-15.48
15.50	0.6102	—	XTP15-15.50	XTM15-15.50	XTK15-15.50	XTN15-15.50
15.60	0.6142	—	XTP15-15.60	XTM15-15.60	XTK15-15.60	XTN15-15.60
15.70	0.6181	—	XTP15-15.70	XTM15-15.70	XTK15-15.70	XTN15-15.70
15.80	0.6220	—	XTP15-15.80	XTM15-15.80	XTK15-15.80	XTN15-15.80
15.88	0.6252	5/8	XTP15-15.88	XTM15-15.88	XTK15-15.88	XTN15-15.88

Inserts sold in multiples of 1.

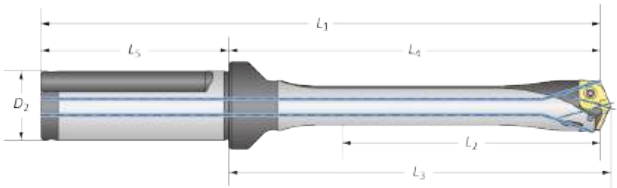
A20: 71 - 86
Key on A20: 2
A20: 7 - 10

Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	15.25 mm, steel, 15 series = use Part No. **XTP15-15.25**
Imperial:	0.6280", steel, 15 series = use Part No. **XTP15-15.95**

15 Series: 15.00 mm - 15.99 mm (0.5906" - 0.6298")

GEN3SYS XT Pro Holders





Flute		Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Part No. With Flat	Part No. Cylindrical
m	Straight	3xD	48.0	75.1	77.6	127.6	50.0	20	HXT0315S-20FM	HXT0315S-20CM
		5xD	79.9	107.0	109.6	159.6	50.0	20	HXT0515S-20FM	HXT0515S-20CM
		7xD	111.9	139.0	141.6	191.6	50.0	20	HXT0715S-20FM	HXT0715S-20CM
		10xD	159.9	187.0	189.6	239.6	50.0	20	⚠ HXT1015S-20FM	⚠ HXT1015S-20CM
		12xD	191.9	219.0	221.5	271.6	50.0	20	⚠ HXT1215S-20FM	⚠ HXT1215S-20CM
i	Straight	3xD	1.889	2.952	3.053	5.083	2.030	3/4	HXT0315S-075F	HXT0315S-075C
		5xD	3.148	4.211	4.312	6.342	2.030	3/4	HXT0515S-075F	HXT0515S-075C
		7xD	4.407	5.470	5.571	7.601	2.030	3/4	HXT0715S-075F	HXT0715S-075C
		10xD	6.296	7.359	7.460	9.490	2.030	3/4	⚠ HXT1015S-075F	⚠ HXT1015S-075C
		12xD	7.555	8.618	8.719	10.749	2.030	3/4	⚠ HXT1215S-075F	⚠ HXT1215S-075C

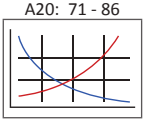
Connection Accessories

Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
7247-IP7-1	7247N-IP7-1	8IP-7	8IP-7TL	8IP-7B	84 N-cm (7.4 in-lbs)

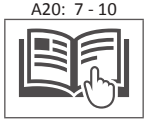
*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A20: 86** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A20: 71 - 86
Key on A20: 2



A20: 7 - 10

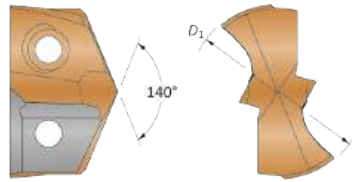


m = Metric (mm)
i = Imperial (in)
Screws sold in multiples of 10.

15 Series: 15.00 mm - 15.99 mm (0.5906" - 0.6298")

GEN3SYS XT Inserts





Substrate	Insert D_1 mm	Insert D_1 inch	Insert Fractional Equivalent	Carbide Part No. Standard	Carbide Part No. Low Rake	Carbide Part No. Cast Iron	Carbide Part No. Stainless
K35 (C1)	15.00	0.5906	—	**7C115P-15**	**7C115P-15LR**	—	—
	15.08	0.5938	19/32	**7C115P-0019**	**7C115P-0019LR**	—	—
	15.25	0.6004	—	**7C115P-15.25**	**7C115P-15.25LR**	—	—
	15.48	0.6094	39/64	**7C115P-.609**	**7C115P-.609LR**	—	—
	15.50	0.6102	—	**7C115P-15.5**	**7C115P-15.5LR**	—	—
	15.70	0.6180	—	**7C115P-.618**	**7C115P-.618LR**	—	—
	15.88	0.6250	5/8	**7C115P-0020**	**7C115P-0020LR**	—	—
K20 (C2)	15.00	0.5906	—	**7C215P-15**	**7C215P-15LR**	**7C215P-15CI**	**7C215P-15AS**
	15.08	0.5938	19/32	**7C215P-0019**	**7C215P-0019LR**	**7C215P-0019CI**	**7C215P-0019AS**
	15.25	0.6004	—	**7C215P-15.25**	**7C215P-15.25LR**	**7C215P-15.25CI**	**7C215P-15.25AS**
	15.48	0.6094	39/64	**7C215P-.609**	**7C215P-.609LR**	**7C215P-.609CI**	**7C215P-.609AS**
	15.50	0.6102	—	**7C215P-15.5**	**7C215P-15.5LR**	**7C215P-15.5CI**	**7C215P-15.5AS**
	15.70	0.6180	—	**7C215P-.618**	**7C215P-.618LR**	**7C215P-.618CI**	**7C215P-.618AS**
	15.88	0.6250	5/8	**7C215P-0020**	**7C215P-0020LR**	**7C215P-0020CI**	**7C215P-0020AS**

Inserts sold in multiples of 1.

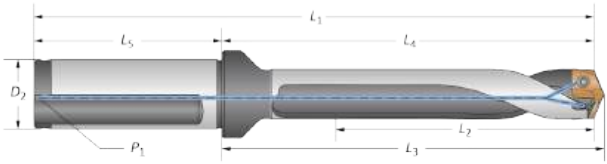
A20: 71 - 86
Key on A20: 2
A20: 7 - 10

Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	15.95 mm, C2, cast iron, 15 series = use Part No. **7C215P-15.95CI**
Imperial:	0.6280", C2, stainless, 15 series = use Part No. **7C215P-.6280AS**

15 Series: 15.00 mm - 15.99 mm (0.5906" - 0.6298")

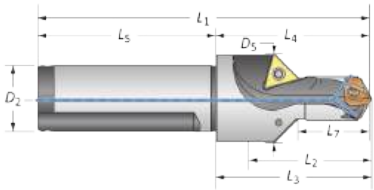
GEN3SYS Holders





	Flute	Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No. With Flat	Part No. Cylindrical
ⓜ	Straight	3xD	48.0	75.1	77.6	127.6	50.0	20	1/8 BSPT	**60315S-20FM**	—
		5xD	80.0	107.0	109.6	159.6	50.0	20	1/8 BSPT	**60515S-20FM**	—
		7xD	112.0	139.0	141.6	191.6	50.0	20	1/8 BSPT	**60715S-20FM**	—
	Helical	Stub	17.3	44.3	46.8	96.9	50.0	20	1/8 BSPT	**60115H-20FM**	—
		3xD	48.0	75.1	77.6	127.6	50.0	20	1/8 BSPT	**60315H-20FM**	**60315H-20CM**
		5xD	80.0	107.0	109.6	159.6	50.0	20	1/8 BSPT	**60515H-20FM**	**60515H-20CM**
		7xD	112.0	139.0	141.6	191.6	50.0	20	1/8 BSPT	**60715H-20FM**	**60715H-20CM**
ⓘ	Straight	3xD	1.890	2.952	3.053	5.083	2.030	3/4	1/8 NPT	**60315S-075F**	—
		5xD	3.149	4.211	4.312	6.342	2.030	3/4	1/8 NPT	**60515S-075F**	—
		7xD	4.408	5.470	5.571	7.601	2.030	3/4	1/8 NPT	**60715S-075F**	—
	Helical	Stub	0.681	1.743	1.844	3.874	2.030	3/4	1/8 NPT	**60115H-075F**	—
		3xD	1.890	2.952	3.053	5.083	2.030	3/4	1/8 NPT	**60315H-075F**	**60315H-075C**
		5xD	3.149	4.211	4.312	6.342	2.030	3/4	1/8 NPT	**60515H-075F**	**60515H-075C**
		7xD	4.408	5.470	5.571	7.601	2.030	3/4	1/8 NPT	**60715H-075F**	**60715H-075C**





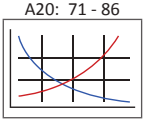
	Series	Step D_5	Step L_7	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Part No.	Chamfer Insert
ⓜ	15	26.99	22.5	17.2	44.3	46.8	96.9	50.0	20	**60115C45-20FM**	**TCMT-110204**
ⓘ	15	1.0625	0.886	0.679	1.743	1.844	3.874	2.030	3/4	**60115C45-075F**	**TCMT-110204**

Connection Accessories

Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
7247-IP7-1	7247N-IP7-1	8IP-7	8IP-7TL	8IP-7B	84 N-cm (7.4 in-lbs)

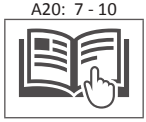
*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A20: 71 - 86



Key on A20: 2

A20: 7 - 10

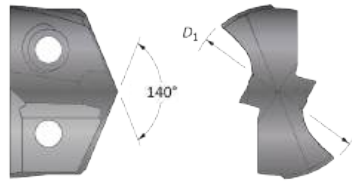


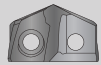
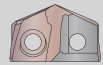
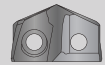
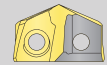
ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

16 Series: 16.00 mm - 16.99 mm (0.6299" - 0.6692")

GEN3SYS XT Pro Inserts

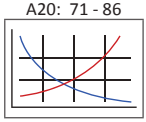




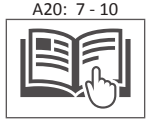
Insert			Carbide			
						
D_1 mm	D_1 inch	Fractional Equivalent	Part No.	Part No.	Part No.	Part No.
			P	M	K	N
16.00	0.6299	—	XTP16-16.00	XTM16-16.00	XTK16-16.00	XTN16-16.00
16.08	0.6331	—	XTP16-16.08	XTM16-16.08	XTK16-16.08	XTN16-16.08
16.20	0.6378	—	XTP16-16.20	XTM16-16.20	XTK16-16.20	XTN16-16.20
16.27	0.6406	41/64	XTP16-16.27	XTM16-16.27	XTK16-16.27	XTN16-16.27
16.40	0.6457	—	XTP16-16.40	XTM16-16.40	XTK16-16.40	XTN16-16.40
16.50	0.6496	—	XTP16-16.50	XTM16-16.50	XTK16-16.50	XTN16-16.50
16.60	0.6535	—	XTP16-16.60	XTM16-16.60	XTK16-16.60	XTN16-16.60
16.67	0.6563	21/32	XTP16-16.67	XTM16-16.67	XTK16-16.67	XTN16-16.67
16.80	0.6614	—	XTP16-16.80	XTM16-16.80	XTK16-16.80	XTN16-16.80
16.90	0.6654	—	XTP16-16.90	XTM16-16.90	XTK16-16.90	XTN16-16.90

Inserts sold in multiples of 1.

A20: 71 - 86
Key on A20: 2



A20: 7 - 10

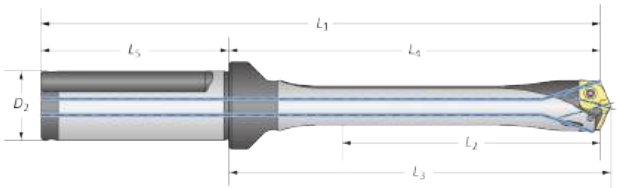


Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	16.25 mm, steel, 16 series = use Part No. **XTP16-16.25**
Imperial:	0.6398", steel, 16 series = use Part No. **XTP16-16.25**

16 Series: 16.00 mm - 16.99 mm (0.6299" - 0.6692")

GEN3SYS XT Pro Holders





Flute		Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Part No. With Flat	Part No. Cylindrical
m	Straight	3xD	51.0	81.3	84.2	134.2	50.0	20	HXT0316S-20FM	HXT0316S-20CM
		5xD	85.0	115.3	118.2	168.2	50.0	20	HXT0516S-20FM	HXT0516S-20CM
		7xD	118.9	149.3	152.2	202.2	50.0	20	HXT0716S-20FM	HXT0716S-20CM
		10xD	169.9	200.3	203.2	253.2	50.0	20	⚠ HXT1016S-20FM	⚠ HXT1016S-20CM
		12xD	203.9	234.3	237.2	287.2	50.0	20	⚠ HXT1216S-20FM	⚠ HXT1216S-20CM
i	Straight	3xD	2.007	3.200	3.314	5.344	2.030	3/4	HXT0316S-075F	HXT0316S-075C
		5xD	3.345	4.538	4.652	6.682	2.030	3/4	HXT0516S-075F	HXT0516S-075C
		7xD	4.682	5.876	5.990	8.020	2.030	3/4	HXT0716S-075F	HXT0716S-075C
		10xD	6.689	7.883	7.997	10.027	2.030	3/4	⚠ HXT1016S-075F	⚠ HXT1016S-075C
		12xD	8.027	9.221	9.335	11.365	2.030	3/4	⚠ HXT1216S-075F	⚠ HXT1216S-075C

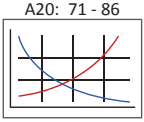
Connection Accessories

Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
72556-IP8-1	72556N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)

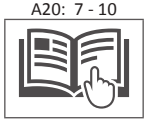
*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A20: 86** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A20: 71 - 86
Key on A20: 2



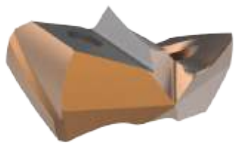
A20: 7 - 10

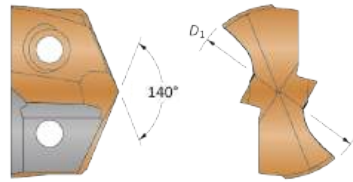


m = Metric (mm)
i = Imperial (in)
Screws sold in multiples of 10.

16 Series: 16.00 mm - 16.99 mm (0.6299" - 0.6692")

GEN3SYS XT Inserts

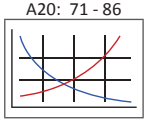




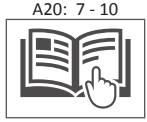
Substrate	Insert D_1 mm	Insert D_1 inch	Insert Fractional Equivalent	Carbide Part No. Standard	Carbide Part No. Low Rake	Carbide Part No. Cast Iron	Carbide Part No. Stainless
K35 (C1)	16.00	0.6299	—	**7C116P-16**	**7C116P-16LR**	—	—
	16.08	0.6331	—	**7C116P-16.08**	**7C116P-16.08LR**	—	—
	16.27	0.6406	41/64	**7C116P-.640**	**7C116P-.640LR**	—	—
	16.50	0.6496	—	**7C116P-16.5**	**7C116P-16.5LR**	—	—
	16.67	0.6563	21/32	**7C116P-0021**	**7C116P-0021LR**	—	—
K20 (C2)	16.00	0.6299	—	**7C216P-16**	**7C216P-16LR**	**7C216P-16CI**	**7C216P-16AS**
	16.08	0.6331	—	**7C216P-16.08**	**7C216P-16.08LR**	**7C216P-16.08CI**	**7C216P-16.08AS**
	16.27	0.6406	41/64	**7C216P-.640**	**7C216P-.640LR**	**7C216P-.640CI**	**7C216P-.640AS**
	16.50	0.6496	—	**7C216P-16.5**	**7C216P-16.5LR**	**7C216P-16.5CI**	**7C216P-16.5AS**
	16.67	0.6563	21/32	**7C216P-0021**	**7C216P-0021LR**	**7C216P-0021CI**	**7C216P-0021AS**

Inserts sold in multiples of 1.

A20: 71 - 86
Key on A20: 2



A20: 7 - 10

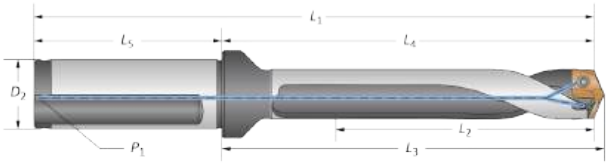


Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	16.25 mm, C2, cast iron, 16 series = use Part No. **7C216P-16.25CI**
Imperial:	0.6398", C2, stainless, 16 series = use Part No. **7C216P-.6398AS**

16 Series: 16.00 mm - 16.99 mm (0.6299" - 0.6692")

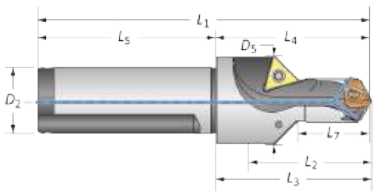
GEN3SYS Holders





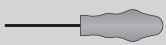
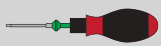
Flute		Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No. With Flat	Part No. Cylindrical
Straight		3xD	51.0	81.3	84.2	134.2	50.0	20	1/8 BSPT	**60316S-20FM**	—
		5xD	85.0	115.3	118.2	168.2	50.0	20	1/8 BSPT	**60516S-20FM**	—
		7xD	118.9	149.3	152.2	202.2	50.0	20	1/8 BSPT	**60716S-20FM**	—
Helical		Stub	20.5	50.8	53.7	103.7	50.0	20	1/8 BSPT	**60116H-20FM**	—
		3xD	51.0	81.3	84.2	134.2	50.0	20	1/8 BSPT	**60316H-20FM**	**60316H-20CM**
		5xD	85.0	115.3	118.2	168.2	50.0	20	1/8 BSPT	**60516H-20FM**	**60516H-20CM**
		7xD	118.9	149.3	152.2	202.2	50.0	20	1/8 BSPT	**60716H-20FM**	**60716H-20CM**
Straight		3xD	2.007	3.200	3.314	5.344	2.030	3/4	1/8 NPT	**60316S-075F**	—
		5xD	3.345	4.538	4.652	6.682	2.030	3/4	1/8 NPT	**60516S-075F**	—
		7xD	4.682	5.876	5.990	8.020	2.030	3/4	1/8 NPT	**60716S-075F**	—
Helical		Stub	0.806	2.000	2.114	4.144	2.030	3/4	1/8 NPT	**60116H-075F**	—
		3xD	2.007	3.200	3.314	5.344	2.030	3/4	1/8 NPT	**60316H-075F**	**60316H-075C**
		5xD	3.345	4.538	4.652	6.682	2.030	3/4	1/8 NPT	**60516H-075F**	**60516H-075C**
		7xD	4.682	5.876	5.990	8.020	2.030	3/4	1/8 NPT	**60716H-075F**	**60716H-075C**





	Series	Step D_5	Step L_7	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Part No.	Chamfer Insert
m	16	26.99	24.0	20.2	50.8	53.7	103.7	50.0	20	**60116C45-20FM**	**TCMT-110204**
i	16	1.0625	0.945	0.797	2.000	2.114	4.144	2.030	3/4	**60116C45-075F**	**TCMT-110204**

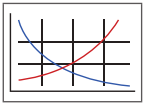
Connection Accessories

 Insert Screws	 Nylon Locking Screws	 Insert Driver	 Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
72556-IP8-1	72556N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A20: 71 - 86

Key on A20: 2



A20: 7 - 10

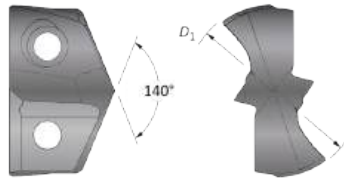


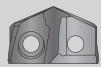
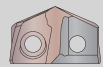
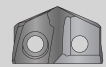
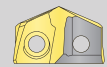
m = Metric (mm)
i = Imperial (in)
Screws sold in multiples of 10.

17 Series: 17.00 mm - 17.99 mm (0.6693" - 0.7086")

GEN3SYS XT Pro Inserts





Insert			Carbide			
						
D_1 mm	D_1 inch	Fractional Equivalent	Part No.	Part No.	Part No.	Part No.
			P	M	K	N
17.00	0.6693	—	XTP17-17.00	XTM17-17.00	XTK17-17.00	XTN17-17.00
17.07	0.6720	43/64	XTP17-17.07	XTM17-17.07	XTK17-17.07	XTN17-17.07
17.10	0.6732	—	XTP17-17.10	XTM17-17.10	XTK17-17.10	XTN17-17.10
17.20	0.6772	—	XTP17-17.20	XTM17-17.20	XTK17-17.20	XTN17-17.20
17.30	0.6811	—	XTP17-17.30	XTM17-17.30	XTK17-17.30	XTN17-17.30
17.40	0.6850	—	XTP17-17.40	XTM17-17.40	XTK17-17.40	XTN17-17.40
17.46	0.6874	11/16	XTP17-17.46	XTM17-17.46	XTK17-17.46	XTN17-17.46
17.50	0.6890	—	XTP17-17.50	XTM17-17.50	XTK17-17.50	XTN17-17.50
17.60	0.6929	—	XTP17-17.60	XTM17-17.60	XTK17-17.60	XTN17-17.60
17.70	0.6969	—	XTP17-17.70	XTM17-17.70	XTK17-17.70	XTN17-17.70
17.80	0.7008	—	XTP17-17.80	XTM17-17.80	XTK17-17.80	XTN17-17.80
17.86	0.7031	45/64	XTP17-17.86	XTM17-17.86	XTK17-17.86	XTN17-17.86
17.90	0.7047	—	XTP17-17.90	XTM17-17.90	XTK17-17.90	XTN17-17.90

Inserts sold in multiples of 1.

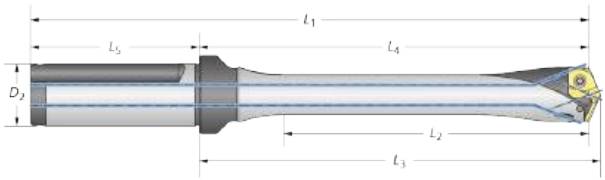
A20: 71 - 86
Key on A20: 2
A20: 7 - 10

Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	17.25 mm, steel, 17 series = use Part No. **XTP17-17.25**
Imperial:	0.6790", steel, 17 series = use Part No. **XTP17-17.25**

17 Series: 17.00 mm - 17.99 mm (0.6693" - 0.7086")

GEN3SYS XT Pro Holders





Flute		Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Part No. With Flat	Part No. Cylindrical
(m)	Straight	3xD	54.0	84.1	87.0	137.0	50.0	20	HXT0317S-20FM	HXT0317S-20CM
		5xD	89.9	120.0	122.9	172.9	50.0	20	HXT0517S-20FM	HXT0517S-20CM
		7xD	125.9	156.0	158.9	208.9	50.0	20	HXT0717S-20FM	HXT0717S-20CM
		10xD	179.9	210.0	212.9	262.9	50.0	20	⚠ HXT1017S-20FM	⚠ HXT1017S-20CM
		12xD	215.9	246.0	248.9	298.9	50.0	20	⚠ HXT1217S-20FM	⚠ HXT1217S-20CM
(i)	Straight	3xD	2.125	3.307	3.421	5.451	2.030	3/4	HXT0317S-075F	HXT0317S-075C
		5xD	3.541	4.724	4.838	6.868	2.030	3/4	HXT0517S-075F	HXT0517S-075C
		7xD	4.958	6.140	6.254	8.284	2.030	3/4	HXT0717S-075F	HXT0717S-075C
		10xD	7.083	8.265	8.379	10.409	2.030	3/4	⚠ HXT1017S-075F	⚠ HXT1017S-075C
		12xD	8.499	9.682	9.796	11.826	2.030	3/4	⚠ HXT1217S-075F	⚠ HXT1217S-075C

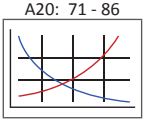
Connection Accessories

Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
72567-IP8-1	72567N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)

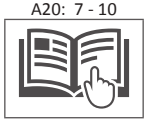
*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A20: 86** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A20: 71 - 86
Key on A20: 2



A20: 7 - 10

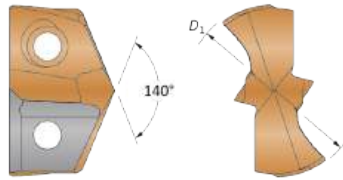


(m) = Metric (mm)
(i) = Imperial (in)
Screws sold in multiples of 10.

17 Series: 17.00 mm - 17.99 mm (0.6693" - 0.7086")

GEN3SYS XT Inserts





Substrate	Insert D_1 mm	Insert D_1 inch	Insert Fractional Equivalent	Carbide Part No. Standard	Carbide Part No. Low Rake	Carbide Part No. Cast Iron	Carbide Part No. Stainless
K35 (C1)	17.00	0.6693	—	**7C117P-17**	**7C117P-17LR**	—	—
	17.07	0.6719	43/64	**7C117P-.671**	**7C117P-.671LR**	—	—
	17.10	0.6732	—	**7C117P-17.1**	**7C117P-17.1LR**	—	—
	17.20	0.6772	—	**7C117P-17.2**	**7C117P-17.2LR**	—	—
	17.46	0.6875	11/16	**7C117P-0022**	**7C117P-0022LR**	—	—
	17.50	0.6890	—	**7C117P-17.5**	**7C117P-17.5LR**	—	—
	17.86	0.7031	45/64	**7C117P-.703**	**7C117P-.703LR**	—	—
K20 (C2)	17.00	0.6693	—	**7C217P-17**	**7C217P-17LR**	**7C217P-17CI**	**7C217P-17AS**
	17.07	0.6719	43/64	**7C217P-.671**	**7C217P-.671LR**	**7C217P-.671CI**	**7C217P-.671AS**
	17.10	0.6732	—	**7C217P-17.1**	**7C217P-17.1LR**	**7C217P-17.1CI**	**7C217P-17.1AS**
	17.20	0.6772	—	**7C217P-17.2**	**7C217P-17.2LR**	**7C217P-17.2CI**	**7C217P-17.2AS**
	17.46	0.6875	11/16	**7C217P-0022**	**7C217P-0022LR**	**7C217P-0022CI**	**7C217P-0022AS**
	17.50	0.6890	—	**7C217P-17.5**	**7C217P-17.5LR**	**7C217P-17.5CI**	**7C217P-17.5AS**
	17.86	0.7031	45/64	**7C217P-.703**	**7C217P-.703LR**	**7C217P-.703CI**	**7C217P-.703AS**

Inserts sold in multiples of 1.

A20: 71 - 86
Key on A20: 2

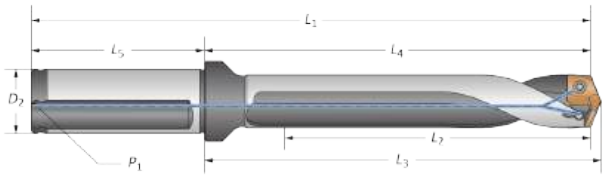
A20: 7 - 10

Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	17.25 mm, C2, cast iron, 17 series = use Part No. **7C217P-17.25CI**
Imperial:	0.6790", C2, stainless, 17 series = use Part No. **7C217P-.6790AS**

17 Series: 17.00 mm - 17.99 mm (0.6693" - 0.7086")

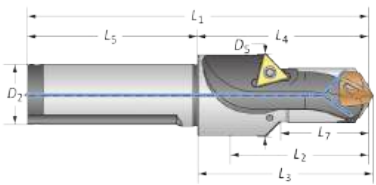
GEN3SYS Holders





Flute		Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No. With Flat	Part No. Cylindrical
Straight		3xD	54.0	84.1	87.0	137.0	50.0	20	1/8 BSPT	60317S-20FM	—
		5xD	90.0	120.0	122.9	172.9	50.0	20	1/8 BSPT	60517S-20FM	—
		7xD	125.9	156.0	158.9	208.9	50.0	20	1/8 BSPT	60717S-20FM	—
Helical		Stub	20.5	50.5	53.4	103.4	50.0	20	1/8 BSPT	60117H-20FM	—
		3xD	54.0	84.1	87.0	137.0	50.0	20	1/8 BSPT	60317H-20FM	60317H-20CM
		5xD	90.0	120.0	122.9	172.9	50.0	20	1/8 BSPT	60517H-20FM	60517H-20CM
		7xD	125.9	156.0	158.9	208.9	50.0	20	1/8 BSPT	60717H-20FM	60717H-20CM
Straight		3xD	2.126	3.307	3.421	5.451	2.030	3/4	1/8 NPT	60317S-075F	—
		5xD	3.542	4.723	4.837	6.867	2.030	3/4	1/8 NPT	60517S-075F	—
		7xD	4.959	6.140	6.254	8.284	2.030	3/4	1/8 NPT	60717S-075F	—
Helical		Stub	0.806	1.987	2.101	4.131	2.030	3/4	1/8 NPT	60117H-075F	—
		3xD	2.126	3.307	3.421	5.451	2.030	3/4	1/8 NPT	60317H-075F	60317H-075C
		5xD	3.542	4.723	4.837	6.867	2.030	3/4	1/8 NPT	60517H-075F	60517H-075C
		7xD	4.959	6.140	6.254	8.284	2.030	3/4	1/8 NPT	60717H-075F	60717H-075C





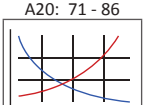
Series	Step D_5	Step L_7	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Part No.	Chamfer Insert
17	25.40	25.5	20.4	50.5	53.4	103.4	50.0	20	60117C45-20FM	TCMT-110204
17	1.0000	1.004	4.017	1.987	2.101	4.131	2.030	3/4	60117C45-075F	TCMT-110204

Connection Accessories

Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
72567-IP8-1	72567N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)

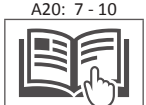
*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A20: 71 - 86



Key on A20: 2

A20: 7 - 10

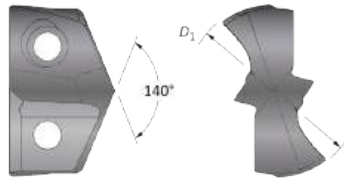


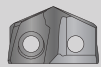
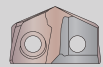
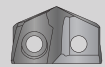
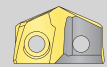
Ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

18 Series: 18.00 mm - 19.99 mm (0.7087" - 0.7873")

GEN3SYS XT Pro Inserts

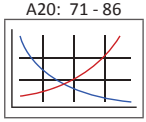




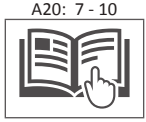
Insert			Carbide			
						
D_1 mm	D_1 inch	Fractional Equivalent	Part No.	Part No.	Part No.	Part No.
			P	M	K	N
18.00	0.7087	—	XTP18-18.00	XTM18-18.00	XTK18-18.00	XTN18-18.00
18.10	0.7126	—	XTP18-18.10	XTM18-18.10	XTK18-18.10	XTN18-18.10
18.20	0.7165	—	XTP18-18.20	XTM18-18.20	XTK18-18.20	XTN18-18.20
18.26	0.7189	23/32	XTP18-18.26	XTM18-18.26	XTK18-18.26	XTN18-18.26
18.30	0.7205	—	XTP18-18.30	XTM18-18.30	XTK18-18.30	XTN18-18.30
18.40	0.7244	—	XTP18-18.40	XTM18-18.40	XTK18-18.40	XTN18-18.40
18.50	0.7283	—	XTP18-18.50	XTM18-18.50	XTK18-18.50	XTN18-18.50
18.60	0.7323	—	XTP18-18.60	XTM18-18.60	XTK18-18.60	XTN18-18.60
18.65	0.7343	47/64	XTP18-18.65	XTM18-18.65	XTK18-18.65	XTN18-18.65
18.70	0.7362	—	XTP18-18.70	XTM18-18.70	XTK18-18.70	XTN18-18.70
18.80	0.7402	—	XTP18-18.80	XTM18-18.80	XTK18-18.80	XTN18-18.80
18.90	0.7441	—	XTP18-18.90	XTM18-18.90	XTK18-18.90	XTN18-18.90
19.00	0.7480	—	XTP18-19.00	XTM18-19.00	XTK18-19.00	XTN18-19.00
19.05	0.7500	3/4	XTP18-19.05	XTM18-19.05	XTK18-19.05	XTN18-19.05
19.10	0.7520	—	XTP18-19.10	XTM18-19.10	XTK18-19.10	XTN18-19.10
19.20	0.7559	—	XTP18-19.20	XTM18-19.20	XTK18-19.20	XTN18-19.20
19.25	0.7579	—	XTP18-19.25	XTM18-19.25	XTK18-19.25	XTN18-19.25
19.30	0.7598	—	XTP18-19.30	XTM18-19.30	XTK18-19.30	XTN18-19.30
19.40	0.7638	—	XTP18-19.40	XTM18-19.40	XTK18-19.40	XTN18-19.40
19.45	0.7657	49/64	XTP18-19.45	XTM18-19.45	XTK18-19.45	XTN18-19.45
19.50	0.7677	—	XTP18-19.50	XTM18-19.50	XTK18-19.50	XTN18-19.50
19.60	0.7717	—	XTP18-19.60	XTM18-19.60	XTK18-19.60	XTN18-19.60
19.70	0.7756	—	XTP18-19.70	XTM18-19.70	XTK18-19.70	XTN18-19.70
19.80	0.7795	—	XTP18-19.80	XTM18-19.80	XTK18-19.80	XTN18-19.80
19.84	0.7811	25/32	XTP18-19.84	XTM18-19.84	XTK18-19.84	XTN18-19.84
19.90	0.7835	—	XTP18-19.90	XTM18-19.90	XTK18-19.90	XTN18-19.90

Inserts sold in multiples of 1.

A20: 71 - 86
Key on A20: 2



A20: 7 - 10

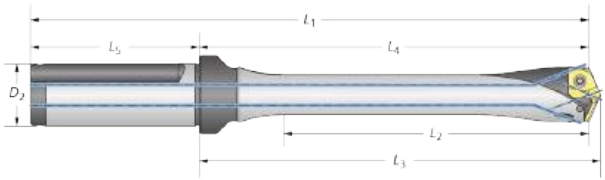


Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	18.25 mm, steel, 18 series = use Part No. **XTP18-18.25**
Imperial:	0.7185", steel, 18 series = use Part No. **XTP18-18.25**

18 Series: 18.00 mm - 19.99 mm (0.7087" - 0.7873")

GEN3SYS XT Pro Holders





	Flute	Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Part No. With Flat	Part No. Cylindrical
m	Straight	3xD	60.0	94.0	96.8	152.8	56.0	25	HXT0318S-25FM	HXT0318S-25CM
		5xD	100.0	134.0	136.8	192.8	56.0	25	HXT0518S-25FM	HXT0518S-25CM
		7xD	139.9	174.0	176.8	232.8	56.0	25	HXT0718S-25FM	HXT0718S-25CM
		10xD	199.9	233.9	236.7	292.7	56.0	25	⚠ HXT1018S-25FM	⚠ HXT1018S-25CM
		12xD	239.9	273.9	276.7	332.7	56.0	25	⚠ HXT1218S-25FM	⚠ HXT1218S-25CM
i	Straight	3xD	2.362	3.701	3.811	6.091	2.280	1	HXT0318S-100F	HXT0318S-100C
		5xD	3.936	5.275	5.385	7.665	2.280	1	HXT0518S-100F	HXT0518S-100C
		7xD	5.510	6.849	6.959	9.239	2.280	1	HXT0718S-100F	HXT0718S-100C
		10xD	7.871	9.210	9.320	11.600	2.280	1	⚠ HXT1018S-100F	⚠ HXT1018S-100C
		12xD	9.445	10.784	10.894	13.174	2.280	1	⚠ HXT1218S-100F	⚠ HXT1218S-100C

Connection Accessories

Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
7375-IP9-1	7375N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A20: 86** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A20: 71 - 86
Key on A20: 2

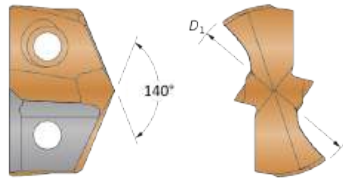
A20: 7 - 10

m = Metric (mm)
i = Imperial (in)
Screws sold in multiples of 10.

18 Series: 18.00 mm - 19.99 mm (0.7087" - 0.7873")

GEN3SYS XT Inserts

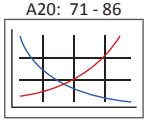




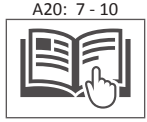
Substrate	Insert D_1 mm	Insert D_1 inch	Insert Fractional Equivalent	Carbide Part No. Standard	Carbide Part No. Low Rake	Carbide Part No. Cast Iron	Carbide Part No. Stainless
K35 (C1)	18.00	0.7087	—	**7C118P-18**	**7C118P-18LR**	—	—
	18.26	0.7188	23/32	**7C118P-0023**	**7C118P-0023LR**	—	—
	18.50	0.7283	—	**7C118P-18.5**	**7C118P-18.5LR**	—	—
	18.65	0.7344	47/64	**7C118P-.734**	**7C118P-.734LR**	—	—
	19.00	0.7480	—	**7C118P-19**	**7C118P-19LR**	—	—
	19.05	0.7500	3/4	**7C118P-0024**	**7C118P-0024LR**	—	—
	19.25	0.7580	—	**7C118P-.758**	**7C118P-.758LR**	—	—
	19.45	0.7656	49/64	**7C118P-.765**	**7C118P-.765LR**	—	—
	19.50	0.7677	—	**7C118P-19.5**	**7C118P-19.5LR**	—	—
	19.80	0.7795	—	**7C118P-19.8**	**7C118P-19.8LR**	—	—
	19.85	0.7813	25/32	**7C118P-0025**	**7C118P-0025LR**	—	—
K20 (C2)	18.00	0.7087	—	**7C218P-18**	**7C218P-18LR**	**7C218P-18CI**	**7C218P-18AS**
	18.26	0.7188	23/32	**7C218P-0023**	**7C218P-0023LR**	**7C218P-0023CI**	**7C218P-0023AS**
	18.50	0.7283	—	**7C218P-18.5**	**7C218P-18.5LR**	**7C218P-18.5CI**	**7C218P-18.5AS**
	18.65	0.7344	47/64	**7C218P-.734**	**7C218P-.734LR**	**7C218P-.734CI**	**7C218P-.734AS**
	19.00	0.7480	—	**7C218P-19**	**7C218P-19LR**	**7C218P-19CI**	**7C218P-19AS**
	19.05	0.7500	3/4	**7C218P-0024**	**7C218P-0024LR**	**7C218P-0024CI**	**7C218P-0024AS**
	19.25	0.7580	—	**7C218P-.758**	**7C218P-.758LR**	**7C218P-.758CI**	**7C218P-.758AS**
	19.45	0.7656	49/64	**7C218P-.765**	**7C218P-.765LR**	**7C218P-.765CI**	**7C218P-.765AS**
	19.50	0.7677	—	**7C218P-19.5**	**7C218P-19.5LR**	**7C218P-19.5CI**	**7C218P-19.5AS**
	19.80	0.7795	—	**7C218P-19.8**	**7C218P-19.8LR**	**7C218P-19.8CI**	**7C218P-19.8AS**
	19.85	0.7813	25/32	**7C218P-0025**	**7C218P-0025LR**	**7C218P-0025CI**	**7C218P-0025AS**

Inserts sold in multiples of 1.

A20: 71 - 86
Key on A20: 2



A20: 7 - 10

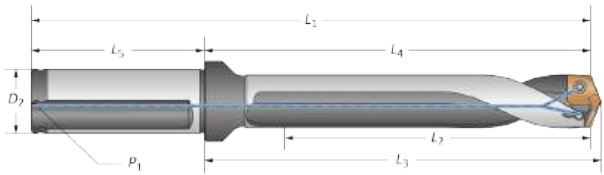


Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	18.25 mm, C2, cast iron, 18 series = use Part No. **7C218P-18.25CI**
Imperial:	0.7185", C2, stainless, 18 series = use Part No. **7C218P-.7185AS**

18 Series: 18.00 mm - 19.99 mm (0.7087" - 0.7873")

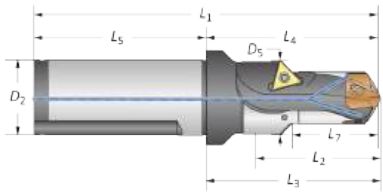
GEN3SYS Holders





Flute		Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No. With Flat	Part No. Cylindrical
Straight		3xD	60.0	94.0	96.8	152.8	56.0	25	1/8 BSPT	**60318S-25FM**	—
		5xD	99.9	134.0	136.8	192.8	56.0	25	1/8 BSPT	**60518S-25FM**	—
		7xD	139.9	174.0	176.8	232.8	56.0	25	1/8 BSPT	**60718S-25FM**	—
Helical		Stub	21.9	56.0	58.8	114.8	56.0	25	1/8 BSPT	**60118H-25FM**	—
		3xD	60.0	94.0	96.8	152.8	56.0	25	1/8 BSPT	**60318H-25FM**	**60318H-25CM**
		5xD	99.9	134.0	136.8	192.8	56.0	25	1/8 BSPT	**60518H-25FM**	**60518H-25CM**
		7xD	139.9	174.0	176.8	232.8	56.0	25	1/8 BSPT	**60718H-25FM**	**60718H-25CM**
Straight		3xD	2.360	3.701	3.811	6.091	2.280	1	1/8 NPT	**60318S-100F**	—
		5xD	3.934	5.275	5.385	7.665	2.280	1	1/8 NPT	**60518S-100F**	—
		7xD	5.508	6.849	6.959	9.239	2.280	1	1/8 NPT	**60718S-100F**	—
Helical		Stub	0.862	2.203	2.313	4.593	2.280	1	1/8 NPT	**60118H-100F**	—
		3xD	2.360	3.701	3.811	6.091	2.280	1	1/8 NPT	**60318H-100F**	**60318H-100C**
		5xD	3.934	5.275	5.385	7.665	2.280	1	1/8 NPT	**60518H-100F**	**60518H-100C**
		7xD	5.508	6.849	6.959	9.239	2.280	1	1/8 NPT	**60718H-100F**	**60718H-100C**





Series	Step D_5	Step L_7	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Part No.	Chamfer Insert
18	25.15	27.0	21.8	56.0	58.8	114.8	56.0	25	**60118C45-25FM**	**TCMT-110204**
18	0.9900	1.063	0.857	2.203	2.313	4.593	2.280	1	**60118C45-100F**	**TCMT-110204**

Connection Accessories

Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
7375-IP9-1	7375N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

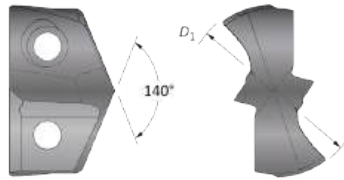
A20: 71 - 86
Key on A20: 2
A20: 7 - 10

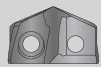
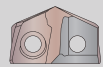
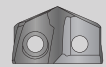
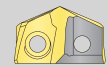
Ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

20 Series: 20.00 mm - 21.99 mm (0.7874" - 0.8660")

GEN3SYS XT Pro Inserts

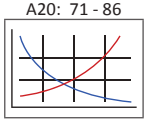




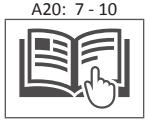
Insert			Carbide			
						
D_1 mm	D_1 inch	Fractional Equivalent	Part No.	Part No.	Part No.	Part No.
			P	M	K	N
20.00	0.7874	—	XTP20-20.00	XTM20-20.00	XTK20-20.00	XTN20-20.00
20.10	0.7913	—	XTP20-20.10	XTM20-20.10	XTK20-20.10	XTN20-20.10
20.20	0.7953	—	XTP20-20.20	XTM20-20.20	XTK20-20.20	XTN20-20.20
20.24	0.7969	51/64	XTP20-20.24	XTM20-20.24	XTK20-20.24	XTN20-20.24
20.30	0.7992	—	XTP20-20.30	XTM20-20.30	XTK20-20.30	XTN20-20.30
20.40	0.8031	—	XTP20-20.40	XTM20-20.40	XTK20-20.40	XTN20-20.40
20.50	0.8071	—	XTP20-20.50	XTM20-20.50	XTK20-20.50	XTN20-20.50
20.60	0.8110	—	XTP20-20.60	XTM20-20.60	XTK20-20.60	XTN20-20.60
20.64	0.8126	13/16	XTP20-20.64	XTM20-20.64	XTK20-20.64	XTN20-20.64
20.70	0.8150	—	XTP20-20.70	XTM20-20.70	XTK20-20.70	XTN20-20.70
20.80	0.8189	—	XTP20-20.80	XTM20-20.80	XTK20-20.80	XTN20-20.80
20.90	0.8228	—	XTP20-20.90	XTM20-20.90	XTK20-20.90	XTN20-20.90
21.00	0.8268	—	XTP20-21.00	XTM20-21.00	XTK20-21.00	XTN20-21.00
21.10	0.8307	—	XTP20-21.10	XTM20-21.10	XTK20-21.10	XTN20-21.10
21.20	0.8346	—	XTP20-21.20	XTM20-21.20	XTK20-21.20	XTN20-21.20
21.30	0.8386	—	XTP20-21.30	XTM20-21.30	XTK20-21.30	XTN20-21.30
21.40	0.8425	—	XTP20-21.40	XTM20-21.40	XTK20-21.40	XTN20-21.40
21.43	0.8437	27/32	XTP20-21.43	XTM20-21.43	XTK20-21.43	XTN20-21.43
21.50	0.8465	—	XTP20-21.50	XTM20-21.50	XTK20-21.50	XTN20-21.50
21.60	0.8504	—	XTP20-21.60	XTM20-21.60	XTK20-21.60	XTN20-21.60
21.70	0.8543	—	XTP20-21.70	XTM20-21.70	XTK20-21.70	XTN20-21.70
21.80	0.8583	—	XTP20-21.80	XTM20-21.80	XTK20-21.80	XTN20-21.80
21.83	0.8594	55/64	XTP20-21.83	XTM20-21.83	XTK20-21.83	XTN20-21.83
21.90	0.8622	—	XTP20-21.90	XTM20-21.90	XTK20-21.90	XTN20-21.90

Inserts sold in multiples of 1.

A20: 71 - 86
Key on A20: 2



A20: 7 - 10

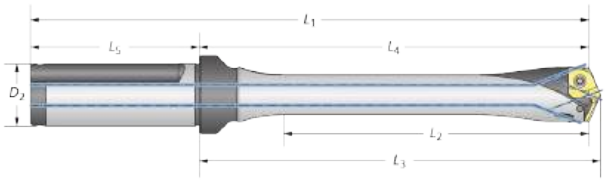


Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	20.25 mm, steel, 20 series = use Part No. **XTP20-20.25**
Imperial:	0.7974", steel, 20 series = use Part No. **XTP20-20.25**

20 Series: 20.00 mm - 21.99 mm (0.7874" - 0.8660")

GEN3SYS XT Pro Holders





Flute		Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Part No. With Flat	Part No. Cylindrical
(m)	Straight	3xD	66.0	100.1	102.9	158.9	56.0	25	HXT0320S-25FM	HXT0320S-25CM
		5xD	110.0	144.1	146.9	202.9	56.0	25	HXT0520S-25FM	HXT0520S-25CM
		7xD	153.9	188.1	190.9	246.9	56.0	25	HXT0720S-25FM	HXT0720S-25CM
		10xD	219.9	254.0	256.8	312.8	56.0	25	⚠ HXT1020S-25FM	⚠ HXT1020S-25CM
		12xD	263.9	298.0	300.8	356.8	56.0	25	⚠ HXT1220S-25FM	⚠ HXT1220S-25CM
(i)	Straight	3xD	2.597	3.941	4.051	6.331	2.280	1	HXT0320S-100F	HXT0320S-100C
		5xD	4.329	5.673	5.783	8.063	2.280	1	HXT0520S-100F	HXT0520S-100C
		7xD	6.060	7.404	7.514	9.794	2.280	1	HXT0720S-100F	HXT0720S-100C
		10xD	8.658	10.002	10.112	12.392	2.280	1	⚠ HXT1020S-100F	⚠ HXT1020S-100C
		12xD	10.389	11.733	11.843	14.123	2.280	1	⚠ HXT1220S-100F	⚠ HXT1220S-100C

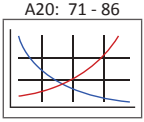
Connection Accessories

Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
7375-IP9-1	7375N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)

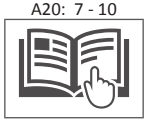
*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A20: 86** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A20: 71 - 86
Key on A20: 2



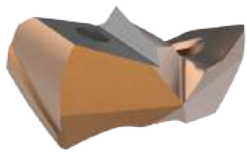
A20: 7 - 10

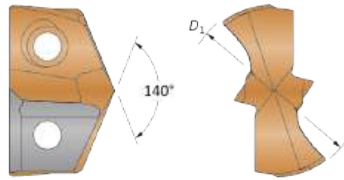


(m) = Metric (mm)
(i) = Imperial (in)
Screws sold in multiples of 10.

20 Series: 20.00 mm - 21.99 mm (0.7874" - 0.8660")

GEN3SYS XT Inserts





Substrate	Insert D_1 mm	Insert D_1 inch	Insert Fractional Equivalent	Carbide Part No. Standard	Carbide Part No. Low Rake	Carbide Part No. Cast Iron	Carbide Part No. Stainless
K35 (C1)	20.00	0.7874	—	**7C120P-20**	**7C120P-20LR**	—	—
	20.24	0.7969	51/64	**7C120P-.796**	**7C120P-.796LR**	—	—
	20.50	0.8071	—	**7C120P-20.5**	**7C120P-20.5LR**	—	—
	20.64	0.8125	13/16	**7C120P-0026**	**7C120P-0026LR**	—	—
	21.00	0.8268	—	**7C120P-21**	**7C120P-21LR**	—	—
	21.43	0.8438	27/32	**7C120P-0027**	**7C120P-0027LR**	—	—
	21.50	0.8465	—	**7C120P-21.5**	**7C120P-21.5LR**	—	—
	21.83	0.8594	55/64	**7C120P-.859**	**7C120P-.859LR**	—	—
K20 (C2)	20.00	0.7874	—	**7C220P-20**	**7C220P-20LR**	**7C220P-20CI**	**7C220P-20AS**
	20.24	0.7969	51/64	**7C220P-.796**	**7C220P-.796LR**	**7C220P-.796CI**	**7C220P-.796AS**
	20.50	0.8071	—	**7C220P-20.5**	**7C220P-20.5LR**	**7C220P-20.5CI**	**7C220P-20.5AS**
	20.64	0.8125	13/16	**7C220P-0026**	**7C220P-0026LR**	**7C220P-0026CI**	**7C220P-0026AS**
	21.00	0.8268	—	**7C220P-21**	**7C220P-21LR**	**7C220P-21CI**	**7C220P-21AS**
	21.43	0.8438	27/32	**7C220P-0027**	**7C220P-0027LR**	**7C220P-0027CI**	**7C220P-0027AS**
	21.50	0.8465	—	**7C220P-21.5**	**7C220P-21.5LR**	**7C220P-21.5CI**	**7C220P-21.5AS**
	21.83	0.8594	55/64	**7C220P-.859**	**7C220P-.859LR**	**7C220P-.859CI**	**7C220P-.859AS**

Inserts sold in multiples of 1.

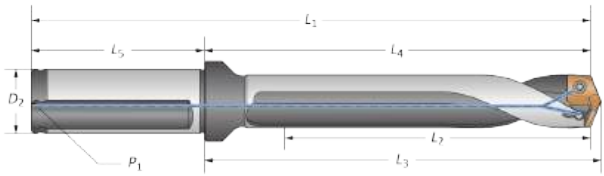
A20: 71 - 86
Key on A20: 2
A20: 7 - 10

Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	20.25 mm, C2, cast iron, 20 series = use Part No. **7C220P-20.25CI**
Imperial:	0.7974", C2, stainless, 20 series = use Part No. **7C220P-.7974AS**

20 Series: 20.00 mm - 21.99 mm (0.7874" - 0.8660")

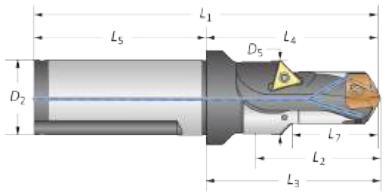
GEN3SYS Holders





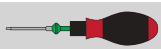
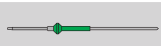
Flute		Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No. With Flat	Part No. Cylindrical
Straight		3xD	65.9	100.1	102.9	158.9	56.0	25	1/8 BSPT	**60320S-25FM**	—
		5xD	109.9	144.1	146.9	202.9	56.0	25	1/8 BSPT	**60520S-25FM**	—
		7xD	153.9	188.1	190.9	246.9	56.0	25	1/8 BSPT	**60720S-25FM**	—
Helical		Stub	23.5	57.6	60.4	116.4	56.0	25	1/8 BSPT	**60120H-25FM**	—
		3xD	65.9	100.1	102.9	158.9	56.0	25	1/8 BSPT	**60320H-25FM**	**60320H-25CM**
		5xD	109.9	144.1	146.9	202.9	56.0	25	1/8 BSPT	**60520H-25FM**	**60520H-25CM**
		7xD	153.9	188.1	190.9	246.9	56.0	25	1/8 BSPT	**60720H-25FM**	**60720H-25CM**
Straight		3xD	2.596	3.941	4.051	6.331	2.280	1	1/8 NPT	**60320S-100F**	—
		5xD	4.327	5.672	5.782	8.062	2.280	1	1/8 NPT	**60520S-100F**	—
		7xD	6.058	7.404	7.514	9.794	2.280	1	1/8 NPT	**60720S-100F**	—
Helical		Stub	0.924	2.269	2.379	4.659	2.280	1	1/8 NPT	**60120H-100F**	—
		3xD	2.596	3.941	4.051	6.331	2.280	1	1/8 NPT	**60320H-100F**	**60320H-100C**
		5xD	4.327	5.672	5.782	8.062	2.280	1	1/8 NPT	**60520H-100F**	**60520H-100C**
		7xD	6.058	7.404	7.514	9.794	2.280	1	1/8 NPT	**60720H-100F**	**60720H-100C**





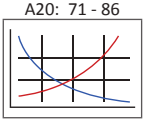
Series	Step D_5	Step L_7	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Part No.	Chamfer Insert
20	27.18	30.0	21.9	57.6	60.4	116.4	56.0	25	**60120C45-25FM**	**TCMT-110204**
20	1.0700	1.181	0.862	2.269	2.379	4.659	2.280	1	**60120C45-100F**	**TCMT-110204**

Connection Accessories

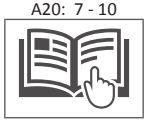
 Insert Screws	 Nylon Locking Screws	 Insert Driver	 Preset Torque Hand Driver	 Replacement Tips	Admissible Tightening Torque*
7375-IP9-1	7375N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A20: 71 - 86
Key on A20: 2



A20: 7 - 10

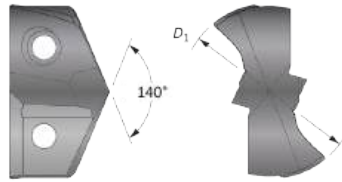


(m) = Metric (mm)
(i) = Imperial (in)
Screws sold in multiples of 10.

22 Series: 22.00 mm - 23.99 mm (0.8661" - 0.9448")

GEN3SYS XT Pro Inserts

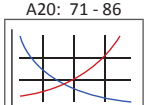




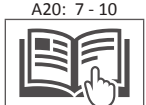
Insert			Carbide			
			Part No.	Part No.	Part No.	Part No.
D_1 mm	D_1 inch	Fractional Equivalent	P	M	K	N
22.00	0.8661	—	XTP22-22.00	XTM22-22.00	XTK22-22.00	XTN22-22.00
22.10	0.8701	—	XTP22-22.10	XTM22-22.10	XTK22-22.10	XTN22-22.10
22.20	0.8740	—	XTP22-22.20	XTM22-22.20	XTK22-22.20	XTN22-22.20
22.23	0.8752	7/8	XTP22-22.23	XTM22-22.23	XTK22-22.23	XTN22-22.23
22.30	0.8780	—	XTP22-22.30	XTM22-22.30	XTK22-22.30	XTN22-22.30
22.40	0.8819	—	XTP22-22.40	XTM22-22.40	XTK22-22.40	XTN22-22.40
22.50	0.8858	—	XTP22-22.50	XTM22-22.50	XTK22-22.50	XTN22-22.50
22.62	0.8906	57/64	XTP22-22.62	XTM22-22.62	XTK22-22.62	XTN22-22.62
22.70	0.8937	—	XTP22-22.70	XTM22-22.70	XTK22-22.70	XTN22-22.70
22.80	0.8976	—	XTP22-22.80	XTM22-22.80	XTK22-22.80	XTN22-22.80
22.90	0.9016	—	XTP22-22.90	XTM22-22.90	XTK22-22.90	XTN22-22.90
23.00	0.9055	—	XTP22-23.00	XTM22-23.00	XTK22-23.00	XTN22-23.00
23.02	0.9063	29/32	XTP22-23.02	XTM22-23.02	XTK22-23.02	XTN22-23.02
23.10	0.9094	—	XTP22-23.10	XTM22-23.10	XTK22-23.10	XTN22-23.10
23.20	0.9134	—	XTP22-23.20	XTM22-23.20	XTK22-23.20	XTN22-23.20
23.30	0.9173	—	XTP22-23.30	XTM22-23.30	XTK22-23.30	XTN22-23.30
23.42	0.9220	59/64	XTP22-23.42	XTM22-23.42	XTK22-23.42	XTN22-23.42
23.50	0.9252	—	XTP22-23.50	XTM22-23.50	XTK22-23.50	XTN22-23.50
23.60	0.9291	—	XTP22-23.60	XTM22-23.60	XTK22-23.60	XTN22-23.60
23.70	0.9331	—	XTP22-23.70	XTM22-23.70	XTK22-23.70	XTN22-23.70
23.81	0.9374	15/16	XTP22-23.81	XTM22-23.81	XTK22-23.81	XTN22-23.81
23.90	0.9409	—	XTP22-23.90	XTM22-23.90	XTK22-23.90	XTN22-23.90

Inserts sold in multiples of 1.

A20: 71 - 86
Key on A20: 2



A20: 7 - 10

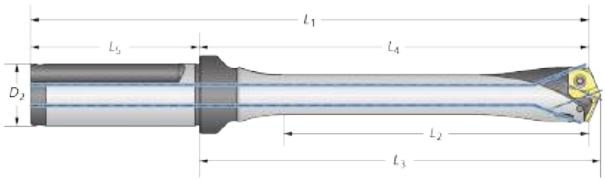


Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	22.25 mm, steel, 22 series = use Part No. **XTP22-22.25**
Imperial:	0.8760", steel, 22 series = use Part No. **XTP22-22.25**

22 Series: 22.00 mm - 23.99 mm (0.8661" - 0.9448")

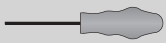
GEN3SYS XT Pro Holders





Flute		Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Part No. With Flat	Part No. Cylindrical
Ⓜ	Straight	3xD	72.0	105.3	108.3	164.3	56.0	25	HXT0322S-25FM	HXT0322S-25CM
		5xD	119.9	153.3	156.2	212.2	56.0	25	HXT0522S-25FM	HXT0522S-25CM
		7xD	167.9	201.3	204.2	260.2	56.0	25	HXT0722S-25FM	HXT0722S-25CM
		10xD	239.9	273.3	276.2	332.2	56.0	25	⚠ HXT1022S-25FM	⚠ HXT1022S-25CM
		12xD	287.9	321.2	324.2	380.2	56.0	25	⚠ HXT1222S-25FM	⚠ HXT1222S-25CM
ⓘ	Straight	3xD	2.833	4.147	4.262	6.542	2.280	1	HXT0322S-100F	HXT0322S-100C
		5xD	4.722	6.036	6.151	8.431	2.280	1	HXT0522S-100F	HXT0522S-100C
		7xD	6.611	7.925	8.040	10.320	2.280	1	HXT0722S-100F	HXT0722S-100C
		10xD	9.444	10.759	10.874	13.154	2.280	1	⚠ HXT1022S-100F	⚠ HXT1022S-100C
		12xD	11.334	12.648	12.763	15.043	2.280	1	⚠ HXT1222S-100F	⚠ HXT1222S-100C

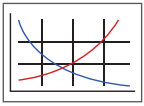
Connection Accessories

 Insert Screws	 Nylon Locking Screws	 Insert Driver	 Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
739-IP9-1	739N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)

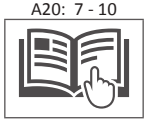
*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A20: 86** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A20: 71 - 86
Key on A20: 2



A20: 7 - 10

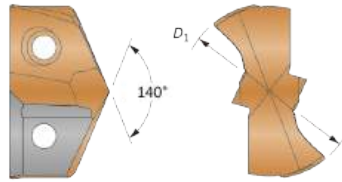


Ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

22 Series: 22.00 mm - 23.99 mm (0.8661" - 0.9448")

GEN3SYS XT Inserts

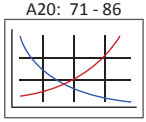




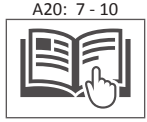
Substrate	Insert D_1 mm	Insert D_1 inch	Insert Fractional Equivalent	Carbide Part No. Standard	Carbide Part No. Low Rake	Carbide Part No. Cast Iron	Carbide Part No. Stainless
K35 (C1)	22.00	0.8661	—	**7C122P-22**	**7C122P-22LR**	—	—
	22.23	0.8750	7/8	**7C122P-0028**	**7C122P-0028LR**	—	—
	22.62	0.8906	57/64	**7C122P-.890**	**7C122P-.890LR**	—	—
	23.00	0.9055	—	**7C122P-23**	**7C122P-23LR**	—	—
	23.02	0.9063	29/32	**7C122P-0029**	**7C122P-0029LR**	—	—
	23.42	0.9219	59/64	**7C122P-.921**	**7C122P-.921LR**	—	—
	23.81	0.9375	15/16	**7C122P-0030**	**7C122P-0030LR**	—	—
K20 (C2)	22.00	0.8661	—	**7C222P-22**	**7C222P-22LR**	**7C222P-22CI**	**7C222P-22AS**
	22.23	0.8750	7/8	**7C222P-0028**	**7C222P-0028LR**	**7C222P-0028CI**	**7C222P-0028AS**
	22.62	0.8906	57/64	**7C222P-.890**	**7C222P-.890LR**	**7C222P-.890CI**	**7C222P-.890AS**
	23.00	0.9055	—	**7C222P-23**	**7C222P-23LR**	**7C222P-23CI**	**7C222P-23AS**
	23.02	0.9063	29/32	**7C222P-0029**	**7C222P-0029LR**	**7C222P-0029CI**	**7C222P-0029AS**
	23.42	0.9219	59/64	**7C222P-.921**	**7C222P-.921LR**	**7C222P-.921CI**	**7C222P-.921AS**
	23.81	0.9375	15/16	**7C222P-0030**	**7C222P-0030LR**	**7C222P-0030CI**	**7C222P-0030AS**

Inserts sold in multiples of 1.

A20: 71 - 86
Key on A20: 2



A20: 7 - 10

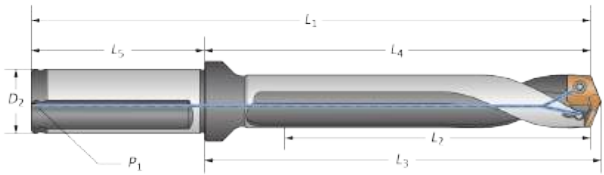


Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	22.25 mm, C2, cast iron, 22 series = use Part No. **7C222P-22.25CI**
Imperial:	0.8760", C2, stainless, 22 series = use Part No. **7C222P-.8760AS**

22 Series: 22.00 mm - 23.99 mm (0.8661" - 0.9448")

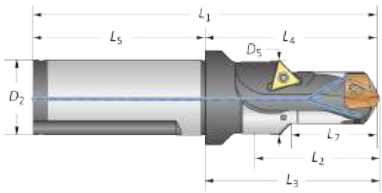
GEN3SYS Holders





Flute		Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No. With Flat	Part No. Cylindrical
Straight		3xD	71.9	105.3	108.2	164.2	56.0	25	1/8 BSPT	**60322S-25FM**	—
		5xD	119.9	153.3	156.2	212.2	56.0	25	1/8 BSPT	**60522S-25FM**	—
		7xD	167.9	201.3	204.2	260.2	56.0	25	1/8 BSPT	**60722S-25FM**	—
Helical		Stub	26.6	60.1	63.0	119.0	56.0	25	1/8 BSPT	**60122H-25FM**	
		3xD	71.9	105.3	108.2	164.2	56.0	25	1/8 BSPT	**60322H-25FM**	**60322H-25CM**
		5xD	119.9	153.3	156.2	212.2	56.0	25	1/8 BSPT	**60522H-25FM**	**60522H-25CM**
		7xD	167.9	201.3	204.2	260.2	56.0	25	1/8 BSPT	**60722H-25FM**	**60722H-25CM**
Straight		3xD	2.831	4.147	4.261	6.541	2.280	1	1/8 NPT	**60322S-100F**	—
		5xD	4.720	6.036	6.150	8.430	2.280	1	1/8 NPT	**60522S-100F**	—
		7xD	6.609	7.925	8.039	10.319	2.280	1	1/8 NPT	**60722S-100F**	—
Helical		Stub	1.049	2.365	2.479	4.759	2.280	1	1/8 NPT	**60122H-100F**	—
		3xD	2.831	4.147	4.261	6.541	2.280	1	1/8 NPT	**60322H-100F**	**60322H-100C**
		5xD	4.720	6.036	6.150	8.430	2.280	1	1/8 NPT	**60522H-100F**	**60522H-100C**
		7xD	6.609	7.925	8.039	10.319	2.280	1	1/8 NPT	**60722H-100F**	**60722H-100C**





Series	Step D_5	Step L_7	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Part No.	Chamfer Insert
22	28.96	33.0	27.4	60.1	63.0	119.0	56.0	25	**60122C45-25FM**	**TCMT-110204**
22	1.1400	1.299	1.080	2.365	2.479	4.759	2.280	1	**60122C45-100F**	**TCMT-110204**

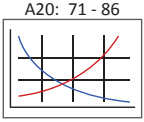
Connection Accessories

Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
739-IP9-1	739N-IP9-1	8IP-9	**8IP-9TL**	8IP-9B	305 N-cm (27.0 in-lbs)

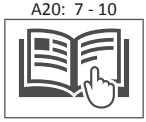
*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A20: 71 - 86

Key on A20: 2



A20: 7 - 10

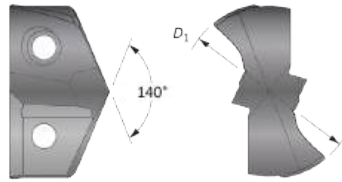


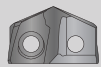
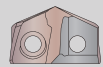
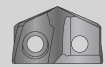
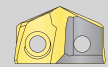
Ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

24 Series: 24.00 mm - 25.99 mm (0.9449" - 1.0235")

GEN3SYS XT Pro Inserts

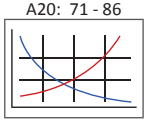




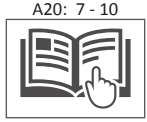
Insert			Carbide			
						
D_1 mm	D_1 inch	Fractional Equivalent	Part No.	Part No.	Part No.	Part No.
			P	M	K	N
24.00	0.9449	—	XTP24-24.00	XTM24-24.00	XTK24-24.00	XTN24-24.00
24.10	0.9488	—	XTP24-24.10	XTM24-24.10	XTK24-24.10	XTN24-24.10
24.20	0.9528	—	XTP24-24.20	XTM24-24.20	XTK24-24.20	XTN24-24.20
24.30	0.9567	—	XTP24-24.30	XTM24-24.30	XTK24-24.30	XTN24-24.30
24.40	0.9606	—	XTP24-24.40	XTM24-24.40	XTK24-24.40	XTN24-24.40
24.50	0.9646	—	XTP24-24.50	XTM24-24.50	XTK24-24.50	XTN24-24.50
24.61	0.9689	31/32	XTP24-24.61	XTM24-24.61	XTK24-24.61	XTN24-24.61
24.70	0.9724	—	XTP24-24.70	XTM24-24.70	XTK24-24.70	XTN24-24.70
24.80	0.9764	—	XTP24-24.80	XTM24-24.80	XTK24-24.80	XTN24-24.80
24.90	0.9803	—	XTP24-24.90	XTM24-24.90	XTK24-24.90	XTN24-24.90
25.00	0.9843	63/64	XTP24-25.00	XTM24-25.00	XTK24-25.00	XTN24-25.00
25.10	0.9882	—	XTP24-25.10	XTM24-25.10	XTK24-25.10	XTN24-25.10
25.20	0.9921	—	XTP24-25.20	XTM24-25.20	XTK24-25.20	XTN24-25.20
25.30	0.9961	—	XTP24-25.30	XTM24-25.30	XTK24-25.30	XTN24-25.30
25.40	1.0000	1	XTP24-25.40	XTM24-25.40	XTK24-25.40	XTN24-25.40
25.50	1.0039	—	XTP24-25.50	XTM24-25.50	XTK24-25.50	XTN24-25.50
25.60	1.0079	—	XTP24-25.60	XTM24-25.60	XTK24-25.60	XTN24-25.60
25.70	1.0118	—	XTP24-25.70	XTM24-25.70	XTK24-25.70	XTN24-25.70
25.78	1.0150	—	XTP24-25.78	XTM24-25.78	XTK24-25.78	XTN24-25.78
25.90	1.0197	—	XTP24-25.90	XTM24-25.90	XTK24-25.90	XTN24-25.90

Inserts sold in multiples of 1.

A20: 71 - 86
Key on A20: 2



A20: 7 - 10

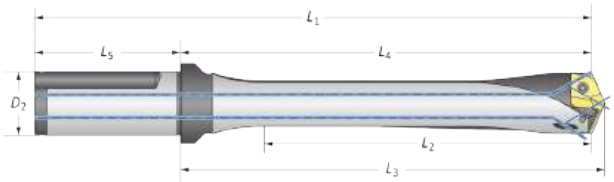


Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	24.25 mm, steel, 24 series = use Part No. **XTP24-24.25**
Imperial:	0.9548", steel, 24 series = use Part No. **XTP24-24.25**

24 Series: 24.00 mm - 25.99 mm (0.9449" - 1.0235")

GEN3SYS XT Pro Holders





	Flute	Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Part No. With Flat	Part No. Cylindrical
m	Straight	3xD	78.0	113.8	116.8	172.8	56.0	25	HXT0324S-25FM	HXT0324S-25CM
		5xD	129.9	165.8	168.7	224.7	56.0	25	HXT0524S-25FM	HXT0524S-25CM
		7xD	181.9	217.8	220.7	276.7	56.0	25	HXT0724S-25FM	HXT0724S-25CM
		10xD	259.9	295.7	298.7	354.7	56.0	25	⚠ HXT1024S-25FM	⚠ HXT1024S-25CM
		12xD	311.9	347.7	350.6	406.7	56.0	25	⚠ HXT1224S-25FM	⚠ HXT1224S-25CM
i	Straight	3xD	3.070	4.482	4.597	6.877	2.280	1	HXT0324S-100F	HXT0324S-100C
		5xD	5.116	6.528	6.643	8.923	2.280	1	HXT0524S-100F	HXT0524S-100C
		7xD	7.163	8.574	8.689	10.969	2.280	1	HXT0724S-100F	HXT0724S-100C
		10xD	10.232	11.643	11.758	14.038	2.280	1	⚠ HXT1024S-100F	⚠ HXT1024S-100C
		12xD	12.279	13.689	13.804	16.084	2.280	1	⚠ HXT1224S-100F	⚠ HXT1224S-100C

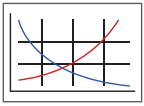
Connection Accessories

Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
739-IP9-1	739N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)

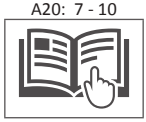
*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A20: 86** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A20: 71 - 86
Key on A20: 2



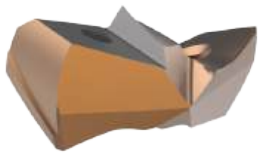
A20: 7 - 10

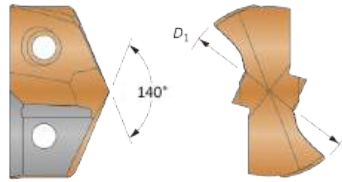


m = Metric (mm)
i = Imperial (in)
Screws sold in multiples of 10.

24 Series: 24.00 mm - 25.99 mm (0.9449" - 1.0235")

GEN3SYS XT Inserts





Substrate	Insert D_1 mm	Insert D_1 inch	Insert Fractional Equivalent	Carbide Part No. Standard	Carbide Part No. Low Rake	Carbide Part No. Cast Iron	Carbide Part No. Stainless
K35 (C1)	24.00	0.9449	—	**7C124P-24**	**7C124P-24LR**	—	—
	24.61	0.9688	31/32	**7C124P-0031**	**7C124P-0031LR**	—	—
	25.00	0.9843	—	**7C124P-25**	**7C124P-25LR**	—	—
	25.40	1.0000	1	**7C124P-0100**	**7C124P-0100LR**	—	—
	25.60	1.0080	—	**7C124P-1.008**	**7C124P-1.008LR**	—	—
	25.80	1.0156	1-1/64	**7C124P-1.015**	**7C124P-1.015LR**	—	—
K20 (C2)	24.00	0.9449	—	**7C224P-24**	**7C224P-24LR**	**7C224P-24CI**	**7C224P-24AS**
	24.61	0.9688	31/32	**7C224P-0031**	**7C224P-0031LR**	**7C224P-0031CI**	**7C224P-0031AS**
	25.00	0.9843	—	**7C224P-25**	**7C224P-25LR**	**7C224P-25CI**	**7C224P-25AS**
	25.40	1.0000	1	**7C224P-0100**	**7C224P-0100LR**	**7C224P-0100CI**	**7C224P-0100AS**
	25.60	1.0080	—	**7C224P-1.008**	**7C224P-1.008LR**	**7C224P-1.008CI**	**7C224P-1.008AS**
	25.80	1.0156	1-1/64	**7C224P-1.015**	**7C224P-1.015LR**	**7C224P-1.015CI**	**7C224P-1.015AS**

Inserts sold in multiples of 1.

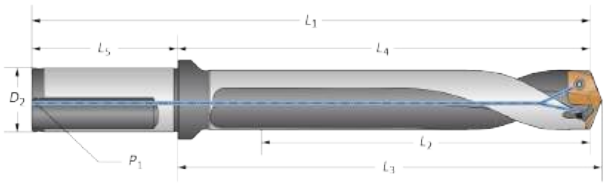
A20: 71 - 86
Key on A20: 2
A20: 7 - 10

Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	24.25 mm, C2, cast iron, 24 series = use Part No. **7C224P-24.25CI**
Imperial:	0.9548", C2, stainless, 24 series = use Part No. **7C224P-.9548AS**

24 Series: 24.00 mm - 25.99 mm (0.9449" - 1.0235")

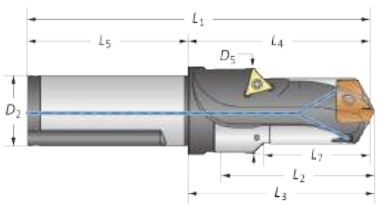
GEN3SYS Holders





Flute		Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No. With Flat	Part No. Cylindrical
Straight		3xD	80.2	113.8	116.3	172.3	56.0	25	1/8 BSPT	60324S-25FM	—
		5xD	132.2	165.8	168.2	224.2	56.0	25	1/8 BSPT	60524S-25FM	—
		7xD	184.1	217.8	220.2	276.2	56.0	25	1/8 BSPT	60724S-25FM	—
Helical		Stub	30.5	64.2	66.6	122.6	56.0	25	1/8 BSPT	60124H-25FM	—
		3xD	80.2	113.8	116.3	172.3	56.0	25	1/8 BSPT	60324H-25FM	60324H-25CM
		5xD	132.2	165.8	168.2	224.2	56.0	25	1/8 BSPT	60524H-25FM	60524H-25CM
		7xD	184.1	217.8	220.2	276.2	56.0	25	1/8 BSPT	60724H-25FM	60724H-25CM
Straight		3xD	3.156	4.482	4.577	6.857	2.280	1	1/8 NPT	60324S-100F	—
		5xD	5.203	6.528	6.623	8.903	2.280	1	1/8 NPT	60524S-100F	—
		7xD	7.249	8.574	8.669	10.949	2.280	1	1/8 NPT	60724S-100F	—
Helical		Stub	1.200	2.526	2.621	4.901	2.280	1	1/8 NPT	60124H-100F	—
		3xD	3.156	4.482	4.577	6.857	2.280	1	1/8 NPT	60324H-100F	60324H-100C
		5xD	5.203	6.528	6.623	8.903	2.280	1	1/8 NPT	60524H-100F	60524H-100C
		7xD	7.249	8.574	8.669	10.949	2.280	1	1/8 NPT	60724H-100F	60724H-100C





Series	Step D_5	Step L_7	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Part No.	Chamfer Insert
24	30.99	36.0	31.6	64.2	66.6	122.6	56.0	25	60124C45-25FM	TCMT-110204
24	1.2200	1.417	1.243	2.526	2.621	4.901	2.280	1	60124C45-100F	TCMT-110204

Connection Accessories

Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
739-IP9-1	739N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A20: 71 - 86
Key on A20: 2

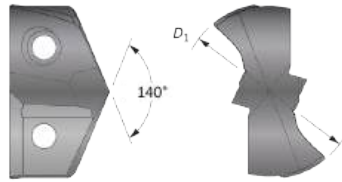
A20: 7 - 10

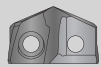
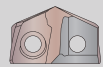
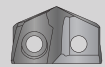
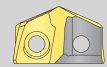
Ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

26 Series: 26.00 mm - 28.99 mm (1.0236" - 1.1416")

GEN3SYS XT Pro Inserts

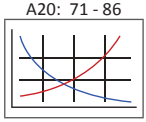




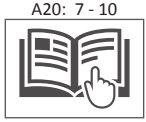
Insert			Carbide			
						
D_1 mm	D_1 inch	Fractional Equivalent	Part No.	Part No.	Part No.	Part No.
			P	M	K	N
26.00	1.0236	—	XTP26-26.00	XTM26-26.00	XTK26-26.00	XTN26-26.00
26.10	1.0276	—	XTP26-26.10	XTM26-26.10	XTK26-26.10	XTN26-26.10
26.20	1.0315	1-1/32	XTP26-26.20	XTM26-26.20	XTK26-26.20	XTN26-26.20
26.30	1.0354	—	XTP26-26.30	XTM26-26.30	XTK26-26.30	XTN26-26.30
26.40	1.0394	—	XTP26-26.40	XTM26-26.40	XTK26-26.40	XTN26-26.40
26.50	1.0433	—	XTP26-26.50	XTM26-26.50	XTK26-26.50	XTN26-26.50
26.59	1.0469	1-3/64	XTP26-26.59	XTM26-26.59	XTK26-26.59	XTN26-26.59
26.60	1.0472	—	XTP26-26.60	XTM26-26.60	XTK26-26.60	XTN26-26.60
26.70	1.0512	—	XTP26-26.70	XTM26-26.70	XTK26-26.70	XTN26-26.70
26.80	1.0551	—	XTP26-26.80	XTM26-26.80	XTK26-26.80	XTN26-26.80
26.90	1.0591	—	XTP26-26.90	XTM26-26.90	XTK26-26.90	XTN26-26.90
26.99	1.0626	1-1/16	XTP26-26.99	XTM26-26.99	XTK26-26.99	XTN26-26.99
27.00	1.0630	—	XTP26-27.00	XTM26-27.00	XTK26-27.00	XTN26-27.00
27.10	1.0669	—	XTP26-27.10	XTM26-27.10	XTK26-27.10	XTN26-27.10
27.20	1.0709	—	XTP26-27.20	XTM26-27.20	XTK26-27.20	XTN26-27.20
27.30	1.0748	—	XTP26-27.30	XTM26-27.30	XTK26-27.30	XTN26-27.30
27.40	1.0787	—	XTP26-27.40	XTM26-27.40	XTK26-27.40	XTN26-27.40
27.50	1.0827	—	XTP26-27.50	XTM26-27.50	XTK26-27.50	XTN26-27.50
27.60	1.0866	—	XTP26-27.60	XTM26-27.60	XTK26-27.60	XTN26-27.60
27.70	1.0906	—	XTP26-27.70	XTM26-27.70	XTK26-27.70	XTN26-27.70
27.78	1.0937	1-3/32	XTP26-27.78	XTM26-27.78	XTK26-27.78	XTN26-27.78
27.90	1.0984	—	XTP26-27.90	XTM26-27.90	XTK26-27.90	XTN26-27.90
28.00	1.1024	—	XTP26-28.00	XTM26-28.00	XTK26-28.00	XTN26-28.00
28.10	1.1063	—	XTP26-28.10	XTM26-28.10	XTK26-28.10	XTN26-28.10
28.17	1.1091	1-7/64	XTP26-28.17	XTM26-28.17	XTK26-28.17	XTN26-28.17
28.20	1.1102	—	XTP26-28.20	XTM26-28.20	XTK26-28.20	XTN26-28.20
28.30	1.1142	—	XTP26-28.30	XTM26-28.30	XTK26-28.30	XTN26-28.30
28.40	1.1181	—	XTP26-28.40	XTM26-28.40	XTK26-28.40	XTN26-28.40
28.50	1.1220	—	XTP26-28.50	XTM26-28.50	XTK26-28.50	XTN26-28.50
28.58	1.1252	1-1/8	XTP26-28.58	XTM26-28.58	XTK26-28.58	XTN26-28.58
28.70	1.1299	—	XTP26-28.70	XTM26-28.70	XTK26-28.70	XTN26-28.70
28.80	1.1339	—	XTP26-28.80	XTM26-28.80	XTK26-28.80	XTN26-28.80
28.90	1.1378	—	XTP26-28.90	XTM26-28.90	XTK26-28.90	XTN26-28.90

Inserts sold in multiples of 1.

A20: 71 - 86
Key on A20: 2



A20: 7 - 10

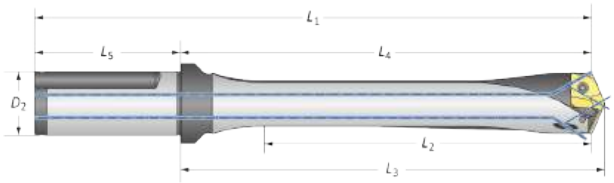


Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	27.25 mm, steel, 26 series = use Part No. **XTP26-27.25**
Imperial:	1.0730", steel, 26 series = use Part No. **XTP26-27.25**

26 Series: 26.00 mm - 28.99 mm (1.0236" - 1.1416")

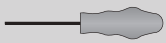
GEN3SYS XT Pro Holders





Flute		Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Part No. With Flat	Part No. Cylindrical
(m)	Straight	3xD	87.0	128.1	130.9	190.9	60.0	32	HXT0326S-32FM	HXT0326S-32CM
		5xD	144.9	186.1	188.8	248.8	60.0	32	HXT0526S-32FM	HXT0526S-32CM
		7xD	202.9	244.0	246.8	306.8	60.0	32	HXT0726S-32FM	HXT0726S-32CM
		10xD	289.9	331.0	333.8	393.8	60.0	32	⚠ HXT1026S-32FM	⚠ HXT1026S-32CM
		12xD	347.9	389.0	391.8	451.8	60.0	32	⚠ HXT1226S-32FM	⚠ HXT1226S-32CM
(i)	Straight	3xD	3.425	5.064	5.174	7.454	2.280	1-1/4	HXT0326S-125F	HXT0326S-125C
		5xD	5.707	7.347	7.457	9.737	2.280	1-1/4	HXT0526S-125F	HXT0526S-125C
		7xD	7.990	9.630	9.740	12.020	2.280	1-1/4	HXT0726S-125F	HXT0726S-125C
		10xD	11.414	13.055	13.165	15.445	2.280	1-1/4	⚠ HXT1026S-125F	⚠ HXT1026S-125C
		12xD	13.697	15.338	15.448	17.728	2.280	1-1/4	⚠ HXT1226S-125F	⚠ HXT1226S-125C

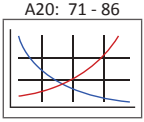
Connection Accessories

 Insert Screws	 Nylon Locking Screws	 Insert Driver	 Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
7495-IP15-1	7495N-IP15-1	8IP-15	8IP-15TL	8IP-15B	690 N-cm (61.0 in-lbs)

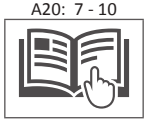
*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A20: 86** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A20: 71 - 86
Key on A20: 2



A20: 7 - 10

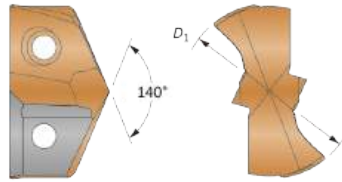


(m) = Metric (mm)
(i) = Imperial (in)
Screws sold in multiples of 10.

26 Series: 26.00 mm - 28.99 mm (1.0236" - 1.1416")

GEN3SYS XT Inserts





Substrate	Insert D_1 mm	Insert D_1 inch	Insert Fractional Equivalent	Carbide Part No. Standard	Carbide Part No. Low Rake	Carbide Part No. Cast Iron	Carbide Part No. Stainless
K35 (C1)	26.00	1.0236	—	**7C126P-26**	**7C126P-26LR**	—	—
	26.20	1.0313	1-1/32	**7C126P-0101**	**7C126P-0101LR**	—	—
	26.59	1.0469	1-3/64	**7C126P-1.046**	**7C126P-1.046LR**	—	—
	26.99	1.0625	1-1/16	**7C126P-0102**	**7C126P-0102LR**	—	—
	27.00	1.0630	—	**7C126P-27**	**7C126P-27LR**	—	—
	27.78	1.0938	1-3/32	**7C126P-0103**	**7C126P-0103LR**	—	—
	28.00	1.1024	—	**7C126P-28**	**7C126P-28LR**	—	—
	28.18	1.1094	1-7/64	**7C126P-1.109**	**7C126P-1.109LR**	—	—
	28.58	1.1250	1-1/8	**7C126P-0104**	**7C126P-0104LR**	—	—
K20 (C2)	26.00	1.0236	—	**7C226P-26**	**7C226P-26LR**	**7C226P-26CI**	**7C226P-26AS**
	26.20	1.0313	1-1/32	**7C226P-0101**	**7C226P-0101LR**	**7C226P-0101CI**	**7C226P-0101AS**
	26.59	1.0469	1-3/64	**7C226P-1.046**	**7C226P-1.046LR**	**7C226P-1.046CI**	**7C226P-1.046AS**
	26.99	1.0625	1-1/16	**7C226P-0102**	**7C226P-0102LR**	**7C226P-0102CI**	**7C226P-0102AS**
	27.00	1.0630	—	**7C226P-27**	**7C226P-27LR**	**7C226P-27CI**	**7C226P-27AS**
	27.78	1.0938	1-3/32	**7C226P-0103**	**7C226P-0103LR**	**7C226P-0103CI**	**7C226P-0103AS**
	28.00	1.1024	—	**7C226P-28**	**7C226P-28LR**	**7C226P-28CI**	**7C226P-28AS**
	28.18	1.1094	1-7/64	**7C226P-1.109**	**7C226P-1.109LR**	**7C226P-1.109CI**	**7C226P-1.109AS**
	28.58	1.1250	1-1/8	**7C226P-0104**	**7C226P-0104LR**	**7C226P-0104CI**	**7C226P-0104AS**

Inserts sold in multiples of 1.

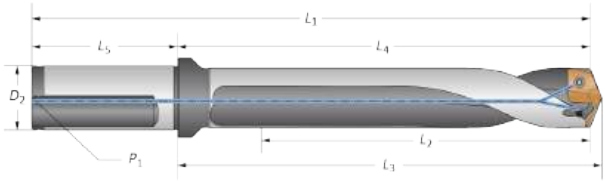
A20: 71 - 86
Key on A20: 2
A20: 7 - 10

Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	27.25 mm, C2, cast iron, 26 series = use Part No. **7C226P-27.25CI**
Imperial:	1.0730", C2, stainless, 26 series = use Part No. **7C226P-1.0730AS**

26 Series: 26.00 mm - 28.99 mm (1.0236" - 1.1416")

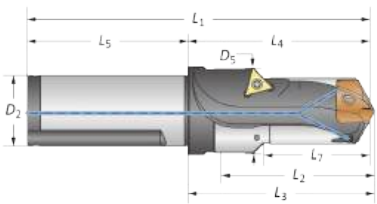
GEN3SYS Holders





Flute		Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No. With Flat	Part No. Cylindrical
Straight		3xD	91.9	128.1	131.1	191.1	60.0	32	1/4 BSPT	**60326S-32FM**	—
		5xD	149.9	186.1	189.1	249.1	60.0	32	1/4 BSPT	**60526S-32FM**	—
		7xD	207.9	244.0	247.1	307.1	60.0	32	1/4 BSPT	**60726S-32FM**	—
Helical		Stub	36.3	72.9	76.0	136.0	60.0	32	1/4 BSPT	**60126H-32FM**	—
		3xD	91.9	128.1	131.1	191.1	60.0	32	1/4 BSPT	**60326H-32FM**	**60326H-32CM**
		5xD	149.9	186.1	189.1	249.1	60.0	32	1/4 BSPT	**60526H-32FM**	**60526H-32CM**
		7xD	207.9	244.0	247.1	307.1	60.0	32	1/4 BSPT	**60726H-32FM**	**60726H-32CM**
Straight		3xD	3.620	5.064	5.184	7.464	2.280	1-1/4	1/4 NPT	**60326S-125F**	—
		5xD	5.903	7.347	7.467	9.747	2.280	1-1/4	1/4 NPT	**60526S-125F**	—
		7xD	8.185	9.630	9.750	12.030	2.280	1-1/4	1/4 NPT	**60726S-125F**	—
Helical		Stub	1.428	2.872	2.992	5.272	2.280	1-1/4	1/4 NPT	**60126H-125F**	—
		3xD	3.620	5.064	5.184	7.464	2.280	1-1/4	1/4 NPT	**60326H-125F**	**60326H-125C**
		5xD	5.903	7.347	7.467	9.747	2.280	1-1/4	1/4 NPT	**60526H-125F**	**60526H-125C**
		7xD	8.185	9.630	9.750	12.030	2.280	1-1/4	1/4 NPT	**60726H-125F**	**60726H-125C**





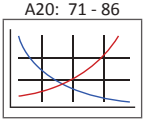
Series	Step D_5	Step L_7	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Part No.	Chamfer Insert
26	34.04	39.0	35.6	72.9	76.0	136.0	60.0	32	**60126C45-32FM**	**TCMT-110204**
26	1.3400	1.535	1.403	2.872	2.992	5.272	2.280	1-1/4	**60126C45-125F**	**TCMT-110204**

Connection Accessories

Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
7495-IP15-1	7495N-IP15-1	8IP-15	8IP-15TL	8IP-15B	690 N-cm (61.0 in-lbs)

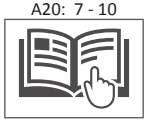
*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A20: 71 - 86



Key on A20: 2

A20: 7 - 10

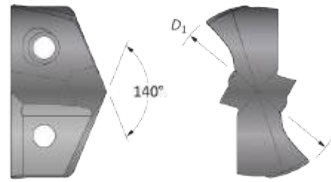


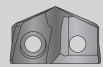
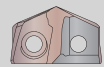
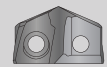
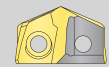
m = Metric (mm)
i = Imperial (in)
Screws sold in multiples of 10.

29 Series: 29.00 mm - 31.99 mm (1.1417" - 1.2597")

GEN3SYS XT Pro Inserts

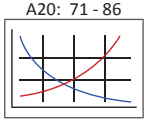




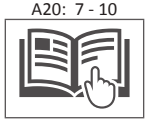
Insert			Carbide			
						
D_1 mm	D_1 inch	Fractional Equivalent	Part No.	Part No.	Part No.	Part No.
			P	M	K	N
29.00	1.1417	—	XTP29-29.00	XTM29-29.00	XTK29-29.00	XTN29-29.00
29.10	1.1457	—	XTP29-29.10	XTM29-29.10	XTK29-29.10	XTN29-29.10
29.20	1.1496	—	XTP29-29.20	XTM29-29.20	XTK29-29.20	XTN29-29.20
29.30	1.1535	—	XTP29-29.30	XTM29-29.30	XTK29-29.30	XTN29-29.30
29.37	1.1563	1-5/32	XTP29-29.37	XTM29-29.37	XTK29-29.37	XTN29-29.37
29.40	1.1575	—	XTP29-29.40	XTM29-29.40	XTK29-29.40	XTN29-29.40
29.50	1.1614	—	XTP29-29.50	XTM29-29.50	XTK29-29.50	XTN29-29.50
29.60	1.1654	—	XTP29-29.60	XTM29-29.60	XTK29-29.60	XTN29-29.60
29.70	1.1693	—	XTP29-29.70	XTM29-29.70	XTK29-29.70	XTN29-29.70
29.80	1.1732	—	XTP29-29.80	XTM29-29.80	XTK29-29.80	XTN29-29.80
29.90	1.1772	—	XTP29-29.90	XTM29-29.90	XTK29-29.90	XTN29-29.90
30.00	1.1811	—	XTP29-30.00	XTM29-30.00	XTK29-30.00	XTN29-30.00
30.10	1.1850	—	XTP29-30.10	XTM29-30.10	XTK29-30.10	XTN29-30.10
30.16	1.1874	1-3/16	XTP29-30.16	XTM29-30.16	XTK29-30.16	XTN29-30.16
30.20	1.1890	—	XTP29-30.20	XTM29-30.20	XTK29-30.20	XTN29-30.20
30.30	1.1929	—	XTP29-30.30	XTM29-30.30	XTK29-30.30	XTN29-30.30
30.40	1.1969	—	XTP29-30.40	XTM29-30.40	XTK29-30.40	XTN29-30.40
30.50	1.2008	—	XTP29-30.50	XTM29-30.50	XTK29-30.50	XTN29-30.50
30.60	1.2047	—	XTP29-30.60	XTM29-30.60	XTK29-30.60	XTN29-30.60
30.70	1.2087	—	XTP29-30.70	XTM29-30.70	XTK29-30.70	XTN29-30.70
30.80	1.2126	—	XTP29-30.80	XTM29-30.80	XTK29-30.80	XTN29-30.80
30.90	1.2165	—	XTP29-30.90	XTM29-30.90	XTK29-30.90	XTN29-30.90
30.96	1.2189	1-7/32	XTP29-30.96	XTM29-30.96	XTK29-30.96	XTN29-30.96
31.00	1.2205	—	XTP29-31.00	XTM29-31.00	XTK29-31.00	XTN29-31.00
31.10	1.2244	—	XTP29-31.10	XTM29-31.10	XTK29-31.10	XTN29-31.10
31.20	1.2283	—	XTP29-31.20	XTM29-31.20	XTK29-31.20	XTN29-31.20
31.30	1.2323	—	XTP29-31.30	XTM29-31.30	XTK29-31.30	XTN29-31.30
31.40	1.2362	—	XTP29-31.40	XTM29-31.40	XTK29-31.40	XTN29-31.40
31.50	1.2402	—	XTP29-31.50	XTM29-31.50	XTK29-31.50	XTN29-31.50
31.60	1.2441	—	XTP29-31.60	XTM29-31.60	XTK29-31.60	XTN29-31.60
31.70	1.2480	—	XTP29-31.70	XTM29-31.70	XTK29-31.70	XTN29-31.70
31.75	1.2500	1-1/4	XTP29-31.75	XTM29-31.75	XTK29-31.75	XTN29-31.75
31.80	1.2520	—	XTP29-31.80	XTM29-31.80	XTK29-31.80	XTN29-31.80
31.90	1.2559	—	XTP29-31.90	XTM29-31.90	XTK29-31.90	XTN29-31.90

Inserts sold in multiples of 1.

A20: 71 - 86
Key on A20: 2



A20: 7 - 10

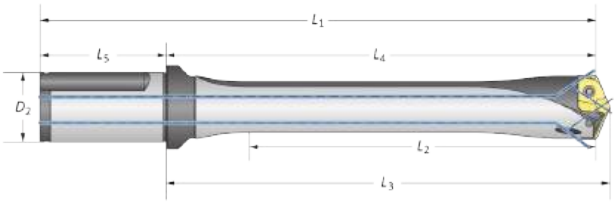


Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	29.25 mm, steel, 29 series = use Part No. **XTP29-29.25**
Imperial:	1.1515", steel, 29 series = use Part No. **XTP29-29.25**

29 Series: 29.00 mm - 31.99 mm (1.1417" - 1.2597")

GEN3SYS XT Pro Holders





Flute		Body Length	L_2	L_4	L_3	L_1	Shank L_5	Shank D_2	Part No. With Flat	Part No. Cylindrical
(m)	Straight	3xD	96.0	136.2	139.1	199.1	60.0	32	HXT0329S-32FM	HXT0329S-32CM
		5xD	159.9	200.1	203.1	263.1	60.0	32	HXT0529S-32FM	HXT0529S-32CM
		7xD	223.9	264.1	267.1	327.1	60.0	32	HXT0729S-32FM	HXT0729S-32CM
		10xD	319.9	360.1	363.0	423.0	60.0	32	⚠ HXT1029S-32FM	⚠ HXT1029S-32CM
(i)	Straight	3xD	3.778	5.382	5.499	7.779	2.280	1-1/4	HXT0329S-125F	HXT0329S-125C
		5xD	6.297	7.901	8.018	10.298	2.280	1-1/4	HXT0529S-125F	HXT0529S-125C
		7xD	8.816	10.420	10.537	12.817	2.280	1-1/4	HXT0729S-125F	HXT0729S-125C
		10xD	12.594	14.199	14.316	16.596	2.280	1-1/4	⚠ HXT1029S-125F	⚠ HXT1029S-125C

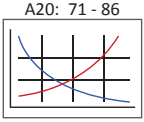
Connection Accessories

 Insert Screws	 Nylon Locking Screws	 Insert Driver	 Preset Torque Hand Driver	 Replacement Tips	Admissible Tightening Torque*
7495-IP15-1	7495N-IP15-1	8IP-15	8IP-15TL	8IP-15B	690 N-cm (61.0 in-lbs)

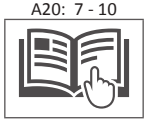
*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A20: 86** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A20: 71 - 86
Key on A20: 2



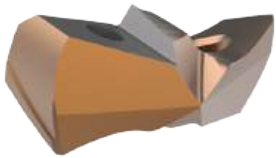
A20: 7 - 10

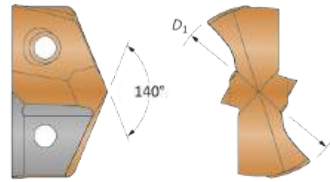


(m) = Metric (mm)
(i) = Imperial (in)
Screws sold in multiples of 10.

29 Series: 29.00 mm - 31.99 mm (1.1417" - 1.2597")

GEN3SYS XT Inserts





Substrate	Insert D_1 mm	Insert D_1 inch	Insert Fractional Equivalent	Carbide Part No. Standard	Carbide Part No. Low Rake	Carbide Part No. Cast Iron	Carbide Part No. Stainless
K35 (C1)	29.00	1.1417	—	**7C129P-29**	**7C129P-29LR**	—	—
	29.37	1.1563	1-5/32	**7C129P-0105**	**7C129P-0105LR**	—	—
	30.00	1.1811	—	**7C129P-30**	**7C129P-30LR**	—	—
	30.16	1.1875	1-3/16	**7C129P-0106**	**7C129P-0106LR**	—	—
	30.50	1.2008	—	**7C129P-30.5**	**7C129P-30.5LR**	—	—
	30.96	1.2188	1-7/32	**7C129P-0107**	**7C129P-0107LR**	—	—
	31.00	1.2205	—	**7C129P-31**	**7C129P-31LR**	—	—
	31.75	1.2500	1-1/4	**7C129P-0108**	**7C129P-0108LR**	—	—
K20 (C2)	29.00	1.1417	—	**7C229P-29**	**7C229P-29LR**	**7C229P-29CI**	**7C229P-29AS**
	29.37	1.1563	1-5/32	**7C229P-0105**	**7C229P-0105LR**	**7C229P-0105CI**	**7C229P-0105AS**
	30.00	1.1811	—	**7C229P-30**	**7C229P-30LR**	**7C229P-30CI**	**7C229P-30AS**
	30.16	1.1875	1-3/16	**7C229P-0106**	**7C229P-0106LR**	**7C229P-0106CI**	**7C229P-0106AS**
	30.50	1.2008	—	**7C229P-30.5**	**7C229P-30.5LR**	**7C229P-30.5CI**	**7C229P-30.5AS**
	30.96	1.2188	1-7/32	**7C229P-0107**	**7C229P-0107LR**	**7C229P-0107CI**	**7C229P-0107AS**
	31.00	1.2205	—	**7C229P-31**	**7C229P-31LR**	**7C229P-31CI**	**7C229P-31AS**
	31.75	1.2500	1-1/4	**7C229P-0108**	**7C229P-0108LR**	**7C229P-0108CI**	**7C229P-0108AS**

Inserts sold in multiples of 1.

A20: 71 - 86
Key on A20: 2

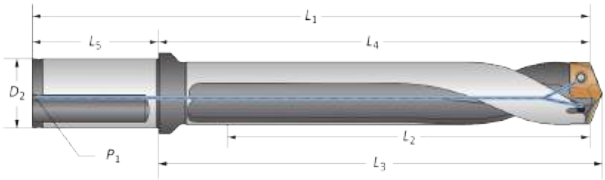
A20: 7 - 10

Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	29.25 mm, C2, cast iron, 29 series = use Part No. **7C229P-29.25CI**
Imperial:	1.1515", C2, stainless, 29 series = use Part No. **7C229P-1.1515AS**

29 Series: 29.00 mm - 31.99 mm (1.1417" - 1.2597")

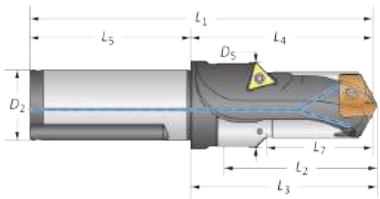
GEN3SYS Holders





Flute	Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No. With Flat	Part No. Cylindrical
Straight	3xD	100.1	136.2	139.1	199.1	60.0	32	1/4 BSPT	**60329S-32FM**	—
	5xD	164.0	200.1	203.1	263.1	60.0	32	1/4 BSPT	**60529S-32FM**	—
	7xD	228.0	264.1	267.1	327.1	60.0	32	1/4 BSPT	**60729S-32FM**	—
Helical	Stub	38.6	75.2	78.2	138.2	60.0	32	1/4 BSPT	**60129H-32FM**	—
	3xD	100.1	136.2	139.1	199.1	60.0	32	1/4 BSPT	**60329H-32FM**	**60329H-32CM**
	5xD	164.0	200.1	203.1	263.1	60.0	32	1/4 BSPT	**60529H-32FM**	**60529H-32CM**
	7xD	228.0	264.1	267.1	327.1	60.0	32	1/4 BSPT	**60729H-32FM**	**60729H-32CM**
Straight	3xD	3.939	5.382	5.499	7.779	2.280	1-1/4	1/4 NPT	**60329S-125F**	—
	5xD	6.458	7.901	8.018	10.298	2.280	1-1/4	1/4 NPT	**60529S-125F**	—
	7xD	8.977	10.420	10.537	12.817	2.280	1-1/4	1/4 NPT	**60729S-125F**	—
Helical	Stub	1.518	2.961	3.078	5.358	2.280	1-1/4	1/4 NPT	**60129H-125F**	—
	3xD	3.939	5.382	5.499	7.779	2.280	1-1/4	1/4 NPT	**60329H-125F**	**60329H-125C**
	5xD	6.458	7.901	8.018	10.298	2.280	1-1/4	1/4 NPT	**60529H-125F**	**60529H-125C**
	7xD	8.977	10.420	10.537	12.817	2.280	1-1/4	1/4 NPT	**60729H-125F**	**60729H-125C**





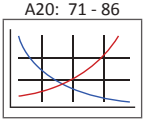
Series	Step D_5	Step L_7	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Part No.	Chamfer Insert
29	37.08	43.5	35.4	75.2	78.2	138.2	60.0	32	**60129C45-32FM**	**TCMT-16T304**
29	1.4600	1.713	1.393	2.961	3.078	5.358	2.280	1-1/4	**60129C45-125F**	**TCMT-16T304**

Connection Accessories

Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
7495-IP15-1	7495N-IP15-1	8IP-15	8IP-15TL	8IP-15B	690 N-cm (61.0 in-lbs)

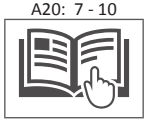
*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A20: 71 - 86



Key on A20: 2

A20: 7 - 10

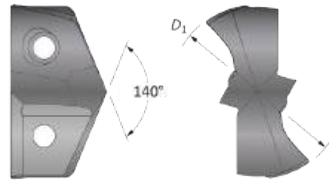


Ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

32 Series: 32.00 mm - 35.00 mm (1.2598" - 1.3780")

GEN3SYS XT Pro Inserts

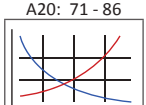




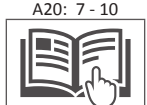
Insert			Carbide			
			Part No.	Part No.	Part No.	Part No.
D_1 mm	D_1 inch	Fractional Equivalent	P	M	K	N
32.00	1.2598	—	XTP32-32.00	XTM32-32.00	XTK32-32.00	XTN32-32.00
32.10	1.2638	—	XTP32-32.10	XTM32-32.10	XTK32-32.10	XTN32-32.10
32.15	1.2657	1-17/64	XTP32-32.15	XTM32-32.15	XTK32-32.15	XTN32-32.15
32.20	1.2677	—	XTP32-32.20	XTM32-32.20	XTK32-32.20	XTN32-32.20
32.30	1.2717	—	XTP32-32.30	XTM32-32.30	XTK32-32.30	XTN32-32.30
32.40	1.2756	—	XTP32-32.40	XTM32-32.40	XTK32-32.40	XTN32-32.40
32.50	1.2795	—	XTP32-32.50	XTM32-32.50	XTK32-32.50	XTN32-32.50
32.55	1.2815	1-9/32	XTP32-32.55	XTM32-32.55	XTK32-32.55	XTN32-32.55
32.60	1.2835	—	XTP32-32.60	XTM32-32.60	XTK32-32.60	XTN32-32.60
32.70	1.2874	—	XTP32-32.70	XTM32-32.70	XTK32-32.70	XTN32-32.70
32.80	1.2913	—	XTP32-32.80	XTM32-32.80	XTK32-32.80	XTN32-32.80
32.90	1.2953	—	XTP32-32.90	XTM32-32.90	XTK32-32.90	XTN32-32.90
33.00	1.2992	—	XTP32-33.00	XTM32-33.00	XTK32-33.00	XTN32-33.00
33.10	1.3031	—	XTP32-33.10	XTM32-33.10	XTK32-33.10	XTN32-33.10
33.20	1.3071	—	XTP32-33.20	XTM32-33.20	XTK32-33.20	XTN32-33.20
33.30	1.3110	—	XTP32-33.30	XTM32-33.30	XTK32-33.30	XTN32-33.30
33.34	1.3126	1-5/16	XTP32-33.34	XTM32-33.34	XTK32-33.34	XTN32-33.34
33.40	1.3150	—	XTP32-33.40	XTM32-33.40	XTK32-33.40	XTN32-33.40
33.50	1.3189	—	XTP32-33.50	XTM32-33.50	XTK32-33.50	XTN32-33.50
33.60	1.3228	—	XTP32-33.60	XTM32-33.60	XTK32-33.60	XTN32-33.60
33.70	1.3268	—	XTP32-33.70	XTM32-33.70	XTK32-33.70	XTN32-33.70
33.80	1.3307	—	XTP32-33.80	XTM32-33.80	XTK32-33.80	XTN32-33.80
33.90	1.3346	—	XTP32-33.90	XTM32-33.90	XTK32-33.90	XTN32-33.90
34.00	1.3386	—	XTP32-34.00	XTM32-34.00	XTK32-34.00	XTN32-34.00
34.10	1.3425	—	XTP32-34.10	XTM32-34.10	XTK32-34.10	XTN32-34.10
34.13	1.3437	1-11/32	XTP32-34.13	XTM32-34.13	XTK32-34.13	XTN32-34.13
34.20	1.3465	—	XTP32-34.20	XTM32-34.20	XTK32-34.20	XTN32-34.20
34.30	1.3504	—	XTP32-34.30	XTM32-34.30	XTK32-34.30	XTN32-34.30
34.40	1.3543	—	XTP32-34.40	XTM32-34.40	XTK32-34.40	XTN32-34.40
34.50	1.3583	—	XTP32-34.50	XTM32-34.50	XTK32-34.50	XTN32-34.50
34.60	1.3622	—	XTP32-34.60	XTM32-34.60	XTK32-34.60	XTN32-34.60
34.70	1.3661	—	XTP32-34.70	XTM32-34.70	XTK32-34.70	XTN32-34.70
34.80	1.3701	—	XTP32-34.80	XTM32-34.80	XTK32-34.80	XTN32-34.80
34.90	1.3740	—	XTP32-34.90	XTM32-34.90	XTK32-34.90	XTN32-34.90
34.93	1.3752	1-3/8	XTP32-34.93	XTM32-34.93	XTK32-34.93	XTN32-34.93
35.00	1.3780	—	XTP32-35.00	XTM32-35.00	XTK32-35.00	XTN32-35.00

Inserts sold in multiples of 1.

A20: 71 - 86
Key on A20: 2



A20: 7 - 10

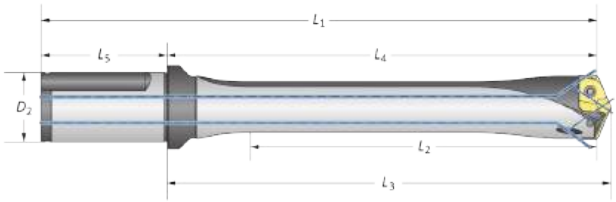


Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	33.25 mm, steel, 32 series = use Part No. **XTP32-33.25**
Imperial:	1.3090", steel, 32 series = use Part No. **XTP32-33.25**

32 Series: 32.00 mm - 35.00 mm (1.2598" - 1.3780")

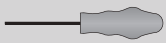
GEN3SYS XT Pro Holders





Flute		Body					Shank		Part No.	
		Length	L_2	L_4	L_3	L_1	L_5	D_2	With Flat	Cylindrical
m	Straight	3xD	105.0	150.7	154.3	214.3	60.0	32	HXT0332S-32FM	HXT0332S-32CM
		5xD	175.0	220.8	224.3	284.3	60.0	32	HXT0532S-32FM	HXT0532S-32CM
		7xD	244.9	290.7	294.3	354.3	60.0	32	HXT0732S-32FM	HXT0732S-32CM
		10xD	349.9	395.7	399.3	459.3	60.0	32	⚠ HXT1032S-32FM	⚠ HXT1032S-32CM
i	Straight	3xD	4.133	6.210	6.350	9.038	2.688	1-1/2	HXT0332S-150F	HXT0332S-150C
		5xD	6.888	8.966	9.106	11.794	2.688	1-1/2	HXT0532S-150F	HXT0532S-150C
		7xD	9.643	11.721	11.861	14.549	2.688	1-1/2	HXT0732S-150F	HXT0732S-150C
		10xD	13.776	15.855	15.995	18.683	2.688	1-1/2	⚠ HXT1032S-150F	⚠ HXT1032S-150C

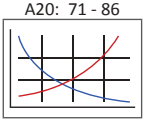
Connection Accessories

 Insert Screws	 Nylon Locking Screws	 Insert Driver	 Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
7495-IP15-1	7495N-IP15-1	8IP-15	8IP-15TL	8IP-15B	690 N-cm (61.0 in-lbs)

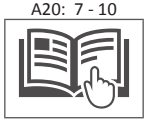
*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A20: 86** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A20: 71 - 86
Key on A20: 2



A20: 7 - 10

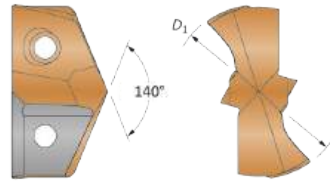


m = Metric (mm)
i = Imperial (in)
Screws sold in multiples of 10.

32 Series: 32.00 mm - 35.00 mm (1.2598" - 1.3780")

GEN3SYS XT Inserts

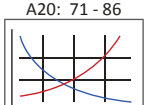




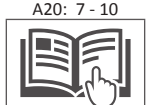
Substrate	Insert D_1 mm	Insert D_1 inch	Insert Fractional Equivalent	Carbide Part No. Standard	Carbide Part No. Low Rake	Carbide Part No. Cast Iron	Carbide Part No. Stainless
K35 (C1)	32.00	1.2598	—	**7C132P-32**	**7C132P-32LR**	—	—
	32.15	1.2657	—	**7C132P-32.15**	**7C132P-32.15LR**	—	—
	32.50	1.2795	—	**7C132P-32.5**	**7C132P-32.5LR**	—	—
	32.55	1.2813	1-9/32	**7C132P-0109**	**7C132P-0109LR**	—	—
	33.00	1.2992	—	**7C132P-33**	**7C132P-33LR**	—	—
	33.34	1.3125	1-5/16	**7C132P-0110**	**7C132P-0110LR**	—	—
	33.50	1.3189	—	**7C132P-33.5**	**7C132P-33.5LR**	—	—
	34.00	1.3386	—	**7C132P-34**	**7C132P-34LR**	—	—
	34.13	1.3438	1-11/32	**7C132P-0111**	**7C132P-0111LR**	—	—
	34.50	1.3583	—	**7C132P-34.5**	**7C132P-34.5LR**	—	—
	34.93	1.3750	1-3/8	**7C132P-0112**	**7C132P-0112LR**	—	—
	35.00	1.3780	—	**7C132P-35**	**7C132P-35LR**	—	—
K20 (C2)	32.00	1.2598	—	**7C232P-32**	**7C232P-32LR**	**7C232P-32CI**	**7C232P-32AS**
	32.15	1.2657	—	**7C232P-32.15**	**7C232P-32.15LR**	**7C232P-32.15CI**	**7C232P-32.15AS**
	32.50	1.2795	—	**7C232P-32.5**	**7C232P-32.5LR**	**7C232P-32.5CI**	**7C232P-32.5AS**
	32.55	1.2813	1-9/32	**7C232P-0109**	**7C232P-0109LR**	**7C232P-0109CI**	**7C232P-0109AS**
	33.00	1.2992	—	**7C232P-33**	**7C232P-33LR**	**7C232P-33CI**	**7C232P-33AS**
	33.34	1.3125	1-5/16	**7C232P-0110**	**7C232P-0110LR**	**7C232P-0110CI**	**7C232P-0110AS**
	33.50	1.3189	—	**7C232P-33.5**	**7C232P-33.5LR**	**7C232P-33.5CI**	**7C232P-33.5AS**
	34.00	1.3386	—	**7C232P-34**	**7C232P-34LR**	**7C232P-34CI**	**7C232P-34AS**
	34.13	1.3438	1-11/32	**7C232P-0111**	**7C232P-0111LR**	**7C232P-0111CI**	**7C232P-0111AS**
	34.50	1.3583	—	**7C232P-34.5**	**7C232P-34.5LR**	**7C232P-34.5CI**	**7C232P-34.5AS**
	34.93	1.3750	1-3/8	**7C232P-0112**	**7C232P-0112LR**	**7C232P-0112CI**	**7C232P-0112AS**
	35.00	1.3780	—	**7C232P-35**	**7C232P-35LR**	**7C232P-35CI**	**7C232P-35AS**

Inserts sold in multiples of 1.

A20: 71 - 86
Key on A20: 2



A20: 7 - 10

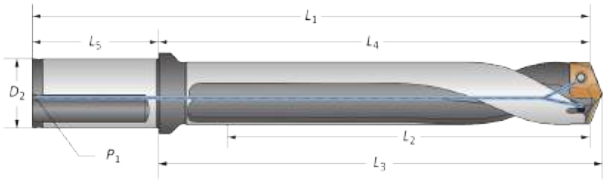


Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	33.25 mm, C2, cast iron, 32 series = use Part No. **7C232P-33.25CI**
Imperial:	1.3090", C2, stainless, 32 series = use Part No. **7C232P-1.3090AS**

32 Series: 32.00 mm - 35.00 mm (1.2598" - 1.3780")

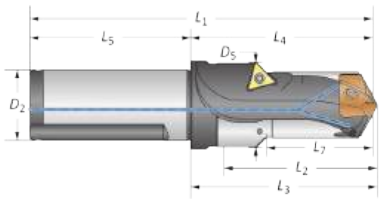
GEN3SYS Holders





Flute		Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No. With Flat	Part No. Cylindrical
Straight		3xD	111.2	157.7	161.3	231.3	70.0	40	1/4 BSPT	60332S-40FM	—
		5xD	181.2	227.7	231.3	301.3	70.0	40	1/4 BSPT	60532S-40FM	—
		7xD	251.2	297.7	301.3	371.3	70.0	40	1/4 BSPT	60732S-40FM	—
Helical		Stub	44.1	90.7	94.2	164.2	70.0	40	1/4 BSPT	60132H-40FM	—
		3xD	111.2	157.7	161.3	231.3	70.0	40	1/4 BSPT	60332H-40FM	60332H-40CM
		5xD	181.2	227.7	231.3	301.3	70.0	40	1/4 BSPT	60532H-40FM	60532H-40CM
		7xD	251.2	297.7	301.3	371.3	70.0	40	1/4 BSPT	60732H-40FM	60732H-40CM
Straight		3xD	4.377	6.210	6.350	9.038	2.688	1-1/2	1/4 NPT	60332S-150F	—
		5xD	7.133	8.965	9.105	11.793	2.688	1-1/2	1/4 NPT	60532S-150F	—
		7xD	9.888	11.721	11.861	14.549	2.688	1-1/2	1/4 NPT	60732S-150F	—
Helical		Stub	1.737	3.570	3.710	6.398	2.688	1-1/2	1/4 NPT	60132H-150F	—
		3xD	4.377	6.210	6.350	9.038	2.688	1-1/2	1/4 NPT	60332H-150F	60332H-150C
		5xD	7.133	8.965	9.105	11.793	2.688	1-1/2	1/4 NPT	60532H-150F	60532H-150C
		7xD	9.888	11.721	11.861	14.549	2.688	1-1/2	1/4 NPT	60732H-150F	60732H-150C





Series	Step D_5	Step L_7	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Part No.	Chamfer Insert
32	40.13	48.0	43.9	90.7	94.2	164.2	70.0	40	60132C45-40FM	TCMT-16T304
32	1.5800	1.890	1.727	3.570	3.710	6.398	2.688	1-1/2	60132C45-150F	TCMT-16T304

Connection Accessories

Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
7495-IP15-1	7495N-IP15-1	8IP-15	8IP-15TL	8IP-15B	690 N-cm (61.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A20: 71 - 86
Key on A20: 2
A20: 7 - 10

Ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

Recommended Drilling Data | Metric (mm)

GEN3SYS XT PRO

ISO	Material	Hardness (BHN)	Speed (m/min)	Feed Rate (mm/rev) by Diameter			
				11 series 11.00 mm - 11.99 mm	12 series 12.00 mm - 12.99 mm	13 series 13.00 mm - 13.99 mm	14 series 14.00 mm - 14.99 mm
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 150	168	0.28	0.30	0.33	0.36
		150 - 200	145	0.25	0.28	0.30	0.33
		200 - 250	130	0.20	0.23	0.25	0.28
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	158	0.28	0.3	0.33	0.36
		125 - 175	137	0.25	0.28	0.30	0.33
		175 - 225	125	0.23	0.25	0.28	0.30
		225 - 275	107	0.18	0.20	0.23	0.25
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	137	0.25	0.28	0.30	0.33
		175 - 225	125	0.23	0.25	0.28	0.30
		225 - 275	107	0.20	0.23	0.25	0.28
		275 - 325	91	0.18	0.20	0.23	0.25
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	126	0.25	0.28	0.30	0.33
		175 - 225	116	0.23	0.25	0.28	0.30
		225 - 275	104	0.20	0.23	0.25	0.28
		275 - 325	94	0.15	0.18	0.20	0.23
		325 - 375	85	0.15	0.15	0.18	0.20
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	76	0.20	0.23	0.25	0.28
		300 - 350	69	0.15	0.18	0.20	0.23
		350 - 400	61	0.13	0.18	0.18	0.20
	Structural Steel A36, A285, A516, etc.	100 - 150	125	0.25	0.28	0.30	0.33
		150 - 250	101	0.20	0.23	0.25	0.28
		250 - 350	93	0.18	0.20	0.23	0.25
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	81	0.15	0.18	0.18	0.20
		200 - 250	62	0.13	0.15	0.15	0.18
M	**Stainless Steel 400 Series** 416, 420, etc.	185 - 275	73	0.15	0.18	0.18	0.20
		275 - 350	56	0.13	0.15	0.15	0.18
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	64	0.10	0.13	0.13	0.15
		185 - 275	47	0.08	0.10	0.10	0.13
	Super Duplex Stainless Steel	135 - 185	38	0.08	0.08	0.08	0.10
		185 - 275	30	0.05	0.05	0.08	0.08

7xD Adjustment Example (0.80 Adjustment)

Data • Adjustment Value	Speed/Feed (7xD)
61 m/min • 0.80	= 48.8 m/min
0.20 mm/rev • 0.80	= 0.16 mm/rev

10xD and 12xD Adjustment Example (0.70 Adjustment)

Speed • Adjustment Value	Speed/Feed (10xD/12xD)
61 m/min • 0.70	= 42.7 m/min
0.20 mm/rev • 0.70	= 0.14 mm/rev

⚠ WARNING **Tool failure can cause serious injury. To prevent:**

- When using holders without support bushing, use a short GEN3SYS holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the coolant recommendation chart for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. For 7xD, 10xD, and 12xD holder lengths, see adjustment example above.

Recommended Drilling Data | Metric (mm)

GEN3SYS XT PRO

Feed Rate (mm/rev) by Diameter									
15 series 15.00 mm - 15.99 mm	**16 series** 16.00 mm - 16.99 mm	**17 series** 17.00 mm - 17.99 mm	**18 series** 18.00 mm - 19.99 mm	**20 series** 20.00 mm - 21.99 mm	**22 series** 22.00 mm - 23.99 mm	**24 series** 24.00 mm - 25.99 mm	**26 series** 26.00 mm - 28.99 mm	**29 series** 29.00 mm - 31.99 mm	**32 series** 32.00 mm - 35.00 mm
0.38	0.41	0.43	0.48	0.53	0.56	0.58	0.61	0.64	0.66
0.36	0.38	0.41	0.43	0.48	0.51	0.53	0.56	0.58	0.61
0.30	0.33	0.36	0.41	0.46	0.48	0.51	0.53	0.56	0.58
0.38	0.41	0.43	0.48	0.53	0.56	0.58	0.61	0.64	0.66
0.36	0.38	0.41	0.46	0.48	0.51	0.53	0.56	0.58	0.61
0.33	0.36	0.38	0.42	0.46	0.48	0.51	0.53	0.56	0.58
0.28	0.30	0.33	0.38	0.41	0.42	0.46	0.48	0.51	0.53
0.36	0.38	0.41	0.46	0.51	0.53	0.56	0.58	0.61	0.64
0.33	0.36	0.38	0.43	0.48	0.51	0.53	0.56	0.58	0.61
0.30	0.33	0.36	0.41	0.46	0.48	0.51	0.53	0.56	0.58
0.28	0.30	0.33	0.38	0.41	0.43	0.46	0.48	0.51	0.53
0.36	0.38	0.41	0.46	0.51	0.53	0.56	0.58	0.61	0.64
0.33	0.36	0.38	0.43	0.48	0.51	0.53	0.56	0.58	0.61
0.30	0.33	0.36	0.41	0.46	0.48	0.51	0.53	0.56	0.58
0.25	0.28	0.30	0.36	0.38	0.41	0.43	0.46	0.48	0.51
0.23	0.25	0.28	0.33	0.36	0.38	0.41	0.43	0.46	0.48
0.28	0.30	0.33	0.36	0.38	0.41	0.43	0.46	0.48	0.51
0.25	0.28	0.28	0.30	0.33	0.36	0.38	0.41	0.43	0.46
0.23	0.25	0.25	0.28	0.30	0.33	0.36	0.38	0.41	0.43
0.33	0.38	0.38	0.43	0.48	0.53	0.56	0.58	0.61	0.64
0.30	0.33	0.36	0.38	0.43	0.48	0.51	0.53	0.56	0.58
0.28	0.30	0.33	0.36	0.38	0.43	0.48	0.51	0.53	0.56
0.20	0.23	0.23	0.25	0.28	0.30	0.33	0.36	0.38	0.41
0.18	0.20	0.20	0.23	0.25	0.28	0.30	0.33	0.36	0.38
0.20	0.23	0.25	0.28	0.30	0.33	0.36	0.38	0.41	0.43
0.18	0.20	0.23	0.25	0.28	0.30	0.33	0.36	0.38	0.41
0.15	0.18	0.18	0.20	0.20	0.23	0.23	0.25	0.25	0.28
0.13	0.15	0.15	0.18	0.18	0.20	0.20	0.23	0.23	0.25
0.10	0.13	0.13	0.15	0.15	0.18	0.20	0.20	0.20	0.25
0.10	0.10	0.13	0.13	0.15	0.15	0.18	0.18	0.20	0.20

Coolant Recommendations

Series	Stub, 3xD, 5xD		7xD		10xD, 12xD	
	Pressure BAR	Flow Rate LPM	Pressure BAR	Flow Rate LPM	Pressure BAR	Flow Rate LPM
11	31	19	41	30	55	38
12	31	19	41	30	55	38
13	28	23	34	36	52	45
14	28	26	34	36	52	45
15	26	26	33	42	48	53
16	26	30	33	45	48	57
17	24	30	31	47	45	62
18	24	34	31	47	45	62
20	21	38	28	49	41	68
22	21	42	28	53	41	68
24	21	42	28	53	41	68
26	21	45	28	61	41	76
29	21	45	28	61	41	76
32	21	45	28	61	41	76

Recommended Drilling Data | Metric (mm)

GEN3SYS XT PRO

ISO	Material	Hardness (BHN)	Speed (m/min)	Feed Rate (mm/rev) by Diameter			
				11 series 11.00 mm - 11.99 mm	12 series 12.00 mm - 12.99 mm	13 series 13.00 mm - 13.99 mm	14 series 14.00 mm - 14.99 mm
K	SG / Nodular Cast Iron	120 - 150	168	0.27	0.30	0.33	0.36
		150 - 200	159	0.25	0.28	0.30	0.33
		200 - 220	141	0.22	0.25	0.28	0.30
		220 - 260	124	0.20	0.23	0.25	0.28
		260 - 320	112	0.20	0.21	0.23	0.25
	Grey / White Iron	120 - 150	175	0.30	0.33	0.36	0.38
		150 - 200	168	0.28	0.30	0.33	0.36
		200 - 220	151	0.25	0.28	0.30	0.33
		220 - 260	130	0.23	0.25	0.28	0.30
		260 - 320	116	0.23	0.25	0.28	0.30
N	Cast Aluminum	30	351	0.30	0.33	0.36	0.38
		180	262	0.28	0.30	0.33	0.36
	Wrought Aluminum	30	488	0.33	0.38	0.41	0.43
		180	351	0.30	0.36	0.38	0.41
	Aluminum Bronze	100 - 200	126	0.26	0.28	0.30	0.32
		200 - 250	103	0.22	0.24	0.26	0.28
	Brass	100	230	0.29	0.30	0.33	0.36
	Copper	60	149	0.07	0.08	0.09	0.11
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 220	40	0.15	0.18	0.18	0.20
		220 - 310	30	0.13	0.15	0.15	0.18
	Titanium Alloy	140 - 220	43	0.13	0.15	0.18	0.20
		220 - 310	34	0.10	0.13	0.15	0.18
	Aerospace Alloy S82	185 - 275	50	0.10	0.10	0.12	0.14
		275 - 350	41	0.09	0.09	0.10	0.12
H	Wear Plate Hardox®, AR400, T-1, etc.	400	50	0.13	0.13	0.15	0.17
		500	40	0.11	0.11	0.13	0.15
		600	27	0.10	0.10	0.11	0.13
	Hardened Steel	300 - 400	51	0.13	0.13	0.15	0.17
		400 - 500	40	0.11	0.11	0.13	0.15

7xD Adjustment Example (0.80 Adjustment)

Data • Adjustment Value	Speed/Feed (7xD)
61 m/min • 0.80	= 48.8 m/min
0.20 mm/rev • 0.80	= 0.16 mm/rev

10xD and 12xD Adjustment Example (0.70 Adjustment)

Speed • Adjustment Value	Speed/Feed (10xD/12xD)
61 m/min • 0.70	= 42.7 m/min
0.20 mm/rev • 0.70	= 0.14 mm/rev

⚠ WARNING **Tool failure can cause serious injury. To prevent:**

- When using holders without support bushing, use a short GEN3SYS holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

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IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the coolant recommendation chart for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. For 7xD, 10xD, and 12xD holder lengths, see adjustment example above.

Recommended Drilling Data | Metric (mm)

GEN3SYS XT PRO

Feed Rate (mm/rev) by Diameter									
15 series 15.00 mm - 15.99 mm	**16 series** 16.00 mm - 16.99 mm	**17 series** 17.00 mm - 17.99 mm	**18 series** 18.00 mm - 19.99 mm	**20 series** 20.00 mm - 21.99 mm	**22 series** 22.00 mm - 23.99 mm	**24 series** 24.00 mm - 25.99 mm	**26 series** 26.00 mm - 28.99 mm	**29 series** 29.00 mm - 31.99 mm	**32 series** 32.00 mm - 35.00 mm
0.38	0.41	0.46	0.51	0.53	0.56	0.58	0.61	0.64	0.66
0.36	0.38	0.43	0.48	0.51	0.53	0.56	0.58	0.61	0.63
0.33	0.36	0.41	0.46	0.48	0.51	0.53	0.56	0.58	0.60
0.30	0.33	0.38	0.43	0.46	0.48	0.51	0.53	0.56	0.58
0.28	0.30	0.36	0.38	0.43	0.46	0.48	0.51	0.53	0.55
0.41	0.43	0.48	0.53	0.56	0.58	0.61	0.64	0.66	0.69
0.38	0.41	0.46	0.51	0.53	0.56	0.58	0.61	0.64	0.66
0.36	0.38	0.43	0.51	0.51	0.53	0.56	0.58	0.61	0.64
0.33	0.36	0.41	0.46	0.48	0.51	0.53	0.56	0.58	0.61
0.33	0.36	0.38	0.43	0.46	0.48	0.51	0.53	0.56	0.58
0.41	0.43	0.46	0.48	0.51	0.53	0.56	0.58	0.61	0.64
0.38	0.41	0.43	0.46	0.48	0.51	0.53	0.56	0.58	0.58
0.46	0.48	0.51	0.53	0.56	0.61	0.66	0.69	0.74	0.76
0.43	0.46	0.48	0.53	0.56	0.58	0.64	0.66	0.71	0.74
0.34	0.36	0.38	0.40	0.42	0.44	0.46	0.48	0.48	0.50
0.30	0.32	0.34	0.36	0.38	0.42	0.46	0.46	0.46	0.48
0.38	0.41	0.43	0.48	0.53	0.56	0.60	0.63	0.66	0.66
0.13	0.15	0.16	0.18	0.20	0.20	0.22	0.25	0.25	0.28
0.20	0.23	0.23	0.25	0.28	0.28	0.30	0.30	0.33	0.36
0.18	0.20	0.20	0.23	0.25	0.25	0.28	0.28	0.30	0.33
0.20	0.23	0.23	0.25	0.28	0.28	0.30	0.30	0.33	0.33
0.18	0.20	0.20	0.23	0.25	0.25	0.28	0.28	0.30	0.30
0.15	0.16	0.18	0.18	0.20	0.22	0.24	0.26	0.28	0.31
0.14	0.15	0.16	0.16	0.18	0.20	0.22	0.24	0.26	0.29
0.19	0.21	0.23	0.25	0.27	0.27	0.29	0.29	0.31	0.31
0.17	0.19	0.21	0.23	0.25	0.25	0.27	0.27	0.29	0.29
0.15	0.17	0.19	0.21	0.23	0.23	0.25	0.25	0.25	0.27
0.19	0.21	0.22	0.23	0.25	0.25	0.27	0.27	0.29	0.29
0.17	0.19	0.20	0.21	0.23	0.23	0.25	0.25	0.27	0.27

Coolant Recommendations

Series	Stub, 3xD, 5xD		7xD		10xD, 12xD	
	Pressure BAR	Flow Rate LPM	Pressure BAR	Flow Rate LPM	Pressure BAR	Flow Rate LPM
11	31	19	41	30	55	38
12	31	19	41	30	55	38
13	28	23	34	36	52	45
14	28	26	34	36	52	45
15	26	26	33	42	48	53
16	26	30	33	45	48	57
17	24	30	31	47	45	62
18	24	34	31	47	45	62
20	21	38	28	49	41	68
22	21	42	28	53	41	68
24	21	42	28	53	41	68
26	21	45	28	61	41	76
29	21	45	28	61	41	76
32	21	45	28	61	41	76

Recommended Drilling Data | Metric (mm)

GEN3SYS XT

ISO	Material	Hardness (BHN)	Speed (m/min)	Feed Rate (mm/rev) by Diameter			
				11 series 11.00 mm - 11.99 mm	12 series 12.00 mm - 12.99 mm	13 series 13.00 mm - 13.99 mm	14 series 14.00 mm - 14.99 mm
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 150	146	0.23	0.28	0.30	0.33
		150 - 200	126	0.23	0.26	0.28	0.30
		200 - 250	119	0.19	0.21	0.23	0.26
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	137	0.26	0.28	0.30	0.33
		125 - 175	119	0.23	0.26	0.28	0.30
		175 - 225	108	0.21	0.23	0.26	0.28
		225 - 275	95	0.16	0.19	0.21	0.23
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	119	0.23	0.26	0.28	0.30
		175 - 225	108	0.21	0.23	0.26	0.28
		225 - 275	95	0.19	0.21	0.23	0.26
		275 - 325	81	0.16	0.19	0.21	0.23
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	114	0.23	0.26	0.28	0.30
		175 - 225	105	0.21	0.23	0.26	0.28
		225 - 275	95	0.19	0.21	0.23	0.26
		275 - 325	87	0.14	0.16	0.19	0.21
		325 - 375	78	0.14	0.14	0.16	0.19
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	70	0.19	0.21	0.23	0.26
		300 - 350	63	0.14	0.16	0.19	0.21
		350 - 400	56	0.12	0.14	0.16	0.19
	Structural Steel A36, A285, A516, etc.	100 - 150	108	0.23	0.26	0.28	0.30
		150 - 250	87	0.19	0.21	0.23	0.26
		250 - 350	81	0.16	0.19	0.21	0.23
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	78	0.14	0.16	0.16	0.19
		200 - 250	59	0.12	0.14	0.14	0.16
M	**Stainless Steel 400 Series** 416, 420, etc.	185 - 275	73	0.15	0.18	0.18	0.20
		275 - 350	56	0.13	0.15	0.15	0.18
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	64	0.10	0.13	0.13	0.15
		185 - 275	47	0.08	0.10	0.10	0.13
	Super Duplex Stainless Steel	135 - 185	38	0.08	0.08	0.08	0.10
		185 - 275	30	0.05	0.05	0.08	0.08

7xD Adjustment Example (0.80 Adjustment)

Data • Adjustment Value	Speed/Feed (7xD)
61 m/min • 0.80	= 48.8 m/min
0.20 mm/rev • 0.80	= 0.16 mm/rev

⚠ WARNING **Tool failure can cause serious injury. To prevent:**

- When using holders without support bushing, use a short GEN3SYS holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the coolant recommendation chart for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. For 7xD, 10xD, and 12xD holder lengths, see adjustment example above.

Recommended Drilling Data | Metric (mm)

GEN3SYS XT

Feed Rate (mm/rev) by Diameter									
15 series 15.00 mm - 15.99 mm	**16 series** 16.00 mm - 16.99 mm	**17 series** 17.00 mm - 17.99 mm	**18 series** 18.00 mm - 19.99 mm	**20 series** 20.00 mm - 21.99 mm	**22 series** 22.00 mm - 23.99 mm	**24 series** 24.00 mm - 25.99 mm	**26 series** 26.00 mm - 28.99 mm	**29 series** 29.00 mm - 31.99 mm	**32 series** 32.00 mm - 35.00 mm
0.35	0.37	0.40	0.44	0.49	0.51	0.54	0.56	0.58	0.61
0.33	0.35	0.37	0.40	0.44	0.47	0.49	0.51	0.54	0.56
0.28	0.30	0.33	0.37	0.42	0.44	0.47	0.49	0.51	0.54
0.35	0.37	0.40	0.44	0.49	0.51	0.54	0.56	0.58	0.61
0.33	0.35	0.37	0.41	0.44	0.47	0.49	0.51	0.54	0.56
0.30	0.33	0.35	0.38	0.41	0.44	0.47	0.49	0.51	0.54
0.26	0.28	0.30	0.35	0.37	0.40	0.42	0.44	0.47	0.49
0.33	0.35	0.37	0.42	0.47	0.49	0.51	0.54	0.56	0.58
0.30	0.33	0.35	0.40	0.44	0.47	0.49	0.51	0.54	0.56
0.28	0.30	0.33	0.37	0.41	0.44	0.47	0.49	0.51	0.54
0.26	0.28	0.30	0.35	0.37	0.40	0.42	0.44	0.47	0.49
0.33	0.35	0.37	0.42	0.47	0.49	0.51	0.54	0.56	0.58
0.30	0.33	0.35	0.40	0.44	0.47	0.49	0.51	0.54	0.56
0.28	0.30	0.33	0.37	0.38	0.44	0.47	0.49	0.51	0.54
0.23	0.26	0.28	0.33	0.35	0.37	0.40	0.42	0.46	0.47
0.21	0.23	0.26	0.30	0.33	0.35	0.37	0.40	0.42	0.44
0.26	0.28	0.30	0.33	0.35	0.37	0.40	0.42	0.44	0.47
0.23	0.26	0.26	0.28	0.30	0.33	0.35	0.37	0.40	0.42
0.21	0.23	0.23	0.26	0.28	0.30	0.33	0.35	0.37	0.40
0.30	0.35	0.35	0.40	0.44	0.49	0.51	0.54	0.56	0.58
0.28	0.30	0.33	0.35	0.40	0.44	0.47	0.49	0.51	0.54
0.26	0.28	0.30	0.33	0.35	0.40	0.44	0.47	0.49	0.51
0.19	0.21	0.21	0.23	0.26	0.28	0.30	0.33	0.35	0.37
0.16	0.19	0.19	0.21	0.23	0.26	0.28	0.30	0.33	0.35
0.20	0.23	0.25	0.28	0.30	0.33	0.36	0.38	0.41	0.43
0.18	0.20	0.23	0.25	0.28	0.30	0.33	0.36	0.38	0.41
0.15	0.18	0.18	0.20	0.20	0.23	0.23	0.25	0.25	0.28
0.13	0.15	0.15	0.18	0.18	0.20	0.20	0.23	0.23	0.25
0.10	0.13	0.13	0.15	0.15	0.18	0.20	0.20	0.20	0.25
0.10	0.10	0.13	0.13	0.15	0.15	0.18	0.18	0.20	0.20

Coolant Recommendations

Series	Stub, 3xD, 5xD		7xD		10xD, 12xD	
	Pressure BAR	Flow Rate LPM	Pressure BAR	Flow Rate LPM	Pressure BAR	Flow Rate LPM
11	31	19	41	30	55	38
12	31	19	41	30	55	38
13	28	23	34	36	52	45
14	28	26	34	36	52	45
15	26	26	33	42	48	53
16	26	30	33	45	48	57
17	24	30	31	47	45	62
18	24	34	31	47	45	62
20	21	38	28	49	41	68
22	21	42	28	53	41	68
24	21	42	28	53	41	68
26	21	45	28	61	41	76
29	21	45	28	61	41	76
32	21	45	28	61	41	76

Recommended Drilling Data | Metric (mm)

GEN3SYS XT

ISO	Material	Hardness (BHN)	Speed (m/min)	Feed Rate (mm/rev) by Diameter			
				11 series 11.00 mm - 11.99 mm	12 series 12.00 mm - 12.99 mm	13 series 13.00 mm - 13.99 mm	14 series 14.00 mm - 14.99 mm
K	SG / Nodular Cast Iron	120 - 150	146	0.23	0.28	0.30	0.33
		150 - 200	138	0.23	0.26	0.28	0.30
		200 - 220	123	0.19	0.23	0.26	0.28
		220 - 260	108	0.19	0.21	0.23	0.26
		260 - 320	97	0.19	0.19	0.21	0.23
	Grey / White Iron	120 - 150	152	0.28	0.30	0.33	0.35
		150 - 200	146	0.26	0.28	0.30	0.33
		200 - 220	131	0.23	0.26	0.28	0.30
		220 - 260	113	0.21	0.23	0.26	0.28
		260 - 320	102	0.21	0.23	0.26	0.28
N	Cast Aluminum	30	300	0.28	0.30	0.33	0.35
		180	225	0.26	0.28	0.30	0.33
	Wrought Aluminum	30	425	0.30	0.35	0.37	0.40
		180	300	0.28	0.33	0.35	0.37
	Aluminum Bronze	100 - 200	110	0.23	0.26	0.28	0.28
		200 - 250	90	0.19	0.21	0.23	0.26
	Brass	100	200	0.23	0.28	0.30	0.33
	Copper	60	130	0.07	0.07	0.07	0.09
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 220	37	0.14	0.16	0.16	0.19
		220 - 310	29	0.12	0.14	0.14	0.16
	Titanium Alloy	140 - 220	42	0.12	0.14	0.16	0.19
		220 - 310	33	0.09	0.12	0.14	0.16
	Aerospace Alloy S82	185 - 275	45	0.09	0.09	0.12	0.12
		275 - 350	37	0.07	0.07	0.09	0.12
H	Wear Plate Hardox®, AR400, T-1, etc.	400	45	0.12	0.12	0.14	0.14
		500	37	0.09	0.09	0.12	0.14
		600	25	0.09	0.09	0.09	0.12
	Hardened Steel	300 - 400	47	0.12	0.12	0.14	0.14
		400 - 500	37	0.09	0.09	0.12	0.14

7xD Adjustment Example (0.80 Adjustment)

Data • Adjustment Value	Speed/Feed (7xD)
61 m/min • 0.80	= 48.8 m/min
0.20 mm/rev • 0.80	= 0.16 mm/rev

⚠ WARNING **Tool failure can cause serious injury. To prevent:**

- When using holders without support bushing, use a short GEN3SYS holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

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IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the coolant recommendation chart for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. For 7xD, 10xD, and 12xD holder lengths, see adjustment example above.

Recommended Drilling Data | Metric (mm)

GEN3SYS XT

Feed Rate (mm/rev) by Diameter									
15 series 15.00 mm - 15.99 mm	**16 series** 16.00 mm - 16.99 mm	**17 series** 17.00 mm - 17.99 mm	**18 series** 18.00 mm - 19.99 mm	**20 series** 20.00 mm - 21.99 mm	**22 series** 22.00 mm - 23.99 mm	**24 series** 24.00 mm - 25.99 mm	**26 series** 26.00 mm - 28.99 mm	**29 series** 29.00 mm - 31.99 mm	**32 series** 32.00 mm - 35.00 mm
0.35	0.37	0.42	0.47	0.47	0.51	0.51	0.56	0.58	0.61
0.33	0.35	0.40	0.44	0.47	0.47	0.51	0.51	0.56	0.56
0.30	0.33	0.37	0.41	0.44	0.47	0.47	0.51	0.51	0.54
0.28	0.30	0.35	0.38	0.41	0.44	0.47	0.47	0.51	0.51
0.26	0.28	0.33	0.35	0.38	0.41	0.44	0.47	0.47	0.49
0.37	0.40	0.46	0.49	0.51	0.54	0.56	0.58	0.61	0.63
0.35	0.37	0.42	0.47	0.49	0.51	0.54	0.56	0.58	0.61
0.33	0.35	0.40	0.47	0.47	0.49	0.51	0.54	0.56	0.58
0.30	0.33	0.37	0.42	0.44	0.47	0.49	0.51	0.54	0.56
0.30	0.33	0.35	0.40	0.41	0.44	0.47	0.49	0.51	0.54
0.37	0.40	0.42	0.44	0.47	0.49	0.51	0.54	0.56	0.58
0.35	0.37	0.40	0.41	0.44	0.47	0.49	0.51	0.54	0.54
0.42	0.44	0.47	0.51	0.54	0.56	0.61	0.63	0.68	0.70
0.40	0.41	0.44	0.49	0.51	0.54	0.58	0.61	0.65	0.68
0.30	0.33	0.35	0.35	0.37	0.40	0.42	0.44	0.44	0.44
0.28	0.28	0.30	0.33	0.35	0.37	0.40	0.41	0.41	0.41
0.35	0.37	0.40	0.44	0.47	0.51	0.54	0.56	0.61	0.61
0.12	0.14	0.14	0.16	0.19	0.19	0.19	0.23	0.23	0.26
0.19	0.21	0.21	0.23	0.26	0.26	0.28	0.28	0.30	0.33
0.16	0.19	0.19	0.21	0.23	0.23	0.26	0.26	0.28	0.30
0.19	0.21	0.21	0.23	0.26	0.26	0.28	0.28	0.30	0.33
0.16	0.19	0.19	0.21	0.23	0.23	0.26	0.26	0.28	0.28
0.14	0.14	0.16	0.16	0.19	0.19	0.21	0.23	0.26	0.28
0.12	0.14	0.14	0.14	0.16	0.19	0.19	0.21	0.23	0.26
0.16	0.19	0.21	0.23	0.23	0.23	0.26	0.26	0.28	0.28
0.14	0.16	0.19	0.21	0.23	0.23	0.23	0.23	0.26	0.26
0.14	0.14	0.16	0.19	0.21	0.21	0.23	0.23	0.23	0.23
0.16	0.19	0.19	0.21	0.23	0.23	0.23	0.23	0.26	0.26
0.14	0.16	0.19	0.19	0.21	0.21	0.23	0.23	0.23	0.23

Coolant Recommendations

Series	Stub, 3xD, 5xD		7xD		10xD, 12xD	
	Pressure BAR	Flow Rate LPM	Pressure BAR	Flow Rate LPM	Pressure BAR	Flow Rate LPM
11	31	19	41	30	55	38
12	31	19	41	30	55	38
13	28	23	34	36	52	45
14	28	26	34	36	52	45
15	26	26	33	42	48	53
16	26	30	33	45	48	57
17	24	30	31	47	45	62
18	24	34	31	47	45	62
20	21	38	28	49	41	68
22	21	42	28	53	41	68
24	21	42	28	53	41	68
26	21	45	28	61	41	76
29	21	45	28	61	41	76
32	21	45	28	61	41	76

Recommended Drilling Data | Imperial (in)

GEN3SYS XT PRO

ISO	Material	Hardness (BHN)	Speed (SFM)	Feed Rate (IPR) by Diameter			
				11 series 0.4331" - 0.4723"	12 series 0.4724" - 0.5117"	13 series 0.5118" - 0.5511"	14 series 0.5512" - 0.5905"
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 150	550	0.011	0.012	0.013	0.014
		150 - 200	475	0.010	0.011	0.012	0.013
		200 - 250	425	0.008	0.009	0.010	0.011
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	520	0.011	0.012	0.013	0.014
		125 - 175	450	0.010	0.011	0.012	0.013
		175 - 225	410	0.009	0.010	0.011	0.012
		225 - 275	350	0.007	0.008	0.009	0.010
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	450	0.010	0.011	0.012	0.013
		175 - 225	410	0.009	0.010	0.011	0.012
		225 - 275	350	0.008	0.009	0.010	0.011
		275 - 325	300	0.007	0.008	0.009	0.010
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	415	0.010	0.011	0.012	0.013
		175 - 225	380	0.009	0.010	0.011	0.012
		225 - 275	340	0.008	0.009	0.010	0.011
		275 - 325	310	0.006	0.007	0.008	0.009
		325 - 375	280	0.006	0.006	0.007	0.008
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	250	0.008	0.009	0.010	0.011
		300 - 350	225	0.006	0.007	0.008	0.009
		350 - 400	200	0.005	0.006	0.007	0.008
	Structural Steel A36, A285, A516, etc.	100 - 150	410	0.010	0.011	0.012	0.013
		150 - 250	330	0.008	0.009	0.010	0.011
		250 - 350	305	0.007	0.008	0.009	0.010
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	265	0.006	0.007	0.007	0.008
		200 - 250	205	0.005	0.006	0.006	0.007
M	**Stainless Steel 400 Series** 416, 420, etc.	185 - 275	240	0.006	0.007	0.007	0.008
		275 - 350	180	0.005	0.006	0.006	0.007
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	220	0.004	0.005	0.005	0.006
		185 - 275	160	0.003	0.004	0.004	0.005
	Super Duplex Stainless Steel	135 - 185	125	0.003	0.003	0.003	0.004
		185 - 275	100	0.002	0.002	0.003	0.003

7xD Adjustment Example (0.80 Adjustment)

Data • Adjustment Value	Speed/Feed (7xD)
200 SFM • 0.80	= 160 SFM
0.008 IPR • 0.80	= 0.0064 IPR

10xD and 12xD Adjustment Example (0.70 Adjustment)

Speed • Adjustment Value	Speed/Feed (10xD/12xD)
200 SFM • 0.70	= 140 SFM
0.008 IPR • 0.70	= 0.0056 IPR

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- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

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IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the coolant recommendation chart for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. For 7xD, 10xD, and 12xD holder lengths, see adjustment example above.

Recommended Drilling Data | Imperial (in)

GEN3SYS XT PRO

Feed Rate (IPR) by Diameter									
15 series 0.5906" - 0.6298"	**16 series** 0.6299" - 0.6692"	**17 series** 0.6693" - 0.7086"	**18 series** 0.7087" - 0.7873"	**20 series** 0.7874" - 0.8660"	**22 series** 0.8661" - 0.9448"	**24 series** 0.9449" - 1.0235"	**26 series** 1.0236" - 1.1416"	**29 series** 1.1417" - 1.2597"	**32 series** 1.2598" - 1.3780"
0.015	0.016	0.017	0.019	0.021	0.022	0.023	0.024	0.025	0.026
0.014	0.015	0.016	0.017	0.019	0.020	0.021	0.022	0.023	0.024
0.012	0.013	0.014	0.016	0.018	0.019	0.020	0.021	0.022	0.023
0.015	0.016	0.017	0.019	0.021	0.022	0.023	0.024	0.025	0.026
0.014	0.015	0.016	0.018	0.019	0.020	0.021	0.022	0.023	0.024
0.013	0.014	0.015	0.017	0.018	0.019	0.020	0.021	0.022	0.023
0.011	0.012	0.013	0.015	0.016	0.017	0.018	0.019	0.020	0.021
0.014	0.015	0.016	0.018	0.020	0.021	0.022	0.023	0.024	0.025
0.013	0.014	0.015	0.017	0.019	0.020	0.021	0.022	0.023	0.024
0.012	0.013	0.014	0.016	0.018	0.019	0.020	0.021	0.022	0.023
0.011	0.012	0.013	0.015	0.016	0.017	0.018	0.019	0.020	0.021
0.014	0.015	0.016	0.018	0.020	0.021	0.022	0.023	0.024	0.025
0.013	0.014	0.015	0.017	0.019	0.020	0.021	0.022	0.023	0.024
0.012	0.013	0.014	0.016	0.018	0.019	0.020	0.021	0.022	0.023
0.010	0.011	0.012	0.014	0.015	0.016	0.017	0.018	0.019	0.020
0.009	0.010	0.011	0.013	0.014	0.015	0.016	0.017	0.018	0.019
0.011	0.012	0.013	0.014	0.015	0.016	0.017	0.018	0.019	0.020
0.010	0.011	0.011	0.012	0.013	0.014	0.015	0.016	0.017	0.018
0.009	0.010	0.010	0.011	0.012	0.013	0.014	0.015	0.016	0.017
0.013	0.015	0.015	0.017	0.019	0.021	0.022	0.023	0.024	0.025
0.012	0.013	0.014	0.015	0.017	0.019	0.020	0.021	0.022	0.023
0.011	0.012	0.013	0.014	0.015	0.017	0.019	0.020	0.021	0.022
0.008	0.009	0.009	0.010	0.011	0.012	0.013	0.014	0.015	0.016
0.007	0.008	0.008	0.009	0.010	0.011	0.012	0.013	0.014	0.015
0.008	0.009	0.010	0.011	0.012	0.013	0.014	0.015	0.016	0.017
0.007	0.008	0.009	0.010	0.011	0.012	0.013	0.014	0.015	0.016
0.006	0.007	0.007	0.008	0.008	0.009	0.009	0.010	0.010	0.011
0.005	0.006	0.006	0.007	0.007	0.008	0.008	0.009	0.009	0.010
0.004	0.005	0.005	0.006	0.006	0.007	0.008	0.008	0.008	0.010
0.004	0.004	0.005	0.005	0.006	0.006	0.007	0.007	0.008	0.008

Coolant Recommendations

Series	Stub, 3xD, 5xD		7xD		10xD, 12xD	
	Pressure PSI	Flow Rate GPM	Pressure PSI	Flow Rate GPM	Pressure PSI	Flow Rate GPM
11	450	5	600	8	800	10
12	450	5	600	8	800	10
13	400	6	500	9.5	750	12
14	400	7	500	9.5	750	12
15	380	7	475	11	700	14
16	380	8	475	12	700	15
17	350	8	450	12.5	650	16.5
18	350	9	450	12.5	650	16.5
20	300	10	400	13	600	18
22	300	11	400	14	600	18
24	300	11	400	14	600	18
26	300	12	400	16	600	20
29	300	12	400	16	600	20
32	300	12	400	16	600	20

Recommended Drilling Data | Imperial (in)

GEN3SYS XT PRO

ISO	Material	Hardness (BHN)	Speed (SFM)	Feed Rate (IPR) by Diameter			
				11 series 0.4331" - 0.4723"	12 series 0.4724" - 0.5117"	13 series 0.5118" - 0.5511"	14 series 0.5512" - 0.5905"
K	SG / Nodular Cast Iron	120 - 150	550	0.010	0.012	0.013	0.014
		150 - 200	520	0.010	0.011	0.012	0.013
		200 - 220	465	0.008	0.010	0.011	0.012
		220 - 260	405	0.008	0.009	0.010	0.011
		260 - 320	365	0.008	0.008	0.009	0.010
	Grey / White Iron	120 - 150	575	0.012	0.013	0.014	0.015
		150 - 200	550	0.011	0.012	0.013	0.014
		200 - 220	495	0.010	0.011	0.012	0.013
		220 - 260	425	0.009	0.010	0.011	0.012
		260 - 320	380	0.009	0.010	0.011	0.012
N	Cast Aluminum	30	1150	0.012	0.013	0.014	0.015
		180	860	0.011	0.012	0.013	0.014
	Wrought Aluminum	30	1600	0.013	0.015	0.016	0.017
		180	1150	0.012	0.014	0.015	0.016
	Aluminum Bronze	100 - 200	415	0.010	0.011	0.012	0.012
		200 - 250	335	0.008	0.009	0.010	0.011
	Brass	100	755	0.010	0.012	0.013	0.014
	Copper	60	490	0.003	0.003	0.003	0.004
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 220	130	0.006	0.007	0.007	0.008
		220 - 310	100	0.005	0.006	0.006	0.007
	Titanium Alloy	140 - 220	140	0.005	0.006	0.007	0.008
		220 - 310	110	0.004	0.005	0.006	0.007
	Aerospace Alloy S82	185 - 275	165	0.004	0.004	0.005	0.005
		275 - 350	135	0.003	0.003	0.004	0.005
H	Wear Plate Hardox®, AR400, T-1, etc.	400	160	0.005	0.005	0.006	0.006
		500	130	0.004	0.004	0.005	0.006
		600	90	0.004	0.004	0.004	0.005
	Hardened Steel	300 - 400	170	0.005	0.005	0.006	0.006
		400 - 500	130	0.004	0.004	0.005	0.006

7xD Adjustment Example (0.80 Adjustment)

Data • Adjustment Value	Speed/Feed (7xD)
200 SFM • 0.80	= 160 SFM
0.008 IPR • 0.80	= 0.0064 IPR

10xD and 12xD Adjustment Example (0.70 Adjustment)

Speed • Adjustment Value	Speed/Feed (10xD/12xD)
200 SFM • 0.70	= 140 SFM
0.008 IPR • 0.70	= 0.0056 IPR

⚠ WARNING **Tool failure can cause serious injury. To prevent:**

- When using holders without support bushing, use a short GEN3SYS holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the coolant recommendation chart for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. For 7xD, 10xD, and 12xD holder lengths, see adjustment example above.

Recommended Drilling Data | Imperial (in)

GEN3SYS XT PRO

Feed Rate (IPR) by Diameter									
15 series 0.5906" - 0.6298"	**16 series** 0.6299" - 0.6692"	**17 series** 0.6693" - 0.7086"	**18 series** 0.7087" - 0.7873"	**20 series** 0.7874" - 0.8660"	**22 series** 0.8661" - 0.9448"	**24 series** 0.9449" - 1.0235"	**26 series** 1.0236" - 1.1416"	**29 series** 1.1417" - 1.2597"	**32 series** 1.2598" - 1.3780"
0.015	0.016	0.018	0.020	0.020	0.022	0.022	0.024	0.025	0.026
0.014	0.015	0.017	0.019	0.020	0.020	0.022	0.022	0.024	0.024
0.013	0.014	0.016	0.018	0.019	0.020	0.020	0.022	0.022	0.023
0.012	0.013	0.015	0.017	0.018	0.019	0.020	0.020	0.022	0.022
0.011	0.012	0.014	0.015	0.017	0.018	0.019	0.020	0.020	0.021
0.016	0.017	0.019	0.021	0.022	0.023	0.024	0.025	0.026	0.027
0.015	0.016	0.018	0.020	0.021	0.022	0.023	0.024	0.025	0.026
0.014	0.015	0.017	0.020	0.020	0.021	0.022	0.023	0.024	0.025
0.013	0.014	0.016	0.018	0.019	0.020	0.021	0.022	0.023	0.024
0.013	0.014	0.015	0.017	0.018	0.019	0.020	0.021	0.022	0.023
0.016	0.017	0.018	0.019	0.020	0.021	0.022	0.023	0.024	0.025
0.015	0.016	0.017	0.018	0.019	0.020	0.021	0.022	0.023	0.023
0.018	0.019	0.020	0.022	0.023	0.024	0.026	0.027	0.029	0.030
0.017	0.018	0.019	0.021	0.022	0.023	0.025	0.026	0.028	0.029
0.013	0.014	0.015	0.015	0.016	0.017	0.018	0.019	0.019	0.019
0.012	0.012	0.013	0.014	0.015	0.016	0.017	0.018	0.018	0.019
0.015	0.016	0.017	0.019	0.020	0.022	0.023	0.024	0.026	0.026
0.005	0.006	0.006	0.007	0.008	0.008	0.008	0.010	0.010	0.011
0.008	0.009	0.009	0.010	0.011	0.011	0.012	0.012	0.013	0.014
0.007	0.008	0.008	0.009	0.010	0.010	0.011	0.011	0.012	0.013
0.008	0.009	0.009	0.010	0.011	0.011	0.012	0.012	0.013	0.014
0.007	0.008	0.008	0.009	0.010	0.010	0.011	0.011	0.012	0.012
0.006	0.006	0.007	0.007	0.008	0.008	0.009	0.010	0.011	0.012
0.005	0.006	0.006	0.006	0.007	0.008	0.008	0.009	0.010	0.011
0.007	0.008	0.009	0.010	0.010	0.010	0.011	0.011	0.012	0.012
0.006	0.007	0.008	0.009	0.010	0.010	0.010	0.010	0.011	0.011
0.006	0.006	0.007	0.008	0.009	0.009	0.010	0.010	0.010	0.010
0.007	0.008	0.008	0.009	0.010	0.010	0.010	0.010	0.011	0.011
0.006	0.007	0.008	0.008	0.009	0.009	0.010	0.010	0.010	0.010

Coolant Recommendations

Series	Stub, 3xD, 5xD		7xD		10xD, 12xD	
	Pressure PSI	Flow Rate GPM	Pressure PSI	Flow Rate GPM	Pressure PSI	Flow Rate GPM
11	450	5	600	8	800	10
12	450	5	600	8	800	10
13	400	6	500	9.5	750	12
14	400	7	500	9.5	750	12
15	380	7	475	11	700	14
16	380	8	475	12	700	15
17	350	8	450	12.5	650	16.5
18	350	9	450	12.5	650	16.5
20	300	10	400	13	600	18
22	300	11	400	14	600	18
24	300	11	400	14	600	18
26	300	12	400	16	600	20
29	300	12	400	16	600	20
32	300	12	400	16	600	20

Recommended Drilling Data | Imperial (in)

GEN3SYS XT

ISO	Material	Hardness (BHN)	Speed (SFM)	Feed Rate (IPR) by Diameter			
				11 series 0.4331" - 0.4723"	12 series 0.4724" - 0.5117"	13 series 0.5118" - 0.5511"	14 series 0.5512" - 0.5905"
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 150	480	0.009	0.011	0.012	0.013
		150 - 200	415	0.009	0.010	0.011	0.012
		200 - 250	390	0.007	0.008	0.009	0.010
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	450	0.010	0.011	0.012	0.013
		125 - 175	390	0.009	0.010	0.011	0.012
		175 - 225	355	0.008	0.009	0.010	0.011
		225 - 275	310	0.006	0.007	0.008	0.009
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	390	0.009	0.010	0.011	0.012
		175 - 225	355	0.008	0.009	0.010	0.011
		225 - 275	310	0.007	0.008	0.009	0.010
		275 - 325	265	0.006	0.007	0.008	0.009
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	375	0.009	0.010	0.011	0.012
		175 - 225	345	0.008	0.009	0.010	0.011
		225 - 275	310	0.007	0.008	0.009	0.010
		275 - 325	285	0.006	0.006	0.007	0.008
		325 - 375	255	0.006	0.006	0.006	0.007
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	230	0.007	0.008	0.009	0.010
		300 - 350	205	0.006	0.006	0.007	0.008
		350 - 400	185	0.005	0.006	0.006	0.007
	Structural Steel A36, A285, A516, etc.	100 - 150	355	0.009	0.010	0.011	0.012
		150 - 250	285	0.007	0.008	0.009	0.010
		250 - 350	265	0.006	0.007	0.008	0.009
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	255	0.006	0.006	0.006	0.007
		200 - 250	195	0.005	0.006	0.006	0.006
M	**Stainless Steel 400 Series** 416, 420, etc.	185 - 275	240	0.006	0.007	0.007	0.008
		275 - 350	185	0.005	0.006	0.006	0.007
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	220	0.004	0.005	0.005	0.006
		185 - 275	160	0.003	0.004	0.004	0.005
	Super Duplex Stainless Steel	135 - 185	125	0.003	0.003	0.003	0.004
		185 - 275	100	0.002	0.002	0.003	0.003

7xD Adjustment Example (0.80 Adjustment)

Data • Adjustment Value	Speed/Feed (7xD)
200 SFM • 0.80	= 160 SFM
0.008 IPR • 0.80	= 0.0064 IPR

⚠ WARNING **Tool failure can cause serious injury. To prevent:**

- When using holders without support bushing, use a short GEN3SYS holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

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IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the coolant recommendation chart for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. For 7xD, 10xD, and 12xD holder lengths, see adjustment example above.

Recommended Drilling Data | Imperial (in)

GEN3SYS XT

Feed Rate (IPR) by Diameter									
15 series 0.5906" - 0.6298"	**16 series** 0.6299" - 0.6692"	**17 series** 0.6693" - 0.7086"	**18 series** 0.7087" - 0.7873"	**20 series** 0.7874" - 0.8660"	**22 series** 0.8661" - 0.9448"	**24 series** 0.9449" - 1.0235"	**26 series** 1.0236" - 1.1416"	**29 series** 1.1417" - 1.2597"	**32 series** 1.2598" - 1.3780"
0.014	0.015	0.016	0.017	0.019	0.020	0.021	0.022	0.023	0.024
0.013	0.014	0.015	0.016	0.017	0.018	0.019	0.020	0.021	0.022
0.011	0.012	0.013	0.015	0.017	0.017	0.018	0.019	0.020	0.021
0.014	0.015	0.016	0.017	0.019	0.020	0.021	0.022	0.023	0.024
0.013	0.014	0.015	0.016	0.017	0.018	0.019	0.020	0.021	0.022
0.012	0.013	0.014	0.015	0.016	0.017	0.018	0.019	0.020	0.021
0.010	0.011	0.012	0.014	0.015	0.016	0.017	0.017	0.018	0.019
0.013	0.014	0.015	0.017	0.018	0.019	0.020	0.021	0.022	0.023
0.012	0.013	0.014	0.016	0.017	0.018	0.019	0.020	0.021	0.022
0.011	0.012	0.013	0.015	0.016	0.017	0.018	0.019	0.020	0.021
0.010	0.011	0.012	0.014	0.015	0.016	0.017	0.017	0.018	0.019
0.013	0.014	0.015	0.017	0.018	0.019	0.020	0.021	0.022	0.023
0.012	0.013	0.014	0.016	0.017	0.018	0.019	0.020	0.021	0.022
0.011	0.012	0.013	0.015	0.015	0.017	0.018	0.019	0.020	0.021
0.009	0.010	0.011	0.013	0.014	0.015	0.016	0.017	0.018	0.018
0.008	0.009	0.010	0.012	0.013	0.014	0.015	0.016	0.017	0.017
0.010	0.011	0.012	0.013	0.014	0.015	0.016	0.017	0.017	0.018
0.009	0.010	0.010	0.011	0.012	0.013	0.014	0.015	0.016	0.017
0.008	0.009	0.009	0.010	0.011	0.012	0.013	0.014	0.015	0.016
0.012	0.014	0.014	0.016	0.017	0.019	0.020	0.021	0.022	0.023
0.011	0.012	0.013	0.014	0.016	0.017	0.018	0.019	0.020	0.021
0.010	0.011	0.012	0.013	0.014	0.016	0.017	0.018	0.019	0.020
0.007	0.008	0.008	0.009	0.010	0.011	0.012	0.013	0.014	0.015
0.006	0.007	0.007	0.008	0.009	0.010	0.011	0.012	0.013	0.014
0.008	0.009	0.010	0.011	0.012	0.013	0.014	0.015	0.016	0.017
0.007	0.008	0.009	0.010	0.011	0.012	0.013	0.014	0.015	0.016
0.006	0.007	0.007	0.008	0.008	0.009	0.009	0.010	0.010	0.011
0.005	0.006	0.006	0.007	0.007	0.008	0.008	0.009	0.009	0.010
0.004	0.005	0.005	0.006	0.006	0.007	0.008	0.008	0.008	0.010
0.004	0.004	0.005	0.005	0.006	0.006	0.007	0.007	0.008	0.008

Coolant Recommendations

Series	Stub, 3xD, 5xD		7xD		10xD, 12xD	
	Pressure PSI	Flow Rate GPM	Pressure PSI	Flow Rate GPM	Pressure PSI	Flow Rate GPM
11	450	5	600	8	800	10
12	450	5	600	8	800	10
13	400	6	500	9.5	750	12
14	400	7	500	9.5	750	12
15	380	7	475	11	700	14
16	380	8	475	12	700	15
17	350	8	450	12.5	650	16.5
18	350	9	450	12.5	650	16.5
20	300	10	400	13	600	18
22	300	11	400	14	600	18
24	300	11	400	14	600	18
26	300	12	400	16	600	20
29	300	12	400	16	600	20
32	300	12	400	16	600	20

Recommended Drilling Data | Imperial (in)

GEN3SYS XT

ISO	Material	Hardness (BHN)	Speed (SFM)	Feed Rate (IPR) by Diameter			
				11 series 0.4331" - 0.4723"	12 series 0.4724" - 0.5117"	13 series 0.5118" - 0.5511"	14 series 0.5512" - 0.5905"
K	SG / Nodular Cast Iron	120 - 150	480	0.009	0.011	0.012	0.013
		150 - 200	450	0.009	0.010	0.011	0.012
		200 - 220	400	0.007	0.009	0.010	0.011
		220 - 260	350	0.007	0.008	0.009	0.010
		260 - 320	320	0.007	0.007	0.008	0.009
	Grey / White Iron	120 - 150	500	0.011	0.012	0.013	0.014
		150 - 200	480	0.010	0.011	0.012	0.013
		200 - 220	430	0.009	0.010	0.011	0.012
		220 - 260	370	0.008	0.009	0.010	0.011
		260 - 320	335	0.008	0.009	0.010	0.011
N	Cast Aluminum	30	1000	0.011	0.012	0.013	0.014
		180	750	0.010	0.011	0.012	0.013
	Wrought Aluminum	30	1400	0.012	0.014	0.015	0.016
		180	1000	0.011	0.013	0.014	0.015
	Aluminum Bronze	100 - 200	360	0.009	0.010	0.011	0.011
		200 - 250	295	0.007	0.008	0.009	0.010
	Brass	100	660	0.009	0.011	0.012	0.013
	Copper	60	425	0.003	0.003	0.003	0.004
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 220	120	0.006	0.006	0.006	0.007
		220 - 310	95	0.005	0.006	0.006	0.006
	Titanium Alloy	140 - 220	140	0.005	0.006	0.006	0.007
		220 - 310	110	0.004	0.005	0.006	0.006
	Aerospace Alloy S82	185 - 275	145	0.004	0.004	0.005	0.005
		275 - 350	120	0.003	0.003	0.004	0.005
H	Wear Plate Hardox®, AR400, T-1, etc.	400	145	0.005	0.005	0.006	0.006
		500	110	0.004	0.004	0.005	0.006
		600	80	0.004	0.004	0.004	0.005
	Hardened Steel	300 - 400	155	0.005	0.005	0.006	0.006
		400 - 500	120	0.004	0.004	0.005	0.006

7xD Adjustment Example (0.80 Adjustment)

Data • Adjustment Value	Speed/Feed (7xD)
200 SFM • 0.80	= 160 SFM
0.008 IPR • 0.80	= 0.0064 IPR

⚠ WARNING **Tool failure can cause serious injury. To prevent:**

- When using holders without support bushing, use a short GEN3SYS holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the coolant recommendation chart for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. For 7xD, 10xD, and 12xD holder lengths, see adjustment example above.

Recommended Drilling Data | Imperial (in)

GEN3SYS XT

Feed Rate (IPR) by Diameter									
15 series 0.5906" - 0.6298"	**16 series** 0.6299" - 0.6692"	**17 series** 0.6693" - 0.7086"	**18 series** 0.7087" - 0.7873"	**20 series** 0.7874" - 0.8660"	**22 series** 0.8661" - 0.9448"	**24 series** 0.9449" - 1.0235"	**26 series** 1.0236" - 1.1416"	**29 series** 1.1417" - 1.2597"	**32 series** 1.2598" - 1.3780"
0.014	0.015	0.017	0.018	0.018	0.020	0.020	0.022	0.023	0.024
0.013	0.014	0.016	0.017	0.018	0.018	0.020	0.020	0.022	0.022
0.012	0.013	0.015	0.016	0.017	0.018	0.018	0.020	0.020	0.021
0.011	0.012	0.014	0.015	0.016	0.017	0.018	0.018	0.020	0.020
0.010	0.011	0.013	0.014	0.015	0.016	0.017	0.018	0.018	0.019
0.015	0.016	0.018	0.019	0.020	0.021	0.022	0.023	0.024	0.025
0.014	0.015	0.017	0.018	0.019	0.020	0.021	0.022	0.023	0.024
0.013	0.014	0.016	0.018	0.018	0.019	0.020	0.021	0.022	0.023
0.012	0.013	0.015	0.017	0.017	0.018	0.019	0.020	0.021	0.022
0.012	0.013	0.014	0.016	0.016	0.017	0.018	0.019	0.020	0.021
0.015	0.016	0.017	0.017	0.018	0.019	0.020	0.021	0.022	0.023
0.014	0.015	0.016	0.016	0.017	0.018	0.019	0.020	0.021	0.021
0.017	0.017	0.018	0.020	0.021	0.022	0.024	0.025	0.027	0.028
0.016	0.016	0.017	0.019	0.020	0.021	0.023	0.024	0.026	0.027
0.012	0.013	0.014	0.014	0.015	0.016	0.017	0.017	0.017	0.017
0.011	0.011	0.012	0.013	0.014	0.015	0.016	0.016	0.016	0.016
0.014	0.015	0.016	0.017	0.018	0.020	0.021	0.022	0.024	0.024
0.005	0.006	0.006	0.006	0.007	0.007	0.007	0.009	0.009	0.010
0.007	0.008	0.008	0.009	0.010	0.010	0.011	0.011	0.012	0.013
0.006	0.007	0.007	0.008	0.009	0.009	0.010	0.010	0.011	0.012
0.007	0.008	0.008	0.009	0.010	0.010	0.011	0.011	0.012	0.013
0.006	0.007	0.007	0.008	0.009	0.009	0.010	0.010	0.011	0.011
0.006	0.006	0.006	0.006	0.007	0.007	0.008	0.009	0.010	0.011
0.005	0.006	0.006	0.006	0.006	0.007	0.007	0.008	0.009	0.010
0.006	0.007	0.008	0.009	0.009	0.009	0.010	0.010	0.011	0.011
0.006	0.006	0.007	0.008	0.009	0.009	0.009	0.009	0.010	0.010
0.006	0.006	0.006	0.007	0.008	0.008	0.009	0.009	0.009	0.009
0.006	0.007	0.007	0.008	0.009	0.009	0.009	0.009	0.010	0.010
0.006	0.006	0.007	0.007	0.008	0.008	0.009	0.009	0.009	0.009

Coolant Recommendations

Series	Stub, 3xD, 5xD		7xD		10xD, 12xD	
	Pressure PSI	Flow Rate GPM	Pressure PSI	Flow Rate GPM	Pressure PSI	Flow Rate GPM
11	450	5	600	8	800	10
12	450	5	600	8	800	10
13	400	6	500	9.5	750	12
14	400	7	500	9.5	750	12
15	380	7	475	11	700	14
16	380	8	475	12	700	15
17	350	8	450	12.5	650	16.5
18	350	9	450	12.5	650	16.5
20	300	10	400	13	600	18
22	300	11	400	14	600	18
24	300	11	400	14	600	18
26	300	12	400	16	600	20
29	300	12	400	16	600	20
32	300	12	400	16	600	20

Technical Formulas

Formulas

1.	**RPM**	**= (318.47 • m/min) / DIA**
	where:	
	RPM	= revolutions per minute (rev/min)
	m/min	= speed (m/min)
	DIA	= diameter of drill (mm)
2.	**mm/min**	**= RPM • mm/rev**
	where:	
	mm/min	= mm per minute (mm/min)
	RPM	= revolutions per minute (rev/min)
	mm/rev	= feed rate (mm/rev)
3.	**m/min**	**= RPM • 0.003 • DIA**
	where:	
	m/min	= speed (m/min)
	RPM	= revolutions per minute (rev/min)
	DIA	= diameter of drill (mm)
4.	**Thrust**	**= 154 • (mm/rev) • DIA • K_m**
	where:	
	Thrust	= axial thrust (N)
	mm/rev	= feed rate (mm/rev)
	DIA	= diameter of drill (mm)
	K_m	= specific cutting energy (kPa)
5.	**Tool Power**	**= ((mm/rev) • RPM • K_m • DIA²)/218604.8**
	where:	
	Tool Power	= tool power (HP)
	mm/rev	= feed rate (mm/rev)
	RPM	= revolutions per minute (rev/min)
	K_m	= specific cutting energy (kPa)
	DIA	= diameter of drill (mm)

Material Constants

Type of Material	Hardness	K_m (kPa)
Plain Carbon and Alloy Steel	85 - 200 BHN	5.45
	200 - 275 BHN	6.48
	275 - 375 BHN	6.89
	375 - 425 BHN	7.93
Stainless Steels	135 - 275 BHN	6.48
	30 - 45 RC	7.45
Cast Iron	100 - 200 BHN	3.45
	200 - 300 BHN	7.45
Copper Alloy	20 - 80 RB	2.96
	80 - 100 RB	4.96
Aluminum Alloy	–	1.52
Magnesium Alloy	–	1.10
High-Temperature Alloys	–	9.93
Titanium Alloy	–	4.96

Formulas

1.	**RPM**	**= (3.82 • SFM) / DIA**
	where:	
	RPM	= revolutions per minute (rev/min)
	SFM	= speed (ft/min)
	DIA	= diameter of drill (inch)
2.	**IPM**	**= RPM • IPR**
	where:	
	IPM	= inches per minute (in/min)
	RPM	= revolutions per minute (rev/min)
	IPR	= feed rate (in/rev)
3.	**SFM**	**= RPM • 0.262 • DIA**
	where:	
	SFM	= speed (ft/min)
	RPM	= revolutions per minute (rev/min)
	DIA	= diameter of drill (inch)
4.	**Thrust**	**= 153,700 • IPR • DIA • K_m**
	where:	
	Thrust	= axial thrust (lbs)
	IPR	= feed rate (in/rev)
	DIA	= diameter of drill (inch)
	K_m	= specific cutting energy (lbs/in²)
5.	**Tool Power**	**= .6991 • IPR • RPM • K_m • DIA²**
	where:	
	Tool Power	= tool power (HP)
	IPR	= feed rate (in/rev)
	RPM	= revolutions per minute (rev/min)
	K_m	= specific cutting energy (lbs/in²)
	DIA	= diameter of drill (inch)

Material Constants

Type of Material	Hardness	K_m (lbs/in²)
Plain Carbon and Alloy Steel	85 - 200 BHN	0.79
	200 - 275 BHN	0.94
	275 - 375 BHN	1.00
	375 - 425 BHN	1.15
Stainless Steels	135 - 275 BHN	0.94
	30 - 45 RC	1.08
Cast Iron	100 - 200 BHN	0.50
	200 - 300 BHN	1.08
Copper Alloy	20 - 80 RB	0.43
	80 - 100 RB	0.72
Aluminum Alloy	–	0.22
Magnesium Alloy	–	0.16
High-Temperature Alloys	–	1.44
Titanium Alloy	–	0.72

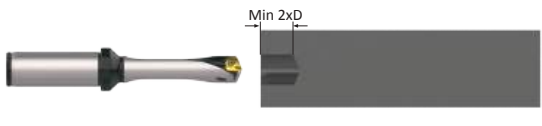
The table and equations on this page are found in the “Machinery’s Handbook.” Permission to simplify and print the equations is granted by the Editor of the “Machinery’s Handbook.”

Deep Hole Drilling Guidelines

GEN3SYS XT Pro | 10xD and 12xD Holders

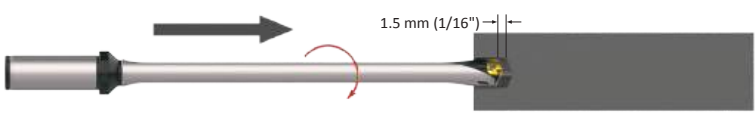
1. Pilot Hole
100% RPM
100% mm/rev (IPR)

Establish the pilot hole using the same diameter short drill to a depth of 2xD minimum.
Utilize a pilot drill with the same or larger included point angle.



2. Feed-in
⚠ 50 RPM max
300 mm/min (12 IPM)

Feed the longer drill within 1.5 mm (1/16") short of the established pilot hole bottom at a **maximum of 50 RPM** and 300 mm/min (12 IPM) feed rate.



3. Deep Hole Transition Drilling
50% RPM
75% mm/rev (IPR)

Drill additional 1xD past the bottom of the pilot hole at 50% reduction of recommended speed and 25% reduction of recommended feed.
Minimum of one second dwell is required to meet full speed before feeding.



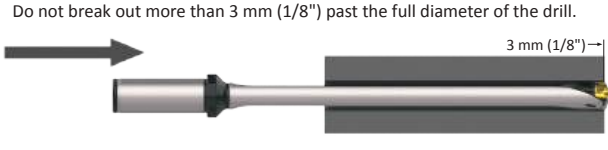
4. Deep Hole Drilling - Blind
100% RPM
100% mm/rev (IPR)

Drill to full depth at recommended speed and feed for longer drill according to Allied speed and feed charts.
No peck cycle recommended.



5. Deep Hole Drilling - at Breakout
50% RPM
75% mm/rev (IPR)

For through holes only:
Reduce speed by 50% and feed by 25% prior to breakout.
Do not break out more than 3 mm (1/8") past the full diameter of the drill.



6. Drill Retract
⚠ 50 RPM max

Reduce speed to a **maximum of 50 RPM** before retracting from the hole.



⚠ WARNING **Tool failure can cause serious injury. To prevent:**

- When using holders without support bushing, use a short GEN3SYS holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

Troubleshooting Guide

	Potential Problem																		
	Accelerated corner wear	Barber pole	Bell-mouthed hole	Insert chipping	Blue chips	Built-up edge (BUE)	Chatter	Chip packing	Chipping of point	Damaged or broken tools	Excessive margin wear	High flank wear	Hole lead off	Hole out of position	Hole out of round	Oversize hole	Poor hole finish	Poor tool life	Power spikes - Load meter	
Setup Condition	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	**Possible Solutions**
Worn or misaligned spindle (lathe, screw machine, chucker)	**1**	**2**	**3**				**7**		**9**	**10**	**11**		**13**			**16**	**17**			• Align spindle and turret or tailstock. • Repair spindle.
Use of low rigidity machine tools		**2**	**3**	**4**			**7**		**9**	**10**			**13**	**14**						• Reduce penetration rate to fall within the physical limits of the machine or setup (**NOTICE:** Do not reduce feed below threshold of good chip formation).
Poor workpiece support		**2**		**4**			**7**			**10**	**11**				**15**		**17**			• Provide additional support for the workpiece. • Reduce penetration rate to fall within the physical limits of the machine or setup (**NOTICE:** Do not reduce feed below threshold of good chip formation).
Flood coolant, low coolant pressure, or low coolant volume	**1**				**5**	**6**		**8**		**10**		**12**				**16**	**17**	**18**	**19**	• Run coolant through tool holder when drilling greater than 1xD. • Increase coolant pressure and volume through the tool holder. • Reduce penetration rate to fall within the coolant limitations (**NOTICE:** Do not reduce feed below threshold of good chip formation). • Add a peck cycle to help clear chips.
Interrupted cuts. Entry or exit surfaces that are not perpendicular to the spindle (draft angles, parting lines, curved or stepped surfaces, cross holes, and cast or forged surfaces)				**4**			**7**		**9**	**10**	**11**		**13**	**14**	**15**	**16**	**17**	**18**		• Premill (spot face) entry or exit surface to remove interruption. • Decrease feed as much as 50% through entry or exit interruption. • Use short holders in low impact entry cuts.
Material harder than expected or running tools beyond recommended speed	**1**				**5**	**6**				**10**		**12**						**18**		• Reduce speed. • Increase coolant pressure and volume. • Improve coolant condition by use of quality products and regular maintenance.
Poor material microstructure or foreign particles (forgings and castings that have not been normalized or annealed, poorly prepared steel, flame cut parts, and sand casting)				**4**		**6**				**10**		**12**	**13**					**18**		• Compare performance of other tools for similar wear problems, which may indicate poor microstructure. Anneal or normalize parts to improve microstructure for machining. • Reduce feeds (**NOTICE:** Do not reduce feed below threshold of good chip formation).
Poor chip control								**8**		**10**	**11**		**13**			**16**	**17**	**18**	**19**	• Increase feed to recommended levels. Contact Allied's Application Engineering group for technical recommendations. • Increase coolant pressure and volume. • Improve coolant condition by use of quality products and regular maintenance.
Spot drilled holes with included angle less than that matching GEN3SYS XT or cored holes	**1**			**4**			**7**						**13**					**18**		• Spot hole with short tool of same or greater included angle as GEN3SYS XT drill insert. • Reduce feed (**NOTICE:** Do not reduce feed below threshold of good chip formation). If possible, drill from solid.

Notes

SECTION A25

T-A Pro®

T-A Pro® Drill

9.50 mm - 47.80 mm (0.3739" - 1.8820")



T-A Pro®

After 35 years of spade drilling success with our iconic T-A® (throwaway) insert, the best just got better. Our team of engineers developed technology that takes THE "go-to" solution for general purpose holemaking to a performance level previously unachievable by a spade insert.

The T-A Pro combines material-specific insert geometries, a redesigned drill body, and a proprietary coolant-through system to allow penetration rates, which run at speeds faster than other high performance drills.

The best just got *better*

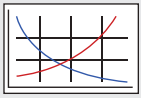
- Excellent chip control.
- Improves hole quality and surface finish.
- Provides maximum durability and stability.

Applicable Industries

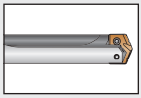
- Aerospace
- Agriculture
- Automotive
- Defense
- General Production
- Heavy Equipment
- Hydraulics
- Marine
- Oil and Gas
- Renewable Energy/ Energy
- Tool, Mold, and Die

Reference Icons

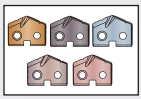
The following icons will appear throughout the catalog to help you navigate between products.



Recommended Cutting Data
Speed and feed recommendations for optimum and safe drilling.



T-A Pro Holders
Range of holders that connect with the corresponding inserts.



T-A Pro Inserts
ISO-material special coated inserts that connect with the corresponding holders.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

⚠ WARNING means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

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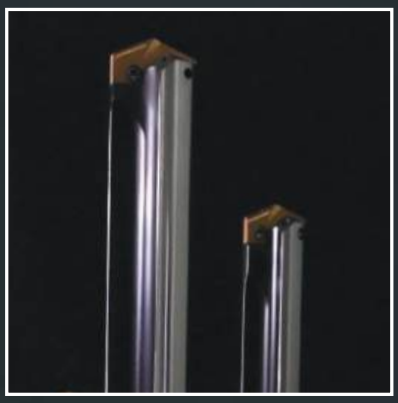
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T-A *Pro*®



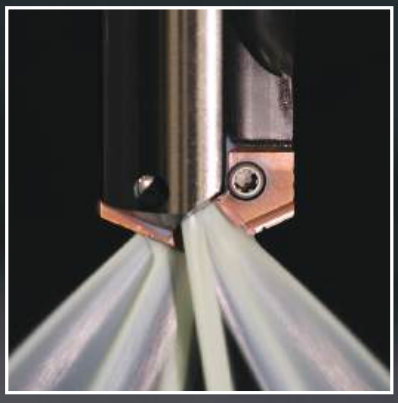
NEW HOLDER DESIGN

Optimized flute design for
increased **chip evacuation.**



NEW INSERT DESIGN

ISO-specific geometries with a new
point design to ***simplify*** your insert choices.



NEW COOLANT DESIGN

Proprietary coolant outlet configuration provides ***superior***
performance **even in low coolant applications (200 PSI).**

Case Study

T-A Pro®
(P) STEEL GEOMETRY



Mold Components | P20 Hi-hard

Hole Ø: 37.31 mm (1.4689")
Hole Depth: 165.10 mm (6.5000")

Holder, 5xD length: HTA3A05-150F
Insert, P (steel): TAP3-37.31

P - Steel



- 68% decrease in cycle time.
- 600% increase in tool life.
- 95% decrease in cost per hole.

	RPM	SPEED	FEED IN	CYCLE TIME	TOOL LIFE
Competitor	590	68.58 m/min (225 SFM)	0.06 mm/rev (0.0025 IPR)	4 min 30 sec	2.54 m (100")
Allied	**470**	**54.86 m/min (180 SFM)**	**0.254 mm/rev (0.0100 IPR)**	**1 min 25 sec**	**17.78 m (700")**

T-A Pro Drilling System Information



A High Penetration Drilling Solution

- Quick connectivity to existing T-A® holders for minimal setup times and immediate increase in productivity.
- Body diameter specific holders to maximize rigidity while drilling.
- Ease of insert selection with ISO geometries compared to T-A.
- Consistency of a spade with penetration rates of a high performance drill.

INSERT GEOMETRIES



STEELS

- Designed to provide increased penetration rates and tool life in steel applications.
- Excellent chip control with superior geometry and edge.
- Increased heat resistance and improved tool life with Allied's multilayer AM300® coating.



Available in Z- 3 series only.

STAINLESS STEEL

- Designed for all stainless steels and heat-resistant super alloy (HRSA) materials.
- Optimized geometry for improved chip formation while minimizing exit burr.
- Industry-leading tool life in stainless and HRSA materials with Allied's new AM460 coating.



CAST IRONS

- Uniquely designed for cast/nodular iron applications.
- Geometry that provides maximum tool life, reduced exit burr, and improved hole finish.
- Increased abrasion resistance and tool life with Allied's multilayer TiAlN coating.



NONFERROUS

- Designed for applications in aluminum, brass, and copper.
- Geometry that yields excellent chip control in these softer materials.
- TiCN coating for versatility to run in a variety of materials while reducing buildup.



SUBSTRATE FROM
HIGH-SPEED STEEL

- Multipurpose geometry engineered for a wide range of materials.
- Reliable tool life and high process repeatability in the most challenging applications.
- Excellent heat resistance and high lubricity for broad scope use with AM200® coating.

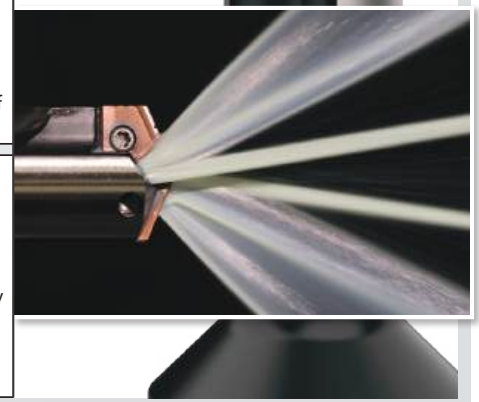
INSERT DESIGN
ISO-specific geometries with a new point design to simplify your insert choices.



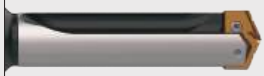
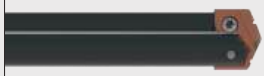
COOLANT DESIGN
Proprietary coolant outlet configuration provides superior cooling even in low-coolant applications.

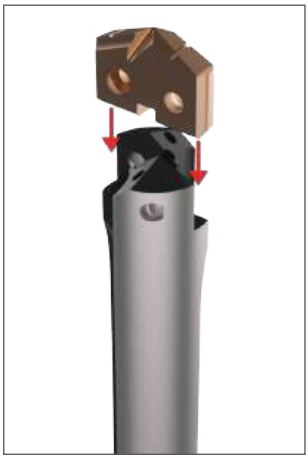
HOLDER DESIGN
New flute design optimized to prevent chip packing from slowing you down.





Insert Comparison & Assembly Information

		 T-A Pro® Inserts	 GEN2 T-A® Inserts	 T-A® Inserts
Recommended for increased productivity		✓		
ISO-specific geometry/ coating combination		✓		
Connects with T-A Pro holders		✓	✓	✓
Connects with T-A holders		✓	✓	✓



Step 1:
Align the flats on the T-A Pro insert with the flats on the ears of the holder.



Step 2:
Slide the insert into the precision ground locating pocket on the holder. The insert should not be turned, rotated, or twisted for locking purposes. The holder pocket and locating pads on the insert assure optimum fit and repeatability.



Step 3:
Apply a generous amount of E-Z Break® (provided in the packaging) onto the supplied TORX® Plus screws.

Tighten the TORX Plus screws to the recommended torque value specified in the catalog by series. A preset TORX driver is available to assure that the proper torque is applied.

Product Nomenclature

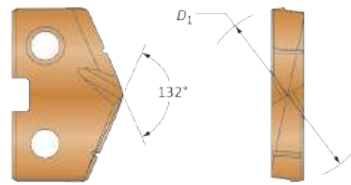
T-A Pro Drill Inserts

TA	P		0	–	15.00
	ISO Material / Geometry		Series		Diameter (mm)
	Standard T-A Pro Inserts:	**Form T-A Pro Inserts:**	**Y**		**Standard T-A Pro Inserts:**
	P = Steel	**CF** = Carbide	**Z**		For complete list of ranges by series, see table below.
	M = Stainless steel*	**XF** = High-speed steel	**0**		
	K = Cast iron		**1**		**Form T-A Pro Inserts:**
	N = Nonferrous		**2**		**82DEG** = 82° form angle
	X = High-speed steel		**3**		**90DEG** = 90° form angle
					100DEG = 100° form angle

*Available in Z -3 series only.

Reference Key

Symbol	Attribute
D_1	Insert diameter



Series & Body Diameters

Series		Y Series	Z Series	0 Series
Insert				
Insert Ø	mm	9.50 - 11.09	11.10 - 12.69	12.70 - 17.64
	inch	0.3739 - 0.4368	0.4369 - 0.4998	0.4999 - 0.6946
Holder				
Insert Ø min	A Body	9.50 mm (0.3739")	11.10 mm (0.4369")	12.70 mm (0.4999")
	B Body	10.32 mm (0.4062")	12.20 mm (0.4802")	14.00 mm (0.5510")
	C Body	–	–	15.08 mm (0.5936")
	D Body	–	–	16.50 mm (0.6495")
Shank Ø	mm	20.00	20.00	20.00
	inch	0.750	0.750	0.750

Product Nomenclature

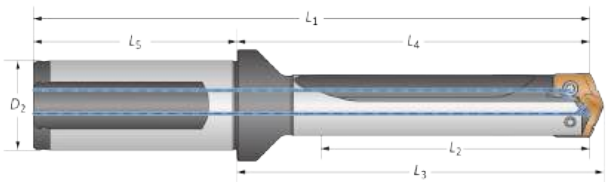
T-A Pro Holders

HTA	0	B	05	–	20		FM
	Series	Body Diameter	Drill Length		Shank Diameter		Shank Style
					Metric (mm)	Imperial (inch)	
	Y	A	**01** = Stub		**20** = 20 mm	**075** = 0.750"	**FM** = Flanged metric with flat
	Z	B	**03** = 3xD		**25** = 25 mm	**100** = 1.000"	**CM** = Cylindrical metric (no flat)
	0	C	**05** = 5xD		**32** = 32 mm	**125** = 1.250"	**F** = Flanged with flat
	1	D	**07** = 7xD		**40** = 40 mm	**150** = 1.500"	**C** = Cylindrical (no flat)
	2		**10** = 10xD ⚠				
	3		**12** = 12xD ⚠				
			15 = 15xD ⚠				
			C45 = Drill/chamfer*				

* Drill and chamfer holders are available in A and C body diameters only.

Reference Key

Symbol	Attribute
D_2	Shank diameter
L_1	Overall length
L_2	Drill depth
L_3	Holder reference length
L_4	Holder body length
L_5	Shank length



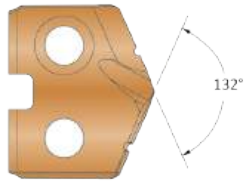
1 Series	2 Series	3 Series
		
17.65 - 24.37	24.38 - 35.04	35.05 - 47.80
0.6947 - 0.9596	0.9597 - 1.3797	1.3798 - 1.8820
17.65 mm (0.6947")	24.38 mm (0.9597")	35.05 mm (1.3798")
19.05 mm (0.7499")	25.40 mm (0.9999")	37.80 mm (1.4880")
20.60 mm (0.8109")	28.50 mm (1.1219")	41.00 mm (1.6140")
22.90 mm (0.9014")	31.70 mm (1.2479")	44.40 mm (1.7479")
25.00	32.00	40.00
1.000	1.250	1.500

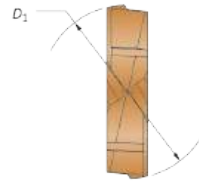
⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A25: 64** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

Y Series: 9.50 mm - 11.09 mm (0.3739" - 0.4368")

Replaceable Inserts



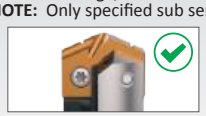




Insert				Carbide			HSS
				Part No.	Part No.	Part No.	Part No.
Series	D_1 mm	D_1 inch	Fractional Equivalent	P	K	N	X
Y-A	9.50	0.3740	—	TAPY-9.50	TAKY-9.50	TANY-9.50	TAXY-9.50
Y-A	9.53	0.3752	3/8	TAPY-9.53	TAKY-9.53	TANY-9.53	TAXY-9.53
Y-A	9.60	0.3780	—	TAPY-9.60	TAKY-9.60	TANY-9.60	TAXY-9.60
Y-A	9.70	0.3819	—	TAPY-9.70	TAKY-9.70	TANY-9.70	TAXY-9.70
Y-A	9.80	0.3858	—	TAPY-9.80	TAKY-9.80	TANY-9.80	TAXY-9.80
Y-A	9.90	0.3898	—	TAPY-9.90	TAKY-9.90	TANY-9.90	TAXY-9.90
Y-A	9.92	0.3906	25/64	TAPY-9.92	TAKY-9.92	TANY-9.92	TAXY-9.92
Y-A	10.00	0.3937	—	TAPY-10.00	TAKY-10.00	TANY-10.00	TAXY-10.00
Y-A	10.10	0.3976	—	TAPY-10.10	TAKY-10.10	TANY-10.10	TAXY-10.10
Y-A	10.20	0.4016	—	TAPY-10.20	TAKY-10.20	TANY-10.20	TAXY-10.20
Y-A	10.30	0.4055	—	TAPY-10.30	TAKY-10.30	TANY-10.30	TAXY-10.30

Inserts sold in multiples of 2.

Sub Series Holders (A, B, C, D) - Sub series holders are recommended when running carbide inserts toward the upper end of the series drill range, as well as in tougher applications requiring more insert support and holder strength.
NOTE: Only specified sub series inserts should be used with equivalent or smaller sub series holders.

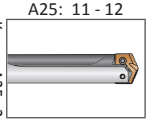

A Series Insert + A Series Holder


C Series Insert + A Series Holder

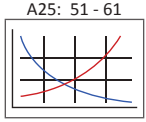

C Series Insert + C Series Holder


A Series Insert + C Series Holder

A25: 11 - 12


Key on A25: 2

A25: 51 - 61

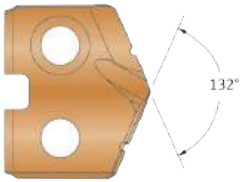


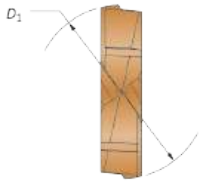
Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	13.16 mm, steel, 0 series = use Part No. **TAP0-13.16**
Imperial:	0.5180", steel, 0 series = use Part No. **TAP0-13.16**

Y Series: 9.50 mm - 11.09 mm (0.3739" - 0.4368")

Replaceable Inserts







Insert				Carbide			HSS
				Part No.	Part No.	Part No.	Part No.
Series	D_1 mm	D_1 inch	Fractional Equivalent	P	K	N	X
Y-B	10.32	0.4063	13/32	TAPY-10.32	TAKY-10.32	TANY-10.32	TAXY-10.32
Y-B	10.40	0.4094	—	TAPY-10.40	TAKY-10.40	TANY-10.40	TAXY-10.40
Y-B	10.50	0.4134	—	TAPY-10.50	TAKY-10.50	TANY-10.50	TAXY-10.50
Y-B	10.60	0.4173	—	TAPY-10.60	TAKY-10.60	TANY-10.60	TAXY-10.60
Y-B	10.70	0.4213	—	TAPY-10.70	TAKY-10.70	TANY-10.70	TAXY-10.70
Y-B	10.72	0.4220	27/64	TAPY-10.72	TAKY-10.72	TANY-10.72	TAXY-10.72
Y-B	10.80	0.4252	—	TAPY-10.80	TAKY-10.80	TANY-10.80	TAXY-10.80
Y-B	10.90	0.4291	—	TAPY-10.90	TAKY-10.90	TANY-10.90	TAXY-10.90
Y-B	11.00	0.4331	—	TAPY-11.00	TAKY-11.00	TANY-11.00	TAXY-11.00

Inserts sold in multiples of 2.

Sub Series Holders (A, B, C, D) - Sub series holders are recommended when running carbide inserts toward the upper end of the series drill range, as well as in tougher applications requiring more insert support and holder strength.
NOTE: Only specified sub series inserts should be used with equivalent or smaller sub series holders.

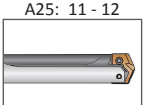

A Series Insert +
A Series Holder


C Series Insert +
A Series Holder


C Series Insert +
C Series Holder

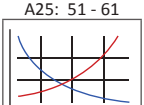

A Series Insert +
C Series Holder

A25: 11 - 12



Key on A25: 2

A25: 51 - 61

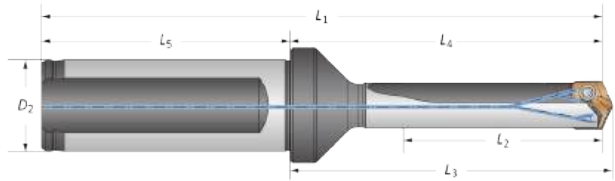


Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	13.16 mm, steel, 0 series = use Part No. **TAP0-13.16**
Imperial:	0.5180", steel, 0 series = use Part No. **TAP0-13.16**

Y Series: 9.50 mm - 11.09 mm (0.3739" - 0.4368")

Holders

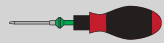




Metric Holders

	Body						Shank		Part No.	
	Length	Sub Series	L_2	L_4	L_3	L_1	L_5	D_2	With Flat	Cylindrical
m	Stub	A	11.1	39.5	41.5	89.5	50.0	20	**HTAYA01-20FM**	**HTAYA01-20CM**
	Stub	B	11.1	39.5	41.5	89.5	50.0	20	**HTAYB01-20FM**	**HTAYB01-20CM**
	3xD	A	33.2	64.9	66.9	114.9	50.0	20	**HTAYA03-20FM**	**HTAYA03-20CM**
	3xD	B	33.2	64.9	66.9	114.9	50.0	20	**HTAYB03-20FM**	**HTAYB03-20CM**
	5xD	A	55.4	87.0	89.1	137.1	50.0	20	**HTAYA05-20FM**	**HTAYA05-20CM**
	5xD	B	55.4	87.0	89.1	137.1	50.0	20	**HTAYB05-20FM**	**HTAYB05-20CM**
	7xD	A	77.5	109.2	111.2	159.2	50.0	20	**HTAYA07-20FM**	**HTAYA07-20CM**
	7xD	B	77.5	109.2	111.2	159.2	50.0	20	**HTAYB07-20FM**	**HTAYB07-20CM**
	10xD	A	110.7	142.4	144.4	192.4	50.0	20	⚠ **HTAYA10-20FM**	⚠ **HTAYA10-20CM**
	10xD	B	110.7	142.4	144.4	192.4	50.0	20	⚠ **HTAYB10-20FM**	⚠ **HTAYB10-20CM**
	12xD	A	132.9	164.6	166.6	214.6	50.0	20	⚠ **HTAYA12-20FM**	⚠ **HTAYA12-20CM**
	12xD	B	132.9	164.6	166.6	214.6	50.0	20	⚠ **HTAYB12-20FM**	⚠ **HTAYB12-20CM**
	15xD	A	166.1	197.8	199.8	247.8	50.0	20	⚠ **HTAYA15-20FM**	⚠ **HTAYA15-20CM**
	15xD	B	166.1	197.8	199.8	247.8	50.0	20	⚠ **HTAYB15-20FM**	⚠ **HTAYB15-20CM**

Connection Accessories

 Insert Screws	 Nylon Locking Screws	 Insert Driver	 Preset Torque Hand Driver	 Replacement Tips	Admissible Tightening Torque*
724-IP7-1	724N-IP7-1	8IP-7	8IP-7TL	8IP-7B	84 N-cm (7.4 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

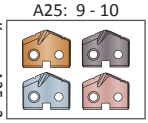
Y Series Holder Diameter Range

Sub Series	YA	YB
Metric (mm)	9.50 mm - 11.09 mm	10.32 mm - 11.09 mm
Imperial (inch)	0.3739" - 0.4368"	0.4062" - 0.4368"

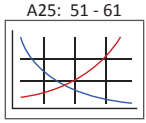
⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A25: 64** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A25: 9 - 10

Key on A25: 2



A25: 51 - 61

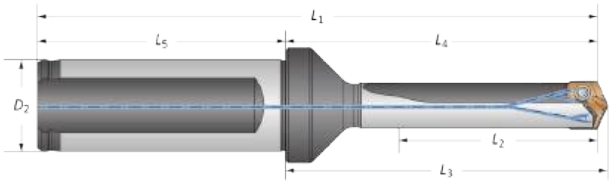


ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

Y Series: 9.50 mm - 11.09 mm (0.3739" - 0.4368")

Holders





Imperial Holders

	Body						Shank		Part No.	
	Length	Sub Series	L_2	L_4	L_3	L_1	L_5	D_2	With Flat	Cylindrical
	Stub	A	0.436	1.554	1.634	3.584	2.030	3/4	HTAYA01-075F	HTAYA01-075C
	Stub	B	0.436	1.554	1.634	3.584	2.030	3/4	HTAYB01-075F	HTAYB01-075C
	3xD	A	1.308	2.555	2.635	4.585	2.030	3/4	HTAYA03-075F	HTAYA03-075C
	3xD	B	1.308	2.555	2.635	4.585	2.030	3/4	HTAYB03-075F	HTAYB03-075C
	5xD	A	2.180	3.427	3.507	5.457	2.030	3/4	HTAYA05-075F	HTAYA05-075C
	5xD	B	2.180	3.427	3.507	5.457	2.030	3/4	HTAYB05-075F	HTAYB05-075C
i	7xD	A	3.052	4.299	4.379	6.329	2.030	3/4	HTAYA07-075F	HTAYA07-075C
	7xD	B	3.052	4.299	4.379	6.329	2.030	3/4	HTAYB07-075F	HTAYB07-075C
	10xD	A	4.360	5.607	5.687	7.637	2.030	3/4	⚠ HTAYA10-075F	⚠ HTAYA10-075C
	10xD	B	4.360	5.607	5.687	7.637	2.030	3/4	⚠ HTAYB10-075F	⚠ HTAYB10-075C
	12xD	A	5.232	6.479	6.559	8.509	2.030	3/4	⚠ HTAYA12-075F	⚠ HTAYA12-075C
	12xD	B	5.232	6.479	6.559	8.509	2.030	3/4	⚠ HTAYB12-075F	⚠ HTAYB12-075C
	15xD	A	6.540	7.787	7.867	9.817	2.030	3/4	⚠ HTAYA15-075F	⚠ HTAYA15-075C
	15xD	B	6.540	7.787	7.867	9.817	2.030	3/4	⚠ HTAYB15-075F	⚠ HTAYB15-075C

Connection Accessories

 Insert Screws	 Nylon Locking Screws	 Insert Driver	 Preset Torque Hand Driver	 Replacement Tips	Admissible Tightening Torque*
724-IP7-1	724N-IP7-1	8IP-7	8IP-7TL	8IP-7B	84 N-cm (7.4 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

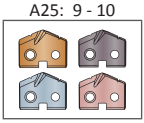
Y Series Holder Diameter Range

Sub Series	YA	YB
Metric (mm)	9.50 mm - 11.09 mm	10.32 mm - 11.09 mm
Imperial (inch)	0.3739" - 0.4368"	0.4062" - 0.4368"

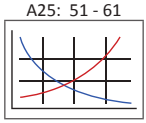
⚠ **WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A25: 64** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A25: 9 - 10

Key on A25: 2



A25: 51 - 61

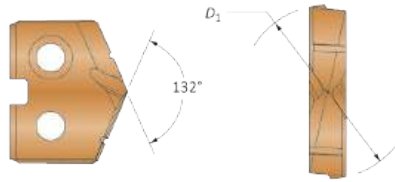


ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

Z Series: 11.10 mm - 12.69 mm (0.4369" - 0.4998")

Replaceable Inserts

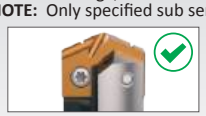




Insert				Carbide				HSS
				Part No.	Part No.	Part No.	Part No.	Part No.
Series	D_1 mm	D_1 inch	Fractional Equivalent	P	M	K	N	X
Z-A	11.11	0.4374	7/16	TAPZ-11.11	TAMZ-11.11	TAKZ-11.11	TANZ-11.11	TAXZ-11.11
Z-A	11.20	0.4409	—	TAPZ-11.20	TAMZ-11.20	TAKZ-11.20	TANZ-11.20	TAXZ-11.20
Z-A	11.30	0.4449	—	TAPZ-11.30	TAMZ-11.30	TAKZ-11.30	TANZ-11.30	TAXZ-11.30
Z-A	11.40	0.4488	—	TAPZ-11.40	TAMZ-11.40	TAKZ-11.40	TANZ-11.40	TAXZ-11.40
Z-A	11.50	0.4528	—	TAPZ-11.50	TAMZ-11.50	TAKZ-11.50	TANZ-11.50	TAXZ-11.50
Z-A	11.51	0.4531	29/64	TAPZ-11.51	TAMZ-11.51	TAKZ-11.51	TANZ-11.51	TAXZ-11.51
Z-A	11.60	0.4567	—	TAPZ-11.60	TAMZ-11.60	TAKZ-11.60	TANZ-11.60	TAXZ-11.60
Z-A	11.70	0.4606	—	TAPZ-11.70	TAMZ-11.70	TAKZ-11.70	TANZ-11.70	TAXZ-11.70
Z-A	11.80	0.4646	—	TAPZ-11.80	TAMZ-11.80	TAKZ-11.80	TANZ-11.80	TAXZ-11.80
Z-A	11.91	0.4689	15/32	TAPZ-11.91	TAMZ-11.91	TAKZ-11.91	TANZ-11.91	TAXZ-11.91
Z-A	12.00	0.4724	—	TAPZ-12.00	TAMZ-12.00	TAKZ-12.00	TANZ-12.00	TAXZ-12.00
Z-A	12.10	0.4764	—	TAPZ-12.10	TAMZ-12.10	TAKZ-12.10	TANZ-12.10	TAXZ-12.10

Inserts sold in multiples of 2.

Sub Series Holders (A, B, C, D) - Sub series holders are recommended when running carbide inserts toward the upper end of the series drill range, as well as in tougher applications requiring more insert support and holder strength.
NOTE: Only specified sub series inserts should be used with equivalent or smaller sub series holders.

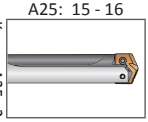

A Series Insert + A Series Holder


C Series Insert + A Series Holder

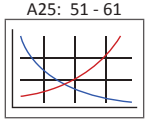

C Series Insert + C Series Holder


A Series Insert + C Series Holder

A25: 15 - 16


Key on A25: 2

A25: 51 - 61

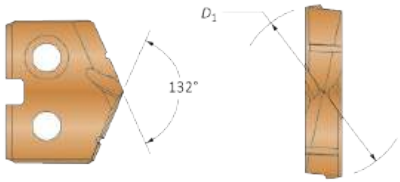


Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	13.16 mm, steel, 0 series = use Part No. **TAP0-13.16**
Imperial:	0.5180", steel, 0 series = use Part No. **TAP0-13.16**

Z Series: 11.10 mm - 12.69 mm (0.4369" - 0.4998")

Replaceable Inserts





Insert				Carbide				HSS
				Part No.	Part No.	Part No.	Part No.	Part No.
Series	D_1 mm	D_1 inch	Fractional Equivalent	P	M	K	N	X
Z-B	12.20	0.4803	—	TAPZ-12.20	TAMZ-12.20	TAKZ-12.20	TANZ-12.20	TAXZ-12.20
Z-B	12.30	0.4843	31/64	TAPZ-12.30	TAMZ-12.30	TAKZ-12.30	TANZ-12.30	TAXZ-12.30
Z-B	12.40	0.4882	—	TAPZ-12.40	TAMZ-12.40	TAKZ-12.40	TANZ-12.40	TAXZ-12.40
Z-B	12.50	0.4921	—	TAPZ-12.50	TAMZ-12.50	TAKZ-12.50	TANZ-12.50	TAXZ-12.50
Z-B	12.60	0.4961	—	TAPZ-12.60	TAMZ-12.60	TAKZ-12.60	TANZ-12.60	TAXZ-12.60

Inserts sold in multiples of 2.

Sub Series Holders (A, B, C, D) - Sub series holders are recommended when running carbide inserts toward the upper end of the series drill range, as well as in tougher applications requiring more insert support and holder strength.
NOTE: Only specified sub series inserts should be used with equivalent or smaller sub series holders.

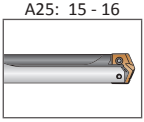

A Series Insert + A Series Holder


C Series Insert + A Series Holder


C Series Insert + C Series Holder

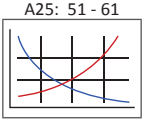

A Series Insert + C Series Holder

A25: 15 - 16



Key on A25: 2

A25: 51 - 61

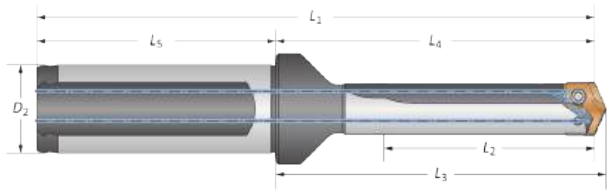


Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	13.16 mm, steel, 0 series = use Part No. **TAP0-13.16**
Imperial:	0.5180", steel, 0 series = use Part No. **TAP0-13.16**

Z Series: 11.10 mm - 12.69 mm (0.4369" - 0.4998")

Holders





Metric Holders

	Body						Shank		Part No.	
	Length	Sub Series	L_2	L_4	L_3	L_1	L_5	D_2	With Flat	Cylindrical
ⓜ	Stub	A	12.0	40.6	42.7	90.7	50.0	20	HTAZA01-20FM	HTAZA01-20CM
	Stub	B	12.0	40.6	42.7	90.7	50.0	20	HTAZB01-20FM	HTAZB01-20CM
	3xD	A	36.1	68.4	70.4	118.4	50.0	20	HTAZA03-20FM	HTAZA03-20CM
	3xD	B	36.1	68.4	70.4	118.4	50.0	20	HTAZB03-20FM	HTAZB03-20CM
	5xD	A	60.2	92.5	94.5	142.5	50.0	20	HTAZA05-20FM	HTAZA05-20CM
	5xD	B	60.2	92.5	94.5	142.5	50.0	20	HTAZB05-20FM	HTAZB05-20CM
	7xD	A	84.3	116.6	118.6	166.6	50.0	20	HTAZA07-20FM	HTAZA07-20CM
	7xD	B	84.3	116.6	118.6	166.6	50.0	20	HTAZB07-20FM	HTAZB07-20CM
	10xD	A	120.4	152.7	154.7	202.7	50.0	20	⚠ HTAZA10-20FM	⚠ HTAZA10-20CM
	10xD	B	120.4	152.7	154.7	202.7	50.0	20	⚠ HTAZB10-20FM	⚠ HTAZB10-20CM
	12xD	A	144.5	176.8	178.8	226.8	50.0	20	⚠ HTAZA12-20FM	⚠ HTAZA12-20CM
	12xD	B	144.5	176.8	178.8	226.8	50.0	20	⚠ HTAZB12-20FM	⚠ HTAZB12-20CM
	15xD	A	180.6	212.9	214.9	262.9	50.0	20	⚠ HTAZA15-20FM	⚠ HTAZA15-20CM
	15xD	B	180.6	212.9	214.9	262.9	50.0	20	⚠ HTAZB15-20FM	⚠ HTAZB15-20CM

Connection Accessories

 Insert Screws	 Nylon Locking Screws	 Insert Driver	 Preset Torque Hand Driver	 Replacement Tips	Admissible Tightening Torque*
7247-IP7-1	7247N-IP7-1	8IP-7	8IP-7TL	8IP-7B	84 N-cm (7.4 in-lbs)

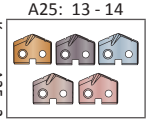
*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

Z Series Holder Diameter Range

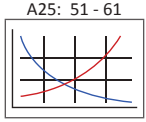
Sub Series	ZA	ZB
Metric (mm)	11.10 mm - 12.69 mm	12.20 mm - 12.69 mm
Imperial (inch)	0.4369" - 0.4998"	0.4802" - 0.4998"

⚠ **WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A25: 64** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A25: 13 - 14



A25: 51 - 61

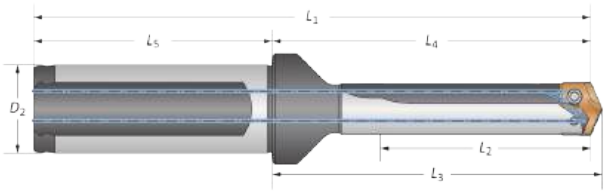


ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

Z Series: 11.10 mm - 12.69 mm (0.4369" - 0.4998")

Holders





Imperial Holders

	Body						Shank		Part No.	
	Length	Sub Series	L_2	L_4	L_3	L_1	L_5	D_2	With Flat	Cylindrical
	Stub	A	0.474	1.600	1.680	3.630	2.030	3/4	HTAZA01-075F	HTAZA01-075C
	Stub	B	0.474	1.600	1.680	3.630	2.030	3/4	HTAZB01-075F	HTAZB01-075C
	3xD	A	1.422	2.693	2.773	4.723	2.030	3/4	HTAZA03-075F	HTAZA03-075C
	3xD	B	1.422	2.693	2.773	4.723	2.030	3/4	HTAZB03-075F	HTAZB03-075C
	5xD	A	2.370	3.641	3.721	5.671	2.030	3/4	HTAZA05-075F	HTAZA05-075C
	5xD	B	2.370	3.641	3.721	5.671	2.030	3/4	HTAZB05-075F	HTAZB05-075C
ⓘ	7xD	A	3.318	4.589	4.669	6.619	2.030	3/4	HTAZA07-075F	HTAZA07-075C
	7xD	B	3.318	4.589	4.669	6.619	2.030	3/4	HTAZB07-075F	HTAZB07-075C
	10xD	A	4.740	6.011	6.091	8.041	2.030	3/4	⚠ HTAZA10-075F	⚠ HTAZA10-075C
	10xD	B	4.740	6.011	6.091	8.041	2.030	3/4	⚠ HTAZB10-075F	⚠ HTAZB10-075C
	12xD	A	5.688	6.959	7.039	8.989	2.030	3/4	⚠ HTAZA12-075F	⚠ HTAZA12-075C
	12xD	B	5.688	6.959	7.039	8.989	2.030	3/4	⚠ HTAZB12-075F	⚠ HTAZB12-075C
	15xD	A	7.110	8.381	8.461	10.411	2.030	3/4	⚠ HTAZA15-075F	⚠ HTAZA15-075C
	15xD	B	7.110	8.381	8.461	10.411	2.030	3/4	⚠ HTAZB15-075F	⚠ HTAZB15-075C

Connection Accessories

 Insert Screws	 Nylon Locking Screws	 Insert Driver	 Preset Torque Hand Driver	 Replacement Tips	Admissible Tightening Torque*
7247-IP7-1	7247N-IP7-1	8IP-7	8IP-7TL	8IP-7B	84 N-cm (7.4 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

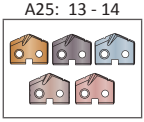
Z Series Holder Diameter Range

Sub Series	ZA	ZB
Metric (mm)	11.10 mm - 12.69 mm	12.20 mm - 12.69 mm
Imperial (inch)	0.4369" - 0.4998"	0.4802" - 0.4998"

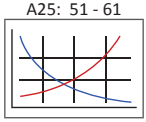
⚠ **WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A25: 64** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A25: 13 - 14

Key on A25: 2



A25: 51 - 61

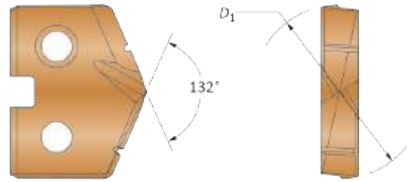


ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

0 Series: 12.70 mm - 17.64 mm (0.4999" - 0.6946")

Replaceable Inserts

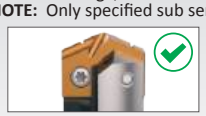




Insert				Carbide				HSS
				Part No.	Part No.	Part No.	Part No.	Part No.
Series	D_1 mm	D_1 inch	Fractional Equivalent	P	M	K	N	X
0-A	12.70	0.5000	1/2	TAP0-12.70	TAM0-12.70	TAK0-12.70	TAN0-12.70	TAX0-12.70
0-A	12.80	0.5039	—	TAP0-12.80	TAM0-12.80	TAK0-12.80	TAN0-12.80	TAX0-12.80
0-A	12.90	0.5079	—	TAP0-12.90	TAM0-12.90	TAK0-12.90	TAN0-12.90	TAX0-12.90
0-A	13.00	0.5118	—	TAP0-13.00	TAM0-13.00	TAK0-13.00	TAN0-13.00	TAX0-13.00
0-A	13.10	0.5157	33/64	TAP0-13.10	TAM0-13.10	TAK0-13.10	TAN0-13.10	TAX0-13.10
0-A	13.20	0.5197	—	TAP0-13.20	TAM0-13.20	TAK0-13.20	TAN0-13.20	TAX0-13.20
0-A	13.30	0.5236	—	TAP0-13.30	TAM0-13.30	TAK0-13.30	TAN0-13.30	TAX0-13.30
0-A	13.40	0.5276	—	TAP0-13.40	TAM0-13.40	TAK0-13.40	TAN0-13.40	TAX0-13.40
0-A	13.49	0.5311	17/32	TAP0-13.49	TAM0-13.49	TAK0-13.49	TAN0-13.49	TAX0-13.49
0-A	13.50	0.5315	—	TAP0-13.50	TAM0-13.50	TAK0-13.50	TAN0-13.50	TAX0-13.50
0-A	13.60	0.5354	—	TAP0-13.60	TAM0-13.60	TAK0-13.60	TAN0-13.60	TAX0-13.60
0-A	13.70	0.5394	—	TAP0-13.70	TAM0-13.70	TAK0-13.70	TAN0-13.70	TAX0-13.70
0-A	13.80	0.5433	—	TAP0-13.80	TAM0-13.80	TAK0-13.80	TAN0-13.80	TAX0-13.80
0-A	13.89	0.5469	35/64	TAP0-13.89	TAM0-13.89	TAK0-13.89	TAN0-13.89	TAX0-13.89
0-B	14.00	0.5512	—	TAP0-14.00	TAM0-14.00	TAK0-14.00	TAN0-14.00	TAX0-14.00
0-B	14.10	0.5551	—	TAP0-14.10	TAM0-14.10	TAK0-14.10	TAN0-14.10	TAX0-14.10
0-B	14.20	0.5591	—	TAP0-14.20	TAM0-14.20	TAK0-14.20	TAN0-14.20	TAX0-14.20
0-B	14.29	0.5626	9/16	TAP0-14.29	TAM0-14.29	TAK0-14.29	TAN0-14.29	TAX0-14.29
0-B	14.40	0.5669	—	TAP0-14.40	TAM0-14.40	TAK0-14.40	TAN0-14.40	TAX0-14.40
0-B	14.50	0.5709	—	TAP0-14.50	TAM0-14.50	TAK0-14.50	TAN0-14.50	TAX0-14.50
0-B	14.60	0.5748	—	TAP0-14.60	TAM0-14.60	TAK0-14.60	TAN0-14.60	TAX0-14.60
0-B	14.68	0.5780	37/64	TAP0-14.68	TAM0-14.68	TAK0-14.68	TAN0-14.68	TAX0-14.68
0-B	14.80	0.5827	—	TAP0-14.80	TAM0-14.80	TAK0-14.80	TAN0-14.80	TAX0-14.80
0-B	14.90	0.5866	—	TAP0-14.90	TAM0-14.90	TAK0-14.90	TAN0-14.90	TAX0-14.90
0-B	15.00	0.5906	—	TAP0-15.00	TAM0-15.00	TAK0-15.00	TAN0-15.00	TAX0-15.00

Inserts sold in multiples of 2.

Sub Series Holders (A, B, C, D) - Sub series holders are recommended when running carbide inserts toward the upper end of the series drill range, as well as in tougher applications requiring more insert support and holder strength.
NOTE: Only specified sub series inserts should be used with equivalent or smaller sub series holders.

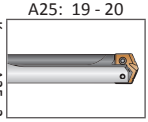

A Series Insert + A Series Holder


C Series Insert + A Series Holder


C Series Insert + C Series Holder

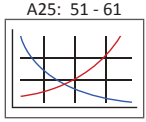

A Series Insert + C Series Holder

A25: 19 - 20



Key on A25: 2

A25: 51 - 61

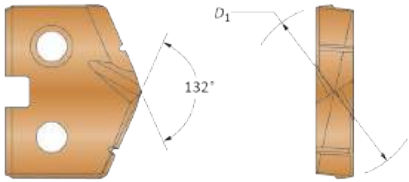


Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	13.16 mm, steel, 0 series = use Part No. **TAP0-13.16**
Imperial:	0.5180", steel, 0 series = use Part No. **TAP0-13.16**

0 Series: 12.70 mm - 17.64 mm (0.4999" - 0.6946")

Replaceable Inserts





Insert				Carbide				HSS
				Part No.	Part No.	Part No.	Part No.	Part No.
Series	D_1 mm	D_1 inch	Fractional Equivalent	P	M	K	N	X
0-C	15.08	0.5937	19/32	TAP0-15.08	TAM0-15.08	TAK0-15.08	TAN0-15.08	TAX0-15.08
0-C	15.20	0.5984	—	TAP0-15.20	TAM0-15.20	TAK0-15.20	TAN0-15.20	TAX0-15.20
0-C	15.25	0.6004	—	TAP0-15.25	TAM0-15.25	TAK0-15.25	TAN0-15.25	TAX0-15.25
0-C	15.30	0.6024	—	TAP0-15.30	TAM0-15.30	TAK0-15.30	TAN0-15.30	TAX0-15.30
0-C	15.40	0.6063	—	TAP0-15.40	TAM0-15.40	TAK0-15.40	TAN0-15.40	TAX0-15.40
0-C	15.48	0.6094	39/64	TAP0-15.48	TAM0-15.48	TAK0-15.48	TAN0-15.48	TAX0-15.48
0-C	15.50	0.6102	—	TAP0-15.50	TAM0-15.50	TAK0-15.50	TAN0-15.50	TAX0-15.50
0-C	15.60	0.6142	—	TAP0-15.60	TAM0-15.60	TAK0-15.60	TAN0-15.60	TAX0-15.60
0-C	15.70	0.6181	—	TAP0-15.70	TAM0-15.70	TAK0-15.70	TAN0-15.70	TAX0-15.70
0-C	15.80	0.6220	—	TAP0-15.80	TAM0-15.80	TAK0-15.80	TAN0-15.80	TAX0-15.80
0-C	15.88	0.6252	5/8	TAP0-15.88	TAM0-15.88	TAK0-15.88	TAN0-15.88	TAX0-15.88
0-C	16.00	0.6299	—	TAP0-16.00	TAM0-16.00	TAK0-16.00	TAN0-16.00	TAX0-16.00
0-C	16.08	0.6331	—	TAP0-16.08	TAM0-16.08	TAK0-16.08	TAN0-16.08	TAX0-16.08
0-C	16.20	0.6378	—	TAP0-16.20	TAM0-16.20	TAK0-16.20	TAN0-16.20	TAX0-16.20
0-C	16.27	0.6406	41/64	TAP0-16.27	TAM0-16.27	TAK0-16.27	TAN0-16.27	TAX0-16.27
0-C	16.40	0.6457	—	TAP0-16.40	TAM0-16.40	TAK0-16.40	TAN0-16.40	TAX0-16.40
0-D	16.50	0.6496	—	TAP0-16.50	TAM0-16.50	TAK0-16.50	TAN0-16.50	TAX0-16.50
0-D	16.60	0.6535	—	TAP0-16.60	TAM0-16.60	TAK0-16.60	TAN0-16.60	TAX0-16.60
0-D	16.67	0.6563	21/32	TAP0-16.67	TAM0-16.67	TAK0-16.67	TAN0-16.67	TAX0-16.67
0-D	16.80	0.6614	—	TAP0-16.80	TAM0-16.80	TAK0-16.80	TAN0-16.80	TAX0-16.80
0-D	16.90	0.6654	—	TAP0-16.90	TAM0-16.90	TAK0-16.90	TAN0-16.90	TAX0-16.90
0-D	17.00	0.6693	—	TAP0-17.00	TAM0-17.00	TAK0-17.00	TAN0-17.00	TAX0-17.00
0-D	17.07	0.6720	43/64	TAP0-17.07	TAM0-17.07	TAK0-17.07	TAN0-17.07	TAX0-17.07
0-D	17.10	0.6732	—	TAP0-17.10	TAM0-17.10	TAK0-17.10	TAN0-17.10	TAX0-17.10
0-D	17.20	0.6772	—	TAP0-17.20	TAM0-17.20	TAK0-17.20	TAN0-17.20	TAX0-17.20
0-D	17.30	0.6811	—	TAP0-17.30	TAM0-17.30	TAK0-17.30	TAN0-17.30	TAX0-17.30
0-D	17.40	0.6850	—	TAP0-17.40	TAM0-17.40	TAK0-17.40	TAN0-17.40	TAX0-17.40
0-D	17.46	0.6874	11/16	TAP0-17.46	TAM0-17.46	TAK0-17.46	TAN0-17.46	TAX0-17.46
0-D	17.50	0.6890	—	TAP0-17.50	TAM0-17.50	TAK0-17.50	TAN0-17.50	TAX0-17.50
0-D	17.60	0.6929	—	TAP0-17.60	TAM0-17.60	TAK0-17.60	TAN0-17.60	TAX0-17.60

Inserts sold in multiples of 2.

Sub Series Holders (A, B, C, D) - Sub series holders are recommended when running carbide inserts toward the upper end of the series drill range, as well as in tougher applications requiring more insert support and holder strength.
NOTE: Only specified sub series inserts should be used with equivalent or smaller sub series holders.

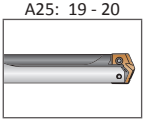

A Series Insert + A Series Holder


C Series Insert + A Series Holder


C Series Insert + C Series Holder

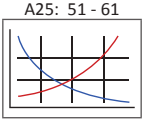

A Series Insert + C Series Holder

A25: 19 - 20



Key on A25: 2

A25: 51 - 61

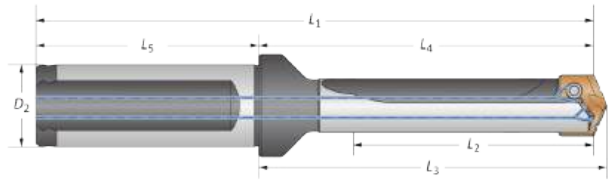


Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	13.16 mm, steel, 0 series = use Part No. **TAP0-13.16**
Imperial:	0.5180", steel, 0 series = use Part No. **TAP0-13.16**

0 Series: 12.70 mm - 17.64 mm (0.4999" - 0.6946")

Holders





Metric Holders

	Length	Sub Series	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Part No. With Flat	Part No. Cylindrical
m	Stub	A	15.3	44.0	46.7	94.0	50.0	20	HTA0A01-20FM	HTA0A01-20CM
	Stub	B	15.3	44.0	46.7	94.0	50.0	20	HTA0B01-20FM	HTA0B01-20CM
	Stub	C	15.3	44.0	46.7	94.0	50.0	20	HTA0C01-20FM	HTA0C01-20CM
	Stub	D	15.3	44.0	46.7	94.0	50.0	20	HTA0D01-20FM	HTA0D01-20CM
	3xD	A	45.9	77.8	80.5	127.8	50.0	20	HTA0A03-20FM	HTA0A03-20CM
	3xD	B	45.9	77.8	80.5	127.8	50.0	20	HTA0B03-20FM	HTA0B03-20CM
	3xD	C	45.9	77.8	80.5	127.8	50.0	20	HTA0C03-20FM	HTA0C03-20CM
	3xD	D	45.9	77.8	80.5	127.8	50.0	20	HTA0D03-20FM	HTA0D03-20CM
	5xD	A	76.6	108.5	111.2	158.5	50.0	20	HTA0A05-20FM	HTA0A05-20CM
	5xD	B	76.6	108.5	111.2	158.5	50.0	20	HTA0B05-20FM	HTA0B05-20CM
	5xD	C	76.6	108.5	111.2	158.5	50.0	20	HTA0C05-20FM	HTA0C05-20CM
	5xD	D	76.6	108.5	111.2	158.5	50.0	20	HTA0D05-20FM	HTA0D05-20CM
	7xD	A	107.2	139.1	141.8	189.1	50.0	20	HTA0A07-20FM	HTA0A07-20CM
	7xD	B	107.2	139.1	141.8	189.1	50.0	20	HTA0B07-20FM	HTA0B07-20CM
	7xD	C	107.2	139.1	141.8	189.1	50.0	20	HTA0C07-20FM	HTA0C07-20CM
	7xD	D	107.2	139.1	141.8	189.1	50.0	20	HTA0D07-20FM	HTA0D07-20CM
	10xD	A	153.2	185.0	187.8	235.1	50.0	20	⚠ HTA0A10-20FM	⚠ HTA0A10-20CM
	10xD	B	153.2	185.0	187.8	235.1	50.0	20	⚠ HTA0B10-20FM	⚠ HTA0B10-20CM
	10xD	C	153.2	185.0	187.8	235.1	50.0	20	⚠ HTA0C10-20FM	⚠ HTA0C10-20CM
	10xD	D	153.2	185.0	187.8	235.1	50.0	20	⚠ HTA0D10-20FM	⚠ HTA0D10-20CM
	12xD	A	183.8	215.7	218.4	265.7	50.0	20	⚠ HTA0A12-20FM	⚠ HTA0A12-20CM
	12xD	B	183.8	215.7	218.4	265.7	50.0	20	⚠ HTA0B12-20FM	⚠ HTA0B12-20CM
	12xD	C	183.8	215.7	218.4	265.7	50.0	20	⚠ HTA0C12-20FM	⚠ HTA0C12-20CM
	12xD	D	183.8	215.7	218.4	265.7	50.0	20	⚠ HTA0D12-20FM	⚠ HTA0D12-20CM
	15xD	A	229.7	261.6	264.3	311.6	50.0	20	⚠ HTA0A15-20FM	⚠ HTA0A15-20CM
	15xD	B	229.7	261.6	264.3	311.6	50.0	20	⚠ HTA0B15-20FM	⚠ HTA0B15-20CM
	15xD	C	229.7	261.6	264.3	311.6	50.0	20	⚠ HTA0C15-20FM	⚠ HTA0C15-20CM
	15xD	D	229.7	261.6	264.3	311.6	50.0	20	⚠ HTA0D15-20FM	⚠ HTA0D15-20CM

Connection Accessories

	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
A/B	72556-IP8-1	72556N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)
C/D	72567-IP8-1	72567N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)

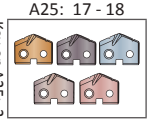
*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

0 Series Holder Diameter Range

Sub Series	0A	0B	0C	0D
Metric (mm)	12.70 mm - 17.64 mm	14.00 mm - 17.64 mm	15.08 mm - 17.64 mm	16.50 mm - 17.64 mm
Imperial (inch)	0.4999" - 0.6946"	0.5510" - 0.6946"	0.5936" - 0.6946"	0.6495" - 0.6946"

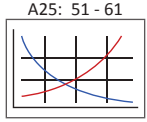
⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A25: 64** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A25: 17 - 18



Key on A25: 2

A25: 51 - 61

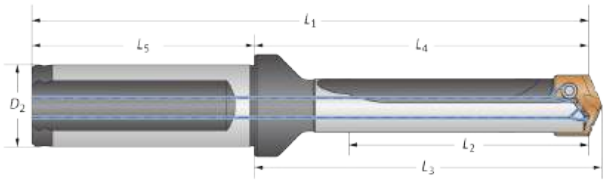


m = Metric (mm)
i = Imperial (in)
Screws sold in multiples of 10.

0 Series: 12.70 mm - 17.64 mm (0.4999" - 0.6946")

Holders





Imperial Holders

	Length	Sub Series	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Part No. With Flat	Part No. Cylindrical
	Stub	A	0.603	1.731	1.838	3.761	2.030	3/4	HTA0A01-075F	HTA0A01-075C
	Stub	B	0.603	1.731	1.838	3.761	2.030	3/4	HTA0B01-075F	HTA0B01-075C
	Stub	C	0.603	1.731	1.838	3.761	2.030	3/4	HTA0C01-075F	HTA0C01-075C
	Stub	D	0.603	1.731	1.838	3.761	2.030	3/4	HTA0D01-075F	HTA0D01-075C
	3xD	A	1.809	3.064	3.171	5.094	2.030	3/4	HTA0A03-075F	HTA0A03-075C
	3xD	B	1.809	3.064	3.171	5.094	2.030	3/4	HTA0B03-075F	HTA0B03-075C
	3xD	C	1.809	3.064	3.171	5.094	2.030	3/4	HTA0C03-075F	HTA0C03-075C
	3xD	D	1.809	3.064	3.171	5.094	2.030	3/4	HTA0D03-075F	HTA0D03-075C
	5xD	A	3.015	4.270	4.377	6.300	2.030	3/4	HTA0A05-075F	HTA0A05-075C
	5xD	B	3.015	4.270	4.377	6.300	2.030	3/4	HTA0B05-075F	HTA0B05-075C
	5xD	C	3.015	4.270	4.377	6.300	2.030	3/4	HTA0C05-075F	HTA0C05-075C
	5xD	D	3.015	4.270	4.377	6.300	2.030	3/4	HTA0D05-075F	HTA0D05-075C
	7xD	A	4.221	5.476	5.583	7.506	2.030	3/4	HTA0A07-075F	HTA0A07-075C
ⓘ	7xD	B	4.221	5.476	5.583	7.506	2.030	3/4	HTA0B07-075F	HTA0B07-075C
	7xD	C	4.221	5.476	5.583	7.506	2.030	3/4	HTA0C07-075F	HTA0C07-075C
	7xD	D	4.221	5.476	5.583	7.506	2.030	3/4	HTA0D07-075F	HTA0D07-075C
	10xD	A	6.030	7.285	7.392	9.315	2.030	3/4	⚠ HTA0A10-075F	⚠ HTA0A10-075C
	10xD	B	6.030	7.285	7.392	9.315	2.030	3/4	⚠ HTA0B10-075F	⚠ HTA0B10-075C
	10xD	C	6.030	7.285	7.392	9.315	2.030	3/4	⚠ HTA0C10-075F	⚠ HTA0C10-075C
	10xD	D	6.030	7.285	7.392	9.315	2.030	3/4	⚠ HTA0D10-075F	⚠ HTA0D10-075C
	12xD	A	7.236	8.491	8.598	10.521	2.030	3/4	⚠ HTA0A12-075F	⚠ HTA0A12-075C
	12xD	B	7.236	8.491	8.598	10.521	2.030	3/4	⚠ HTA0B12-075F	⚠ HTA0B12-075C
	12xD	C	7.236	8.491	8.598	10.521	2.030	3/4	⚠ HTA0C12-075F	⚠ HTA0C12-075C
	12xD	D	7.236	8.491	8.598	10.521	2.030	3/4	⚠ HTA0D12-075F	⚠ HTA0D12-075C
	15xD	A	9.045	10.300	10.407	12.330	2.030	3/4	⚠ HTA0A15-075F	⚠ HTA0A15-075C
	15xD	B	9.045	10.300	10.407	12.330	2.030	3/4	⚠ HTA0B15-075F	⚠ HTA0B15-075C
	15xD	C	9.045	10.300	10.407	12.330	2.030	3/4	⚠ HTA0C15-075F	⚠ HTA0C15-075C
	15xD	D	9.045	10.300	10.407	12.330	2.030	3/4	⚠ HTA0D15-075F	⚠ HTA0D15-075C

Connection Accessories

	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
A/B	72556-IP8-1	72556N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)
C/D	72567-IP8-1	72567N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)

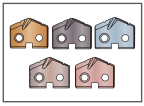
*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

0 Series Holder Diameter Range

Sub Series	0A	0B	0C	0D
Metric (mm)	12.70 mm - 17.64 mm	14.00 mm - 17.64 mm	15.08 mm - 17.64 mm	16.50 mm - 17.64 mm
Imperial (inch)	0.4999" - 0.6946"	0.5510" - 0.6946"	0.5936" - 0.6946"	0.6495" - 0.6946"

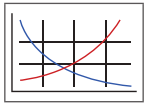
⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A25: 64** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A25: 17 - 18



Key on A25: 2

A25: 51 - 61

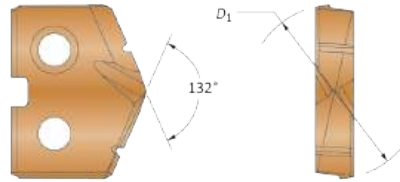


ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

1 Series: 17.65 mm - 24.37 mm (0.6947" - 0.9596")

Replaceable Inserts





Insert				Carbide				HSS
				Part No.	Part No.	Part No.	Part No.	Part No.
Series	D_1 mm	D_1 inch	Fractional Equivalent	P	M	K	N	X
1-A	17.70	0.6969	—	TAP1-17.70	TAM1-17.70	TAK1-17.70	TAN1-17.70	TAX1-17.70
1-A	17.80	0.7008	—	TAP1-17.80	TAM1-17.80	TAK1-17.80	TAN1-17.80	TAX1-17.80
1-A	17.86	0.7031	45/64	TAP1-17.86	TAM1-17.86	TAK1-17.86	TAN1-17.86	TAX1-17.86
1-A	17.90	0.7047	—	TAP1-17.90	TAM1-17.90	TAK1-17.90	TAN1-17.90	TAX1-17.90
1-A	18.00	0.7087	—	TAP1-18.00	TAM1-18.00	TAK1-18.00	TAN1-18.00	TAX1-18.00
1-A	18.10	0.7126	—	TAP1-18.10	TAM1-18.10	TAK1-18.10	TAN1-18.10	TAX1-18.10
1-A	18.20	0.7165	—	TAP1-18.20	TAM1-18.20	TAK1-18.20	TAN1-18.20	TAX1-18.20
1-A	18.26	0.7189	23/32	TAP1-18.26	TAM1-18.26	TAK1-18.26	TAN1-18.26	TAX1-18.26
1-A	18.30	0.7205	—	TAP1-18.30	TAM1-18.30	TAK1-18.30	TAN1-18.30	TAX1-18.30
1-A	18.40	0.7244	—	TAP1-18.40	TAM1-18.40	TAK1-18.40	TAN1-18.40	TAX1-18.40
1-A	18.50	0.7283	—	TAP1-18.50	TAM1-18.50	TAK1-18.50	TAN1-18.50	TAX1-18.50
1-A	18.60	0.7323	—	TAP1-18.60	TAM1-18.60	TAK1-18.60	TAN1-18.60	TAX1-18.60
1-A	18.65	0.7343	47/64	TAP1-18.65	TAM1-18.65	TAK1-18.65	TAN1-18.65	TAX1-18.65
1-A	18.70	0.7362	—	TAP1-18.70	TAM1-18.70	TAK1-18.70	TAN1-18.70	TAX1-18.70
1-A	18.80	0.7402	—	TAP1-18.80	TAM1-18.80	TAK1-18.80	TAN1-18.80	TAX1-18.80
1-A	18.90	0.7441	—	TAP1-18.90	TAM1-18.90	TAK1-18.90	TAN1-18.90	TAX1-18.90
1-A	19.00	0.7480	—	TAP1-19.00	TAM1-19.00	TAK1-19.00	TAN1-19.00	TAX1-19.00

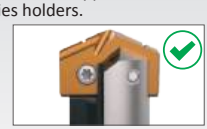
Inserts sold in multiples of 2.

Sub Series Holders (A, B, C, D)

Sub series holders are recommended when running carbide inserts toward the upper end of the series drill range, as well as in tougher applications requiring more insert support and holder strength. **NOTE:** Only specified sub series inserts should be used with equivalent or smaller sub series holders.



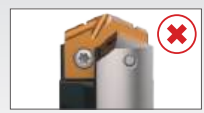
A Series Insert + A Series Holder



C Series Insert + A Series Holder

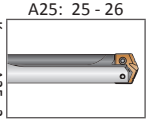


C Series Insert + C Series Holder



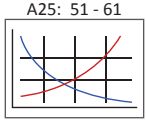
A Series Insert + C Series Holder

A25: 25 - 26



Key on A25: 2

A25: 51 - 61



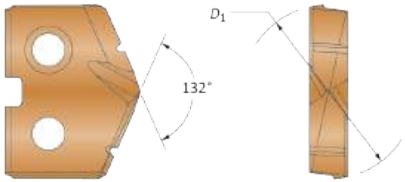
Sizes not shown are available upon request.
When ordering, please follow the example below:

Metric:	13.16 mm, steel, 0 series = use Part No. **TAP0-13.16**
Imperial:	0.5180", steel, 0 series = use Part No. **TAP0-13.16**

1 Series: 17.65 mm - 24.37 mm (0.6947" - 0.9596")

Replaceable Inserts





Insert				Carbide				HSS
				Part No.	Part No.	Part No.	Part No.	Part No.
Series	D_1 mm	D_1 inch	Fractional Equivalent	P	M	K	N	X
1-B	19.05	0.7500	3/4	TAP1-19.05	TAM1-19.05	TAK1-19.05	TAN1-19.05	TAX1-19.05
1-B	19.10	0.7520	—	TAP1-19.10	TAM1-19.10	TAK1-19.10	TAN1-19.10	TAX1-19.10
1-B	19.20	0.7559	—	TAP1-19.20	TAM1-19.20	TAK1-19.20	TAN1-19.20	TAX1-19.20
1-B	19.25	0.7579	—	TAP1-19.25	TAM1-19.25	TAK1-19.25	TAN1-19.25	TAX1-19.25
1-B	19.30	0.7598	—	TAP1-19.30	TAM1-19.30	TAK1-19.30	TAN1-19.30	TAX1-19.30
1-B	19.40	0.7638	—	TAP1-19.40	TAM1-19.40	TAK1-19.40	TAN1-19.40	TAX1-19.40
1-B	19.45	0.7657	49/64	TAP1-19.45	TAM1-19.45	TAK1-19.45	TAN1-19.45	TAX1-19.45
1-B	19.50	0.7677	—	TAP1-19.50	TAM1-19.50	TAK1-19.50	TAN1-19.50	TAX1-19.50
1-B	19.60	0.7717	—	TAP1-19.60	TAM1-19.60	TAK1-19.60	TAN1-19.60	TAX1-19.60
1-B	19.70	0.7756	—	TAP1-19.70	TAM1-19.70	TAK1-19.70	TAN1-19.70	TAX1-19.70
1-B	19.80	0.7795	—	TAP1-19.80	TAM1-19.80	TAK1-19.80	TAN1-19.80	TAX1-19.80
1-B	19.84	0.7811	25/32	TAP1-19.84	TAM1-19.84	TAK1-19.84	TAN1-19.84	TAX1-19.84
1-B	19.90	0.7835	—	TAP1-19.90	TAM1-19.90	TAK1-19.90	TAN1-19.90	TAX1-19.90
1-B	20.00	0.7874	—	TAP1-20.00	TAM1-20.00	TAK1-20.00	TAN1-20.00	TAX1-20.00
1-B	20.10	0.7913	—	TAP1-20.10	TAM1-20.10	TAK1-20.10	TAN1-20.10	TAX1-20.10
1-B	20.20	0.7953	—	TAP1-20.20	TAM1-20.20	TAK1-20.20	TAN1-20.20	TAX1-20.20
1-B	20.24	0.7969	51/64	TAP1-20.24	TAM1-20.24	TAK1-20.24	TAN1-20.24	TAX1-20.24
1-B	20.30	0.7992	—	TAP1-20.30	TAM1-20.30	TAK1-20.30	TAN1-20.30	TAX1-20.30
1-B	20.40	0.8031	—	TAP1-20.40	TAM1-20.40	TAK1-20.40	TAN1-20.40	TAX1-20.40
1-B	20.50	0.8071	—	TAP1-20.50	TAM1-20.50	TAK1-20.50	TAN1-20.50	TAX1-20.50

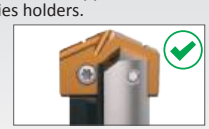
Inserts sold in multiples of 2.

Sub Series Holders (A, B, C, D)

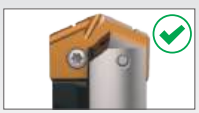
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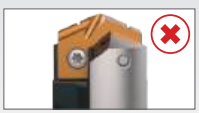
A Series Insert + A Series Holder



C Series Insert + A Series Holder

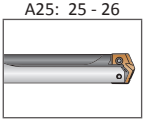


C Series Insert + C Series Holder



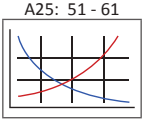
A Series Insert + C Series Holder

A25: 25 - 26



Key on A25: 2

A25: 51 - 61



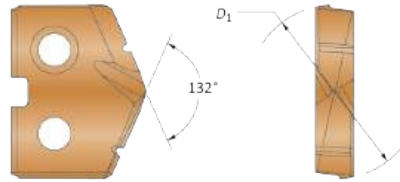
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1 Series: 17.65 mm - 24.37 mm (0.6947" - 0.9596")

Replaceable Inserts





Insert				Carbide				HSS
				Part No.	Part No.	Part No.	Part No.	Part No.
Series	D_1 mm	D_1 inch	Fractional Equivalent	P	M	K	N	X
1-C	20.60	0.8110	—	TAP1-20.60	TAM1-20.60	TAK1-20.60	TAN1-20.60	TAX1-20.60
1-C	20.64	0.8126	13/16	TAP1-20.64	TAM1-20.64	TAK1-20.64	TAN1-20.64	TAX1-20.64
1-C	20.70	0.8150	—	TAP1-20.70	TAM1-20.70	TAK1-20.70	TAN1-20.70	TAX1-20.70
1-C	20.80	0.8189	—	TAP1-20.80	TAM1-20.80	TAK1-20.80	TAN1-20.80	TAX1-20.80
1-C	20.90	0.8228	—	TAP1-20.90	TAM1-20.90	TAK1-20.90	TAN1-20.90	TAX1-20.90
1-C	21.00	0.8268	—	TAP1-21.00	TAM1-21.00	TAK1-21.00	TAN1-21.00	TAX1-21.00
1-C	21.10	0.8307	—	TAP1-21.10	TAM1-21.10	TAK1-21.10	TAN1-21.10	TAX1-21.10
1-C	21.20	0.8346	—	TAP1-21.20	TAM1-21.20	TAK1-21.20	TAN1-21.20	TAX1-21.20
1-C	21.30	0.8386	—	TAP1-21.30	TAM1-21.30	TAK1-21.30	TAN1-21.30	TAX1-21.30
1-C	21.40	0.8425	—	TAP1-21.40	TAM1-21.40	TAK1-21.40	TAN1-21.40	TAX1-21.40
1-C	21.43	0.8437	27/32	TAP1-21.43	TAM1-21.43	TAK1-21.43	TAN1-21.43	TAX1-21.43
1-C	21.50	0.8465	—	TAP1-21.50	TAM1-21.50	TAK1-21.50	TAN1-21.50	TAX1-21.50
1-C	21.60	0.8504	—	TAP1-21.60	TAM1-21.60	TAK1-21.60	TAN1-21.60	TAX1-21.60
1-C	21.70	0.8543	—	TAP1-21.70	TAM1-21.70	TAK1-21.70	TAN1-21.70	TAX1-21.70
1-C	21.80	0.8583	—	TAP1-21.80	TAM1-21.80	TAK1-21.80	TAN1-21.80	TAX1-21.80
1-C	21.83	0.8594	55/64	TAP1-21.83	TAM1-21.83	TAK1-21.83	TAN1-21.83	TAX1-21.83
1-C	21.90	0.8622	—	TAP1-21.90	TAM1-21.90	TAK1-21.90	TAN1-21.90	TAX1-21.90
1-C	22.00	0.8661	—	TAP1-22.00	TAM1-22.00	TAK1-22.00	TAN1-22.00	TAX1-22.00
1-C	22.10	0.8701	—	TAP1-22.10	TAM1-22.10	TAK1-22.10	TAN1-22.10	TAX1-22.10
1-C	22.20	0.8740	—	TAP1-22.20	TAM1-22.20	TAK1-22.20	TAN1-22.20	TAX1-22.20
1-C	22.23	0.8752	7/8	TAP1-22.23	TAM1-22.23	TAK1-22.23	TAN1-22.23	TAX1-22.23
1-C	22.30	0.8780	—	TAP1-22.30	TAM1-22.30	TAK1-22.30	TAN1-22.30	TAX1-22.30
1-C	22.40	0.8819	—	TAP1-22.40	TAM1-22.40	TAK1-22.40	TAN1-22.40	TAX1-22.40
1-C	22.50	0.8858	—	TAP1-22.50	TAM1-22.50	TAK1-22.50	TAN1-22.50	TAX1-22.50
1-C	22.62	0.8906	57/64	TAP1-22.62	TAM1-22.62	TAK1-22.62	TAN1-22.62	TAX1-22.62
1-C	22.70	0.8937	—	TAP1-22.70	TAM1-22.70	TAK1-22.70	TAN1-22.70	TAX1-22.70
1-C	22.80	0.8976	—	TAP1-22.80	TAM1-22.80	TAK1-22.80	TAN1-22.80	TAX1-22.80

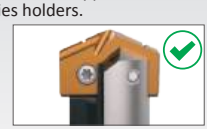
Inserts sold in multiples of 2.

Sub Series Holders (A, B, C, D)

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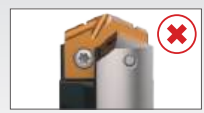
A Series Insert + A Series Holder



C Series Insert + A Series Holder

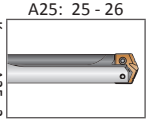


C Series Insert + C Series Holder

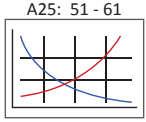


A Series Insert + C Series Holder

A25: 25 - 26



A25: 51 - 61



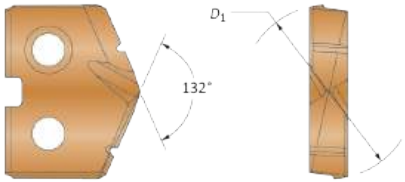
Key on A25: 2

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Metric:	13.16 mm, steel, 0 series = use Part No. **TAP0-13.16**
Imperial:	0.5180", steel, 0 series = use Part No. **TAP0-13.16**

1 Series: 17.65 mm - 24.37 mm (0.6947" - 0.9596")

Replaceable Inserts





Insert				Carbide				HSS
				Part No.	Part No.	Part No.	Part No.	Part No.
Series	D_1 mm	D_1 inch	Fractional Equivalent	P	M	K	N	X
1-D	22.90	0.9016	—	TAP1-22.90	TAM1-22.90	TAK1-22.90	TAN1-22.90	TAX1-22.90
1-D	23.00	0.9055	—	TAP1-23.00	TAM1-23.00	TAK1-23.00	TAN1-23.00	TAX1-23.00
1-D	23.02	0.9063	29/32	TAP1-23.02	TAM1-23.02	TAK1-23.02	TAN1-23.02	TAX1-23.02
1-D	23.10	0.9094	—	TAP1-23.10	TAM1-23.10	TAK1-23.10	TAN1-23.10	TAX1-23.10
1-D	23.20	0.9134	—	TAP1-23.20	TAM1-23.20	TAK1-23.20	TAN1-23.20	TAX1-23.20
1-D	23.30	0.9173	—	TAP1-23.30	TAM1-23.30	TAK1-23.30	TAN1-23.30	TAX1-23.30
1-D	23.42	0.9220	59/64	TAP1-23.42	TAM1-23.42	TAK1-23.42	TAN1-23.42	TAX1-23.42
1-D	23.50	0.9252	—	TAP1-23.50	TAM1-23.50	TAK1-23.50	TAN1-23.50	TAX1-23.50
1-D	23.60	0.9291	—	TAP1-23.60	TAM1-23.60	TAK1-23.60	TAN1-23.60	TAX1-23.60
1-D	23.70	0.9331	—	TAP1-23.70	TAM1-23.70	TAK1-23.70	TAN1-23.70	TAX1-23.70
1-D	23.81	0.9374	15/16	TAP1-23.81	TAM1-23.81	TAK1-23.81	TAN1-23.81	TAX1-23.81
1-D	23.90	0.9409	—	TAP1-23.90	TAM1-23.90	TAK1-23.90	TAN1-23.90	TAX1-23.90
1-D	24.00	0.9449	—	TAP1-24.00	TAM1-24.00	TAK1-24.00	TAN1-24.00	TAX1-24.00
1-D	24.10	0.9488	—	TAP1-24.10	TAM1-24.10	TAK1-24.10	TAN1-24.10	TAX1-24.10
1-D	24.20	0.9528	—	TAP1-24.20	TAM1-24.20	TAK1-24.20	TAN1-24.20	TAX1-24.20
1-D	24.30	0.9567	—	TAP1-24.30	TAM1-24.30	TAK1-24.30	TAN1-24.30	TAX1-24.30

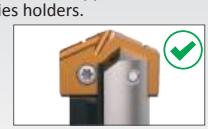
Inserts sold in multiples of 2.

Sub Series Holders (A, B, C, D)

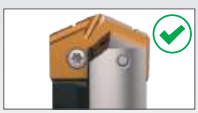
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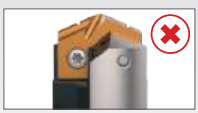
A Series Insert + A Series Holder



C Series Insert + A Series Holder

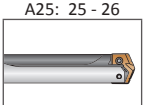


C Series Insert + C Series Holder



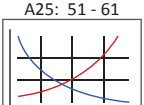
A Series Insert + C Series Holder

A25: 25 - 26



Key on A25: 2

A25: 51 - 61



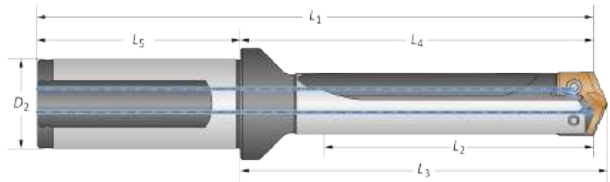
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1 Series: 17.65 mm - 24.37 mm (0.6947" - 0.9596")

Holders





Metric Holders

	Body						Shank		Part No.	
	Length	Sub Series	L_2	L_4	L_3	L_1	L_5	D_2	With Flat	Cylindrical
m	Stub	A	21.0	56.5	60.0	112.5	56.0	25	HTA1A01-25FM	HTA1A01-25CM
	Stub	B	21.0	56.5	60.0	112.5	56.0	25	HTA1B01-25FM	HTA1B01-25CM
	Stub	C	21.0	56.5	60.0	112.5	56.0	25	HTA1C01-25FM	HTA1C01-25CM
	Stub	D	21.0	56.5	60.0	112.5	56.0	25	HTA1D01-25FM	HTA1D01-25CM
	3xD	A	62.9	100.9	104.5	156.9	56.0	25	HTA1A03-25FM	HTA1A03-25CM
	3xD	B	62.9	100.9	104.5	156.9	56.0	25	HTA1B03-25FM	HTA1B03-25CM
	3xD	C	62.9	100.9	104.5	156.9	56.0	25	HTA1C03-25FM	HTA1C03-25CM
	3xD	D	62.9	100.9	104.5	156.9	56.0	25	HTA1D03-25FM	HTA1D03-25CM
	5xD	A	104.8	142.8	146.4	198.8	56.0	25	HTA1A05-25FM	HTA1A05-25CM
	5xD	B	104.8	142.8	146.4	198.8	56.0	25	HTA1B05-25FM	HTA1B05-25CM
	5xD	C	104.8	142.8	146.4	198.8	56.0	25	HTA1C05-25FM	HTA1C05-25CM
	5xD	D	104.8	142.8	146.4	198.8	56.0	25	HTA1D05-25FM	HTA1D05-25CM
	7xD	A	146.7	184.7	188.3	240.7	56.0	25	HTA1A07-25FM	HTA1A07-25CM
	7xD	B	146.7	184.7	188.3	240.7	56.0	25	HTA1B07-25FM	HTA1B07-25CM
	7xD	C	146.7	184.7	188.3	240.7	56.0	25	HTA1C07-25FM	HTA1C07-25CM
	7xD	D	146.7	184.7	188.3	240.7	56.0	25	HTA1D07-25FM	HTA1D07-25CM
	10xD	A	209.6	247.6	251.2	303.6	56.0	25	⚠ HTA1A10-25FM	⚠ HTA1A10-25CM
	10xD	B	209.6	247.6	251.2	303.6	56.0	25	⚠ HTA1B10-25FM	⚠ HTA1B10-25CM
	10xD	C	209.6	247.6	251.2	303.6	56.0	25	⚠ HTA1C10-25FM	⚠ HTA1C10-25CM
	10xD	D	209.6	247.6	251.2	303.6	56.0	25	⚠ HTA1D10-25FM	⚠ HTA1D10-25CM
	12xD	A	251.5	289.5	293.1	345.5	56.0	25	⚠ HTA1A12-25FM	⚠ HTA1A12-25CM
	12xD	B	251.5	289.5	293.1	345.5	56.0	25	⚠ HTA1B12-25FM	⚠ HTA1B12-25CM
	12xD	C	251.5	289.5	293.1	345.5	56.0	25	⚠ HTA1C12-25FM	⚠ HTA1C12-25CM
	12xD	D	251.5	289.5	293.1	345.5	56.0	25	⚠ HTA1D12-25FM	⚠ HTA1D12-25CM
	15xD	A	314.3	352.4	355.9	408.4	56.0	25	⚠ HTA1A15-25FM	⚠ HTA1A15-25CM
	15xD	B	314.3	352.4	355.9	408.4	56.0	25	⚠ HTA1B15-25FM	⚠ HTA1B15-25CM
	15xD	C	314.3	352.4	355.9	408.4	56.0	25	⚠ HTA1C15-25FM	⚠ HTA1C15-25CM
	15xD	D	314.3	352.4	355.9	408.4	56.0	25	⚠ HTA1D15-25FM	⚠ HTA1D15-25CM

Connection Accessories

	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
A/B	7375-IP9-1	7375N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)
C/D	739-IP9-1	739N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)

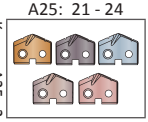
*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

1 Series Holder Diameter Range

Sub Series	1A	1B	1C	1D
Metric (mm)	17.65 mm - 24.37 mm	19.05 mm - 24.37 mm	20.60 mm - 24.37 mm	22.90 mm - 24.37 mm
Imperial (inch)	0.6947" - 0.9596"	0.7499" - 0.9596"	0.8109" - 0.9596"	0.9014" - 0.9596"

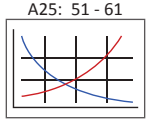
⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A25: 64** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A25: 21 - 24



Key on A25: 2

A25: 51 - 61

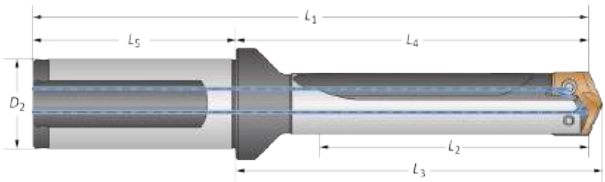


ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

1 Series: 17.65 mm - 24.37 mm (0.6947" - 0.9596")

Holders





Imperial Holders

	Body						Shank		Part No.	
	Length	Sub Series	L_2	L_4	L_3	L_1	L_5	D_2	With Flat	Cylindrical
	Stub	A	0.825	2.224	2.364	4.504	2.280	1	HTA1A01-100F	HTA1A01-100C
	Stub	B	0.825	2.224	2.364	4.504	2.280	1	HTA1B01-100F	HTA1B01-100C
	Stub	C	0.825	2.224	2.364	4.504	2.280	1	HTA1C01-100F	HTA1C01-100C
	Stub	D	0.825	2.224	2.364	4.504	2.280	1	HTA1D01-100F	HTA1D01-100C
	3xD	A	2.475	3.973	4.113	6.253	2.280	1	HTA1A03-100F	HTA1A03-100C
	3xD	B	2.475	3.973	4.113	6.253	2.280	1	HTA1B03-100F	HTA1B03-100C
	3xD	C	2.475	3.973	4.113	6.253	2.280	1	HTA1C03-100F	HTA1C03-100C
	3xD	D	2.475	3.973	4.113	6.253	2.280	1	HTA1D03-100F	HTA1D03-100C
	5xD	A	4.125	5.623	5.763	7.903	2.280	1	HTA1A05-100F	HTA1A05-100C
	5xD	B	4.125	5.623	5.763	7.903	2.280	1	HTA1B05-100F	HTA1B05-100C
	5xD	C	4.125	5.623	5.763	7.903	2.280	1	HTA1C05-100F	HTA1C05-100C
	5xD	D	4.125	5.623	5.763	7.903	2.280	1	HTA1D05-100F	HTA1D05-100C
	7xD	A	5.775	7.273	7.413	9.553	2.280	1	HTA1A07-100F	HTA1A07-100C
	7xD	B	5.775	7.273	7.413	9.553	2.280	1	HTA1B07-100F	HTA1B07-100C
	7xD	C	5.775	7.273	7.413	9.553	2.280	1	HTA1C07-100F	HTA1C07-100C
	7xD	D	5.775	7.273	7.413	9.553	2.280	1	HTA1D07-100F	HTA1D07-100C
	10xD	A	8.250	9.748	9.888	12.028	2.280	1	⚠ HTA1A10-100F	⚠ HTA1A10-100C
	10xD	B	8.250	9.748	9.888	12.028	2.280	1	⚠ HTA1B10-100F	⚠ HTA1B10-100C
	10xD	C	8.250	9.748	9.888	12.028	2.280	1	⚠ HTA1C10-100F	⚠ HTA1C10-100C
	10xD	D	8.250	9.748	9.888	12.028	2.280	1	⚠ HTA1D10-100F	⚠ HTA1D10-100C
	12xD	A	9.900	11.398	11.538	13.678	2.280	1	⚠ HTA1A12-100F	⚠ HTA1A12-100C
	12xD	B	9.900	11.398	11.538	13.678	2.280	1	⚠ HTA1B12-100F	⚠ HTA1B12-100C
	12xD	C	9.900	11.398	11.538	13.678	2.280	1	⚠ HTA1C12-100F	⚠ HTA1C12-100C
	12xD	D	9.900	11.398	11.538	13.678	2.280	1	⚠ HTA1D12-100F	⚠ HTA1D12-100C
	15xD	A	12.375	13.873	14.013	16.153	2.280	1	⚠ HTA1A15-100F	⚠ HTA1A15-100C
	15xD	B	12.375	13.873	14.013	16.153	2.280	1	⚠ HTA1B15-100F	⚠ HTA1B15-100C
	15xD	C	12.375	13.873	14.013	16.153	2.280	1	⚠ HTA1C15-100F	⚠ HTA1C15-100C
	15xD	D	12.375	13.873	14.013	16.153	2.280	1	⚠ HTA1D15-100F	⚠ HTA1D15-100C

Connection Accessories

	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
A/B	7375-IP9-1	7375N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)
C/D	739-IP9-1	739N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)

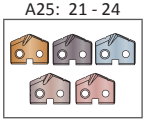
*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

1 Series Holder Diameter Range

Sub Series	1A	1B	1C	1D
Metric (mm)	17.65 mm - 24.37 mm	19.05 mm - 24.37 mm	20.60 mm - 24.37 mm	22.90 mm - 24.37 mm
Imperial (inch)	0.6947" - 0.9596"	0.7499" - 0.9596"	0.8109" - 0.9596"	0.9014" - 0.9596"

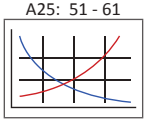
⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A25: 64** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A25: 21 - 24



Key on A25: 2

A25: 51 - 61

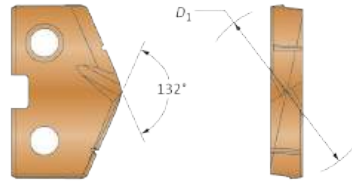


Ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

2 Series: 24.38 mm - 35.04 mm (0.9597" - 1.3797")

Replaceable Inserts

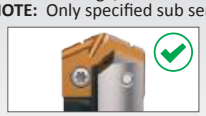




Insert				Carbide				HSS
				Part No.	Part No.	Part No.	Part No.	Part No.
Series	D_1 mm	D_1 inch	Fractional Equivalent	P	M	K	N	X
2-A	24.40	0.9606	—	TAP2-24.40	TAM2-24.40	TAK2-24.40	TAN2-24.40	TAX2-24.40
2-A	24.50	0.9646	—	TAP2-24.50	TAM2-24.50	TAK2-24.50	TAN2-24.50	TAX2-24.50
2-A	24.61	0.9689	31/32	TAP2-24.61	TAM2-24.61	TAK2-24.61	TAN2-24.61	TAX2-24.61
2-A	24.70	0.9724	—	TAP2-24.70	TAM2-24.70	TAK2-24.70	TAN2-24.70	TAX2-24.70
2-A	24.80	0.9764	—	TAP2-24.80	TAM2-24.80	TAK2-24.80	TAN2-24.80	TAX2-24.80
2-A	24.90	0.9803	—	TAP2-24.90	TAM2-24.90	TAK2-24.90	TAN2-24.90	TAX2-24.90
2-A	25.00	0.9843	63/64	TAP2-25.00	TAM2-25.00	TAK2-25.00	TAN2-25.00	TAX2-25.00
2-A	25.10	0.9882	—	TAP2-25.10	TAM2-25.10	TAK2-25.10	TAN2-25.10	TAX2-25.10
2-A	25.20	0.9921	—	TAP2-25.20	TAM2-25.20	TAK2-25.20	TAN2-25.20	TAX2-25.20
2-A	25.30	0.9961	—	TAP2-25.30	TAM2-25.30	TAK2-25.30	TAN2-25.30	TAX2-25.30
2-B	25.40	1.0000	1	TAP2-25.40	TAM2-25.40	TAK2-25.40	TAN2-25.40	TAX2-25.40
2-B	25.50	1.0039	—	TAP2-25.50	TAM2-25.50	TAK2-25.50	TAN2-25.50	TAX2-25.50
2-B	25.60	1.0079	—	TAP2-25.60	TAM2-25.60	TAK2-25.60	TAN2-25.60	TAX2-25.60
2-B	25.70	1.0118	—	TAP2-25.70	TAM2-25.70	TAK2-25.70	TAN2-25.70	TAX2-25.70
2-B	25.78	1.0150	—	TAP2-25.78	TAM2-25.78	TAK2-25.78	TAN2-25.78	TAX2-25.78
2-B	25.90	1.0197	—	TAP2-25.90	TAM2-25.90	TAK2-25.90	TAN2-25.90	TAX2-25.90
2-B	26.00	1.0236	—	TAP2-26.00	TAM2-26.00	TAK2-26.00	TAN2-26.00	TAX2-26.00
2-B	26.10	1.0276	—	TAP2-26.10	TAM2-26.10	TAK2-26.10	TAN2-26.10	TAX2-26.10
2-B	26.20	1.0315	1-1/32	TAP2-26.20	TAM2-26.20	TAK2-26.20	TAN2-26.20	TAX2-26.20
2-B	26.30	1.0354	—	TAP2-26.30	TAM2-26.30	TAK2-26.30	TAN2-26.30	TAX2-26.30
2-B	26.40	1.0394	—	TAP2-26.40	TAM2-26.40	TAK2-26.40	TAN2-26.40	TAX2-26.40
2-B	26.50	1.0433	—	TAP2-26.50	TAM2-26.50	TAK2-26.50	TAN2-26.50	TAX2-26.50
2-B	26.57	1.0461	—	TAP2-26.57	TAM2-26.57	TAK2-26.57	TAN2-26.57	TAX2-26.57
2-B	26.59	1.0469	1-3/64	TAP2-26.59	TAM2-26.59	TAK2-26.59	TAN2-26.59	TAX2-26.59
2-B	26.60	1.0472	—	TAP2-26.60	TAM2-26.60	TAK2-26.60	TAN2-26.60	TAX2-26.60
2-B	26.70	1.0512	—	TAP2-26.70	TAM2-26.70	TAK2-26.70	TAN2-26.70	TAX2-26.70
2-B	26.80	1.0551	—	TAP2-26.80	TAM2-26.80	TAK2-26.80	TAN2-26.80	TAX2-26.80
2-B	26.90	1.0591	—	TAP2-26.90	TAM2-26.90	TAK2-26.90	TAN2-26.90	TAX2-26.90
2-B	26.99	1.0626	1-1/16	TAP2-26.99	TAM2-26.99	TAK2-26.99	TAN2-26.99	TAX2-26.99
2-B	27.00	1.0630	—	TAP2-27.00	TAM2-27.00	TAK2-27.00	TAN2-27.00	TAX2-27.00

Inserts sold in multiples of 2.

Sub Series Holders (A, B, C, D) - Sub series holders are recommended when running carbide inserts toward the upper end of the series drill range, as well as in tougher applications requiring more insert support and holder strength.
NOTE: Only specified sub series inserts should be used with equivalent or smaller sub series holders.


A Series Insert + A Series Holder

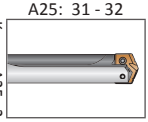

C Series Insert + A Series Holder


C Series Insert + C Series Holder

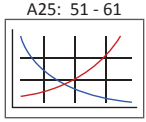

A Series Insert + C Series Holder

A25: 31 - 32

Key on A25: 2



A25: 51 - 61



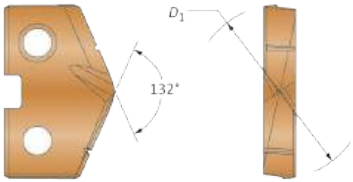
Sizes not shown are available upon request.
When ordering, please follow the example below:

Metric:	13.16 mm, steel, 0 series = use Part No. **TAP0-13.16**
Imperial:	0.5180", steel, 0 series = use Part No. **TAP0-13.16**

2 Series: 24.38 mm - 35.04 mm (0.9597" - 1.3797")

Replaceable Inserts





Insert				Carbide				HSS
				Part No.	Part No.	Part No.	Part No.	Part No.
Series	D_1 mm	D_1 inch	Fractional Equivalent	P	M	K	N	X
2-B	27.10	1.0669	—	TAP2-27.10	TAM2-27.10	TAK2-27.10	TAN2-27.10	TAX2-27.10
2-B	27.20	1.0709	—	TAP2-27.20	TAM2-27.20	TAK2-27.20	TAN2-27.20	TAX2-27.20
2-B	27.30	1.0748	—	TAP2-27.30	TAM2-27.30	TAK2-27.30	TAN2-27.30	TAX2-27.30
2-B	27.40	1.0787	—	TAP2-27.40	TAM2-27.40	TAK2-27.40	TAN2-27.40	TAX2-27.40
2-B	27.50	1.0827	—	TAP2-27.50	TAM2-27.50	TAK2-27.50	TAN2-27.50	TAX2-27.50
2-B	27.60	1.0866	—	TAP2-27.60	TAM2-27.60	TAK2-27.60	TAN2-27.60	TAX2-27.60
2-B	27.70	1.0906	—	TAP2-27.70	TAM2-27.70	TAK2-27.70	TAN2-27.70	TAX2-27.70
2-B	27.78	1.0937	1-3/32	TAP2-27.78	TAM2-27.78	TAK2-27.78	TAN2-27.78	TAX2-27.78
2-B	27.90	1.0984	—	TAP2-27.90	TAM2-27.90	TAK2-27.90	TAN2-27.90	TAX2-27.90
2-B	28.00	1.1024	—	TAP2-28.00	TAM2-28.00	TAK2-28.00	TAN2-28.00	TAX2-28.00
2-B	28.10	1.1063	—	TAP2-28.10	TAM2-28.10	TAK2-28.10	TAN2-28.10	TAX2-28.10
2-B	28.17	1.1091	1-7/64	TAP2-28.17	TAM2-28.17	TAK2-28.17	TAN2-28.17	TAX2-28.17
2-B	28.20	1.1102	—	TAP2-28.20	TAM2-28.20	TAK2-28.20	TAN2-28.20	TAX2-28.20
2-B	28.30	1.1142	—	TAP2-28.30	TAM2-28.30	TAK2-28.30	TAN2-28.30	TAX2-28.30
2-B	28.40	1.1181	—	TAP2-28.40	TAM2-28.40	TAK2-28.40	TAN2-28.40	TAX2-28.40
2-C	28.50	1.1220	—	TAP2-28.50	TAM2-28.50	TAK2-28.50	TAN2-28.50	TAX2-28.50
2-C	28.58	1.1252	1-1/8	TAP2-28.58	TAM2-28.58	TAK2-28.58	TAN2-28.58	TAX2-28.58
2-C	28.70	1.1299	—	TAP2-28.70	TAM2-28.70	TAK2-28.70	TAN2-28.70	TAX2-28.70
2-C	28.80	1.1339	—	TAP2-28.80	TAM2-28.80	TAK2-28.80	TAN2-28.80	TAX2-28.80
2-C	28.90	1.1378	—	TAP2-28.90	TAM2-28.90	TAK2-28.90	TAN2-28.90	TAX2-28.90
2-C	29.00	1.1417	—	TAP2-29.00	TAM2-29.00	TAK2-29.00	TAN2-29.00	TAX2-29.00
2-C	29.10	1.1457	—	TAP2-29.10	TAM2-29.10	TAK2-29.10	TAN2-29.10	TAX2-29.10
2-C	29.20	1.1496	—	TAP2-29.20	TAM2-29.20	TAK2-29.20	TAN2-29.20	TAX2-29.20
2-C	29.30	1.1535	—	TAP2-29.30	TAM2-29.30	TAK2-29.30	TAN2-29.30	TAX2-29.30
2-C	29.37	1.1563	1-5/32	TAP2-29.37	TAM2-29.37	TAK2-29.37	TAN2-29.37	TAX2-29.37
2-C	29.40	1.1575	—	TAP2-29.40	TAM2-29.40	TAK2-29.40	TAN2-29.40	TAX2-29.40
2-C	29.50	1.1614	—	TAP2-29.50	TAM2-29.50	TAK2-29.50	TAN2-29.50	TAX2-29.50
2-C	29.60	1.1654	—	TAP2-29.60	TAM2-29.60	TAK2-29.60	TAN2-29.60	TAX2-29.60
2-C	29.70	1.1693	—	TAP2-29.70	TAM2-29.70	TAK2-29.70	TAN2-29.70	TAX2-29.70
2-C	29.80	1.1732	—	TAP2-29.80	TAM2-29.80	TAK2-29.80	TAN2-29.80	TAX2-29.80

Inserts sold in multiples of 2.

Sub Series Holders (A, B, C, D) - Sub series holders are recommended when running carbide inserts toward the upper end of the series drill range, as well as in tougher applications requiring more insert support and holder strength.
NOTE: Only specified sub series inserts should be used with equivalent or smaller sub series holders.

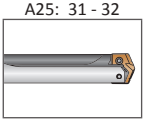

A Series Insert + A Series Holder


C Series Insert + A Series Holder

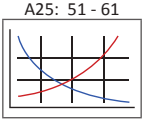

C Series Insert + C Series Holder


A Series Insert + C Series Holder

A25: 31 - 32



A25: 51 - 61



Key on A25: 2

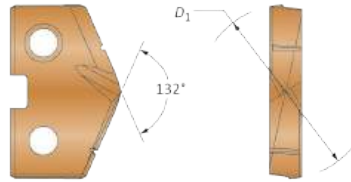
Sizes not shown are available upon request.
When ordering, please follow the example below:

Metric:	13.16 mm, steel, 0 series = use Part No. **TAP0-13.16**
Imperial:	0.5180", steel, 0 series = use Part No. **TAP0-13.16**

2 Series: 24.38 mm - 35.04 mm (0.9597" - 1.3797")

Replaceable Inserts

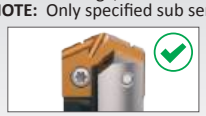




Insert				Carbide				HSS
				Part No.	Part No.	Part No.	Part No.	Part No.
Series	D_1 mm	D_1 inch	Fractional Equivalent	P	M	K	N	X
2-C	29.90	1.1772	—	TAP2-29.90	TAM2-29.90	TAK2-29.90	TAN2-29.90	TAX2-29.90
2-C	30.00	1.1811	—	TAP2-30.00	TAM2-30.00	TAK2-30.00	TAN2-30.00	TAX2-30.00
2-C	30.10	1.1850	—	TAP2-30.10	TAM2-30.10	TAK2-30.10	TAN2-30.10	TAX2-30.10
2-C	30.16	1.1874	1-3/16	TAP2-30.16	TAM2-30.16	TAK2-30.16	TAN2-30.16	TAX2-30.16
2-C	30.20	1.1890	—	TAP2-30.20	TAM2-30.20	TAK2-30.20	TAN2-30.20	TAX2-30.20
2-C	30.30	1.1929	—	TAP2-30.30	TAM2-30.30	TAK2-30.30	TAN2-30.30	TAX2-30.30
2-C	30.40	1.1969	—	TAP2-30.40	TAM2-30.40	TAK2-30.40	TAN2-30.40	TAX2-30.40
2-C	30.50	1.2008	—	TAP2-30.50	TAM2-30.50	TAK2-30.50	TAN2-30.50	TAX2-30.50
2-C	30.60	1.2047	—	TAP2-30.60	TAM2-30.60	TAK2-30.60	TAN2-30.60	TAX2-30.60
2-C	30.70	1.2087	—	TAP2-30.70	TAM2-30.70	TAK2-30.70	TAN2-30.70	TAX2-30.70
2-C	30.80	1.2126	—	TAP2-30.80	TAM2-30.80	TAK2-30.80	TAN2-30.80	TAX2-30.80
2-C	30.90	1.2165	—	TAP2-30.90	TAM2-30.90	TAK2-30.90	TAN2-30.90	TAX2-30.90
2-C	30.96	1.2189	1-7/32	TAP2-30.96	TAM2-30.96	TAK2-30.96	TAN2-30.96	TAX2-30.96
2-C	31.00	1.2205	—	TAP2-31.00	TAM2-31.00	TAK2-31.00	TAN2-31.00	TAX2-31.00
2-C	31.10	1.2244	—	TAP2-31.10	TAM2-31.10	TAK2-31.10	TAN2-31.10	TAX2-31.10
2-C	31.20	1.2283	—	TAP2-31.20	TAM2-31.20	TAK2-31.20	TAN2-31.20	TAX2-31.20
2-C	31.30	1.2323	—	TAP2-31.30	TAM2-31.30	TAK2-31.30	TAN2-31.30	TAX2-31.30
2-C	31.40	1.2362	—	TAP2-31.40	TAM2-31.40	TAK2-31.40	TAN2-31.40	TAX2-31.40
2-C	31.50	1.2402	—	TAP2-31.50	TAM2-31.50	TAK2-31.50	TAN2-31.50	TAX2-31.50
2-C	31.60	1.2441	—	TAP2-31.60	TAM2-31.60	TAK2-31.60	TAN2-31.60	TAX2-31.60
2-D	31.70	1.2480	—	TAP2-31.70	TAM2-31.70	TAK2-31.70	TAN2-31.70	TAX2-31.70
2-D	31.75	1.2500	1-1/4	TAP2-31.75	TAM2-31.75	TAK2-31.75	TAN2-31.75	TAX2-31.75
2-D	31.80	1.2520	—	TAP2-31.80	TAM2-31.80	TAK2-31.80	TAN2-31.80	TAX2-31.80
2-D	31.90	1.2559	—	TAP2-31.90	TAM2-31.90	TAK2-31.90	TAN2-31.90	TAX2-31.90
2-D	32.00	1.2598	—	TAP2-32.00	TAM2-32.00	TAK2-32.00	TAN2-32.00	TAX2-32.00
2-D	32.10	1.2638	—	TAP2-32.10	TAM2-32.10	TAK2-32.10	TAN2-32.10	TAX2-32.10
2-D	32.15	1.2657	1-17/64	TAP2-32.15	TAM2-32.15	TAK2-32.15	TAN2-32.15	TAX2-32.15
2-D	32.20	1.2677	—	TAP2-32.20	TAM2-32.20	TAK2-32.20	TAN2-32.20	TAX2-32.20
2-D	32.30	1.2717	—	TAP2-32.30	TAM2-32.30	TAK2-32.30	TAN2-32.30	TAX2-32.30
2-D	32.40	1.2756	—	TAP2-32.40	TAM2-32.40	TAK2-32.40	TAN2-32.40	TAX2-32.40

Inserts sold in multiples of 2.

Sub Series Holders (A, B, C, D) - Sub series holders are recommended when running carbide inserts toward the upper end of the series drill range, as well as in tougher applications requiring more insert support and holder strength.
NOTE: Only specified sub series inserts should be used with equivalent or smaller sub series holders.


A Series Insert + A Series Holder

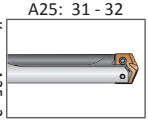

C Series Insert + A Series Holder


C Series Insert + C Series Holder

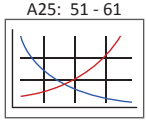

A Series Insert + C Series Holder

A25: 31 - 32

Key on A25: 2



A25: 51 - 61

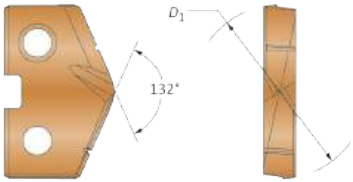


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2 Series: 24.38 mm - 35.04 mm (0.9597" - 1.3797")

Replaceable Inserts





Insert				Carbide				HSS
				Part No.	Part No.	Part No.	Part No.	Part No.
Series	D_1 mm	D_1 inch	Fractional Equivalent	P	M	K	N	X
2-D	32.50	1.2795	—	TAP2-32.50	TAM2-32.50	TAK2-32.50	TAN2-32.50	TAX2-32.50
2-D	32.55	1.2815	1-9/32	TAP2-32.55	TAM2-32.55	TAK2-32.55	TAN2-32.55	TAX2-32.55
2-D	32.60	1.2835	—	TAP2-32.60	TAM2-32.60	TAK2-32.60	TAN2-32.60	TAX2-32.60
2-D	32.70	1.2874	—	TAP2-32.70	TAM2-32.70	TAK2-32.70	TAN2-32.70	TAX2-32.70
2-D	32.80	1.2913	—	TAP2-32.80	TAM2-32.80	TAK2-32.80	TAN2-32.80	TAX2-32.80
2-D	32.90	1.2953	—	TAP2-32.90	TAM2-32.90	TAK2-32.90	TAN2-32.90	TAX2-32.90
2-D	33.00	1.2992	—	TAP2-33.00	TAM2-33.00	TAK2-33.00	TAN2-33.00	TAX2-33.00
2-D	33.10	1.3031	—	TAP2-33.10	TAM2-33.10	TAK2-33.10	TAN2-33.10	TAX2-33.10
2-D	33.20	1.3071	—	TAP2-33.20	TAM2-33.20	TAK2-33.20	TAN2-33.20	TAX2-33.20
2-D	33.30	1.3110	—	TAP2-33.30	TAM2-33.30	TAK2-33.30	TAN2-33.30	TAX2-33.30
2-D	33.34	1.3126	1-5/16	TAP2-33.34	TAM2-33.34	TAK2-33.34	TAN2-33.34	TAX2-33.34
2-D	33.40	1.3150	—	TAP2-33.40	TAM2-33.40	TAK2-33.40	TAN2-33.40	TAX2-33.40
2-D	33.50	1.3189	—	TAP2-33.50	TAM2-33.50	TAK2-33.50	TAN2-33.50	TAX2-33.50
2-D	33.60	1.3228	—	TAP2-33.60	TAM2-33.60	TAK2-33.60	TAN2-33.60	TAX2-33.60
2-D	33.70	1.3268	—	TAP2-33.70	TAM2-33.70	TAK2-33.70	TAN2-33.70	TAX2-33.70
2-D	33.80	1.3307	—	TAP2-33.80	TAM2-33.80	TAK2-33.80	TAN2-33.80	TAX2-33.80
2-D	33.90	1.3346	—	TAP2-33.90	TAM2-33.90	TAK2-33.90	TAN2-33.90	TAX2-33.90
2-D	34.00	1.3386	—	TAP2-34.00	TAM2-34.00	TAK2-34.00	TAN2-34.00	TAX2-34.00
2-D	34.10	1.3425	—	TAP2-34.10	TAM2-34.10	TAK2-34.10	TAN2-34.10	TAX2-34.10
2-D	34.13	1.3437	1-11/32	TAP2-34.13	TAM2-34.13	TAK2-34.13	TAN2-34.13	TAX2-34.13
2-D	34.20	1.3465	—	TAP2-34.20	TAM2-34.20	TAK2-34.20	TAN2-34.20	TAX2-34.20
2-D	34.30	1.3504	—	TAP2-34.30	TAM2-34.30	TAK2-34.30	TAN2-34.30	TAX2-34.30
2-D	34.40	1.3543	—	TAP2-34.40	TAM2-34.40	TAK2-34.40	TAN2-34.40	TAX2-34.40
2-D	34.50	1.3583	—	TAP2-34.50	TAM2-34.50	TAK2-34.50	TAN2-34.50	TAX2-34.50
2-D	34.60	1.3622	—	TAP2-34.60	TAM2-34.60	TAK2-34.60	TAN2-34.60	TAX2-34.60
2-D	34.70	1.3661	—	TAP2-34.70	TAM2-34.70	TAK2-34.70	TAN2-34.70	TAX2-34.70
2-D	34.80	1.3701	—	TAP2-34.80	TAM2-34.80	TAK2-34.80	TAN2-34.80	TAX2-34.80
2-D	34.90	1.3740	—	TAP2-34.90	TAM2-34.90	TAK2-34.90	TAN2-34.90	TAX2-34.90
2-D	34.93	1.3752	1-3/8	TAP2-34.93	TAM2-34.93	TAK2-34.93	TAN2-34.93	TAX2-34.93
2-D	35.00	1.3780	—	TAP2-35.00	TAM2-35.00	TAK2-35.00	TAN2-35.00	TAX2-35.00

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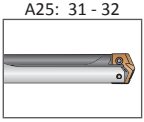

A Series Insert + A Series Holder


C Series Insert + A Series Holder

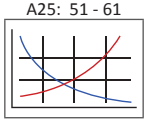

C Series Insert + C Series Holder


A Series Insert + C Series Holder

A25: 31 - 32



A25: 51 - 61



Key on A25: 2

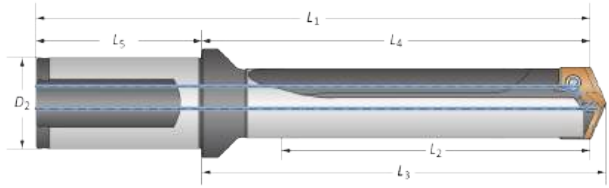
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Holders

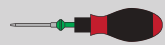




Metric Holders

	Body						Shank		Part No.	
	Length	Sub Series	L_2	L_4	L_3	L_1	L_5	D_2	With Flat	Cylindrical
m	Stub	A	29.7	75.0	78.6	135.0	60.0	32	HTA2A01-32FM	HTA2A01-32CM
	Stub	B	29.7	75.0	78.6	135.0	60.0	32	HTA2B01-32FM	HTA2B01-32CM
	Stub	C	29.7	75.0	78.6	135.0	60.0	32	HTA2C01-32FM	HTA2C01-32CM
	Stub	D	29.7	75.0	78.6	135.0	60.0	32	HTA2D01-32FM	HTA2D01-32CM
	3xD	A	89.2	137.4	141.0	197.4	60.0	32	HTA2A03-32FM	HTA2A03-32CM
	3xD	B	89.2	137.4	141.0	197.4	60.0	32	HTA2B03-32FM	HTA2B03-32CM
	3xD	C	89.2	137.4	141.0	197.4	60.0	32	HTA2C03-32FM	HTA2C03-32CM
	3xD	D	89.2	137.4	141.0	197.4	60.0	32	HTA2D03-32FM	HTA2D03-32CM
	5xD	A	148.7	196.9	200.5	256.9	60.0	32	HTA2A05-32FM	HTA2A05-32CM
	5xD	B	148.7	196.9	200.5	256.9	60.0	32	HTA2B05-32FM	HTA2B05-32CM
	5xD	C	148.7	196.9	200.5	256.9	60.0	32	HTA2C05-32FM	HTA2C05-32CM
	5xD	D	148.7	196.9	200.5	256.9	60.0	32	HTA2D05-32FM	HTA2D05-32CM
	7xD	A	208.2	256.4	260.0	316.4	60.0	32	HTA2A07-32FM	HTA2A07-32CM
	7xD	B	208.2	256.4	260.0	316.4	60.0	32	HTA2B07-32FM	HTA2B07-32CM
	7xD	C	208.2	256.4	260.0	316.4	60.0	32	HTA2C07-32FM	HTA2C07-32CM
	7xD	D	208.2	256.4	260.0	316.4	60.0	32	HTA2D07-32FM	HTA2D07-32CM
	10xD	A	297.4	345.6	349.2	405.6	60.0	32	⚠ HTA2A10-32FM	⚠ HTA2A10-32CM
	10xD	B	297.4	345.6	349.2	405.6	60.0	32	⚠ HTA2B10-32FM	⚠ HTA2B10-32CM
	10xD	C	297.4	345.6	349.2	405.6	60.0	32	⚠ HTA2C10-32FM	⚠ HTA2C10-32CM
	10xD	D	297.4	345.6	349.2	405.6	60.0	32	⚠ HTA2D10-32FM	⚠ HTA2D10-32CM
	12xD	A	356.9	405.1	408.7	465.1	60.0	32	⚠ HTA2A12-32FM	⚠ HTA2A12-32CM
	12xD	B	356.9	405.1	408.7	465.1	60.0	32	⚠ HTA2B12-32FM	⚠ HTA2B12-32CM
	12xD	C	356.9	405.1	408.7	465.1	60.0	32	⚠ HTA2C12-32FM	⚠ HTA2C12-32CM
	12xD	D	356.9	405.1	408.7	465.1	60.0	32	⚠ HTA2D12-32FM	⚠ HTA2D12-32CM
	15xD	A	446.2	494.4	497.9	554.4	60.0	32	⚠ HTA2A15-32FM	⚠ HTA2A15-32CM
	15xD	B	446.2	494.4	497.9	554.4	60.0	32	⚠ HTA2B15-32FM	⚠ HTA2B15-32CM
	15xD	C	446.2	494.4	497.9	554.4	60.0	32	⚠ HTA2C15-32FM	⚠ HTA2C15-32CM
	15xD	D	446.2	494.4	497.9	554.4	60.0	32	⚠ HTA2D15-32FM	⚠ HTA2D15-32CM

Connection Accessories

 Insert Screws	 Nylon Locking Screws	 Insert Driver	 Preset Torque Hand Driver	 Replacement Tips	Admissible Tightening Torque*
7495-IP15-1	7495N-IP15-1	8IP-15	8IP-15TL	8IP-15B	690 N-cm (61.0 in-lbs)

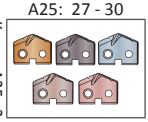
*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

2 Series Holder Diameter Range

Sub Series	2A	2B	2C	2D
Metric (mm)	24.38 mm - 35.04 mm	25.40 mm - 35.04 mm	28.50 mm - 35.04 mm	31.70 mm - 35.04 mm
Imperial (inch)	0.9597" - 1.3797"	0.9999" - 1.3797"	1.1219" - 1.3797"	1.2479" - 1.3797"

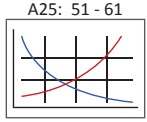
⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A25: 64** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A25: 27 - 30



Key on A25: 2

A25: 51 - 61

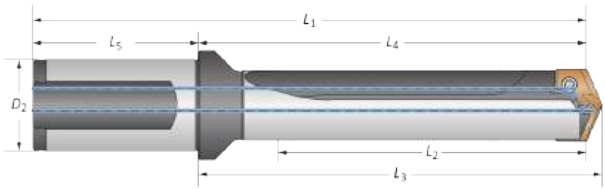


ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

2 Series: 24.38 mm - 35.04 mm (0.9597" - 1.3797")

Holders

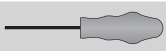
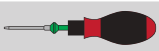




Imperial Holders

	Body						Shank		Part No.	
	Length	Sub Series	L_2	L_4	L_3	L_1	L_5	D_2	With Flat	Cylindrical
	Stub	A	1.171	2.954	3.094	5.234	2.280	1-1/4	HTA2A01-125F	HTA2A01-125C
	Stub	B	1.171	2.954	3.094	5.234	2.280	1-1/4	HTA2B01-125F	HTA2B01-125C
	Stub	C	1.171	2.954	3.094	5.234	2.280	1-1/4	HTA2C01-125F	HTA2C01-125C
	Stub	D	1.171	2.954	3.094	5.234	2.280	1-1/4	HTA2D01-125F	HTA2D01-125C
	3xD	A	3.513	5.411	5.551	7.691	2.280	1-1/4	HTA2A03-125F	HTA2A03-125C
	3xD	B	3.513	5.411	5.551	7.691	2.280	1-1/4	HTA2B03-125F	HTA2B03-125C
	3xD	C	3.513	5.411	5.551	7.691	2.280	1-1/4	HTA2C03-125F	HTA2C03-125C
	3xD	D	3.513	5.411	5.551	7.691	2.280	1-1/4	HTA2D03-125F	HTA2D03-125C
	5xD	A	5.855	7.753	7.893	10.033	2.280	1-1/4	HTA2A05-125F	HTA2A05-125C
	5xD	B	5.855	7.753	7.893	10.033	2.280	1-1/4	HTA2B05-125F	HTA2B05-125C
	5xD	C	5.855	7.753	7.893	10.033	2.280	1-1/4	HTA2C05-125F	HTA2C05-125C
	5xD	D	5.855	7.753	7.893	10.033	2.280	1-1/4	HTA2D05-125F	HTA2D05-125C
	7xD	A	8.197	10.095	10.235	12.375	2.280	1-1/4	HTA2A07-125F	HTA2A07-125C
	7xD	B	8.197	10.095	10.235	12.375	2.280	1-1/4	HTA2B07-125F	HTA2B07-125C
	7xD	C	8.197	10.095	10.235	12.375	2.280	1-1/4	HTA2C07-125F	HTA2C07-125C
	7xD	D	8.197	10.095	10.235	12.375	2.280	1-1/4	HTA2D07-125F	HTA2D07-125C
	10xD	A	11.710	13.608	13.748	15.888	2.280	1-1/4	⚠ HTA2A10-125F	⚠ HTA2A10-125C
	10xD	B	11.710	13.608	13.748	15.888	2.280	1-1/4	⚠ HTA2B10-125F	⚠ HTA2B10-125C
	10xD	C	11.710	13.608	13.748	15.888	2.280	1-1/4	⚠ HTA2C10-125F	⚠ HTA2C10-125C
	10xD	D	11.710	13.608	13.748	15.888	2.280	1-1/4	⚠ HTA2D10-125F	⚠ HTA2D10-125C
	12xD	A	14.052	15.950	16.090	18.230	2.280	1-1/4	⚠ HTA2A12-125F	⚠ HTA2A12-125C
	12xD	B	14.052	15.950	16.090	18.230	2.280	1-1/4	⚠ HTA2B12-125F	⚠ HTA2B12-125C
	12xD	C	14.052	15.950	16.090	18.230	2.280	1-1/4	⚠ HTA2C12-125F	⚠ HTA2C12-125C
	12xD	D	14.052	15.950	16.090	18.230	2.280	1-1/4	⚠ HTA2D12-125F	⚠ HTA2D12-125C
	15xD	A	17.565	19.463	19.603	21.743	2.280	1-1/4	⚠ HTA2A15-125F	⚠ HTA2A15-125C
	15xD	B	17.565	19.463	19.603	21.743	2.280	1-1/4	⚠ HTA2B15-125F	⚠ HTA2B15-125C
	15xD	C	17.565	19.463	19.603	21.743	2.280	1-1/4	⚠ HTA2C15-125F	⚠ HTA2C15-125C
	15xD	D	17.565	19.463	19.603	21.743	2.280	1-1/4	⚠ HTA2D15-125F	⚠ HTA2D15-125C

Connection Accessories

 Insert Screws	 Nylon Locking Screws	 Insert Driver	 Preset Torque Hand Driver	 Replacement Tips	Admissible Tightening Torque*
7495-IP15-1	7495N-IP15-1	8IP-15	8IP-15TL	8IP-15B	690 N-cm (61.0 in-lbs)

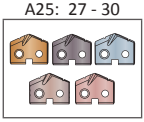
*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

2 Series Holder Diameter Range

Sub Series	2A	2B	2C	2D
Metric (mm)	24.38 mm - 35.04 mm	25.40 mm - 35.04 mm	28.50 mm - 35.04 mm	31.70 mm - 35.04 mm
Imperial (inch)	0.9597" - 1.3797"	0.9999" - 1.3797"	1.1219" - 1.3797"	1.2479" - 1.3797"

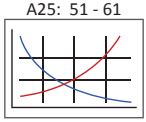
⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A25: 64** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A25: 27 - 30



Key on A25: 2

A25: 51 - 61

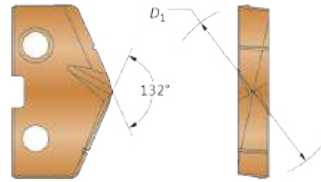


Ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

3 Series: 35.05 mm - 47.80 mm (1.3798" - 1.8820")

Replaceable Inserts

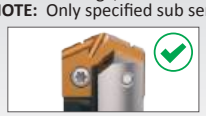




Insert				Carbide				HSS
				Part No.	Part No.	Part No.	Part No.	Part No.
Series	D_1 mm	D_1 inch	Fractional Equivalent	P	M	K	N	X
3-A	35.10	1.3819	—	TAP3-35.10	TAM3-35.10	TAK3-35.10	TAN3-35.10	TAX3-35.10
3-A	35.20	1.3858	—	TAP3-35.20	TAM3-35.20	TAK3-35.20	TAN3-35.20	TAX3-35.20
3-A	35.30	1.3898	—	TAP3-35.30	TAM3-35.30	TAK3-35.30	TAN3-35.30	TAX3-35.30
3-A	35.40	1.3937	—	TAP3-35.40	TAM3-35.40	TAK3-35.40	TAN3-35.40	TAX3-35.40
3-A	35.50	1.3976	—	TAP3-35.50	TAM3-35.50	TAK3-35.50	TAN3-35.50	TAX3-35.50
3-A	35.60	1.4016	—	TAP3-35.60	TAM3-35.60	TAK3-35.60	TAN3-35.60	TAX3-35.60
3-A	35.70	1.4055	—	TAP3-35.70	TAM3-35.70	TAK3-35.70	TAN3-35.70	TAX3-35.70
3-A	35.72	1.4063	1-13/32	TAP3-35.72	TAM3-35.72	TAK3-35.72	TAN3-35.72	TAX3-35.72
3-A	35.80	1.4094	—	TAP3-35.80	TAM3-35.80	TAK3-35.80	TAN3-35.80	TAX3-35.80
3-A	35.90	1.4134	—	TAP3-35.90	TAM3-35.90	TAK3-35.90	TAN3-35.90	TAX3-35.90
3-A	36.00	1.4173	—	TAP3-36.00	TAM3-36.00	TAK3-36.00	TAN3-36.00	TAX3-36.00
3-A	36.10	1.4213	—	TAP3-36.10	TAM3-36.10	TAK3-36.10	TAN3-36.10	TAX3-36.10
3-A	36.20	1.4252	—	TAP3-36.20	TAM3-36.20	TAK3-36.20	TAN3-36.20	TAX3-36.20
3-A	36.30	1.4291	—	TAP3-36.30	TAM3-36.30	TAK3-36.30	TAN3-36.30	TAX3-36.30
3-A	36.40	1.4331	—	TAP3-36.40	TAM3-36.40	TAK3-36.40	TAN3-36.40	TAX3-36.40
3-A	36.50	1.4370	—	TAP3-36.50	TAM3-36.50	TAK3-36.50	TAN3-36.50	TAX3-36.50
3-A	36.51	1.4374	1-7/16	TAP3-36.51	TAM3-36.51	TAK3-36.51	TAN3-36.51	TAX3-36.51
3-A	36.60	1.4409	—	TAP3-36.60	TAM3-36.60	TAK3-36.60	TAN3-36.60	TAX3-36.60
3-A	36.70	1.4449	—	TAP3-36.70	TAM3-36.70	TAK3-36.70	TAN3-36.70	TAX3-36.70
3-A	36.80	1.4488	—	TAP3-36.80	TAM3-36.80	TAK3-36.80	TAN3-36.80	TAX3-36.80
3-A	36.90	1.4528	—	TAP3-36.90	TAM3-36.90	TAK3-36.90	TAN3-36.90	TAX3-36.90
3-A	37.00	1.4567	—	TAP3-37.00	TAM3-37.00	TAK3-37.00	TAN3-37.00	TAX3-37.00
3-A	37.10	1.4606	—	TAP3-37.10	TAM3-37.10	TAK3-37.10	TAN3-37.10	TAX3-37.10
3-A	37.20	1.4646	—	TAP3-37.20	TAM3-37.20	TAK3-37.20	TAN3-37.20	TAX3-37.20

Inserts sold in multiples of 2.

Sub Series Holders (A, B, C, D) - Sub series holders are recommended when running carbide inserts toward the upper end of the series drill range, as well as in tougher applications requiring more insert support and holder strength.
NOTE: Only specified sub series inserts should be used with equivalent or smaller sub series holders.

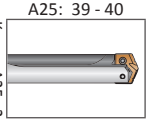

A Series Insert +
A Series Holder


C Series Insert +
A Series Holder

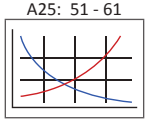

C Series Insert +
C Series Holder


A Series Insert +
C Series Holder

A25: 39 - 40


Key on A25: 2

A25: 51 - 61

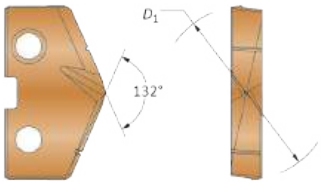


Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	13.16 mm, steel, 0 series = use Part No. **TAP0-13.16**
Imperial:	0.5180", steel, 0 series = use Part No. **TAP0-13.16**

3 Series: 35.05 mm - 47.80 mm (1.3798" - 1.8820")

Replaceable Inserts





Insert				Carbide				HSS
				Part No.	Part No.	Part No.	Part No.	Part No.
Series	D_1 mm	D_1 inch	Fractional Equivalent	P	M	K	N	X
3-A	37.30	1.4685	—	TAP3-37.30	TAM3-37.30	TAK3-37.30	TAN3-37.30	TAX3-37.30
3-A	37.31	1.4689	1-15/32	TAP3-37.31	TAM3-37.31	TAK3-37.31	TAN3-37.31	TAX3-37.31
3-A	37.40	1.4724	—	TAP3-37.40	TAM3-37.40	TAK3-37.40	TAN3-37.40	TAX3-37.40
3-A	37.50	1.4764	—	TAP3-37.50	TAM3-37.50	TAK3-37.50	TAN3-37.50	TAX3-37.50
3-A	37.60	1.4803	—	TAP3-37.60	TAM3-37.60	TAK3-37.60	TAN3-37.60	TAX3-37.60
3-A	37.70	1.4843	1-31/64	TAP3-37.70	TAM3-37.70	TAK3-37.70	TAN3-37.70	TAX3-37.70
3-B	37.80	1.4882	—	TAP3-37.80	TAM3-37.80	TAK3-37.80	TAN3-37.80	TAX3-37.80
3-B	37.90	1.4921	—	TAP3-37.90	TAM3-37.90	TAK3-37.90	TAN3-37.90	TAX3-37.90
3-B	38.00	1.4961	—	TAP3-38.00	TAM3-38.00	TAK3-38.00	TAN3-38.00	TAX3-38.00
3-B	38.10	1.5000	1-1/2	TAP3-38.10	TAM3-38.10	TAK3-38.10	TAN3-38.10	TAX3-38.10
3-B	38.20	1.5039	—	TAP3-38.20	TAM3-38.20	TAK3-38.20	TAN3-38.20	TAX3-38.20
3-B	38.30	1.5079	—	TAP3-38.30	TAM3-38.30	TAK3-38.30	TAN3-38.30	TAX3-38.30
3-B	38.40	1.5118	—	TAP3-38.40	TAM3-38.40	TAK3-38.40	TAN3-38.40	TAX3-38.40
3-B	38.50	1.5157	1-33/64	TAP3-38.50	TAM3-38.50	TAK3-38.50	TAN3-38.50	TAX3-38.50
3-B	38.60	1.5197	—	TAP3-38.60	TAM3-38.60	TAK3-38.60	TAN3-38.60	TAX3-38.60
3-B	38.70	1.5236	—	TAP3-38.70	TAM3-38.70	TAK3-38.70	TAN3-38.70	TAX3-38.70
3-B	38.80	1.5276	—	TAP3-38.80	TAM3-38.80	TAK3-38.80	TAN3-38.80	TAX3-38.80
3-B	38.89	1.5311	1-17/32	TAP3-38.89	TAM3-38.89	TAK3-38.89	TAN3-38.89	TAX3-38.89
3-B	38.90	1.5315	—	TAP3-38.90	TAM3-38.90	TAK3-38.90	TAN3-38.90	TAX3-38.90
3-B	39.00	1.5354	—	TAP3-39.00	TAM3-39.00	TAK3-39.00	TAN3-39.00	TAX3-39.00
3-B	39.10	1.5394	—	TAP3-39.10	TAM3-39.10	TAK3-39.10	TAN3-39.10	TAX3-39.10
3-B	39.20	1.5433	—	TAP3-39.20	TAM3-39.20	TAK3-39.20	TAN3-39.20	TAX3-39.20
3-B	39.29	1.5469	1-35/64	TAP3-39.29	TAM3-39.29	TAK3-39.29	TAN3-39.29	TAX3-39.29
3-B	39.30	1.5472	—	TAP3-39.30	TAM3-39.30	TAK3-39.30	TAN3-39.30	TAX3-39.30

Inserts sold in multiples of 2.

Sub Series Holders (A, B, C, D) - Sub series holders are recommended when running carbide inserts toward the upper end of the series drill range, as well as in tougher applications requiring more insert support and holder strength.
NOTE: Only specified sub series inserts should be used with equivalent or smaller sub series holders.

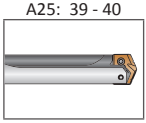

A Series Insert + A Series Holder


C Series Insert + A Series Holder


C Series Insert + C Series Holder

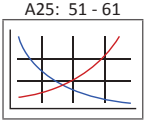

A Series Insert + C Series Holder

A25: 39 - 40



Key on A25: 2

A25: 51 - 61

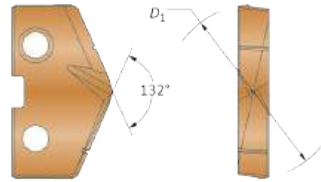


Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	13.16 mm, steel, 0 series = use Part No. **TAP0-13.16**
Imperial:	0.5180", steel, 0 series = use Part No. **TAP0-13.16**

3 Series: 35.05 mm - 47.80 mm (1.3798" - 1.8820")

Replaceable Inserts

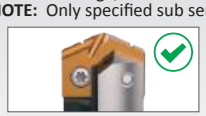




Insert				Carbide				HSS
				Part No.	Part No.	Part No.	Part No.	Part No.
Series	D_1 mm	D_1 inch	Fractional Equivalent	P	M	K	N	X
3-B	39.40	1.5512	—	TAP3-39.40	TAM3-39.40	TAK3-39.40	TAN3-39.40	TAX3-39.40
3-B	39.50	1.5551	—	TAP3-39.50	TAM3-39.50	TAK3-39.50	TAN3-39.50	TAX3-39.50
3-B	39.60	1.5591	—	TAP3-39.60	TAM3-39.60	TAK3-39.60	TAN3-39.60	TAX3-39.60
3-B	39.69	1.5626	1-9/16	TAP3-39.69	TAM3-39.69	TAK3-39.69	TAN3-39.69	TAX3-39.69
3-B	39.70	1.5630	—	TAP3-39.70	TAM3-39.70	TAK3-39.70	TAN3-39.70	TAX3-39.70
3-B	39.80	1.5669	—	TAP3-39.80	TAM3-39.80	TAK3-39.80	TAN3-39.80	TAX3-39.80
3-B	39.90	1.5709	—	TAP3-39.90	TAM3-39.90	TAK3-39.90	TAN3-39.90	TAX3-39.90
3-B	40.00	1.5748	—	TAP3-40.00	TAM3-40.00	TAK3-40.00	TAN3-40.00	TAX3-40.00
3-B	40.10	1.5787	—	TAP3-40.10	TAM3-40.10	TAK3-40.10	TAN3-40.10	TAX3-40.10
3-B	40.20	1.5827	—	TAP3-40.20	TAM3-40.20	TAK3-40.20	TAN3-40.20	TAX3-40.20
3-B	40.30	1.5866	—	TAP3-40.30	TAM3-40.30	TAK3-40.30	TAN3-40.30	TAX3-40.30
3-B	40.40	1.5906	—	TAP3-40.40	TAM3-40.40	TAK3-40.40	TAN3-40.40	TAX3-40.40
3-B	40.48	1.5937	1-19/32	TAP3-40.48	TAM3-40.48	TAK3-40.48	TAN3-40.48	TAX3-40.48
3-B	40.50	1.5945	—	TAP3-40.50	TAM3-40.50	TAK3-40.50	TAN3-40.50	TAX3-40.50
3-B	40.60	1.5984	—	TAP3-40.60	TAM3-40.60	TAK3-40.60	TAN3-40.60	TAX3-40.60
3-B	40.70	1.6024	—	TAP3-40.70	TAM3-40.70	TAK3-40.70	TAN3-40.70	TAX3-40.70
3-B	40.80	1.6063	—	TAP3-40.80	TAM3-40.80	TAK3-40.80	TAN3-40.80	TAX3-40.80
3-B	40.90	1.6102	—	TAP3-40.90	TAM3-40.90	TAK3-40.90	TAN3-40.90	TAX3-40.90
3-C	41.00	1.6142	—	TAP3-41.00	TAM3-41.00	TAK3-41.00	TAN3-41.00	TAX3-41.00
3-C	41.10	1.6181	—	TAP3-41.10	TAM3-41.10	TAK3-41.10	TAN3-41.10	TAX3-41.10
3-C	41.20	1.6220	—	TAP3-41.20	TAM3-41.20	TAK3-41.20	TAN3-41.20	TAX3-41.20
3-C	41.28	1.6252	1-5/8	TAP3-41.28	TAM3-41.28	TAK3-41.28	TAN3-41.28	TAX3-41.28
3-C	41.30	1.6260	—	TAP3-41.30	TAM3-41.30	TAK3-41.30	TAN3-41.30	TAX3-41.30
3-C	41.40	1.6299	—	TAP3-41.40	TAM3-41.40	TAK3-41.40	TAN3-41.40	TAX3-41.40

Inserts sold in multiples of 2.

Sub Series Holders (A, B, C, D) - Sub series holders are recommended when running carbide inserts toward the upper end of the series drill range, as well as in tougher applications requiring more insert support and holder strength.
NOTE: Only specified sub series inserts should be used with equivalent or smaller sub series holders.

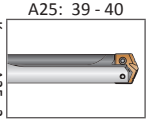

A Series Insert + A Series Holder


C Series Insert + A Series Holder


C Series Insert + C Series Holder

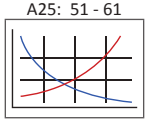

A Series Insert + C Series Holder

A25: 39 - 40



Key on A25: 2

A25: 51 - 61

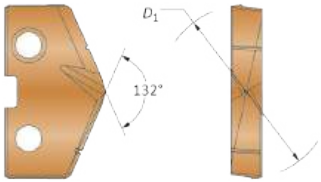


Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	13.16 mm, steel, 0 series = use Part No. **TAP0-13.16**
Imperial:	0.5180", steel, 0 series = use Part No. **TAP0-13.16**

3 Series: 35.05 mm - 47.80 mm (1.3798" - 1.8820")

Replaceable Inserts





Insert				Carbide				HSS
				Part No.	Part No.	Part No.	Part No.	Part No.
Series	D_1 mm	D_1 inch	Fractional Equivalent	P	M	K	N	X
3-C	41.50	1.6339	—	TAP3-41.50	TAM3-41.50	TAK3-41.50	TAN3-41.50	TAX3-41.50
3-C	41.60	1.6378	—	TAP3-41.60	TAM3-41.60	TAK3-41.60	TAN3-41.60	TAX3-41.60
3-C	41.70	1.6417	—	TAP3-41.70	TAM3-41.70	TAK3-41.70	TAN3-41.70	TAX3-41.70
3-C	41.80	1.6457	—	TAP3-41.80	TAM3-41.80	TAK3-41.80	TAN3-41.80	TAX3-41.80
3-C	41.90	1.6496	—	TAP3-41.90	TAM3-41.90	TAK3-41.90	TAN3-41.90	TAX3-41.90
3-C	42.00	1.6535	—	TAP3-42.00	TAM3-42.00	TAK3-42.00	TAN3-42.00	TAX3-42.00
3-C	42.07	1.6563	1-21/32	TAP3-42.07	TAM3-42.07	TAK3-42.07	TAN3-42.07	TAX3-42.07
3-C	42.10	1.6575	—	TAP3-42.10	TAM3-42.10	TAK3-42.10	TAN3-42.10	TAX3-42.10
3-C	42.20	1.6614	—	TAP3-42.20	TAM3-42.20	TAK3-42.20	TAN3-42.20	TAX3-42.20
3-C	42.30	1.6654	—	TAP3-42.30	TAM3-42.30	TAK3-42.30	TAN3-42.30	TAX3-42.30
3-C	42.40	1.6693	—	TAP3-42.40	TAM3-42.40	TAK3-42.40	TAN3-42.40	TAX3-42.40
3-C	42.50	1.6732	—	TAP3-42.50	TAM3-42.50	TAK3-42.50	TAN3-42.50	TAX3-42.50
3-C	42.60	1.6772	—	TAP3-42.60	TAM3-42.60	TAK3-42.60	TAN3-42.60	TAX3-42.60
3-C	42.70	1.6811	—	TAP3-42.70	TAM3-42.70	TAK3-42.70	TAN3-42.70	TAX3-42.70
3-C	42.80	1.6850	—	TAP3-42.80	TAM3-42.80	TAK3-42.80	TAN3-42.80	TAX3-42.80
3-C	42.86	1.6874	1-11/16	TAP3-42.86	TAM3-42.86	TAK3-42.86	TAN3-42.86	TAX3-42.86
3-C	42.90	1.6890	—	TAP3-42.90	TAM3-42.90	TAK3-42.90	TAN3-42.90	TAX3-42.90
3-C	43.00	1.6929	—	TAP3-43.00	TAM3-43.00	TAK3-43.00	TAN3-43.00	TAX3-43.00
3-C	43.10	1.6969	—	TAP3-43.10	TAM3-43.10	TAK3-43.10	TAN3-43.10	TAX3-43.10
3-C	43.20	1.7008	—	TAP3-43.20	TAM3-43.20	TAK3-43.20	TAN3-43.20	TAX3-43.20
3-C	43.30	1.7047	—	TAP3-43.30	TAM3-43.30	TAK3-43.30	TAN3-43.30	TAX3-43.30
3-C	43.40	1.7087	—	TAP3-43.40	TAM3-43.40	TAK3-43.40	TAN3-43.40	TAX3-43.40
3-C	43.50	1.7126	—	TAP3-43.50	TAM3-43.50	TAK3-43.50	TAN3-43.50	TAX3-43.50
3-C	43.60	1.7165	—	TAP3-43.60	TAM3-43.60	TAK3-43.60	TAN3-43.60	TAX3-43.60

Inserts sold in multiples of 2.

Sub Series Holders (A, B, C, D) - Sub series holders are recommended when running carbide inserts toward the upper end of the series drill range, as well as in tougher applications requiring more insert support and holder strength.
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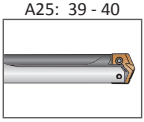

A Series Insert + A Series Holder


C Series Insert + A Series Holder

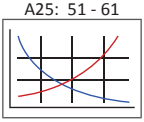

C Series Insert + C Series Holder


A Series Insert + C Series Holder

A25: 39 - 40



A25: 51 - 61



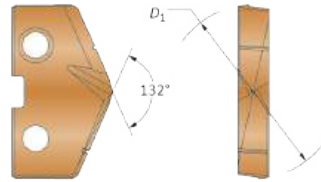
Key on A25: 2

Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	13.16 mm, steel, 0 series = use Part No. **TAP0-13.16**
Imperial:	0.5180", steel, 0 series = use Part No. **TAP0-13.16**

3 Series: 35.05 mm - 47.80 mm (1.3798" - 1.8820")

Replaceable Inserts

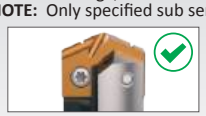




Insert				Carbide				HSS
				Part No.	Part No.	Part No.	Part No.	Part No.
Series	D_1 mm	D_1 inch	Fractional Equivalent	P	M	K	N	X
3-C	43.66	1.7189	1-23/32	TAP3-43.66	TAM3-43.66	TAK3-43.66	TAN3-43.66	TAX3-43.66
3-C	43.70	1.7205	—	TAP3-43.70	TAM3-43.70	TAK3-43.70	TAN3-43.70	TAX3-43.70
3-C	43.80	1.7244	—	TAP3-43.80	TAM3-43.80	TAK3-43.80	TAN3-43.80	TAX3-43.80
3-C	43.90	1.7283	—	TAP3-43.90	TAM3-43.90	TAK3-43.90	TAN3-43.90	TAX3-43.90
3-C	44.00	1.7323	—	TAP3-44.00	TAM3-44.00	TAK3-44.00	TAN3-44.00	TAX3-44.00
3-C	44.10	1.7362	—	TAP3-44.10	TAM3-44.10	TAK3-44.10	TAN3-44.10	TAX3-44.10
3-C	44.20	1.7402	—	TAP3-44.20	TAM3-44.20	TAK3-44.20	TAN3-44.20	TAX3-44.20
3-C	44.30	1.7441	—	TAP3-44.30	TAM3-44.30	TAK3-44.30	TAN3-44.30	TAX3-44.30
3-D	44.40	1.7480	—	TAP3-44.40	TAM3-44.40	TAK3-44.40	TAN3-44.40	TAX3-44.40
3-D	44.45	1.7500	1-3/4	TAP3-44.45	TAM3-44.45	TAK3-44.45	TAN3-44.45	TAX3-44.45
3-D	44.50	1.7520	—	TAP3-44.50	TAM3-44.50	TAK3-44.50	TAN3-44.50	TAX3-44.50
3-D	44.60	1.7559	—	TAP3-44.60	TAM3-44.60	TAK3-44.60	TAN3-44.60	TAX3-44.60
3-D	44.70	1.7598	—	TAP3-44.70	TAM3-44.70	TAK3-44.70	TAN3-44.70	TAX3-44.70
3-D	44.80	1.7638	—	TAP3-44.80	TAM3-44.80	TAK3-44.80	TAN3-44.80	TAX3-44.80
3-D	44.90	1.7677	—	TAP3-44.90	TAM3-44.90	TAK3-44.90	TAN3-44.90	TAX3-44.90
3-D	45.00	1.7717	—	TAP3-45.00	TAM3-45.00	TAK3-45.00	TAN3-45.00	TAX3-45.00
3-D	45.10	1.7756	—	TAP3-45.10	TAM3-45.10	TAK3-45.10	TAN3-45.10	TAX3-45.10
3-D	45.20	1.7795	—	TAP3-45.20	TAM3-45.20	TAK3-45.20	TAN3-45.20	TAX3-45.20
3-D	45.24	1.7811	1-25/32	TAP3-45.24	TAM3-45.24	TAK3-45.24	TAN3-45.24	TAX3-45.24
3-D	45.30	1.7835	—	TAP3-45.30	TAM3-45.30	TAK3-45.30	TAN3-45.30	TAX3-45.30
3-D	45.40	1.7874	—	TAP3-45.40	TAM3-45.40	TAK3-45.40	TAN3-45.40	TAX3-45.40
3-D	45.50	1.7913	—	TAP3-45.50	TAM3-45.50	TAK3-45.50	TAN3-45.50	TAX3-45.50
3-D	45.60	1.7953	—	TAP3-45.60	TAM3-45.60	TAK3-45.60	TAN3-45.60	TAX3-45.60
3-D	45.64	1.7969	1-51/64	TAP3-45.64	TAM3-45.64	TAK3-45.64	TAN3-45.64	TAX3-45.64

Inserts sold in multiples of 2.

Sub Series Holders (A, B, C, D) - Sub series holders are recommended when running carbide inserts toward the upper end of the series drill range, as well as in tougher applications requiring more insert support and holder strength.
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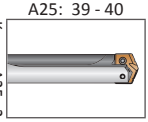

A Series Insert + A Series Holder


C Series Insert + A Series Holder


C Series Insert + C Series Holder

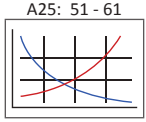

A Series Insert + C Series Holder

A25: 39 - 40



Key on A25: 2

A25: 51 - 61

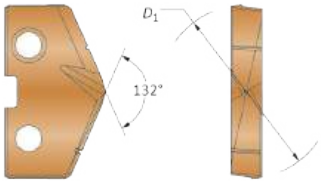


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Replaceable Inserts





Insert				Carbide				HSS
				Part No.	Part No.	Part No.	Part No.	Part No.
Series	D_1 mm	D_1 inch	Fractional Equivalent	P	M	K	N	X
3-D	45.70	1.7992	—	TAP3-45.70	TAM3-45.70	TAK3-45.70	TAN3-45.70	TAX3-45.70
3-D	45.80	1.8031	—	TAP3-45.80	TAM3-45.80	TAK3-45.80	TAN3-45.80	TAX3-45.80
3-D	45.90	1.8071	—	TAP3-45.90	TAM3-45.90	TAK3-45.90	TAN3-45.90	TAX3-45.90
3-D	46.00	1.8110	—	TAP3-46.00	TAM3-46.00	TAK3-46.00	TAN3-46.00	TAX3-46.00
3-D	46.04	1.8126	1-13/16	TAP3-46.04	TAM3-46.04	TAK3-46.04	TAN3-46.04	TAX3-46.04
3-D	46.10	1.8150	—	TAP3-46.10	TAM3-46.10	TAK3-46.10	TAN3-46.10	TAX3-46.10
3-D	46.20	1.8189	—	TAP3-46.20	TAM3-46.20	TAK3-46.20	TAN3-46.20	TAX3-46.20
3-D	46.30	1.8228	—	TAP3-46.30	TAM3-46.30	TAK3-46.30	TAN3-46.30	TAX3-46.30
3-D	46.40	1.8268	—	TAP3-46.40	TAM3-46.40	TAK3-46.40	TAN3-46.40	TAX3-46.40
3-D	46.50	1.8307	—	TAP3-46.50	TAM3-46.50	TAK3-46.50	TAN3-46.50	TAX3-46.50
3-D	46.60	1.8346	—	TAP3-46.60	TAM3-46.60	TAK3-46.60	TAN3-46.60	TAX3-46.60
3-D	46.70	1.8386	—	TAP3-46.70	TAM3-46.70	TAK3-46.70	TAN3-46.70	TAX3-46.70
3-D	46.80	1.8425	—	TAP3-46.80	TAM3-46.80	TAK3-46.80	TAN3-46.80	TAX3-46.80
3-D	46.83	1.8437	1-27/32	TAP3-46.83	TAM3-46.83	TAK3-46.83	TAN3-46.83	TAX3-46.83
3-D	46.90	1.8465	—	TAP3-46.90	TAM3-46.90	TAK3-46.90	TAN3-46.90	TAX3-46.90
3-D	47.00	1.8504	—	TAP3-47.00	TAM3-47.00	TAK3-47.00	TAN3-47.00	TAX3-47.00
3-D	47.10	1.8543	—	TAP3-47.10	TAM3-47.10	TAK3-47.10	TAN3-47.10	TAX3-47.10
3-D	47.20	1.8583	—	TAP3-47.20	TAM3-47.20	TAK3-47.20	TAN3-47.20	TAX3-47.20
3-D	47.30	1.8622	—	TAP3-47.30	TAM3-47.30	TAK3-47.30	TAN3-47.30	TAX3-47.30
3-D	47.40	1.8661	—	TAP3-47.40	TAM3-47.40	TAK3-47.40	TAN3-47.40	TAX3-47.40
3-D	47.50	1.8701	—	TAP3-47.50	TAM3-47.50	TAK3-47.50	TAN3-47.50	TAX3-47.50
3-D	47.60	1.8740	—	TAP3-47.60	TAM3-47.60	TAK3-47.60	TAN3-47.60	TAX3-47.60
3-D	47.63	1.8752	1-7/8	TAP3-47.63	TAM3-47.63	TAK3-47.63	TAN3-47.63	TAX3-47.63

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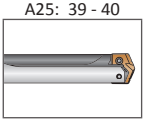

A Series Insert + A Series Holder


C Series Insert + A Series Holder

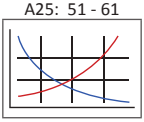

C Series Insert + C Series Holder


A Series Insert + C Series Holder

A25: 39 - 40



A25: 51 - 61



Key on A25: 2

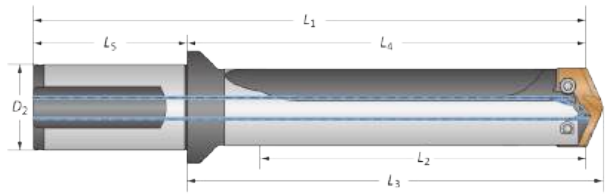
Sizes not shown are available upon request.
When ordering, please follow the example below:

Metric:	13.16 mm, steel, 0 series = use Part No. **TAP0-13.16**
Imperial:	0.5180", steel, 0 series = use Part No. **TAP0-13.16**

3 Series: 35.05 mm - 47.80 mm (1.3798" - 1.8820")

Holders





Metric Holders

	Length	Sub Series	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Part No. With Flat	Part No. Cylindrical
ⓜ	Stub	A	41.1	92.3	97.1	162.3	70.0	40	HTA3A01-40FM	HTA3A01-40CM
	Stub	B	41.1	92.3	97.1	162.3	70.0	40	HTA3B01-40FM	HTA3B01-40CM
	Stub	C	41.1	92.3	97.1	162.3	70.0	40	HTA3C01-40FM	HTA3C01-40CM
	Stub	D	41.1	92.3	97.1	162.3	70.0	40	HTA3D01-40FM	HTA3D01-40CM
	3xD	A	123.3	180.1	184.8	250.1	70.0	40	HTA3A03-40FM	HTA3A03-40CM
	3xD	B	123.3	180.1	184.8	250.1	70.0	40	HTA3B03-40FM	HTA3B03-40CM
	3xD	C	123.3	180.1	184.8	250.1	70.0	40	HTA3C03-40FM	HTA3C03-40CM
	3xD	D	123.3	180.1	184.8	250.1	70.0	40	HTA3D03-40FM	HTA3D03-40CM
	5xD	A	205.5	262.3	267.0	332.3	70.0	40	HTA3A05-40FM	HTA3A05-40CM
	5xD	B	205.5	262.3	267.0	332.3	70.0	40	HTA3B05-40FM	HTA3B05-40CM
	5xD	C	205.5	262.3	267.0	332.3	70.0	40	HTA3C05-40FM	HTA3C05-40CM
	5xD	D	205.5	262.3	267.0	332.3	70.0	40	HTA3D05-40FM	HTA3D05-40CM
	7xD	A	287.7	344.4	349.2	414.5	70.0	40	HTA3A07-40FM	HTA3A07-40CM
	7xD	B	287.7	344.4	349.2	414.5	70.0	40	HTA3B07-40FM	HTA3B07-40CM
	7xD	C	287.7	344.4	349.2	414.5	70.0	40	HTA3C07-40FM	HTA3C07-40CM
	7xD	D	287.7	344.4	349.2	414.5	70.0	40	HTA3D07-40FM	HTA3D07-40CM
	10xD	A	411.0	467.7	472.5	537.7	70.0	40	⚠ HTA3A10-40FM	⚠ HTA3A10-40CM
	10xD	B	411.0	467.7	472.5	537.7	70.0	40	⚠ HTA3B10-40FM	⚠ HTA3B10-40CM
	10xD	C	411.0	467.7	472.5	537.7	70.0	40	⚠ HTA3C10-40FM	⚠ HTA3C10-40CM
	10xD	D	411.0	467.7	472.5	537.7	70.0	40	⚠ HTA3D10-40FM	⚠ HTA3D10-40CM
	12xD	A	493.2	549.9	554.7	619.9	70.0	40	⚠ HTA3A12-40FM	⚠ HTA3A12-40CM
	12xD	B	493.2	549.9	554.7	619.9	70.0	40	⚠ HTA3B12-40FM	⚠ HTA3B12-40CM
	12xD	C	493.2	549.9	554.7	619.9	70.0	40	⚠ HTA3C12-40FM	⚠ HTA3C12-40CM
	12xD	D	493.2	549.9	554.7	619.9	70.0	40	⚠ HTA3D12-40FM	⚠ HTA3D12-40CM
	15xD	A	616.5	673.2	678.0	743.2	70.0	40	⚠ HTA3A15-40FM	⚠ HTA3A15-40CM
	15xD	B	616.5	673.2	678.0	743.2	70.0	40	⚠ HTA3B15-40FM	⚠ HTA3B15-40CM
	15xD	C	616.5	673.2	678.0	743.2	70.0	40	⚠ HTA3C15-40FM	⚠ HTA3C15-40CM
	15xD	D	616.5	673.2	678.0	743.2	70.0	40	⚠ HTA3D15-40FM	⚠ HTA3D15-40CM

Connection Accessories

 Insert Screws	 Nylon Locking Screws	 Insert Driver	Admissible Tightening Torque*
7514-IP20-1	7514N-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

3 Series Holder Diameter Range

Sub Series	3A	3B	3C	3D
Metric (mm)	35.05 mm - 47.80 mm	37.80 mm - 47.80 mm	41.00 mm - 47.80 mm	44.40 mm - 47.80 mm
Imperial (inch)	1.3798" - 1.8820"	1.4880" - 1.8820"	1.6140" - 1.8820"	1.7479" - 1.8820"

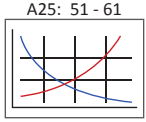
⚠ **WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A25: 64** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

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Key on A25: 2

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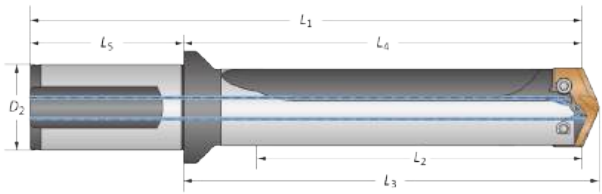


ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

3 Series: 35.05 mm - 47.80 mm (1.3798" - 1.8820")

Holders





Imperial Holders

	Body						Shank		Part No.	
	Length	Sub Series	L_2	L_4	L_3	L_1	L_5	D_2	With Flat	Cylindrical
	Stub	A	1.618	3.634	3.821	6.322	2.688	1-1/2	**HTA3A01-150F**	**HTA3A01-150C**
	Stub	B	1.618	3.634	3.821	6.322	2.688	1-1/2	**HTA3B01-150F**	**HTA3B01-150C**
	Stub	C	1.618	3.634	3.821	6.322	2.688	1-1/2	**HTA3C01-150F**	**HTA3C01-150C**
	Stub	D	1.618	3.634	3.821	6.322	2.688	1-1/2	**HTA3D01-150F**	**HTA3D01-150C**
	3xD	A	4.854	7.089	7.276	9.777	2.688	1-1/2	**HTA3A03-150F**	**HTA3A03-150C**
	3xD	B	4.854	7.089	7.276	9.777	2.688	1-1/2	**HTA3B03-150F**	**HTA3B03-150C**
	3xD	C	4.854	7.089	7.276	9.777	2.688	1-1/2	**HTA3C03-150F**	**HTA3C03-150C**
	3xD	D	4.854	7.089	7.276	9.777	2.688	1-1/2	**HTA3D03-150F**	**HTA3D03-150C**
	5xD	A	8.090	10.325	10.512	13.013	2.688	1-1/2	**HTA3A05-150F**	**HTA3A05-150C**
	5xD	B	8.090	10.325	10.512	13.013	2.688	1-1/2	**HTA3B05-150F**	**HTA3B05-150C**
	5xD	C	8.090	10.325	10.512	13.013	2.688	1-1/2	**HTA3C05-150F**	**HTA3C05-150C**
	5xD	D	8.090	10.325	10.512	13.013	2.688	1-1/2	**HTA3D05-150F**	**HTA3D05-150C**
	7xD	A	11.326	13.561	13.748	16.249	2.688	1-1/2	**HTA3A07-150F**	**HTA3A07-150C**
ⓘ	7xD	B	11.326	13.561	13.748	16.249	2.688	1-1/2	**HTA3B07-150F**	**HTA3B07-150C**
	7xD	C	11.326	13.561	13.748	16.249	2.688	1-1/2	**HTA3C07-150F**	**HTA3C07-150C**
	7xD	D	11.326	13.561	13.748	16.249	2.688	1-1/2	**HTA3D07-150F**	**HTA3D07-150C**
	10xD	A	16.180	18.415	18.602	21.103	2.688	1-1/2	⚠ **HTA3A10-150F**	⚠ **HTA3A10-150C**
	10xD	B	16.180	18.415	18.602	21.103	2.688	1-1/2	⚠ **HTA3B10-150F**	⚠ **HTA3B10-150C**
	10xD	C	16.180	18.415	18.602	21.103	2.688	1-1/2	⚠ **HTA3C10-150F**	⚠ **HTA3C10-150C**
	10xD	D	16.180	18.415	18.602	21.103	2.688	1-1/2	⚠ **HTA3D10-150F**	⚠ **HTA3D10-150C**
	12xD	A	19.416	21.651	21.838	24.339	2.688	1-1/2	⚠ **HTA3A12-150F**	⚠ **HTA3A12-150C**
	12xD	B	19.416	21.651	21.838	24.339	2.688	1-1/2	⚠ **HTA3B12-150F**	⚠ **HTA3B12-150C**
	12xD	C	19.416	21.651	21.838	24.339	2.688	1-1/2	⚠ **HTA3C12-150F**	⚠ **HTA3C12-150C**
	12xD	D	19.416	21.651	21.838	24.339	2.688	1-1/2	⚠ **HTA3D12-150F**	⚠ **HTA3D12-150C**
	15xD	A	24.270	26.505	26.692	29.193	2.688	1-1/2	⚠ **HTA3A15-150F**	⚠ **HTA3A15-150C**
	15xD	B	24.270	26.505	26.692	29.193	2.688	1-1/2	⚠ **HTA3B15-150F**	⚠ **HTA3B15-150C**
	15xD	C	24.270	26.505	26.692	29.193	2.688	1-1/2	⚠ **HTA3C15-150F**	⚠ **HTA3C15-150C**
	15xD	D	24.270	26.505	26.692	29.193	2.688	1-1/2	⚠ **HTA3D15-150F**	⚠ **HTA3D15-150C**

Connection Accessories

 Insert Screws	 Nylon Locking Screws	 Insert Driver	Admissible Tightening Torque*
7514-IP20-1	7514N-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)

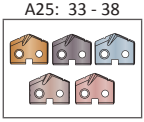
*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

3 Series Holder Diameter Range

Sub Series	3A	3B	3C	3D
Metric (mm)	35.05 mm - 47.80 mm	37.80 mm - 47.80 mm	41.00 mm - 47.80 mm	44.40 mm - 47.80 mm
Imperial (inch)	1.3798" - 1.8820"	1.4880" - 1.8820"	1.6140" - 1.8820"	1.7479" - 1.8820"

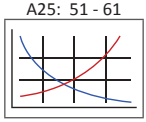
⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A25: 64** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

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Key on A25: 2

A25: 51 - 61



Ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

T-A Pro Drill Chamfer Holders

Overview & Formulas



DRILL CHAMFER HOLDERS

- Provides a 1.0 mm (0.040") x 45° (minimum) chamfer for various thread specifications.
- Chamfer/edge break the top of the hole to reduce secondary deburring.
- Flute length of the tool being a minimum 2xD offers ability to pre-drill for extended length holders from 10xD to 15xD.

CHAMFER SOLUTIONS *MADE EASY.*

Preselected diameters for standard thread sizes offer easy user selection.

1. Select your thread size from the selection guide.
2. Select insert ISO geometry based on material.
3. Select shank designation.
4. Specify chamfer size and calculate step length and Z-depth.

Unified Standard Threads

Series	Thread Size	Thread Major	Pilot Insert No.	Holder Part No.
Coarse (UNC)	7/16" - 14	11.10	TA#Y-9.50	HTAYAC45-XXXX
	1/2" - 13	12.70	TA#Y-10.80	
	9/16" - 12	14.27	TA#Z-12.20	HTAZAC45-XXXX
	5/8" - 11	15.88	TA#0-13.50	HTA0AC45-XXXX
	3/4" - 10	19.05	TA#0-16.50	HTA0CC45-XXXX
	7/8" - 9	22.23	TA#1-19.50	HTA1AC45-XXXX
	1" - 8	25.40	TA#1-22.30	HTA1CC45-XXXX
	1-1/8" - 7	28.58	TA#2-25.00	HTA2AC45-XXXX
	1-1/4" - 7	31.75	TA#2-28.20	
	1-3/8" - 6	34.93	TA#2-31.00	HTA2CC45-XXXX
	1-1/2" - 6	38.10	TA#2-34.00	
	1-3/4" - 5	44.45	TA#3-39.50	HTA3AC45-XXXX
	2" - 4.5	50.80	TA#3-45.00	HTA3CC45-XXXX

- Denotes insert ISO code (**P** (steel), **M** (stainless steel), **K** (cast iron), **N** (nonferrous), **X** (high-speed steel substrate)).

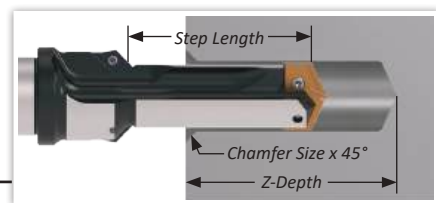
Z-Depth

Drill & Chamfer for Threads

$$\text{Z-Depth}_{(4)} = \left(\frac{\text{Thread Major } Ø - D_{1\,min}}{2}\right) + (L_5) + \text{(Chamfer Size)}$$

Drill and Chamfer for Edge Break

$$\text{Z-Depth} = \left(\frac{D_1 - D_{1\,min}}{2}\right) + (L_5) + \text{(Chamfer Size)}$$

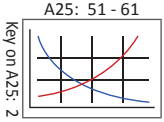


Step Length

$$\text{Step Length}_{(4)} = \left(\frac{D_1 - D_{1\,min}}{2}\right) + (L_5) - \left(\frac{D_1}{2(\tan(\text{Point Angle}/2))}\right)$$

NOTE: Standard point angle is 132°.

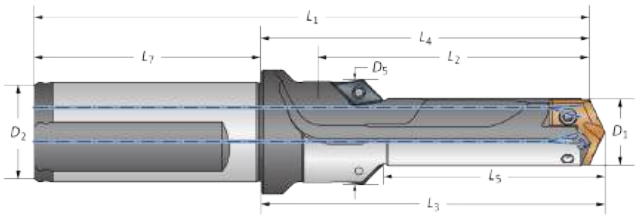
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T-A Pro Drill Chamfer Holders

Metric & Imperial Holders





	Series	Sub Series	D_1 Range Min	D_1 Range Max	Step D_5	Step L_5	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_7	Shank D_2	Part No. With Flat	Part No. Cylindrical
m	Y	A	9.50	11.09	18.7	31.8	44.6	59.3	61.3	109.3	50.0	20	HTAYAC45-20FM	HTAYAC45-20CM
	Z	A	11.10	12.69	20.3	38.1	50.0	65.1	67.1	115.1	50.0	20	HTAZAC45-20FM	HTAZAC45-20CM
	0	A	12.70	15.07	21.9	44.5	57.9	70.7	73.4	120.7	50.0	20	HTA0AC45-20FM	HTA0AC45-20CM
		C	15.08	17.64	24.3	50.8	61.9	76.3	79.0	126.3	50.0	20	HTA0CC45-20FM	HTA0CC45-20CM
	1	A	17.65	20.59	26.9	57.2	68.7	84.3	87.9	140.3	56.0	25	HTA1AC45-25FM	HTA1AC45-25CM
		C	20.60	24.37	29.9	63.5	74.4	90.0	93.6	146.1	56.0	25	HTA1CC45-25FM	HTA1CC45-25CM
	2	A	24.38	28.49	39.1	63.5	83.2	102.9	106.5	162.9	60.0	32	HTA2AC45-32FM	HTA2AC45-32CM
		C	28.50	35.04	43.2	82.6	99.8	120.3	123.9	180.3	60.0	32	HTA2CC45-32FM	HTA2CC45-32CM
	3	A	35.05	40.99	49.8	95.3	112.1	138.0	142.7	208.0	70.0	40	HTA3AC45-40FM	HTA3AC45-40CM
		C	41.00	47.80	55.7	108.0	123.7	152.0	156.7	222.0	70.0	40	HTA3CC45-40FM	HTA3CC45-40CM
i	Y	A	0.3739	0.4368	0.735	1.250	1.754	2.333	2.413	4.363	2.030	3/4	HTAYAC45-075F	HTAYAC45-075C
	Z	A	0.4369	0.4998	0.800	1.500	1.970	2.562	2.642	4.592	2.030	3/4	HTAZAC45-075F	HTAZAC45-075C
	0	A	0.4999	0.5935	0.864	1.750	2.278	2.782	2.889	4.812	2.030	3/4	HTA0AC45-075F	HTA0AC45-075C
		C	0.5936	0.6946	0.958	2.000	2.438	3.003	3.110	5.033	2.030	3/4	HTA0CC45-075F	HTA0CC45-075C
	1	A	0.6947	0.8108	1.060	2.250	2.705	3.320	3.460	5.600	2.280	1	HTA1AC45-100F	HTA1AC45-100C
		C	0.8109	0.9596	1.176	2.500	2.930	3.545	3.685	5.825	2.280	1	HTA1CC45-100F	HTA1CC45-100C
	2	A	0.9597	1.1218	1.540	2.500	3.277	4.051	4.191	6.331	2.280	1-1/4	HTA2AC45-125F	HTA2AC45-125C
		C	1.1219	1.3797	1.700	3.250	3.927	4.737	4.877	7.017	2.280	1-1/4	HTA2CC45-125F	HTA2CC45-125C
	3	A	1.3798	1.6139	1.960	3.750	4.412	5.432	5.619	8.120	2.688	1-1/2	HTA3AC45-150F	HTA3AC45-150C
		C	1.6140	1.8820	2.194	4.250	4.872	5.984	6.171	8.672	2.688	1-1/2	HTA3CC45-150F	HTA3CC45-150C

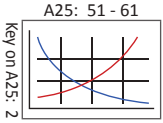
Chamfer Inserts (Wohlhaupter® 146 Geometry)

Y - 1 Series Part No.	Y - 1 Series TORX®	Y - 1 Series Driver	2 - 3 Series Part No.	2 - 3 Series TORX®	2 - 3 Series Driver	P	M	K	N	S	H
397968WHC88	115676-1	8T-8	**397591WHC88**	115673-1	8T-15	●	●	—	●	●	—
397968WHC81	115676-1	8T-8	**397591WHC81**	115673-1	8T-15	◐	—	●	—	—	●

● First Choice ◐ Second Choice

Pilot insert screws and drivers can be found on the respective series holder page.

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m = Metric (mm)
i = Imperial (in)
Screws sold in multiples of 10.

Chamfer Thread Size & Pilot Insert

Metric

Unified Standard Threads

Series	Thread Size	Thread Major	Pilot Insert No.	Holder Part No.
Coarse (UNC)	7/16" - 14	11.10	**TA#Y-9.50**	**HTAYAC45**-XXXX
	1/2" - 13	12.70	**TA#Y-10.80**	
	9/16" - 12	14.27	**TA#Z-12.20**	**HTAZAC45**-XXXX
	5/8" - 11	15.88	**TA#0-13.50**	**HTA0AC45**-XXXX
	3/4" - 10	19.05	**TA#0-16.50**	**HTA0CC45**-XXXX
	7/8" - 9	22.23	**TA#1-19.50**	**HTA1AC45**-XXXX
	1" - 8	25.40	**TA#1-22.30**	**HTA1CC45**-XXXX
	1-1/8" - 7	28.58	**TA#2-25.00**	**HTA2AC45**-XXXX
	1-1/4" - 7	31.75	**TA#2-28.20**	
	1-3/8" - 6	34.93	**TA#2-31.00**	**HTA2CC45**-XXXX
	1-1/2" - 6	38.10	**TA#2-34.00**	
	1-3/4" - 5	44.45	**TA#3-39.50**	**HTA3AC45**-XXXX
	2" - 4.5	50.80	**TA#3-45.00**	**HTA3CC45**-XXXX
Fine (UNF)	7/16" - 20	11.10	**TA#Y-9.90**	**HTAYAC45**-XXXX
	1/2" - 20	12.70	**TA#Z-11.50**	**HTAZAC45**-XXXX
	9/16" - 18	14.27	**TA#0-12.90**	**HTA0AC45**-XXXX
	5/8" - 18	15.88	**TA#0-14.50**	
	3/4" - 16	19.05	**TA#0-17.50**	**HTA0CC45**-XXXX
	7/8" - 14	22.23	**TA#1-20.50**	**HTA1AC45**-XXXX
	1" - 12	25.40	**TA#1-23.30**	**HTA1CC45**-XXXX
	1-1/8" - 12	28.58	**TA#2-26.50**	**HTA2AC45**-XXXX
	1-1/4" - 12	31.75	**TA#2-29.70**	**HTA2CC45**-XXXX
	1-3/8" - 12	34.93	**TA#2-32.90**	
	1-1/2" - 12	38.10	**TA#2-36.00**	**HTA3AC45**-XXXX
Extra Fine (UNEF)	7/16" - 28	11.10	**TA#Y-10.20**	**HTAYAC45**-XXXX
	1/2" - 28	12.70	**TA#Z-11.80**	**HTAZAC45**-XXXX
	9/16" - 24	14.27	**TA#0-13.30**	**HTA0AC45**-XXXX
	5/8" - 24	15.88	**TA#0-14.90**	
	3/4" - 20	19.05	**TA#1-17.80**	**HTA1AC45**-XXXX
	7/8" - 20	22.23	**TA#1-21.00**	**HTA1CC45**-XXXX
	1" - 20	25.40	**TA#1-24.20**	
	1-1/8" - 18	28.58	**TA#2-27.20**	**HTA2AC45**-XXXX
	1-1/4" - 18	31.75	**TA#2-30.40**	**HTA2CC45**-XXXX
	1-3/8" - 18	34.93	**TA#2-33.60**	
	1-1/2" - 18	38.10	**TA#2-36.70**	**HTA3AC45**-XXXX

ISO Metric Standard Threads

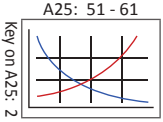
Series	Thread Size	Thread Major	Pilot Insert No.	Holder Part No.
Coarse (MC)	M11 x 1.5	11.00	**TA#Y-9.50**	**HTAYAC45**-XXXX
	M12 x 1.75	12.00	**TA#Y-10.30**	
	M14 x 2	14.00	**TA#Z-12.00**	**HTAZAC45**-XXXX
	M16 x 2	16.00	**TA#0-14.00**	**HTA0AC45**-XXXX
	M18 x 2.5	18.00	**TA#0-15.50**	**HTA0CC45**-XXXX
	M20 x 2.5	20.00	**TA#0-17.50**	
	M22 x 2.5	22.00	**TA#1-19.50**	**HTA1AC45**-XXXX
	M24 x 3	24.00	**TA#1-21.00**	**HTA1CC45**-XXXX
	M27 x 3	27.00	**TA#1-24.00**	
	M30 x 3.5	30.00	**TA#2-26.50**	**HTA2AC45**-XXXX
	M33 x 3.5	33.00	**TA#2-29.50**	**HTA2CC45**-XXXX
	M36 x 4	36.00	**TA#2-32.00**	
	M39 x 4	39.00	**TA#2-35.00**	
	M42 x 4.5	42.00	**TA#3-37.50**	**HTA3AC45**-XXXX
	M45 x 4.5	45.00	**TA#3-40.50**	
	M48 x 5	48.00	**TA#3-43.00**	**HTA3CC45**-XXXX
	M52 x 5	52.00	**TA#3-47.00**	

ISO Metric Standard Threads

Series	Thread Size	Thread Major	Pilot Insert No.	Holder Part No.
Fine (MF)	M11 x 1	11.00	**TA#Y-10.00**	**HTAYAC45**-XXXX
	M11 x 0.75	11.00	**TA#Y-10.30**	
	M12 x 1.5	12.00	**TA#Y-10.50**	
	M12 x 1.25	12.00	**TA#Y-10.80**	
	M12 x 1	12.00	**TA#Y-11.00**	
	M14 x 1.5	14.00	**TA#Z-12.50**	**HTAZAC45**-XXXX
	M14 x 1.25	14.00	**TA#0-12.80**	**HTA0AC45**-XXXX
	M14 x 1	14.00	**TA#0-13.00**	
	M16 x 1.5	16.00	**TA#0-14.50**	
	M16 x 1	16.00	**TA#0-15.00**	
	M18 x 2	18.00	**TA#0-16.00**	**HTA0CC45**-XXXX
	M18 x 1.5	18.00	**TA#0-16.50**	
	M18 x 1	18.00	**TA#0-17.00**	
	M20 x 2	20.00	**TA#1-18.00**	**HTA1AC45**-XXXX
	M20 x 1.5	20.00	**TA#1-18.50**	
	M20 x 1	20.00	**TA#1-19.00**	
	M22 x 2	22.00	**TA#1-20.00**	
	M22 x 1.5	22.00	**TA#1-20.50**	
	M22 x 1	22.00	**TA#1-21.00**	**HTA1CC45**-XXXX
	M24 x 2	24.00	**TA#1-22.00**	
	M24 x 1.5	24.00	**TA#1-22.50**	
	M24 x 1	24.00	**TA#1-23.00**	
	M27 x 2	27.00	**TA#2-25.00**	**HTA2AC45**-XXXX
	M27 x 1.5	27.00	**TA#2-25.50**	
	M27 x 1	27.00	**TA#2-26.00**	
	M30 x 3	30.00	**TA#2-27.00**	
	M30 x 2	30.00	**TA#2-28.00**	
	M30 x 1.5	30.00	**TA#2-28.50**	**HTA2CC45**-XXXX
	M30 x 1	30.00	**TA#2-29.00**	
	M33 x 3	33.00	**TA#2-30.00**	
	M33 x 2	33.00	**TA#2-31.00**	
	M33 x 1.5	33.00	**TA#2-31.50**	
	M36 x 3	36.00	**TA#2-33.00**	
	M36 x 2	36.00	**TA#2-34.00**	
	M36 x 1.5	36.00	**TA#2-34.50**	
	M39 x 3	39.00	**TA#3-36.00**	**HTA3AC45**-XXXX
	M39 x 2	39.00	**TA#3-37.00**	
	M39 x 1.5	39.00	**TA#3-37.50**	
	M42 x 4	42.00	**TA#3-38.00**	
	M42 x 3	42.00	**TA#3-39.00**	
	M42 x 2	42.00	**TA#3-40.00**	
	M42 x 1.5	42.00	**TA#3-40.50**	
	M45 x 4	45.00	**TA#3-41.00**	**HTA3CC45**-XXXX
	M45 x 3	45.00	**TA#3-42.00**	
	M45 x 2	45.00	**TA#3-43.00**	
	M45 x 1.5	45.00	**TA#3-43.50**	
	M48 x 4	48.00	**TA#3-44.00**	
	M48 x 3	48.00	**TA#3-45.00**	
	M48 x 2	48.00	**TA#3-46.00**	
	M48 x 1.5	48.00	**TA#3-46.50**	

NOTE: All diameters listed are for cutting taps and thread mills.
- Denotes insert ISO code (**P** (steel), **M** (stainless steel), **K** (cast iron), **N** (nonferrous), **X** (high-speed steel substrate)).

A25: 51 - 61



Chamfer Thread Size & Pilot Insert

Metric

American National Standard Pipe Threads

Series	Thread Size	Thread Major	Pilot Insert No.	Holder Part No.
Tapered without Reamer (NPT)	1/4" - 18	13.72	**TA#Z-11.11**	**HTAZAC45**-XXXX
	3/8" - 18	17.15	**TA#0-14.60**	**HTA0AC45**-XXXX
	1/2" - 14	21.34	**TA#1-17.90**	**HTA1AC45**-XXXX
	3/4" - 14	26.67	**TA#1-23.30**	**HTA1CC45**-XXXX
	1" - 11.5	33.40	**TA#2-29.00**	**HTA2CC45**-XXXX
	1-1/4" - 11.5	42.16	**TA#3-37.70**	**HTA3AC45**-XXXX
	1-1/2" - 11.5	48.26	**TA#3-43.70**	**HTA3CC45**-XXXX
Tapered with Reamer (NPT)	1/4" - 18	13.72	**TA#Y-10.70**	**HTAYAC45**-XXXX
	3/8" - 18	17.15	**TA#0-14.20**	**HTA0AC45**-XXXX
	1/2" - 14	21.34	**TA#0-17.50**	**HTA0CC45**-XXXX
	3/4" - 14	26.67	**TA#1-22.90**	**HTA1CC45**-XXXX
	1" - 11.5	33.40	**TA#2-28.60**	**HTA2CC45**-XXXX
	1-1/4" - 11.5	42.16	**TA#3-37.30**	**HTA3AC45**-XXXX
	1-1/2" - 11.5	48.26	**TA#3-43.30**	**HTA3CC45**-XXXX
Straight (NPS)	1/4" - 18	13.36	**TA#Z-11.50**	**HTAZAC45**-XXXX
	3/8" - 18	16.76	**TA#0-15.00**	**HTA0AC45**-XXXX
	1/2" - 14	20.90	**TA#1-18.30**	**HTA1AC45**-XXXX
	3/4" - 14	26.26	**TA#1-23.70**	**HTA1CC45**-XXXX
	1" - 11.5	32.84	**TA#2-29.40**	**HTA2CC45**-XXXX
	1-1/4" - 11.5	41.61	**TA#3-38.10**	**HTA3AC45**-XXXX
	1-1/2" - 11.5	47.68	**TA#3-44.10**	**HTA3CC45**-XXXX

British Standard Threads

Series	Thread Size	Thread Major	Pilot Insert No.	Holder Part No.
Coarse (BSW)	1/2" - 12	12.70	**TA#Y-10.50**	**HTAYAC45**-XXXX
	9/16" - 12	14.29	**TA#Z-12.00**	**HTAZAC45**-XXXX
	5/8" - 11	15.88	**TA#0-13.40**	**HTA0AC45**-XXXX
	11/16" - 11	17.46	**TA#0-14.80**	
	3/4" - 10	19.05	**TA#0-16.40**	**HTA0CC45**-XXXX
	7/8" - 9	22.23	**TA#1-19.25**	**HTA1AC45**-XXXX
	1" - 8	25.40	**TA#1-22.00**	**HTA1CC45**-XXXX
	1-1/8" - 7	28.58	**TA#2-24.70**	**HTA2AC45**-XXXX
	1-1/4" - 7	31.75	**TA#2-27.50**	
	1-3/8" - 6	34.93	**TA#2-30.00**	**HTA2CC45**-XXXX
	1-1/2" - 6	38.10	**TA#2-33.50**	
	1-3/4" - 5	44.45	**TA#3-39.00**	**HTA3AC45**-XXXX
	2" - 4.5	50.80	**TA#3-44.50**	**HTA3CC45**-XXXX
Fine (BSF)	1/2" - 16	12.70	**TA#Y-11.00**	**HTAYAC45**-XXXX
	9/16" - 16	14.29	**TA#Z-12.60**	**HTAZAC45**-XXXX
	5/8" - 14	15.88	**TA#0-14.00**	**HTA0AC45**-XXXX
	11/16" - 14	17.46	**TA#0-15.50**	**HTA0CC45**-XXXX
	3/4" - 12	19.05	**TA#0-16.80**	
	7/8" - 11	22.23	**TA#1-19.80**	**HTA1AC45**-XXXX
	1" - 10	25.40	**TA#1-22.70**	**HTA1CC45**-XXXX
	1-1/8" - 9	28.58	**TA#2-25.50**	**HTA2AC45**-XXXX
	1-1/4" - 9	31.75	**TA#2-28.50**	**HTA2CC45**-XXXX
	1-3/8" - 8	34.93	**TA#2-31.50**	
	1-1/2" - 8	38.10	**TA#2-34.50**	

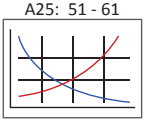
British Standard Pipe Threads

Series	Thread Size	Thread Major	Pilot Insert No.	Holder Part No.
Rc Series without Reamer (BSPT)	1/4" - 19	13.16	**TA#Y-11.00**	**HTAYAC45**-XXXX
	3/8" - 19	16.66	**TA#0-14.50**	**HTA0AC45**-XXXX
	1/2" - 14	20.99	**TA#1-18.10**	**HTA1AC45**-XXXX
	3/4" - 14	26.44	**TA#1-23.50**	**HTA1CC45**-XXXX
	1" - 11	33.25	**TA#2-29.60**	**HTA2CC45**-XXXX
	1-1/4" - 11	41.91	**TA#3-38.10**	**HTA3AC45**-XXXX
	1-1/2" - 11	47.80	**TA#3-44.00**	**HTA3CC45**-XXXX
Rc Series with Reamer (BSPT)	1/4" - 19	13.16	**TA#Y-10.60**	**HTAYAC45**-XXXX
	3/8" - 19	16.66	**TA#0-14.10**	**HTA0AC45**-XXXX
	1/2" - 14	20.99	**TA#1-17.70**	**HTA1AC45**-XXXX
	3/4" - 14	26.44	**TA#1-23.10**	**HTA1CC45**-XXXX
	1" - 11	33.25	**TA#2-29.20**	**HTA2CC45**-XXXX
	1-1/4" - 11	41.91	**TA#3-37.70**	**HTA3AC45**-XXXX
	1-1/2" - 11	47.80	**TA#3-43.60**	**HTA3CC45**-XXXX
Rp Series (BSPT)	1/4" - 19	13.16	**TA#Z-11.50**	**HTAZAC45**-XXXX
	3/8" - 19	16.66	**TA#0-15.00**	**HTA0AC45**-XXXX
	1/2" - 14	20.96	**TA#1-18.50**	**HTA1AC45**-XXXX
	5/8" - 14	21.96	**TA#1-20.50**	
	3/4" - 14	26.44	**TA#1-24.00**	**HTA1CC45**-XXXX
	1" - 11	33.25	**TA#2-30.30**	**HTA2CC45**-XXXX
	1-1/4" - 11	41.91	**TA#3-39.00**	**HTA3AC45**-XXXX
	1-1/2" - 11	47.80	**TA#3-45.00**	**HTA3CC45**-XXXX
G Series (BSPP)	1/4" - 19	13.16	**TA#Z-11.80**	**HTAZAC45**-XXXX
	3/8" - 19	16.66	**TA#0-15.25**	**HTA0CC45**-XXXX
	1/2" - 14	20.96	**TA#1-19.00**	**HTA1AC45**-XXXX
	5/8" - 14	26.44	**TA#1-21.00**	**HTA1CC45**-XXXX
	3/4" - 14	26.44	**TA#2-24.50**	**HTA2AC45**-XXXX
	7/8" - 14	31.24	**TA#2-28.20**	
	1" - 11	33.25	**TA#2-30.75**	**HTA2CC45**-XXXX
	1-1/8" - 11	34.25	**TA#3-35.50**	**HTA3AC45**-XXXX
	1-1/4" - 11	41.91	**TA#3-39.50**	
	1-3/8" - 11	42.91	**TA#3-41.90**	**HTA3CC45**-XXXX
	1-1/2" - 11	47.80	**TA#3-45.20**	

NOTE: All diameters listed are for cutting taps and thread mills.
- Denotes insert ISO code (**P** (steel), **M** (stainless steel), **K** (cast iron), **N** (nonferrous), **X** (high-speed steel substrate)).

A25: 51 - 61

Key on A25: 2



Chamfer Thread Size & Pilot Insert

Imperial

Unified Standard Threads

Series	Thread Size	Thread Major	Pilot Insert No.	Holder Part No.
Coarse (UNC)	7/16" - 14	0.4370	**TA#Y-9.50**	**HTAYAC45**-XXXX
	1/2" - 13	0.5000	**TA#Y-10.72**	
	9/16" - 12	0.5620	**TA#Z-12.30**	**HTAZAC45**-XXXX
	5/8" - 11	0.6250	**TA#0-13.49**	**HTA0AC45**-XXXX
	3/4" - 10	0.7500	**TA#0-16.67**	**HTA0CC45**-XXXX
	7/8" - 9	0.8750	**TA#1-19.45**	**HTA1AC45**-XXXX
	1" - 8	1.0000	**TA#1-22.23**	**HTA1CC45**-XXXX
	1-1/8" - 7	1.1250	**TA#2-25.00**	**HTA2AC45**-XXXX
	1-1/4" - 7	1.2500	**TA#2-28.17**	
	1-3/8" - 6	1.3750	**TA#2-30.96**	**HTA2CC45**-XXXX
	1-1/2" - 6	1.5000	**TA#2-34.13**	
	1-3/4" - 5	1.7500	**TA#3-39.29**	**HTA3AC45**-XXXX
	2" - 4.5	2.0000	**TA#3-45.24**	**HTA3CC45**-XXXX
Fine (UNF)	7/16" - 20	0.4370	**TA#Y-9.92**	**HTAYAC45**-XXXX
	1/2" - 20	0.5000	**TA#Z-11.51**	**HTAZAC45**-XXXX
	9/16" - 18	0.5620	**TA#0-12.90**	**HTA0AC45**-XXXX
	5/8" - 18	0.6250	**TA#0-14.50**	
	3/4" - 16	0.7500	**TA#0-17.46**	**HTA0CC45**-XXXX
	7/8" - 14	0.8750	**TA#1-20.50**	**HTA1AC45**-XXXX
	1" - 12	1.0000	**TA#1-23.42**	**HTA1CC45**-XXXX
	1-1/8" - 12	1.1250	**TA#2-26.59**	**HTA2AC45**-XXXX
	1-1/4" - 12	1.2500	**TA#2-29.70**	**HTA2CC45**-XXXX
	1-3/8" - 12	1.3750	**TA#2-32.90**	
	1-1/2" - 12	1.5000	**TA#2-36.00**	**HTA3AC45**-XXXX
Extra Fine (UNEF)	7/16" - 28	0.4370	**TA#Y-10.20**	**HTAYAC45**-XXXX
	1/2" - 28	0.5000	**TA#Z-11.80**	**HTAZAC45**-XXXX
	9/16" - 24	0.5620	**TA#0-13.30**	**HTA0AC45**-XXXX
	5/8" - 24	0.6250	**TA#0-14.90**	
	3/4" - 20	0.7500	**TA#1-17.86**	**HTA1AC45**-XXXX
	7/8" - 20	0.8750	**TA#1-21.00**	**HTA1CC45**-XXXX
	1" - 20	1.0000	**TA#1-24.20**	
	1-1/8" - 18	1.1250	**TA#2-27.20**	**HTA2AC45**-XXXX
	1-1/4" - 18	1.2500	**TA#2-30.40**	**HTA2CC45**-XXXX
	1-3/8" - 18	1.3750	**TA#2-33.60**	
	1-1/2" - 18	1.5000	**TA#2-36.70**	**HTA3AC45**-XXXX

ISO Metric Standard Threads

Series	Thread Size	Thread Major	Pilot Insert No.	Holder Part No.
Coarse (MC)	M11 x 1.5	0.4331	**TA#Y-9.50**	**HTAYAC45**-XXXX
	M12 x 1.75	0.4724	**TA#Y-10.30**	
	M14 x 2	0.5512	**TA#Z-12.00**	**HTAZAC45**-XXXX
	M16 x 2	0.6299	**TA#0-14.00**	**HTA0AC45**-XXXX
	M18 x 2.5	0.7087	**TA#0-15.50**	**HTA0CC45**-XXXX
	M20 x 2.5	0.7874	**TA#0-17.50**	
	M22 x 2.5	0.8661	**TA#1-19.50**	**HTA1AC45**-XXXX
	M24 x 3	0.9449	**TA#1-21.00**	**HTA1CC45**-XXXX
	M27 x 3	1.0630	**TA#1-24.00**	
	M30 x 3.5	1.1811	**TA#2-26.50**	**HTA2AC45**-XXXX
	M33 x 3.5	1.2992	**TA#2-29.50**	**HTA2CC45**-XXXX
	M36 x 4	1.4173	**TA#2-32.00**	
	M39 x 4	1.5354	**TA#2-35.00**	
	M42 x 4.5	1.6535	**TA#3-37.50**	**HTA3AC45**-XXXX
	M45 x 4.5	1.7717	**TA#3-40.50**	
	M48 x 5	1.8898	**TA#3-43.00**	**HTA3CC45**-XXXX
	M52 x 5	2.0472	**TA#3-47.00**	

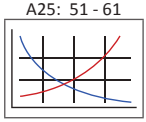
ISO Metric Standard Threads

Series	Thread Size	Thread Major	Pilot Insert No.	Holder Part No.
Fine (MF)	M11 x 1	0.4331	**TA#Y-10.00**	**HTAYAC45**-XXXX
	M11 x 0.75	0.4331	**TA#Y-10.30**	
	M12 x 1.5	0.4724	**TA#Y-10.50**	
	M12 x 1.25	0.4724	**TA#Y-10.80**	
	M12 x 1	0.4724	**TA#Y-11.00**	
	M14 x 1.5	0.5512	**TA#Z-12.50**	**HTAZAC45**-XXXX
	M14 x 1.25	0.5512	**TA#0-12.80**	**HTA0AC45**-XXXX
	M14 x 1	0.5512	**TA#0-13.00**	
	M16 x 1.5	0.6299	**TA#0-14.50**	
	M16 x 1	0.6299	**TA#0-15.00**	
	M18 x 2	0.7087	**TA#0-16.00**	**HTA0CC45**-XXXX
	M18 x 1.5	0.7087	**TA#0-16.50**	
	M18 x 1	0.7087	**TA#0-17.00**	
	M20 x 2	0.7874	**TA#1-18.00**	**HTA1AC45**-XXXX
	M20 x 1.5	0.7874	**TA#1-18.50**	
	M20 x 1	0.7874	**TA#1-19.00**	
	M22 x 2	0.8661	**TA#1-20.00**	
	M22 x 1.5	0.8661	**TA#1-20.50**	
	M22 x 1	0.8661	**TA#1-21.00**	**HTA1CC45**-XXXX
	M24 x 2	0.9449	**TA#1-22.00**	
	M24 x 1.5	0.9449	**TA#1-22.50**	
	M24 x 1	0.9449	**TA#1-23.00**	
	M27 x 2	1.0630	**TA#2-25.00**	**HTA2AC45**-XXXX
	M27 x 1.5	1.0630	**TA#2-25.50**	
	M27 x 1	1.0630	**TA#2-26.00**	
	M30 x 3	1.1811	**TA#2-27.00**	
	M30 x 2	1.1811	**TA#2-28.00**	
	M30 x 1.5	1.1811	**TA#2-28.50**	**HTA2CC45**-XXXX
	M30 x 1	1.1811	**TA#2-29.00**	
	M33 x 3	1.2992	**TA#2-30.00**	
	M33 x 2	1.2992	**TA#2-31.00**	
	M33 x 1.5	1.2992	**TA#2-31.50**	
	M36 x 3	1.4173	**TA#2-33.00**	
	M36 x 2	1.4173	**TA#2-34.00**	
	M36 x 1.5	1.4173	**TA#2-34.50**	
	M39 x 3	1.5354	**TA#3-36.00**	**HTA3AC45**-XXXX
	M39 x 2	1.5354	**TA#3-37.00**	
	M39 x 1.5	1.5354	**TA#3-37.50**	
	M42 x 4	1.6535	**TA#3-38.00**	
	M42 x 3	1.6535	**TA#3-39.00**	
	M42 x 2	1.6535	**TA#3-40.00**	
	M42 x 1.5	1.6535	**TA#3-40.50**	
	M45 x 4	1.7717	**TA#3-41.00**	**HTA3CC45**-XXXX
	M45 x 3	1.7717	**TA#3-42.00**	
	M45 x 2	1.7717	**TA#3-43.00**	
	M45 x 1.5	1.7717	**TA#3-43.50**	
	M48 x 4	1.8898	**TA#3-44.00**	
	M48 x 3	1.8898	**TA#3-45.00**	
	M48 x 2	1.8898	**TA#3-46.00**	
	M48 x 1.5	1.8898	**TA#3-46.50**	

NOTE: All diameters listed are for cutting taps and thread mills.
- Denotes insert ISO code (**P** (steel), **M** (stainless steel), **K** (cast iron), **N** (nonferrous), **X** (high-speed steel substrate)).

A25: 51 - 61

Key on A25: 2



Chamfer Thread Size & Pilot Insert

Imperial

American National Standard Pipe Threads

Series	Thread Size	Thread Major	Pilot Insert No.	Holder Part No.
Tapered without Reamer (NPT)	1/4" - 18	0.5400	**TA#Z-11.11**	**HTAZAC45**-XXXX
	3/8" - 18	0.6750	**TA#0-14.68**	**HTA0AC45**-XXXX
	1/2" - 14	0.8400	**TA#1-17.86**	**HTA1AC45**-XXXX
	3/4" - 14	1.0500	**TA#1-23.02**	**HTA1CC45**-XXXX
	1" - 11.5	1.3150	**TA#2-28.97**	**HTA2CC45**-XXXX
	1-1/4" - 11.5	1.6600	**TA#3-37.70**	**HTA3AC45**-XXXX
	1-1/2" - 11.5	1.9000	**TA#3-43.66**	**HTA3CC45**-XXXX
Tapered with Reamer (NPT)	1/4" - 18	0.5400	**TA#Y-10.72**	**HTAYAC45**-XXXX
	3/8" - 18	0.6750	**TA#0-14.29**	**HTA0AC45**-XXXX
	1/2" - 14	0.8400	**TA#0-17.46**	**HTA0CC45**-XXXX
	3/4" - 14	1.0500	**TA#1-22.62**	**HTA1CC45**-XXXX
	1" - 11.5	1.3150	**TA#2-28.58**	**HTA2CC45**-XXXX
	1-1/4" - 11.5	1.6600	**TA#3-37.31**	**HTA3AC45**-XXXX
	1-1/2" - 11.5	1.9000	**TA#3-43.26**	**HTA3CC45**-XXXX
Straight (NPS)	1/4" - 18	0.5260	**TA#Z-11.51**	**HTAZAC45**-XXXX
	3/8" - 18	0.6600	**TA#0-15.08**	**HTA0CC45**-XXXX
	1/2" - 14	0.8230	**TA#1-18.26**	**HTA1AC45**-XXXX
	3/4" - 14	1.0340	**TA#1-23.42**	**HTA1CC45**-XXXX
	1" - 11.5	1.2930	**TA#2-29.37**	**HTA2CC45**-XXXX
	1-1/4" - 11.5	1.6380	**TA#3-38.10**	**HTA3AC45**-XXXX
	1-1/2" - 11.5	1.8770	**TA#3-44.05**	**HTA3CC45**-XXXX

British Standard Threads

Series	Thread Size	Thread Major	Pilot Insert No.	Holder Part No.
Coarse (BSW)	1/2" - 12	0.5000	**TA#Y-10.32**	**HTAYAC45**-XXXX
	9/16" - 12	0.5626	**TA#Z-11.91**	**HTAZAC45**-XXXX
	5/8" - 11	0.6252	**TA#0-13.10**	**HTA0AC45**-XXXX
	11/16" - 11	0.6874	**TA#0-14.68**	
	3/4" - 10	0.7500	**TA#0-16.27**	**HTA0CC45**-XXXX
	7/8" - 9	0.8752	**TA#1-19.05**	**HTA1AC45**-XXXX
	1" - 8	1.0000	**TA#1-21.83**	**HTA1CC45**-XXXX
	1-1/8" - 7	1.1252	**TA#2-24.61**	**HTA2AC45**-XXXX
	1-1/4" - 7	1.2500	**TA#2-27.38**	
	1-3/8" - 6	1.3752	**TA#2-29.77**	**HTA2CC45**-XXXX
	1-1/2" - 6	1.5000	**TA#2-33.34**	
	1-3/4" - 5	1.7500	**TA#3-38.50**	**HTA3AC45**-XXXX
	2" - 4.5	2.0000	**TA#3-44.05**	**HTA3CC45**-XXXX
Fine (BSF)	1/2" - 16	0.5000	**TA#Z-11.11**	**HTAZAC45**-XXXX
	9/16" - 16	0.5626	**TA#0-12.70**	**HTA0AC45**-XXXX
	5/8" - 14	0.6252	**TA#0-13.89**	
	11/16" - 14	0.6874	**TA#0-15.48**	**HTA0CC45**-XXXX
	3/4" - 12	0.7500	**TA#0-16.67**	
	7/8" - 11	0.8752	**TA#1-19.45**	**HTA1AC45**-XXXX
	1" - 10	1.0000	**TA#1-22.62**	**HTA1CC45**-XXXX
	1-1/8" - 9	1.1252	**TA#2-25.40**	**HTA2AC45**-XXXX
	1-1/4" - 9	1.2500	**TA#2-28.58**	**HTA2CC45**-XXXX
	1-3/8" - 8	1.3752	**TA#2-31.35**	
	1-1/2" - 8	1.5000	**TA#2-34.58**	

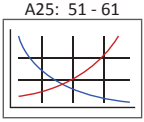
British Standard Pipe Threads

Series	Thread Size	Thread Major	Pilot Insert No.	Holder Part No.
Rc Series without Reamer (BSPT)	1/4" - 19	0.5181	**TA#Z-11.11**	**HTAZAC45**-XXXX
	3/8" - 19	0.6559	**TA#0-14.68**	**HTA0AC45**-XXXX
	1/2" - 14	0.8264	**TA#1-18.26**	**HTA1AC45**-XXXX
	3/4" - 14	1.0409	**TA#1-23.81**	**HTA1CC45**-XXXX
	1" - 11	1.3091	**TA#2-29.77**	**HTA2CC45**-XXXX
	1-1/4" - 11	1.6500	**TA#3-38.50**	**HTA3AC45**-XXXX
	1-1/2" - 11	1.8819	**TA#3-44.45**	**HTA3CC45**-XXXX
Rc Series with Reamer (BSPT)	1/4" - 19	0.5181	**TA#Y-10.72**	**HTAYAC45**-XXXX
	3/8" - 19	0.6559	**TA#0-14.29**	**HTA0AC45**-XXXX
	1/2" - 14	0.8264	**TA#1-17.86**	**HTA1AC45**-XXXX
	3/4" - 14	1.0409	**TA#1-23.42**	**HTA1CC45**-XXXX
	1" - 11	1.3091	**TA#2-29.37**	**HTA2CC45**-XXXX
	1-1/4" - 11	1.6500	**TA#3-38.10**	**HTA3AC45**-XXXX
	1-1/2" - 11	1.8819	**TA#3-44.05**	**HTA3CC45**-XXXX
Rp Series (BSPT)	1/4" - 19	0.5181	**TA#Z-11.51**	**HTAZAC45**-XXXX
	3/8" - 19	0.6559	**TA#0-15.08**	**HTA0CC45**-XXXX
	1/2" - 14	0.8252	**TA#1-19.05**	**HTA1AC45**-XXXX
	5/8" - 14	0.8646	**TA#1-20.64**	**HTA1CC45**-XXXX
	3/4" - 14	1.0409	**TA#1-21.03**	
	1" - 11	1.3091	**TA#2-30.56**	**HTA2CC45**-XXXX
	1-1/4" - 11	1.6500	**TA#3-39.29**	**HTA3AC45**-XXXX
	1-1/2" - 11	1.8819	**TA#3-45.24**	**HTA3CC45**-XXXX
G Series (BSPP)	1/4" - 19	0.5181	**TA#Z-11.51**	**HTAZAC45**-XXXX
	3/8" - 19	0.6559	**TA#0-15.08**	**HTA0CC45**-XXXX
	1/2" - 14	0.8252	**TA#1-19.05**	**HTA1AC45**-XXXX
	5/8" - 14	1.0409	**TA#1-21.03**	**HTA1CC45**-XXXX
	3/4" - 14	1.0409	**TA#2-24.61**	**HTA2AC45**-XXXX
	7/8" - 14	1.2299	**TA#2-28.17**	
	1" - 11	1.3091	**TA#2-30.56**	**HTA2CC45**-XXXX
	1-1/8" - 11	1.3484	**TA#3-35.32**	**HTA3AC45**-XXXX
	1-1/4" - 11	1.6500	**TA#3-39.29**	
	1-3/8" - 11	1.6894	**TA#3-41.67**	**HTA3CC45**-XXXX
	1-1/2" - 11	1.8819	**TA#3-45.24**	

NOTE: All diameters listed are for cutting taps and thread mills.
- Denotes insert ISO code (**P** (steel), **M** (stainless steel), **K** (cast iron), **N** (nonferrous), **X** (high-speed steel substrate)).

A25: 51 - 61

Key on A25: 2



T-A Pro Form Inserts

Countersink Specs

T-A Pro Drill Form Inserts

TA	C	F	0	–	90DEG
	Insert Substrate	Style	Series		Form Type
	C = Carbide **X** = High-speed steel (cobalt)	**F** = Form Insert	**Y** **Z** **0** **1** **2** **3**		**82DEG** = 82° form angle **90DEG** = 90° form angle **100DEG** = 100° form angle

Metric Screw Countersinks

		Insert		Metric Screw Sizes										
A_1 (Form)	Series	D_2 - D_1 mm	D_2 - D_1 inch	M3	M4	M5	M6	M8	M10	M12	M14	M16	M20	M24
90°	Y	3.05 - 11.09	0.1200 - 0.4368	■	■	■								
	Z	3.05 - 12.69	0.1200 - 0.4998	■	■	■	■							
	0	6.22 - 17.64	0.2450 - 0.6946				■	■						
	1	10.29 - 24.37	0.4050 - 0.9596						■					
	2	12.70 - 35.04	0.5000 - 1.3797							■	■	■		
	3	15.88 - 47.80	0.6250 - 1.8820									■	■	■

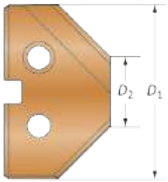
Imperial Screw Countersinks

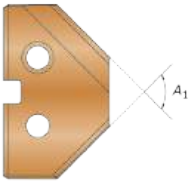
		Insert		Imperial Screw Sizes											
A_1 (Form)	Series	D_2 - D_1 mm	D_2 - D_1 inch	#6	#8	#10	#12	1/4"	5/16"	3/8"	7/16"	1/2"	9/16"	5/8"	3/4"	7/8"
82°	Y	3.43 - 11.09	0.1350 - 0.4368	■	■	■										
	Z	3.43 - 12.69	0.1350 - 0.4998	■	■	■	■									
	0	6.22 - 17.64	0.2450 - 0.6946					■	■							
	1	9.53 - 24.37	0.3750 - 0.9596							■	■	■				
	2	14.22 - 35.04	0.5600 - 1.3797										■	■		
	3	15.88 - 47.80	0.6250 - 1.8820											■	■	■
100°	Y	3.30 - 11.09	0.1300 - 0.4368	■	■	■										
	Z	3.30 - 12.69	0.1300 - 0.4998	■	■	■										
	0	6.10 - 17.64	0.2400 - 0.6946					■	■							
	1	8.89 - 24.37	0.3500 - 0.9596							■	■					
	2	12.70 - 35.04	0.5000 - 1.3797									■	■	■		
	3	15.88 - 47.80	0.6250 - 1.8820											■	■	■

T-A Pro Form Inserts

Countersink and Chamfer Inserts







Countersink and Chamfer Form Inserts

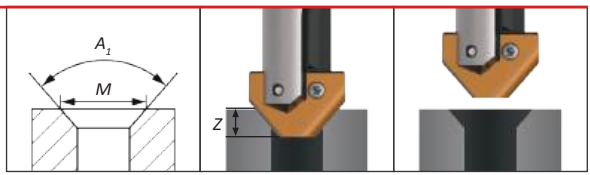
Insert					Part No.		
A_1 (Form)			D_2 - D_1		Carbide	HSS	Stub Holders*
Countersink	Chamfer	Series	mm	inch	AM300®	AM200®	Part No.
82°	—	Y	3.43 - 11.09	0.1350 - 0.4368	TACFY-82DEG	TAXFY-82DEG	HTAYx01-xxxx
		Z	3.43 - 12.69	0.1350 - 0.4998	TACFZ-82DEG	TAXFZ-82DEG	HTAZx01-xxxx
		0	6.22 - 17.64	0.2450 - 0.6946	TACF0-82DEG	TAXF0-82DEG	HTA0x01-xxxx
		1	9.53 - 24.37	0.3750 - 0.9596	TACF1-82DEG	TAXF1-82DEG	HTA1x01-xxxx
		2	14.22 - 35.04	0.5600 - 1.3797	TACF2-82DEG	TAXF2-82DEG	HTA2x01-xxxx
		3	15.88 - 47.80	0.6250 - 1.8820	TACF3-82DEG	TAXF3-82DEG	HTA3x01-xxxx
90°	2x45°	Y	3.05 - 11.09	0.1200 - 0.4368	TACFY-90DEG	TAXFY-90DEG	HTAYx01-xxxx
		Z	3.05 - 12.69	0.1200 - 0.4998	TACFZ-90DEG	TAXFZ-90DEG	HTAZx01-xxxx
		0	6.22 - 17.64	0.2450 - 0.6946	TACF0-90DEG	TAXF0-90DEG	HTA0x01-xxxx
		1	10.29 - 24.37	0.4050 - 0.9596	TACF1-90DEG	TAXF1-90DEG	HTA1x01-xxxx
		2	12.70 - 35.04	0.5000 - 1.3797	TACF2-90DEG	TAXF2-90DEG	HTA2x01-xxxx
		3	15.88 - 47.80	0.6250 - 1.8820	TACF3-90DEG	TAXF3-90DEG	HTA3x01-xxxx
100°	—	Y	3.30 - 11.09	0.1300 - 0.4368	TACFY-100DEG	TAXFY-100DEG	HTAYx01-xxxx
		Z	3.30 - 12.69	0.1300 - 0.4998	TACFZ-100DEG	TAXFZ-100DEG	HTAZx01-xxxx
		0	6.10 - 17.64	0.2400 - 0.6946	TACF0-100DEG	TAXF0-100DEG	HTA0x01-xxxx
		1	8.89 - 24.37	0.3500 - 0.9596	TACF1-100DEG	TAXF1-100DEG	HTA1x01-xxxx
		2	12.70 - 35.04	0.5000 - 1.3797	TACF2-100DEG	TAXF2-100DEG	HTA2x01-xxxx
		3	15.88 - 47.80	0.6250 - 1.8820	TACF3-100DEG	TAXF3-100DEG	HTA3x01-xxxx

NOTE: Only for use with stub holders.
*See holder nomenclature on page A25: 8 for holder body diameters (x) and shanks (xxxx).
Series Y-2: inserts sold in multiples of 2. | Series 3: inserts sold in multiples of 1.

Countersink (82°, 90°, and 100°)

$$\text{Z Depth } (Z) = \left(\frac{M - D_2}{2 \cdot (\tan(A_1 / 2))}\right)$$

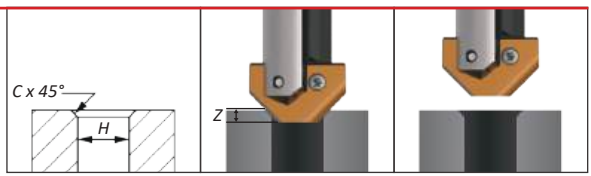
M = Desired major diameter
D_2 = Insert diameter at touch off flat
A_1 = Included angle of insert



Chamfer (90°)

$$\text{Z Depth } (Z) = \left(\frac{(H + (2 \cdot C)) - D_2}{2}\right)$$

H = Existing hole diameter
C = Radial chamfer size
D_2 = Insert diameter at touch off flat



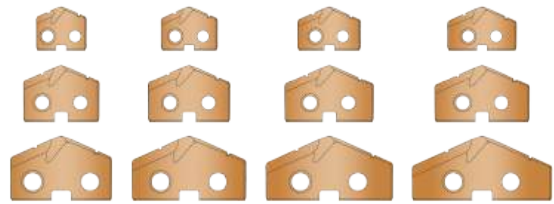
A25: 55 A25: 61

Key on A25: 2

T-A Pro Kits: 12.70 mm - 35.04 mm (0.4999" - 1.3797")

Inserts





Metric Insert Kit

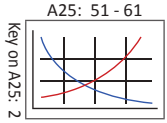
	Series	Diameter mm	Diameter inch	Diameter Fractional	Qty	TAP-MET-KIT P	TAM-MET-KIT M	TAK-MET-KIT K	TAN-MET-KIT N	TAX-MET-KIT X
	0-A	13.00	0.5118	—	2	TAP0-13.00	TAM0-13.00	TAK0-13.00	TAN0-13.00	TAX0-13.00
	0-B	14.00	0.5512	—	2	TAP0-14.00	TAM0-14.00	TAK0-14.00	TAN0-14.00	TAX0-14.00
	0-C	16.00	0.6299	—	2	TAP0-16.00	TAM0-16.00	TAK0-16.00	TAN0-16.00	TAX0-16.00
	0-D	17.50	0.6890	—	2	TAP0-17.50	TAM0-17.50	TAK0-17.50	TAN0-17.50	TAX0-17.50
	1-A	18.00	0.7087	—	2	TAP1-18.00	TAM1-18.00	TAK1-18.00	TAN1-18.00	TAX1-18.00
ⓜ	1-B	20.00	0.7874	—	2	TAP1-20.00	TAM1-20.00	TAK1-20.00	TAN1-20.00	TAX1-20.00
	1-C	22.00	0.8661	—	2	TAP1-22.00	TAM1-22.00	TAK1-22.00	TAN1-22.00	TAX1-22.00
	1-D	24.00	0.9449	—	2	TAP1-24.00	TAM1-24.00	TAK1-24.00	TAN1-24.00	TAX1-24.00
	2-A	25.00	0.9843	63/64	2	TAP2-25.00	TAM2-25.00	TAK2-25.00	TAN2-25.00	TAX2-25.00
	2-C	30.00	1.1811	—	2	TAP2-30.00	TAM2-30.00	TAK2-30.00	TAN2-30.00	TAX2-30.00
	2-D	32.00	1.2598	—	2	TAP2-32.00	TAM2-32.00	TAK2-32.00	TAN2-32.00	TAX2-32.00
	2-D	35.00	1.3780	—	2	TAP2-35.00	TAM2-35.00	TAK2-35.00	TAN2-35.00	TAX2-35.00

Imperial Insert Kit

	Series	Diameter mm	Diameter inch	Diameter Fractional	Qty	TAP-IMP-KIT P	TAM-IMP-KIT M	TAK-IMP-KIT K	TAN-IMP-KIT N	TAX-IMP-KIT X
	0-A	12.70	0.5000	1/2	2	TAP0-12.70	TAM0-12.70	TAK0-12.70	TAN0-12.70	TAX0-12.70
	0-B	14.29	0.5626	9/16	2	TAP0-14.29	TAM0-14.29	TAK0-14.29	TAN0-14.29	TAX0-14.29
	0-C	15.88	0.6252	5/8	2	TAP0-15.88	TAM0-15.88	TAK0-15.88	TAN0-15.88	TAX0-15.88
	0-D	17.46	0.6874	11/16	2	TAP0-17.46	TAM0-17.46	TAK0-17.46	TAN0-17.46	TAX0-17.46
	1-B	19.05	0.7500	3/4	2	TAP1-19.05	TAM1-19.05	TAK1-19.05	TAN1-19.05	TAX1-19.05
ⓘ	1-C	20.64	0.8126	13/16	2	TAP1-20.64	TAM1-20.64	TAK1-20.64	TAN1-20.64	TAX1-20.64
	1-C	22.23	0.8752	7/8	2	TAP1-22.23	TAM1-22.23	TAK1-22.23	TAN1-22.23	TAX1-22.23
	1-D	23.81	0.9374	15/16	2	TAP1-23.81	TAM1-23.81	TAK1-23.81	TAN1-23.81	TAX1-23.81
	2-B	25.40	1.0000	1	2	TAP2-25.40	TAM2-25.40	TAK2-25.40	TAN2-25.40	TAX2-25.40
	2-C	28.58	1.1252	1-1/8	2	TAP2-28.58	TAM2-28.58	TAK2-28.58	TAN2-28.58	TAX2-28.58
	2-D	31.75	1.2500	1-1/4	2	TAP2-31.75	TAM2-31.75	TAK2-31.75	TAN2-31.75	TAX2-31.75
	2-D	34.93	1.3752	1-3/8	2	TAP2-34.93	TAM2-34.93	TAK2-34.93	TAN2-34.93	TAX2-34.93

T-A PRO MATERIAL LIBRARY: SEE IT IN ACTION.

A25: 51 - 61

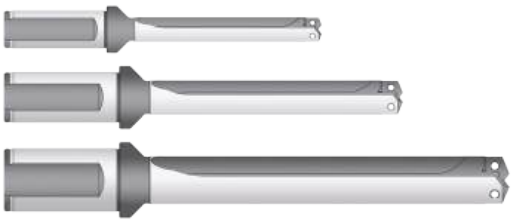


ⓜ = Metric (mm)
ⓘ = Imperial (in)

T-A Pro Kits: 12.70 mm - 35.04 mm (0.4999" - 1.3797")

Holders





Metric 3xD Holder Kits

	Series	Length	Drill Depth	Shank Diameter	Qty	HTA03FM-KIT Flanged with flat	HTA03CM-KIT Cylindrical (no flat)
	0-A	3xD	45.9	20	1	HTA0A03-20FM	HTA0A03-20CM
m	1-A	3xD	62.9	25	1	HTA1A03-25FM	HTA1A03-25CM
	2-A	3xD	89.2	32	1	HTA2A03-32FM	HTA2A03-32CM

Metric 5xD Holder Kits

	Series	Length	Drill Depth	Shank Diameter	Qty	HTA05FM-KIT Flanged with flat	HTA05CM-KIT Cylindrical (no flat)
	0-A	5xD	76.6	20	1	HTA0A05-20FM	HTA0A05-20CM
m	1-A	5xD	104.8	25	1	HTA1A05-25FM	HTA1A05-25CM
	2-A	5xD	148.7	32	1	HTA2A05-32FM	HTA2A05-32CM

Imperial 3xD Holder Kits

	Series	Length	Drill Depth	Shank Diameter	Qty	HTA03F-KIT Flanged with flat	HTA03C-KIT Cylindrical (no flat)
	0-A	3xD	1.809	0.750	1	HTA0A03-075F	HTA0A03-075C
i	1-A	3xD	2.475	1.000	1	HTA1A03-100F	HTA1A03-100C
	2-A	3xD	3.513	1.250	1	HTA2A03-125F	HTA2A03-125C

Imperial 5xD Holder Kits

	Series	Length	Drill Depth	Shank Diameter	Qty	HTA05F-KIT Flanged with flat	HTA05C-KIT Cylindrical (no flat)
	0-A	5xD	3.015	0.750	1	HTA0A05-075F	HTA0A05-075C
i	1-A	5xD	4.125	1.000	1	HTA1A05-100F	HTA1A05-100C
	2-A	5xD	5.855	1.250	1	HTA2A05-125F	HTA2A05-125C

A25: 51 - 61

Key on A25: 2

m = Metric (mm)
i = Imperial (in)

Recommended Drilling Data | Metric (mm)

T-A PRO | HIGH-SPEED STEEL

ISO	Material	Hardness (BHN)	Insert Grade	Speed (m/min)	Feed Rate (mm/rev) by Diameter				
					Y / Z Series	0 Series	1 Series	2 Series	3 Series
					9.50 mm - 12.69 mm	12.70 mm - 17.64 mm	17.65 mm - 24.37 mm	24.38 mm - 35.04 mm	35.05 mm - 47.80 mm
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 150	X	105	0.15	0.25	0.33	0.41	0.51
		150 - 200	X	100	0.15	0.25	0.33	0.41	0.51
		200 - 250	X	90	0.13	0.25	0.33	0.41	0.51
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	X	95	0.15 ❖	0.23	0.30	0.38	0.48
		125 - 175	X	90	0.13 ❖	0.23	0.30	0.38	0.48
		175 - 225	X	85	0.13 ❖	0.20	0.25	0.36	0.46
		225 - 275	X	80	0.13 ❖	0.20	0.25	0.36	0.46
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	X	90	0.15	0.23	0.30	0.38	0.48
		175 - 225	X	85	0.13	0.20	0.25	0.36	0.46
		225 - 275	X	80	0.13	0.20	0.25	0.36	0.46
		275 - 325	X	70	0.10	0.18	0.23	0.30	0.41
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	X	75	0.15	0.23	0.30	0.36	0.43
		175 - 225	X	70	0.13	0.20	0.28	0.36	0.43
		225 - 275	X	65	0.13	0.20	0.28	0.36	0.43
		275 - 325	X	60	0.10	0.18	0.25	0.30	0.38
		325 - 375	X	60	0.08	0.18	0.25	0.30	0.38
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	X	40	0.10	0.18	0.25	0.33	0.38
		300 - 350	X	35	0.08	0.15	0.23	0.30	0.36
		350 - 400	X	25	0.08	0.15	0.20	0.28	0.33
	Structural Steel A36, A285, A516, etc.	100 - 150	X	75	0.15 ❖	0.25	0.30	0.36	0.46
		150 - 250	X	65	0.13 ❖	0.23	0.25	0.30	0.41
		250 - 350	X	55	0.10 ❖	0.20	0.23	0.25	0.36
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	X	45	0.10	0.15	0.20	0.25	0.30
		200 - 250	X	35	0.10	0.15	0.20	0.25	0.30
M	**Stainless Steel 400 Series** 416, 420, etc.	185 - 275	X	40	0.13 ❖	0.25	0.28	0.30	0.33
		275 - 350	X	35	0.10 ❖	0.23	0.25	0.28	0.30
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	X	40	0.13 ❖	0.18	0.20	0.23	0.30
		185 - 275	X	35	0.10 ❖	0.15	0.18	0.20	0.28
	PH Stainless 17-4, 13-8, 15-5	275 - 350	X	30	0.08 ❖	0.10	0.15	0.20	0.25
		350 - 425	X	25	0.08 ❖	0.10	0.15	0.20	0.25
	Super Duplex Stainless Steel	135 - 185	X	40	0.13 ❖	0.13	0.15	0.15	0.18
		185 - 275	X	35	0.10 ❖	0.13	0.13	0.15	0.15

❖ Contact our Application Engineering department for assistance when machining these materials.

7xD and 10xD Adjustment Example (0.80 Adjustment)

Data • Adjustment Value	Speed/Feed (7xD)
100 m/min • 0.80	= 80 m/min
0.2 mm/rev • 0.80	= 0.16 mm/rev

12xD and 15xD Adjustment Example (0.70 Adjustment)

Speed • Adjustment Value	Speed/Feed (12xD)
100 m/min • 0.70	= 70 m/min
0.2 mm/rev • 0.70	= 0.14 mm/rev

Coolant Recommendations

Series	Stub, 3xD, 5xD		7xD, 10xD		12xD, 15xD	
	Pressure BAR	Flow Rate LPM	Pressure BAR	Flow Rate LPM	Pressure BAR	Flow Rate LPM
Y	31	15	34	55	45	30
Z	31	15	34	22	45	30
0	24	22	31	34	34	45
1	21	30	27	38	34	45
2	17	38	24	49	31	60
3	14	45	21	53	27	68

⚠ WARNING **Tool failure can cause serious injury. To prevent:**
- When using holders without support bushing, use a short T-A Pro holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the coolant recommendation chart for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. For 7xD, 10xD, 12xD, and 15xD holder lengths, see adjustment example above.

Recommended Drilling Data | Metric (mm)

T-A PRO | HIGH-SPEED STEEL

ISO	Material	Hardness (BHN)	Insert Grade	Speed (m/min)	Feed Rate (mm/rev) by Diameter				
					Y / Z Series 9.50 mm - 12.69 mm	0 Series 12.70 mm - 17.64 mm	1 Series 17.65 mm - 24.37 mm	2 Series 24.38 mm - 35.04 mm	3 Series 35.05 mm - 47.80 mm
K	SG / Nodular Cast Iron	120 - 150	X	90	0.18	0.30	0.41	0.51	0.61
		150 - 200	X	85	0.15	0.28	0.36	0.46	0.56
		200 - 220	X	75	0.15	0.23	0.30	0.41	0.46
		220 - 260	X	65	0.13	0.18	0.23	0.30	0.36
		260 - 320	X	55	0.10	0.15	0.18	0.23	0.30
N	Cast Aluminum	30	X	185	0.20	0.33	0.41	0.51	0.56
		180	X	90	0.20	0.33	0.41	0.46	0.56
	Wrought Aluminum	30	X	275	0.23	0.33	0.43	0.51	0.61
		180	X	185	0.13	0.18	0.25	0.33	0.41
	Aluminum Bronze	100 - 200	X	90	0.15	0.28	0.36	0.46	0.56
		200 - 250	X	75	0.13	0.18	0.23	0.30	0.36
	Brass	100	X	150	0.18	0.30	0.41	0.51	0.61
m	Copper	60	X	100	0.05	0.08	0.15	0.20	0.25
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 220	X	15	0.08 ❖	0.18	0.20	0.25	0.30
		220 - 310	X	10	0.08 ❖	0.15	0.18	0.20	0.25
	Titanium Alloy	140 - 220	X	20	0.08	0.18	0.20	0.25	0.30
		220 - 310	X	15	0.08	0.15	0.18	0.20	0.25
	Aerospace Alloy S82	185 - 275	X	40	0.13	0.20	0.23	0.25	0.36
		275 - 350	X	35	0.10	0.18	0.20	0.20	0.30
H	Wear Plate Hardox®, AR400, T-1, etc.	400	X	20	0.08	0.15	0.20	0.23	0.30
		500	X	15	0.05	0.13	0.18	0.20	0.25
		600	—	—	—	—	—	—	—
	Hardened Steel	300 - 400	X	25	0.08	0.15	0.20	0.23	0.30
		400 - 500	X	15	0.05	0.13	0.18	0.20	0.25

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7xD and 10xD Adjustment Example (0.80 Adjustment)

Data • Adjustment Value	Speed/Feed (7xD)
100 m/min • 0.80	= 80 m/min
0.2 mm/rev • 0.80	= 0.16 mm/rev

12xD and 15xD Adjustment Example (0.70 Adjustment)

Speed • Adjustment Value	Speed/Feed (12xD)
100 m/min • 0.70	= 70 m/min
0.2 mm/rev • 0.70	= 0.14 mm/rev

Coolant Recommendations

Series	Stub, 3xD, 5xD Pressure BAR	Stub, 3xD, 5xD Flow Rate LPM	7xD, 10xD Pressure BAR	7xD, 10xD Flow Rate LPM	12xD, 15xD Pressure BAR	12xD, 15xD Flow Rate LPM
Y	31	15	34	55	45	30
Z	31	15	34	22	45	30
0	24	22	31	34	34	45
1	21	30	27	38	34	45
2	17	38	24	49	31	60
3	14	45	21	53	27	68

⚠ WARNING **Tool failure can cause serious injury. To prevent:**

- When using holders without support bushing, use a short T-A Pro holder to establish an initial hole that is a minimum of 2 diameters deep.
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Recommended Drilling Data | Metric (mm)

T-A PRO | CARBIDE

ISO	Material	Hardness (BHN)	Insert Grade	Speed (m/min)	Feed Rate (mm/rev) by Diameter				
					Y / Z Series	0 Series	1 Series	2 Series	3 Series
					9.50 mm - 12.69 mm	12.70 mm - 17.64 mm	17.65 mm - 24.37 mm	24.38 mm - 35.04 mm	35.05 mm - 47.80 mm
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 150	P	145	0.18	0.25	0.33	0.41	0.51
		150 - 200	P	135	0.18	0.25	0.33	0.41	0.51
		200 - 250	P	125	0.15	0.25	0.33	0.41	0.51
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	P	130	0.15 ❖	0.23	0.30	0.38	0.48
		125 - 175	P	125	0.15 ❖	0.23	0.30	0.38	0.48
		175 - 225	P	115	0.13 ❖	0.20	0.25	0.36	0.46
		225 - 275	P	110	0.13 ❖	0.20	0.25	0.36	0.46
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	P	125	0.15	0.23	0.30	0.38	0.48
		175 - 225	P	115	0.13	0.20	0.25	0.36	0.46
		225 - 275	P	110	0.13	0.20	0.25	0.36	0.46
		275 - 325	P	100	0.10	0.18	0.23	0.30	0.41
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	P	130	0.15	0.23	0.30	0.36	0.43
		175 - 225	P	120	0.13	0.20	0.28	0.36	0.43
		225 - 275	P	110	0.13	0.20	0.28	0.36	0.43
		275 - 325	P	105	0.10	0.18	0.25	0.30	0.38
		325 - 375	P	95	0.08	0.18	0.25	0.30	0.38
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	P	105	0.10	0.18	0.25	0.33	0.38
		300 - 350	P	100	0.08	0.15	0.23	0.30	0.36
		350 - 400	P	90	0.08	0.15	0.20	0.28	0.33
	Structural Steel A36, A285, A516, etc.	100 - 150	P	120	0.15 ❖	0.25	0.30	0.36	0.46
		150 - 250	P	105	0.13 ❖	0.23	0.25	0.30	0.41
		250 - 350	P	85	0.10 ❖	0.20	0.23	0.25	0.36
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	P	65	0.10	0.15	0.20	0.25	0.30
		200 - 250	P	55	0.10	0.15	0.20	0.25	0.30
M	**Stainless Steel 400 Series** 416, 420, etc.	185 - 275	M	85	0.13 ❖	0.23	0.25	0.30	0.33
		275 - 350	M	70	0.10 ❖	0.20	0.23	0.28	0.30
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	M	85	0.08 ❖	0.10	0.13	0.20	0.28
		185 - 275	M	75	0.05 ❖	0.08	0.10	0.18	0.23
	Stainless Steel 300L Series 304L, 316L, etc.	135 - 185	M	100	0.08 ❖	0.10	0.13	0.20	0.28
		185 - 275	M	85	0.05 ❖	0.08	0.10	0.18	0.23
	PH Stainless 17-4, 13-8, 15-5	275 - 350	M	85	0.08 ❖	0.10	0.13	0.20	0.28
		350 - 425	M	75	0.05 ❖	0.08	0.10	0.18	0.23
	Super Duplex Stainless Steel	135 - 185	M	75	0.08 ❖	0.10	0.13	0.20	0.28
		185 - 275	M	70	0.05 ❖	0.08	0.10	0.18	0.23

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7xD and 10xD Adjustment Example (0.80 Adjustment)

Data • Adjustment Value	Speed/Feed (7xD)
100 m/min • 0.80	= 80 m/min
0.2 mm/rev • 0.80	= 0.16 mm/rev

12xD and 15xD Adjustment Example (0.70 Adjustment)

Speed • Adjustment Value	Speed/Feed (12xD)
100 m/min • 0.70	= 70 m/min
0.2 mm/rev • 0.70	= 0.14 mm/rev

Coolant Recommendations

Series	Stub, 3xD, 5xD		7xD, 10xD		12xD, 15xD	
	Pressure BAR	Flow Rate LPM	Pressure BAR	Flow Rate LPM	Pressure BAR	Flow Rate LPM
Y	31	15	34	55	45	30
Z	31	15	34	22	45	30
0	24	22	31	34	34	45
1	21	30	27	38	34	45
2	17	38	24	49	31	60
3	14	45	21	53	27	68

⚠ WARNING **Tool failure can cause serious injury. To prevent:**
- When using holders without support bushing, use a short T-A Pro holder to establish an initial hole that is a minimum of 2 diameters deep.
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Recommended Drilling Data | Metric (mm)

T-A PRO | CARBIDE

ISO	Material	Hardness (BHN)	Insert Grade	Speed (m/min)	Feed Rate (mm/rev) by Diameter				
					Y / Z Series	0 Series	1 Series	2 Series	3 Series
					9.50 mm - 12.69 mm	12.70 mm - 17.64 mm	17.65 mm - 24.37 mm	24.38 mm - 35.04 mm	35.05 mm - 47.80 mm
K	SG / Nodular Cast Iron	120 - 150	K	185	0.18	0.30	0.41	0.51	0.61
		150 - 200	K	170	0.15	0.28	0.36	0.46	0.56
		200 - 220	K	150	0.15	0.23	0.30	0.41	0.46
		220 - 260	K	135	0.13	0.18	0.23	0.30	0.36
		260 - 320	K	120	0.10	0.15	0.18	0.23	0.30
N	Cast Aluminum	30	N	335	0.20	0.33	0.41	0.51	0.56
		180	N	185	0.20	0.33	0.41	0.46	0.56
	Wrought Aluminum	30	N	335	0.23	0.33	0.43	0.51	0.61
		180	N	185	0.13	0.18	0.25	0.33	0.41
	Aluminum Bronze	100 - 200	N	150	0.15	0.28	0.36	0.46	0.56
		200 - 250	N	90	0.13	0.18	0.23	0.30	0.36
	Brass	100	N	200	0.18	0.30	0.41	0.51	0.61
	Copper	60	N	130	0.05	0.08	0.15	0.20	0.25
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 220	M	35	0.05 ❖	0.13	0.18	0.20	0.23
		220 - 310	M	25	0.05 ❖	0.08	0.13	0.15	0.18
	Titanium Alloy	140 - 220	M	45	0.08 ❖	0.10	0.18	0.20	0.23
		220 - 310	M	35	0.08 ❖	0.08	0.13	0.15	0.18
	Aerospace Alloy S82	185 - 275	M	45	0.08 ❖	0.10	0.18	0.20	0.23
		275 - 350	M	35	0.08 ❖	0.08	0.13	0.15	0.18
H	Wear Plate Hardox®, AR400, T-1, etc.	400	P	20	0.08	0.15	0.20	0.23	0.30
		500	P	15	0.05	0.13	0.18	0.20	0.25
		600	—	—	—	—	—	—	—
	Hardened Steel	300 - 400	P	30	0.08	0.15	0.20	0.23	0.30
		400 - 500	P	15	0.05	0.13	0.18	0.20	0.25

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7xD and 10xD Adjustment Example (0.80 Adjustment)

Data • Adjustment Value	Speed/Feed (7xD)
100 m/min • 0.80	= 80 m/min
0.2 mm/rev • 0.80	= 0.16 mm/rev

12xD and 15xD Adjustment Example (0.70 Adjustment)

Speed • Adjustment Value	Speed/Feed (12xD)
100 m/min • 0.70	= 70 m/min
0.2 mm/rev • 0.70	= 0.14 mm/rev

Coolant Recommendations

Series	Stub, 3xD, 5xD		7xD, 10xD		12xD, 15xD	
	Pressure BAR	Flow Rate LPM	Pressure BAR	Flow Rate LPM	Pressure BAR	Flow Rate LPM
Y	31	15	34	55	45	30
Z	31	15	34	22	45	30
0	24	22	31	34	34	45
1	21	30	27	38	34	45
2	17	38	24	49	31	60
3	14	45	21	53	27	68

⚠ WARNING **Tool failure can cause serious injury. To prevent:**

- When using holders without support bushing, use a short T-A Pro holder to establish an initial hole that is a minimum of 2 diameters deep.
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Recommended Drilling Data | Metric (mm)

T-A PRO FORM INSERTS | HIGH-SPEED STEEL

ISO	Material		Y / Z Series 9.50 mm - 12.69 mm	0 Series 12.70 mm - 17.64 mm	1 Series 17.65 mm - 24.37 mm	2 Series 24.38 mm - 35.04 mm	3 Series 35.05 mm - 47.80 mm
P	Low-Carbon Steel	m/min	45 - 70	45 - 70	45 - 70	60 - 75	60 - 75
		mm/rev	0.18 - 0.25	0.18 - 0.25	0.25 - 0.38	0.28 - 0.43	0.30 - 0.48
	Alloy Steel	m/min	40 - 65	40 - 65	40 - 65	45 - 70	45 - 70
		mm/rev	0.18 - 0.25	0.15 - 0.23	0.25 - 0.36	0.28 - 0.41	0.30 - 0.43
M	Stainless Steel	m/min	65 - 85	65 - 85	65 - 95	65 - 95	65 - 105
		mm/rev	0.18 - 0.25	0.18 - 0.25	0.20 - 0.36	0.20 - 0.36	0.25 - 0.41
K	Cast Iron	m/min	55 - 110	55 - 110	55 - 110	70 - 120	70 - 120
		mm/rev	0.20 - 0.30	0.20 - 0.30	0.20 - 0.48	0.23 - 0.48	0.33 - 0.53
N	Nonferrous	m/min	75 - 190	60 - 170	65 - 220	105 - 225	135 - 260
		mm/rev	0.18 - 0.25	0.18 - 0.25	0.25 - 0.38	0.28 - 0.43	0.30 - 0.48

T-A PRO FORM INSERTS | CARBIDE

ISO	Material		Y / Z Series 9.50 mm - 12.69 mm	0 Series 12.70 mm - 17.64 mm	1 Series 17.65 mm - 24.37 mm	2 Series 24.38 mm - 35.04 mm	3 Series 35.05 mm - 47.80 mm
P	Low-Carbon Steel	m/min	60 - 115	60 - 115	60 - 115	75 - 120	75 - 120
		mm/rev	0.18 - 0.28	0.18 - 0.28	0.28 - 0.41	0.30 - 0.46	0.33 - 0.51
	Alloy Steel	m/min	60 - 105	60 - 105	60 - 105	70 - 115	70 - 115
		mm/rev	0.18 - 0.28	0.18 - 0.28	0.28 - 0.43	0.30 - 0.48	0.30 - 0.48
M	Stainless Steel	m/min	75 - 100	75 - 100	75 - 115	75 - 115	75 - 120
		mm/rev	0.18 - 0.25	0.18 - 0.25	0.20 - 0.36	0.20 - 0.36	0.25 - 0.41
K	Cast Iron	m/min	105 - 195	105 - 195	105 - 195	130 - 210	130 - 210
		mm/rev	0.23 - 0.33	0.23 - 0.33	0.23 - 0.51	0.25 - 0.51	0.36 - 0.56
N	Nonferrous	m/min	105 - 215	105 - 245	105 - 275	120 - 290	120 - 290
		mm/rev	0.18 - 0.28	0.18 - 0.28	0.28 - 0.41	0.30 - 0.46	0.33 - 0.51

Notes

Recommended Drilling Data | Imperial (in)

T-A PRO | HIGH-SPEED STEEL

ISO	Material	Hardness (BHN)	Insert Grade	Speed (SFM)	Feed Rate (IPR) by Diameter				
					Y / Z Series	0 Series	1 Series	2 Series	3 Series
					0.3739" - 0.4998"	0.4999" - 0.6946"	0.6947" - 0.9596"	0.9597" - 1.3797"	1.3798" - 1.8820"
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 150	X	350	0.006	0.010	0.013	0.016	0.020
		150 - 200	X	325	0.006	0.010	0.013	0.016	0.020
		200 - 250	X	300	0.005	0.010	0.013	0.016	0.020
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	X	315	0.006 ❖	0.009	0.012	0.015	0.019
		125 - 175	X	300	0.005 ❖	0.009	0.012	0.015	0.019
		175 - 225	X	285	0.005 ❖	0.008	0.010	0.014	0.018
		225 - 275	X	265	0.005 ❖	0.008	0.010	0.014	0.018
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	X	300	0.006	0.009	0.012	0.015	0.019
		175 - 225	X	285	0.005	0.008	0.010	0.014	0.018
		225 - 275	X	265	0.005	0.008	0.010	0.014	0.018
		275 - 325	X	235	0.004	0.007	0.009	0.012	0.016
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	X	250	0.006	0.009	0.012	0.014	0.017
		175 - 225	X	235	0.005	0.008	0.011	0.014	0.017
		225 - 275	X	220	0.005	0.008	0.011	0.014	0.017
		275 - 325	X	205	0.004	0.007	0.010	0.012	0.015
		325 - 375	X	190	0.003	0.007	0.010	0.012	0.015
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	X	135	0.004	0.007	0.010	0.013	0.015
		300 - 350	X	110	0.003	0.006	0.009	0.012	0.014
		350 - 400	X	90	0.003	0.006	0.008	0.011	0.013
	Structural Steel A36, A285, A516, etc.	100 - 150	X	250	0.006 ❖	0.010	0.012	0.014	0.018
		150 - 250	X	210	0.005 ❖	0.009	0.010	0.012	0.016
		250 - 350	X	175	0.004 ❖	0.008	0.009	0.010	0.014
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	X	145	0.004	0.006	0.008	0.010	0.012
		200 - 250	X	120	0.004	0.006	0.008	0.010	0.012
M	**Stainless Steel 400 Series** 416, 420, etc.	185 - 275	X	125	0.005 ❖	0.010	0.011	0.012	0.013
		275 - 350	X	110	0.004 ❖	0.009	0.010	0.011	0.012
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	X	125	0.005 ❖	0.007	0.008	0.009	0.012
		185 - 275	X	110	0.004 ❖	0.006	0.007	0.008	0.011
	PH Stainless 17-4, 13-8, 15-5	275 - 350	X	95	0.003 ❖	0.004	0.006	0.008	0.010
		350 - 425	X	75	0.003 ❖	0.004	0.006	0.008	0.010
	Super Duplex Stainless Steel	135 - 185	X	125	0.005 ❖	0.005	0.006	0.006	0.007
		185 - 275	X	110	0.004 ❖	0.005	0.005	0.006	0.006

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7xD and 10xD Adjustment Example (0.80 Adjustment)

Data • Adjustment Value	Speed/Feed (7xD)
200 SFM • 0.80	= 160 SFM
0.008 IPR • 0.80	= 0.0064 IPR

12xD and 15xD Adjustment Example (0.70 Adjustment)

Speed • Adjustment Value	Speed/Feed (12xD)
200 SFM • 0.70	= 140 SFM
0.008 IPR • 0.70	= 0.0056 IPR

Coolant Recommendations

Series	Stub, 3xD, 5xD		7xD, 10xD		12xD, 15xD	
	Pressure PSI	Flow Rate GPM	Pressure PSI	Flow Rate GPM	Pressure PSI	Flow Rate GPM
Y	450	4	550	6	650	8
Z	450	4	550	6	650	8
0	350	6	450	9	550	12
1	300	8	400	10	500	12
2	250	10	350	13	450	16
3	200	12	300	14	400	18

⚠ WARNING **Tool failure can cause serious injury. To prevent:**

- When using holders without support bushing, use a short T-A Pro holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the coolant recommendation chart for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. For 7xD, 10xD, 12xD, and 15xD holder lengths, see adjustment example above.

Recommended Drilling Data | Imperial (in)

T-A PRO | HIGH-SPEED STEEL

ISO	Material	Hardness (BHN)	Insert Grade	Speed (SFM)	Feed Rate (IPR) by Diameter				
					Y / Z Series 0.3739" - 0.4998"	0 Series 0.4999" - 0.6946"	1 Series 0.6947" - 0.9596"	2 Series 0.9597" - 1.3797"	3 Series 1.3798" - 1.8820"
K	SG / Nodular Cast Iron	120 - 150	X	300	0.007	0.012	0.016	0.020	0.024
		150 - 200	X	275	0.006	0.011	0.014	0.018	0.022
		200 - 220	X	240	0.006	0.009	0.012	0.016	0.018
		220 - 260	X	215	0.005	0.007	0.009	0.012	0.014
		260 - 320	X	175	0.004	0.006	0.007	0.009	0.012
N	Cast Aluminum	30	X	600	0.008	0.013	0.016	0.020	0.022
		180	X	300	0.008	0.013	0.016	0.018	0.022
	Wrought Aluminum	30	X	900	0.009	0.013	0.017	0.020	0.024
		180	X	600	0.005	0.007	0.010	0.013	0.016
	Aluminum Bronze	100 - 200	X	300	0.006	0.011	0.014	0.018	0.022
		200 - 250	X	250	0.005	0.007	0.009	0.012	0.014
	Brass	100	X	485	0.007	0.012	0.016	0.020	0.024
	Copper	60	X	320	0.002	0.003	0.006	0.008	0.010
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 220	X	45	0.003 ❖	0.007	0.008	0.010	0.012
		220 - 310	X	40	0.003 ❖	0.006	0.007	0.008	0.010
	Titanium Alloy	140 - 220	X	60	0.003	0.007	0.008	0.010	0.012
		220 - 310	X	50	0.003	0.006	0.007	0.008	0.010
	Aerospace Alloy S82	185 - 275	X	125	0.005	0.008	0.009	0.010	0.014
		275 - 350	X	110	0.004	0.007	0.008	0.008	0.012
H	Wear Plate Hardox®, AR400, T-1, etc.	400	X	60	0.003	0.006	0.008	0.009	0.012
		500	X	45	0.002	0.005	0.007	0.008	0.010
		600	—	—	—	—	—	—	—
	Hardened Steel	300 - 400	X	75	0.003	0.006	0.008	0.009	0.012
		400 - 500	X	45	0.002	0.005	0.007	0.008	0.010

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7xD and 10xD Adjustment Example (0.80 Adjustment)

Data • Adjustment Value	Speed/Feed (7xD)
200 SFM • 0.80	= 160 SFM
0.008 IPR • 0.80	= 0.0064 IPR

12xD and 15xD Adjustment Example (0.70 Adjustment)

Speed • Adjustment Value	Speed/Feed (12xD)
200 SFM • 0.70	= 140 SFM
0.008 IPR • 0.70	= 0.0056 IPR

Coolant Recommendations

Series	Stub, 3xD, 5xD Pressure PSI	Stub, 3xD, 5xD Flow Rate GPM	7xD, 10xD Pressure PSI	7xD, 10xD Flow Rate GPM	12xD, 15xD Pressure PSI	12xD, 15xD Flow Rate GPM
Y	450	4	550	6	650	8
Z	450	4	550	6	650	8
0	350	6	450	9	550	12
1	300	8	400	10	500	12
2	250	10	350	13	450	16
3	200	12	300	14	400	18

⚠ WARNING **Tool failure can cause serious injury. To prevent:**

- When using holders without support bushing, use a short T-A Pro holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

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IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the coolant recommendation chart for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. For 7xD, 10xD, 12xD, and 15xD holder lengths, see adjustment example above.

Recommended Drilling Data | Imperial (in)

T-A PRO | CARBIDE

ISO	Material	Hardness (BHN)	Insert Grade	Speed (SFM)	Feed Rate (IPR) by Diameter				
					Y / Z Series	0 Series	1 Series	2 Series	3 Series
					0.3739" - 0.4998"	0.4999" - 0.6946"	0.6947" - 0.9596"	0.9597" - 1.3797"	1.3798" - 1.8820"
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 150	P	475	0.007	0.010	0.013	0.016	0.020
		150 - 200	P	440	0.007	0.010	0.013	0.016	0.020
		200 - 250	P	410	0.006	0.010	0.013	0.016	0.020
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	P	425	0.006 ❖	0.009	0.012	0.015	0.019
		125 - 175	P	410	0.006 ❖	0.009	0.012	0.015	0.019
		175 - 225	P	385	0.005 ❖	0.008	0.010	0.014	0.018
		225 - 275	P	355	0.005 ❖	0.008	0.010	0.014	0.018
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	P	410	0.006	0.009	0.012	0.015	0.019
		175 - 225	P	385	0.005	0.008	0.010	0.014	0.018
		225 - 275	P	355	0.005	0.008	0.010	0.014	0.018
		275 - 325	P	330	0.004	0.007	0.009	0.012	0.016
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	P	420	0.006	0.009	0.012	0.014	0.017
		175 - 225	P	390	0.005	0.008	0.011	0.014	0.017
		225 - 275	P	360	0.005	0.008	0.011	0.014	0.017
		275 - 325	P	340	0.004	0.007	0.010	0.012	0.015
		325 - 375	P	310	0.003	0.007	0.010	0.012	0.015
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	P	350	0.004	0.007	0.010	0.013	0.015
		300 - 350	P	325	0.003	0.006	0.009	0.012	0.014
		350 - 400	P	300	0.003	0.006	0.008	0.011	0.013
	Structural Steel A36, A285, A516, etc.	100 - 150	P	400	0.006 ❖	0.010	0.012	0.014	0.018
		150 - 250	P	340	0.005 ❖	0.009	0.010	0.012	0.016
		250 - 350	P	280	0.004 ❖	0.008	0.009	0.010	0.014
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	P	220	0.004	0.006	0.008	0.010	0.012
		200 - 250	P	180	0.004	0.006	0.008	0.010	0.012
M	**Stainless Steel 400 Series** 416, 420, etc.	185 - 275	M	280	0.005 ❖	0.009	0.010	0.012	0.013
		275 - 350	M	230	0.004 ❖	0.008	0.009	0.011	0.012
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	M	280	0.003 ❖	0.004	0.005	0.008	0.011
		185 - 275	M	250	0.002 ❖	0.003	0.004	0.007	0.009
	Stainless Steel 300L Series 304L, 316L, etc.	135 - 185	M	325	0.003 ❖	0.004	0.005	0.008	0.011
		185 - 275	M	280	0.002 ❖	0.003	0.004	0.007	0.009
	PH Stainless 17-4, 13-8, 15-5	275 - 350	M	280	0.003 ❖	0.004	0.005	0.008	0.011
		350 - 425	M	250	0.002 ❖	0.003	0.004	0.007	0.009
	Super Duplex Stainless Steel	135 - 185	M	250	0.003 ❖	0.004	0.005	0.008	0.011
		185 - 275	M	230	0.002 ❖	0.003	0.004	0.007	0.009

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7xD and 10xD Adjustment Example (0.80 Adjustment)

Data • Adjustment Value	Speed/Feed (7xD)
200 SFM • 0.80	= 160 SFM
0.008 IPR • 0.80	= 0.0064 IPR

12xD and 15xD Adjustment Example (0.70 Adjustment)

Speed • Adjustment Value	Speed/Feed (12xD)
200 SFM • 0.70	= 140 SFM
0.008 IPR • 0.70	= 0.0056 IPR

Coolant Recommendations

Series	Stub, 3xD, 5xD		7xD, 10xD		12xD, 15xD	
	Pressure PSI	Flow Rate GPM	Pressure PSI	Flow Rate GPM	Pressure PSI	Flow Rate GPM
Y	450	4	550	6	650	8
Z	450	4	550	6	650	8
0	350	6	450	9	550	12
1	300	8	400	10	500	12
2	250	10	350	13	450	16
3	200	12	300	14	400	18

⚠ WARNING **Tool failure can cause serious injury. To prevent:**

- When using holders without support bushing, use a short T-A Pro holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

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Recommended Drilling Data | Imperial (in)

T-A PRO | CARBIDE

ISO	Material	Hardness (BHN)	Insert Grade	Speed (SFM)	Feed Rate (IPR) by Diameter				
					Y / Z Series	0 Series	1 Series	2 Series	3 Series
					0.3739" - 0.4998"	0.4999" - 0.6946"	0.6947" - 0.9596"	0.9597" - 1.3797"	1.3798" - 1.8820"
K	SG / Nodular Cast Iron	120 - 150	K	600	0.007	0.012	0.016	0.020	0.024
		150 - 200	K	550	0.006	0.011	0.014	0.018	0.022
		200 - 220	K	500	0.006	0.009	0.012	0.016	0.018
		220 - 260	K	450	0.005	0.007	0.009	0.012	0.014
		260 - 320	K	400	0.004	0.006	0.007	0.009	0.012
N	Cast Aluminum	30	N	1100	0.008	0.013	0.016	0.020	0.022
		180	N	600	0.008	0.013	0.016	0.018	0.022
	Wrought Aluminum	30	N	1100	0.009	0.013	0.017	0.020	0.024
		180	N	600	0.005	0.007	0.010	0.013	0.016
	Aluminum Bronze	100 - 200	N	500	0.006	0.011	0.014	0.018	0.022
		200 - 250	N	300	0.005	0.007	0.009	0.012	0.014
	Brass	100	N	650	0.007	0.012	0.016	0.020	0.024
	Copper	60	N	430	0.002	0.003	0.006	0.008	0.010
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 220	M	110	0.002 ❖	0.005	0.007	0.008	0.009
		220 - 310	M	85	0.002 ❖	0.003	0.005	0.006	0.007
	Titanium Alloy	140 - 220	M	150	0.003 ❖	0.004	0.007	0.008	0.009
		220 - 310	M	120	0.003 ❖	0.003	0.005	0.006	0.007
	Aerospace Alloy S82	185 - 275	M	150	0.003 ❖	0.004	0.007	0.008	0.009
		275 - 350	M	120	0.003 ❖	0.003	0.005	0.006	0.007
H	Wear Plate Hardox®, AR400, T-1, etc.	400	P	70	0.003	0.006	0.008	0.009	0.012
		500	P	45	0.002	0.005	0.007	0.008	0.010
		600	—	—	—	—	—	—	—
	Hardened Steel	300 - 400	P	95	0.003	0.006	0.008	0.009	0.012
		400 - 500	P	45	0.002	0.005	0.007	0.008	0.010

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7xD and 10xD Adjustment Example (0.80 Adjustment)

Data • Adjustment Value	Speed/Feed (7xD)
200 SFM • 0.80	= 160 SFM
0.008 IPR • 0.80	= 0.0064 IPR

12xD and 15xD Adjustment Example (0.70 Adjustment)

Speed • Adjustment Value	Speed/Feed (12xD)
200 SFM • 0.70	= 140 SFM
0.008 IPR • 0.70	= 0.0056 IPR

Coolant Recommendations

Series	Stub, 3xD, 5xD		7xD, 10xD		12xD, 15xD	
	Pressure PSI	Flow Rate GPM	Pressure PSI	Flow Rate GPM	Pressure PSI	Flow Rate GPM
Y	450	4	550	6	650	8
Z	450	4	550	6	650	8
0	350	6	450	9	550	12
1	300	8	400	10	500	12
2	250	10	350	13	450	16
3	200	12	300	14	400	18

⚠ WARNING **Tool failure can cause serious injury. To prevent:**

- When using holders without support bushing, use a short T-A Pro holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

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Recommended Drilling Data | Imperial (in)

T-A PRO FORM INSERTS | HIGH-SPEED STEEL

ISO	Material		Y / Z Series 0.3739" - 0.4998"	0 Series 0.4999" - 0.6946"	1 Series 0.6947" - 0.9596"	2 Series 0.9597" - 1.3797"	3 Series 1.3798" - 1.8820"
P	Low-Carbon Steel	SFM	150 - 235	150 - 235	150 - 235	190 - 250	190 - 250
		IPR	0.007 - 0.01	0.007 - 0.01	0.01 - 0.015	0.011 - 0.017	0.012 - 0.019
	Alloy Steel	SFM	130 - 220	130 - 220	130 - 220	145 - 235	145 - 235
		IPR	0.007 - 0.010	0.006 - 0.009	0.01 - 0.014	0.011 - 0.016	0.012 - 0.017
M	Stainless Steel	SFM	215 - 275	215 - 275	215 - 315	215 - 315	215 - 340
		IPR	0.007 - 0.010	0.007 - 0.010	0.008 - 0.014	0.008 - 0.014	0.01 - 0.016
K	Cast Iron	SFM	180 - 365	180 - 365	180 - 365	225 - 390	225 - 390
		IPR	0.008 - 0.012	0.008 - 0.012	0.008 - 0.019	0.009 - 0.019	0.013 - 0.021
N	Nonferrous	SFM	250 - 625	195 - 565	220 - 715	350 - 745	450 - 850
		IPR	0.009 - 0.014	0.009 - 0.014	0.014 - 0.018	0.014 - 0.020	0.014 - 0.022

T-A PRO FORM INSERTS | CARBIDE

ISO	Material		Y / Z Series 0.3739" - 0.4998"	0 Series 0.4999" - 0.6946"	1 Series 0.6947" - 0.9596"	2 Series 0.9597" - 1.3797"	3 Series 1.3798" - 1.8820"
P	Low-Carbon Steel	SFM	200 - 375	200 - 375	200 - 375	250 - 400	250 - 400
		IPR	0.007 - 0.011	0.007 - 0.011	0.011 - 0.016	0.012 - 0.018	0.013 - 0.02
	Alloy Steel	SFM	200 - 350	200 - 350	200 - 350	225 - 375	225 - 375
		IPR	0.007 - 0.011	0.007 - 0.011	0.011 - 0.017	0.012 - 0.019	0.012 - 0.019
M	Stainless Steel	SFM	250 - 325	250 - 325	250 - 375	250 - 375	250 - 400
		IPR	0.007 - 0.010	0.007 - 0.010	0.008 - 0.014	0.008 - 0.014	0.010 - 0.016
K	Cast Iron	SFM	340 - 645	340 - 645	340 - 645	430 - 685	430 - 685
		IPR	0.009 - 0.013	0.009 - 0.013	0.009 - 0.020	0.010 - 0.020	0.014 - 0.022
N	Nonferrous	SFM	350 - 700	350 - 800	350 - 900	400 - 950	400 - 950
		IPR	0.010 - 0.017	0.010 - 0.017	0.014 - 0.020	0.014 - 0.020	0.014 - 0.022

Notes

Technical Formulas

Formulas

1.	**RPM**	**= (3.82 • SFM) / DIA**
	where:	
	RPM	= revolutions per minute (rev/min)
	SFM	= speed (ft/min)
	DIA	= diameter of drill (inch)
2.	**IPM**	**= RPM • IPR**
	where:	
	IPM	= inches per minute (in/min)
	RPM	= revolutions per minute (rev/min)
	IPR	= feed rate (in/rev)
3.	**SFM**	**= RPM • 0.262 • DIA**
	where:	
	SFM	= speed (ft/min)
	RPM	= revolutions per minute (rev/min)
	DIA	= diameter of drill (inch)
4.	**Thrust**	**= 153,700 • IPR • DIA • K_m**
	where:	
	Thrust	= axial thrust (lbs)
	IPR	= feed rate (in/rev)
	DIA	= diameter of drill (inch)
	K_m	= specific cutting energy (lbs/in^2)
5.	**Tool Power**	**= .6991 • IPR • RPM • K_m • DIA^2**
	where:	
	Tool Power	= tool power (HP)
	IPR	= feed rate (in/rev)
	RPM	= revolutions per minute (rev/min)
	K_m	= specific cutting energy (lbs/in^2)
	DIA	= diameter of drill (inch)

Material Constants

Type of Material	Hardness	K_m (lbs/in^2)
Plain Carbon and Alloy Steel	85 - 200 BHN	0.79
	200 - 275 BHN	0.94
	275 - 375 BHN	1.00
	375 - 425 BHN	1.15
Stainless Steels	135 - 275 BHN	0.94
	30 - 45 RC	1.08
Cast Iron	100 - 200 BHN	0.50
	200 - 300 BHN	1.08
Copper Alloy	20 - 80 RB	0.43
	80 - 100 RB	0.72
Aluminum Alloy	–	0.22
Magnesium Alloy	–	0.16
High-Temperature Alloys	–	1.44
Titanium Alloy	–	0.72

Formulas

1.	**RPM**	**= (318.47 • m/min) / DIA**
	where:	
	RPM	= revolutions per minute (rev/min)
	m/min	= speed (m/min)
	DIA	= diameter of drill (mm)
2.	**mm/min**	**= RPM • mm/rev**
	where:	
	mm/min	= mm per minute (mm/min)
	RPM	= revolutions per minute (rev/min)
	mm/rev	= feed rate (mm/rev)
3.	**m/min**	**= RPM • 0.003 • DIA**
	where:	
	m/min	= speed (m/min)
	RPM	= revolutions per minute (rev/min)
	DIA	= diameter of drill (mm)
4.	**Thrust**	**= 154 • (mm/rev) • DIA • K_m**
	where:	
	Thrust	= axial thrust (N)
	mm/rev	= feed rate (mm/rev)
	DIA	= diameter of drill (mm)
	K_m	= specific cutting energy (kPa)
5.	**Tool Power**	**= ((mm/rev) • RPM • K_m • DIA^2)/218604.8**
	where:	
	Tool Power	= tool power (HP)
	mm/rev	= feed rate (mm/rev)
	RPM	= revolutions per minute (rev/min)
	K_m	= specific cutting energy (kPa)
	DIA	= diameter of drill (mm)

Material Constants

Type of Material	Hardness	K_m (kPa)
Plain Carbon and Alloy Steel	85 - 200 BHN	5.45
	200 - 275 BHN	6.48
	275 - 375 BHN	6.89
	375 - 425 BHN	7.93
Stainless Steels	135 - 275 BHN	6.48
	30 - 45 RC	7.45
Cast Iron	100 - 200 BHN	3.45
	200 - 300 BHN	7.45
Copper Alloy	20 - 80 RB	2.96
	80 - 100 RB	4.96
Aluminum Alloy	–	1.52
Magnesium Alloy	–	1.10
High-Temperature Alloys	–	9.93
Titanium Alloy	–	4.96

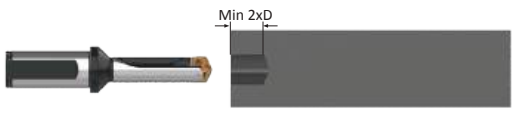
The table and equations on this page are found in the “Machinery’s Handbook.” Permission to simplify and print the equations is granted by the Editor of the “Machinery’s Handbook.”

Deep Hole Drilling Guidelines

T-A Pro | 10xD, 12xD, and 15xD Holders

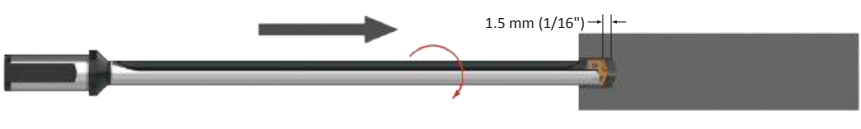
1. Pilot Hole
100% RPM
100% mm/rev (IPR)

Establish the pilot hole using the same diameter short drill to a depth of 2xD minimum.
Utilize a pilot drill with the same or larger included point angle.



2. Feed-in
⚠ 50 RPM max
300 mm/min (12 IPM)

Feed the longer drill within 1.5 mm (1/16") short of the established pilot hole bottom at a **maximum of 50 RPM** and 300 mm/min (12 IPM) feed rate.



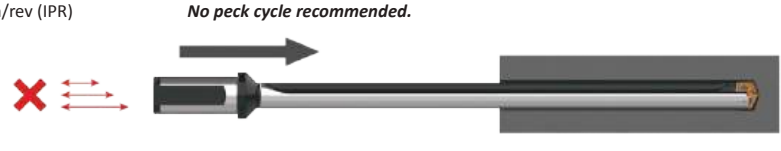
3. Deep Hole Transition Drilling
50% RPM
75% mm/rev (IPR)

Drill additional 1xD past the bottom of the pilot hole at 50% reduction of recommended speed and 25% reduction of recommended feed.
Minimum of one second dwell is required to meet full speed before feeding.



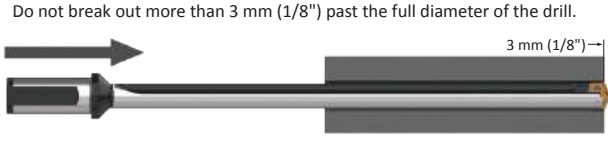
4. Deep Hole Drilling - Blind
100% RPM
100% mm/rev (IPR)

Drill to full depth at recommended speed and feed for longer drill according to Allied speed and feed charts.
No peck cycle recommended.



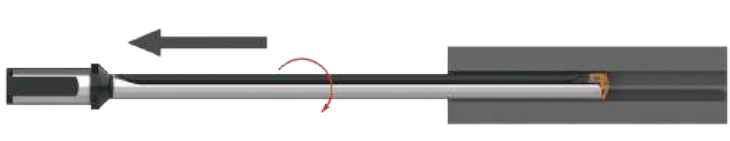
5. Deep Hole Drilling - at Breakout
50% RPM
75% mm/rev (IPR)

For through holes only:
Reduce speed by 50% and feed by 25% prior to breakout.
Do not break out more than 3 mm (1/8") past the full diameter of the drill.



6. Drill Retract
⚠ 50 RPM max

Reduce speed to a **maximum of 50 RPM** before retracting from the hole.



⚠ WARNING **Tool failure can cause serious injury. To prevent:**

- When using holders without support bushing, use a short T-A Pro holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

Troubleshooting Guide

	Potential Problem																		
	Accelerated corner wear	Barber pole	Bell-mouthed hole	Insert chipping	Blue chips	Built-Up Edge (BUE)	Chatter	Chip packing	Chipping of point	Damaged or broken tools	Excessive margin wear	High flank wear	Hole lead off	Hole out of position	Hole out of round	Oversize hole	Poor hole finish	Poor tool life	Power spikes - Load meter
Setup Condition	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Worn or misaligned spindle (lathe, screw machine, chucker)	**1**	**2**	**3**				**7**		**9**	**10**	**11**		**13**			**16**	**17**		
Use of low rigidity machine tools		**2**	**3**	**4**			**7**		**9**	**10**			**13**	**14**					
Poor workpiece support		**2**		**4**			**7**			**10**	**11**				**15**		**17**		
Flood coolant, low coolant pressure, or low coolant volume	**1**				**5**	**6**		**8**		**10**		**12**				**16**	**17**	**18**	**19**
Interrupted cuts. Entry or exit surfaces that are not perpendicular to the spindle (draft angles, parting lines, curved or stepped surfaces, cross holes, and cast or forged surfaces)				**4**			**7**		**9**	**10**	**11**		**13**	**14**	**15**	**16**	**17**	**18**	
Material harder than expected or running tools beyond recommended speed	**1**				**5**	**6**				**10**		**12**						**18**	
Poor material microstructure or foreign particles (forgings and castings that have not been normalized or annealed, poorly prepared steel, flame cut parts, and sand casting)				**4**		**6**				**10**		**12**	**13**					**18**	
Poor chip control								**8**		**10**	**11**		**13**			**16**	**17**	**18**	**19**
Spot drilled holes with included angle less than that matching T-A Pro or cored holes	**1**			**4**			**7**						**13**					**18**	

Setup Condition	Possible Solutions
Worn or misaligned spindle (lathe, screw machine, chucker)	• Align spindle and turret or tailstock. • Repair spindle.
Use of low rigidity machine tools	• Reduce penetration rate to fall within the physical limits of the machine or setup (**NOTICE:** Do not reduce feed below threshold of good chip formation).
Poor workpiece support	• Provide additional support for the workpiece. • Reduce penetration rate to fall within the physical limits of the machine or setup (**NOTICE:** Do not reduce feed below threshold of good chip formation).
Flood coolant, low coolant pressure, or low coolant volume	• Run coolant through tool holder when drilling greater than 1xD. • Increase coolant pressure and volume through the tool holder. • Reduce penetration rate to fall within the coolant limitations (**NOTICE:** Do not reduce feed below threshold of good chip formation). • Add a peck cycle to help clear chips.
Interrupted cuts. Entry or exit surfaces that are not perpendicular to the spindle (draft angles, parting lines, curved or stepped surfaces, cross holes, and cast or forged surfaces)	• Pre-mill (spot face) entry or exit surface to remove interruption. • Decrease feed as much as 50% through entry or exit interruption. • Use short holders in low impact entry cuts.
Material harder than expected or running tools beyond recommended speed	• Reduce speed. • Increase coolant pressure and volume. • Improve coolant condition by use of quality products and regular maintenance.
Poor material microstructure or foreign particles (forgings and castings that have not been normalized or annealed, poorly prepared steel, flame cut parts, and sand casting)	• Compare performance of other tools for similar wear problems, which may indicate poor microstructure. Anneal or normalize parts to improve microstructure for machining. • Reduce feeds (**NOTICE:** Do not reduce feed below threshold of good chip formation).
Poor chip control	• Increase feed to recommended levels. Contact Allied's Application Engineering group for technical recommendations. • Increase coolant pressure and volume. • Improve coolant condition by use of quality products and regular maintenance.
Spot drilled holes with included angle less than that matching T-A Pro or cored holes	• Spot hole with short tool of same or greater included angle as T-A Pro drill insert. • Reduce feed (**NOTICE:** Do not reduce feed below threshold of good chip formation). If possible, drill from solid.

Notes

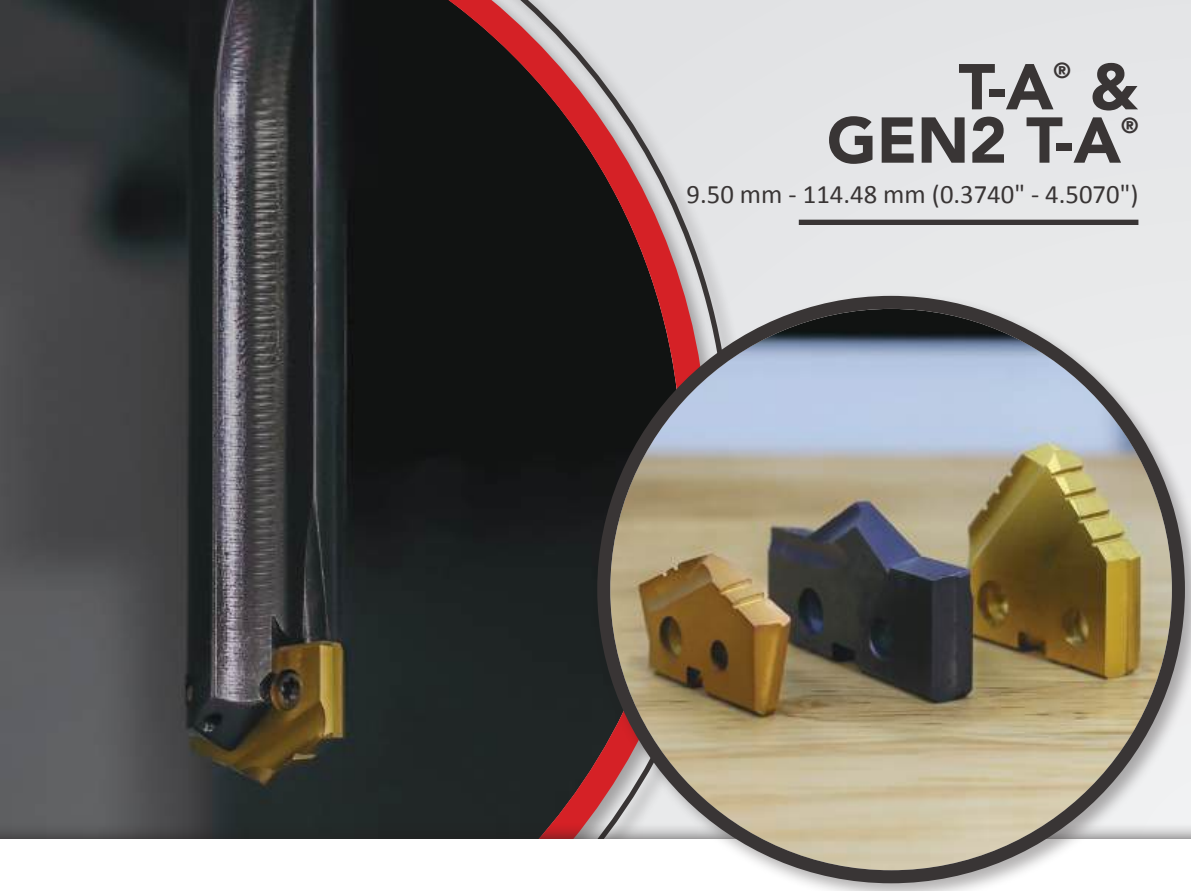
SECTION

A30

T-A® & GEN2 T-A®

T-A® & GEN2 T-A®

9.50 mm - 114.48 mm (0.3740" - 4.5070")



T-A® Drilling System

The T-A drilling system is an innovation inspired by the Universal replaceable spade insert drilling system. However, with the development of the GEN2 T-A insert, along with the countless geometry options for the T-A, this drilling system provides benefits and performance that spade blade inserts of the past never could.

With constant innovations in holder designs, insert geometries and coatings, and coolant dispersion, the T-A drilling system continues to evolve and become much more productive and powerful than ever before.

This is Not Yesterday's Spade Drill

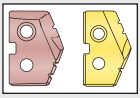
- Excellent hole size and finish.
- Optimizes chip evacuation.
- Wide range of geometry options available.

Applicable Industries

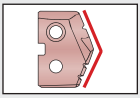
- Aerospace
- Agriculture
- Automotive
- Defense
- General Production
- Heavy Equipment
- Hydraulics
- Marine
- Oil and Gas
- Renewable Energy/ Energy
- Tool, Mold, and Die

Reference Icons

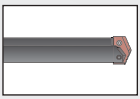
The following icons will appear throughout the catalog to help you navigate between products.



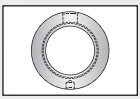
T-A Inserts
Range of inserts that connect with the corresponding holders.



Available Insert Geometries
Details for the different geometry options available for each T-A insert style.



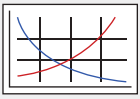
T-A Holders
Range of holders that connect with the corresponding inserts.



Rotary Coolant Adapter (RCA) Information
Detailed instructions and information regarding the corresponding part(s).



T-ACR 45 Chamfer Rings
Range of T-ACR 45 chamfer rings available for the corresponding holders.



Recommended Cutting Data
Speed and feed recommendations for optimum and safe drilling.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

WARNING means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

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T-A Drilling System Overview

Replaceable Inserts

Series		Y Series		Z Series		0 Series		1 Series		2 Series		3 Series	
T-A®													
Insert Ø	mm	9.50 - 11.09		11.10 - 12.97		12.98 - 17.67		17.53 - 24.40		24.41 - 35.06		34.37 - 47.82	
	inch	0.3740 - 0.4369		0.4370 - 0.5109		0.5110 - 0.6959		0.6900 - 0.9609		0.9610 - 1.3809		1.3530 - 1.8829	
Half Series Insert Ø min						0.6094" (15.48 mm)		0.8594" (21.83 mm)		1.1875" (30.16 mm)			
Series		**T-A**	**GEN2 T-A**	**T-A**	**GEN2 T-A**	**T-A**	**GEN2 T-A**	**T-A**	**GEN2 T-A**	**T-A**	**GEN2 T-A**	**T-A**	**GEN2 T-A**
HSS Substrates		SC PC	SC	SC PC	SC	SC PC	SC	HSS SC PC	SC	HSS SC PC	SC	SC	HSS SC PC
Carbide Substrates		K20 (C2) K10 (C3) P40 (C5) N2	K35 (C1) K20 (C2)	K20 (C2) K10 (C3) P40 (C5) N2	K35 (C1) K20 (C2)	K20 (C2) K10 (C3) P40 (C5) N2	K35 (C1) K20 (C2)	K20 (C2) K10 (C3) P40 (C5) N2	K35 (C1) K20 (C2)	K20 (C2) K10 (C3) P40 (C5) N2	K35 (C1) K20 (C2)	K20 (C2) P40 (C5)	–
Coatings		TiN TiAlN TiCN	AM200® AM300®	TiN TiAlN TiCN	AM200® AM300®	TiN TiAlN TiCN	AM200® AM300®	TiN TiAlN TiCN	AM200® AM300®	TiN TiAlN TiCN	AM200® AM300®	TiN	AM200® TiN

SC = Super Cobalt **PC = Premium Cobalt**

Coatings



AM300®

- Increased heat resistance over AM200 coating.
- Up to 20% increased tool life over AM200 coating.
- Provides superior tool life at high penetration rates.
- Color: copper/orange.



AM200®

- Increased heat resistance over TiN, TiCN, and TiAlN with improved wear capabilities.
- Over 20% increase in tool life compared to TiAlN coating.
- Color: copper/bronze.



TiN

- General purpose coating.
- Improved tool life over noncoated inserts.
- Excellent choice for aluminum.
- Color: gold/yellow.



TiAlN

- Excellent choice for wear resistance over high surface speeds.
- Excellent oxidation resistance.
- Maximum working temperature 800°C.
- Color: violet/grey.



TiCN

- Excellent choice for wear resistance over low surface speeds.
- High hardness/wear resistance.
- Maximum working temperature 400°C.
- Color: blue/grey.

T-A Drilling System Overview

Replaceable Inserts

4 Series		5 Series		6 Series		7 Series		8 Series	
									
46.99 - 65.30		62.38 - 76.22		76.23 - 89.09		89.10 - 101.62		101.63 - 114.48	
1.8500 - 2.5709		2.4560 - 3.0009		3.0010 - 3.5079		3.5080 - 4.0009		4.0010 - 4.5070	
✖		✖		✖		✖		✖	
T-A	**GEN2 T-A**	**T-A**	**GEN2 T-A**	**T-A**	**GEN2 T-A**	**T-A**	**GEN2 T-A**	**T-A**	**GEN2 T-A**
SC	HSS SC	HSS SC	HSS SC	HSS SC	HSS SC	HSS SC	HSS SC	HSS SC	HSS SC
–	–	–	–	–	–	–	–	–	–
TiN	AM200® TiN	TiN	AM200® TiN	TiN	AM200® TiN	TiN	AM200® TiN	TiN	AM200® TiN

Substrate Grades			
HSS (T-A / GEN2 T-A®) First choice for general purpose use. Suited for difficult machining applications with low rigidity, as well as deep hole drilling. Recommended for drilling most steels, cast irons, and aluminum alloys up to 275 BHN.	**HSS Super Cobalt** (T-A / GEN2 T-A) Suited for good-to-rigid machining applications, used for drilling exotic and high-alloy materials, or general use when surface speed needs to be increased. For use in material hardness up to 350 BHN.	**HSS Premium Cobalt** (T-A / GEN2 T-A) Suited for rigid machining applications, used for drilling exotic and high-alloy materials, or general use when surface speed needs to be increased. For material hardness up to 400 BHN.	**Carbide P40 (C5)** (T-A) Excellent for drilling free-machining steel, low/medium-carbon steels, alloy steels, high-strength steels, tool steels, and hardened steels.
Carbide K10 (C3) (T-A) Designed for drilling grey/white cast irons. The special geometry offers substantial increase in penetration rates and provides exceptional edge strength and tool life.	**Carbide K20 (C2)** (T-A / GEN2 T-A) Excellent for drilling high-temperature alloys, titanium alloys, cast aluminum, SG/nodular cast iron, grey/white iron, aluminum bronze, brass, copper, and certain stainless steels.	**Carbide K35 (C1)** (T-A / GEN2 T-A) Excellent for drilling free-machining steels, low/medium-carbon steels, alloy steels, high-strength steels, tool steels, and hardened steels.	**Carbide N2** (T-A) Allied's N2 carbide is used with CVD diamond coating. This improves the insert's hardness, durability, and performance, which extends tool life between 30 - 50x over uncoated carbide.

T-A Drilling System Overview

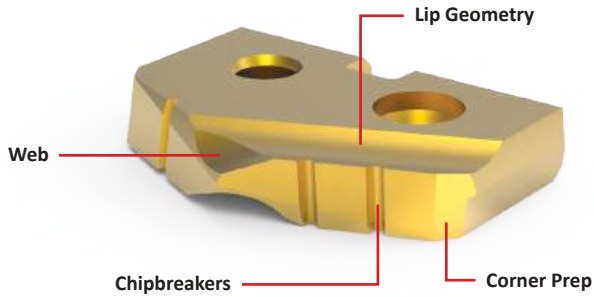
Replaceable Inserts

There's a Geometry for That.

Allied Machine knows there isn't a one-size-fits-all solution when it comes to holemaking. To better accommodate the countless holes our customers drill, we have developed multiple geometry options with new geometries in development at all times.

If you're unsure which geometry would be best for your application, give our Application Engineers a call. They're standing by ready to point you in the right direction.

1.330.343.4283
1.800.321.5537 (toll free)
appeng@alliedmachine.com



GEN2 T-A®



Standard
- Offers substantial increases in penetration rates and tool life.
- Improves centering, drill stability, chip formation, and lowers drill forces.
- Provides smoother breakout on through hole applications.

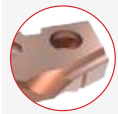


High Efficiency (-HE)
- Excellent chip formation in materials with very high elasticity/ductility and poor chip forming conditions.
- Effective in lower-powered machines.
- Material example: low-carbon steel (not suitable for stainless steel).

T-A®



Standard
- Offers excellent penetration rates and tool life.
- Smooth breakout on through holes.
- Increases drill stability and chip formation.
- Ideally suited for low-to-high rigidity machining applications.



Tiny Chip (-TC)
- Unique lip and point design for excellent chip control.
- Improved capabilities in long-chipping materials such as low-carbon steels and soft alloy steels.
- Enhanced performance in lower-powered machines for better chip formation at lower feed rates.



Corner Radius (-CR)
- Improves exit burrs.
- Excellent surface finish in most applications.
- Improves heat dispersion and tool life.
- Can be used in addition to other geometries (as a special).



Special Corner Preparation (-SK)
- Ideal for machining cast iron materials.
- Larger than a standard corner clip.
- Improves heat resistance.
- Standard feature on CI, HI, and HR geometries.



Cam Point (-CP)
- Helical cam ground point.
- Improves drill stability and centering characteristics.
- Reduces bellmouthing when using longer holders.
- Target materials: steels, cast/forged steels, cast iron.



Notch Point® (-NP)
- Reduces bellmouthing and leadoff.
- Increases stability in deep hole applications.
- Reduces thrust.
- Can be used in addition to other geometries like cast iron, high rake, and high impact.



High Impact (-HI)
- Designed for materials with hardness > 200 BHN (700 N/mm^2).
- Enhances chip formation in materials with high elasticity/ductility and poor chip forming characteristics.
- SK corner clip improves tool life.
- Target materials: structural/cast and forged steels (not suitable for stainless steel).



High Rake (-HR)
- Designed for materials with hardness < 200 BHN (700 N/mm^2).
- Improves chip formation in materials with very high elasticity/ductility, extremely poor chip forming characteristics, and low material hardness.
- SK corner clip improves tool life.
- Target materials: soft steels, steel castings and forgings (not suitable for stainless steel).

T-A Drilling System Overview

Replaceable Inserts

T-A®



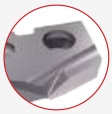
High Impact Notch Point® (-IN)
- Combination of high impact and Notch Point geometries.
- Increases stability in deep hole applications.
- Enhances chip formation in materials with high elasticity/ductility and poor chip forming characteristics.



High Rake Notch Point® (-RN)
- Combination of high rake and Notch Point geometries.
- Reduces bellmouthing and leadoff.
- Improves chip formation in materials with very high elasticity/ductility, extremely poor chip forming characteristics, and low material hardness.



Cast Iron (-CI)
- Specifically designed for use in grey and white cast irons.
- Exceptional edge strength.
- SK2 corner preparation for improved tool life.
- Standard geometry on K10 (C3) carbide inserts.



Cast Iron Notch Point® (-CN)
- Combination of cast iron and Notch Point geometries.
- Increases stability in deep hole applications.
- Specifically designed for use in grey and white cast irons.



Aluminum (-AN)
- First choice for machining aluminum.
- Enhanced geometry improves chip formation and hole quality.
- TiN coating improves heat resistance and extends tool life.



Brass (-BR)
- Improves tool life due to the specialized geometry and edge preparation.
- Reduces self-feed tendency.



90° Spot and Chamfer (-SP)
- Center cutting web design improves stability and strength.
- Eliminates the need for a secondary chamfering operation.
- Available with chipbreakers (see -SW).



90° Spot and Chamfer (-SW)
- Center cutting web design improves stability and strength.
- Eliminates the need for a secondary chamfering operation.
- With added chipbreakers.



Flat Bottom (-FB)
- Ideal for flattening or squaring the bottom of preexisting holes with high rigidity.
- Includes small 10° point on the nose of the insert.
- Available without chipbreakers (see -FN).



Flat Bottom (-FN)
- Ideal for flattening or squaring the bottom of preexisting holes with high rigidity.
- Includes small 10° point on the nose of the insert.
- Available with chipbreakers (see -FB).



Double Wide Chip Splitters (-DW)
- Efficient cutting with reduced power consumption.
- Confident chip control in challenging applications.
- Improved heat management for consistent performance.

Available Standard Insert Geometries

The following table shows which geometries are available as a standard item (based on insert type and series). If you need a geometry on your insert but it is not listed as available, please call the Application Engineering department to discuss quoting your insert as a special to include the desired geometry. Additional lead time and process fees may apply.

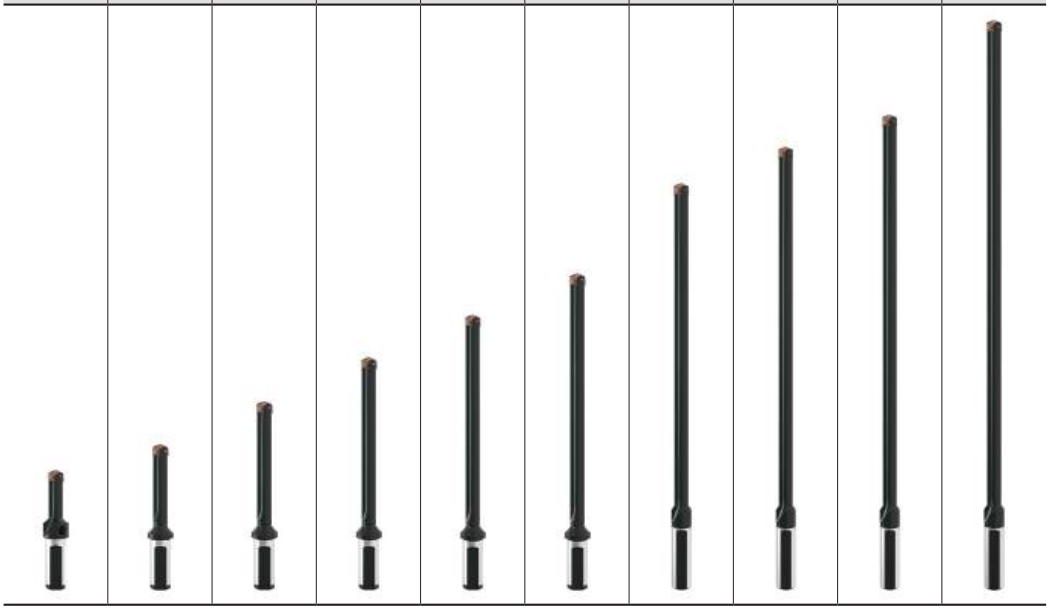
		-AN	-BT	-BR	-CI	-CN	-CP	-CR	-DW	-FB	-FN	-HE	-HI	-HR	-IN	-NC	-NP	-RN	-SK	-SP	-SW	-TC	-WC
GEN2 T-A®	Y - 2 Series											●											
	3 - 4 Series			●	●			●				●	●	●		●			●				●
	5 - 8 Series			●				●					●	●		●			●				●
T-A® High-Speed Steel	Y - 2 Series	●		●	●	●	●	●		●	●		●	●	●	●	●	●	●	●	●	●	●
	3 Series			●	●	●		●		●	●		●	●	●	●	●	●	●	●	●	●	●
	4 Series			●	●			●		●	●		●	●		●			●			●	●
	5 - 8 Series			●				●	●				●	●		●			●			●	●
T-A® Carbide	Y - Z Series	●	●	●	●	●	●	●		●	●		●	●	●	●	●	●	●			●	●
	0 - 2 Series	●	●	●	●	●	●	●		●	●		●	●	●	●	●	●	●			●	●
	3 Series		●	●	●	●		●					●	●	●	●	●	●	●			●	●

T-A Drilling System Overview

Insert Holders

Holder Length Options (for use with both T-A GEN2 and T-A inserts)

Stub	Short	Intermediate	Standard	Standard Plus ⚠	Extended ⚠	Long ⚠	Long Plus ⚠	XL ⚠	3XL ⚠
Y - 3*	All	All	All	Y - 2^	0 - 3	0 - 2	0	All	All



* straight flute flanged shank only. ^ helical flute flanged shank only.

Shank Options



ER Collet Shank
Series: Y, Z, 0



Straight Shank
Series: ALL



Morse Taper Shank
Series: ALL



Flanged Shank
Series: ALL

Half Series Holders (0.5, 1.5, 2.5)

Half series holders are recommended when running carbide inserts toward the upper end of the series drill range, as well as in tougher applications requiring more insert support and holder strength. **NOTE:** Only specified half series inserts should be used with half series holders.



Standard Series Insert + Standard Series Holder



Half Series Insert + Standard Series Holder



Half Series Insert + Half Series Holder



Standard Series Insert + Half Series Holder

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

Notes

T-A Drilling System Overview

Technical Details

Next Level Solutions: GEN2 T-A®

What takes a solution to the next level? When you make innovative designs and enhancements to a product that already achieves high performance results, you push the boundaries of what is known. And when you push the known boundaries, the unknown becomes the next level.

After all, everything begins as unknown.



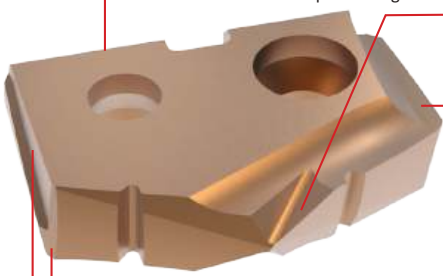
AM300® Coating

- ***Provides superior tool life*** at high penetration rates.
- ***Improves heat resistance*** over AM200® coating.
- ***Increases tool life*** up to 20% over AM200 coating.



AM200® Coating

- ***Improves heat resistance*** over TiN, TiCN, and TiAlN with improved wear capabilities.
- ***Increases penetration rates.***
- ***Increases tool life*** more than 20% over TiAlN coating.

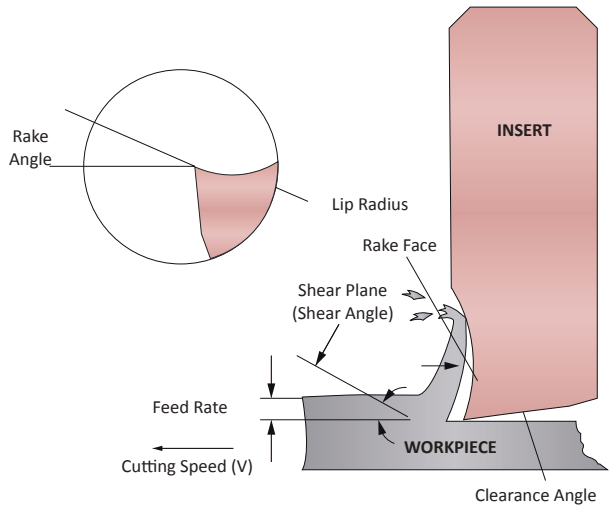




Improving Chip Formation

Achieving optimal chip formation is crucial. The quality of the chips being produced directly affects everything in the entire process: the cycle time, the tool life, the scrap rate, and the quality and condition of the final machined hole.

We know how important chip formation is. That's why we constantly improve and develop new geometries to create a better, more productive T-A product.



Setting Up New Applications

- Check coolant flows adequately through the tool before beginning.
- Drill a short hole 1xD deep initially.
- The chips produced should be short in length and material colored, not straw or blue.
- Measure the hole produced to check that it is within the desired tolerance.
- If all is correct, continue to machine the remainder of the hole.
- Ensure the drilling process is quiet and smooth with no chip packing.

T-A Drilling System Overview

Technical Details

Wear vs Toughness

When selecting a grade of cutting tool material for your application, both wear resistance and grade toughness should be considered. The greater the wear resistance a cutting tool material exhibits, the more likely chipping or fracture is to occur. This requires more rigid machining conditions.

On the other hand, to effectively machine some materials, cobalt or carbide grades of cutting tool material may be required. The graph will aid you in the selection of a cutting tool material with the right combination of wear resistance and toughness to make your application both efficient and cost-effective.



AM300®



AM200®



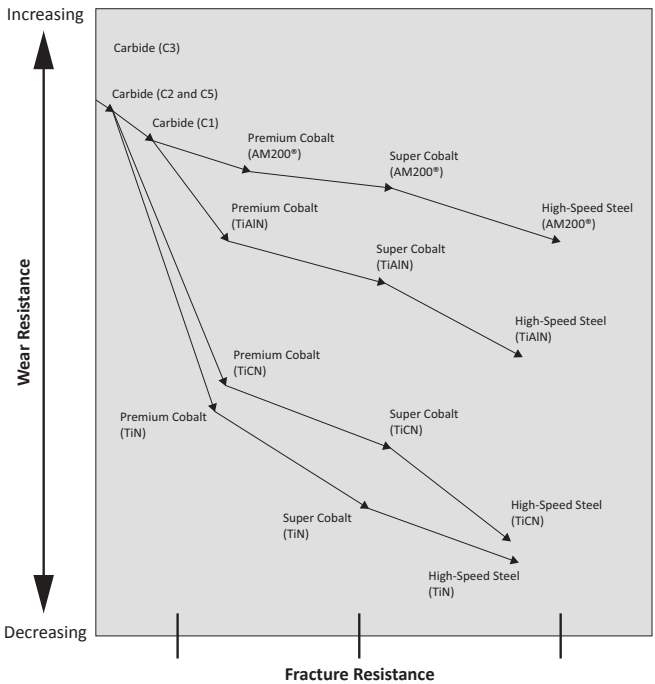
TiN



TiAlN



TiCN



T-A System Guidelines for Use

- Select the shortest holder possible for the application.
- Ensure the T-A holder is held securely and is within 0.08 mm (0.003") of center line.
- The T-A insert should be installed in the slot of the holder using the TORX® Plus screws provided. These should be tightened to the values listed on the T-A holder pages.
- The holder slot should be clean from dirt or debris.
- Check that the insert outer diameter is a minimum of 0.30 mm (0.012") larger than the holder body diameter.
- Use the recommended cutting data section for guidance when selecting correct insert grades, along with speeds and feeds.
- **NOTE:** These cutting parameters are starting conditions only and make no allowance for machine or component rigidity.



Product Nomenclature

T-A Drill Inserts

4	5		3		H	–	0115	-TC
Insert	**Material**		**Series**		**Coating**		**Diameter**	**Geometry**
1 = T-A®	**3** = HSS	**C1** =K35 (C1) carbide	**Y**	**4**	**P** = AM300®		**13** = Metric (mm)	**Blank** = Standard
4 = GEN2 T-A®	**5** = Super cobalt	**C2** = K20 (C2) carbide	**Z**	**5**	**H** = AM200®		**.515** = Decimal (in)	**-TC** = Tiny Chip
	8 = Premium cobalt	**C3** = K10 (C3) carbide	**0**	**6**	**A** = TiAlN		**0017** = Fractional (in)	See pgs. **5 - 6** for a complete list of geometries.
		C5 = P40 (C5) carbide	**1**	**7**	**N** = TiCN			
			2	**8**	**T** = TiN			
			3					

Ordering Instructions

▶ **Standard Items:**

All orders are processed through Allied Machine's computerized order entry and invoicing system. Please specify the correct item number as well as a full description of the desired item(s) so we can process your order accurately and efficiently. Incorrect item numbers and/or descriptions will cause unnecessary delays and possible returns that are subject to a 10% restocking charge. Your assistance is critical if we are to achieve our goal of processing orders and shipping in-stock items error free within 24 hours.

▶ **Nonstandard Sizes and Geometries:**

Nonstandard diameter — Substitute the required diameter in place of the standard diameter.

Ex:	Standard item number	**132T-0101**
	Nonstandard diameter with standard geometry (inch)	**132T-1.0200** (Note: 4 decimal places)
	Nonstandard diameter with standard geometry (metric)	**132T-34.20** (Note: 2 decimal places)

Special geometry — Add the special geometry code at the end of the standard item number.

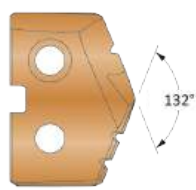
Ex:	Standard item number	**132T-0101**
	Standard diameter with special geometry (inch)	**132T-0101-SK**

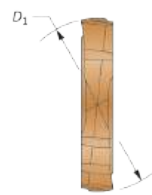
Nonstandard diameter with special geometry — Replace the standard diameter and add the special geometry code.

Ex:	Standard item number	**132T-0101**
	Nonstandard diameter with special geometry (inch)	**132T-1.0200-SK** (Note: 4 decimal places)

Reference Key

Symbol	Attribute
D_1	Insert diameter





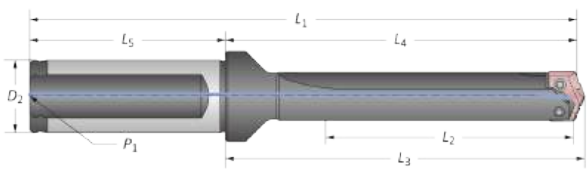
Product Nomenclature

T-A Drill Holders

2	30	20	S	–	004			I
	Drill Length	Series	Flute		Shank Designator			Shank Code
					Metric	Imperial	Morse Taper	
	10 = Stub	**Y0** = Y	**S** = Straight		**16** = 16 mm	**063** = 0.625"	**002** = 2MT	**I** = Imperial Morse taper
	20 = Short	**Z0** = Z	**H** = Helical		**20** = 20 mm	**075** = 0.750"	**003** = 3MT	**M** = Metric Morse taper
	30 = Intermediate	**00** = 0			**25** = 25 mm	**100** = 1.000"	**004** = 4MT	**L** = Lathe shank
	40 = Standard	**05** = 0.5			**32** = 32 mm	**125** = 1.250"	**005** = 5MT	**F** = Flanged shank
	45 = Standard Plus ⚠	**10** = 1			**40** = 40 mm	**150** = 1.500"		**FM** = Flanged metric shank
	50 = Extended ⚠	**15** = 1.5			**50** = 50 mm	**175** = 1.750"		**ER** = ER collet (Y - 0)
	60 = Long ⚠	**20** = 2				**200** = 2.000"		
	65 = Long Plus ⚠	**25** = 2.5				**300** = 3.000"		
	70 = XL ⚠	**30** = 3						
	90 = 3XL ⚠	**40** = 4						
		50 = 5/6						
		70 = 7/8						

Reference Key

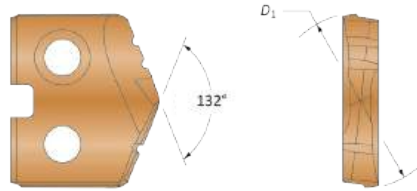
Symbol	Attribute
D_2	Shank diameter
L_1	Overall length
L_2	Drill depth
L_3	Holder reference length
L_4	Holder length
L_5	Shank length
P_1	Rear pipe tap
P_2	Side pipe tap
RCA	Corresponding RCA item number
MT	Morse taper size
ER	ER collet size

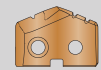


Y Series: 9.50 mm - 11.09 mm (0.3740" - 0.4369")

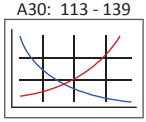
GEN2 T-A® Drill Inserts



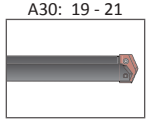


Insert			HSS: Super Cobalt	Carbide: K35 (C1)	Carbide: K20 (C2)
					
			Part No.	Part No.	Part No.
D_1 mm	D_1 inch	Fractional Equivalent	AM200®	AM300®	AM300®
9.50	0.3740	—	**45YH-9.5**	**4C1YP-9.5**	**4C2YP-9.5**
9.53	0.3750	3/8	**45YH-0012**	**4C1YP-0012**	**4C2YP-0012**
9.80	0.3860	—	**45YH-.386**	**4C1YP-.386**	**4C2YP-.386**
9.92	0.3906	25/64	**45YH-.390**	**4C1YP-.390**	**4C2YP-.390**
10.00	0.3937	—	**45YH-10**	**4C1YP-10**	**4C2YP-10**
10.20	0.4016	—	**45YH-10.2**	**4C1YP-10.2**	**4C2YP-10.2**
10.32	0.4063	13/32	**45YH-0013**	**4C1YP-0013**	**4C2YP-0013**
10.50	0.4134	—	**45YH-10.5**	**4C1YP-10.5**	**4C2YP-10.5**
10.72	0.4219	27/64	**45YH-.421**	**4C1YP-.421**	**4C2YP-.421**
10.80	0.4252	—	**45YH-10.8**	**4C1YP-10.8**	**4C2YP-10.8**
11.00	0.4331	—	**45YH-11**	**4C1YP-11**	**4C2YP-11**

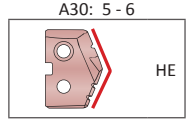
A30: 113 - 139
Key on A30: 2



A30: 19 - 21



A30: 5 - 6



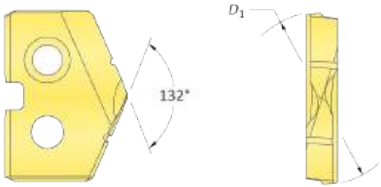
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

Inserts sold in quantities of 2.

Y Series: 9.50 mm - 11.09 mm (0.3740" - 0.4369")

T-A® Drill Inserts



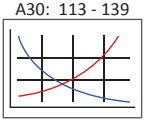


Insert			HSS: Super Cobalt		
					
			Part No.	Part No.	Part No.
D_1 mm	D_1 inch	Fractional Equivalent	TiN	TiAlN	TiCN
9.50	0.3740	—	**15YT-9.5**	**15YA-9.5**	**15YN-9.5**
9.53	0.3750	3/8	**15YT-0012**	**15YA-0012**	**15YN-0012**
9.80	0.3860	—	**15YT-.386**	**15YA-.386**	**15YN-.386**
9.92	0.3906	25/64	**15YT-.390**	**15YA-.390**	**15YN-.390**
10.00	0.3937	—	**15YT-10**	**15YA-10**	**15YN-10**
10.20	0.4016	—	**15YT-10.2**	**15YA-10.2**	**15YN-10.2**
10.32	0.4063	13/32	**15YT-0013**	**15YA-0013**	**15YN-0013**
10.50	0.4134	—	**15YT-10.5**	**15YA-10.5**	**15YN-10.5**
10.72	0.4219	27/64	**15YT-.421**	**15YA-.421**	**15YN-.421**
10.80	0.4252	—	**15YT-10.8**	**15YA-10.8**	**15YN-10.8**
11.00	0.4331	—	**15YT-11**	**15YA-11**	**15YN-11**

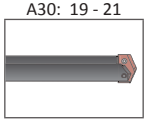
Insert			HSS: Premium Cobalt		
					
			Part No.	Part No.	Part No.
D_1 mm	D_1 inch	Fractional Equivalent	TiN	TiAlN	TiCN
9.50	0.3740	—	**18YT-9.5**	**18YA-9.5**	**18YN-9.5**
9.53	0.3750	3/8	**18YT-0012**	**18YA-0012**	**18YN-0012**
9.80	0.3860	—	**18YT-.386**	**18YA-.386**	**18YN-.386**
9.92	0.3906	25/64	**18YT-.390**	**18YA-.390**	**18YN-.390**
10.00	0.3937	—	**18YT-10**	**18YA-10**	**18YN-10**
10.20	0.4016	—	**18YT-10.2**	**18YA-10.2**	**18YN-10.2**
10.32	0.4063	13/32	**18YT-0013**	**18YA-0013**	**18YN-0013**
10.50	0.4134	—	**18YT-10.5**	**18YA-10.5**	**18YN-10.5**
10.72	0.4219	27/64	**18YT-.421**	**18YA-.421**	**18YN-.421**
10.80	0.4252	—	**18YT-10.8**	**18YA-10.8**	**18YN-10.8**
11.00	0.4331	—	**18YT-11**	**18YA-11**	**18YN-11**

A30: 113 - 139

Key on A30: 2



A30: 19 - 21



A30: 5 - 6



HI, HR, CR, TC, SK, NP, IN, RN, CN, AN, BR, CI, CP, NC, WC

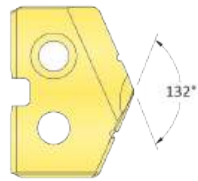
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

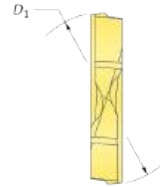
Inserts sold in quantities of 2.

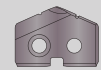
Y Series: 9.50 mm - 11.09 mm (0.3740" - 0.4369")

T-A® Drill Inserts



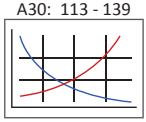




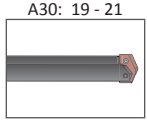
Insert			Carbide: P40 (C5)		Carbide: K20 (C2)	
						
			Part No.	Part No.	Part No.	Part No.
D_1 mm	D_1 inch	Fractional Equivalent	TiN	TiAlN	TiN	TiAlN
9.50	0.3740	—	**1C5YT-9.5**	**1C5YA-9.5**	**1C2YT-9.5**	**1C2YA-9.5**
9.53	0.3750	3/8	**1C5YT-0012**	**1C5YA-0012**	**1C2YT-0012**	**1C2YA-0012**
9.80	0.3860	—	**1C5YT-.386**	**1C5YA-.386**	**1C2YT-.386**	**1C2YA-.386**
9.92	0.3906	25/64	**1C5YT-.390**	**1C5YA-.390**	**1C2YT-.390**	**1C2YA-.390**
10.00	0.3937	—	**1C5YT-10**	**1C5YA-10**	**1C2YT-10**	**1C2YA-10**
10.20	0.4016	—	**1C5YT-10.2**	**1C5YA-10.2**	**1C2YT-10.2**	**1C2YA-10.2**
10.32	0.4063	13/32	**1C5YT-0013**	**1C5YA-0013**	**1C2YT-0013**	**1C2YA-0013**
10.50	0.4134	—	**1C5YT-10.5**	**1C5YA-10.5**	**1C2YT-10.5**	**1C2YA-10.5**
10.72	0.4219	27/64	**1C5YT-.421**	**1C5YA-.421**	**1C2YT-.421**	**1C2YA-.421**
10.80	0.4252	—	**1C5YT-10.8**	**1C5YA-10.8**	**1C2YT-10.8**	**1C2YA-10.8**
11.00	0.4331	—	**1C5YT-11**	**1C5YA-11**	**1C2YT-11**	**1C2YA-11**

A30: 113 - 139

Key on A30: 2



A30: 19 - 21



A30: 5 - 6



HI, HR, CR, TC, SK, NP, IN, RN, CN, AN, BR, CI, CP, NC, WC, BT

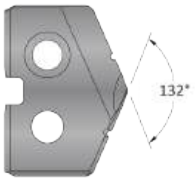
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

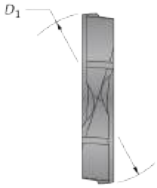
Inserts sold in quantities of 2.

Y Series: 9.50 mm - 11.09 mm (0.3740" - 0.4369")

T-A® Drill Inserts

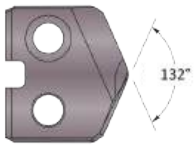


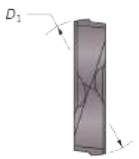






Cast Iron Geometry



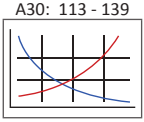


Insert			Carbide: N2	Cast Iron Geometry Carbide: K10 (C3)
				
D_1 mm	D_1 inch	Fractional Equivalent	Part No. Diamond Film*	Part No. TiAlN
9.50	0.3740	—	**1N2YD-9.5**	**1C3YA-9.5-CI**
9.53	0.3750	3/8	**1N2YD-0012**	**1C3YA-0012-CI**
9.80	0.3860	—	**1N2YD-.386**	**1C3YA-.386-CI**
9.92	0.3906	25/64	**1N2YD-.390**	**1C3YA-.390-CI**
10.00	0.3937	—	**1N2YD-10**	**1C3YA-10-CI**
10.20	0.4016	—	**1N2YD-10.2**	**1C3YA-10.2-CI**
10.32	0.4063	13/32	**1N2YD-0013**	**1C3YA-0013-CI**
10.50	0.4134	—	**1N2YD-10.5**	**1C3YA-10.5-CI**
10.72	0.4219	27/64	**1N2YD-.421**	**1C3YA-.421-CI**
10.80	0.4252	—	**1N2YD-10.8**	**1C3YA-10.8-CI**
11.00	0.4331	—	**1N2YD-11**	**1C3YA-11-CI**

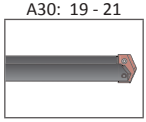
*****Diamond film coated items are nonstocked standard and only available in standard geometry. For additional geometries, please contact Application Engineering. Process fees apply.

Key on A30: 2

A30: 113 - 139



A30: 19 - 21



A30: 5 - 6



HI, HR, CR, TC, SK, NP, IN, RN, CN, AN, BR, CI, CP, NC, WC, BT

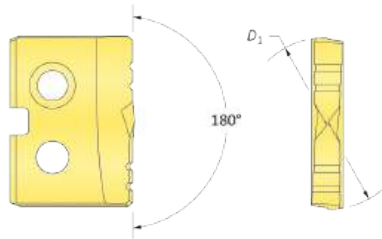
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

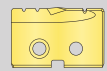
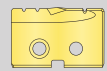
Inserts sold in quantities of 2.

Y Series: 9.50 mm - 11.09 mm (0.3740" - 0.4369")

T-A® Drill Inserts

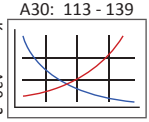




Insert			Flat Bottom Geometry	
			HSS: Super Cobalt	Carbide: K20 (C2)
				
			Part No.	Part No.
D_1 mm	D_1 inch	Fractional Equivalent	TiN	TiN*
9.50	0.3740	—	**15YT-9.5-FB**	**15YT-9.5-FB**
9.53	0.3750	3/8	**15YT-0012-FB**	**15YT-0012-FB**
9.80	0.3860	—	**15YT-.386-FB**	**15YT-.386-FB**
9.92	0.3906	25/64	**15YT-.390-FB**	**15YT-.390-FB**
10.00	0.3937	—	**15YT-10-FB**	**15YT-10-FB**
10.20	0.4016	—	**15YT-10.2-FB**	**15YT-10.2-FB**
10.32	0.4063	13/32	**15YT-0013-FB**	**15YT-0013-FB**
10.50	0.4134	—	**15YT-10.5-FB**	**15YT-10.5-FB**
10.72	0.4219	27/64	**15YT-.421-FB**	**15YT-.421-FB**
10.80	0.4252	—	**15YT-10.8-FB**	**15YT-10.8-FB**
11.00	0.4331	—	**15YT-11-FB**	**15YT-11-FB**

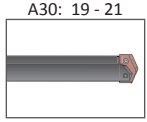
***** Carbide: K20 (C2) inserts with flat bottom geometry are nonstocked standard items. Process fees apply.

A30: 113 - 139

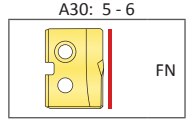


Key on A30: 2

A30: 19 - 21



A30: 5 - 6



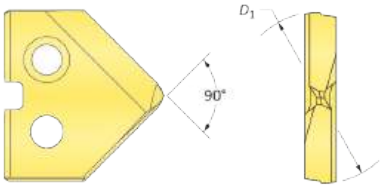
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

Inserts sold in quantities of 2.

Y Series: 9.50 mm - 11.09 mm (0.3740" - 0.4369")

T-A® Drill Inserts





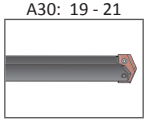
Insert			90° Spot & Chamfer Geometry HSS: Super Cobalt		
			Part No.	Part No.	Part No.
D_1 mm	D_1 inch	Fractional Equivalent	TiN	TiAlN	TiCN
9.50	0.3740	—	**15YT-9.5-SP**	**15YA-9.5-SP**	**15YN-9.5-SP**
9.53	0.3750	3/8	**15YT-0012-SP**	**15YA-0012-SP**	**15YN-0012-SP**
9.80	0.3860	—	**15YT-.386-SP**	**15YA-.386-SP**	**15YN-.386-SP**
9.92	0.3906	25/64	**15YT-.390-SP**	**15YA-.390-SP**	**15YN-.390-SP**
10.00	0.3937	—	**15YT-10-SP**	**15YA-10-SP**	**15YN-10-SP**
10.20	0.4016	—	**15YT-10.2-SP**	**15YA-10.2-SP**	**15YN-10.2-SP**
10.32	0.4063	13/32	**15YT-0013-SP**	**15YA-0013-SP**	**15YN-0013-SP**
10.50	0.4134	—	**15YT-10.5-SP**	**15YA-10.5-SP**	**15YN-10.5-SP**
10.72	0.4219	27/64	**15YT-.421-SP**	**15YA-.421-SP**	**15YN-.421-SP**
10.80	0.4252	—	**15YT-10.8-SP**	**15YA-10.8-SP**	**15YN-10.8-SP**
11.00	0.4331	—	**15YT-11-SP**	**15YA-11-SP**	**15YN-11-SP**

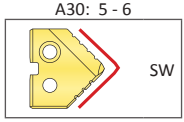
Key on A30: 2

A30: 113 - 139

A30: 19 - 21

A30: 5 - 6





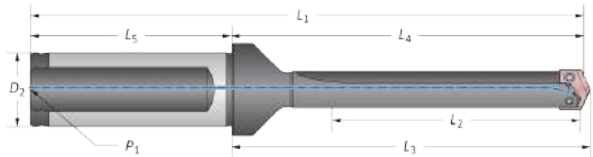
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

Inserts sold in quantities of 2.

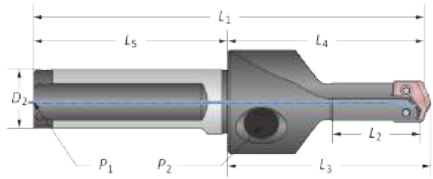
Y Series: 9.50 mm - 11.09 mm (0.3740" - 0.4369")

T-A® Drill Holders









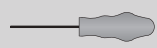
Stub Length

Flange Shank Holders

Flute	Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No.
Straight	Stub	21.9	47.6	49.9	95.6	48.0	16	1/16 BSPT	210Y0S-16FM
	Short	28.9	61.1	63.4	111.1	50.0	20	1/8 BSPT	220Y0S-20FM
	Standard	57.6	89.7	92.0	139.7	50.0	20	1/8 BSPT	240Y0S-20FM
	Extended	108.4	140.5	142.8	190.5	50.0	20	1/8 BSPT	⚠ 250Y0S-20FM
	XL	219.4	251.6	253.9	301.6	50.0	20	1/8 BSPT	⚠ 270Y0S-20FM
	3XL	287.6	319.9	322.1	369.9	50.0	20	1/8 BSPT	⚠ 290Y0S-20FM
Helical	Standard	72.6	89.7	92.0	139.7	50.0	20	1/8 BSPT	240Y0H-20FM
	Standard Plus	98.3	115.4	117.7	165.4	50.0	20	1/8 BSPT	⚠ 245Y0H-20FM
	Extended	123.4	140.5	142.8	190.5	50.0	20	1/8 BSPT	⚠ 250Y0H-20FM
Straight	Stub	0.861	1.875	1.965	3.750	1.875	5/8	1/16 NPT	210Y0S-063F
	Short	1.141	2.406	2.496	4.436	2.030	3/4	1/8 NPT	220Y0S-075F
	Standard	2.266	3.531	3.621	5.561	2.030	3/4	1/8 NPT	240Y0S-075F
	Extended	4.266	5.531	5.621	7.561	2.030	3/4	1/8 NPT	⚠ 250Y0S-075F
Helical	Standard	2.860	3.531	3.621	5.561	2.030	3/4	1/8 NPT	240Y0H-075F
	Standard Plus	3.872	4.543	4.633	6.573	2.030	3/4	1/8 NPT	245Y0H-075F
	Extended	4.860	5.531	5.621	7.561	2.030	3/4	1/8 NPT	⚠ 250Y0H-075F

NOTE: Stub length holders have a 3.175 mm (1/8") side pipe tap (P_2).

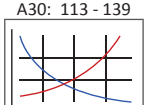
Connection Accessories

 Insert Screws	 Nylon Locking Screws	 Insert Driver	 Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
724-IP7-1	724N-IP7-1	8IP-7	8IP-7TL	8IP-7B	84 N-cm (7.4 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

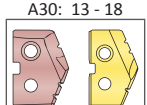
⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A30: 113 - 139



Key on A30: 2

A30: 13 - 18

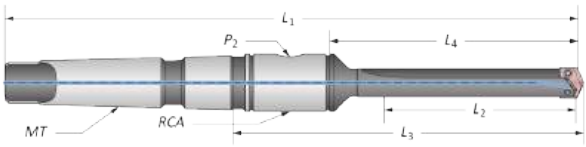


Ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

Y Series: 9.50 mm - 11.09 mm (0.3740" - 0.4369")

T-A® Drill Holders





Taper Shank Holders

	Flute	Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank *MT**	Shank P_2	Shank RCA	Part No.
m	Straight	Short	27.3	51.6	88.0	160.3	#2 MT ISO	1/16 BSPT	2T-2SRM	**220Y0S-002M**
m	Helical	Standard	69.1	80.2	116.6	188.9	#2 MT ISO	1/16 BSPT	2T-2SRM	**240Y0H-002M**
m	Helical	Extended	119.9	131.0	167.4	239.7	#2 MT ISO	1/16 BSPT	2T-2SRM	⚠ **250Y0H-002M**
i	Straight	Short	1.075	2.031	3.464	6.312	#2 MT	1/16 NPT	2T-2SR	**220Y0S-002I**
i	Straight	Standard	2.200	3.156	4.589	7.437	#2 MT	1/16 NPT	2T-2SR	**240Y0S-002I**
i	Straight	Extended	4.200	5.156	6.589	9.437	#2 MT	1/16 NPT	2T-2SR	⚠ **250Y0S-002I**
i	Helical	Standard	2.719	3.156	4.589	7.437	#2 MT	1/16 NPT	2T-2SR	**240Y0H-002I**
i	Helical	Extended	4.719	5.156	6.589	9.437	#2 MT	1/16 NPT	2T-2SR	⚠ **250Y0H-002I**

*MT ISO 296 type BEK.

Connection Accessories

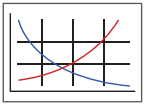
 Insert Screws	 Nylon Locking Screws	 Insert Driver	 Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
724-IP7-1	724N-IP7-1	8IP-7	8IP-7TL	8IP-7B	84 N-cm (7.4 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

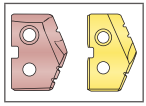
⚠ **WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

Key on A30: 2

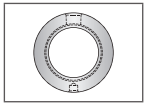
A30: 113 - 139



A30: 13 - 18



A30: 22 & 111

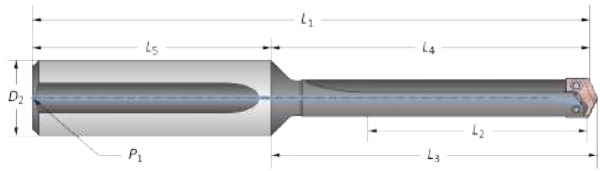


m = Metric (mm)
i = Imperial (in)
Screws sold in multiples of 10.

Y Series: 9.50 mm - 11.09 mm (0.3740" - 0.4369")

T-A® Drill Holders

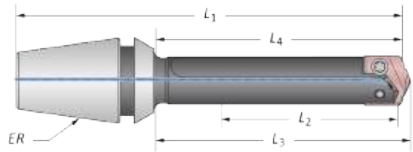




Straight Shank Holders

Flute	Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No.
Straight	Short	1.080	2.031	2.121	4.406	2.375	3/4	1/8 NPT	**220Y0S-075L**
	Standard	2.205	3.156	3.246	5.531	2.375	3/4	1/8 NPT	**240Y0S-075L**
	Extended	4.205	5.156	5.246	7.531	2.375	3/4	1/8 NPT	⚠ **250Y0S-075L**
	XL	8.580	9.531	9.621	11.906	2.375	3/4	1/8 NPT	⚠ **270Y0S-075L**
	3XL	11.267	12.218	12.308	14.593	2.375	3/4	1/8 NPT	⚠ **290Y0S-075L**





ER Collet Holders

Flute	Body L_2	Body L_4	Body L_3	Body L_1	Body *ER*	Part No.	Collet Nut without Retaining Ring
Straight	42.5	48.5	50.8	75.8	ER-16	**210Y0S-16ER**	ER-16N
	42.5	48.5	50.8	79.8	ER-20	**210Y0S-20ER**	ER-20N

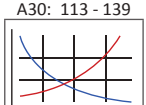
Connection Accessories

Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
724-IP7-1	724N-IP7-1	8IP-7	8IP-7TL	8IP-7B	84 N-cm (7.4 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

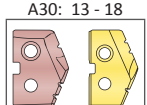
⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A30: 113 - 139



Key on A30: 2

A30: 13 - 18

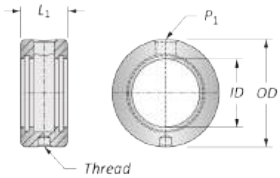


Ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

Y Series: 9.50 mm - 11.09 mm (0.3740" - 0.4369")

T-A® Drill Accessories





Rotary Coolant Adapter (RCA) and Accessories

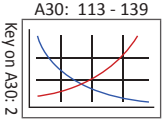
	ID	OD	L_1	Driving Rod Thread	P_1	Part No.	RCA O-Rings	
							Kit Part No.*	Replacements
m	19.1	44.5	22.2	M8 x 1.25	1/8 BSPT	⚠ 2T-2SRM	2T1-2SR	2T1-2OR-10
i	0.750	1.750	0.875	5/16" - 18	1/8 NPT	⚠ 2T-2SR	2T1-2SR	2T1-2OR-10

*RCA Repair Kit includes (2) O-rings, (2) snap rings, and (2) thrust washers.

⚠ Refer to page A30: 111 for proper RCA assembly and safety information. RCA rotation during drilling can cause hose and/or hose fitting failure, machinery damage, and/or serious injury. To prevent, use RCA and positive stop studs when drilling.

⚠ WARNING RCA rotation during drilling can cause hose and/or hose fitting failure, machinery damage, and/or serious injury. To prevent, use RCA and positive stop studs when drilling. Factory technical assistance is also available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com**

A30: 113 - 139

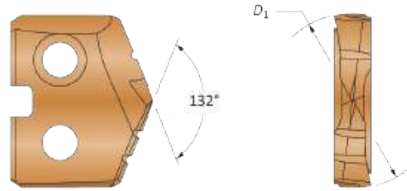


m = Metric (mm)
i = Imperial (in)
O-rings sold in packs of 10.

Z Series: 11.10 mm - 12.97 mm (0.4370" - 0.5109")

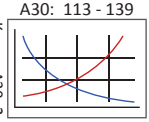
GEN2 T-A® Drill Inserts



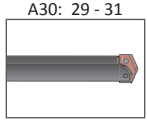


Insert			HSS: Super Cobalt	Carbide: K35 (C1)	Carbide: K20 (C2)
			Part No.	Part No.	Part No.
D_1 mm	D_1 inch	Fractional Equivalent	AM200®	AM300®	AM300®
11.11	0.4375	7/16	**45ZH-0014**	**4C1ZP-0014**	**4C2ZP-0014**
11.46	0.4510	—	**45ZH-.451**	**4C1ZP-.451**	**4C2ZP-.451**
11.50	0.4528	—	**45ZH-11.5**	**4C1ZP-11.5**	**4C2ZP-11.5**
11.51	0.4531	29/64	**45ZH-.453**	**4C1ZP-.453**	**4C2ZP-.453**
11.91	0.4688	15/32	**45ZH-0015**	**4C1ZP-0015**	**4C2ZP-0015**
12.00	0.4724	—	**45ZH-12**	**4C1ZP-12**	**4C2ZP-12**
12.30	0.4844	31/64	**45ZH-.484**	**4C1ZP-.484**	**4C2ZP-.484**
12.50	0.4921	—	**45ZH-12.5**	**4C1ZP-12.5**	**4C2ZP-12.5**
12.70	0.5000	1/2	**45ZH-0016**	**4C1ZP-0016**	**4C2ZP-0016**
12.85	0.5060	—	**45ZH-.506**	**4C1ZP-.506**	**4C2ZP-.506**
12.95	0.5100	—	**45ZH-.510**	**4C1ZP-.510**	**4C2ZP-.510**

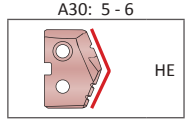
A30: 113 - 139
Key on A30: 2



A30: 29 - 31



A30: 5 - 6



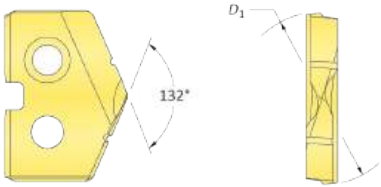
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

Inserts sold in quantities of 2.

Z Series: 11.10 mm - 12.97 mm (0.4370" - 0.5109")

T-A® Drill Inserts



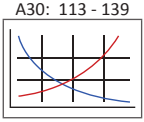


Insert			HSS: Super Cobalt		
			Part No.	Part No.	Part No.
D_1 mm	D_1 inch	Fractional Equivalent	TiN	TiAlN	TiCN
11.11	0.4375	7/16	**15ZT-0014**	**15ZA-0014**	**15ZN-0014**
11.46	0.4510	—	**15ZT-.451**	**15ZA-.451**	**15ZN-.451**
11.50	0.4528	—	**15ZT-11.5**	**15ZA-11.5**	**15ZN-11.5**
11.51	0.4531	29/64	**15ZT-.453**	**15ZA-.453**	**15ZN-.453**
11.91	0.4688	15/32	**15ZT-0015**	**15ZA-0015**	**15ZN-0015**
12.00	0.4724	—	**15ZT-12**	**15ZA-12**	**15ZN-12**
12.30	0.4844	31/64	**15ZT-.484**	**15ZA-.484**	**15ZN-.484**
12.50	0.4921	—	**15ZT-12.5**	**15ZA-12.5**	**15ZN-12.5**
12.70	0.5000	1/2	**15ZT-0016**	**15ZA-0016**	**15ZN-0016**
12.85	0.5060	—	**15ZT-.506**	**15ZA-.506**	**15ZN-.506**
12.95	0.5100	—	**15ZT-.510**	**15ZA-.510**	**15ZN-.510**

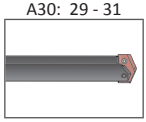
Insert			HSS: Premium Cobalt		
			Part No.	Part No.	Part No.
D_1 mm	D_1 inch	Fractional Equivalent	TiN	TiAlN	TiCN
11.11	0.4375	7/16	**18ZT-0014**	**18ZA-0014**	**18ZN-0014**
11.46	0.4510	—	**18ZT-.451**	**18ZA-.451**	**18ZN-.451**
11.50	0.4528	—	**18ZT-11.5**	**18ZA-11.5**	**18ZN-11.5**
11.51	0.4531	29/64	**18ZT-.453**	**18ZA-.453**	**18ZN-.453**
11.91	0.4688	15/32	**18ZT-0015**	**18ZA-0015**	**18ZN-0015**
12.00	0.4724	—	**18ZT-12**	**18ZA-12**	**18ZN-12**
12.30	0.4844	31/64	**18ZT-.484**	**18ZA-.484**	**18ZN-.484**
12.50	0.4921	—	**18ZT-12.5**	**18ZA-12.5**	**18ZN-12.5**
12.70	0.5000	1/2	**18ZT-0016**	**18ZA-0016**	**18ZN-0016**
12.85	0.5060	—	**18ZT-.506**	**18ZA-.506**	**18ZN-.506**
12.95	0.5100	—	**18ZT-.510**	**18ZA-.510**	**18ZN-.510**

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Key on A30: 2



A30: 29 - 31



A30: 5 - 6



HI, HR, CR, TC, SK, NP, IN, RN, CN, AN, BR, CI, CP, NC, WC

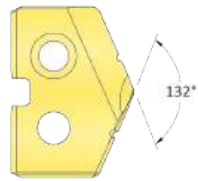
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

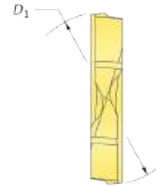
Inserts sold in quantities of 2.

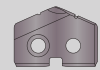
Z Series: 11.10 mm - 12.97 mm (0.4370" - 0.5109")

T-A® Drill Inserts

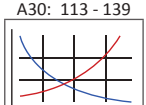




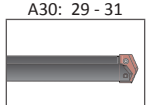


Insert			Carbide: P40 (C5)		Carbide: K20 (C2)	
			 Part No.	 Part No.	 Part No.	 Part No.
D_1 mm	D_1 inch	Fractional Equivalent	TiN	TiAlN	TiN	TiAlN
11.11	0.4375	7/16	**1C5ZT-0014**	**1C5ZA-0014**	**1C2ZT-0014**	**1C2ZA-0014**
11.46	0.4510	—	**1C5ZT-.451**	**1C5ZA-.451**	**1C2ZT-.451**	**1C2ZA-.451**
11.50	0.4528	—	**1C5ZT-11.5**	**1C5ZA-11.5**	**1C2ZT-11.5**	**1C2ZA-11.5**
11.51	0.4531	29/64	**1C5ZT-.453**	**1C5ZA-.453**	**1C2ZT-.453**	**1C2ZA-.453**
11.91	0.4688	15/32	**1C5ZT-0015**	**1C5ZA-0015**	**1C2ZT-0015**	**1C2ZA-0015**
12.00	0.4724	—	**1C5ZT-12**	**1C5ZA-12**	**1C2ZT-12**	**1C2ZA-12**
12.30	0.4844	31/64	**1C5ZT-.484**	**1C5ZA-.484**	**1C2ZT-.484**	**1C2ZA-.484**
12.50	0.4921	—	**1C5ZT-12.5**	**1C5ZA-12.5**	**1C2ZT-12.5**	**1C2ZA-12.5**
12.70	0.5000	1/2	**1C5ZT-0016**	**1C5ZA-0016**	**1C2ZT-0016**	**1C2ZA-0016**
12.85	0.5060	—	**1C5ZT-.506**	**1C5ZA-.506**	**1C2ZT-.506**	**1C2ZA-.506**
12.95	0.5100	—	**1C5ZT-.510**	**1C5ZA-.510**	**1C2ZT-.510**	**1C2ZA-.510**

A30: 113 - 139
Key on A30: 2



A30: 29 - 31



A30: 5 - 6



HI, HR, CR, TC, SK, NP, IN, RN, CN, AN, BR, CI, CP, NC, WC, BT

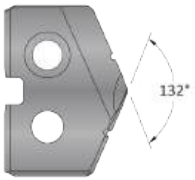
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

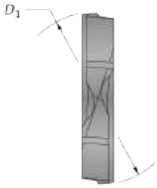
Inserts sold in quantities of 2.

Z Series: 11.10 mm - 12.97 mm (0.4370" - 0.5109")

T-A® Drill Inserts

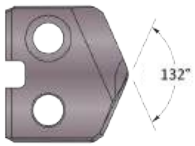








Cast Iron Geometry



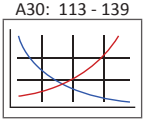


Insert			Carbide: N2	Cast Iron Geometry Carbide: K10 (C3)
D_1 mm	D_1 inch	Fractional Equivalent	Part No. Diamond Film	Part No. TiAlN
11.11	0.4375	7/16	**1N2ZD-0014**	**1C3ZA-0014-CI**
11.46	0.4510	—	**1N2ZD-.451**	**1C3ZA-.451-CI**
11.50	0.4528	—	**1N2ZD-11.5**	**1C3ZA-11.5-CI**
11.51	0.4531	29/64	**1N2ZD-.453**	**1C3ZA-.453-CI**
11.91	0.4688	15/32	**1N2ZD-0015**	**1C3ZA-0015-CI**
12.00	0.4724	—	**1N2ZD-12**	**1C3ZA-12-CI**
12.30	0.4844	31/64	**1N2ZD-.484**	**1C3ZA-.484-CI**
12.50	0.4921	—	**1N2ZD-12.5**	**1C3ZA-12.5-CI**
12.70	0.5000	1/2	**1N2ZD-0016**	**1C3ZA-0016-CI**
12.85	0.5060	—	**1N2ZD-.506**	**1C3ZA-.506-CI**
12.95	0.5100	—	**1N2ZD-.510**	**1C3ZA-.510-CI**

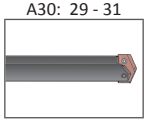
*****Diamond film coated items are nonstocked standard and only available in standard geometry. For additional geometries, please contact Application Engineering. Process fees apply.

Key on A30: 2

A30: 113 - 139



A30: 29 - 31



A30: 5 - 6



HI, HR, CR, TC, SK, NP, IN, RN, CN, AN, BR, CI, CP, NC, WC, BT

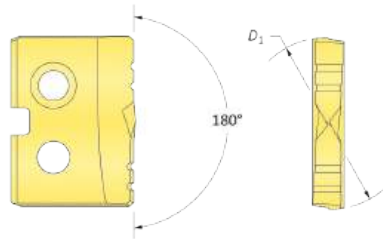
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

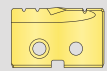
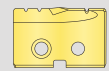
Inserts sold in quantities of 2.

Z Series: 11.10 mm - 12.97 mm (0.4370" - 0.5109")

T-A® Drill Inserts

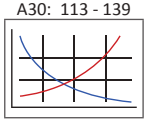




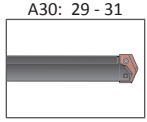
Insert			Flat Bottom Geometry	
			HSS: Super Cobalt	Carbide: K20 (C2)
				
			Part No.	Part No.
D_1 mm	D_1 inch	Fractional Equivalent	TiN	TiN*
11.11	0.4375	7/16	**15ZT-0014-FB**	**1C2ZT-0014-FB**
11.46	0.4510	—	**15ZT-.451-FB**	**1C2ZT-.451-FB**
11.50	0.4528	—	**15ZT-11.5-FB**	**1C2ZT-11.5-FB**
11.51	0.4531	29/64	**15ZT-.453-FB**	**1C2ZT-.453-FB**
11.91	0.4688	15/32	**15ZT-0015-FB**	**1C2ZT-0015-FB**
12.00	0.4724	—	**15ZT-12-FB**	**1C2ZT-12-FB**
12.30	0.4844	31/64	**15ZT-.484-FB**	**1C2ZT-.484-FB**
12.50	0.4921	—	**15ZT-12.5-FB**	**1C2ZT-12.5-FB**
12.70	0.5000	1/2	**15ZT-0016-FB**	**1C2ZT-0016-FB**
12.85	0.5060	—	**15ZT-.506-FB**	**1C2ZT-.506-FB**
12.95	0.5100	—	**15ZT-.510-FB**	**1C2ZT-.510-FB**

*Carbide: K20 (C2) inserts with flat bottom geometry are nonstocked standard items. Process fees apply.

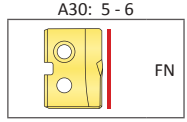
A30: 113 - 139
Key on A30: 2



A30: 29 - 31



A30: 5 - 6



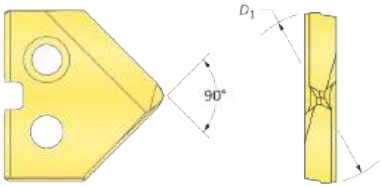
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

Inserts sold in quantities of 2.

Z Series: 11.10 mm - 12.97 mm (0.4370" - 0.5109")

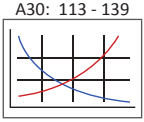
T-A® Drill Inserts



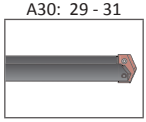


Insert			90° Spot & Chamfer Geometry HSS: Super Cobalt		
			Part No.	Part No.	Part No.
D_1 mm	D_1 inch	Fractional Equivalent	TiN	TiAlN	TiCN
11.11	0.4375	7/16	15ZT-0014-SP	15ZA-0014-SP	15ZN-0014-SP
11.46	0.4510	—	15ZT-.451-SP	15ZA-.451-SP	15ZN-.451-SP
11.50	0.4528	—	15ZT-11.5-SP	15ZA-11.5-SP	15ZN-11.5-SP
11.51	0.4531	29/64	15ZT-.453-SP	15ZA-.453-SP	15ZN-.453-SP
11.91	0.4688	15/32	15ZT-0015-SP	15ZA-0015-SP	15ZN-0015-SP
12.00	0.4724	—	15ZT-12-SP	15ZA-12-SP	15ZN-12-SP
12.30	0.4844	31/64	15ZT-.484-SP	15ZA-.484-SP	15ZN-.484-SP
12.50	0.4921	—	15ZT-12.5-SP	15ZA-12.5-SP	15ZN-12.5-SP
12.70	0.5000	1/2	15ZT-0016-SP	15ZA-0016-SP	15ZN-0016-SP
12.85	0.5060	—	15ZT-.506-SP	15ZA-.506-SP	15ZN-.506-SP
12.95	0.5100	—	15ZT-.510-SP	15ZA-.510-SP	15ZN-.510-SP

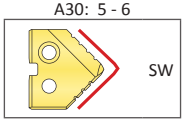
A30: 113 - 139
Key on A30: 2



A30: 29 - 31



A30: 5 - 6



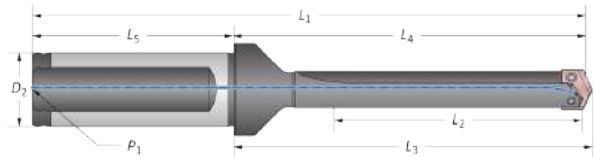
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

Inserts sold in quantities of 2.

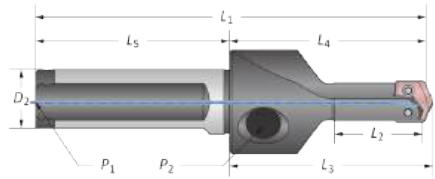
Z Series: 11.10 mm - 12.97 mm (0.4370" - 0.5109")

T-A® Drill Holders









Stub Length

Flange Shank Holders

Flute	Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No.
Straight (m)	Stub	20.4	45.6	47.9	93.6	48.0	16	1/16 BSPT	210Z0S-16FM
	Short	29.1	61.1	63.4	111.1	50.0	20	1/8 BSPT	220Z0S-20FM
	Standard	57.6	89.7	92.0	139.7	50.0	20	1/8 BSPT	240Z0S-20FM
	Extended	108.4	140.5	142.8	190.5	50.0	20	1/8 BSPT	⚠ 250Z0S-20FM
	XL	219.6	251.6	253.9	301.6	50.0	20	1/8 BSPT	⚠ 270Z0S-20FM
	3XL	287.9	319.9	322.1	369.9	50.0	20	1/8 BSPT	⚠ 290Z0S-20FM
Helical (m)	Standard	73.0	89.7	92.0	139.7	50.0	20	1/8 BSPT	240Z0H-20FM
	Standard Plus	98.7	115.4	117.7	165.4	50.0	20	1/8 BSPT	⚠ 245Z0H-20FM
	Extended	123.8	140.5	142.8	190.5	50.0	20	1/8 BSPT	⚠ 250Z0H-20FM
	Long	192.7	209.4	211.7	259.4	50.0	20	1/8 BSPT	⚠ 260Z0H-20FM
Straight (i)	Stub	0.805	1.797	1.887	3.672	1.875	5/8	1/16 NPT	210Z0S-063F
	Short	1.142	2.406	2.496	4.436	2.030	3/4	1/8 NPT	220Z0S-075F
	Standard	2.267	3.531	3.621	5.561	2.030	3/4	1/8 NPT	240Z0S-075F
	Extended	4.267	5.531	5.621	7.561	2.030	3/4	1/8 NPT	⚠ 250Z0S-075F
Helical (i)	Standard	2.874	3.531	3.621	5.561	2.030	3/4	1/8 NPT	240Z0H-075F
	Standard Plus	3.886	4.543	4.633	6.573	2.030	3/4	1/8 NPT	⚠ 245Z0H-075F
	Extended	4.874	5.531	5.621	7.561	2.030	3/4	1/8 NPT	⚠ 250Z0H-075F
	Long	7.586	8.244	8.334	10.274	2.030	3/4	1/8 NPT	⚠ 260Z0H-075F

NOTE: Stub length holders have a 3.175 mm (1/8") side pipe tap (P_2).

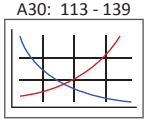
Connection Accessories

Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
7247-IP7-1	7247N-IP7-1	8IP-7	8IP-7TL	8IP-7B	84 N-cm (7.4 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

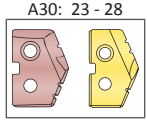
⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A30: 113 - 139



Key on A30: 2

A30: 23 - 28

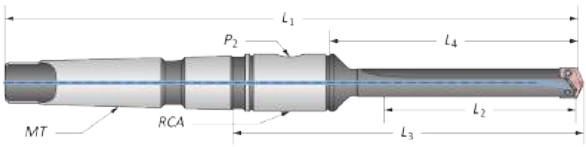


(m) = Metric (mm)
(i) = Imperial (in)
Screws sold in multiples of 10.

Z Series: 11.10 mm - 12.97 mm (0.4370" - 0.5109")

T-A® Drill Holders





Taper Shank Holders

	Flute	Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank *MT**	Shank P_2	Shank RCA	Part No.
m	Straight	Short	27.3	51.6	88.0	160.3	#2 MT ISO	1/16 BSPT	2T-2SRM	**220Z0S-002M**
m	Helical	Standard	69.4	80.2	116.6	188.9	#2 MT ISO	1/16 BSPT	2T-2SRM	**240Z0H-002M**
m	Helical	Extended	120.2	131.0	167.4	239.7	#2 MT ISO	1/16 BSPT	2T-2SRM	⚠ **250Z0H-002M**
i	Straight	Short	1.074	2.031	3.464	6.312	#2 MT	1/16 NPT	2T-2SR	**220Z0S-002I**
i	Straight	Standard	2.199	3.156	4.589	7.437	#2 MT	1/16 NPT	2T-2SR	**240Z0S-002I**
i	Straight	Extended	4.199	5.156	6.589	9.437	#2 MT	1/16 NPT	2T-2SR	⚠ **250Z0S-002I**
i	Helical	Standard	2.733	3.156	4.589	7.437	#2 MT	1/16 NPT	2T-2SR	**240Z0H-002I**
i	Helical	Extended	4.733	5.156	6.589	9.437	#2 MT	1/16 NPT	2T-2SR	⚠ **250Z0H-002I**

*MT ISO 296 type BEK.

Connection Accessories

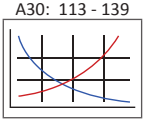
 Insert Screws	 Nylon Locking Screws	 Insert Driver	 Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
7247-IP7-1	7247N-IP7-1	8IP-7	8IP-7TL	8IP-7B	84 N-cm (7.4 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

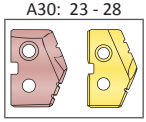
⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A30: 113 - 139

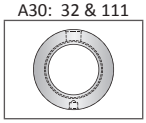
Key on A30: 2



A30: 23 - 28



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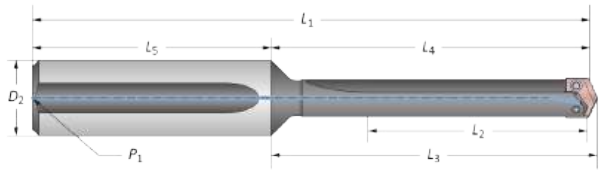


m = Metric (mm)
i = Imperial (in)
Screws sold in multiples of 10.

Z Series: 11.10 mm - 12.97 mm (0.4370" - 0.5109")

T-A® Drill Holders

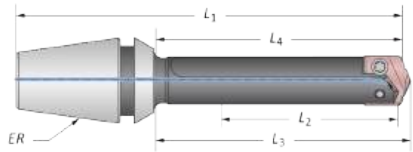




Straight Shank Holders

Flute	Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No.
Straight	Short	1.079	2.031	2.121	4.406	2.375	3/4	1/8 NPT	**220Z0S-075L**
	Standard	2.204	3.156	3.246	5.531	2.375	3/4	1/8 NPT	**240Z0S-075L**
	Extended	4.204	5.156	5.246	7.531	2.375	3/4	1/8 NPT	⚠ **250Z0S-075L**
	XL	8.579	9.531	9.621	11.906	2.375	3/4	1/8 NPT	⚠ **270Z0S-075L**
	3XL	11.266	12.218	12.308	14.593	2.375	3/4	1/8 NPT	⚠ **290Z0S-075L**





ER Collet Holders

Flute	Body L_2	Body L_4	Body L_3	Body L_1	Body *ER*	Part No.	Collet Nut without Retaining Ring
Straight	42.1	48.5	50.8	75.8	ER-16	**210Z0S-16ER**	ER-16N
	42.1	48.5	50.8	79.8	ER-20	**210Z0S-20ER**	ER-20N

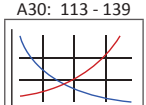
Connection Accessories

Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
7247-IP7-1	7247N-IP7-1	8IP-7	8IP-7TL	8IP-7B	84 N-cm (7.4 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

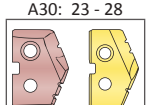
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A30: 113 - 139



Key on A30: 2

A30: 23 - 28

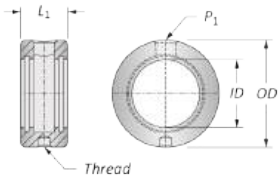


Ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

Z Series: 11.10 mm - 12.97 mm (0.4370" - 0.5109")

T-A Drill Accessories





Rotary Coolant Adapter (RCA) and Accessories

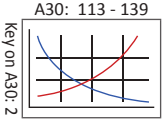
	ID	OD	L_1	Driving Rod Thread	P_1	Part No.	RCA O-Rings	
							Kit Part No.*	Replacements
m	19.1	44.5	22.2	M8 x 1.25	1/8 BSPT	⚠ 2T-2SRM	2T1-2SR	2T1-2OR-10
i	0.750	1.750	0.875	5/16" - 18	1/8 NPT	⚠ 2T-2SR	2T1-2SR	2T1-2OR-10

*RCA Repair Kit includes (2) O-rings, (2) snap rings, and (2) thrust washers.

⚠ Refer to page A30: 111 for proper RCA assembly and safety information. RCA rotation during drilling can cause hose and/or hose fitting failure, machinery damage, and/or serious injury. To prevent, use RCA and positive stop studs when drilling.

⚠ WARNING RCA rotation during drilling can cause hose and/or hose fitting failure, machinery damage, and/or serious injury. To prevent, use RCA and positive stop studs when drilling. Factory technical assistance is also available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com**

A30: 113 - 139

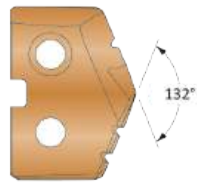


m = Metric (mm)
i = Imperial (in)
O-rings sold in packs of 10.

0 Series: 12.98 mm - 17.67 mm (0.5110" - 0.6959")

GEN2 T-A® Drill Inserts



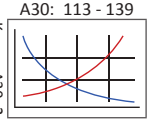




Series	Insert D_1 mm	Insert D_1 inch	Insert Fractional Equivalent	HSS: Super Cobalt Part No. AM200®	Carbide: K35 (C1) Part No. AM300®	Carbide: K20 (C2) Part No. AM300®
0	13.00	0.5118	—	450H-13	4C20P-13	4C10P-13
	13.10	0.5156	33/64	450H-.515	4C20P-.515	4C10P-.515
	13.50	0.5313	17/32	450H-0017	4C20P-0017	4C10P-0017
	13.50	0.5315	—	450H-13.5	4C20P-13.5	4C10P-13.5
	13.89	0.5469	35/64	450H-.546	4C20P-.546	4C10P-.546
	14.00	0.5512	—	450H-14	4C20P-14	4C10P-14
	14.29	0.5625	9/16	450H-0018	4C20P-0018	4C10P-0018
	14.50	0.5709	—	450H-14.5	4C20P-14.5	4C10P-14.5
	14.68	0.5781	37/64	450H-.578	4C20P-.578	4C10P-.578
	15.00	0.5906	—	450H-15	4C20P-15	4C10P-15
	15.08	0.5938	19/32	450H-0019	4C20P-0019	4C10P-0019
0.5	15.48	0.6094	39/64	450H-.609	4C20P-.609	4C10P-.609
	15.50	0.6102	—	450H-15.5	4C20P-15.5	4C10P-15.5
	15.88	0.6250	5/8	450H-0020	4C20P-0020	4C10P-0020
	16.00	0.6299	—	450H-16	4C20P-16	4C10P-16
	16.27	0.6406	41/64	450H-.640	4C20P-.640	4C10P-.640
	16.50	0.6496	—	450H-16.5	4C20P-16.5	4C10P-16.5
	16.67	0.6563	21/32	450H-0021	4C20P-0021	4C10P-0021
	17.00	0.6693	—	450H-17	4C20P-17	4C10P-17
	17.07	0.6719	43/64	450H-.671	4C20P-.671	4C10P-.671
	17.46	0.6875	11/16	450H-0022	4C20P-0022	4C10P-0022
	17.50	0.6890	—	450H-17.5	4C20P-17.5	4C10P-17.5

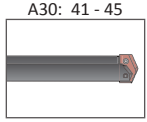
NOTE: 0.5 series inserts fit into both 0 and 0.5 series holders. However, 0 series inserts ONLY fit into 0 series holders. See page A30: 7 for visual.

A30: 113 - 139

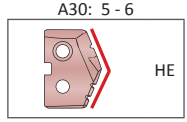


Key on A30: 2

A30: 41 - 45



A30: 5 - 6



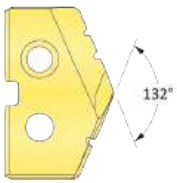
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

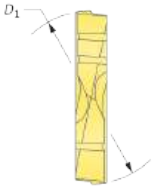
Inserts sold in quantities of 2.

0 Series: 12.98 mm - 17.67 mm (0.5110" - 0.6959")

T-A® Drill Inserts





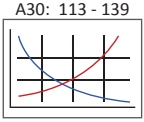


Series	Insert D_1 mm	Insert D_1 inch	Insert Fractional Equivalent	HSS: Super Cobalt Part No. TiN	HSS: Super Cobalt Part No. TiAlN	HSS: Super Cobalt Part No. TiCN
0	13.00	0.5118	—	**150T-13**	**150A-13**	**150N-13**
	13.10	0.5156	33/64	**150T-.515**	**150A-.515**	**150N-.515**
	13.50	0.5313	17/32	**150T-0017**	**150A-0017**	**150N-0017**
	13.50	0.5315	—	**150T-13.5**	**150A-13.5**	**150N-13.5**
	13.89	0.5469	35/64	**150T-.546**	**150A-.546**	**150N-.546**
	14.00	0.5512	—	**150T-14**	**150A-14**	**150N-14**
	14.29	0.5625	9/16	**150T-0018**	**150A-0018**	**150N-0018**
	14.50	0.5709	—	**150T-14.5**	**150A-14.5**	**150N-14.5**
	14.68	0.5781	37/64	**150T-.578**	**150A-.578**	**150N-.578**
	15.00	0.5906	—	**150T-15**	**150A-15**	**150N-15**
	15.08	0.5938	19/32	**150T-0019**	**150A-0019**	**150N-0019**
0.5	15.48	0.6094	39/64	**150T-.609**	**150A-.609**	**150N-.609**
	15.50	0.6102	—	**150T-15.5**	**150A-15.5**	**150N-15.5**
	15.88	0.6250	5/8	**150T-0020**	**150A-0020**	**150N-0020**
	16.00	0.6299	—	**150T-16**	**150A-16**	**150N-16**
	16.27	0.6406	41/64	**150T-.640**	**150A-.640**	**150N-.640**
	16.50	0.6496	—	**150T-16.5**	**150A-16.5**	**150N-16.5**
	16.67	0.6563	21/32	**150T-0021**	**150A-0021**	**150N-0021**
	17.00	0.6693	—	**150T-17**	**150A-17**	**150N-17**
	17.07	0.6719	43/64	**150T-.671**	**150A-.671**	**150N-.671**
	17.46	0.6875	11/16	**150T-0022**	**150A-0022**	**150N-0022**
	17.50	0.6890	—	**150T-17.5**	**150A-17.5**	**150N-17.5**

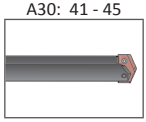
NOTE: 0.5 series inserts fit into both 0 and 0.5 series holders. However, 0 series inserts ONLY fit into 0 series holders. See page A30: 7 for visual.

A30: 113 - 139

Key on A30: 2



A30: 41 - 45



A30: 5 - 6



HI, HR, CR, TC, SK, NP, IN, RN, CN, AN, BR, CI, CP, NC, WC

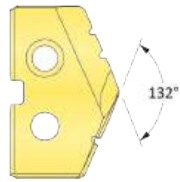
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

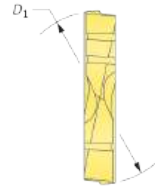
Inserts sold in quantities of 2.

0 Series: 12.98 mm - 17.67 mm (0.5110" - 0.6959")

T-A® Drill Inserts





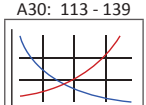


Series	Insert D_1 mm	Insert D_1 inch	Insert Fractional Equivalent	HSS: Premium Cobalt Part No. TiN	HSS: Premium Cobalt Part No. TiAlN	HSS: Premium Cobalt Part No. TiCN
0	13.00	0.5118	—	**180T-13**	**180A-13**	**180N-13**
	13.10	0.5156	33/64	**180T-.515**	**180A-.515**	**180N-.515**
	13.50	0.5313	17/32	**180T-0017**	**180A-0017**	**180N-0017**
	13.50	0.5315	—	**180T-13.5**	**180A-13.5**	**180N-13.5**
	13.89	0.5469	35/64	**180T-.546**	**180A-.546**	**180N-.546**
	14.00	0.5512	—	**180T-14**	**180A-14**	**180N-14**
	14.29	0.5625	9/16	**180T-0018**	**180A-0018**	**180N-0018**
	14.50	0.5709	—	**180T-14.5**	**180A-14.5**	**180N-14.5**
	14.68	0.5781	37/64	**180T-.578**	**180A-.578**	**180N-.578**
	15.00	0.5906	—	**180T-15**	**180A-15**	**180N-15**
	15.08	0.5938	19/32	**180T-0019**	**180A-0019**	**180N-0019**
0.5	15.48	0.6094	39/64	**180T-.609**	**180A-.609**	**180N-.609**
	15.50	0.6102	—	**180T-15.5**	**180A-15.5**	**180N-15.5**
	15.88	0.6250	5/8	**180T-0020**	**180A-0020**	**180N-0020**
	16.00	0.6299	—	**180T-16**	**180A-16**	**180N-16**
	16.27	0.6406	41/64	**180T-.640**	**180A-.640**	**180N-.640**
	16.50	0.6496	—	**180T-16.5**	**180A-16.5**	**180N-16.5**
	16.67	0.6563	21/32	**180T-0021**	**180A-0021**	**180N-0021**
	17.00	0.6693	—	**180T-17**	**180A-17**	**180N-17**
	17.07	0.6719	43/64	**180T-.671**	**180A-.671**	**180N-.671**
	17.46	0.6875	11/16	**180T-0022**	**180A-0022**	**180N-0022**
	17.50	0.6890	—	**180T-17.5**	**180A-17.5**	**180N-17.5**

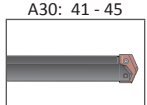
NOTE: 0.5 series inserts fit into both 0 and 0.5 series holders. However, 0 series inserts ONLY fit into 0 series holders. See page A30: 7 for visual.

A30: 113 - 139

Key on A30: 2



A30: 41 - 45



A30: 5 - 6



HI, HR, CR, TC, SK, NP, IN, RN, CN, AN, BR, CI, CP, NC, WC

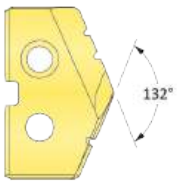
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

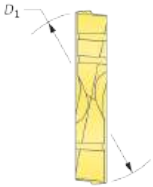
Inserts sold in quantities of 2.

0 Series: 12.98 mm - 17.67 mm (0.5110" - 0.6959")

T-A® Drill Inserts



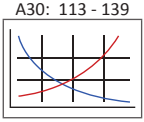




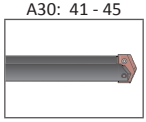
Series	Insert D_1 mm	Insert D_1 inch	Insert Fractional Equivalent	Carbide: P40 (C5)  Part No. TiN	Carbide: P40 (C5)  Part No. TiAlN	Carbide: K20 (C2)  Part No. TiN	Carbide: K20 (C2)  Part No. TiAlN
0	13.00	0.5118	—	**1C50T-13**	**1C50A-13**	**1C20T-13**	**1C20A-13**
	13.10	0.5156	33/64	**1C50T-.515**	**1C50A-.515**	**1C20T-.515**	**1C20A-.515**
	13.50	0.5313	17/32	**1C50T-0017**	**1C50A-0017**	**1C20T-0017**	**1C20A-0017**
	13.50	0.5315	—	**1C50T-13.5**	**1C50A-13.5**	**1C20T-13.5**	**1C20A-13.5**
	13.89	0.5469	35/64	**1C50T-.546**	**1C50A-.546**	**1C20T-.546**	**1C20A-.546**
	14.00	0.5512	—	**1C50T-14**	**1C50A-14**	**1C20T-14**	**1C20A-14**
	14.29	0.5625	9/16	**1C50T-0018**	**1C50A-0018**	**1C20T-0018**	**1C20A-0018**
	14.50	0.5709	—	**1C50T-14.5**	**1C50A-14.5**	**1C20T-14.5**	**1C20A-14.5**
	14.68	0.5781	37/64	**1C50T-.578**	**1C50A-.578**	**1C20T-.578**	**1C20A-.578**
	15.00	0.5906	—	**1C50T-15**	**1C50A-15**	**1C20T-15**	**1C20A-15**
	15.08	0.5938	19/32	**1C50T-0019**	**1C50A-0019**	**1C20T-0019**	**1C20A-0019**
0.5	15.48	0.6094	39/64	**1C50T-.609**	**1C50A-.609**	**1C20T-.609**	**1C20A-.609**
	15.50	0.6102	—	**1C50T-15.5**	**1C50A-15.5**	**1C20T-15.5**	**1C20A-15.5**
	15.88	0.6250	5/8	**1C50T-0020**	**1C50A-0020**	**1C20T-0020**	**1C20A-0020**
	16.00	0.6299	—	**1C50T-16**	**1C50A-16**	**1C20T-16**	**1C20A-16**
	16.27	0.6406	41/64	**1C50T-.640**	**1C50A-.640**	**1C20T-.640**	**1C20A-.640**
	16.50	0.6496	—	**1C50T-16.5**	**1C50A-16.5**	**1C20T-16.5**	**1C20A-16.5**
	16.67	0.6563	21/32	**1C50T-0021**	**1C50A-0021**	**1C20T-0021**	**1C20A-0021**
	17.00	0.6693	—	**1C50T-17**	**1C50A-17**	**1C20T-17**	**1C20A-17**
	17.07	0.6719	43/64	**1C50T-.671**	**1C50A-.671**	**1C20T-.671**	**1C20A-.671**
	17.46	0.6875	11/16	**1C50T-0022**	**1C50A-0022**	**1C20T-0022**	**1C20A-0022**
	17.50	0.6890	—	**1C50T-17.5**	**1C50A-17.5**	**1C20T-17.5**	**1C20A-17.5**

NOTE: 0.5 series inserts fit into both 0 and 0.5 series holders. However, 0 series inserts ONLY fit into 0 series holders. See page A30: 7 for visual.

A30: 113 - 139
Key on A30: 2



A30: 41 - 45



A30: 5 - 6



HI, HR, CR, TC, SK, NP, IN, RN, CN, AN, BR, CI, CP, NC, WC, BT

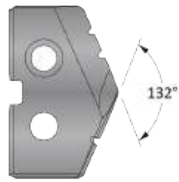
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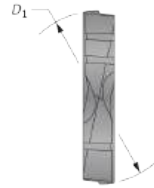
Inserts sold in quantities of 2.

0 Series: 12.98 mm - 17.67 mm (0.5110" - 0.6959")

T-A® Drill Inserts

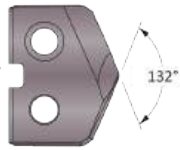


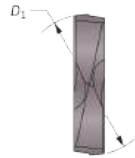






Cast Iron Geometry



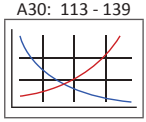


					Cast Iron Geometry
	Insert			Carbide: N2	Carbide: K10 (C3)
					
Series	D_1 mm	D_1 inch	Fractional Equivalent	Part No. Diamond Film*	Part No. TiAlN
0	13.00	0.5118	—	**1N20D-13**	**1C30A-13-CI**
	13.10	0.5156	33/64	**1N20D-.515**	**1C30A-.515-CI**
	13.50	0.5313	17/32	**1N20D-0017**	**1C30A-0017-CI**
	13.50	0.5315	—	**1N20D-13.5**	**1C30A-13.5-CI**
	13.89	0.5469	35/64	**1N20D-.546**	**1C30A-.546-CI**
	14.00	0.5512	—	**1N20D-14**	**1C30A-14-CI**
	14.29	0.5625	9/16	**1N20D-0018**	**1C30A-0018-CI**
	14.50	0.5709	—	**1N20D-14.5**	**1C30A-14.5-CI**
	14.68	0.5781	37/64	**1N20D-.578**	**1C30A-.578-CI**
	15.00	0.5906	—	**1N20D-15**	**1C30A-15-CI**
	15.08	0.5938	19/32	**1N20D-0019**	**1C30A-0019-CI**
0.5	15.48	0.6094	39/64	**1N20D-.609**	**1C30A-.609-CI**
	15.50	0.6102	—	**1N20D-15.5**	**1C30A-15.5-CI**
	15.88	0.6250	5/8	**1N20D-0020**	**1C30A-0020-CI**
	16.00	0.6299	—	**1N20D-16**	**1C30A-16-CI**
	16.27	0.6406	41/64	**1N20D-.640**	**1C30A-.640-CI**
	16.50	0.6496	—	**1N20D-16.5**	**1C30A-16.5-CI**
	16.67	0.6563	21/32	**1N20D-0021**	**1C30A-0021-CI**
	17.00	0.6693	—	**1N20D-17**	**1C30A-17-CI**
	17.07	0.6719	43/64	**1N20D-.671**	**1C30A-.671-CI**
	17.46	0.6875	11/16	**1N20D-0022**	**1C30A-0022-CI**
	17.50	0.6890	—	**1N20D-17.5**	**1C30A-17.5-CI**

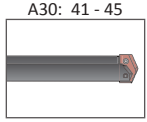
***Diamond film coated items are nonstocked standard and only available in standard geometry. For additional geometries, please contact Application Engineering. Process fees apply.

NOTE: 0.5 series inserts fit into both 0 and 0.5 series holders. However, 0 series inserts ONLY fit into 0 series holders. See page A30: 7 for visual.

A30: 113 - 139
Key on A30: 2



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HI, HR, CR, TC, SK, NP, IN, RN, CN, AN, BR, CI, CP, NC, WC, BT

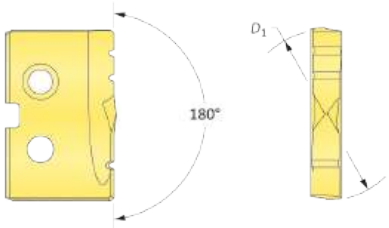
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

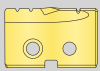
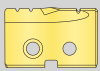
Inserts sold in quantities of 2.

0 Series: 12.98 mm - 17.67 mm (0.5110" - 0.6959")

T-A® Drill Inserts

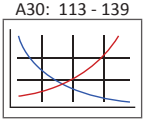


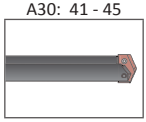


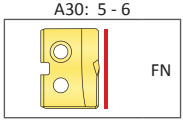
	Insert			Flat Bottom Geometry	
				HSS: Super Cobalt	Carbide: K20 (C2)
					
				Part No.	Part No.
Series	D_1 mm	D_1 inch	Fractional Equivalent	TiN	TiN*
0	13.00	0.5118	—	150T-13-FB	1C20T-13-FB
	13.10	0.5156	33/64	150T-.515-FB	1C20T-.515-FB
	13.50	0.5313	17/32	150T-0017-FB	1C20T-0017-FB
	13.50	0.5315	—	150T-13.5-FB	1C20T-13.5-FB
	13.89	0.5469	35/64	150T-.546-FB	1C20T-.546-FB
	14.00	0.5512	—	150T-14-FB	1C20T-14-FB
	14.29	0.5625	9/16	150T-0018-FB	1C20T-0018-FB
	14.50	0.5709	—	150T-14.5-FB	1C20T-14.5-FB
	14.68	0.5781	37/64	150T-.578-FB	1C20T-.578-FB
	15.00	0.5906	—	150T-15-FB	1C20T-15-FB
	15.08	0.5938	19/32	150T-0019-FB	1C20T-0019-FB
0.5	15.48	0.6094	39/64	150T-.609-FB	1C20T-.609-FB
	15.50	0.6102	—	150T-15.5-FB	1C20T-15.5-FB
	15.88	0.6250	5/8	150T-0020-FB	1C20T-0020-FB
	16.00	0.6299	—	150T-16-FB	1C20T-16-FB
	16.27	0.6406	41/64	150T-.640-FB	1C20T-.640-FB
	16.50	0.6496	—	150T-16.5-FB	1C20T-16.5-FB
	16.67	0.6563	21/32	150T-0021-FB	1C20T-0021-FB
	17.00	0.6693	—	150T-17-FB	1C20T-17-FB
	17.07	0.6719	43/64	150T-.671-FB	1C20T-.671-FB
	17.46	0.6875	11/16	150T-0022-FB	1C20T-0022-FB
	17.50	0.6890	—	150T-17.5-FB	1C20T-17.5-FB

*Carbide: K20 (C2) inserts with flat bottom geometry are nonstocked standard items. Process fees apply.

NOTE: 0.5 series inserts fit into both 0 and 0.5 series holders. However, 0 series inserts ONLY fit into 0 series holders. See page A30: 7 for visual.

A30: 113 - 139
Key on A30: 2


A30: 41 - 45


A30: 5 - 6


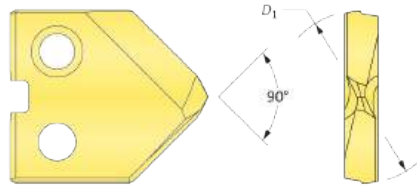
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

Inserts sold in quantities of 2.

0 Series: 12.98 mm - 17.67 mm (0.5110" - 0.6959")

T-A® Drill Inserts

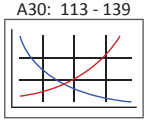




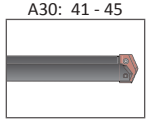
	Insert			90° Spot & Chamfer Geometry		
				HSS: Super Cobalt		
				Part No.	Part No.	Part No.
Series	D_1 mm	D_1 inch	Fractional Equivalent	TiN	TiAlN	TiCN
0	13.00	0.5118	—	150T-13-SP	150A-13-SP	150N-13-SP
	13.10	0.5156	33/64	150T-.515-SP	150A-.515-SP	150N-.515-SP
	13.50	0.5313	17/32	150T-0017-SP	150A-0017-SP	150N-0017-SP
	13.50	0.5315	—	150T-13.5-SP	150A-13.5-SP	150N-13.5-SP
	13.89	0.5469	35/64	150T-.546-SP	150A-.546-SP	150N-.546-SP
	14.00	0.5512	—	150T-14-SP	150A-14-SP	150N-14-SP
	14.29	0.5625	9/16	150T-0018-SP	150A-0018-SP	150N-0018-SP
	14.50	0.5709	—	150T-14.5-SP	150A-14.5-SP	150N-14.5-SP
	14.68	0.5781	37/64	150T-.578-SP	150A-.578-SP	150N-.578-SP
	15.00	0.5906	—	150T-15-SP	150A-15-SP	150N-15-SP
	15.08	0.5938	19/32	150T-0019-SP	150A-0019-SP	150N-0019-SP
0.5	15.48	0.6094	39/64	150T-.609-SP	150A-.609-SP	150N-.609-SP
	15.50	0.6102	—	150T-15.5-SP	150A-15.5-SP	150N-15.5-SP
	15.88	0.6250	5/8	150T-0020-SP	150A-0020-SP	150N-0020-SP
	16.00	0.6299	—	150T-16-SP	150A-16-SP	150N-16-SP
	16.27	0.6406	41/64	150T-.640-SP	150A-.640-SP	150N-.640-SP
	16.50	0.6496	—	150T-16.5-SP	150A-16.5-SP	150N-16.5-SP
	16.67	0.6563	21/32	150T-0021-SP	150A-0021-SP	150N-0021-SP
	17.00	0.6693	—	150T-17-SP	150A-17-SP	150N-17-SP
	17.07	0.6719	43/64	150T-.671-SP	150A-.671-SP	150N-.671-SP
	17.46	0.6875	11/16	150T-0022-SP	150A-0022-SP	150N-0022-SP
	17.50	0.6890	—	150T-17.5-SP	150A-17.5-SP	150N-17.5-SP

NOTE: 0.5 series inserts fit into both 0 and 0.5 series holders. However, 0 series inserts ONLY fit into 0 series holders. See page A30: 7 for visual.

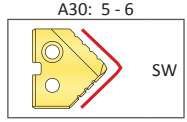
A30: 113 - 139
Key on A30: 2



A30: 41 - 45



A30: 5 - 6



Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

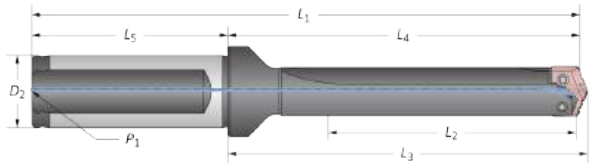
Inserts sold in quantities of 2.

Notes

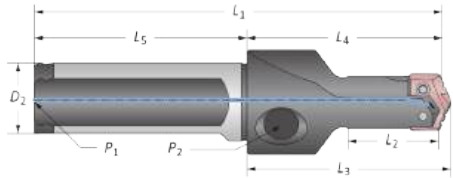
0 Series: 12.98 mm - 17.67 mm (0.5110" - 0.6959")

T-A® Drill Holders









Stub Length

Metric Flange Shank Holders

Flute	Series	Body Length	L_2	L_4	L_3	L_1	Shank L_5	D_2	P_1	Part No.
Straight	0	Stub	23.1	47.6	50.3	97.6	50.0	20	1/8 BSPT	21000S-20FM
		Short	30.9	63.5	66.2	113.5	50.0	20	1/8 BSPT	22000S-20FM
		Standard	59.6	92.1	94.8	142.1	50.0	20	1/8 BSPT	24000S-20FM
		Extended	110.4	142.9	145.6	192.9	50.0	20	1/8 BSPT	⚠ 25000S-20FM
		XL	291.3	323.9	326.6	373.9	50.0	20	1/8 BSPT	⚠ 27000S-20FM
		3XL	383.3	415.9	418.6	465.9	50.0	20	1/8 BSPT	⚠ 29000S-20FM
	0.5	Stub	24.0	47.6	50.3	97.6	50.0	20	1/8 BSPT	21005S-20FM
		Short	29.6	63.5	66.2	113.5	50.0	20	1/8 BSPT	22005S-20FM
		Standard	58.9	92.1	94.8	142.1	50.0	20	1/8 BSPT	24005S-20FM
		Extended	109.7	142.9	145.6	192.9	50.0	20	1/8 BSPT	⚠ 25005S-20FM
Helical	0	Standard	75.9	92.1	94.8	142.1	50.0	20	1/8 BSPT	24000H-20FM
		Standard Plus	101.4	117.6	120.3	167.6	50.0	20	1/8 BSPT	⚠ 24500H-20FM
		Extended	126.7	142.9	145.6	192.9	50.0	20	1/8 BSPT	⚠ 25000H-20FM
		Long	190.2	206.4	209.1	256.4	50.0	20	1/8 BSPT	⚠ 26000H-20FM
		Long Plus	252.4	268.6	271.3	318.6	50.0	20	1/8 BSPT	⚠ 26500H-20FM
	0.5	Standard	77.1	92.1	94.8	142.1	50.0	20	1/8 BSPT	24005H-20FM
		Extended	127.9	142.9	145.6	192.9	50.0	20	1/8 BSPT	⚠ 25005H-20FM
		Long	191.4	206.4	209.1	256.4	50.0	20	1/8 BSPT	⚠ 26005H-20FM

NOTE: Stub length holders have a 3.175 mm (1/8") side pipe tap (P_2).
NOTE: 0.5 series inserts fit into both 0 and 0.5 series holders. However, 0 series inserts ONLY fit into 0 series holders. See page A30: 7 for visual.

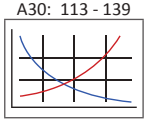
Connection Accessories

Series	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
0	72556-IP8-1	72556N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)
0.5	72567-IP8-1	72567N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)

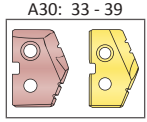
*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

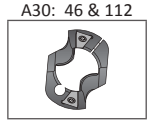
A30: 113 - 139
Key on A30: 2



A30: 33 - 39



A30: 46 & 112

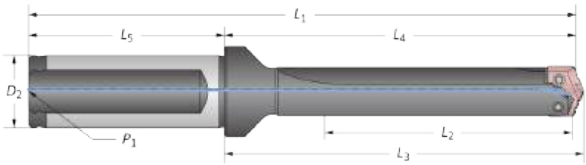


ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

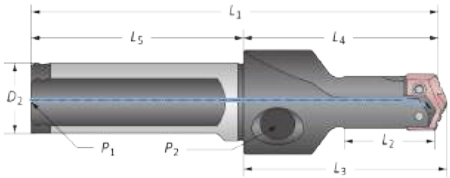
0 Series: 12.98 mm - 17.67 mm (0.5110" - 0.6959")

T-A® Drill Holders









Stub Length

Imperial Flange Shank Holders

Flute	Series	Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No.
Straight	0	Stub	0.910	1.875	1.982	3.905	2.030	3/4	1/8 NPT	21000S-075F
		Short	1.220	2.500	2.607	4.530	2.030	3/4	1/8 NPT	22000S-075F
		Standard	2.345	3.625	3.732	5.655	2.030	3/4	1/8 NPT	24000S-075F
		Extended	4.345	5.625	5.732	7.655	2.030	3/4	1/8 NPT	⚠ 25000S-075F
	0.5	Stub	0.945	1.875	1.982	3.905	2.030	3/4	1/8 NPT	21005S-075F
		Short	1.195	2.500	2.607	4.530	2.030	3/4	1/8 NPT	22005S-075F
		Standard	2.320	3.625	3.732	5.655	2.030	3/4	1/8 NPT	24005S-075F
		Extended	4.320	5.625	5.732	7.655	2.030	3/4	1/8 NPT	⚠ 25005S-075F
Helical	0	Standard	2.987	3.625	3.732	5.655	2.030	3/4	1/8 NPT	24000H-075F
		Standard Plus	3.992	4.630	4.737	6.660	2.030	3/4	1/8 NPT	⚠ 24500H-075F
		Extended	4.987	5.625	5.732	7.655	2.030	3/4	1/8 NPT	⚠ 25000H-075F
		Long	7.487	8.125	8.232	10.155	2.030	3/4	1/8 NPT	⚠ 26000H-075F
		Long Plus	9.937	10.575	10.682	12.605	2.030	3/4	1/8 NPT	⚠ 26500H-075F
	0.5	Standard	3.034	3.625	3.732	5.655	2.030	3/4	1/8 NPT	24005H-075F
		Extended	5.034	5.625	5.732	7.655	2.030	3/4	1/8 NPT	⚠ 25005H-075F
		Long	7.534	8.125	8.232	10.155	2.030	3/4	1/8 NPT	⚠ 26005H-075F

NOTE: Stub length holders have a 3.175 mm (1/8") side pipe tap (P_2).

NOTE: 0.5 series inserts fit into both 0 and 0.5 series holders. However, 0 series inserts ONLY fit into 0 series holders. See page A30: 7 for visual.

Connection Accessories

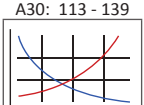
Series	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
0	72556-IP8-1	72556N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)
0.5	72567-IP8-1	72567N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

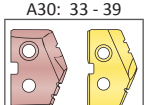
⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

Key on A30: 2

A30: 113 - 139



A30: 33 - 39



A30: 46 & 112

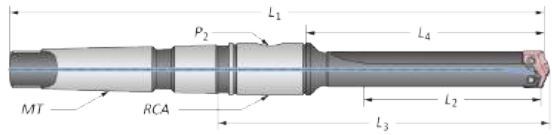


Ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

0 Series: 12.98 mm - 17.67 mm (0.5110" - 0.6959")

T-A® Drill Holders





Metric Taper Shank Holders

	Flute	Series	Body Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank *MT**	Shank P_2	Shank RCA	Part No.
	Straight	0	Short	30.8	55.6	92.4	164.3	#2 MT ISO	1/16 BSPT	2T-2SRM	**22000S-002M**
		0.5	Short	30.2	55.6	92.4	164.3	#2 MT ISO	1/16 BSPT	2T-2SRM	**22005S-002M**
m	Helical	0	Standard	73.9	84.2	121.0	192.9	#2 MT ISO	1/16 BSPT	2T-2SRM	**24000H-002M**
			Extended	124.7	135.0	171.8	243.7	#2 MT ISO	1/16 BSPT	2T-2SRM	⚠ **25000H-002M**
			Long	188.2	198.5	235.3	307.2	#2 MT ISO	1/16 BSPT	2T-2SRM	⚠ **26000H-002M**
		0.5	Standard	75.1	84.2	121.0	192.9	#2 MT ISO	1/16 BSPT	2T-2SRM	**24005H-002M**
			Extended	125.9	135.0	171.8	243.7	#2 MT ISO	1/16 BSPT	2T-2SRM	⚠ **25005H-002M**
			Long	189.4	198.5	235.3	307.2	#2 MT ISO	1/16 BSPT	2T-2SRM	⚠ **26005H-002M**

*MT ISO 296 type BEK.

NOTE: 0.5 series inserts fit into both 0 and 0.5 series holders. However, 0 series inserts ONLY fit into 0 series holders. See page A30: 7 for visual.

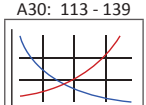
Connection Accessories

Series	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
0	72556-IP8-1	72556N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)
0.5	72567-IP8-1	72567N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

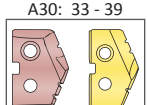
⚠ **WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A30: 113 - 139

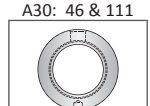


Key on A30: 2

A30: 33 - 39



A30: 46 & 111



A30: 46 & 112

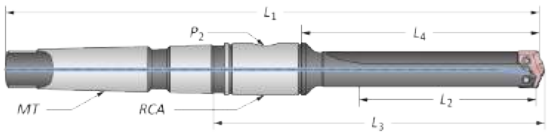


ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

0 Series: 12.98 mm - 17.67 mm (0.5110" - 0.6959")

T-A® Drill Holders





Imperial Taper Shank Holders

Flute	Series	Body Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank MT	Shank P_2	Shank RCA	Part No.
Straight	0	Short	1.213	2.188	3.638	6.469	#2 MT	1/16 NPT	2T-2SR	22000S-002I
		Standard	2.338	3.313	4.763	7.594	#2 MT	1/16 NPT	2T-2SR	24000S-002I
		Extended	4.338	5.313	6.763	9.594	#2 MT	1/16 NPT	2T-2SR	⚠ 25000S-002I
	0.5	Short	1.188	2.188	3.638	6.469	#2 MT	1/16 NPT	2T-2SR	22005S-002I
		Standard	2.313	3.313	4.763	7.594	#2 MT	1/16 NPT	2T-2SR	24005S-002I
		Extended	4.313	5.313	6.763	9.594	#2 MT	1/16 NPT	2T-2SR	⚠ 25005S-002I
Helical	0	Standard	2.909	3.313	4.763	7.594	#2 MT	1/16 NPT	2T-2SR	24000H-002I
		Extended	4.909	5.313	6.763	9.594	#2 MT	1/16 NPT	2T-2SR	⚠ 25000H-002I
		Long	7.409	7.813	9.263	12.094	#2 MT	1/16 NPT	2T-2SR	⚠ 26000H-002I
	0.5	Standard	2.956	3.313	4.763	7.594	#2 MT	1/16 NPT	2T-2SR	24005H-002I
		Extended	4.956	5.313	6.763	9.594	#2 MT	1/16 NPT	2T-2SR	⚠ 25005H-002I
		Long	7.456	7.813	9.263	12.094	#2 MT	1/16 NPT	2T-2SR	⚠ 26005H-002I

NOTE: 0.5 series inserts fit into both 0 and 0.5 series holders. However, 0 series inserts ONLY fit into 0 series holders. See page A30: 7 for visual.

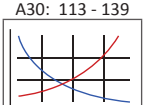
Connection Accessories

Series	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
0	72556-IP8-1	72556N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)
0.5	72567-IP8-1	72567N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)

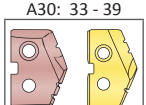
*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

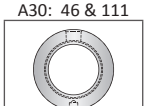
A30: 113 - 139



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A30: 46 & 111



A30: 46 & 112



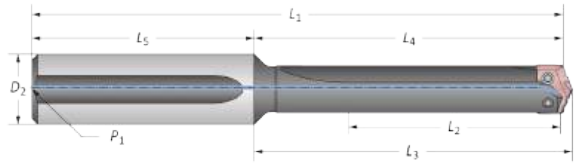
Key on A30: 2

Ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

0 Series: 12.98 mm - 17.67 mm (0.5110" - 0.6959")

T-A® Drill Holders



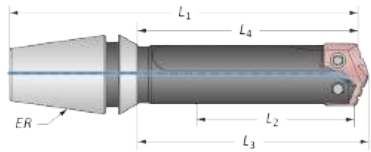


Straight Shank Holders

Flute	Series	Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No.
Straight	0	Short	1.218	2.188	2.295	4.563	2.375	3/4	1/8 NPT	**22000S-075L**
		Standard	2.343	3.313	3.420	5.688	2.375	3/4	1/8 NPT	**24000S-075L**
		Extended	4.343	5.313	5.420	7.688	2.375	3/4	1/8 NPT	⚠ **25000S-075L**
		Long	6.843	7.813	7.920	10.188	2.375	3/4	1/8 NPT	⚠ **26000S-075L**
		XL	11.468	12.438	12.545	14.813	2.375	3/4	1/8 NPT	⚠ **27000S-075L**
		3XL	15.093	16.063	16.170	18.438	2.375	3/4	1/8 NPT	⚠ **29000S-075L**
	0.5	Short	1.194	2.188	2.295	4.563	2.375	3/4	1/8 NPT	**22005S-075L**
		Standard	2.319	3.313	3.420	5.688	2.375	3/4	1/8 NPT	**24005S-075L**
		Extended	4.319	5.313	5.420	7.688	2.375	3/4	1/8 NPT	⚠ **25005S-075L**
		Long	6.819	7.813	7.920	10.188	2.375	3/4	1/8 NPT	⚠ **26005S-075L**

NOTE: 0.5 series inserts fit into both 0 and 0.5 series holders. However, 0 series inserts ONLY fit into 0 series holders. See page A30: 7 for visual.





ER Collet Holders

Series	Body L_2	Body L_4	Body L_3	Body L_1	ER	Part No.	Collet Nut without Retaining Ring
0	41.2	48.1	50.8	75.3	ER-16	**21000S-16ER**	ER-16N
	41.2	48.1	50.8	79.3	ER-20	**21000S-20ER**	ER-20N

NOTE: 0.5 series inserts fit into both 0 and 0.5 series holders. However, 0 series inserts ONLY fit into 0 series holders. See page A30: 7 for visual.

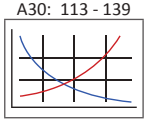
Connection Accessories

Series	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
0	72556-IP8-1	72556N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)
0.5	72567-IP8-1	72567N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

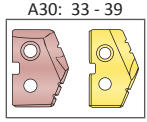
⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

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Key on A30: 2

A30: 33 - 39



A30: 46 & 112

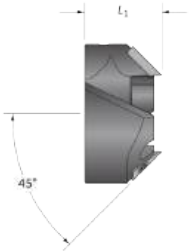


Ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

0 Series: 12.98 mm - 17.67 mm (0.5110" - 0.6959")

T-A® Drill Accessories



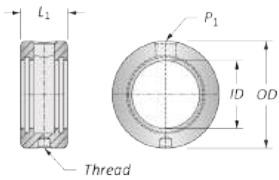




T-ACR 45 Chamfer Ring

Holder Series	D_1 Range	Chamfer Ring D_4	Chamfer Ring L_1	Part No.	Insert Part No.	Insert Screw	Insert Driver	Clamping Screw	Insert Driver
0	0.5118 - 0.6890	1.148	0.676	**T-ACR-45-0**	T-ACRI-45-B-C5A	7255-IP8-1	8IP-8	7375-IP9-1	8IP-9





Rotary Coolant Adapter (RCA) and Accessories

	ID	OD	L_1	Driving Rod Thread	P_1	Part No.	RCA O-Rings Kit Part No.*	RCA O-Rings Replacements
m	19.1	44.5	22.2	M8 x 1.25	1/8 BSPT	⚠ **2T-2SRM**	2T1-2SR	2T1-2OR-10
i	0.750	1.750	0.875	5/16" - 18	1/8 NPT	⚠ **2T-2SR**	2T1-2SR	2T1-2OR-10

*RCA Repair Kit includes (2) O-rings, (2) snap rings, and (2) thrust washers.

⚠ Refer to page A30: 111 for proper RCA assembly and safety information.

⚠ WARNING RCA rotation during drilling can cause hose and/or hose fitting failure, machinery damage, and/or serious injury. To prevent, use RCA and positive stop studs when drilling. Factory technical assistance is also available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com**

A30: 113 - 139
Key on A30: 2

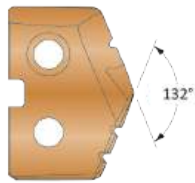
m = Metric (mm)
i = Imperial (in)

Chamfer ring inserts sold separately.
Screws sold in multiples of 10.
O-rings sold in packs of 10.

1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")

GEN2 T-A® Drill Inserts



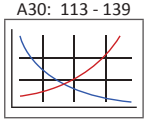




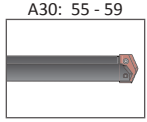
Series	Insert D_1 mm	Insert D_1 inch	Insert Fractional Equivalent	HSS: Super Cobalt  Part No. AM200®	Carbide: K35 (C1)  Part No. AM300®	Carbide: K20 (C2)  Part No. AM300®
1	17.86	0.7031	45/64	451H-.703	4C21P-.703	4C11P-.703
	18.00	0.7087	—	451H-18	4C21P-18	4C11P-18
	18.26	0.7188	23/32	451H-0023	4C21P-0023	4C11P-0023
	18.50	0.7283	—	451H-18.5	4C21P-18.5	4C11P-18.5
	18.65	0.7344	47/64	451H-.734	4C21P-.734	4C11P-.734
	19.00	0.7480	—	451H-19	4C21P-19	4C11P-19
	19.05	0.7500	3/4	451H-0024	4C21P-0024	4C11P-0024
	19.45	0.7656	49/64	451H-.765	4C21P-.765	4C11P-.765
	19.50	0.7677	—	451H-19.5	4C21P-19.5	4C11P-19.5
	19.85	0.7813	25/32	451H-0025	4C21P-0025	4C11P-0025
	20.00	0.7874	—	451H-20	4C21P-20	4C11P-20
	20.24	0.7969	51/64	451H-.796	4C21P-.796	4C11P-.796
	20.35	0.8010	—	451H-.801	4C21P-.801	4C11P-.801
	20.50	0.8071	—	451H-20.5	4C21P-20.5	4C11P-20.5
	20.64	0.8125	13/16	451H-0026	4C21P-0026	4C11P-0026
	21.00	0.8268	—	451H-21	4C21P-21	4C11P-21
	21.43	0.8438	27/32	451H-0027	4C21P-0027	4C11P-0027
	21.50	0.8465	—	451H-21.5	4C21P-21.5	4C11P-21.5
1.5	21.83	0.8594	55/64	451H-.859	4C21P-.859	4C11P-.859
	22.00	0.8661	—	451H-22	4C21P-22	4C11P-22
	22.23	0.8750	7/8	451H-0028	4C21P-0028	4C11P-0028
	22.50	0.8858	—	451H-22.5	4C21P-22.5	4C11P-22.5
	22.62	0.8906	57/64	451H-.890	4C21P-.890	4C11P-.890
	23.00	0.9055	—	451H-23	4C21P-23	4C11P-23
	23.02	0.9063	29/32	451H-0029	4C21P-0029	4C11P-0029
	23.42	0.9219	59/64	451H-.921	4C21P-.921	4C11P-.921
	23.50	0.9252	—	451H-23.5	4C21P-23.5	4C11P-23.5
	23.81	0.9375	15/16	451H-0030	4C21P-0030	4C11P-0030
	24.00	0.9449	—	451H-24	4C21P-24	4C11P-24

NOTE: 1.5 series inserts fit into both 1 and 1.5 series holders. However, 1 series inserts ONLY fit into 1 series holders. See page A30: 7 for visual.

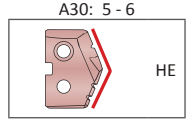
A30: 113 - 139
Key on A30: 2



A30: 55 - 59



A30: 5 - 6



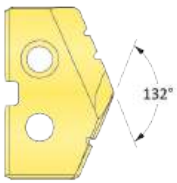
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

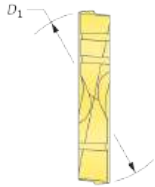
Inserts sold in quantities of 2.

1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")

T-A® Drill Inserts





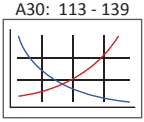


Series	Insert D_1 mm	Insert D_1 inch	Insert Fractional Equivalent	HSS: High-Speed Steel Part No. TiN	HSS: High-Speed Steel Part No. TiAlN	HSS: High-Speed Steel Part No. TiCN
1	17.86	0.7031	45/64	**131T-.703**	**131A-.703**	**131N-.703**
	18.00	0.7087	—	**131T-18**	**131A-18**	**131N-18**
	18.26	0.7188	23/32	**131T-0023**	**131A-0023**	**131N-0023**
	18.50	0.7283	—	**131T-18.5**	**131A-18.5**	**131N-18.5**
	18.65	0.7344	47/64	**131T-.734**	**131A-.734**	**131N-.734**
	19.00	0.7480	—	**131T-19**	**131A-19**	**131N-19**
	19.05	0.7500	3/4	**131T-0024**	**131A-0024**	**131N-0024**
	19.45	0.7656	49/64	**131T-.765**	**131A-.765**	**131N-.765**
	19.50	0.7677	—	**131T-19.5**	**131A-19.5**	**131N-19.5**
	19.85	0.7813	25/32	**131T-0025**	**131A-0025**	**131N-0025**
	20.00	0.7874	—	**131T-20**	**131A-20**	**131N-20**
	20.24	0.7969	51/64	**131T-.796**	**131A-.796**	**131N-.796**
	20.35	0.8010	—	**131T-.801**	**131A-.801**	**131N-.801**
	20.50	0.8071	—	**131T-20.5**	**131A-20.5**	**131N-20.5**
	20.64	0.8125	13/16	**131T-0026**	**131A-0026**	**131N-0026**
	21.00	0.8268	—	**131T-21**	**131A-21**	**131N-21**
	21.43	0.8438	27/32	**131T-0027**	**131A-0027**	**131N-0027**
	21.50	0.8465	—	**131T-21.5**	**131A-21.5**	**131N-21.5**
1.5	21.83	0.8594	55/64	**131T-.859**	**131A-.859**	**131N-.859**
	22.00	0.8661	—	**131T-22**	**131A-22**	**131N-22**
	22.23	0.8750	7/8	**131T-0028**	**131A-0028**	**131N-0028**
	22.50	0.8858	—	**131T-22.5**	**131A-22.5**	**131N-22.5**
	22.62	0.8906	57/64	**131T-.890**	**131A-.890**	**131N-.890**
	23.00	0.9055	—	**131T-23**	**131A-23**	**131N-23**
	23.02	0.9063	29/32	**131T-0029**	**131A-0029**	**131N-0029**
	23.42	0.9219	59/64	**131T-.921**	**131A-.921**	**131N-.921**
	23.50	0.9252	—	**131T-23.5**	**131A-23.5**	**131N-23.5**
	23.81	0.9375	15/16	**131T-0030**	**131A-0030**	**131N-0030**
	24.00	0.9449	—	**131T-24**	**131A-24**	**131N-24**

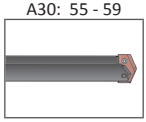
NOTE: 1.5 series inserts fit into both 1 and 1.5 series holders. However, 1 series inserts ONLY fit into 1 series holders. See page A30: 7 for visual.

A30: 113 - 139

Key on A30: 2



A30: 55 - 59



A30: 5 - 6



HI, HR, CR, TC, SK, NP, IN, RN, CN, AN, BR, CI, CP, NC, WC

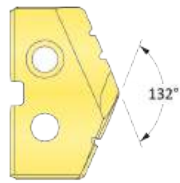
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

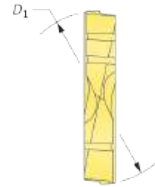
Inserts sold in quantities of 2.

1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")

T-A® Drill Inserts





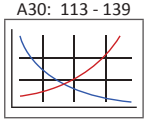


Series	Insert D_1 mm	Insert D_1 inch	Insert Fractional Equivalent	HSS: Super Cobalt  Part No. TiN	 Part No. TiAlN	 Part No. TiCN
1	17.86	0.7031	45/64	**151T-.703**	**151A-.703**	**151N-.703**
	18.00	0.7087	—	**151T-18**	**151A-18**	**151N-18**
	18.26	0.7188	23/32	**151T-0023**	**151A-0023**	**151N-0023**
	18.50	0.7283	—	**151T-18.5**	**151A-18.5**	**151N-18.5**
	18.65	0.7344	47/64	**151T-.734**	**151A-.734**	**151N-.734**
	19.00	0.7480	—	**151T-19**	**151A-19**	**151N-19**
	19.05	0.7500	3/4	**151T-0024**	**151A-0024**	**151N-0024**
	19.45	0.7656	49/64	**151T-.765**	**151A-.765**	**151N-.765**
	19.50	0.7677	—	**151T-19.5**	**151A-19.5**	**151N-19.5**
	19.85	0.7813	25/32	**151T-0025**	**151A-0025**	**151N-0025**
	20.00	0.7874	—	**151T-20**	**151A-20**	**151N-20**
	20.24	0.7969	51/64	**151T-.796**	**151A-.796**	**151N-.796**
	20.35	0.8010	—	**151T-.801**	**151A-.801**	**151N-.801**
	20.50	0.8071	—	**151T-20.5**	**151A-20.5**	**151N-20.5**
	20.64	0.8125	13/16	**151T-0026**	**151A-0026**	**151N-0026**
	21.00	0.8268	—	**151T-21**	**151A-21**	**151N-21**
	21.43	0.8438	27/32	**151T-0027**	**151A-0027**	**151N-0027**
	21.50	0.8465	—	**151T-21.5**	**151A-21.5**	**151N-21.5**
1.5	21.83	0.8594	55/64	**151T-.859**	**151A-.859**	**151N-.859**
	22.00	0.8661	—	**151T-22**	**151A-22**	**151N-22**
	22.23	0.8750	7/8	**151T-0028**	**151A-0028**	**151N-0028**
	22.50	0.8858	—	**151T-22.5**	**151A-22.5**	**151N-22.5**
	22.62	0.8906	57/64	**151T-.890**	**151A-.890**	**151N-.890**
	23.00	0.9055	—	**151T-23**	**151A-23**	**151N-23**
	23.02	0.9063	29/32	**151T-0029**	**151A-0029**	**151N-0029**
	23.42	0.9219	59/64	**151T-.921**	**151A-.921**	**151N-.921**
	23.50	0.9252	—	**151T-23.5**	**151A-23.5**	**151N-23.5**
	23.81	0.9375	15/16	**151T-0030**	**151A-0030**	**151N-0030**
	24.00	0.9449	—	**151T-24**	**151A-24**	**151N-24**

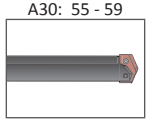
NOTE: 1.5 series inserts fit into both 1 and 1.5 series holders. However, 1 series inserts ONLY fit into 1 series holders. See page A30: 7 for visual.

A30: 113 - 139

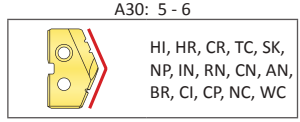
Key on A30: 2



A30: 55 - 59



A30: 5 - 6



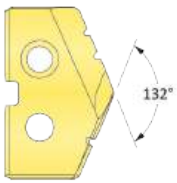
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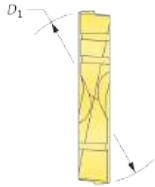
Inserts sold in quantities of 2.

1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")

T-A® Drill Inserts





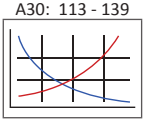


Series	Insert D_1 mm	Insert D_1 inch	Insert Fractional Equivalent	HSS: Premium Cobalt Part No. TiN	HSS: Premium Cobalt Part No. TiAlN	HSS: Premium Cobalt Part No. TiCN
1	17.86	0.7031	45/64	**181T-.703**	**181A-.703**	**181N-.703**
	18.00	0.7087	—	**181T-18**	**181A-18**	**181N-18**
	18.26	0.7188	23/32	**181T-0023**	**181A-0023**	**181N-0023**
	18.50	0.7283	—	**181T-18.5**	**181A-18.5**	**181N-18.5**
	18.65	0.7344	47/64	**181T-.734**	**181A-.734**	**181N-.734**
	19.00	0.7480	—	**181T-19**	**181A-19**	**181N-19**
	19.05	0.7500	3/4	**181T-0024**	**181A-0024**	**181N-0024**
	19.45	0.7656	49/64	**181T-.765**	**181A-.765**	**181N-.765**
	19.50	0.7677	—	**181T-19.5**	**181A-19.5**	**181N-19.5**
	19.85	0.7813	25/32	**181T-0025**	**181A-0025**	**181N-0025**
	20.00	0.7874	—	**181T-20**	**181A-20**	**181N-20**
	20.24	0.7969	51/64	**181T-.796**	**181A-.796**	**181N-.796**
	20.35	0.8010	—	**181T-.801**	**181A-.801**	**181N-.801**
	20.50	0.8071	—	**181T-20.5**	**181A-20.5**	**181N-20.5**
	20.64	0.8125	13/16	**181T-0026**	**181A-0026**	**181N-0026**
	21.00	0.8268	—	**181T-21**	**181A-21**	**181N-21**
	21.43	0.8438	27/32	**181T-0027**	**181A-0027**	**181N-0027**
	21.50	0.8465	—	**181T-21.5**	**181A-21.5**	**181N-21.5**
1.5	21.83	0.8594	55/64	**181T-.859**	**181A-.859**	**181N-.859**
	22.00	0.8661	—	**181T-22**	**181A-22**	**181N-22**
	22.23	0.8750	7/8	**181T-0028**	**181A-0028**	**181N-0028**
	22.50	0.8858	—	**181T-22.5**	**181A-22.5**	**181N-22.5**
	22.62	0.8906	57/64	**181T-.890**	**181A-.890**	**181N-.890**
	23.00	0.9055	—	**181T-23**	**181A-23**	**181N-23**
	23.02	0.9063	29/32	**181T-0029**	**181A-0029**	**181N-0029**
	23.42	0.9219	59/64	**181T-.921**	**181A-.921**	**181N-.921**
	23.50	0.9252	—	**181T-23.5**	**181A-23.5**	**181N-23.5**
	23.81	0.9375	15/16	**181T-0030**	**181A-0030**	**181N-0030**
	24.00	0.9449	—	**181T-24**	**181A-24**	**181N-24**

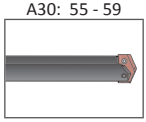
NOTE: 1.5 series inserts fit into both 1 and 1.5 series holders. However, 1 series inserts ONLY fit into 1 series holders. See page A30: 7 for visual.

A30: 113 - 139

Key on A30: 2



A30: 55 - 59



A30: 5 - 6



HI, HR, CR, TC, SK, NP, IN, RN, CN, AN, BR, CI, CP, NC, WC

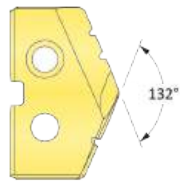
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

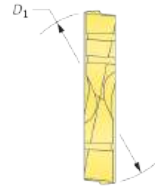
Inserts sold in quantities of 2.

1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")

T-A® Drill Inserts



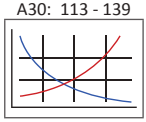




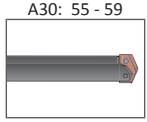
Series	Insert D_1 mm	Insert D_1 inch	Insert Fractional Equivalent	Carbide: P40 (C5) Part No. TiN	Carbide: P40 (C5) Part No. TiAlN	Carbide: K20 (C2) Part No. TiN	Carbide: K20 (C2) Part No. TiAlN
1	17.86	0.7031	45/64	1C51T-.703	1C51A-.703	1C21T-.703	1C21A-.703
	18.00	0.7087	—	1C51T-18	1C51A-18	1C21T-18	1C21A-18
	18.26	0.7188	23/32	1C51T-0023	1C51A-0023	1C21T-0023	1C21A-0023
	18.50	0.7283	—	1C51T-18.5	1C51A-18.5	1C21T-18.5	1C21A-18.5
	18.65	0.7344	47/64	1C51T-.734	1C51A-.734	1C21T-.734	1C21A-.734
	19.00	0.7480	—	1C51T-19	1C51A-19	1C21T-19	1C21A-19
	19.05	0.7500	3/4	1C51T-0024	1C51A-0024	1C21T-0024	1C21A-0024
	19.45	0.7656	49/64	1C51T-.765	1C51A-.765	1C21T-.765	1C21A-.765
	19.50	0.7677	—	1C51T-19.5	1C51A-19.5	1C21T-19.5	1C21A-19.5
	19.85	0.7813	25/32	1C51T-0025	1C51A-0025	1C21T-0025	1C21A-0025
	20.00	0.7874	—	1C51T-20	1C51A-20	1C21T-20	1C21A-20
	20.24	0.7969	51/64	1C51T-.796	1C51A-.796	1C21T-.796	1C21A-.796
	20.35	0.8010	—	1C51T-.801	1C51A-.801	1C21T-.801	1C21A-.801
	20.50	0.8071	—	1C51T-20.5	1C51A-20.5	1C21T-20.5	1C21A-20.5
	20.64	0.8125	13/16	1C51T-0026	1C51A-0026	1C21T-0026	1C21A-0026
	21.00	0.8268	—	1C51T-21	1C51A-21	1C21T-21	1C21A-21
	21.43	0.8438	27/32	1C51T-0027	1C51A-0027	1C21T-0027	1C21A-0027
	21.50	0.8465	—	1C51T-21.5	1C51A-21.5	1C21T-21.5	1C21A-21.5
1.5	21.83	0.8594	55/64	1C51T-.859	1C51A-.859	1C21T-.859	1C21A-.859
	22.00	0.8661	—	1C51T-22	1C51A-22	1C21T-22	1C21A-22
	22.23	0.8750	7/8	1C51T-0028	1C51A-0028	1C21T-0028	1C21A-0028
	22.50	0.8858	—	1C51T-22.5	1C51A-22.5	1C21T-22.5	1C21A-22.5
	22.62	0.8906	57/64	1C51T-.890	1C51A-.890	1C21T-.890	1C21A-.890
	23.00	0.9055	—	1C51T-23	1C51A-23	1C21T-23	1C21A-23
	23.02	0.9063	29/32	1C51T-0029	1C51A-0029	1C21T-0029	1C21A-0029
	23.42	0.9219	59/64	1C51T-.921	1C51A-.921	1C21T-.921	1C21A-.921
	23.50	0.9252	—	1C51T-23.5	1C51A-23.5	1C21T-23.5	1C21A-23.5
	23.81	0.9375	15/16	1C51T-0030	1C51A-0030	1C21T-0030	1C21A-0030
	24.00	0.9449	—	1C51T-24	1C51A-24	1C21T-24	1C21A-24

NOTE: 1.5 series inserts fit into both 1 and 1.5 series holders. However, 1 series inserts ONLY fit into 1 series holders. See page A30: 7 for visual.

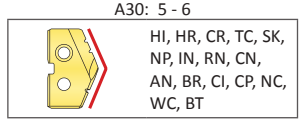
A30: 113 - 139
Key on A30: 2



A30: 55 - 59



A30: 5 - 6



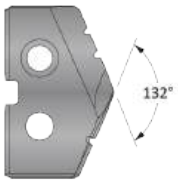
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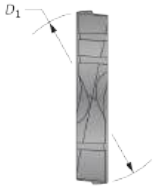
Inserts sold in quantities of 2.

1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")

T-A® Drill Inserts

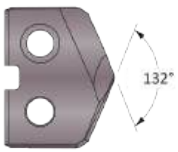


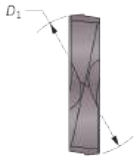






Cast Iron Geometry





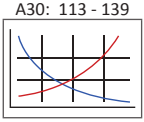
	Insert			Carbide: N2	Cast Iron Geometry Carbide: K10 (C3)
				 Part No.	 Part No.
Series	D_1 mm	D_1 inch	Fractional Equivalent	Diamond Film*	TiAlN
1	17.86	0.7031	45/64	**1N21D-.703**	**1C31A-.703-CI**
	18.00	0.7087	—	**1N21D-18**	**1C31A-18-CI**
	18.26	0.7188	23/32	**1N21D-0023**	**1C31A-0023-CI**
	18.50	0.7283	—	**1N21D-18.5**	**1C31A-18.5-CI**
	18.65	0.7344	47/64	**1N21D-.734**	**1C31A-.734-CI**
	19.00	0.7480	—	**1N21D-19**	**1C31A-19-CI**
	19.05	0.7500	3/4	**1N21D-0024**	**1C31A-0024-CI**
	19.45	0.7656	49/64	**1N21D-.765**	**1C31A-.765-CI**
	19.50	0.7677	—	**1N21D-19.5**	**1C31A-19.5-CI**
	19.85	0.7813	25/32	**1N21D-0025**	**1C31A-0025-CI**
	20.00	0.7874	—	**1N21D-20**	**1C31A-20-CI**
	20.24	0.7969	51/64	**1N21D-.796**	**1C31A-.796-CI**
	20.35	0.8010	—	**1N21D-.801**	**1C31A-.801-CI**
	20.50	0.8071	—	**1N21D-20.5**	**1C31A-20.5-CI**
	20.64	0.8125	13/16	**1N21D-0026**	**1C31A-0026-CI**
	21.00	0.8268	—	**1N21D-21**	**1C31A-21-CI**
	21.43	0.8438	27/32	**1N21D-0027**	**1C31A-0027-CI**
	21.50	0.8465	—	**1N21D-21.5**	**1C31A-21.5-CI**
1.5	21.83	0.8594	55/64	**1N21D-.859**	**1C31A-.859-CI**
	22.00	0.8661	—	**1N21D-22**	**1C31A-22-CI**
	22.23	0.8750	7/8	**1N21D-0028**	**1C31A-0028-CI**
	22.50	0.8858	—	**1N21D-22.5**	**1C31A-22.5-CI**
	22.62	0.8906	57/64	**1N21D-.890**	**1C31A-.890-CI**
	23.00	0.9055	—	**1N21D-23**	**1C31A-23-CI**
	23.02	0.9063	29/32	**1N21D-0029**	**1C31A-0029-CI**
	23.42	0.9219	59/64	**1N21D-.921**	**1C31A-.921-CI**
	23.50	0.9252	—	**1N21D-23.5**	**1C31A-23.5-CI**
	23.81	0.9375	15/16	**1N21D-0030**	**1C31A-0030-CI**
	24.00	0.9449	—	**1N21D-24**	**1C31A-24-CI**

***Diamond film coated items are nonstocked standard and only available in standard geometry. For additional geometries, please contact Application Engineering. Process fees apply.

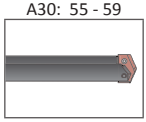
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A30: 113 - 139

Key on A30: 2



A30: 55 - 59



A30: 5 - 6



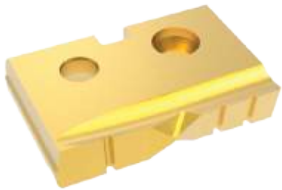
HI, HR, CR, TC, SK, NP, IN, RN, CN, AN, BR, CI, CP, NC, WC, BT

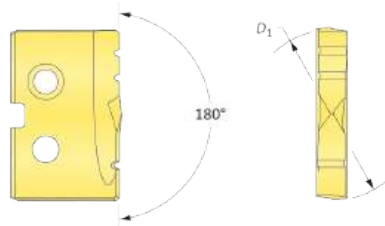
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

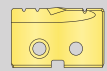
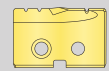
Inserts sold in quantities of 2.

1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")

T-A® Drill Inserts

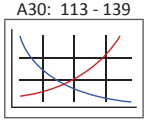


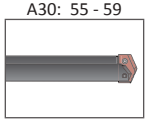


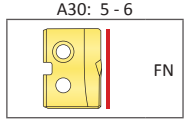
	Insert			Flat Bottom Geometry	
				HSS: Super Cobalt	Carbide: K20 (C2)
					
				Part No.	Part No.
Series	D_1 mm	D_1 inch	Fractional Equivalent	TiN	TiN*
1	17.86	0.7031	45/64	**151T-.703-FB**	**1C21T-.703-FB**
	18.00	0.7087	—	**151T-18-FB**	**1C21T-18-FB**
	18.26	0.7188	23/32	**151T-0023-FB**	**1C21T-0023-FB**
	18.50	0.7283	—	**151T-18.5-FB**	**1C21T-18.5-FB**
	18.65	0.7344	47/64	**151T-.734-FB**	**1C21T-.734-FB**
	19.00	0.7480	—	**151T-19-FB**	**1C21T-19-FB**
	19.05	0.7500	3/4	**151T-0024-FB**	**1C21T-0024-FB**
	19.45	0.7656	49/64	**151T-.765-FB**	**1C21T-.765-FB**
	19.50	0.7677	—	**151T-19.5-FB**	**1C21T-19.5-FB**
	19.85	0.7813	25/32	**151T-0025-FB**	**1C21T-0025-FB**
	20.00	0.7874	—	**151T-20-FB**	**1C21T-20-FB**
	20.24	0.7969	51/64	**151T-.796-FB**	**1C21T-.796-FB**
	20.35	0.8010	—	**151T-.801-FB**	**1C21T-.801-FB**
	20.50	0.8071	—	**151T-20.5-FB**	**1C21T-20.5-FB**
	20.64	0.8125	13/16	**151T-0026-FB**	**1C21T-0026-FB**
	21.00	0.8268	—	**151T-21-FB**	**1C21T-21-FB**
	21.43	0.8438	27/32	**151T-0027-FB**	**1C21T-0027-FB**
	21.50	0.8465	—	**151T-21.5-FB**	**1C21T-21.5-FB**
1.5	21.83	0.8594	55/64	**151T-.859-FB**	**1C21T-.859-FB**
	22.00	0.8661	—	**151T-22-FB**	**1C21T-22-FB**
	22.23	0.8750	7/8	**151T-0028-FB**	**1C21T-0028-FB**
	22.50	0.8858	—	**151T-22.5-FB**	**1C21T-22.5-FB**
	22.62	0.8906	57/64	**151T-.890-FB**	**1C21T-.890-FB**
	23.00	0.9055	—	**151T-23-FB**	**1C21T-23-FB**
	23.02	0.9063	29/32	**151T-0029-FB**	**1C21T-0029-FB**
	23.42	0.9219	59/64	**151T-.921-FB**	**1C21T-.921-FB**
	23.50	0.9252	—	**151T-23.5-FB**	**1C21T-23.5-FB**
	23.81	0.9375	15/16	**151T-0030-FB**	**1C21T-0030-FB**
	24.00	0.9449	—	**151T-24-FB**	**1C21T-24-FB**

*Carbide: K20 (C2) inserts with flat bottom geometry are nonstocked standard items. Process fees apply.

NOTE: 1.5 series inserts fit into both 1 and 1.5 series holders. However, 1 series inserts ONLY fit into 1 series holders. See page A30: 7 for visual.

A30: 113 - 139
Key on A30: 2


A30: 55 - 59


A30: 5 - 6


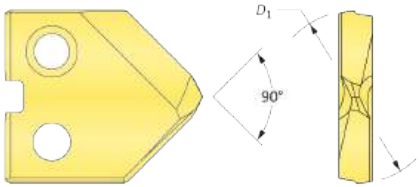
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

Inserts sold in quantities of 2.

1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")

T-A® Drill Inserts

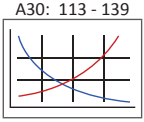




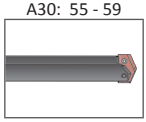
Series	Insert D_1 mm	Insert D_1 inch	Insert Fractional Equivalent	90° Spot & Chamfer Geometry HSS: Super Cobalt Part No. TiN	Part No. TiAlN	Part No. TiCN
1	17.86	0.7031	45/64	151T-.703-SP	151A-.703-SP	151N-.703-SP
	18.00	0.7087	—	151T-18-SP	151A-18-SP	151N-18-SP
	18.26	0.7188	23/32	151T-0023-SP	151A-0023-SP	151N-0023-SP
	18.50	0.7283	—	151T-18.5-SP	151A-18.5-SP	151N-18.5-SP
	18.65	0.7344	47/64	151T-.734-SP	151A-.734-SP	151N-.734-SP
	19.00	0.7480	—	151T-19-SP	151A-19-SP	151N-19-SP
	19.05	0.7500	3/4	151T-0024-SP	151A-0024-SP	151N-0024-SP
	19.45	0.7656	49/64	151T-.765-SP	151A-.765-SP	151N-.765-SP
	19.50	0.7677	—	151T-19.5-SP	151A-19.5-SP	151N-19.5-SP
	19.85	0.7813	25/32	151T-0025-SP	151A-0025-SP	151N-0025-SP
	20.00	0.7874	—	151T-20-SP	151A-20-SP	151N-20-SP
	20.24	0.7969	51/64	151T-.796-SP	151A-.796-SP	151N-.796-SP
	20.35	0.8010	—	151T-.801-SP	151A-.801-SP	151N-.801-SP
	20.50	0.8071	—	151T-20.5-SP	151A-20.5-SP	151N-20.5-SP
	20.64	0.8125	13/16	151T-0026-SP	151A-0026-SP	151N-0026-SP
	21.00	0.8268	—	151T-21-SP	151A-21-SP	151N-21-SP
	21.43	0.8438	27/32	151T-0027-SP	151A-0027-SP	151N-0027-SP
	21.50	0.8465	—	151T-21.5-SP	151A-21.5-SP	151N-21.5-SP
1.5	21.83	0.8594	55/64	151T-.859-SP	151A-.859-SP	151N-.859-SP
	22.00	0.8661	—	151T-22-SP	151A-22-SP	151N-22-SP
	22.23	0.8750	7/8	151T-0028-SP	151A-0028-SP	151N-0028-SP
	22.50	0.8858	—	151T-22.5-SP	151A-22.5-SP	151N-22.5-SP
	22.62	0.8906	57/64	151T-.890-SP	151A-.890-SP	151N-.890-SP
	23.00	0.9055	—	151T-23-SP	151A-23-SP	151N-23-SP
	23.02	0.9063	29/32	151T-0029-SP	151A-0029-SP	151N-0029-SP
	23.42	0.9219	59/64	151T-.921-SP	151A-.921-SP	151N-.921-SP
	23.50	0.9252	—	151T-23.5-SP	151A-23.5-SP	151N-23.5-SP
	23.81	0.9375	15/16	151T-0030-SP	151A-0030-SP	151N-0030-SP
	24.00	0.9449	—	151T-24-SP	151A-24-SP	151N-24-SP

NOTE: 1.5 series inserts fit into both 1 and 1.5 series holders. However, 1 series inserts ONLY fit into 1 series holders. See page A30: 7 for visual.

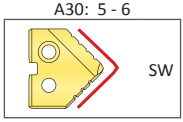
A30: 113 - 139
Key on A30: 2



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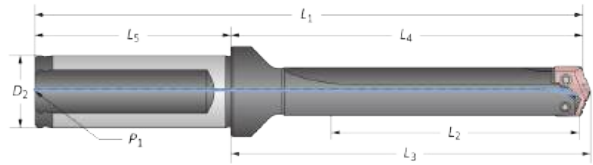
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

Inserts sold in quantities of 2.

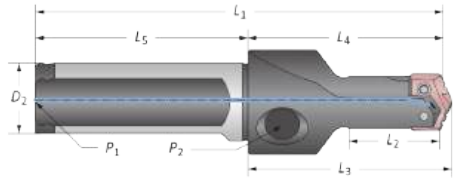
1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")

T-A® Drill Holders









Stub Length

Metric Flange Shank Holders

Flute	Series	Body: Length	L_2	L_4	L_3	L_1	Shank: L_5	D_2	P_1	Part No.
Straight	1	Stub	50.6	75.8	79.3	131.8	56.0	25	1/8 BSPT	**21010S-25FM**
		Short	66.8	107.2	110.7	163.2	56.0	25	1/8 BSPT	**22010S-25FM**
		Intermediate	114.8	154.8	158.3	210.8	56.0	25	1/8 BSPT	**23010S-25FM**
		Standard	165.6	205.6	209.1	261.6	56.0	25	1/8 BSPT	**24010S-25FM**
		Extended	267.2	307.2	310.7	363.2	56.0	25	1/8 BSPT	⚠ **25010S-25FM**
		XL	454.2	494.5	498.1	550.5	56.0	25	1/8 BSPT	⚠ **27010S-25FM**
		3XL	562.1	602.5	606.0	658.5	56.0	25	1/8 BSPT	⚠ **29010S-25FM**
	1.5	Stub	64.9	88.5	92.0	144.5	56.0	25	1/8 BSPT	**21015S-25FM**
		Short	66.1	107.2	110.7	163.2	56.0	25	1/8 BSPT	**22015S-25FM**
		Intermediate	113.8	154.8	158.3	210.8	56.0	25	1/8 BSPT	**23015S-25FM**
		Standard	164.6	205.6	209.1	261.6	56.0	25	1/8 BSPT	**24015S-25FM**
		Extended	266.2	307.2	310.7	363.2	56.0	25	1/8 BSPT	⚠ **25015S-25FM**
Helical	1	Intermediate	132.8	154.8	158.3	210.8	56.0	25	1/8 BSPT	**23010H-25FM**
		Standard	183.6	205.6	209.1	261.6	56.0	25	1/8 BSPT	**24010H-25FM**
		Standard Plus	234.3	256.3	259.9	312.3	56.0	25	1/8 BSPT	⚠ **24510H-25FM**
		Extended	285.2	307.2	310.7	363.2	56.0	25	1/8 BSPT	⚠ **25010H-25FM**
		Long	380.3	402.3	405.9	458.3	56.0	25	1/8 BSPT	⚠ **26010H-25FM**
	1.5	Intermediate	134.4	154.8	158.3	210.8	56.0	25	1/8 BSPT	**23015H-25FM**
		Standard	185.2	205.6	209.1	261.6	56.0	25	1/8 BSPT	**24015H-25FM**
		Extended	286.8	307.2	310.7	363.2	56.0	25	1/8 BSPT	⚠ **25015H-25FM**

NOTE: Stub length holders have a 3.175 mm (1/8") side pipe tap (P_2).

NOTE: 1.5 series inserts fit into both 1 and 1.5 series holders. However, 1 series inserts ONLY fit into 1 series holders. See page A30: 7 for visual.

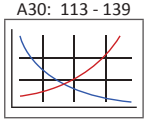
Connection Accessories

Series	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
1	7375-IP9-1	7375N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)
1.5	739-IP9-1	739N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)

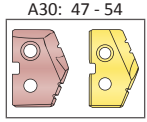
*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A30: 113 - 139



A30: 47 - 54



A30: 60 & 112



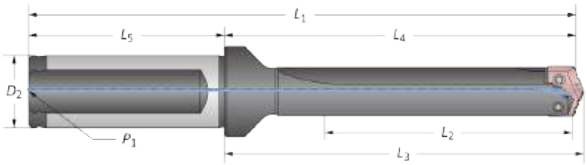
Key on A30: 2

ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

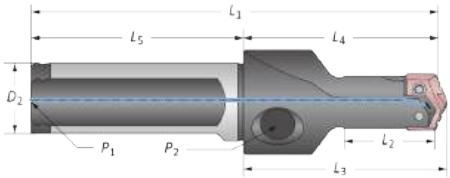
1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")

T-A® Drill Holders









Stub Length

Imperial Flange Shank Holders

Flute	Series	Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No.
Straight	1	Stub	1.992	2.984	3.124	5.264	2.280	1	1/8 NPT	21010S-100F
		Short	2.643	4.219	4.359	6.499	2.280	1	1/8 NPT	22010S-100F
		Intermediate	4.518	6.094	6.234	8.374	2.280	1	1/8 NPT	23010S-100F
		Standard	6.518	8.094	8.234	10.374	2.280	1	1/8 NPT	24010S-100F
		Extended	10.518	12.094	12.234	14.374	2.280	1	1/8 NPT	⚠ 25010S-100F
	1.5	Stub	2.554	3.484	3.624	5.764	2.280	1	1/8 NPT	21015S-100F
		Short	2.607	4.219	4.359	6.499	2.280	1	1/8 NPT	22015S-100F
		Intermediate	4.482	6.094	6.234	8.374	2.280	1	1/8 NPT	23015S-100F
		Standard	6.482	8.094	8.234	10.374	2.280	1	1/8 NPT	24015S-100F
		Extended	10.482	12.094	12.234	14.374	2.280	1	1/8 NPT	⚠ 25015S-100F
Helical	1	Intermediate	5.229	6.094	6.234	8.374	2.280	1	1/8 NPT	23010H-100F
		Standard	7.229	8.094	8.234	10.374	2.280	1	1/8 NPT	24010H-100F
		Standard Plus	9.226	10.091	10.231	12.371	2.280	1	1/8 NPT	⚠ 24510H-100F
		Extended	11.229	12.094	12.234	14.374	2.280	1	1/8 NPT	⚠ 25010H-100F
		Long	14.974	15.839	15.979	18.119	2.280	1	1/8 NPT	⚠ 26010H-100F
	1.5	Intermediate	5.291	6.094	6.234	8.374	2.280	1	1/8 NPT	23015H-100F
		Standard	7.291	8.094	8.234	10.374	2.280	1	1/8 NPT	24015H-100F
		Extended	11.291	12.094	12.234	14.374	2.280	1	1/8 NPT	⚠ 25015H-100F

NOTE: Stub length holders have a 3.175 mm (1/8") side pipe tap (P_2).

NOTE: 1.5 series inserts fit into both 1 and 1.5 series holders. However, 1 series inserts ONLY fit into 1 series holders. See page A30: 7 for visual.

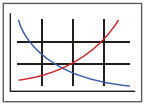
Connection Accessories

Series	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
1	7375-IP9-1	7375N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)
1.5	739-IP9-1	739N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)

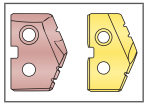
*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A30: 113 - 139
Key on A30: 2



A30: 47 - 54



A30: 60 & 112

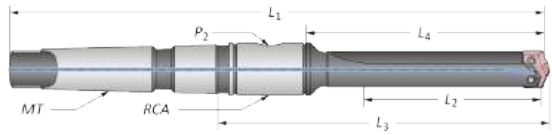


ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")

T-A® Drill Holders





Metric Taper Shank Holders

Flute	Series	Body: Length	Body: L_2	Body: L_4	Body: L_3	Body: L_1	Shank: *MT**	Shank: P_2	Shank: RCA	Part No.
Straight	1	Short	66.8	98.4	142.4	232.6	#3 MT ISO	1/8 BSPT	2T-3SRM	**22010S-003M**
Straight	1.5	Short	63.0	98.4	142.4	232.6	#3 MT ISO	1/8 BSPT	2T-3SRM	**22015S-003M**
Helical	1	Intermediate	133.0	149.2	193.2	283.4	#3 MT ISO	1/8 BSPT	2T-3SRM	**23010H-003M**
Helical	1	Standard	183.8	200.0	244.0	334.2	#3 MT ISO	1/8 BSPT	2T-3SRM	**24010H-003M**
Helical	1	Extended	285.4	301.6	345.6	435.8	#3 MT ISO	1/8 BSPT	2T-3SRM	⚠ **25010H-003M**
Helical	1.5	Intermediate	132.6	149.2	193.2	283.4	#3 MT ISO	1/8 BSPT	2T-3SRM	**23015H-003M**
Helical	1.5	Standard	183.4	200.0	244.0	334.2	#3 MT ISO	1/8 BSPT	2T-3SRM	**24015H-003M**
Helical	1.5	Extended	285.0	301.6	345.6	435.8	#3 MT ISO	1/8 BSPT	2T-3SRM	⚠ **25015H-003M**

*MT ISO 296 type BEK.

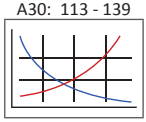
NOTE: 1.5 series inserts fit into both 1 and 1.5 series holders. However, 1 series inserts ONLY fit into 1 series holders. See page A30: 7 for visual.

Connection Accessories

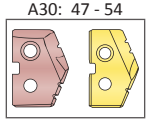
Series	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
1	7375-IP9-1	7375N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)
1.5	739-IP9-1	739N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)

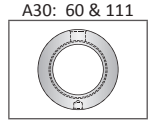
*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

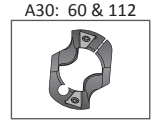
⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A30: 113 - 139 

Key on A30: 2

A30: 47 - 54 

A30: 60 & 111 

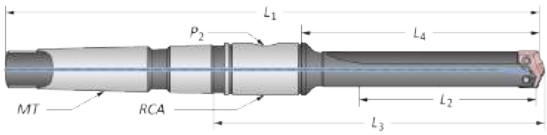
A30: 60 & 112 

Ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")

T-A® Drill Holders





Imperial Taper Shank Holders

Flute	Series	Body: Length	L_2	L_4	L_3	L_1	Shank: MT	P_2	RCA	Part No.
Straight	1	Short	2.631	3.875	5.608	9.156	#3 MT	1/8 NPT	2T-3SR	**22010S-003I**
		Short	2.631	3.875	5.671	10.156	#4 MT	1/8 NPT	2T-3SR	**22010S-004I**
		Intermediate	4.631	5.875	7.608	11.156	#3 MT	1/8 NPT	2T-3SR	**23010S-003I**
		Standard	6.631	7.875	9.608	13.156	#3 MT	1/8 NPT	2T-3SR	**24010S-003I**
		Standard	6.631	7.875	9.671	14.156	#4 MT	1/8 NPT	2T-3SR	**24010S-004I**
		Extended	10.631	11.875	13.608	17.156	#3 MT	1/8 NPT	2T-3SR	⚠ **25010S-003I**
	1.5	Short	2.482	3.875	5.608	9.156	#3 MT	1/8 NPT	2T-3SR	**22015S-003I**
		Short	2.483	3.875	5.671	10.156	#4 MT	1/8 NPT	2T-3SR	**22015S-004I**
		Intermediate	4.482	5.875	7.608	11.156	#3 MT	1/8 NPT	2T-3SR	**23015S-003I**
		Standard	6.482	7.875	9.608	13.156	#3 MT	1/8 NPT	2T-3SR	**24015S-003I**
		Standard	6.483	7.875	9.671	14.156	#4 MT	1/8 NPT	2T-3SR	**24015S-004I**
		Extended	10.482	11.875	13.608	17.156	#3 MT	1/8 NPT	2T-3SR	⚠ **25015S-003I**
Helical	1	Intermediate	5.236	5.875	7.608	11.156	#3 MT	1/8 NPT	2T-3SR	**23010H-003I**
		Standard	7.236	7.875	9.608	13.156	#3 MT	1/8 NPT	2T-3SR	**24010H-003I**
		Standard	7.236	7.875	9.671	14.156	#4 MT	1/8 NPT	2T-3SR	**24010H-004I**
		Extended	11.236	11.875	13.608	17.156	#3 MT	1/8 NPT	2T-3SR	⚠ **25010H-003I**
	1.5	Intermediate	5.219	5.875	7.608	11.156	#3 MT	1/8 NPT	2T-3SR	**23015H-003I**
		Standard	7.219	7.875	9.608	13.156	#3 MT	1/8 NPT	2T-3SR	**24015H-003I**
		Standard	7.219	7.875	9.671	14.156	#4 MT	1/8 NPT	2T-3SR	**24015H-004I**
		Extended	11.219	11.875	13.608	17.156	#3 MT	1/8 NPT	2T-3SR	⚠ **25015H-003I**

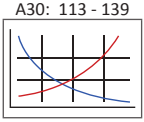
NOTE: 0.5 series inserts fit into both 0 and 0.5 series holders. However, 0 series inserts ONLY fit into 0 series holders. See page A30: 7 for visual.

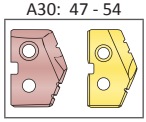
Connection Accessories

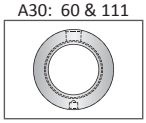
Series	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
1	7375-IP9-1	7375N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)
1.5	739-IP9-1	739N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

⚠ **WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A30: 113 - 139 

A30: 47 - 54 

A30: 60 & 111 

A30: 60 & 112 

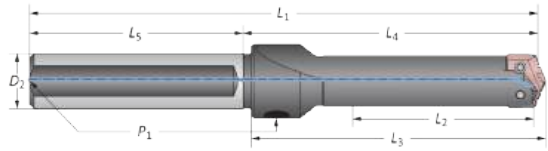
Key on A30: 2

Ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")

T-A® Drill Holders





Straight Shank Holders

Flute	Series	Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No.
Straight	1	Short	2.619	3.875	4.015	6.875	3.000	3/4	1/8 NPT	**22010S-075L**
		Short	2.647	3.875	4.015	6.875	3.000	1	1/8 NPT	**22010S-100L**
		Intermediate	4.647	5.875	6.015	8.875	3.000	1	1/8 NPT	**23010S-100L**
		Standard	6.619	7.875	8.015	10.875	3.000	3/4	1/8 NPT	**24010S-075L**
		Standard	6.647	7.875	8.015	10.875	3.000	1	1/8 NPT	**24010S-100L**
		Extended	10.647	11.875	12.015	14.875	3.000	1	1/8 NPT	⚠ **25010S-100L**
		XL	18.022	19.250	19.390	22.250	3.000	1	1/8 NPT	⚠ **27010S-100L**
		3XL	22.272	23.500	23.640	26.500	3.000	1	1/8 NPT	⚠ **29010S-100L**
	1.5	Short	2.649	3.875	4.015	6.875	3.000	3/4	1/8 NPT	**22015S-075L**
		Short	2.661	3.875	4.015	6.875	3.000	1	1/8 NPT	**22015S-100L**
		Intermediate	4.661	5.875	6.015	8.875	3.000	1	1/8 NPT	**23015S-100L**
		Standard	6.649	7.875	8.015	10.875	3.000	3/4	1/8 NPT	**24015S-075L**
		Standard	6.661	7.875	8.015	10.875	3.000	1	1/8 NPT	**24015S-100L**
		Extended	10.661	11.875	12.015	14.875	3.000	1	1/8 NPT	⚠ **25015S-100L**

NOTE: 1.5 series inserts fit into both 1 and 1.5 series holders. However, 1 series inserts ONLY fit into 1 series holders. See page A30: 7 for visual.

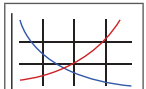
Connection Accessories

Series	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
1	7375-IP9-1	7375N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)
1.5	739-IP9-1	739N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

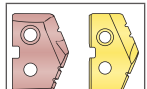
⚠ **WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A30: 113 - 139



Key on A30: 2

A30: 47 - 54



A30: 60 & 112

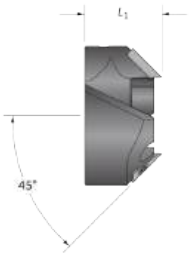


Ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")

T-A® Drill Accessories



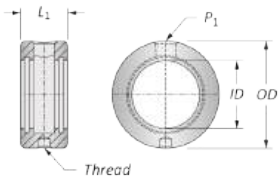




T-ACR 45 Chamfer Rings

Holder Series	D_1 Range	Chamfer Ring D_4	Chamfer Ring L_1	Part No.	Insert Part No.	Insert Screw	Insert Driver	Clamping Screw	Insert Driver
1	0.6900 - 0.8540	1.330	0.797	**T-ACR-45-1**	T-ACRI-45-B-C5A	7255-IP8-1	8IP-8	7495-IP15-1	8IP-15
1.5	0.8540 - 0.9600	1.493	0.891	**T-ACR-45-1.5**	T-ACRI-45-B-C5A	7255-IP8-1	8IP-8	7495-IP15-1	8IP-15





Rotary Coolant Adapters (RCA) and Accessories

	ID	OD	L_1	Driving Rod Thread	P_1	Part No.	RCA O-Rings Kit Part No.*	RCA O-Rings Replacements
m	25.4	54.0	28.6	M8 x 1.25	1/8 BSPT	⚠ **2T-3SRM**	2T1-3SR	2T1-3OR-10
i	1.000	2.125	1.125	5/16" - 18	1/8 NPT	⚠ **2T-3SR**	2T1-3SR	2T1-3OR-10

*RCA Repair Kit includes (2) O-rings, (2) snap rings, and (2) thrust washers.

⚠ Refer to page A30: 111 for proper RCA assembly and safety information.

⚠ WARNING RCA rotation during drilling can cause hose and/or hose fitting failure, machinery damage, and/or serious injury. To prevent, use RCA and positive stop studs when drilling. Factory technical assistance is also available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com**

A30: 113 - 139
Key on A30: 2

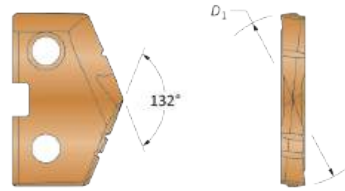
m = Metric (mm)
i = Imperial (in)

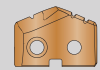
Chamfer ring inserts sold separately.
Screws sold in multiples of 10.
O-rings sold in packs of 10.

2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

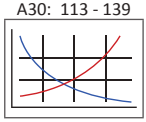
GEN2 T-A® Drill Inserts

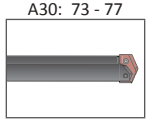


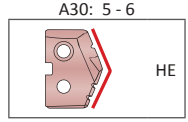


Series	Insert D_1 mm	Insert D_1 inch	Insert Fractional Equivalent	HSS: Super Cobalt  Part No. AM200®	Carbide: K35 (C1)  Part No. AM300®	Carbide: K20 (C2)  Part No. AM300®
2	24.50	0.9646	—	452H-24.5	4C22P-24.5	4C12P-24.5
	24.61	0.9688	31/32	452H-0031	4C22P-0031	4C12P-0031
	24.79	0.9760	—	452H-.976	4C22P-.976	4C12P-.976
	25.00	0.9843	63/64	452H-25	4C22P-25	4C12P-25
	25.40	1.0000	1	452H-0100	4C22P-0100	4C12P-0100
	25.50	1.0039	—	452H-25.5	4C22P-25.5	4C12P-25.5
	25.80	1.0156	1-1/64	452H-1.015	4C22P-1.015	4C12P-1.015
	26.00	1.0236	—	452H-26	4C22P-26	4C12P-26
	26.20	1.0313	1-1/32	452H-0101	4C22P-0101	4C12P-0101
	26.50	1.0433	—	452H-26.5	4C22P-26.5	4C12P-26.5
	26.59	1.0469	1-3/64	452H-1.046	4C22P-1.046	4C12P-1.046
	26.99	1.0625	1-1/16	452H-0102	4C22P-0102	4C12P-0102
	27.00	1.0630	—	452H-27	4C22P-27	4C12P-27
	27.50	1.0827	—	452H-27.5	4C22P-27.5	4C12P-27.5
	27.78	1.0938	1-3/64	452H-0103	4C22P-0103	4C12P-0103
	28.00	1.1024	—	452H-28	4C22P-28	4C12P-28
	28.18	1.1094	1-7/64	452H-1.109	4C22P-1.109	4C12P-1.109
	28.50	1.1220	—	452H-28.5	4C22P-28.5	4C12P-28.5
	28.58	1.1250	1-1/8	452H-0104	4C22P-0104	4C12P-0104
	29.00	1.1417	—	452H-29	4C22P-29	4C12P-29
	29.37	1.1563	1-5/32	452H-0105	4C22P-0105	4C12P-0105
	29.50	1.1614	—	452H-29.5	4C22P-29.5	4C12P-29.5
	30.00	1.1811	—	452H-30	4C22P-30	4C12P-30

NOTE: 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

A30: 113 - 139
Key on A30: 2


A30: 73 - 77


A30: 5 - 6


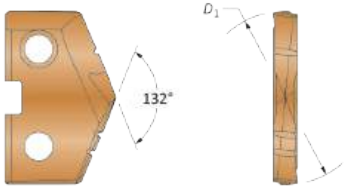
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

Inserts sold in quantities of 2.

2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

GEN2 T-A® Drill Inserts

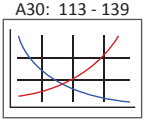




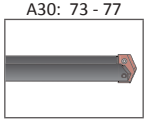
Series	Insert D_1 mm	Insert D_1 inch	Insert Fractional Equivalent	HSS: Super Cobalt Part No. AM200®	Carbide: K35 (C1) Part No. AM300®	Carbide: K20 (C2) Part No. AM300®
2.5	30.16	1.1875	1-3/16	**452H-0106**	**4C22P-0106**	**4C12P-0106**
	30.50	1.2008	—	**452H-30.5**	**4C22P-30.5**	**4C12P-30.5**
	30.96	1.2188	1-7/32	**452H-0107**	**4C22P-0107**	**4C12P-0107**
	31.00	1.2205	—	**452H-31**	**4C22P-31**	**4C12P-31**
	31.14	1.2260	—	**452H-1.226**	**4C22P-1.226**	**4C12P-1.226**
	31.27	1.2310	—	**452H-1.231**	**4C22P-1.231**	**4C12P-1.231**
	31.35	1.2344	1-15/64	**452H-1.234**	**4C22P-1.234**	**4C12P-1.234**
	31.50	1.2402	—	**452H-31.5**	**4C22P-31.5**	**4C12P-31.5**
	31.75	1.2500	1-1/4	**452H-0108**	**4C22P-0108**	**4C12P-0108**
	32.00	1.2598	—	**452H-32**	**4C22P-32**	**4C12P-32**
	32.50	1.2795	—	**452H-32.5**	**4C22P-32.5**	**4C12P-32.5**
	32.55	1.2813	1-9/32	**452H-0109**	**4C22P-0109**	**4C12P-0109**
	33.00	1.2992	—	**452H-33**	**4C22P-33**	**4C12P-33**
	33.34	1.3125	1-5/16	**452H-0110**	**4C22P-0110**	**4C12P-0110**
	33.50	1.3189	—	**452H-33.5**	**4C22P-33.5**	**4C12P-33.5**
	34.00	1.3386	—	**452H-34**	**4C22P-34**	**4C12P-34**
	34.13	1.3438	1-11/32	**452H-0111**	**4C22P-0111**	**4C12P-0111**
	34.50	1.3583	—	**452H-34.5**	**4C22P-34.5**	**4C12P-34.5**
	34.93	1.3750	1-3/8	**452H-0112**	**4C22P-0112**	**4C12P-0112**
	35.00	1.3780	—	**452H-35**	**4C22P-35**	**4C12P-35**

NOTE: 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

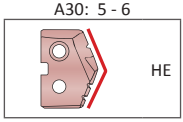
A30: 113 - 139
Key on A30: 2



A30: 73 - 77



A30: 5 - 6



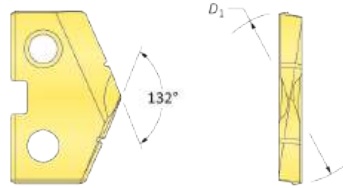
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

Inserts sold in quantities of 2.

2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

T-A® Drill Inserts

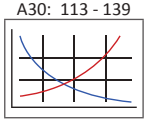




Series	Insert D_1 mm	Insert D_1 inch	Insert Fractional Equivalent	HSS: High-Speed Steel Part No. TiN	HSS: High-Speed Steel Part No. TiAlN	HSS: High-Speed Steel Part No. TiCN
2	24.50	0.9646	—	**132T-24.5**	**132A-24.5**	**132N-24.5**
	24.61	0.9688	31/32	**132T-0031**	**132A-0031**	**132N-0031**
	24.79	0.9760	—	**132T-.976**	**132A-.976**	**132N-.976**
	25.00	0.9843	63/64	**132T-25**	**132A-25**	**132N-25**
	25.40	1.0000	1	**132T-0100**	**132A-0100**	**132N-0100**
	25.50	1.0039	—	**132T-25.5**	**132A-25.5**	**132N-25.5**
	25.80	1.0156	1-1/64	**132T-1.015**	**132A-1.015**	**132N-1.015**
	26.00	1.0236	—	**132T-26**	**132A-26**	**132N-26**
	26.20	1.0313	1-1/32	**132T-0101**	**132A-0101**	**132N-0101**
	26.50	1.0433	—	**132T-26.5**	**132A-26.5**	**132N-26.5**
	26.59	1.0469	1-3/64	**132T-1.046**	**132A-1.046**	**132N-1.046**
	26.99	1.0625	1-1/16	**132T-0102**	**132A-0102**	**132N-0102**
	27.00	1.0630	—	**132T-27**	**132A-27**	**132N-27**
	27.50	1.0827	—	**132T-27.5**	**132A-27.5**	**132N-27.5**
	27.78	1.0938	1-3/32	**132T-0103**	**132A-0103**	**132N-0103**
	28.00	1.1024	—	**132T-28**	**132A-28**	**132N-28**
	28.18	1.1094	1-7/64	**132T-1.109**	**132A-1.109**	**132N-1.109**
	28.50	1.1220	—	**132T-28.5**	**132A-28.5**	**132N-28.5**
	28.58	1.1250	1-1/8	**132T-0104**	**132A-0104**	**132N-0104**
	29.00	1.1417	—	**132T-29**	**132A-29**	**132N-29**
	29.37	1.1563	1-5/32	**132T-0105**	**132A-0105**	**132N-0105**
	29.50	1.1614	—	**132T-29.5**	**132A-29.5**	**132N-29.5**
	30.00	1.1811	—	**132T-30**	**132A-30**	**132N-30**
2.5	30.16	1.1875	1-3/16	**132T-0106**	**132A-0106**	**132N-0106**
	30.50	1.2008	—	**132T-30.5**	**132A-30.5**	**132N-30.5**
	30.96	1.2188	1-7/32	**132T-0107**	**132A-0107**	**132N-0107**
	31.00	1.2205	—	**132T-31**	**132A-31**	**132N-31**
	31.14	1.2260	—	**132T-1.226**	**132A-1.226**	**132N-1.226**
	31.27	1.2310	—	**132T-1.231**	**132A-1.231**	**132N-1.231**
	31.35	1.2344	1-15/64	**132T-1.234**	**132A-1.234**	**132N-1.234**
	31.50	1.2402	—	**132T-31.5**	**132A-31.5**	**132N-31.5**
	31.75	1.2500	1-1/4	**132T-0108**	**132A-0108**	**132N-0108**
	32.00	1.2598	—	**132T-32**	**132A-32**	**132N-32**
	32.50	1.2795	—	**132T-32.5**	**132A-32.5**	**132N-32.5**
	32.55	1.2813	1-9/32	**132T-0109**	**132A-0109**	**132N-0109**
	33.00	1.2992	—	**132T-33**	**132A-33**	**132N-33**
	33.34	1.3125	1-5/16	**132T-0110**	**132A-0110**	**132N-0110**
	33.50	1.3189	—	**132T-33.5**	**132A-33.5**	**132N-33.5**
	34.00	1.3386	—	**132T-34**	**132A-34**	**132N-34**
	34.13	1.3438	1-11/32	**132T-0111**	**132A-0111**	**132N-0111**
	34.50	1.3583	—	**132T-34.5**	**132A-34.5**	**132N-34.5**
	34.93	1.3750	1-3/8	**132T-0112**	**132A-0112**	**132N-0112**
	35.00	1.3780	—	**132T-35**	**132A-35**	**132N-35**

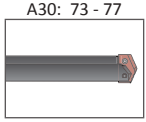
NOTE: 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

A30: 113 - 139



Key on A30: 2

A30: 73 - 77



A30: 5 - 6



HI, HR, CR, TC, SK, NP, IN, RN, CN, AN, BR, CI, CP, NC, WC

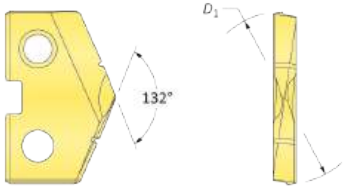
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

Inserts sold in quantities of 2.

2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

T-A® Drill Inserts



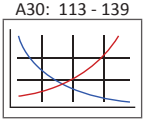


Series	Insert D_1 mm	Insert D_1 inch	Insert Fractional Equivalent	HSS: Super Cobalt Part No. TiN	HSS: Super Cobalt Part No. TiAlN	HSS: Super Cobalt Part No. TiCN
2	24.50	0.9646	—	152T-24.5	152A-24.5	152N-24.5
	24.61	0.9688	31/32	152T-0031	152A-0031	152N-0031
	24.79	0.9760	—	152T-.976	152A-.976	152N-.976
	25.00	0.9843	63/64	152T-25	152A-25	152N-25
	25.40	1.0000	1	152T-0100	152A-0100	152N-0100
	25.50	1.0039	—	152T-25.5	152A-25.5	152N-25.5
	25.80	1.0156	1-1/64	152T-1.015	152A-1.015	152N-1.015
	26.00	1.0236	—	152T-26	152A-26	152N-26
	26.20	1.0313	1-1/32	152T-0101	152A-0101	152N-0101
	26.50	1.0433	—	152T-26.5	152A-26.5	152N-26.5
	26.59	1.0469	1-3/64	152T-1.046	152A-1.046	152N-1.046
	26.99	1.0625	1-1/16	152T-0102	152A-0102	152N-0102
	27.00	1.0630	—	152T-27	152A-27	152N-27
	27.50	1.0827	—	152T-27.5	152A-27.5	152N-27.5
	27.78	1.0938	1-3/32	152T-0103	152A-0103	152N-0103
	28.00	1.1024	—	152T-28	152A-28	152N-28
	28.18	1.1094	1-7/64	152T-1.109	152A-1.109	152N-1.109
	28.50	1.1220	—	152T-28.5	152A-28.5	152N-28.5
	28.58	1.1250	1-1/8	152T-0104	152A-0104	152N-0104
	29.00	1.1417	—	152T-29	152A-29	152N-29
	29.37	1.1563	1-5/32	152T-0105	152A-0105	152N-0105
	29.50	1.1614	—	152T-29.5	152A-29.5	152N-29.5
	30.00	1.1811	—	152T-30	152A-30	152N-30
2.5	30.16	1.1875	1-3/16	152T-0106	152A-0106	152N-0106
	30.50	1.2008	—	152T-30.5	152A-30.5	152N-30.5
	30.96	1.2188	1-7/32	152T-0107	152A-0107	152N-0107
	31.00	1.2205	—	152T-31	152A-31	152N-31
	31.14	1.2260	—	152T-1.226	152A-1.226	152N-1.226
	31.27	1.2310	—	152T-1.231	152A-1.231	152N-1.231
	31.35	1.2344	1-15/64	152T-1.234	152A-1.234	152N-1.234
	31.50	1.2402	—	152T-31.5	152A-31.5	152N-31.5
	31.75	1.2500	1-1/4	152T-0108	152A-0108	152N-0108
	32.00	1.2598	—	152T-32	152A-32	152N-32
	32.50	1.2795	—	152T-32.5	152A-32.5	152N-32.5
	32.55	1.2813	1-9/32	152T-0109	152A-0109	152N-0109
	33.00	1.2992	—	152T-33	152A-33	152N-33
	33.34	1.3125	1-5/16	152T-0110	152A-0110	152N-0110
	33.50	1.3189	—	152T-33.5	152A-33.5	152N-33.5
	34.00	1.3386	—	152T-34	152A-34	152N-34
	34.13	1.3438	1-11/32	152T-0111	152A-0111	152N-0111
	34.50	1.3583	—	152T-34.5	152A-34.5	152N-34.5
	34.93	1.3750	1-3/8	152T-0112	152A-0112	152N-0112
	35.00	1.3780	—	152T-35	152A-35	152N-35

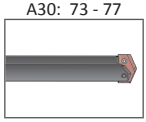
NOTE: 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

A30: 113 - 139

Key on A30: 2



A30: 73 - 77



A30: 5 - 6



HI, HR, CR, TC, SK, NP, IN, RN, CN, AN, BR, CI, CP, NC, WC

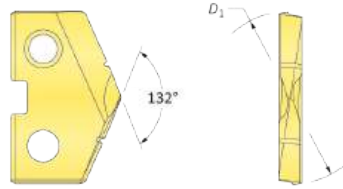
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Inserts sold in quantities of 2.

2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

T-A® Drill Inserts

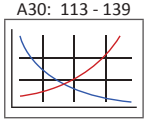




Series	Insert D_1 mm	Insert D_1 inch	Insert Fractional Equivalent	HSS: Premiuim Cobalt Part No. TiN	Part No. TiAlN	Part No. TiCN
2	24.50	0.9646	—	**182T-24.5**	**182A-24.5**	**182N-24.5**
	24.61	0.9688	31/32	**182T-0031**	**182A-0031**	**182N-0031**
	24.79	0.9760	—	**182T-.976**	**182A-.976**	**182N-.976**
	25.00	0.9843	63/64	**182T-25**	**182A-25**	**182N-25**
	25.40	1.0000	1	**182T-0100**	**182A-0100**	**182N-0100**
	25.50	1.0039	—	**182T-25.5**	**182A-25.5**	**182N-25.5**
	25.80	1.0156	1-1/64	**182T-1.015**	**182A-1.015**	**182N-1.015**
	26.00	1.0236	—	**182T-26**	**182A-26**	**182N-26**
	26.20	1.0313	1-1/32	**182T-0101**	**182A-0101**	**182N-0101**
	26.50	1.0433	—	**182T-26.5**	**182A-26.5**	**182N-26.5**
	26.59	1.0469	1-3/64	**182T-1.046**	**182A-1.046**	**182N-1.046**
	26.99	1.0625	1-1/16	**182T-0102**	**182A-0102**	**182N-0102**
	27.00	1.0630	—	**182T-27**	**182A-27**	**182N-27**
	27.50	1.0827	—	**182T-27.5**	**182A-27.5**	**182N-27.5**
	27.78	1.0938	1-3/32	**182T-0103**	**182A-0103**	**182N-0103**
	28.00	1.1024	—	**182T-28**	**182A-28**	**182N-28**
	28.18	1.1094	1-7/64	**182T-1.109**	**182A-1.109**	**182N-1.109**
	28.50	1.1220	—	**182T-28.5**	**182A-28.5**	**182N-28.5**
	28.58	1.1250	1-1/8	**182T-0104**	**182A-0104**	**182N-0104**
	29.00	1.1417	—	**182T-29**	**182A-29**	**182N-29**
	29.37	1.1563	1-5/32	**182T-0105**	**182A-0105**	**182N-0105**
	29.50	1.1614	—	**182T-29.5**	**182A-29.5**	**182N-29.5**
	30.00	1.1811	—	**182T-30**	**182A-30**	**182N-30**
2.5	30.16	1.1875	1-3/16	**182T-0106**	**182A-0106**	**182N-0106**
	30.50	1.2008	—	**182T-30.5**	**182A-30.5**	**182N-30.5**
	30.96	1.2188	1-7/32	**182T-0107**	**182A-0107**	**182N-0107**
	31.00	1.2205	—	**182T-31**	**182A-31**	**182N-31**
	31.14	1.2260	—	**182T-1.226**	**182A-1.226**	**182N-1.226**
	31.27	1.2310	—	**182T-1.231**	**182A-1.231**	**182N-1.231**
	31.35	1.2344	1-15/64	**182T-1.234**	**182A-1.234**	**182N-1.234**
	31.50	1.2402	—	**182T-31.5**	**182A-31.5**	**182N-31.5**
	31.75	1.2500	1-1/4	**182T-0108**	**182A-0108**	**182N-0108**
	32.00	1.2598	—	**182T-32**	**182A-32**	**182N-32**
	32.50	1.2795	—	**182T-32.5**	**182A-32.5**	**182N-32.5**
	32.55	1.2813	1-9/32	**182T-0109**	**182A-0109**	**182N-0109**
	33.00	1.2992	—	**182T-33**	**182A-33**	**182N-33**
	33.34	1.3125	1-5/16	**182T-0110**	**182A-0110**	**182N-0110**
	33.50	1.3189	—	**182T-33.5**	**182A-33.5**	**182N-33.5**
	34.00	1.3386	—	**182T-34**	**182A-34**	**182N-34**
	34.13	1.3438	1-11/32	**182T-0111**	**182A-0111**	**182N-0111**
	34.50	1.3583	—	**182T-34.5**	**182A-34.5**	**182N-34.5**
	34.93	1.3750	1-3/8	**182T-0112**	**182A-0112**	**182N-0112**
	35.00	1.3780	—	**182T-35**	**182A-35**	**182N-35**

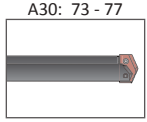
NOTE: 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

A30: 113 - 139



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A30: 73 - 77



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HI, HR, CR, TC, SK, NP, IN, RN, CN, AN, BR, CI, CP, NC, WC

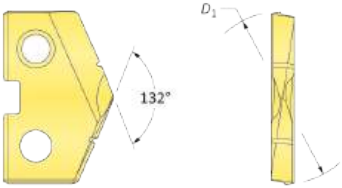
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2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

T-A® Drill Inserts



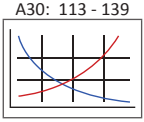


Series	Insert D_1 mm	Insert D_1 inch	Insert Fractional Equivalent	Carbide: P40 (C5) Part No. TiN	Carbide: P40 (C5) Part No. TiAlN	Carbide: K20 (C2) Part No. TiN	Carbide: K20 (C2) Part No. TiAlN
2	24.50	0.9646	—	1C52T-24.5	1C52A-24.5	1C22T-24.5	1C22A-24.5
	24.61	0.9688	31/32	1C52T-0031	1C52A-0031	1C22T-0031	1C22A-0031
	24.79	0.9760	—	1C52T-.976	1C52A-.976	1C22T-.976	1C22A-.976
	25.00	0.9843	63/64	1C52T-25	1C52A-25	1C22T-25	1C22A-25
	25.40	1.0000	1	1C52T-0100	1C52A-0100	1C22T-0100	1C22A-0100
	25.50	1.0039	—	1C52T-25.5	1C52A-25.5	1C22T-25.5	1C22A-25.5
	25.80	1.0156	1-1/64	1C52T-1.015	1C52A-1.015	1C22T-1.015	1C22A-1.015
	26.00	1.0236	—	1C52T-26	1C52A-26	1C22T-26	1C22A-26
	26.20	1.0313	1-1/32	1C52T-0101	1C52A-0101	1C22T-0101	1C22A-0101
	26.50	1.0433	—	1C52T-26.5	1C52A-26.5	1C22T-26.5	1C22A-26.5
	26.59	1.0469	1-3/64	1C52T-1.046	1C52A-1.046	1C22T-1.046	1C22A-1.046
	26.99	1.0625	1-1/16	1C52T-0102	1C52A-0102	1C22T-0102	1C22A-0102
	27.00	1.0630	—	1C52T-27	1C52A-27	1C22T-27	1C22A-27
	27.50	1.0827	—	1C52T-27.5	1C52A-27.5	1C22T-27.5	1C22A-27.5
	27.78	1.0938	1-3/32	1C52T-0103	1C52A-0103	1C22T-0103	1C22A-0103
	28.00	1.1024	—	1C52T-28	1C52A-28	1C22T-28	1C22A-28
	28.18	1.1094	1-7/64	1C52T-1.109	1C52A-1.109	1C22T-1.109	1C22A-1.109
	28.50	1.1220	—	1C52T-28.5	1C52A-28.5	1C22T-28.5	1C22A-28.5
	28.58	1.1250	1-1/8	1C52T-0104	1C52A-0104	1C22T-0104	1C22A-0104
	29.00	1.1417	—	1C52T-29	1C52A-29	1C22T-29	1C22A-29
	29.37	1.1563	1-5/32	1C52T-0105	1C52A-0105	1C22T-0105	1C22A-0105
	29.50	1.1614	—	1C52T-29.5	1C52A-29.5	1C22T-29.5	1C22A-29.5
	30.00	1.1811	—	1C52T-30	1C52A-30	1C22T-30	1C22A-30
2.5	30.16	1.1875	1-3/16	1C52T-0106	1C52A-0106	1C22T-0106	1C22A-0106
	30.50	1.2008	—	1C52T-30.5	1C52A-30.5	1C22T-30.5	1C22A-30.5
	30.96	1.2188	1-7/32	1C52T-0107	1C52A-0107	1C22T-0107	1C22A-0107
	31.00	1.2205	—	1C52T-31	1C52A-31	1C22T-31	1C22A-31
	31.14	1.2260	—	1C52T-1.226	1C52A-1.226	1C22T-1.226	1C22A-1.226
	31.27	1.2310	—	1C52T-1.231	1C52A-1.231	1C22T-1.231	1C22A-1.231
	31.35	1.2344	1-15/64	1C52T-1.234	1C52A-1.234	1C22T-1.234	1C22A-1.234
	31.50	1.2402	—	1C52T-31.5	1C52A-31.5	1C22T-31.5	1C22A-31.5
	31.75	1.2500	1-1/4	1C52T-0108	1C52A-0108	1C22T-0108	1C22A-0108
	32.00	1.2598	—	1C52T-32	1C52A-32	1C22T-32	1C22A-32
	32.50	1.2795	—	1C52T-32.5	1C52A-32.5	1C22T-32.5	1C22A-32.5
	32.55	1.2813	1-9/32	1C52T-0109	1C52A-0109	1C22T-0109	1C22A-0109
	33.00	1.2992	—	1C52T-33	1C52A-33	1C22T-33	1C22A-33
	33.34	1.3125	1-5/16	1C52T-0110	1C52A-0110	1C22T-0110	1C22A-0110
	33.50	1.3189	—	1C52T-33.5	1C52A-33.5	1C22T-33.5	1C22A-33.5
	34.00	1.3386	—	1C52T-34	1C52A-34	1C22T-34	1C22A-34
	34.13	1.3438	1-11/32	1C52T-0111	1C52A-0111	1C22T-0111	1C22A-0111
	34.50	1.3583	—	1C52T-34.5	1C52A-34.5	1C22T-34.5	1C22A-34.5
	34.93	1.3750	1-3/8	1C52T-0112	1C52A-0112	1C22T-0112	1C22A-0112
	35.00	1.3780	—	1C52T-35	1C52A-35	1C22T-35	1C22A-35

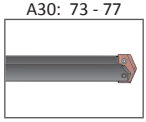
NOTE: 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

A30: 113 - 139

Key on A30: 2



A30: 73 - 77



A30: 5 - 6



HI, HR, CR, TC, SK, NP, IN, RN, CN, AN, BR, CI, CP, NC, WC, BT

Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

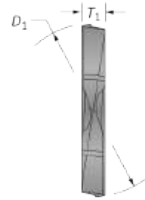
Inserts sold in quantities of 2.

2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

T-A® Drill Inserts

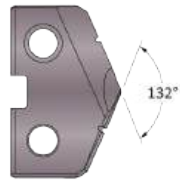








Cast Iron Geometry



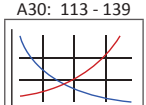


	Insert			Carbide: N2	Cast Iron Geometry Carbide: K10 (C3)
					
Series	D_1 mm	D_1 inch	Fractional Equivalent	Part No. Diamond Film*	Part No. TiAlN
2	24.50	0.9646	—	**1N22D-24.5**	**1C32A-24.5-CI**
	24.61	0.9688	31/32	**1N22D-0031**	**1C32A-0031-CI**
	24.79	0.9760	—	**1N22D-.976**	**1C32A-.976-CI**
	25.00	0.9843	63/64	**1N22D-25**	**1C32A-25-CI**
	25.40	1.0000	1	**1N22D-0100**	**1C32A-0100-CI**
	25.50	1.0039	—	**1N22D-25.5**	**1C32A-25.5-CI**
	25.80	1.0156	1-1/64	**1N22D-1.015**	**1C32A-1.015-CI**
	26.00	1.0236	—	**1N22D-26**	**1C32A-26-CI**
	26.20	1.0313	1-1/32	**1N22D-0101**	**1C32A-0101-CI**
	26.50	1.0433	—	**1N22D-26.5**	**1C32A-26.5-CI**
	26.59	1.0469	1-3/64	**1N22D-1.046**	**1C32A-1.046-CI**
	26.99	1.0625	1-1/16	**1N22D-0102**	**1C32A-0102-CI**
	27.00	1.0630	—	**1N22D-27**	**1C32A-27-CI**
	27.50	1.0827	—	**1N22D-27.5**	**1C32A-27.5-CI**
	27.78	1.0938	1-3/32	**1N22D-0103**	**1C32A-0103-CI**
	28.00	1.1024	—	**1N22D-28**	**1C32A-28-CI**
	28.18	1.1094	1-7/64	**1N22D-1.109**	**1C32A-1.109-CI**
	28.50	1.1220	—	**1N22D-28.5**	**1C32A-28.5-CI**
	28.58	1.1250	1-1/8	**1N22D-0104**	**1C32A-0104-CI**
	29.00	1.1417	—	**1N22D-29**	**1C32A-29-CI**
	29.37	1.1563	1-5/32	**1N22D-0105**	**1C32A-0105-CI**
	29.50	1.1614	—	**1N22D-29.5**	**1C32A-29.5-CI**
	30.00	1.1811	—	**1N22D-30**	**1C32A-30-CI**

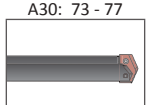
*Diamond film coated items are nonstocked standard and only available in standard geometry. For additional geometries, please contact Application Engineering. Process fees apply.

NOTE: 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

A30: 113 - 139
Key on A30: 2



A30: 73 - 77



A30: 5 - 6



HI, HR, CR, TC, SK, NP, IN, RN, CN, AN, BR, CI, CP, NC, WC, BT

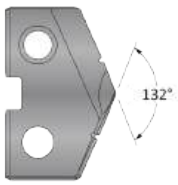
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

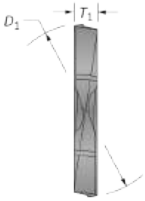
Inserts sold in quantities of 2.

2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

T-A® Drill Inserts

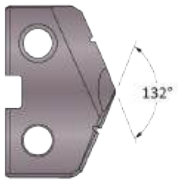


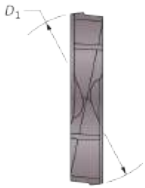






Cast Iron Geometry





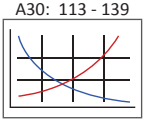
Series	Insert D_1 mm	Insert D_1 inch	Insert Fractional Equivalent	Carbide: N2 Part No. Diamond Film*	Cast Iron Geometry Carbide: K10 (C3) Part No. TiAlN
2.5	30.16	1.1875	1-3/16	**1N22D-0106**	**1C32A-0106-CI**
	30.50	1.2008	—	**1N22D-30.5**	**1C32A-30.5-CI**
	30.96	1.2188	1-7/32	**1N22D-0107**	**1C32A-0107-CI**
	31.00	1.2205	—	**1N22D-31**	**1C32A-31-CI**
	31.14	1.2260	—	**1N22D-1.226**	**1C32A-1.226-CI**
	31.27	1.2310	—	**1N22D-1.231**	**1C32A-1.231-CI**
	31.35	1.2344	1-15/64	**1N22D-1.234**	**1C32A-1.234-CI**
	31.50	1.2402	—	**1N22D-31.5**	**1C32A-31.5-CI**
	31.75	1.2500	1-1/4	**1N22D-0108**	**1C32A-0108-CI**
	32.00	1.2598	—	**1N22D-32**	**1C32A-32-CI**
	32.50	1.2795	—	**1N22D-32.5**	**1C32A-32.5-CI**
	32.55	1.2813	1-9/32	**1N22D-0109**	**1C32A-0109-CI**
	33.00	1.2992	—	**1N22D-33**	**1C32A-33-CI**
	33.34	1.3125	1-5/16	**1N22D-0110**	**1C32A-0110-CI**
	33.50	1.3189	—	**1N22D-33.5**	**1C32A-33.5-CI**
	34.00	1.3386	—	**1N22D-34**	**1C32A-34-CI**
	34.13	1.3438	1-11/32	**1N22D-0111**	**1C32A-0111-CI**
	34.50	1.3583	—	**1N22D-34.5**	**1C32A-34.5-CI**
	34.93	1.3750	1-3/8	**1N22D-0112**	**1C32A-0112-CI**
	35.00	1.3780	—	**1N22D-35**	**1C32A-35-CI**

*Diamond film coated items are nonstocked standard and only available in standard geometry. For additional geometries, please contact Application Engineering. Process fees apply.

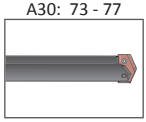
NOTE: 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

Key on A30: 2

A30: 113 - 139



A30: 73 - 77



A30: 5 - 6



HI, HR, CR, TC, SK, NP, IN, RN, CN, AN, BR, CI, CP, NC, WC, BT

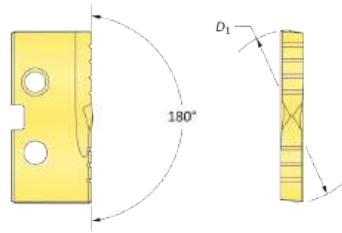
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

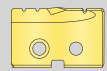
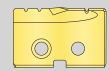
Inserts sold in quantities of 2.

2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

T-A® Drill Inserts

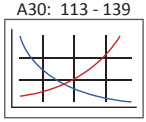


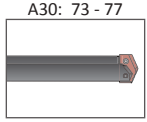


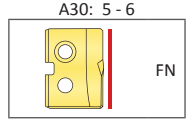
	Insert			Flat Bottom Geometry	
				HSS: Super Cobalt	Carbide: K20 (C2)
					
				Part No.	Part No.
Series	D_1 mm	D_1 inch	Fractional Equivalent	TiN	TiN
2	24.50	0.9646	—	**152T-24.5-FB**	**1C22T-24.5-FB**
	24.61	0.9688	31/32	**152T-0031-FB**	**1C22T-0031-FB**
	24.79	0.9760	—	**152T-.976-FB**	**1C22T-.976-FB**
	25.00	0.9843	63/64	**152T-25-FB**	**1C22T-25-FB**
	25.40	1.0000	1	**152T-0100-FB**	**1C22T-0100-FB**
	25.50	1.0039	—	**152T-25.5-FB**	**1C22T-25.5-FB**
	25.80	1.0156	1-1/64	**152T-1.015-FB**	**1C22T-1.015-FB**
	26.00	1.0236	—	**152T-26-FB**	**1C22T-26-FB**
	26.20	1.0313	1-1/32	**152T-0101-FB**	**1C22T-0101-FB**
	26.50	1.0433	—	**152T-26.5-FB**	**1C22T-26.5-FB**
	26.59	1.0469	1-3/64	**152T-1.046-FB**	**1C22T-1.046-FB**
	26.99	1.0625	1-1/16	**152T-0102-FB**	**1C22T-0102-FB**
	27.00	1.0630	—	**152T-27-FB**	**1C22T-27-FB**
	27.50	1.0827	—	**152T-27.5-FB**	**1C22T-27.5-FB**
	27.78	1.0938	1-3/32	**152T-0103-FB**	**1C22T-0103-FB**
	28.00	1.1024	—	**152T-28-FB**	**1C22T-28-FB**
	28.18	1.1094	1-7/64	**152T-1.109-FB**	**1C22T-1.109-FB**
	28.50	1.1220	—	**152T-28.5-FB**	**1C22T-28.5-FB**
	28.58	1.1250	1-1/8	**152T-0104-FB**	**1C22T-0104-FB**
	29.00	1.1417	—	**152T-29-FB**	**1C22T-29-FB**
	29.37	1.1563	1-5/32	**152T-0105-FB**	**1C22T-0105-FB**
	29.50	1.1614	—	**152T-29.5-FB**	**1C22T-29.5-FB**
	30.00	1.1811	—	**152T-30-FB**	**1C22T-30-FB**

NOTE: *Carbide: K20 (C2) inserts with flat bottom geometry are nonstocked standard items. Process fees apply.

NOTE: 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

A30: 113 - 139
Key on A30: 2


A30: 73 - 77


A30: 5 - 6


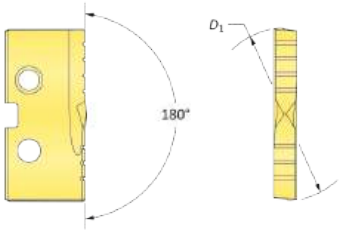
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

Inserts sold in quantities of 2.

2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

T-A® Drill Inserts



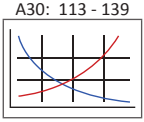


Series	Insert D_1 mm	Insert D_1 inch	Insert Fractional Equivalent	Flat Bottom Geometry HSS: Super Cobalt Part No. TiN	Flat Bottom Geometry Carbide: K20 (C2) Part No. TiN
2.5	30.16	1.1875	1-3/16	**152T-0106-FB**	**1C22T-0106-FB**
	30.50	1.2008	—	**152T-30.5-FB**	**1C22T-30.5-FB**
	30.96	1.2188	1-7/32	**152T-0107-FB**	**1C22T-0107-FB**
	31.00	1.2205	—	**152T-31-FB**	**1C22T-31-FB**
	31.14	1.2260	—	**152T-1.226-FB**	**1C22T-1.226-FB**
	31.27	1.2310	—	**152T-1.231-FB**	**1C22T-1.231-FB**
	31.35	1.2344	1-15/64	**152T-1.234-FB**	**1C22T-1.234-FB**
	31.50	1.2402	—	**152T-31.5-FB**	**1C22T-31.5-FB**
	31.75	1.2500	1-1/4	**152T-0108-FB**	**1C22T-0108-FB**
	32.00	1.2598	—	**152T-32-FB**	**1C22T-32-FB**
	32.50	1.2795	—	**152T-32.5-FB**	**1C22T-32.5-FB**
	32.55	1.2813	1-9/32	**152T-0109-FB**	**1C22T-0109-FB**
	33.00	1.2992	—	**152T-33-FB**	**1C22T-33-FB**
	33.34	1.3125	1-5/16	**152T-0110-FB**	**1C22T-0110-FB**
	33.50	1.3189	—	**152T-33.5-FB**	**1C22T-33.5-FB**
	34.00	1.3386	—	**152T-34-FB**	**1C22T-34-FB**
	34.13	1.3438	1-11/32	**152T-0111-FB**	**1C22T-0111-FB**
	34.50	1.3583	—	**152T-34.5-FB**	**1C22T-34.5-FB**
	34.93	1.3750	1-3/8	**152T-0112-FB**	**1C22T-0112-FB**
	35.00	1.3780	—	**152T-35-FB**	**1C22T-35-FB**

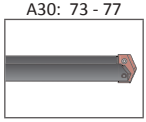
NOTE: *Carbide: K20 (C2) inserts with flat bottom geometry are nonstocked standard items. Process fees apply.

NOTE: 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

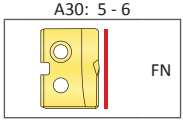
A30: 113 - 139
Key on A30: 2



A30: 73 - 77



A30: 5 - 6



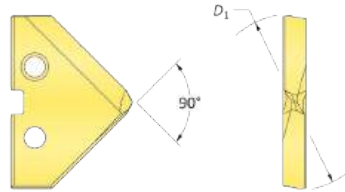
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

Inserts sold in quantities of 2.

2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

T-A® Drill Inserts

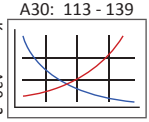




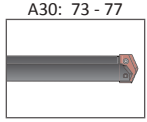
	Insert			90° Spot & Chamfer Geometry		
				HSS: Super Cobalt		
				Part No.	Part No.	Part No.
Series	D_1 mm	D_1 inch	Fractional Equivalent	TiN	TiAlN	TiCN
2	24.50	0.9646	—	152T-24.5-SP	152A-24.5-SP	152N-24.5-SP
	24.61	0.9688	31/32	152T-0031-SP	152A-0031-SP	152N-0031-SP
	24.79	0.9760	—	152T-.976-SP	152A-.976-SP	152N-.976-SP
	25.00	0.9843	63/64	152T-25-SP	152A-25-SP	152N-25-SP
	25.40	1.0000	1	152T-0100-SP	152A-0100-SP	152N-0100-SP
	25.50	1.0039	—	152T-25.5-SP	152A-25.5-SP	152N-25.5-SP
	25.80	1.0156	1-1/64	152T-1.015-SP	152A-1.015-SP	152N-1.015-SP
	26.00	1.0236	—	152T-26-SP	152A-26-SP	152N-26-SP
	26.20	1.0313	1-1/32	152T-0101-SP	152A-0101-SP	152N-0101-SP
	26.50	1.0433	—	152T-26.5-SP	152A-26.5-SP	152N-26.5-SP
	26.59	1.0469	1-3/64	152T-1.046-SP	152A-1.046-SP	152N-1.046-SP
	26.99	1.0625	1-1/16	152T-0102-SP	152A-0102-SP	152N-0102-SP
	27.00	1.0630	—	152T-27-SP	152A-27-SP	152N-27-SP
	27.50	1.0827	—	152T-27.5-SP	152A-27.5-SP	152N-27.5-SP
	27.78	1.0938	1-3/32	152T-0103-SP	152A-0103-SP	152N-0103-SP
	28.00	1.1024	—	152T-28-SP	152A-28-SP	152N-28-SP
	28.18	1.1094	1-7/64	152T-1.109-SP	152A-1.109-SP	152N-1.109-SP
	28.50	1.1220	—	152T-28.5-SP	152A-28.5-SP	152N-28.5-SP
	28.58	1.1250	1-1/8	152T-0104-SP	152A-0104-SP	152N-0104-SP
	29.00	1.1417	—	152T-29-SP	152A-29-SP	152N-29-SP
	29.37	1.1563	1-5/32	152T-0105-SP	152A-0105-SP	152N-0105-SP
	29.50	1.1614	—	152T-29.5-SP	152A-29.5-SP	152N-29.5-SP
	30.00	1.1811	—	152T-30-SP	152A-30-SP	152N-30-SP

NOTE: 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

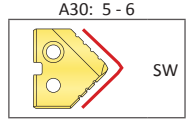
A30: 113 - 139
Key on A30: 2



A30: 73 - 77



A30: 5 - 6



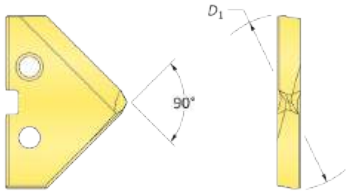
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

Inserts sold in quantities of 2.

2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

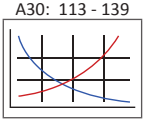
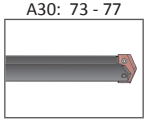
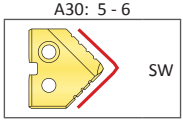
T-A® Drill Inserts





	Insert			90° Spot & Chamfer Geometry		
				HSS: Super Cobalt		
				 Part No.	 Part No.	 Part No.
Series	D_1 mm	D_1 inch	Fractional Equivalent	TiN	TiAlN	TiCN
2.5	30.16	1.1875	1-3/16	152T-0106-SP	152A-0106-SP	152N-0106-SP
	30.50	1.2008	—	152T-30.5-SP	152A-30.5-SP	152N-30.5-SP
	30.96	1.2188	1-7/32	152T-0107-SP	152A-0107-SP	152N-0107-SP
	31.00	1.2205	—	152T-31-SP	152A-31-SP	152N-31-SP
	31.27	1.2310	—	152T-1.226-SP	152A-1.226-SP	152N-1.226-SP
	31.35	1.2344	1-15/64	152T-1.231-SP	152A-1.231-SP	152N-1.231-SP
	31.35	1.2344	1-15/64	152T-1.234-SP	152A-1.234-SP	152N-1.234-SP
	31.50	1.2402	—	152T-31.5-SP	152A-31.5-SP	152N-31.5-SP
	31.75	1.2500	1-1/4	152T-0108-SP	152A-0108-SP	152N-0108-SP
	32.00	1.2598	—	152T-32-SP	152A-32-SP	152N-32-SP
	32.50	1.2795	—	152T-32.5-SP	152A-32.5-SP	152N-32.5-SP
	32.55	1.2813	1-9/32	152T-0109-SP	152A-0109-SP	152N-0109-SP
	33.00	1.2992	—	152T-33-SP	152A-33-SP	152N-33-SP
	33.34	1.3125	1-5/16	152T-0110-SP	152A-0110-SP	152N-0110-SP
	33.50	1.3189	—	152T-33.5-SP	152A-33.5-SP	152N-33.5-SP
	34.00	1.3386	—	152T-34-SP	152A-34-SP	152N-34-SP
	34.13	1.3438	1-11/32	152T-0111-SP	152A-0111-SP	152N-0111-SP
	34.50	1.3583	—	152T-34.5-SP	152A-34.5-SP	152N-34.5-SP
	34.93	1.3750	1-3/8	152T-0112-SP	152A-0112-SP	152N-0112-SP
	35.00	1.3780	—	152T-35-SP	152A-35-SP	152N-35-SP

NOTE: 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

A30: 113 - 139
Key on A30: 2

A30: 73 - 77

A30: 5 - 6


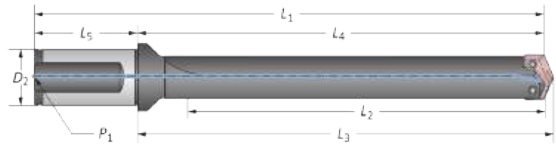
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

Inserts sold in quantities of 2.

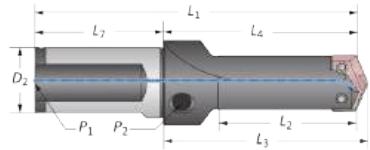
2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

T-A® Drill Holders









Stub Length

Metric Flange Shank Holders

Flute	Series	Body Length	L_2	L_4	L_3	L_1	Shank L_5	D_2	P_1	Part No.
Straight	2	Stub	63.5	88.5	92.0	148.5	60.0	32	1/4 BSPT	**21020S-32FM**
		Short	86.1	128.6	132.2	188.6	60.0	32	1/4 BSPT	**22020S-32FM**
		Intermediate	136.9	179.4	183.0	239.4	60.0	32	1/4 BSPT	**23020S-32FM**
		Standard	187.7	230.2	233.8	290.2	60.0	32	1/4 BSPT	**24020S-32FM**
		Extended	289.3	331.8	335.4	391.8	60.0	32	1/4 BSPT	⚠ **25020S-32FM**
		XL	511.6	554.1	557.6	614.0	60.0	32	1/4 BSPT	⚠ **27020S-32FM**
		3XL	692.6	735.0	738.6	795.0	60.0	32	1/4 BSPT	⚠ **29020S-32FM**
	2.5	Stub	100.6	123.4	127.0	183.4	60.0	32	1/4 BSPT	**21025S-32FM**
		Short	84.7	128.6	132.2	188.6	60.0	32	1/4 BSPT	**22025S-32FM**
		Intermediate	135.5	179.4	183.0	239.4	60.0	32	1/4 BSPT	**23025S-32FM**
		Standard	186.3	230.2	233.8	290.2	60.0	32	1/4 BSPT	**24025S-32FM**
		Extended	287.9	331.8	335.4	391.8	60.0	32	1/4 BSPT	⚠ **25025S-32FM**
Helical	2	Intermediate	154.8	179.4	183.0	239.4	60.0	32	1/4 BSPT	**23020H-32FM**
		Standard	205.6	230.2	233.8	290.2	60.0	32	1/4 BSPT	**24020H-32FM**
		Standard Plus	256.3	280.9	284.5	340.9	60.0	32	1/4 BSPT	⚠ **24520H-32FM**
		Extended	307.2	331.8	335.4	391.8	60.0	32	1/4 BSPT	⚠ **25020H-32FM**
		Long	428.3	452.9	456.5	512.9	60.0	32	1/4 BSPT	⚠ **26020H-32FM**
	2.5	Intermediate	156.8	179.4	183.0	239.4	60.0	32	1/4 BSPT	**23025H-32FM**
		Standard	207.6	230.2	233.8	290.2	60.0	32	1/4 BSPT	**24025H-32FM**
		Extended	309.2	331.8	335.4	391.8	60.0	32	1/4 BSPT	⚠ **25025H-32FM**

NOTE: Stub length holders have a 3.175 mm (1/8") side pipe tap (P_2).

NOTE: 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

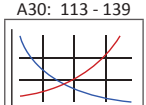
Connection Accessories

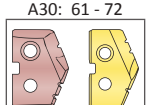
 Insert Screws	 Nylon Locking Screws	 Insert Driver	 Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
7495-IP15-1	7495N-IP15-1	8IP-15	8IP-15TL	8IP-15B	690 N-cm (61.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

Key on A30: 2

A30: 113 - 139 

A30: 61 - 72 

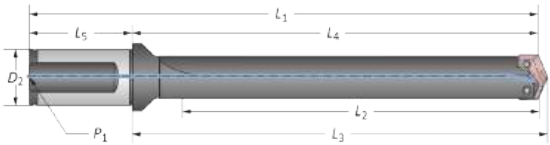
A30: 78 & 112 

ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

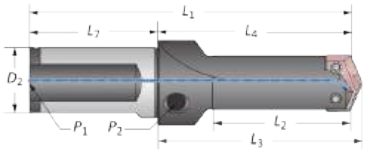
2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

T-A® Drill Holders









Stub Length

Imperial Flange Shank Holders

Flute	Series	Body Length	L_2	L_4	L_3	L_1	Shank L_5	D_2	P_1	Part No.
Straight	2	Stub	2.500	3.484	3.624	5.764	2.280	1-1/4	1/4 NPT	**21020S-125F**
		Short	3.391	5.063	5.203	7.343	2.280	1-1/4	1/4 NPT	**22020S-125F**
		Intermediate	5.391	7.063	7.203	9.343	2.280	1-1/4	1/4 NPT	**23020S-125F**
		Standard	7.391	9.063	9.203	11.343	2.280	1-1/4	1/4 NPT	**24020S-125F**
		Extended	11.391	13.063	13.203	15.343	2.280	1-1/4	1/4 NPT	⚠ **25020S-125F**
	2.5	Stub	3.959	4.859	4.999	7.139	2.280	1-1/4	1/4 NPT	**21025S-125F**
		Short	3.334	5.063	5.203	7.343	2.280	1-1/4	1/4 NPT	**22025S-125F**
		Intermediate	5.334	7.063	7.203	9.343	2.280	1-1/4	1/4 NPT	**23025S-125F**
		Standard	7.334	9.063	9.203	11.343	2.280	1-1/4	1/4 NPT	**24025S-125F**
		Extended	11.334	13.063	13.203	15.343	2.280	1-1/4	1/4 NPT	⚠ **25025S-125F**
Helical	2	Intermediate	6.093	7.063	7.203	9.343	2.280	1-1/4	1/4 NPT	**23020H-125F**
		Standard	8.093	9.063	9.203	11.343	2.280	1-1/4	1/4 NPT	**24020H-125F**
		Standard Plus	10.089	11.059	11.199	13.339	2.280	1-1/4	1/4 NPT	⚠ **24520H-125F**
		Extended	12.093	13.063	13.203	15.343	2.280	1-1/4	1/4 NPT	⚠ **25020H-125F**
		Long	16.861	17.831	17.971	20.111	2.280	1-1/4	1/4 NPT	⚠ **26020H-125F**
	2.5	Intermediate	6.172	7.063	7.203	9.343	2.280	1-1/4	1/4 NPT	**23025H-125F**
		Standard	8.172	9.063	9.203	11.343	2.280	1-1/4	1/4 NPT	**24025H-125F**
		Extended	12.172	13.063	13.203	15.343	2.280	1-1/4	1/4 NPT	⚠ **25025H-125F**

NOTE: Stub length holders have a 3.175 mm (1/8") side pipe tap (P_2).

NOTE: 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

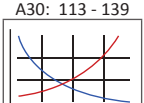
Connection Accessories

 Insert Screws	 Nylon Locking Screws	 Insert Driver	 Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
7495-IP15-1	7495N-IP15-1	8IP-15	8IP-15TL	8IP-15B	690 N-cm (61.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

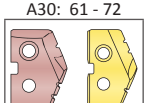
⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A30: 113 - 139



Key on A30: 2

A30: 61 - 72



A30: 78 & 112

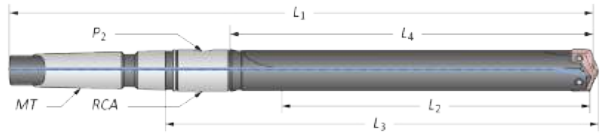


ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

T-A® Drill Holders





Metric Taper Shank Holders

Flute	Series	Body Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank *MT**	Shank P_2	Shank RCA	Part No.
Straight	2	Short	82.0	114.3	159.9	273.8	#4 MT ISO	1/8 BSPT	2T-3SRM	**22020S-004M**
Straight	2.5	Short	76.5	114.3	167.1	281.0	#4 MT ISO	1/8 BSPT	2T-4SRM	**22025S-004M**
Helical	2	Intermediate	148.6	165.1	210.7	324.6	#4 MT ISO	1/8 BSPT	2T-3SRM	**23020H-004M**
Helical	2	Standard	199.4	215.9	261.5	375.4	#4 MT ISO	1/8 BSPT	2T-3SRM	**24020H-004M**
Helical	2	Extended	301.0	317.5	363.1	477.0	#4 MT ISO	1/8 BSPT	2T-3SRM	⚠ **25020H-004M**
Helical	2.5	Intermediate	146.8	165.1	217.9	331.8	#4 MT ISO	1/4 BSPT	2T-4SRM	**23025H-004M**
Helical	2.5	Standard	197.6	215.9	268.7	382.6	#4 MT ISO	1/4 BSPT	2T-4SRM	**24025H-004M**
Helical	2.5	Extended	299.2	317.5	370.3	484.2	#4 MT ISO	1/4 BSPT	2T-4SRM	⚠ **25025H-004M**

*MT ISO 296 type BEK.

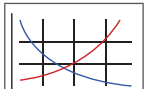
NOTE: 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

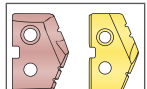
Connection Accessories

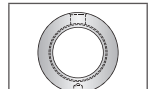
 Insert Screws	 Nylon Locking Screws	 Insert Driver	 Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
7495-IP15-1	7495N-IP15-1	8IP-15	8IP-15TL	8IP-15B	690 N-cm (61.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

⚠ **WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A30: 113 - 139
Key on A30: 2


A30: 61 - 72


A30: 78 & 111


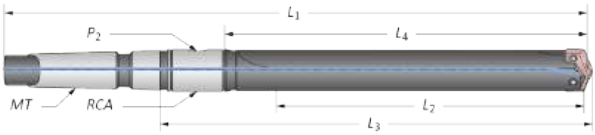
A30: 78 & 112


ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

T-A® Drill Holders





Imperial Taper Shank Holders

Flute	Series	Body Length	L_2	L_4	L_3	L_1	Shank MT	P_2	RCA	Part No.
Straight	2	Short	3.229	4.500	6.233	9.781	#3 MT	1/8 NPT	2T-3SR	**22020S-003I**
		Short	3.229	4.500	6.296	10.781	#4 MT	1/8 NPT	2T-3SR	**22020S-004I**
		Intermediate	5.229	6.500	8.296	12.781	#4 MT	1/8 NPT	2T-3SR	**23020S-004I**
		Standard	7.229	8.500	10.233	13.781	#3 MT	1/8 NPT	2T-3SR	**24020S-003I**
		Standard	7.229	8.500	10.296	14.781	#4 MT	1/8 NPT	2T-3SR	**24020S-004I**
		Extended	11.229	12.500	14.296	18.781	#4 MT	1/8 NPT	2T-3SR	⚠ **25020S-004I**
	2.5	Short	3.380	4.500	6.233	9.781	#3 MT	1/8 NPT	2T-3SR	**22025S-003I**
		Short	3.013	4.500	6.577	11.062	#4 MT	1/4 NPT	2T-4SR	**22025S-004I**
		Intermediate	5.013	6.500	8.577	13.062	#4 MT	1/4 NPT	2T-4SR	**23025S-004I**
		Standard	7.380	8.500	10.233	13.781	#3 MT	1/8 NPT	2T-3SR	**24025S-003I**
		Standard	7.013	8.500	10.577	15.062	#4 MT	1/4 NPT	2T-4SR	**24025S-004I**
		Extended	11.013	12.500	14.577	19.062	#4 MT	1/4 NPT	2T-4SR	⚠ **25025S-004I**
Helical	2	Intermediate	5.850	6.500	8.296	12.781	#4 MT	1/8 NPT	2T-3SR	**23020H-004I**
		Standard	7.850	8.500	10.233	13.781	#3 MT	1/8 NPT	2T-3SR	**24020H-003I**
		Standard	7.850	8.500	10.296	14.781	#4 MT	1/8 NPT	2T-3SR	**24020H-004I**
		Extended	11.850	12.500	14.296	18.781	#4 MT	1/8 NPT	2T-3SR	⚠ **25020H-004I**
	2.5	Intermediate	5.781	6.500	8.577	13.062	#4 MT	1/4 NPT	2T-4SR	**23025H-004I**
		Standard	8.016	8.500	10.233	13.781	#3 MT	1/8 NPT	2T-3SR	**24025H-003I**
		Standard	7.781	8.500	10.577	15.062	#4 MT	1/4 NPT	2T-4SR	**24025H-004I**
		Extended	11.781	12.500	14.577	19.062	#4 MT	1/4 NPT	2T-4SR	⚠ **25025H-004I**

NOTE: 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

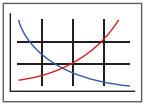
Connection Accessories

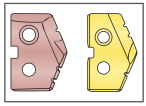
 Insert Screws	 Nylon Locking Screws	 Insert Driver	 Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
7495-IP15-1	7495N-IP15-1	8IP-15	8IP-15TL	8IP-15B	690 N-cm (61.0 in-lbs)

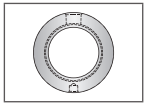
*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

Key on A30: 2

A30: 113 - 139 

A30: 61 - 72 

A30: 78 & 111 

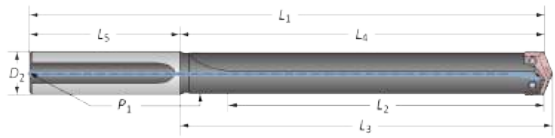
A30: 78 & 112 

ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

T-A® Drill Holders



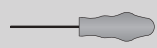


Straight Shank Holders

Flute	Series	Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No.
Straight	2	Short	3.226	4.500	4.640	8.000	3.5000	1	1/8 NPT	**22020S-100L**
		Short	3.119	4.500	4.640	8.000	3.5000	1-1/4	1/8 NPT	**22020S-125L**
		Intermediate	5.119	6.500	6.640	10.000	3.5000	1-1/4	1/8 NPT	**23020S-125L**
		Standard	7.226	8.500	8.640	12.000	3.5000	1	1/8 NPT	**24020S-100L**
		Standard	7.119	8.500	8.640	12.000	3.5000	1-1/4	1/8 NPT	**24020S-125L**
		Extended	11.119	12.500	12.640	16.000	3.5000	1-1/4	1/8 NPT	⚠ **25020S-125L**
		XL	19.869	21.250	21.390	24.750	3.5000	1-1/4	1/8 NPT	⚠ **27020S-125L**
		3XL	26.994	28.375	28.515	31.875	3.5000	1-1/4	1/8 NPT	⚠ **29020S-125L**
	2.5	Short	3.395	4.500	4.640	8.000	3.5000	1	1/8 NPT	**22025S-100L**
		Short	3.015	4.500	4.640	8.000	3.5000	1-1/4	1/8 NPT	**22025S-125L**
		Intermediate	5.015	6.500	6.640	10.000	3.5000	1-1/4	1/8 NPT	**23025S-125L**
		Standard	7.395	8.500	8.640	12.000	3.5000	1	1/8 NPT	**24025S-100L**
		Standard	7.015	8.500	8.640	12.000	3.5000	1-1/4	1/8 NPT	**24025S-125L**
		Extended	11.015	12.500	12.640	16.000	3.5000	1-1/4	1/8 NPT	⚠ **25025S-125L**

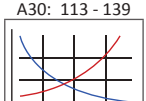
NOTE: 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

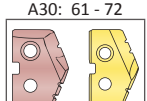
Connection Accessories

 Insert Screws	 Nylon Locking Screws	 Insert Driver	 Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
7495-IP15-1	7495N-IP15-1	8IP-15	8IP-15TL	8IP-15B	690 N-cm (61.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

⚠ **WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A30: 113 - 139
Key on A30: 2


A30: 61 - 72


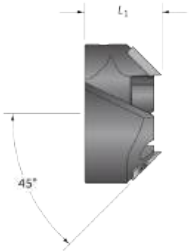
A30: 78 & 112


Ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

T-A® Drill Accessories



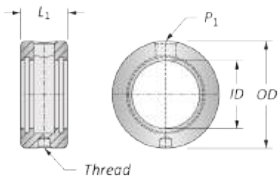




T-ACR 45 Chamfer Ring

Holder Series	D_1 Range	Chamfer Ring D_4	Chamfer Ring L_1	Part No.	Insert Part No.	Insert Screw	Insert Driver	Clamping Screw	Insert Driver
2	0.9610 - 1.3800	1.598	1.000	**T-ACR-45-2**	T-ACRI-45-B-C5A	7255-IP8-1	8IP-8	7514-IP20-1	8IP-20





Rotary Coolant Adapter (RCA) and Accessories

	ID	OD	L_1	Driving Rod Thread	P_1	Part No.	RCA O-Rings Kit Part No.*	RCA O-Rings Replacements
m	25.4	54.0	28.6	M8 x 1.25	1/8 BSPT	⚠ **2T-3SRM**	2T1-3SR	2T1-3OR-10
m	31.8	63.5	34.9	M10 x 1.50	1/4 BSPT	⚠ **2T-4SRM**	2T1-4SR	2T1-4OR-10
i	1.000	2.125	1.125	5/16" - 18	1/8 NPT	⚠ **2T-3SR**	2T1-3SR	2T1-3OR-10
i	1.250	2.500	1.375	3/8" - 16	1/4 NPT	⚠ **2T-4SR**	2T1-4SR	2T1-4OR-10

*RCA Repair Kit includes (2) O-rings, (2) snap rings, and (2) thrust washers.

⚠ Refer to page A30: 111 for proper RCA assembly and safety information.

⚠ WARNING RCA rotation during drilling can cause hose and/or hose fitting failure, machinery damage, and/or serious injury. To prevent, use RCA and positive stop studs when drilling. Factory technical assistance is also available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com**

A30: 113 - 139
Key on A30: 2

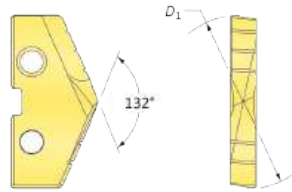
m = Metric (mm)
i = Imperial (in)

Chamfer ring inserts sold separately.
Screws sold in multiples of 10.
O-rings sold in packs of 10.

3 Series: 34.37 mm - 47.82 mm (1.3530" - 1.8829")

GEN2 T-A® Drill Inserts

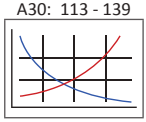




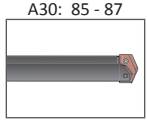
Insert			HSS: High-Speed Steel
			 Part No.
D_1 mm	D_1 inch	Fractional Equivalent	TiN
35.72	1.4063	1-13/32	**433T-0113**
36.00	1.4173	—	**433T-36**
36.51	1.4375	1-7/16	**433T-0114**
37.00	1.4567	—	**433T-37**
37.31	1.4688	1-15/32	**433T-0115**
38.00	1.4961	—	**433T-38**
38.10	1.5000	1-1/2	**433T-0116**
38.90	1.5313	1-17/32	**433T-0117**
39.00	1.5354	—	**433T-39**
39.29	1.5470	—	**433T-1.547**
39.69	1.5625	1-9/16	**433T-0118**
40.00	1.5748	—	**433T-40**
40.48	1.5938	1-19/32	**433T-0119**
41.00	1.6142	—	**433T-41**
41.28	1.6250	1-5/8	**433T-0120**
42.00	1.6535	—	**433T-42**
42.07	1.6563	1-21/32	**433T-0121**
42.86	1.6875	1-11/16	**433T-0122**
43.00	1.6929	—	**433T-43**
43.66	1.7188	1-23/32	**433T-0123**
44.00	1.7323	—	**433T-44**
44.45	1.7500	1-3/4	**433T-0124**
45.00	1.7717	—	**433T-45**
45.25	1.7813	1-25/32	**433T-0125**
45.50	1.7913	—	**433T-45.5**
45.64	1.7970	—	**433T-1.797**
46.00	1.8110	—	**433T-46**
46.04	1.8125	1-13/16	**433T-0126**
46.83	1.8438	1-27/32	**433T-0127**
47.00	1.8504	—	**433T-47**
47.63	1.8750	1-7/8	**433T-0128**

A30: 113 - 139

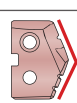
Key on A30: 2



A30: 85 - 87



A30: 5 - 6



HE, HI, HR, CR, SK, BR, CI, NC, WC

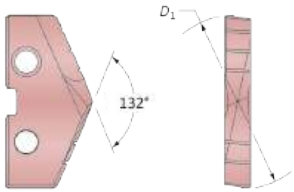
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

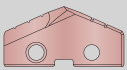
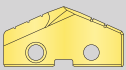
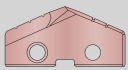
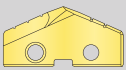
Inserts sold in quantities of 1.

3 Series: 34.37 mm - 47.82 mm (1.3530" - 1.8829")

GEN2 T-A® Drill Inserts

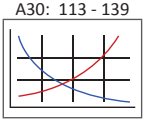




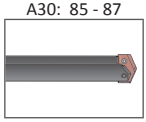
Insert			HSS: Super Cobalt		HSS: Premium Cobalt	
						
			Part No.	Part No.	Part No.	Part No.
D_1 mm	D_1 inch	Fractional Equivalent	AM200®	TiN	AM200®	TiN
35.72	1.4063	1-13/32	**453H-0113**	**453T-0113**	**483H-0113**	**483T-0113**
36.00	1.4173	—	**453H-36**	**453T-36**	**483H-36**	**483T-36**
36.51	1.4375	1-7/16	**453H-0114**	**453T-0114**	**483H-0114**	**483T-0114**
37.00	1.4567	—	**453H-37**	**453T-37**	**483H-37**	**483T-37**
37.31	1.4688	1-15/32	**453H-0115**	**453T-0115**	**483H-0115**	**483T-0115**
38.00	1.4961	—	**453H-38**	**453T-38**	**483H-38**	**483T-38**
38.10	1.5000	1-1/2	**453H-0116**	**453T-0116**	**483H-0116**	**483T-0116**
38.90	1.5313	1-17/32	**453H-0117**	**453T-0117**	**483H-0117**	**483T-0117**
39.00	1.5354	—	**453H-39**	**453T-39**	**483H-39**	**483T-39**
39.29	1.5470	—	**453H-1.547**	**453T-1.547**	**483H-1.547**	**483T-1.547**
39.69	1.5625	1-9/16	**453H-0118**	**453T-0118**	**483H-0118**	**483T-0118**
40.00	1.5748	—	**453H-40**	**453T-40**	**483H-40**	**483T-40**
40.48	1.5938	1-19/32	**453H-0119**	**453T-0119**	**483H-0119**	**483T-0119**
41.00	1.6142	—	**453H-41**	**453T-41**	**483H-41**	**483T-41**
41.28	1.6250	1-5/8	**453H-0120**	**453T-0120**	**483H-0120**	**483T-0120**
42.00	1.6535	—	**453H-42**	**453T-42**	**483H-42**	**483T-42**
42.07	1.6563	1-21/32	**453H-0121**	**453T-0121**	**483H-0121**	**483T-0121**
42.86	1.6875	1-11/16	**453H-0122**	**453T-0122**	**483H-0122**	**483T-0122**
43.00	1.6929	—	**453H-43**	**453T-43**	**483H-43**	**483T-43**
43.66	1.7188	1-23/32	**453H-0123**	**453T-0123**	**483H-0123**	**483T-0123**
44.00	1.7323	—	**453H-44**	**453T-44**	**483H-44**	**483T-44**
44.45	1.7500	1-3/4	**453H-0124**	**453T-0124**	**483H-0124**	**483T-0124**
45.00	1.7717	—	**453H-45**	**453T-45**	**483H-45**	**483T-45**
45.25	1.7813	1-25/32	**453H-0125**	**453T-0125**	**483H-0125**	**483T-0125**
45.50	1.7913	—	**453H-45.5**	**453T-45.5**	**483H-45.5**	**483T-45.5**
45.64	1.7970	—	**453H-1.797**	**453T-1.797**	**483H-1.797**	**483T-1.797**
46.00	1.8110	—	**453H-46**	**453T-46**	**483H-46**	**483T-46**
46.04	1.8125	1-13/16	**453H-0126**	**453T-0126**	**483H-0126**	**483T-0126**
46.83	1.8438	1-27/32	**453H-0127**	**453T-0127**	**483H-0127**	**483T-0127**
47.00	1.8504	—	**453H-47**	**453T-47**	**483H-47**	**483T-47**
47.63	1.8750	1-7/8	**453H-0128**	**453T-0128**	**483H-0128**	**483T-0128**

A30: 113 - 139

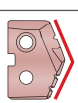
Key on A30: 2



A30: 85 - 87



A30: 5 - 6



HE, HI, HR, CR, SK, BR, CI, NC, WC

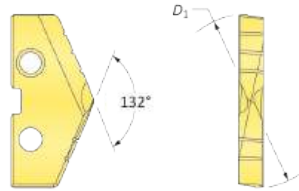
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

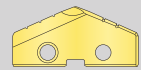
Inserts sold in quantities of 1.

3 Series: 34.37 mm - 47.82 mm (1.3530" - 1.8829")

T-A® Drill Inserts

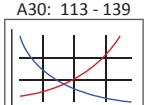




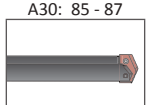
Insert			HSS: Super Cobalt
			 Part No.
D_1 mm	D_1 inch	Fractional Equivalent	TiN
35.72	1.4063	1-13/32	**153T-0113**
36.00	1.4173	—	**153T-36**
36.51	1.4375	1-7/16	**153T-0114**
37.00	1.4567	—	**153T-37**
37.31	1.4688	1-15/32	**153T-0115**
38.00	1.4961	—	**153T-38**
38.10	1.5000	1-1/2	**153T-0116**
38.90	1.5313	1-17/32	**153T-0117**
39.00	1.5354	—	**153T-39**
39.29	1.5470	—	**153T-1.547**
39.69	1.5625	1-9/16	**153T-0118**
40.00	1.5748	—	**153T-40**
40.48	1.5938	1-19/32	**153T-0119**
41.00	1.6142	—	**153T-41**
41.28	1.6250	1-5/8	**153T-0120**
42.00	1.6535	—	**153T-42**
42.07	1.6563	1-21/32	**153T-0121**
42.86	1.6875	1-11/16	**153T-0122**
43.00	1.6929	—	**153T-43**
43.66	1.7188	1-23/32	**153T-0123**
44.00	1.7323	—	**153T-44**
44.45	1.7500	1-3/4	**153T-0124**
45.00	1.7717	—	**153T-45**
45.25	1.7813	1-25/32	**153T-0125**
45.50	1.7913	—	**153T-45.5**
45.64	1.7970	—	**153T-1.797**
46.00	1.8110	—	**153T-46**
46.04	1.8125	1-13/16	**153T-0126**
46.83	1.8438	1-27/32	**153T-0127**
47.00	1.8504	—	**153T-47**
47.63	1.8750	1-7/8	**153T-0128**

A30: 113 - 139

Key on A30: 2



A30: 85 - 87



A30: 5 - 6



HI, HR, CR, SK,
BR, CI, NC, WC, TC,
CN, IN, NP, RN

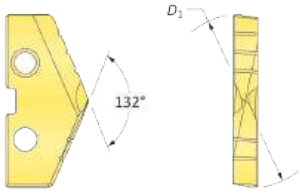
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

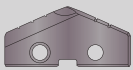
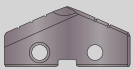
Inserts sold in quantities of 1.

3 Series: 34.37 mm - 47.82 mm (1.3530" - 1.8829")

T-A® Drill Inserts

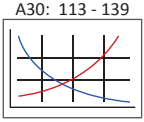




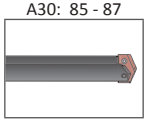
Insert			Carbide: P40 (C5)		Carbide: K20 (C2)	
						
			Part No.	Part No.	Part No.	Part No.
D_1 mm	D_1 inch	Fractional Equivalent	TiN	TiAlN	TiN	TiAlN
35.72	1.4063	1-13/32	1C53T-0113	1C53A-0113	1C23T-0113	1C23A-0113
36.00	1.4173	—	1C53T-36	1C53A-36	1C23T-36	1C23A-36
36.51	1.4375	1-7/16	1C53T-0114	1C53A-0114	1C23T-0114	1C23A-0114
37.00	1.4567	—	1C53T-37	1C53A-37	1C23T-37	1C23A-37
37.31	1.4688	1-15/32	1C53T-0115	1C53A-0115	1C23T-0115	1C23A-0115
38.00	1.4961	—	1C53T-38	1C53A-38	1C23T-38	1C23A-38
38.10	1.5000	1-1/2	1C53T-0116	1C53A-0116	1C23T-0116	1C23A-0116
38.90	1.5313	1-17/32	1C53T-0117	1C53A-0117	1C23T-0117	1C23A-0117
39.00	1.5354	—	1C53T-39	1C53A-39	1C23T-39	1C23A-39
39.29	1.5470	—	1C53T-1.547	1C53A-1.547	1C23T-1.547	1C23A-1.547
39.69	1.5625	1-9/16	1C53T-0118	1C53A-0118	1C23T-0118	1C23A-0118
40.00	1.5748	—	1C53T-40	1C53A-40	1C23T-40	1C23A-40
40.48	1.5938	1-19/32	1C53T-0119	1C53A-0119	1C23T-0119	1C23A-0119
41.00	1.6142	—	1C53T-41	1C53A-41	1C23T-41	1C23A-41
41.28	1.6250	1-5/8	1C53T-0120	1C53A-0120	1C23T-0120	1C23A-0120
42.00	1.6535	—	1C53T-42	1C53A-42	1C23T-42	1C23A-42
42.07	1.6563	1-21/32	1C53T-0121	1C53A-0121	1C23T-0121	1C23A-0121
42.86	1.6875	1-11/16	1C53T-0122	1C53A-0122	1C23T-0122	1C23A-0122
43.00	1.6929	—	1C53T-43	1C53A-43	1C23T-43	1C23A-43
43.66	1.7188	1-23/32	1C53T-0123	1C53A-0123	1C23T-0123	1C23A-0123
44.00	1.7323	—	1C53T-44	1C53A-44	1C23T-44	1C23A-44
44.45	1.7500	1-3/4	1C53T-0124	1C53A-0124	1C23T-0124	1C23A-0124
45.00	1.7717	—	1C53T-45	1C53A-45	1C23T-45	1C23A-45
45.25	1.7813	1-25/32	1C53T-0125	1C53A-0125	1C23T-0125	1C23A-0125
45.50	1.7913	—	1C53T-45.5	1C53A-45.5	1C23T-45.5	1C23A-45.5
45.64	1.7970	—	1C53T-1.797	1C53A-1.797	1C23T-1.797	1C23A-1.797
46.00	1.8110	—	1C53T-46	1C53A-46	1C23T-46	1C23A-46
46.04	1.8125	1-13/16	1C53T-0126	1C53A-0126	1C23T-0126	1C23A-0126
46.83	1.8438	1-27/32	1C53T-0127	1C53A-0127	1C23T-0127	1C23A-0127
47.00	1.8504	—	1C53T-47	1C53A-47	1C23T-47	1C23A-47
47.63	1.8750	1-7/8	1C53T-0128	1C53A-0128	1C23T-0128	1C23A-0128

A30: 113 - 139

Key on A30: 2



A30: 85 - 87



A30: 5 - 6



HI, HR, CR, SK,
NP, IN, RN, CN, BR,
NC, WC, TC, BT

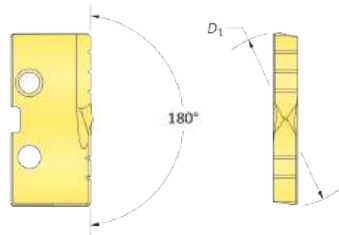
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

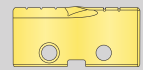
Inserts sold in quantities of 1.

3 Series: 34.37 mm - 47.82 mm (1.3530" - 1.8829")

T-A® Drill Inserts

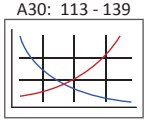




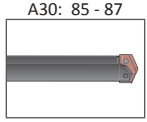
Insert			Flat Bottom Geometry
			HSS: Super Cobalt
			
			Part No.
D_1 mm	D_1 inch	Fractional Equivalent	TiN
35.72	1.4063	1-13/32	**153T-0113-FB**
36.00	1.4173	—	**153T-36-FB**
36.51	1.4375	1-7/16	**153T-0114-FB**
37.00	1.4567	—	**153T-37-FB**
37.31	1.4688	1-15/32	**153T-0115-FB**
38.00	1.4961	—	**153T-38-FB**
38.10	1.5000	1-1/2	**153T-0116-FB**
38.90	1.5313	1-17/32	**153T-0117-FB**
39.00	1.5354	—	**153T-39-FB**
39.29	1.5470	—	**153T-1.547-FB**
39.69	1.5625	1-9/16	**153T-0118-FB**
40.00	1.5748	—	**153T-40-FB**
40.48	1.5938	1-19/32	**153T-0119-FB**
41.00	1.6142	—	**153T-41-FB**
41.28	1.6250	1-5/8	**153T-0120-FB**
42.00	1.6535	—	**153T-42-FB**
42.07	1.6563	1-21/32	**153T-0121-FB**
42.86	1.6875	1-11/16	**153T-0122-FB**
43.00	1.6929	—	**153T-43-FB**
43.66	1.7188	1-23/32	**153T-0123-FB**
44.00	1.7323	—	**153T-44-FB**
44.45	1.7500	1-3/4	**153T-0124-FB**
45.00	1.7717	—	**153T-45-FB**
45.25	1.7813	1-25/32	**153T-0125-FB**
45.50	1.7913	—	**153T-45.5-FB**
45.64	1.7970	—	**153T-1.797-FB**
46.00	1.8110	—	**153T-46-FB**
46.04	1.8125	1-13/16	**153T-0126-FB**
46.83	1.8438	1-27/32	**153T-0127-FB**
47.00	1.8504	—	**153T-47-FB**
47.63	1.8750	1-7/8	**153T-0128-FB**

A30: 113 - 139

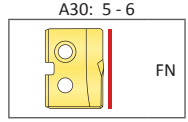
Key on A30: 2



A30: 85 - 87



A30: 5 - 6



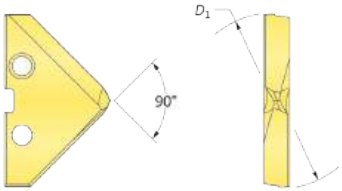
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

Inserts sold in quantities of 1.

3 Series: 34.37 mm - 47.82 mm (1.3530" - 1.8829")

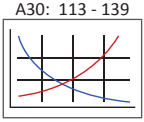
T-A® Drill Inserts



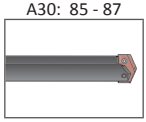


Insert			90° Spot & Chamfer Geometry HSS: Super Cobalt		
			Part No.	Part No.	Part No.
D_1 mm	D_1 inch	Fractional Equivalent	TiN	TiAlN	TiCN
35.72	1.4063	1-13/32	153T-0113-SP	153A-0113-SP	153N-0113-SP
36.00	1.4173	—	153T-36-SP	153A-36-SP	153N-36-SP
36.51	1.4375	1-7/16	153T-0114-SP	153A-0114-SP	153N-0114-SP
37.00	1.4567	—	153T-37-SP	153A-37-SP	153N-37-SP
37.31	1.4688	1-15/32	153T-0115-SP	153A-0115-SP	153N-0115-SP
38.00	1.4961	—	153T-38-SP	153A-38-SP	153N-38-SP
38.10	1.5000	1-1/2	153T-0116-SP	153A-0116-SP	153N-0116-SP
38.90	1.5313	1-17/32	153T-0117-SP	153A-0117-SP	153N-0117-SP
39.00	1.5354	—	153T-39-SP	153A-39-SP	153N-39-SP
39.29	1.5470	—	153T-1.547-SP	153A-1.547-SP	153N-1.547-SP
39.69	1.5625	1-9/16	153T-0118-SP	153A-0118-SP	153N-0118-SP
40.00	1.5748	—	153T-40-SP	153A-40-SP	153N-40-SP
40.48	1.5938	1-19/32	153T-0119-SP	153A-0119-SP	153N-0119-SP
41.00	1.6142	—	153T-41-SP	153A-41-SP	153N-41-SP
41.28	1.6250	1-5/8	153T-0120-SP	153A-0120-SP	153N-0120-SP
42.00	1.6535	—	153T-42-SP	153A-42-SP	153N-42-SP
42.07	1.6563	1-21/32	153T-0121-SP	153A-0121-SP	153N-0121-SP
42.86	1.6875	1-11/16	153T-0122-SP	153A-0122-SP	153N-0122-SP
43.00	1.6929	—	153T-43-SP	153A-43-SP	153N-43-SP
43.66	1.7188	1-23/32	153T-0123-SP	153A-0123-SP	153N-0123-SP
44.00	1.7323	—	153T-44-SP	153A-44-SP	153N-44-SP
44.45	1.7500	1-3/4	153T-0124-SP	153A-0124-SP	153N-0124-SP
45.00	1.7717	—	153T-45-SP	153A-45-SP	153N-45-SP
45.25	1.7813	1-25/32	153T-0125-SP	153A-0125-SP	153N-0125-SP
45.50	1.7913	—	153T-45.5-SP	153A-45.5-SP	153N-45.5-SP
45.64	1.7970	—	153T-1.797-SP	153A-1.797-SP	153N-1.797-SP
46.00	1.8110	—	153T-46-SP	153A-46-SP	153N-46-SP
46.04	1.8125	1-13/16	153T-0126-SP	153A-0126-SP	153N-0126-SP
46.83	1.8438	1-27/32	153T-0127-SP	153A-0127-SP	153N-0127-SP
47.00	1.8504	—	153T-47-SP	153A-47-SP	153N-47-SP
47.63	1.8750	1-7/8	153T-0128-SP	153A-0128-SP	153N-0128-SP

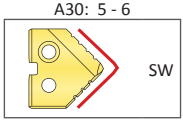
A30: 113 - 139
Key on A30: 2



A30: 85 - 87



A30: 5 - 6



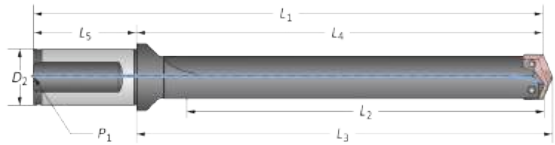
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

Inserts sold in quantities of 1.

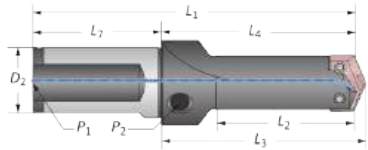
3 Series: 34.37 mm - 47.82 mm (1.3530" - 1.8829")

T-A® Drill Holders









Flange Shank Holders

Flute	Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No.
Straight	Stub	97.7	125.0	129.8	195.0	70.0	40	1/4 BSPT	**21030S-40FM**
	Short	114.6	173.1	177.8	243.1	70.0	40	1/4 BSPT	**22030S-40FM**
	Intermediate	159.1	217.5	222.3	287.5	70.0	40	1/4 BSPT	**23030S-40FM**
	Standard	203.5	262.0	266.7	332.0	70.0	40	1/4 BSPT	**24030S-40FM**
	Extended	343.2	401.7	406.4	471.7	70.0	40	1/4 BSPT	⚠ **25030S-40FM**
	XL	552.8	611.2	616.0	681.2	70.0	40	1/4 BSPT	⚠ **27030S-40FM**
	3XL	781.4	839.8	844.6	909.8	70.0	40	1/4 BSPT	⚠ **29030S-40FM**
Helical	Intermediate	185.7	217.5	222.3	287.5	70.0	40	1/4 BSPT	**23030H-40FM**
	Standard	230.2	262.0	266.7	332.0	70.0	40	1/4 BSPT	**24030H-40FM**
Straight	Stub	3.846	4.922	5.109	7.610	2.688	1-1/2	1/4 NPT	**21030S-150F**
	Short	4.512	6.813	7.000	9.501	2.688	1-1/2	1/4 NPT	**22030S-150F**
	Intermediate	6.262	8.563	8.750	11.251	2.688	1-1/2	1/4 NPT	**23030S-150F**
	Standard	8.012	10.313	10.500	13.001	2.688	1-1/2	1/4 NPT	**24030S-150F**
Helical	Intermediate	7.312	8.563	8.750	11.251	2.688	1-1/2	1/4 NPT	**23030H-150F**
	Standard	9.062	10.313	10.500	13.001	2.688	1-1/2	1/4 NPT	**24030H-150F**

NOTE: Stub length holders have a 3.175 mm (1/8") side pipe tap (P_2).

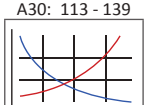
Connection Accessories

Insert Screws	Nylon Locking Screws	Insert Driver	Admissible Tightening Torque*
7514-IP20-1	7514N-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

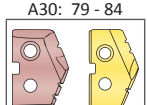
⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A30: 113 - 139



Key on A30: 2

A30: 79 - 84

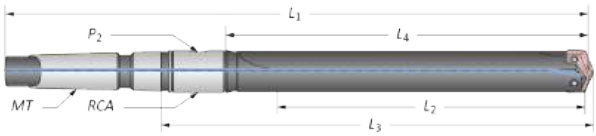


Ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

3 Series: 34.37 mm - 47.82 mm (1.3530" - 1.8829")

T-A® Drill Holders





Taper Shank Holders

Flute	Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank *MT**	Shank P_2	Shank RCA	Part No.
Straight	Short	110.0	152.4	206.3	319.1	#4 MT ISO	1/4 BSPT	2T-4SRM	**22030S-004M**
	Extended	338.6	381.0	434.9	547.7	#4 MT ISO	1/4 BSPT	2T-4SRM	⚠ **25030S-004M**
	XL	548.1	590.6	644.5	757.2	#4 MT ISO	1/4 BSPT	2T-4SRM	⚠ **27030S-004M**
	3XL	776.7	819.2	873.1	985.8	#4 MT ISO	1/4 BSPT	2T-4SRM	⚠ **29030S-004M**
Helical	Intermediate	179.8	196.9	250.8	363.5	#4 MT ISO	1/4 BSPT	2T-4SRM	**23030H-004M**
	Standard	224.3	241.3	295.2	408.0	#4 MT ISO	1/4 BSPT	2T-4SRM	**24030H-004M**
Straight	Short	4.391	6.000	8.124	12.562	#4 MT	1/4 NPT	2T-4SR	**22030S-004I**
	Short	4.048	6.000	8.124	13.812	#5 MT	1/4 NPT	2T-5SR	**22030S-005I**
	Intermediate	6.141	7.750	9.874	14.312	#4 MT	1/4 NPT	2T-4SR	**23030S-004I**
	Standard	7.891	9.500	11.624	16.062	#4 MT	1/4 NPT	2T-4SR	**24030S-004I**
	Standard	7.548	9.500	11.624	17.312	#5 MT	1/4 NPT	2T-5SR	**24030S-005I**
	Extended	13.391	15.000	17.124	21.562	#4 MT	1/4 NPT	2T-4SR	⚠ **25030S-004I**
	XL	21.641	23.250	25.374	29.812	#4 MT	1/4 NPT	2T-4SR	⚠ **27030S-004I**
	3XL	30.641	32.250	34.374	38.812	#4 MT	1/4 NPT	2T-4SR	⚠ **29030S-004I**

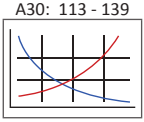
*MT ISO 296 type BEK.

Connection Accessories

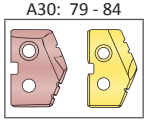
Insert Screws	Nylon Locking Screws	Insert Driver	Admissible Tightening Torque*
7514-IP20-1	7514N-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)

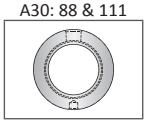
*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A30: 113 - 139 

Key on A30: 2

A30: 79 - 84 

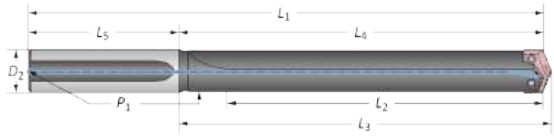
A30: 88 & 111 

Ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

3 Series: 34.37 mm - 47.82 mm (1.3530" - 1.8829")

T-A® Drill Holders





Straight Shank Holders

Flute	Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No.
Straight	Short	4.320	6.000	6.187	10.000	4.000	1-1/4	1/4 NPT	**22030S-125L**
	Short	3.838	6.000	6.187	10.000	4.000	1-1/2	1/4 NPT	**22030S-150L**
	Intermediate	5.798	7.750	7.937	11.750	4.000	1-1/2	1/4 NPT	**23030S-150L**
	Standard	7.820	9.500	9.687	13.500	4.000	1-1/4	1/4 NPT	**24030S-125L**
	Standard	7.548	9.500	9.687	13.500	4.000	1-1/2	1/4 NPT	**24030S-150L**
	Extended	13.320	15.000	15.187	19.000	4.000	1-1/4	1/4 NPT	⚠ **25030S-125L**
	XL	21.088	23.250	23.437	27.250	4.000	1-1/2	1/4 NPT	⚠ **27030S-150L**
	3XL	30.088	32.250	32.437	36.250	4.000	1-1/2	1/4 NPT	⚠ **29030S-150L**

Connection Accessories

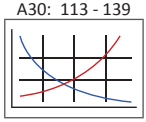
 Insert Screws	 Nylon Locking Screws	 Insert Driver	Admissible Tightening Torque*
7514-IP20-1	7514N-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

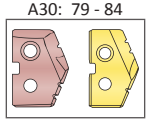
⚠ **WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A30: 113 - 139

Key on A30: 2



A30: 79 - 84

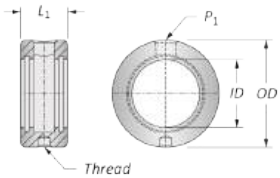


Ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

3 Series: 34.37 mm - 47.82 mm (1.3530" - 1.8829")

T-A Drill Accessories





Rotary Coolant Adapter (RCA) and Accessories

	ID	OD	L_1	Driving Rod Thread	P_1	Part No.	RCA O-Rings	
							Kit Part No.*	Replacements
m	31.8	63.5	34.9	M10 x 1.50	1/4 BSPT	⚠ 2T-4SRM	2T1-4SR	2T1-4OR-10
	44.5	76.2	34.9	M10 x 1.50	1/4 BSPT	⚠ 2T-5SRM	2T1-5SR	2T1-5OR-10
i	1.250	2.500	1.375	3/8" - 16	1/4 NPT	⚠ 2T-4SR	2T1-4SR	2T1-4OR-10
	1.750	3.000	1.375	3/8" - 16	1/4 NPT	⚠ 2T-5SR	2T1-5SR	2T1-5OR-10

*RCA Repair Kit includes (2) O-rings, (2) snap rings, and (2) thrust washers.

⚠ Refer to page A30: 111 for proper RCA assembly and safety information.

⚠ WARNING RCA rotation during drilling can cause hose and/or hose fitting failure, machinery damage, and/or serious injury. To prevent, use RCA and positive stop studs when drilling. Factory technical assistance is also available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com**

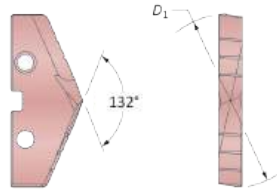
A30: 113 - 139
Key on A30: 2

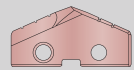
m = Metric (mm)
i = Imperial (in)
O-rings sold in packs of 10.

4 Series: 46.99 mm - 65.30 mm (1.8500" - 2.5709")

GEN2 T-A® Drill Inserts

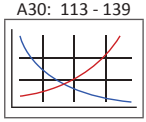




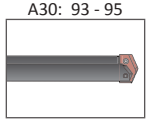
Insert			HSS: High-Speed Steel	HSS: Super Cobalt	
					
			Part No.	Part No.	Part No.
D_1 mm	D_1 inch	Fractional Equivalent	TiN	AM200®	TiN
48.00	1.8898	—	434T-48	454H-48	454T-48
48.42	1.9063	1-29/32	434T-0129	454H-0129	454T-0129
49.00	1.9291	—	434T-49	454H-49	454T-49
49.21	1.9375	1-15/16	434T-0130	454H-0130	454T-0130
50.00	1.9685	—	434T-50	454H-50	454T-50
50.01	1.9688	1-31/32	434T-0131	454H-0131	454T-0131
50.80	2.0000	2	434T-0200	454H-0200	454T-0200
51.00	2.0079	—	434T-51	454H-51	454T-51
51.60	2.0313	2-1/32	434T-0201	454H-0201	454T-0201
52.00	2.0472	2-3/64	434T-52	454H-52	454T-52
52.39	2.0625	2-1/16	434T-0202	454H-0202	454T-0202
53.00	2.0866	—	434T-53	454H-53	454T-53
53.18	2.0938	2-3/32	434T-0203	454H-0203	454T-0203
53.98	2.1250	2-1/8	434T-0204	454H-0204	454T-0204
54.00	2.1260	—	434T-54	454H-54	454T-54
54.77	2.1563	2-5/32	434T-0205	454H-0205	454T-0205
55.00	2.1654	—	434T-55	454H-55	454T-55
55.56	2.1875	2-3/16	434T-0206	454H-0206	454T-0206
56.00	2.2047	—	434T-56	454H-56	454T-56
56.36	2.2188	2-7/32	434T-0207	454H-0207	454T-0207
57.00	2.2441	—	434T-57	454H-57	454T-57
57.15	2.2500	2-1/4	434T-0208	454H-0208	454T-0208
57.95	2.2813	2-9/32	434T-0209	454H-0209	454T-0209
58.00	2.2835	—	434T-58	454H-58	454T-58
58.74	2.3125	2-5/16	434T-0210	454H-0210	454T-0210
59.00	2.3228	—	434T-59	454H-59	454T-59
59.53	2.3438	2-11/32	434T-0211	454H-0211	454T-0211
60.00	2.3622	—	434T-60	454H-60	454T-60
60.33	2.3750	2-3/8	434T-0212	454H-0212	454T-0212
61.00	2.4016	—	434T-61	454H-61	454T-61
61.12	2.4063	2-13/32	434T-0213	454H-0213	454T-0213
61.91	2.4375	2-7/16	434T-0214	454H-0214	454T-0214
62.00	2.4409	—	434T-62	454H-62	454T-62
62.71	2.4688	2-15/32	434T-0215	454H-0215	454T-0215
63.00	2.4803	—	434T-63	454H-63	454T-63
63.50	2.5000	2-1/2	434T-0216	454H-0216	454T-0216
64.00	2.5197	—	434T-64	454H-64	454T-64
64.30	2.5313	2-17/32	434T-0217	454H-0217	454T-0217
65.00	2.5591	—	434T-65	454H-65	454T-65
65.09	2.5625	2-9/16	434T-0218	454H-0218	454T-0218

A30: 113 - 139

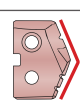
Key on A30: 2



A30: 93 - 95



A30: 5 - 6



HE, HI, HR, CR, SK, BR, CI, NC, WC

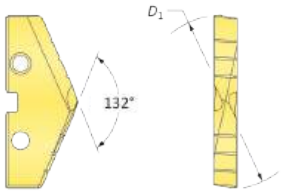
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

Inserts sold in quantities of 1.

4 Series: 46.99 mm - 65.30 mm (1.8500" - 2.5709")

T-A® Drill Inserts

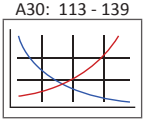




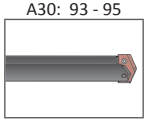
Insert			HSS: Super Cobalt
			
D_1 mm	D_1 inch	Fractional Equivalent	Part No. TiN
48.00	1.8898	—	**154T-48**
48.42	1.9063	1-29/32	**154T-0129**
49.00	1.9291	—	**154T-49**
49.21	1.9375	1-15/16	**154T-0130**
50.00	1.9685	—	**154T-50**
50.01	1.9688	1-31/32	**154T-0131**
50.80	2.0000	2	**154T-0200**
51.00	2.0079	—	**154T-51**
51.60	2.0313	2-1/32	**154T-0201**
52.00	2.0472	2-3/64	**154T-52**
52.39	2.0625	2-1/16	**154T-0202**
53.00	2.0866	—	**154T-53**
53.18	2.0938	2-3/32	**154T-0203**
53.98	2.1250	2-1/8	**154T-0204**
54.00	2.1260	—	**154T-54**
54.77	2.1563	2-5/32	**154T-0205**
55.00	2.1654	—	**154T-55**
55.56	2.1875	2-3/16	**154T-0206**
56.00	2.2047	—	**154T-56**
56.36	2.2188	2-7/32	**154T-0207**
57.00	2.2441	—	**154T-57**
57.15	2.2500	2-1/4	**154T-0208**
57.95	2.2813	2-9/32	**154T-0209**
58.00	2.2835	—	**154T-58**
58.74	2.3125	2-5/16	**154T-0210**
59.00	2.3228	—	**154T-59**
59.53	2.3438	2-11/32	**154T-0211**
60.00	2.3622	—	**154T-60**
60.33	2.3750	2-3/8	**154T-0212**
61.00	2.4016	—	**154T-61**
61.12	2.4063	2-13/32	**154T-0213**
61.91	2.4375	2-7/16	**154T-0214**
62.00	2.4409	—	**154T-62**
62.71	2.4688	2-15/32	**154T-0215**
63.00	2.4803	—	**154T-63**
63.50	2.5000	2-1/2	**154T-0216**
64.00	2.5197	—	**154T-64**
64.30	2.5313	2-17/32	**154T-0217**
65.00	2.5591	—	**154T-65**
65.09	2.5625	2-9/16	**154T-0218**

A30: 113 - 139

Key on A30: 2



A30: 93 - 95



A30: 5 - 6



HI, HR, CR, SK, BR, CI, NC, WC, TC

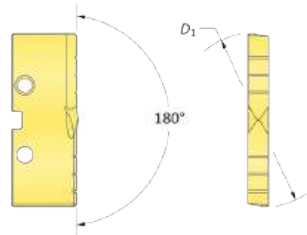
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

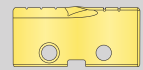
Inserts sold in quantities of 1.

4 Series: 46.99 mm - 65.30 mm (1.8500" - 2.5709")

T-A® Drill Inserts

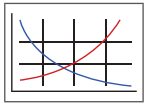




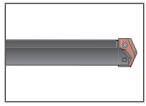
Insert			Flat Bottom Geometry
			HSS: Super Cobalt
			
			Part No.
D_1 mm	D_1 inch	Fractional Equivalent	TiN
48.00	1.8898	—	**154T-48-FB**
48.42	1.9063	1-29/32	**154T-0129-FB**
49.00	1.9291	—	**154T-49-FB**
49.21	1.9375	1-15/16	**154T-0130-FB**
50.00	1.9685	—	**154T-50-FB**
50.01	1.9688	1-31/32	**154T-0131-FB**
50.80	2.0000	2	**154T-0200-FB**
51.00	2.0079	—	**154T-51-FB**
51.60	2.0313	2-1/32	**154T-0201-FB**
52.00	2.0472	2-3/64	**154T-52-FB**
52.39	2.0625	2-1/16	**154T-0202-FB**
53.00	2.0866	—	**154T-53-FB**
53.18	2.0938	2-3/32	**154T-0203-FB**
53.98	2.1250	2-1/8	**154T-0204-FB**
54.00	2.1260	—	**154T-54-FB**
54.77	2.1563	2-5/32	**154T-0205-FB**
55.00	2.1654	—	**154T-55-FB**
55.56	2.1875	2-3/16	**154T-0206-FB**
56.00	2.2047	—	**154T-56-FB**
56.36	2.2188	2-7/32	**154T-0207-FB**
57.00	2.2441	—	**154T-57-FB**
57.15	2.2500	2-1/4	**154T-0208-FB**
57.95	2.2813	2-9/32	**154T-0209-FB**
58.00	2.2835	—	**154T-58-FB**
58.74	2.3125	2-5/16	**154T-0210-FB**
59.00	2.3228	—	**154T-59-FB**
59.53	2.3438	2-11/32	**154T-0211-FB**
60.00	2.3622	—	**154T-60-FB**
60.33	2.3750	2-3/8	**154T-0212-FB**
61.00	2.4016	—	**154T-61-FB**
61.12	2.4063	2-13/32	**154T-0213-FB**
61.91	2.4375	2-7/16	**154T-0214-FB**
62.00	2.4409	—	**154T-62-FB**
62.71	2.4688	2-15/32	**154T-0215-FB**
63.00	2.4803	—	**154T-63-FB**
63.50	2.5000	2-1/2	**154T-0216-FB**
64.00	2.5197	—	**154T-64-FB**
64.30	2.5313	2-17/32	**154T-0217-FB**
65.00	2.5591	—	**154T-65-FB**
65.09	2.5625	2-9/16	**154T-0218-FB**

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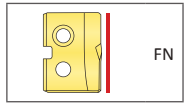
Key on A30: 2



A30: 93 - 95



A30: 5 - 6



Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

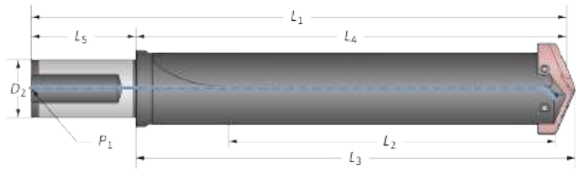
Inserts sold in quantities of 1.

Notes

4 Series: 46.99 mm - 65.30 mm (1.8500" - 2.5709")

T-A® Drill Holders





Flange Shank Holders

	Flute	Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No.
m	Straight	Short	121.9	179.4	184.2	249.4	70.0	40	1/4 BSPT	**22040S-40FM**
		Standard	223.5	281.0	285.8	351.0	70.0	40	1/4 BSPT	**24040S-40FM**
		Extended	414.0	471.5	476.3	541.5	70.0	40	1/4 BSPT	⚠ **25040S-40FM**
		XL	617.2	674.7	679.5	744.7	70.0	40	1/4 BSPT	⚠ **27040S-40FM**
		3XL	871.2	928.7	933.5	998.7	70.0	40	1/4 BSPT	⚠ **29040S-40FM**
	Helical	Standard	252.7	281.0	285.8	351.0	70.0	40	1/4 BSPT	**24040H-40FM**
i	Straight	Short	4.798	7.063	7.250	9.751	2.688	1-1/2	1/4 NPT	**22040S-150F**
		Standard	8.798	11.063	11.250	13.751	2.688	1-1/2	1/4 NPT	**24040S-150F**
	Helical	Standard	9.949	11.063	11.250	13.751	2.688	1-1/2	1/4 NPT	**24040H-150F**

NOTE: Stub length holders have a 3.175 mm (1/8") side pipe tap (P_2).

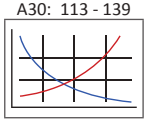
Connection Accessories

 Insert Screws	 Nylon Locking Screws	 Insert Driver	Admissible Tightening Torque*
7514-IP20-1	7514N-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

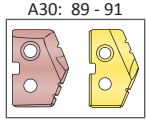
⚠ **WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

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Key on A30: 2

A30: 89 - 91

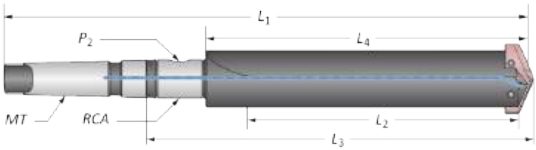


m = Metric (mm)
i = Imperial (in)
Screws sold in multiples of 10.

4 Series: 46.99 mm - 65.30 mm (1.8500" - 2.5709")

T-A® Drill Holders





Taper Shank Holders

	Flute	Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank *MT**	Shank P_2	Shank RCA	Part No.
ⓜ	Straight	Short	117.3	165.1	219.0	363.5	#5 MT ISO	1/4 BSPT	2T-5SRM	**22040S-005M**
ⓜ	Straight	Extended	409.4	457.2	511.1	655.6	#5 MT ISO	1/4 BSPT	2T-5SRM	⚠ **25040S-005M**
ⓜ	Straight	XL	622.1	660.4	714.3	858.8	#5 MT ISO	1/4 BSPT	2T-5SRM	⚠ **27040S-005M**
ⓜ	Straight	3XL	876.1	914.4	968.3	1112.8	#5 MT ISO	1/4 BSPT	2T-5SRM	⚠ **29040S-005M**
ⓜ	Helical	Standard	246.3	266.7	320.6	465.1	#5 MT ISO	1/4 BSPT	2T-5SRM	**24040H-005M**
ⓘ	Straight	Short	5.139	6.500	8.624	13.062	#4 MT	1/4 NPT	2T-4SR	**22040S-004I**
ⓘ	Straight	Short	4.537	6.500	8.624	14.312	#5 MT	1/4 NPT	2T-5SR	**22040S-005I**
ⓘ	Straight	Standard	9.139	10.500	12.624	17.062	#4 MT	1/4 NPT	2T-4SR	**24040S-004I**
ⓘ	Straight	Standard	8.537	10.500	12.624	18.312	#5 MT	1/4 NPT	2T-5SR	**24040S-005I**
ⓘ	Straight	Extended	16.037	18.000	20.124	25.812	#5 MT	1/4 NPT	2T-5SR	⚠ **25040S-005I**
ⓘ	Straight	XL	24.037	26.000	28.124	33.812	#5 MT	1/4 NPT	2T-5SR	⚠ **27040S-005I**
ⓘ	Straight	3XL	34.037	36.000	38.124	43.812	#5 MT	1/4 NPT	2T-5SR	⚠ **29040S-005I**

*MT ISO 296 type BEK.

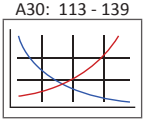
Connection Accessories

 Insert Screws	 Nylon Locking Screws	 Insert Driver	Admissible Tightening Torque*
7514-IP20-1	7514N-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

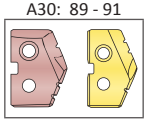
⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

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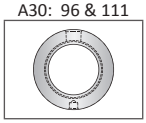


Key on A30: 2

A30: 89 - 91



A30: 96 & 111

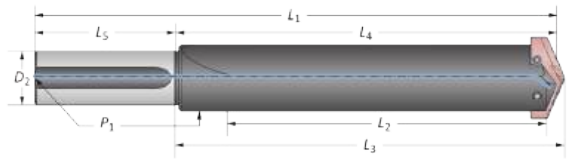


ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

4 Series: 46.99 mm - 65.30 mm (1.8500" - 2.5709")

T-A® Drill Holders





Straight Shank Holders

Flute	Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No.
Straight	Short	4.918	6.500	6.687	10.500	4.000	1-1/2	1/4 NPT	**22040S-150L**
	Short	4.600	6.500	6.687	10.500	4.000	1-3/4	1/4 NPT	**22040S-175L**
	Standard	8.918	10.500	10.687	14.500	4.000	1-1/2	1/4 NPT	**24040S-150L**
	Standard	8.600	10.500	10.687	14.500	4.000	1-3/4	1/4 NPT	**24040S-175L**
	Extended	16.418	18.000	18.187	22.000	4.000	1-1/2	1/4 NPT	⚠ **25040S-150L**
	XL	24.418	26.000	26.187	30.000	4.000	1-1/2	1/4 NPT	⚠ **27040S-150L**
	3XL	34.418	36.000	36.187	40.000	4.000	1-1/2	1/4 NPT	⚠ **29040S-150L**

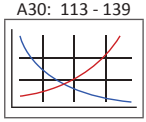
Connection Accessories

 Insert Screws	 Nylon Locking Screws	 Insert Driver	Admissible Tightening Torque*
7514-IP20-1	7514N-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

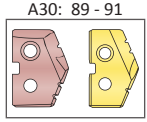
⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A30: 113 - 139



Key on A30: 2

A30: 89 - 91

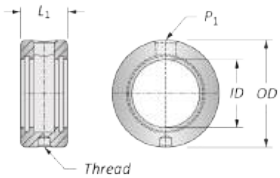


ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

4 Series: 46.99 mm - 65.30 mm (1.8500" - 2.5709")

T-A Drill Accessories





Rotary Coolant Adapter (RCA) and Accessories

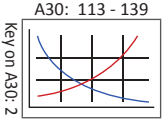
	ID	OD	L_1	Driving Rod Thread	P_1	Part No.	RCA O-Rings	
							Kit Part No.*	Replacements
m	31.8	63.5	34.9	M10 x 1.50	1/4 BSPT	⚠ 2T-4SRM	2T1-4SR	2T1-4OR-10
	44.5	76.2	34.9	M10 x 1.50	1/4 BSPT	⚠ 2T-5SRM	2T1-5SR	2T1-5OR-10
i	1.250	2.500	1.375	3/8" - 16	1/4 NPT	⚠ 2T-4SR	2T1-4SR	2T1-4OR-10
	1.750	3.000	1.375	3/8" - 16	1/4 NPT	⚠ 2T-5SR	2T1-5SR	2T1-5OR-10

*RCA Repair Kit includes (2) O-rings, (2) snap rings, and (2) thrust washers.

⚠ Refer to page A30: 111 for proper RCA assembly and safety information. RCA rotation during drilling can cause hose and/or hose fitting failure, machinery damage, and/or serious injury. To prevent, use RCA and positive stop studs when drilling.

⚠ WARNING RCA rotation during drilling can cause hose and/or hose fitting failure, machinery damage, and/or serious injury. To prevent, use RCA and positive stop studs when drilling. Factory technical assistance is also available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com**

A30: 113 - 139



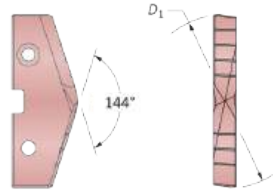
m = Metric (mm)
i = Imperial (in)
O-rings sold in packs of 10.

5/6 Series: 62.38 mm - 89.09 mm (2.4560" - 3.5079")

5 Series Replaceable Inserts

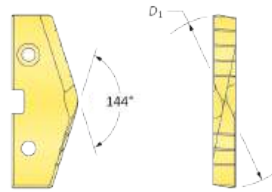


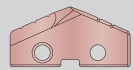
GEN2 T-A





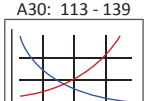
T-A



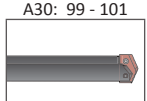
Insert			GEN2 T-A Inserts		T-A Inserts	
			HSS: High-Speed Steel	HSS: Super Cobalt	HSS: High-Speed Steel	HSS: Super Cobalt
						
			Part No.	Part No.	Part No.	Part No.
D_1 mm	D_1 inch	Fractional Equivalent	TiN	AM200®	TiN	TiN*
63.50	2.5000	2-1/2	435T-0216	455H-0216	135T-0216	155T-0216
64.00	2.5197	—	435T-64	455H-64	135T-64	155T-64
64.30	2.5313	2-17/32	435T-0217	455H-0217	135T-0217	155T-0217
65.09	2.5625	2-9/16	435T-0218	455H-0218	135T-0218	155T-0218
65.88	2.5938	2-19/32	435T-0219	455H-0219	135T-0219	155T-0219
66.00	2.5984	—	435T-66	455H-66	135T-66	155T-66
66.68	2.6250	2-5/8	435T-0220	455H-0220	135T-0220	155T-0220
67.47	2.6563	2-21/32	435T-0221	455H-0221	135T-0221	155T-0221
68.00	2.6772	—	435T-68	455H-68	135T-68	155T-68
68.26	2.6875	2-11/16	435T-0222	455H-0222	135T-0222	155T-0222
69.06	2.7188	2-23/32	435T-0223	455H-0223	135T-0223	155T-0223
69.85	2.7500	2-3/4	435T-0224	455H-0224	135T-0224	155T-0224
70.00	2.7559	—	435T-70	455H-70	135T-70	155T-70
70.65	2.7813	2-25/32	435T-0225	455H-0225	135T-0225	155T-0225
71.44	2.8125	2-13/16	435T-0226	455H-0226	135T-0226	155T-0226
72.00	2.8346	—	435T-72	455H-72	135T-72	155T-72
72.23	2.8438	2-27/32	435T-0227	455H-0227	135T-0227	155T-0227
73.03	2.8750	2-7/8	435T-0228	455H-0228	135T-0228	155T-0228
73.82	2.9063	2-29/32	435T-0229	455H-0229	135T-0229	155T-0229
74.00	2.9134	—	435T-74	455H-74	135T-74	155T-74
74.61	2.9375	2-15/16	435T-0230	455H-0230	135T-0230	155T-0230
75.41	2.9688	2-31/32	435T-0231	455H-0231	135T-0231	155T-0231
76.00	2.9921	—	435T-76	455H-76	135T-76	155T-76
76.20	3.0000	3	435T-0300	455H-0300	135T-0300	155T-0300

*Super cobalt T-A inserts with TiN are available as nonstocked standards. Process fees apply.

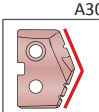
A30: 113 - 139
Key on A30: 2



A30: 99 - 101

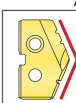


A30: 5 - 6



GEN2 T-A:
HI, HR, CR, SK, BR, NC, WC

A30: 5 - 6



T-A:
DW, HI, HR, CR, SK, BR, NC, WC, TC

Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

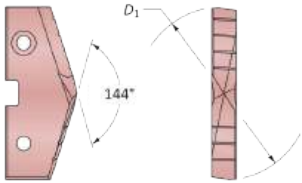
Inserts sold in quantities of 2.

5/6 Series: 62.38 mm - 89.09 mm (2.4560" - 3.5079")

6 Series Replaceable Inserts
(for use with 5 series holders)

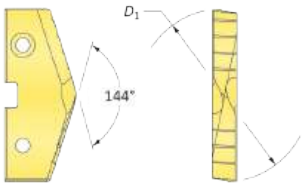


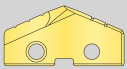
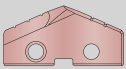
GEN2 T-A



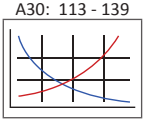


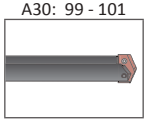
T-A

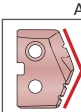


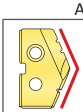
Insert			GEN2 T-A Inserts		T-A Inserts	
			HSS: High-Speed Steel	HSS: Super Cobalt	HSS: High-Speed Steel	HSS: Super Cobalt
						
			Part No.	Part No.	Part No.	Part No.
D_1 mm	D_1 inch	Fractional Equivalent	TiN	AM200®	TiN	TiN*
77.00	3.0313	3-1/32	436T-0301	456H-0301	136T-0301	156T-0301
77.79	3.0625	3-1/16	436T-0302	456H-0302	136T-0302	156T-0302
78.00	3.0709	—	436T-78	456H-78	136T-78	156T-78
78.58	3.0938	3-3/32	436T-0303	456H-0303	136T-0303	156T-0303
79.38	3.1250	3-1/8	436T-0304	456H-0304	136T-0304	156T-0304
80.00	3.1496	—	436T-80	456H-80	136T-80	156T-80
80.17	3.1563	3-5/32	436T-0305	456H-0305	136T-0305	156T-0305
80.96	3.1875	3-3/16	436T-0306	456H-0306	136T-0306	156T-0306
81.76	3.2188	3-7/32	436T-0307	456H-0307	136T-0307	156T-0307
82.00	3.2283	—	436T-82	456H-82	136T-82	156T-82
82.55	3.2500	3-1/4	436T-0308	456H-0308	136T-0308	156T-0308
83.35	3.2813	3-9/32	436T-0309	456H-0309	136T-0309	156T-0309
84.00	3.3071	—	436T-84	456H-84	136T-84	156T-84
84.14	3.3125	3-5/16	436T-0310	456H-0310	136T-0310	156T-0310
84.93	3.3438	3-11/32	436T-0311	456H-0311	136T-0311	156T-0311
85.73	3.3750	3-3/8	436T-0312	456H-0312	136T-0312	156T-0312
86.00	3.3858	—	436T-86	456H-86	136T-86	156T-86
86.52	3.4063	3-13/32	436T-0313	456H-0313	136T-0313	156T-0313
87.31	3.4375	3-7/16	436T-0314	456H-0314	136T-0314	156T-0314
88.00	3.4646	—	436T-88	456H-88	136T-88	156T-88
88.11	3.4688	3-15/32	436T-0315	456H-0315	136T-0315	156T-0315
88.90	3.5000	3-1/2	436T-0316	456H-0316	136T-0316	156T-0316

*Super cobalt T-A inserts with TiN are available as nonstocked standards. Process fees apply.

A30: 113 - 139
Key on A30: 2


A30: 99 - 101


A30: 5 - 6

GEN2 T-A:
HI, HR, CR, SK, BR, NC, WC

A30: 5 - 6

T-A:
DW, HI, HR, CR, SK, BR, NC, WC, TC

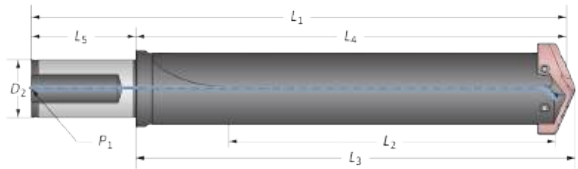
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

Inserts sold in quantities of 2.

5/6 Series: 62.38 mm - 89.09 mm (2.4560" - 3.5079")

T-A® Drill Holders





Flange Shank Holders

	Flute	Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No.
m	Straight	Short	165.7	215.9	222.3	295.9	80.0	50	1/2 BSPT	**22050S-50FM**
m	Straight	Extended	457.8	508.0	514.4	588.0	80.0	50	1/2 BSPT	⚠ **25050S-50FM**
m	Helical	Standard	277.3	317.5	323.9	397.5	80.0	50	1/2 BSPT	**24050H-50FM**
i	Straight	Short	6.523	8.500	8.750	13.000	4.500	2	1/2 NPT	**22050S-200F**
i	Straight	Extended	18.023	20.000	20.250	24.500	4.500	2	1/2 NPT	⚠ **25050S-200F**
i	Helical	Standard	10.918	12.500	12.750	17.000	4.500	2	1/2 NPT	**24050H-200F**

NOTE: Stub length holders have a 3.175 mm (1/8") side pipe tap (P_2).

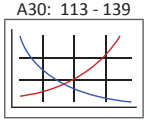
Connection Accessories

 Insert Screws	 Insert Driver	Admissible Tightening Torque*
7619-IP25-1	8IP-25	1750 N-cm (155.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

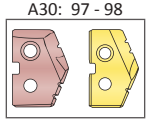
⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A30: 113 - 139



Key on A30: 2

A30: 97 - 98

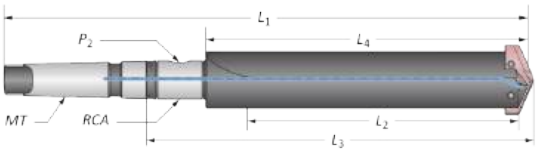


m = Metric (mm)
i = Imperial (in)
Screws sold in multiples of 10.

5/6 Series: 62.38 mm - 89.09 mm (2.4560" - 3.5079")

T-A® Drill Holders





Taper Shank Holders

	Flute	Body Length	L_2	L_4	L_3	L_1	Shank *MT**	P_2	RCA	Part No.
ⓜ	Straight	Short	163.5	215.9	287.3	430.2	#5 MT ISO	1/2 BSPT	2T-6SRM	**22050S-005M**
		Extended	455.6	508.0	579.4	722.3	#5 MT ISO	1/2 BSPT	2T-6SRM	⚠ **25050S-005M**
		XL	652.4	704.9	776.3	919.1	#5 MT ISO	1/2 BSPT	2T-6SRM	⚠ **27050S-005M**
		3XL	881.0	933.5	1004.9	1147.7	#5 MT ISO	1/2 BSPT	2T-6SRM	⚠ **29050S-005M**
	Helical	Standard	286.3	317.5	388.9	531.8	#5 MT ISO	1/2 BSPT	2T-6SRM	**24050H-005M**
ⓘ	Straight	Short	6.438	8.500	11.312	16.937	#5 MT	1/2 NPT	2T-6SR	**22050S-005I**
		Standard	10.438	12.500	15.312	20.937	#5 MT	1/2 NPT	2T-6SR	**24050S-005I**
		Extended	17.938	20.000	22.812	28.437	#5 MT	1/2 NPT	2T-6SR	⚠ **25050S-005I**
		XL	25.688	27.750	30.562	36.187	#5 MT	1/2 NPT	2T-6SR	⚠ **27050S-005I**
		3XL	34.688	36.750	39.562	45.187	#5 MT	1/2 NPT	2T-6SR	⚠ **29050S-005I**

*MT ISO 296 type BEK.

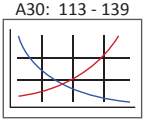
Connection Accessories

 Insert Screws	 Insert Driver	Admissible Tightening Torque*
7619-IP25-1	8IP-25	1750 N-cm (155.0 in-lbs)

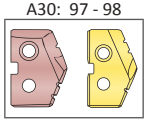
*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

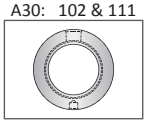
A30: 113 - 139 Key on A30: 2



A30: 97 - 98



A30: 102 & 111

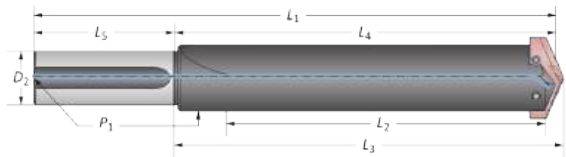


ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

5/6 Series: 62.38 mm - 89.09 mm (2.4560" - 3.5079")

T-A® Drill Holders





Straight Shank Holders

Flute	Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No.
Straight	Short	6.353	8.500	8.750	12.500	4.000	2	1/2 NPT	**22050S-200L**
	Standard	10.353	12.500	12.750	16.500	4.000	2	1/2 NPT	**24050S-200L**
	Extended	17.850	20.000	20.250	24.000	4.000	2	1/2 NPT	⚠ **25050S-200L**
	XL	25.603	27.750	28.000	31.750	4.000	2	1/2 NPT	⚠ **27050S-200L**
	3XL	34.603	36.750	37.000	40.750	4.000	2	1/2 NPT	⚠ **29050S-200L**

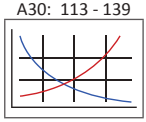
Connection Accessories

 Insert Screws	 Insert Driver	Admissible Tightening Torque*
7619-IP25-1	8IP-25	1750 N-cm (155.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

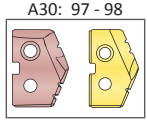
⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A30: 113 - 139



Key on A30: 2

A30: 97 - 98

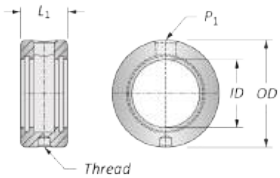


Ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

5/6 Series: 62.38 mm - 89.09 mm (2.4560" - 3.5079")

T-A Drill Accessories





Rotary Coolant Adapter (RCA) and Accessories

	ID	OD	L_1	Driving Rod Thread	P_1	Part No.	RCA O-Rings	
							Kit Part No.*	Replacements
m	57.2	95.3	44.5	M10 x 1.50	1/2 BSPT	⚠ 2T-6SRM	2T1-6SR	2T1-6OR-10
i	2.250	3.750	1.750	1/2" - 13	1/2 NPT	⚠ 2T-6SR	2T1-6SR	2T1-6OR-10

*RCA Repair Kit includes (2) O-rings, (2) snap rings, and (2) thrust washers.

⚠ Refer to page A30: 111 for proper RCA assembly and safety information.

⚠ WARNING RCA rotation during drilling can cause hose and/or hose fitting failure, machinery damage, and/or serious injury. To prevent, use RCA and positive stop studs when drilling. Factory technical assistance is also available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com**

A30: 113 - 139
Key on A30: 2

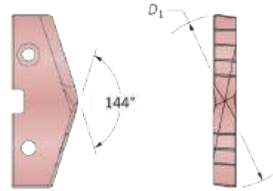
m = Metric (mm)
i = Imperial (in)
O-rings sold in packs of 10.

7/8 Series: 89.10 mm - 114.48 mm (3.5080" - 4.5070")

7 Series Replaceable Inserts

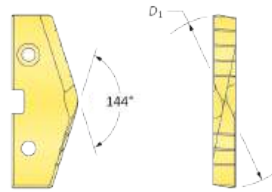


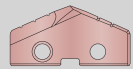
GEN2 T-A





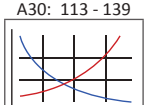
T-A



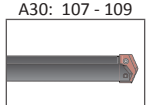
Insert			GEN2 T-A Inserts		T-A Inserts	
			HSS: High-Speed Steel	HSS: Super Cobalt	HSS: High-Speed Steel	HSS: Super Cobalt
						
			Part No.	Part No.	Part No.	Part No.
D_1 mm	D_1 inch	Fractional Equivalent	TiN	AM200®	TiN	TiN*
89.70	3.5313	3-17/32	**437T-0317**	**457H-0317**	**137T-0317**	**157T-0317**
90.00	3.5433	—	**437T-90**	**457H-90**	**137T-90**	**157T-90**
90.49	3.5625	3-9/16	**437T-0318**	**457H-0318**	**137T-0318**	**157T-0318**
91.28	3.5938	3-19/32	**437T-0319**	**457H-0319**	**137T-0319**	**157T-0319**
92.00	3.6220	—	**437T-92**	**457H-92**	**137T-92**	**157T-92**
92.08	3.6250	3-5/8	**437T-0320**	**457H-0320**	**137T-0320**	**157T-0320**
92.87	3.6563	3-21/32	**437T-0321**	**457H-0321**	**137T-0321**	**157T-0321**
93.66	3.6875	3-11/16	**437T-0322**	**457H-0322**	**137T-0322**	**157T-0322**
94.00	3.7008	—	**437T-94**	**457H-94**	**137T-94**	**157T-94**
94.46	3.7188	3-23/32	**437T-0323**	**457H-0323**	**137T-0323**	**157T-0323**
95.25	3.7500	3-3/4	**437T-0324**	**457H-0324**	**137T-0324**	**157T-0324**
96.00	3.7795	—	**437T-96**	**457H-96**	**137T-96**	**157T-96**
96.05	3.7813	3-25/32	**437T-0325**	**457H-0325**	**137T-0325**	**157T-0325**
96.84	3.8125	3-13/16	**437T-0326**	**457H-0326**	**137T-0326**	**157T-0326**
97.63	3.8438	3-27/32	**437T-0327**	**457H-0327**	**137T-0327**	**157T-0327**
98.00	3.8583	—	**437T-98**	**457H-98**	**137T-98**	**157T-98**
98.43	3.8750	3-7/8	**437T-0328**	**457H-0328**	**137T-0328**	**157T-0328**
99.22	3.9063	3-29/32	**437T-0329**	**457H-0329**	**137T-0329**	**157T-0329**
100.00	3.9370	—	**437T-100**	**457H-100**	**137T-100**	**157T-100**
100.01	3.9375	3-15/16	**437T-0330**	**457H-0330**	**137T-0330**	**157T-0330**
100.81	3.9688	3-31/32	**437T-0331**	**457H-0331**	**137T-0331**	**157T-0331**
101.60	4.0000	4	**437T-0400**	**457H-0400**	**137T-0400**	**157T-0400**

*Super cobalt T-A inserts with TiN are available as nonstocked standards. Process fees apply.

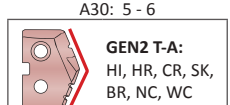
A30: 113 - 139
Key on A30: 2



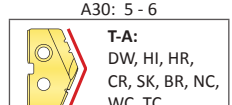
A30: 107 - 109



A30: 5 - 6



A30: 5 - 6



Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

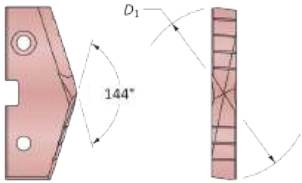
Inserts sold in quantities of 1.

7/8 Series: 89.10 mm - 114.48 mm (3.5080" - 4.5070")

8 Series Replaceable Inserts
(for use with 7 series holders)

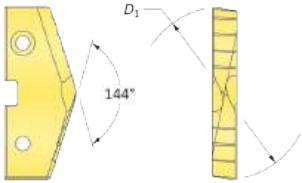


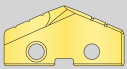
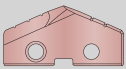
GEN2 T-A





T-A

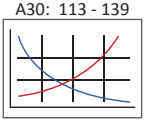


Insert			GEN2 T-A Inserts		T-A Inserts	
			HSS: High-Speed Steel	HSS: Super Cobalt	HSS: High-Speed Steel	HSS: Super Cobalt
						
			Part No.	Part No.	Part No.	Part No.
D_1 mm	D_1 inch	Fractional Equivalent	TiN	AM200®	TiN	TiN*
102.00	4.0157	4-1/64	438T-102	458H-102	138T-102	158T-102
103.19	4.0625	4-1/16	438T-0402	458H-0402	138T-0402	158T-0402
104.00	4.0945	—	438T-104	458H-104	138T-104	158T-104
104.78	4.1250	4-1/8	438T-0404	458H-0404	138T-0404	158T-0404
106.00	4.1732	—	438T-106	458H-106	138T-106	158T-106
106.36	4.1875	4-3/16	438T-0406	458H-0406	138T-0406	158T-0406
107.95	4.2500	4-1/4	438T-0408	458H-0408	138T-0408	158T-0408
108.00	4.2520	—	438T-108	458H-108	138T-108	158T-108
109.54	4.3125	4-5/16	438T-0410	458H-0410	138T-0410	158T-0410
110.00	4.3307	—	438T-110	458H-110	138T-110	158T-110
111.13	4.3750	4-3/8	438T-0412	458H-0412	138T-0412	158T-0412
112.00	4.4094	—	438T-112	458H-112	138T-112	158T-112
112.71	4.4375	4-7/16	438T-0414	458H-0414	138T-0414	158T-0414
114.00	4.4882	—	438T-114	458H-114	138T-114	158T-114
114.30	4.5000	4-1/2	438T-0416	458H-0416	138T-0416	158T-0416

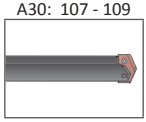
*Super cobalt T-A inserts with TiN are available as nonstocked standards. Process fees apply.

A30

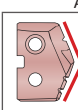
A30: 113 - 139
Key on A30: 2



A30: 107 - 109



A30: 5 - 6



GEN2 T-A:
HI, HR, CR, SK, BR, NC, WC

A30: 5 - 6



T-A:
DW, HI, HR, CR, SK, BR, NC, WC, TC

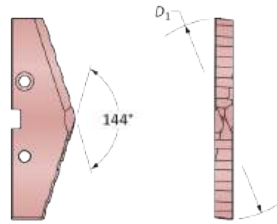
Coatings not listed above can be supplied as nonstocked standards. Process fees apply.

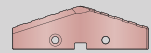
Inserts sold in quantities of 1.

Oversize: 110.00 mm - 152.40 mm (4.3307" - 6.0000")

8 Series Replaceable Inserts
(for use with 7 series holders)



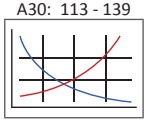


Insert			Double Wide Chip Splitter HSS: Super Cobalt  Part No.
D_1 mm	D_1 inch	Fractional Equivalent	AM200®
110.00	4.3307	—	**158H-110-DW**
114.30	4.5000	4-1/2	**158H-0416-DW**
115.00	4.5276	—	**158H-115-DW**
120.00	4.7244	—	**158H-120-DW**
120.65	4.7500	4-3/4	**158H-0424-DW**
125.00	4.9213	—	**158H-125-DW**
127.00	5.0000	5	**158H-0500-DW**
130.00	5.1181	—	**158H-130-DW**
133.35	5.2500	5-1/4	**158H-0508-DW**
135.00	5.3150	—	**158H-135-DW**
139.70	5.5000	5-1/2	**158H-0516-DW**
140.00	5.5118	—	**158H-140-DW**
145.00	5.7087	—	**158H-145-DW**
146.05	5.7500	5-3/4	**158H-0524-DW**
150.00	5.9055	—	**158H-150-DW**
152.40	6.0000	6	**158H-0600-DW**

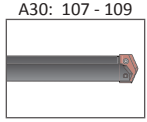
Diameters available up to 200.00 mm (7.8740") upon request.
NOTE: 120.00 mm (4.7244") maximum for stainless steel applications.

Minimum order quantity of 1.

A30: 113 - 139



A30: 107 - 109



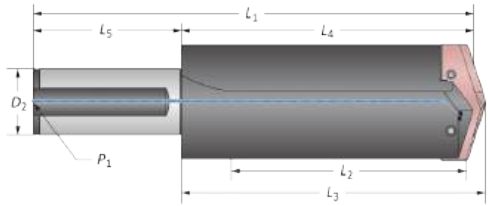
Inserts sold in quantities of 1.

Notes

7/8 Series: 89.10 mm - 114.48 mm (3.5080" - 4.5070")

T-A® Drill Holders





Flange Shank Holders

	Flute	Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No.
m	Straight	Short	178.9	225.4	231.8	305.4	80.0	50	1/2 BSPT	**22070S-50FM**
m	Straight	Extended	558.4	606.9	613.3	686.9	80.0	50	1/2 BSPT	⚠ **25070S-50FM**
m	Helical	Standard	283.5	327.0	333.4	407.0	80.0	50	1/2 BSPT	**24070H-50FM**
i	Straight	Short	6.042	8.875	9.125	13.375	4.500	2	1/2 NPT	**22070S-200F**
i	Straight	Extended	21.986	23.894	24.144	28.394	4.500	2	1/2 NPT	⚠ **25070S-200F**
i	Helical	Standard	11.161	12.875	13.125	17.375	4.500	2	1/2 NPT	**24070H-200F**

NOTE: Stub length holders have a 3.175 mm (1/8") side pipe tap (P_2).

Connection Accessories

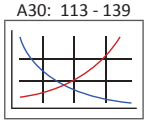
 Insert Screws	 Insert Driver	Admissible Tightening Torque*
7619-IP25-1	8IP-25	1750 N-cm (155.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

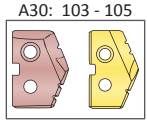
⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A30: 113 - 139

Key on A30: 2



A30: 103 - 105

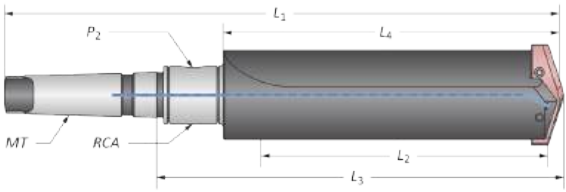


ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

7/8 Series: 89.10 mm - 114.48 mm (3.5080" - 4.5070")

T-A® Drill Holders





Taper Shank Holders

	Flute	Body Length	L_2	L_4	L_3	L_1	Shank *MT**	P_2	RCA	Part No.
ⓜ	Straight	Short	177.2	225.4	296.8	439.7	#5 MT ISO	1/2 BSPT	2T-6SRM	**22070S-005M**
		Extended	561.3	609.6	681.0	823.9	#5 MT ISO	1/2 BSPT	2T-6SRM	⚠ **25070S-005M**
		XL	691.5	739.8	811.2	954.1	#5 MT ISO	1/2 BSPT	2T-6SRM	⚠ **27070S-005M**
		3XL	945.5	993.8	1065.2	1208.1	#5 MT ISO	1/2 BSPT	2T-6SRM	⚠ **29070S-005M**
	Helical	Standard	290.5	327.0	398.4	541.3	#5 MT ISO	1/2 BSPT	2T-6SRM	**24070H-005M**
ⓘ	Straight	Short	6.979	8.875	11.687	17.312	#5 MT	1/2 NPT	2T-6SR	**22070S-005I**
		Standard	10.979	12.875	15.687	21.312	#5 MT	1/2 NPT	2T-6SR	**24070S-005I**
		Extended	22.104	24.000	26.812	32.437	#5 MT	1/2 NPT	2T-6SR	⚠ **25070S-005I**
		XL	27.229	29.125	31.937	37.562	#5 MT	1/2 NPT	2T-6SR	⚠ **27070S-005I**
		3XL	37.229	39.125	41.937	47.562	#5 MT	1/2 NPT	2T-6SR	⚠ **29070S-005I**

*MT ISO 296 type BEK.

Connection Accessories

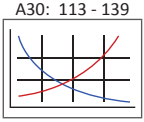
 Insert Screws	 Insert Driver	Admissible Tightening Torque*
7619-IP25-1	8IP-25	1750 N-cm (155.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

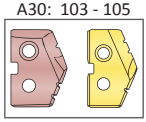
⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A30: 113 - 139

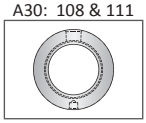
Key on A30: 2



A30: 103 - 105



A30: 108 & 111

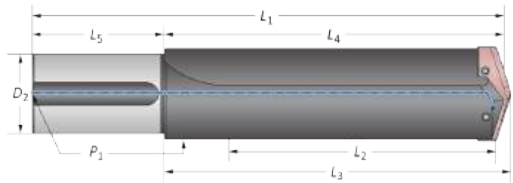


ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

7/8 Series: 89.10 mm - 114.48 mm (3.5080" - 4.5070")

T-A® Drill Holders





Straight Shank Holders

Flute	Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No.
Straight	Short	6.217	8.875	9.125	13.875	5.000	3	1/2 NPT	**22070S-300L**
	Standard	10.217	12.875	13.125	17.875	5.000	3	1/2 NPT	**24070S-300L**
	Extended	21.342	24.000	24.250	29.000	5.000	3	1/2 NPT	⚠ **25070S-300L**
	XL	26.467	29.125	29.375	34.125	5.000	3	1/2 NPT	⚠ **27070S-300L**
	3XL	36.467	39.125	39.375	44.125	5.000	3	1/2 NPT	⚠ **29070S-300L**

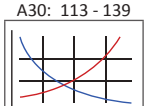
Connection Accessories

 Insert Screws	 Insert Driver	Admissible Tightening Torque*
7619-IP25-1	8IP-25	1750 N-cm (155.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

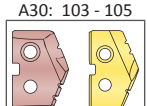
⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A30: 113 - 139



Key on A30: 2

A30: 103 - 105

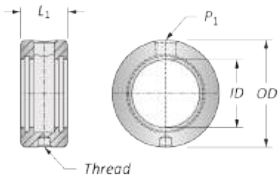


Ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

7/8 Series: 89.10 mm - 114.48 mm (3.5080" - 4.5070")

T-A Drill Accessories





Rotary Coolant Adapter (RCA) and Accessories

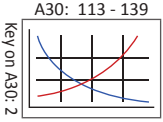
	ID	OD	L_1	Driving Rod Thread	P_1	Part No.	RCA O-Rings Kit Part No.*	RCA O-Rings Replacements
ⓜ	57.2	95.3	44.5	M10 x 1.50	1/2 BSPT	⚠ 2T-6SRM	2T1-6SR	2T1-6OR-10
ⓘ	2.250	3.750	1.750	1/2" - 13	1/2 NPT	⚠ 2T-6SR	2T1-6SR	2T1-6OR-10

*RCA Repair Kit includes (2) O-rings, (2) snap rings, and (2) thrust washers.

⚠ Refer to page A30: 111 for proper RCA assembly and safety information.

⚠ WARNING RCA rotation during drilling can cause hose and/or hose fitting failure, machinery damage, and/or serious injury. To prevent, use RCA and positive stop studs when drilling. Factory technical assistance is also available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com**

A30: 113 - 139

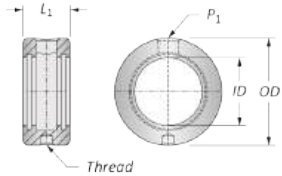


ⓜ = Metric (mm)
ⓘ = Imperial (in)
O-rings sold in packs of 10.

Rotary Coolant Adapters (RCA)

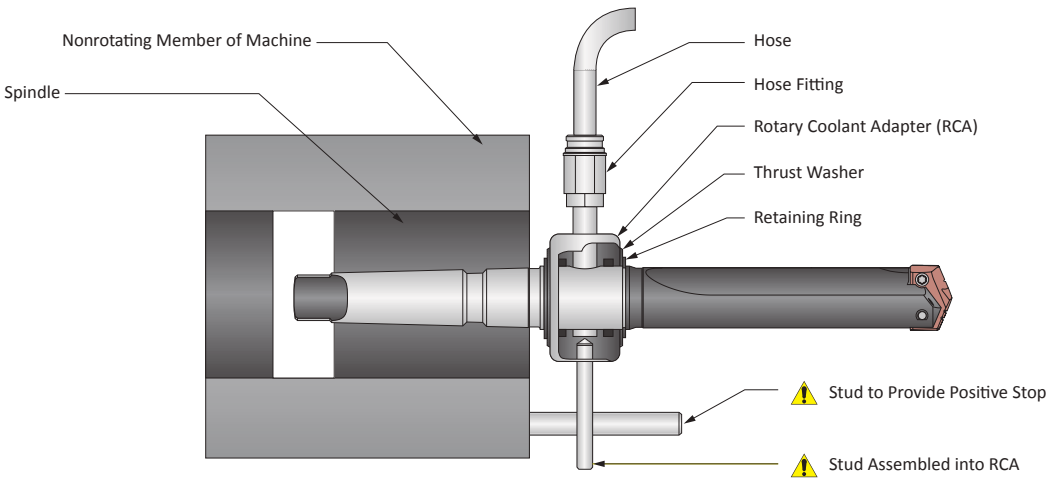
Morse Taper Shanks





	Holder Series	*ID*	*OD*	L_1	Driving Rod Thread	P_1	Part No.	Max Recommended RPM	RCA O-Rings Kit Part No.*	RCA O-Rings Replacements
	Y, Z, 0	0.750	1.750	0.875	5/16" - 18	1/8 NPT	⚠ 2T-2SR	3500	2T1-2SR	2T1-2OR-10
	1, 2	1.000	2.125	1.125	5/16" - 18	1/8 NPT	⚠ 2T-3SR	2500	2T1-3SR	2T1-3OR-10
ⓘ	2, 3, 4	1.250	2.500	1.375	3/8" - 16	1/4 NPT	⚠ 2T-4SR	2000	2T1-4SR	2T1-4OR-10
	3, 4	1.750	3.000	1.375	3/8" - 16	1/4 NPT	⚠ 2T-5SR	1500	2T1-5SR	2T1-5OR-10
	5, 7	2.250	3.750	1.750	1/2" - 13	1/2 NPT	⚠ 2T-6SR	1100	2T1-6SR	2T1-6OR-10
	Y, Z, 0	19.1	44.5	22.2	M8 x 1.25	1/8 BSPT	⚠ 2T-2SRM	3500	2T1-2SR	2T1-2OR-10
	1, 2	25.4	54.0	28.6	M8 x 1.25	1/8 BSPT	⚠ 2T-3SRM	2500	2T1-3SR	2T1-3OR-10
ⓜ	2, 3, 4	31.8	63.5	34.9	M10 x 1.50	1/4 BSPT	⚠ 2T-4SRM	2000	2T1-4SR	2T1-4OR-10
	3, 4	44.5	76.2	34.9	M10 x 1.50	1/4 BSPT	⚠ 2T-5SRM	1500	2T1-5SR	2T1-5OR-10
	5, 7	57.2	95.3	44.5	M10 x 1.50	1/2 BSPT	⚠ 2T-6SRM	1100	2T1-6SR	2T1-6OR-10

*RCA Repair Kit includes (2) O-rings, (2) snap rings, and (2) thrust washers.
NOTE: Max recommended pressure is 600 PSI (42 bar).
NOTE: Recommendations above are based on water and oil based coolants.

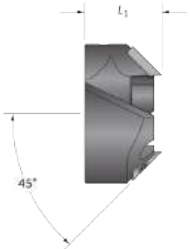


⚠ WARNING RCA rotation during drilling can cause hose and/or hose fitting failure, machinery damage, and/or serious injury. To prevent, use RCA and positive stop studs when drilling. Factory technical assistance is also available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com**

T-ACR 45 Chamfer Rings

Straight Flute Holders







Holder Series	D_1 Range	Chamfer Ring D_4	Chamfer Ring L_1	Part No.	Insert Part No.	Insert Screw	Insert Driver	Clamping Screw	Insert Driver
0	0.5118 - 0.6890	1.148	0.676	**T-ACR-45-0**	T-ACRI-45-B-C5A	7255-IP8-1	8IP-8	7375-IP9-1	8IP-9
1	0.6900 - 0.8540	1.330	0.797	**T-ACR-45-1**	T-ACRI-45-B-C5A	7255-IP8-1	8IP-8	7495-IP15-1	8IP-15
1.5	0.8540 - 0.9600	1.493	0.891	**T-ACR-45-1.5**	T-ACRI-45-B-C5A	7255-IP8-1	8IP-8	7495-IP15-1	8IP-15
2	0.9610 - 1.3800	1.598	1.000	**T-ACR-45-2**	T-ACRI-45-B-C5A	7255-IP8-1	8IP-8	7514-IP20-1	8IP-20



Highlights and Other Information

- Produces a 45° chamfer only.
- Clamping screw allows for setting at any length along the flute.
- Double effective cutting with face mounted inserts provides increased feed rates and greater insert strength.
- The ring is balanced to match the holder center of gravity to ensure stability.
- Inserts only available in C5 carbide and TiAlN coating.
- Ideal for short-run or time-sensitive jobs that require quick delivery.





IMPORTANT: T-A chamfer rings can only be used with straight flute T-A holders.

Inserts sold in quantities of 2.
Screws sold in quantities of 10.

Recommended Drilling Data | Metric (mm)

GEN2 T-A | HIGH-SPEED STEEL

ISO	Material	Hardness (BHN)	HSS Grade	Speed (m/min) TiN	Speed (m/min) AM200®	Feed Rate (mm/rev) by Diameter Y/Z Series 9.50 mm - 12.97 mm	Feed Rate (mm/rev) by Diameter 0 Series 12.98 mm - 17.67 mm
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 150	HSS	61	99	0.20	0.30
		150 - 200	HSS	55	91	0.18	0.28
		200 - 250	HSS	49	85	0.15	0.25
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	HSS	52	88	0.20 ❖	0.25
		125 - 175	HSS	49	83	0.18 ❖	0.25
		175 - 225	HSS	46	79	0.15 ❖	0.23
		225 - 275	HSS	43	73	0.13 ❖	0.23
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	HSS	49	83	0.18	0.25
		175 - 225	HSS	46	79	0.15	0.23
		225 - 275	HSS	43	73	0.15	0.23
		275 - 325	SC, PC	40	68	0.13	0.20
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	HSS	46	73	0.18	0.25
		175 - 225	HSS	43	68	0.15	0.23
		225 - 275	HSS	40	64	0.15	0.23
		275 - 325	SC, PC	37	59	0.13	0.20
		325 - 375	SC, PC	34	54	0.10	0.18
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	SC, PC	24	38	0.15 ❖	0.23
		300 - 350	SC, PC	18	30	0.13 ❖	0.20
		350 - 400	PC	15	24	0.10 ❖	0.18
	Structural Steel A36, A285, A516, etc.	100 - 150	HSS	43	71	0.20 ❖	0.28
		150 - 250	HSS	37	57	0.15 ❖	0.25
		250 - 350	SC, PC	30	48	0.13 ❖	0.23
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	SC	24	38	0.10	0.18
		200 - 250	SC, PC	18	32	0.10	0.18
M	**Stainless Steel 400 Series** 416, 420, etc.	185 - 275	SC, PC	23	35	0.15 ❖	0.20
		275 - 350	SC, PC	18	31	0.13 ❖	0.18
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	SC, PC	23	35	0.08 ❖	0.18
		185 - 275	SC, PC	18	31	0.08 ❖	0.15
	Super Duplex Stainless Steel	135 - 185	SC, PC	18	26	0.08 ❖	0.18
		185 - 275	SC, PC	15	22	0.08 ❖	0.15
K	**SG / Nodular Cast Iron**	120 - 150	HSS	52	84	0.20	0.30
		150 - 200	HSS	46	79	0.18	0.28
		200 - 220	HSS	40	68	0.15	0.23
		220 - 260	SC, PC	34	57	0.13	0.20
		260 - 320	SC, PC	27	47	0.13	0.18
N	**Cast Aluminum**	30	HSS	183	—	0.23	0.38
		180	HSS	91	—	0.20	0.33
	Wrought Aluminum	30	HSS	183	280	0.12	0.33
		180	HSS	91	200	0.12	0.18
	Aluminum Bronze	100 - 200	SC	52	82	0.15	0.24
		200 - 250	SC	40	65	0.12	0.18
	Brass	100	HSS	91	144	0.18	0.27
	Copper	60	SC	40	58	0.07 ❖	0.10
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 220	SC, PC	9	13	0.10 ❖	0.18
		220 - 310	PC	8	12	0.10 ❖	0.15
	Titanium Alloy	140 - 220	SC, PC	11	16	0.10 ❖	0.18
		220 - 310	PC	10	15	0.08 ❖	0.15
	Aerospace Alloy S82	185 - 275	SC, PC	23	35	0.15 ❖	0.20
		275 - 350	SC, PC	18	31	0.13 ❖	0.18
H	**Wear Plate** Hardox®, AR400, T-1, etc.	400	SC, PC	14	21	0.08 ❖	0.15
		500	PC	10	14	0.05 ❖	0.12
		600	N/A	—	—	—	—
	Hardened Steel	300 - 400	PC	15	29	0.10 ❖	0.15
		400 - 500	PC	10	14	0.06 ❖	0.12

❖ Contact our Application Engineering department for assistance when machining these materials.

Deep Hole Drilling Speed and Feed Adjustment Values

	⚠ Holder Length				
	Extended	Long	Long Plus	XL	3XL
Speed	0.90	0.85	0.80	0.80	0.75
Feed	–	0.95	0.90	0.90	0.90

Recommended Speed and Feed Example (3XL)

	Data	•	Adjustment Value	=	Recommendation for Deep Holes
Speed	50 m/min	•	0.75	=	37.5 m/min
Feed	0.20 mm/rev	•	0.90	=	0.18 mm/rev

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples above.

Recommended Drilling Data | Metric (mm)

GEN2 T-A | HIGH-SPEED STEEL

Feed Rate (mm/rev) by Diameter				
1 Series 17.53 mm - 24.40 mm	**2 Series** 24.41 mm - 35.06 mm	**3 Series** 34.37 mm - 47.82 mm	**4 Series** 46.99 mm - 65.30 mm	**5 - 8 Series** 62.38 mm - 114.48 mm
0.41	0.48	0.51	0.58	0.71
0.38	0.43	0.51	0.58	0.71
0.36	0.41	0.51	0.58	0.71
0.36	0.46	0.48	0.58	0.69
0.36	0.43	0.48	0.58	0.69
0.33	0.41	0.46	0.53	0.61
0.33	0.41	0.46	0.53	0.61
0.36	0.43	0.48	0.58	0.69
0.33	0.41	0.46	0.53	0.61
0.33	0.41	0.46	0.53	0.61
0.30	0.38	0.41	0.48	0.56
0.36	0.43	0.43	0.48	0.56
0.33	0.41	0.43	0.48	0.56
0.33	0.41	0.43	0.48	0.56
0.30	0.38	0.38	0.43	0.51
0.28	0.36	0.38	0.43	0.51
0.28	0.33	0.36	0.43	0.51
0.25	0.30	0.36	0.43	0.51
0.23	0.28	0.30	0.41	0.46
0.38	0.43	0.46	0.53	0.66
0.33	0.38	0.41	0.48	0.61
0.30	0.33	0.36	0.43	0.51
0.25	0.30	0.30	0.38	0.43
0.25	0.30	0.30	0.38	0.43
0.23	0.28	0.36	0.41	0.51
0.20	0.25	0.30	0.36	0.46
0.20	0.28	0.36	0.41	0.51
0.18	0.25	0.30	0.36	0.46
0.20	0.28	0.36	0.41	0.51
0.18	0.25	0.30	0.36	0.46
0.41	0.51	0.61	0.69	0.76
0.38	0.48	0.56	0.64	0.71
0.33	0.43	0.46	0.53	0.61
0.28	0.36	0.36	0.43	0.51
0.25	0.28	0.28	0.36	0.41
0.46	0.58	0.56	0.64	0.64
0.40	0.50	0.56	0.64	0.64
0.40	0.50	0.56	0.64	0.64
0.30	0.35	0.56	0.64	0.64
0.30	0.38	0.43	0.48	0.53
0.23	0.28	0.36	0.40	0.46
0.33	0.45	0.47	0.53	0.58
0.18	0.26	0.23	0.27	0.31
0.23	0.28	0.30	0.38	—
0.20	0.25	0.25	0.30	—
0.21	0.27	0.30	0.38	—
0.18	0.23	0.25	0.30	—
0.23	0.28	0.36	0.41	0.51
0.20	0.25	0.30	0.36	0.46
0.20	0.23	0.30	0.41	0.46
0.18	0.20	0.25	0.30	0.40
—	—	—	—	—
0.23	0.27	0.30	0.41	0.46
0.18	0.24	0.25	0.30	0.40

⚠ WARNING **Tool failure can cause serious injury. To prevent:**

- When using holders without support bushing, use a short T-A holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

Recommended Drilling Data | Metric (mm)

GEN2 T-A | CARBIDE

ISO	Material	Hardness (BHN)	Carbide Grade	Speed (m/min) AM300®
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 150	K35 (C1)	146
		150 - 200	K35 (C1)	126
		200 - 250	K35 (C1)	119
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	K35 (C1)	137
		125 - 175	K35 (C1)	119
		175 - 225	K35 (C1)	108
		225 - 275	K35 (C1)	95
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	K35 (C1)	119
		175 - 225	K35 (C1)	108
		225 - 275	K35 (C1)	95
		275 - 325	K35 (C1)	80
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	K35 (C1)	115
		175 - 225	K35 (C1)	105
		225 - 275	K35 (C1)	95
		275 - 325	K35 (C1)	87
		325 - 375	K35 (C1)	78
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	K35 (C1)	70
		300 - 350	K35 (C1)	63
		350 - 400	K35 (C1)	56
	Structural Steel A36, A285, A516, etc.	100 - 150	K35 (C1)	108
		150 - 250	K35 (C1)	87
		250 - 350	K35 (C1)	80
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	K35 (C1)	78
		200 - 250	K35 (C1)	59
M	**Stainless Steel 400 Series** 416, 420, etc.	185 - 275	K20 (C2)	73
		275 - 350	K20 (C2)	56
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	K20 (C2)	73
		185 - 275	K20 (C2)	56
	Super Duplex Stainless Steel	135 - 185	K20 (C2)	38
		185 - 275	K20 (C2)	30
K	**SG / Nodular Cast Iron**	120 - 150	K20 (C2)	152
		150 - 200	K20 (C2)	146
		200 - 220	K20 (C2)	131
		220 - 260	K20 (C2)	113
		260 - 320	K20 (C2)	102
N	**Cast Aluminum**	30	K20 (C2)	300
		180	K20 (C2)	225
	Wrought Aluminum	30	K20 (C2)	426
		180	K20 (C2)	300
	Aluminum Bronze	100 - 200	K20 (C2)	110
		200 - 250	K20 (C2)	90
	Brass	100	K20 (C2)	200
	Copper	60	K20 (C2)	130
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 220	K20 (C2)	37
		220 - 310	K20 (C2)	29
	Titanium Alloy	140 - 220	K20 (C2)	42
		220 - 310	K20 (C2)	33
	Aerospace Alloy S82	185 - 275	K20 (C2)	73
		275 - 350	K20 (C2)	56
H	**Wear Plate** Hardox®, AR400, T-1, etc.	400	K20 (C2)	45
		500	K20 (C2)	37
		600	K20 (C2)	30
	Hardened Steel	300 - 400	K35 (C1)	47
		400 - 500	K35 (C1)	37

❖ Contact our Application Engineering department for assistance when machining these materials.

Deep Hole Drilling Speed and Feed Adjustment Values

	⚠ Holder Length				
	Extended	Long	Long Plus	XL	3XL
Speed	0.90	0.85	0.80	0.80	0.75
Feed	–	0.95	0.90	0.90	0.90

Recommended Speed and Feed Example (3XL)

	Data	•	Adjustment Value	=	Recommendation for Deep Holes
Speed	50 m/min	•	0.75	=	37.5 m/min
Feed	0.20 mm/rev	•	0.90	=	0.18 mm/rev

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples above.

Recommended Drilling Data | Metric (mm)

GEN2 T-A | CARBIDE

Feed Rate (mm/rev) by Diameter			
Y/Z Series 9.50 mm - 12.97 mm	**0 Series** 12.98 mm - 17.67 mm	**1 Series** 17.53 mm - 24.40 mm	**2 Series** 24.41 mm - 35.06 mm
0.20	0.30	0.41	0.48
0.18	0.28	0.38	0.43
0.15	0.25	0.36	0.41
0.20 ❖	0.25	0.36	0.46
0.18 ❖	0.25	0.36	0.43
0.15 ❖	0.23	0.33	0.41
0.13 ❖	0.23	0.33	0.41
0.18	0.25	0.36	0.43
0.15	0.23	0.33	0.41
0.15	0.23	0.33	0.41
0.13	0.20	0.30	0.38
0.18	0.25	0.36	0.43
0.15	0.23	0.33	0.43
0.15	0.23	0.33	0.41
0.13	0.20	0.30	0.38
0.10	0.18	0.28	0.36
0.15 ❖	0.23	0.28	0.33
0.13 ❖	0.20	0.25	0.30
0.10 ❖	0.18	0.23	0.28
0.20 ❖	0.28	0.38	0.43
0.15 ❖	0.25	0.33	0.38
0.13 ❖	0.23	0.30	0.33
0.10	0.18	0.25	0.30
0.10	0.18	0.25	0.30
0.18 ❖	0.23	0.30	0.36
0.15 ❖	0.20	0.28	0.30
0.14 ❖	0.18	0.24	0.29
0.12 ❖	0.16	0.22	0.24
0.12 ❖	0.17	0.22	0.26
0.10 ❖	0.15	0.18	0.22
0.20	0.30	0.38	0.48
0.18	0.28	0.33	0.43
0.15	0.23	0.30	0.38
0.13	0.20	0.28	0.33
0.13	0.18	0.25	0.28
0.23	0.38	0.46	0.58
0.20	0.33	0.40	0.50
0.12	0.33	0.40	0.50
0.12	0.18	0.30	0.35
0.15	0.24	0.30	0.38
0.12	0.18	0.23	0.28
0.18	0.27	0.33	0.45
0.07 ❖	0.10	0.18	0.26
0.10 ❖	0.18	0.23	0.28
0.10 ❖	0.15	0.20	0.25
0.10 ❖	0.18	0.21	0.27
0.08 ❖	0.15	0.18	0.23
0.12 ❖	0.16	0.18	0.22
0.10 ❖	0.14	0.16	0.19
0.07 ❖	0.12	0.20	0.25
0.05 ❖	0.10	0.15	0.20
0.04 ❖	0.08	0.12	0.16
0.10 ❖	0.18	0.23	0.27
0.06 ❖	0.12	0.18	0.24

⚠ WARNING **Tool failure can cause serious injury. To prevent:**

- When using holders without support bushing, use a short T-A holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

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Recommended Drilling Data | Metric (mm)

T-A | HIGH-SPEED STEEL

ISO	Material	Hardness (BHN)	HSS Grade	Speed (m/min) TiN	TiAlN	TiCN	Feed Rate (mm/rev) by Diameter Y/Z Series 9.50 mm - 12.97 mm	0 Series 12.98 mm - 17.67 mm
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 150	HSS	61	85	79	0.18	0.25
		150 - 200	HSS	55	79	72	0.18	0.25
		200 - 250	HSS	49	73	64	0.15	0.25
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	HSS	52	76	67	0.15 ❖	0.23
		125 - 175	HSS	49	73	64	0.15 ❖	0.23
		175 - 225	HSS	46	69	59	0.13 ❖	0.20
		225 - 275	HSS	43	64	55	0.13 ❖	0.20
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	HSS	49	73	64	0.15	0.23
		175 - 225	HSS	46	69	59	0.13	0.20
		225 - 275	HSS	43	64	55	0.13	0.20
		275 - 325	SC, PC	40	59	52	0.10	0.18
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	HSS	46	64	59	0.15	0.20
		175 - 225	HSS	43	59	55	0.13	0.20
		225 - 275	HSS	40	55	52	0.13	0.18
		275 - 325	SC, PC	37	52	47	0.10	0.15
		325 - 375	SC, PC	34	47	44	0.08	0.15
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	SC, PC	24	34	30	0.13 ❖	0.18
		300 - 350	SC, PC	18	26	24	0.10 ❖	0.18
		350 - 400	PC	15	21	20	0.08 ❖	0.15
	Structural Steel A36, A285, A516, etc.	100 - 150	HSS	43	61	55	0.15 ❖	0.25
		150 - 250	HSS	37	52	47	0.13 ❖	0.23
		250 - 350	SC, PC	30	43	40	0.10 ❖	0.20
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	SC	24	34	32	0.10	0.15
		200 - 250	SC, PC	18	27	26	0.10	0.15
M	**Stainless Steel 400 Series** 416, 420, etc.	185 - 275	SC, PC	23	32	29	0.15 ❖	0.20
		275 - 350	SC, PC	18	27	24	0.13 ❖	0.18
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	SC, PC	23	32	29	0.08 ❖	0.18
		185 - 275	SC, PC	18	27	24	0.08 ❖	0.15
	Super Duplex Stainless Steel	135 - 185	SC, PC	18	24	21	0.08 ❖	0.18
		185 - 275	SC, PC	15	20	18	0.08 ❖	0.15
K	**SG / Nodular Cast Iron**	120 - 150	HSS	52	76	67	0.18	0.30
		150 - 200	HSS	46	69	59	0.15	0.28
		200 - 220	HSS	40	59	52	0.15	0.23
		220 - 260	SC, PC	34	50	44	0.13	0.18
		260 - 320	SC, PC	27	41	37	0.10	0.15
N	**Cast Aluminum**	30	HSS	183	259	229	0.20	0.33
		180	HSS	91	137	122	0.20	0.33
	Wrought Aluminum	30	HSS	183	259	229	0.10	0.15
		180	HSS	91	137	122	0.20	0.33
	Aluminum Bronze	100 - 200	SC	52	76	67	0.15	0.28
		200 - 250	SC	40	58	52	0.13	0.18
	Brass	100	HSS	91	136	122	0.18	0.30
	Copper	60	SC	40	50	46	0.05 ❖	0.08
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 220	SC, PC	9	12	11	0.08 ❖	0.18
		220 - 310	PC	8	11	9	0.08 ❖	0.15
	Titanium Alloy	140 - 220	SC, PC	11	15	14	0.08 ❖	0.18
		220 - 310	PC	9	14	11	0.08 ❖	0.15
	Aerospace Alloy S82	185 - 275	SC, PC	23	32	29	0.15 ❖	0.20
		275 - 350	SC, PC	18	27	24	0.13 ❖	0.18
H	**Wear Plate** Hardox®, AR400, T-1, etc.	400	SC, PC	14	21	17	0.08 ❖	0.15
		500	PC	11	14	12	0.05 ❖	0.13
		600	N/A	—	—	—	—	—
	Hardened Steel	300 - 400	PC	15	29	21	0.08 ❖	0.15
		400 - 500	PC	11	14	12	0.05 ❖	0.13

❖ Contact our Application Engineering department for assistance when machining these materials.

Deep Hole Drilling Speed and Feed Adjustment Values

	⚠ Holder Length				
	Extended	Long	Long Plus	XL	3XL
Speed	0.90	0.85	0.80	0.80	0.75
Feed	–	0.95	0.90	0.90	0.90

Recommended Speed and Feed Example (3XL)

	Data	•	Adjustment Value	=	Recommendation for Deep Holes
Speed	50 m/min	•	0.75	=	37.5 m/min
Feed	0.20 mm/rev	•	0.90	=	0.18 mm/rev

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples above.

Recommended Drilling Data | Metric (mm)

T-A | HIGH-SPEED STEEL

Feed Rate (mm/rev) by Diameter				
1 Series 17.53 mm - 24.40 mm	**2 Series** 24.41 mm - 35.06 mm	**3 Series** 34.37 mm - 47.82 mm	**4 Series** 46.99 mm - 65.30 mm	**5 - 8 Series** 62.38 mm - 114.48 mm
0.41	0.48	0.51	0.58	0.71
0.38	0.43	0.51	0.58	0.71
0.36	0.41	0.51	0.58	0.71
0.36	0.46	0.48	0.58	0.69
0.36	0.43	0.48	0.58	0.69
0.33	0.41	0.46	0.53	0.61
0.33	0.41	0.46	0.53	0.61
0.36	0.43	0.48	0.58	0.69
0.33	0.41	0.46	0.53	0.61
0.33	0.41	0.46	0.53	0.61
0.30	0.38	0.41	0.48	0.56
0.36	0.43	0.43	0.48	0.56
0.33	0.41	0.43	0.48	0.56
0.33	0.41	0.43	0.48	0.56
0.30	0.38	0.38	0.43	0.51
0.28	0.36	0.38	0.43	0.51
0.28	0.33	0.36	0.43	0.51
0.25	0.30	0.36	0.43	0.51
0.23	0.28	0.30	0.41	0.46
0.38	0.43	0.46	0.53	0.66
0.33	0.38	0.41	0.48	0.61
0.30	0.33	0.36	0.43	0.51
0.25	0.30	0.30	0.38	0.43
0.25	0.30	0.30	0.38	0.43
0.23	0.28	0.36	0.41	0.51
0.20	0.25	0.30	0.36	0.46
0.20	0.28	0.36	0.41	0.51
0.18	0.25	0.30	0.36	0.46
0.20	0.28	0.36	0.41	0.51
0.18	0.25	0.30	0.36	0.46
0.41	0.51	0.61	0.69	0.76
0.38	0.48	0.56	0.64	0.71
0.33	0.43	0.46	0.53	0.61
0.28	0.36	0.36	0.43	0.51
0.25	0.28	0.28	0.36	0.41
0.46	0.58	0.56	0.64	0.64
0.40	0.50	0.56	0.64	0.64
0.40	0.50	0.56	0.64	0.64
0.30	0.35	0.56	0.64	0.64
0.30	0.38	0.43	0.48	0.53
0.23	0.28	0.36	0.40	0.46
0.33	0.45	0.47	0.53	0.58
0.18	0.26	0.23	0.27	0.31
0.23	0.28	0.30	0.38	—
0.20	0.25	0.25	0.30	—
0.21	0.27	0.30	0.38	—
0.18	0.23	0.25	0.30	—
0.23	0.28	0.36	0.41	0.51
0.20	0.25	0.30	0.36	0.46
0.20	0.23	0.30	0.41	0.46
0.18	0.20	0.25	0.30	0.40
—	—	—	—	—
0.23	0.27	0.30	0.41	0.46
0.18	0.24	0.25	0.30	0.40

NOTE: For diameters over 114.48 mm please reach out to our application engineering department.

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Recommended Drilling Data | Metric (mm)

T-A | CARBIDE

ISO	Material	Hardness (BHN)	Carbide Grade	Speed (m/min) TiN	TiAlN	TiCN
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 150	P40 (C5)	96	128	115
		150 - 200	P40 (C5)	85	110	100
		200 - 250	P40 (C5)	79	104	90
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	P40 (C5)	91	119	110
		125 - 175	P40 (C5)	79	104	90
		175 - 225	P40 (C5)	73	95	82
		225 - 275	P40 (C5)	64	83	75
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	P40 (C5)	79	104	90
		175 - 225	P40 (C5)	73	95	84
		225 - 275	P40 (C5)	67	83	72
		275 - 325	P40 (C5)	55	70	62
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	P40 (C5)	76	99	87
		175 - 225	P40 (C5)	70	92	80
		225 - 275	P40 (C5)	64	83	72
		275 - 325	P40 (C5)	61	76	68
		325 - 375	P40 (C5)	52	67	60
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	P40 (C5)	49	61	55
		300 - 350	P40 (C5)	43	55	49
		350 - 400	P40 (C5)	37	49	43
	Structural Steel A36, A285, A516, etc.	100 - 150	P40 (C5)	73	95	84
		150 - 250	P40 (C5)	61	76	68
		250 - 350	P40 (C5)	55	70	62
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	P40 (C5)	49	67	58
		200 - 250	P40 (C5)	37	52	45
M	**Stainless Steel 400 Series** 416, 420, etc.	185 - 275	K20 (C2)	49	64	57
		275 - 350	K20 (C2)	37	49	43
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	K20 (C2)	49	64	57
		185 - 275	K20 (C2)	37	49	43
	Super Duplex Stainless Steel	135 - 185	K20 (C2)	25	33	29
		185 - 275	K20 (C2)	19	25	22
K	**SG / Nodular Cast Iron**	120 - 150	K20 (C2), C3 (K10)	98	141	127
		150 - 200	K20 (C2), C3 (K10)	82	122	102
		200 - 220	K20 (C2), C3 (K10)	73	110	93
		220 - 260	K20 (C2), C3 (K10)	64	95	79
		260 - 320	K20 (C2), C3 (K10)	55	83	69
N	**Cast Aluminum**	30	K20 (C2)	366	460	410
		180	K20 (C2)	244	306	275
	Wrought Aluminum	30	K20 (C2)	366	460	410
		180	K20 (C2)	244	306	275
	Aluminum Bronze	100 - 200	K20 (C2)	85	110	100
		200 - 250	K20 (C2)	64	94	79
	Brass	100	K20 (C2)	130	184	160
	Copper	60	K20 (C2)	80	120	100
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 220	K20 (C2)	24	32	28
		220 - 310	K20 (C2)	18	26	22
	Titanium Alloy	140 - 220	K20 (C2)	30	38	32
		220 - 310	K20 (C2)	24	33	28
	Aerospace Alloy S82	185 - 275	K20 (C2)	49	64	57
		275 - 350	K20 (C2)	37	49	43
H	**Wear Plate** Hardox®, AR400, T-1, etc.	400	P40 (C5)	23	35	30
		500	P40 (C5)	15	26	21
		600	P40 (C5)	11	22	16
	Hardened Steel	300 - 400	P40 (C5)	34	43	39
		400 - 500	P40 (C5)	20	25	23

❖ Contact our Application Engineering department for assistance when machining these materials.

Deep Hole Drilling Speed and Feed Adjustment Values

	⚠ Holder Length				
	Extended	Long	Long Plus	XL	3XL
Speed	0.90	0.85	0.80	0.80	0.75
Feed	–	0.95	0.90	0.90	0.90

Recommended Speed and Feed Example (3XL)

	Data	•	Adjustment Value	=	Recommendation for Deep Holes
Speed	50 m/min	•	0.75	=	37.5 m/min
Feed	0.20 mm/rev	•	0.90	=	0.18 mm/rev

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples above.

Recommended Drilling Data | Metric (mm)

T-A | CARBIDE

Feed Rate (mm/rev) by Diameter				
Y/Z Series 9.50 mm - 12.97 mm	**0 Series** 12.98 mm - 17.67 mm	**1 Series** 17.53 mm - 24.40 mm	**2 Series** 24.41 mm - 35.06 mm	**3 Series** 34.37 mm - 47.82 mm
0.20	0.30	0.38	0.45	0.53
0.18	0.28	0.35	0.40	0.48
0.15	0.25	0.33	0.38	0.43
0.20 ❖	0.25	0.33	0.43	0.48
0.18 ❖	0.25	0.33	0.40	0.45
0.15 ❖	0.23	0.30	0.38	0.43
0.13 ❖	0.23	0.30	0.38	0.43
0.18	0.25	0.33	0.40	0.45
0.15	0.23	0.30	0.38	0.43
0.15	0.23	0.30	0.38	0.43
0.13	0.20	0.28	0.35	0.40
0.18	0.25	0.33	0.40	0.45
0.15	0.23	0.30	0.38	0.43
0.15	0.23	0.30	0.38	0.43
0.13	0.20	0.28	0.35	0.40
0.10	0.18	0.25	0.33	0.38
0.15 ❖	0.23	0.25	0.30	0.38
0.13 ❖	0.20	0.23	0.28	0.35
0.10 ❖	0.18	0.20	0.25	0.30
0.20 ❖	0.28	0.35	0.40	0.45
0.15 ❖	0.25	0.30	0.35	0.40
0.13 ❖	0.23	0.28	0.30	0.35
0.10	0.18	0.23	0.28	0.33
0.10	0.18	0.23	0.28	0.33
0.17 ❖	0.22	0.29	0.35	0.40
0.14 ❖	0.19	0.27	0.30	0.35
0.13 ❖	0.17	0.22	0.26	0.30
0.11 ❖	0.14	0.20	0.22	0.25
0.11 ❖	0.15	0.19	0.23	0.27
0.09 ❖	0.13	0.18	0.20	0.23
0.20	0.30	0.38	0.48	0.58
0.18	0.28	0.33	0.43	0.53
0.15	0.23	0.30	0.38	0.45
0.13	0.20	0.28	0.33	0.38
0.13	0.18	0.25	0.28	0.33
0.25	0.38	0.45	0.50	0.55
0.23	0.33	0.40	0.45	0.50
0.10	0.15	0.25	0.30	0.36
0.20	0.28	0.36	0.45	0.50
0.13	0.20	0.25	0.36	0.42
0.10	0.15	0.18	0.25	0.33
0.15	0.23	0.28	0.38	0.45
0.05 ❖	0.08	0.10	0.15	0.25
0.10 ❖	0.18	0.23	0.28	0.33
0.10 ❖	0.15	0.20	0.25	0.30
0.10 ❖	0.18	0.23	0.28	0.33
0.10 ❖	0.15	0.20	0.25	0.30
0.17 ❖	0.22	0.29	0.35	0.40
0.14 ❖	0.19	0.27	0.30	0.35
0.07	0.12	0.20	0.25	0.30
0.05	0.10	0.15	0.20	0.25
0.04	0.08	0.12	0.16	0.20
0.10 ❖	0.18	0.23	0.28	0.33
0.08 ❖	0.15	0.20	0.23	0.28

⚠ WARNING **Tool failure can cause serious injury. To prevent:**

- When using holders without support bushing, use a short T-A holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

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Recommended Drilling Data | Metric (mm)

T-A FLAT BOTTOM | HIGH-SPEED STEEL

ISO	Material	Hardness (BHN)	HSS Grade	Speed (m/min) TiN	TiAlN	TiCN	AM200®
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 150	HSS	52	76	70	88
		150 - 200	HSS	47	70	62	81
		200 - 250	HSS	43	64	56	74
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	HSS	46	67	59	77
		125 - 175	HSS	43	64	56	74
		175 - 225	HSS	40	59	53	68
		225 - 275	HSS	37	56	47	65
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	HSS	43	64	56	74
		175 - 225	HSS	40	59	53	68
		225 - 275	HSS	37	56	47	65
		275 - 325	SC	34	53	46	61
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	HSS	40	56	53	65
		175 - 225	HSS	37	53	47	61
		225 - 275	HSS	34	47	44	54
		275 - 325	SC	32	44	41	51
		325 - 375	SC	29	41	38	47
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	SC	21	29	26	33
		300 - 350	SC	15	23	21	27
		350 - 400	SC	13	20	18	23
	Structural Steel A36, A285, A516, etc.	100 - 150	HSS	36	52	47	60
		150 - 250	HSS	32	44	41	51
		250 - 350	SC	26	37	34	43
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	SC	21	29	27	33
		200 - 250	SC	15	24	23	28
M	**Stainless Steel 400 Series** 416, 420, etc.	185 - 275	SC	20	27	26	34
		275 - 350	SC	15	24	21	28
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	SC	20	27	26	34
		185 - 275	SC	15	24	21	28
	Super Duplex Stainless Steel	135 - 185	SC	20	27	26	34
		185 - 275	SC	15	24	21	28
K	**SG / Nodular Cast Iron**	120 - 150	HSS	46	67	59	77
		150 - 200	HSS	40	59	53	68
		200 - 220	HSS	34	53	46	61
		220 - 260	SC	29	46	38	53
		260 - 320	SC	24	37	32	43
N	**Cast Aluminum**	30	HSS	160	228	198	-
		180	HSS	79	122	107	-
	Wrought Aluminum	30	HSS	160	228	198	261
		180	HSS	79	122	107	141
	Aluminum Bronze	100 - 200	SC	40	59	53	70
		200 - 250	SC	29	46	38	50
	Brass	100	HSS	46	67	59	78
	Copper	60	SC	35	45	40	53
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 220	SC	7	10	9	13
		220 - 310	SC	6	9	7	10
	Titanium Alloy	140 - 220	SC	10	14	12	16
		220 - 310	SC	8	12	11	14
	Aerospace Alloy S82	185 - 275	SC	20	27	26	34
		275 - 350	SC	15	24	21	28
H	**Wear Plate** Hardox®, AR400, T-1, etc.	400	SC	—	—	—	—
		500	SC	—	—	—	—
		600	N/A	—	—	—	—
	Hardened Steel	300 - 400	SC	13	20	18	24
		400 - 500	SC	8	12	10	13

❖ Contact our Application Engineering department for assistance when machining these materials.

Deep Hole Drilling Speed and Feed Adjustment Values

	⚠ Holder Length				
	Extended	Long	Long Plus	XL	3XL
Speed	0.90	0.85	0.80	0.80	0.75
Feed	–	0.95	0.90	0.90	0.90

Recommended Speed and Feed Example (3XL)

	Data	•	Adjustment Value	=	Recommendation for Deep Holes
Speed	50 m/min	•	0.75	=	37.5 m/min
Feed	0.20 mm/rev	•	0.90	=	0.18 mm/rev

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples above.

Recommended Drilling Data | Metric (mm)

T-A FLAT BOTTOM | HIGH-SPEED STEEL

Feed Rate (mm/rev) by Diameter					
Y/Z Series 9.50 mm - 12.97 mm	**0 Series** 12.98 mm - 17.67 mm	**1 Series** 17.53 mm - 24.40 mm	**2 Series** 24.41 mm - 35.06 mm	**3 Series** 34.37 mm - 47.82 mm	**4 Series** 46.99 mm - 65.30 mm
0.15	0.23	0.28	0.35	0.41	0.46
0.15	0.23	0.28	0.35	0.41	0.46
0.13	0.23	0.28	0.35	0.38	0.43
0.13 ❖	0.20	0.25	0.33	0.38	0.43
0.13 ❖	0.20	0.25	0.33	0.38	0.41
0.10 ❖	0.18	0.23	0.30	0.36	0.41
0.10 ❖	0.18	0.23	0.30	0.36	0.38
0.13	0.20	0.25	0.33	0.38	0.46
0.10	0.18	0.23	0.30	0.36	0.43
0.10	0.18	0.23	0.30	0.36	0.43
0.10	0.15	0.20	0.25	0.33	0.38
0.13	0.18	0.23	0.30	0.33	0.41
0.10	0.18	0.23	0.30	0.33	0.41
0.10	0.15	0.23	0.30	0.33	0.41
0.10	0.13	0.20	0.25	0.30	0.38
0.08	0.13	0.20	0.25	0.30	0.36
0.10 ❖	0.15	0.20	0.23	0.25	0.30
0.08 ❖	0.15	0.20	0.23	0.25	0.30
0.08 ❖	0.13	0.18	0.20	0.23	0.28
0.13 ❖	0.23	0.25	0.30	0.38	0.43
0.10 ❖	0.20	0.23	0.25	0.33	0.41
0.10 ❖	0.18	0.20	0.23	0.30	0.38
0.10	0.13	0.18	0.23	0.25	0.30
0.10	0.13	0.18	0.23	0.23	0.28
0.13 ❖	0.18	0.20	0.25	0.30	0.36
0.10 ❖	0.15	0.18	0.23	0.25	0.28
0.13 ❖	0.18	0.20	0.25	0.30	0.36
0.10 ❖	0.15	0.18	0.23	0.25	0.28
0.13 ❖	0.18	0.20	0.25	0.30	0.36
0.10 ❖	0.15	0.18	0.23	0.25	0.28
0.15	0.25	0.36	0.43	0.48	0.51
0.13	0.23	0.30	0.41	0.46	0.48
0.13	0.20	0.25	0.36	0.41	0.43
0.10	0.15	0.20	0.25	0.33	0.33
0.10	0.13	0.15	0.20	0.25	0.25
0.18	0.28	0.36	0.43	0.46	0.48
0.18	0.28	0.36	0.41	0.43	0.48
0.18	0.28	0.36	0.43	0.46	0.48
0.18	0.28	0.36	0.41	0.43	0.48
0.13	0.23	0.30	0.41	0.51	0.61
0.10	0.15	0.20	0.25	0.31	0.38
0.15	0.25	0.36	0.43	0.53	0.63
0.05 ❖	0.08	0.15	0.20	0.25	0.35
0.08 ❖	0.15	0.18	0.23	0.25	0.30
0.08 ❖	0.13	0.15	0.18	0.20	0.25
0.08 ❖	0.15	0.18	0.23	0.25	0.30
0.08 ❖	0.13	0.15	0.18	0.20	0.25
0.13 ❖	0.18	0.20	0.25	0.30	0.38
0.10 ❖	0.15	0.18	0.23	0.25	0.30
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
0.08 ❖	0.13	0.18	0.20	0.27	0.38
0.06 ❖	0.10	0.15	0.18	0.23	0.28

⚠ WARNING **Tool failure can cause serious injury. To prevent:**

- When using holders without support bushing, use a short T-A holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

Recommended Drilling Data | Metric (mm)

T-A FLAT BOTTOM | CARBIDE

ISO	Material	Hardness (BHN)	Carbide Grade	Speed (m/min) TiN	TiAlN	TiCN	AM200®
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 150	K20 (C2)	82	110	98	126
		150 - 200	K20 (C2)	73	94	85	110
		200 - 250	K20 (C2)	67	88	76	102
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	K20 (C2)	79	102	94	117
		125 - 175	K20 (C2)	67	88	76	102
		175 - 225	K20 (C2)	61	81	70	93
		225 - 275	K20 (C2)	55	70	64	81
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	K20 (C2)	67	88	76	102
		175 - 225	K20 (C2)	61	81	72	93
		225 - 275	K20 (C2)	55	70	61	81
		275 - 325	K20 (C2)	46	61	53	70
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	K20 (C2)	64	85	75	99
		175 - 225	K20 (C2)	59	79	67	91
		225 - 275	K20 (C2)	55	70	61	81
		275 - 325	K20 (C2)	52	66	58	76
		325 - 375	K20 (C2)	44	58	50	67
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	K20 (C2)	41	52	47	59
		300 - 350	K20 (C2)	37	47	41	55
		350 - 400	K20 (C2)	30	41	37	47
	Structural Steel A36, A285, A516, etc.	100 - 150	K20 (C2)	62	81	72	93
		150 - 250	K20 (C2)	52	66	58	76
		250 - 350	K20 (C2)	47	61	53	70
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	K20 (C2)	41	58	49	67
		200 - 250	K20 (C2)	30	44	37	50
M	**Stainless Steel 400 Series** 416, 420, etc.	185 - 275	K20 (C2)	43	56	50	64
		275 - 350	K20 (C2)	33	43	38	49
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	K20 (C2)	28	37	33	40
		185 - 275	K20 (C2)	21	28	25	32
	Super Duplex Stainless Steel	135 - 185	K20 (C2)	22	29	26	33
		185 - 275	K20 (C2)	17	22	19	26
K	**SG / Nodular Cast Iron**	120 - 150	K20 (C2)	82	120	108	137
		150 - 200	K20 (C2)	70	104	87	119
		200 - 220	K20 (C2)	61	94	79	108
		220 - 260	K20 (C2)	55	81	67	93
		260 - 320	K20 (C2)	47	70	58	81
N	**Cast Aluminum**	30	K20 (C2)	160	228	198	-
		180	K20 (C2)	79	122	107	-
	Wrought Aluminum	30	K20 (C2)	292	368	328	390
		180	K20 (C2)	195	245	220	260
	Aluminum Bronze	100 - 200	K20 (C2)	73	95	85	105
		200 - 250	K20 (C2)	55	81	68	87
	Brass	100	K20 (C2)	112	160	138	185
	Copper	60	K20 (C2)	68	105	85	117
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 220	K20 (C2)	21	27	23	32
		220 - 310	K20 (C2)	15	21	18	24
	Titanium Alloy	140 - 220	K20 (C2)	26	33	28	40
		220 - 310	K20 (C2)	21	29	25	30
	Aerospace Alloy S82	185 - 275	K20 (C2)	43	37	50	40
		275 - 350	K20 (C2)	33	28	38	32
H	**Wear Plate** Hardox®, AR400, T-1, etc.	400	K20 (C2)	20	31	26	39
		500	K20 (C2)	13	23	18	31
		600	K20 (C2)	10	19	14	25
	Hardened Steel	300 - 400	K20 (C2)	30	38	34	41
		400 - 500	K20 (C2)	18	22	20	33

❖ Contact our Application Engineering department for assistance when machining these materials.

Deep Hole Drilling Speed and Feed Adjustment Values

	⚠ Holder Length				
	Extended	Long	Long Plus	XL	3XL
Speed	0.90	0.85	0.80	0.80	0.75
Feed	–	0.95	0.90	0.90	0.90

Recommended Speed and Feed Example (3XL)

	Data	•	Adjustment Value	=	Recommendation for Deep Holes
Speed	50 m/min	•	0.75	=	37.5 m/min
Feed	0.20 mm/rev	•	0.90	=	0.18 mm/rev

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples above.

Recommended Drilling Data | Metric (mm)

T-A FLAT BOTTOM | CARBIDE

Feed Rate (mm/rev) by Diameter			
Y/Z Series 9.50 mm - 12.97 mm	**0 Series** 12.98 mm - 17.67 mm	**1 Series** 17.53 mm - 24.40 mm	**2 Series** 24.41 mm - 35.06 mm
0.17	0.26	0.32	0.39
0.15	0.24	0.30	0.35
0.13	0.22	0.28	0.32
0.17 ❖	0.22	0.28	0.37
0.15 ❖	0.22	0.28	0.35
0.13 ❖	0.19	0.26	0.32
0.11 ❖	0.19	0.26	0.32
0.15	0.22	0.28	0.35
0.13	0.19	0.26	0.32
0.13	0.19	0.26	0.32
0.11	0.17	0.24	0.30
0.15	0.22	0.28	0.35
0.13	0.19	0.26	0.32
0.13	0.19	0.26	0.32
0.11	0.17	0.24	0.30
0.09	0.15	0.22	0.28
0.13 ❖	0.19	0.22	0.26
0.11 ❖	0.17	0.19	0.24
0.09 ❖	0.15	0.17	0.22
0.17 ❖	0.24	0.30	0.35
0.13 ❖	0.22	0.28	0.30
0.11 ❖	0.19	0.25	0.26
0.09	0.15	0.19	0.24
0.09	0.15	0.19	0.24
0.15 ❖	0.20	0.25	0.30
0.13 ❖	0.18	0.23	0.25
0.13 ❖	0.17	0.21	0.25
0.11 ❖	0.15	0.19	0.21
0.10 ❖	0.14	0.17	0.20
0.08 ❖	0.12	0.15	0.17
0.17	0.26	0.32	0.41
0.15	0.24	0.28	0.38
0.13	0.19	0.26	0.32
0.11	0.17	0.24	0.28
0.11	0.15	0.22	0.24
0.22	0.32	0.41	0.43
0.19	0.28	0.35	0.39
0.12	0.18	0.23	0.25
0.10	0.16	0.20	0.22
0.10	0.16	0.20	0.29
0.08	0.12	0.14	0.20
0.12	0.18	0.22	0.30
0.04 ❖	0.06	0.08	0.12
0.09 ❖	0.15	0.19	0.24
0.09 ❖	0.13	0.17	0.22
0.08 ❖	0.14	0.17	0.20
0.08 ❖	0.12	0.15	0.18
0.15 ❖	0.17	0.25	0.30
0.13 ❖	0.15	0.23	0.25
0.06 ❖	0.10	0.16	0.20
0.04 ❖	0.08	0.12	0.16
0.03 ❖	0.06	0.10	0.13
0.08 ❖	0.14	0.18	0.22
0.06 ❖	0.12	0.16	0.18

⚠ WARNING **Tool failure can cause serious injury. To prevent:**

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Recommended Drilling Data | Metric (mm)

T-A DIAMOND COATED | CARBIDE

ISO	Material	Carbide Grade	Speed (m/min) Diamond Coating	Feed Rate (mm/rev) by Diameter Y/Z Series 9.50 mm - 12.97 mm	0 Series 12.98 mm - 17.67 mm	1 Series 17.53 mm - 24.40 mm	2 Series 24.41 mm - 35.06 mm
Polymer Matrix Composites	Carbon (hard)	N2	305 - 450	0.10 - 0.15	0.20 - 0.25	0.25 - 0.30	0.30 - 0.36
	Carbon Fiber	N2	305 - 450	0.10 - 0.15	0.20 - 0.25	0.25 - 0.30	0.30 - 0.36
	Carbon / Glass Fiber	N2	305 - 450	0.10 - 0.15	0.20 - 0.25	0.25 - 0.30	0.30 - 0.36
	Fiberglass	N2	305 - 450	0.10 - 0.15	0.20 - 0.25	0.25 - 0.30	0.30 - 0.36
	Graphite	N2	305 - 450	0.10 - 0.15	0.20 - 0.25	0.25 - 0.30	0.30 - 0.36
	Plastics	N2	76 - 305	0.10 - 0.15	0.20 - 0.25	0.25 - 0.30	0.30 - 0.36
	Epoxy Resin	N2	76 - 305	0.10 - 0.15	0.20 - 0.25	0.25 - 0.30	0.30 - 0.36
	Bismaleimide Resin	N2	76 - 305	0.10 - 0.15	0.20 - 0.25	0.25 - 0.30	0.30 - 0.36
	Polyester Resin	N2	76 - 305	0.10 - 0.15	0.20 - 0.25	0.25 - 0.30	0.30 - 0.36
	Phenolic Resin	N2	76 - 305	0.10 - 0.15	0.20 - 0.25	0.25 - 0.30	0.30 - 0.36
	Rubber	N2	76 - 305	0.10 - 0.15	0.20 - 0.25	0.25 - 0.30	0.30 - 0.36
Metal Matrix Composites	Aluminum	N2	305	0.20	0.33	0.41	0.51
	Si < 10%	N2	305	0.20	0.33	0.41	0.51
	10% < Si < 15%	N2	259 - 305	0.20	0.33	0.41	0.51
	15% < SI < 20%	N2	198 - 259	0.20	0.33	0.41	0.51
	20% < Si < 25%	N2	152 - 198	0.20	0.33	0.41	0.51
	25% < Si	N2	61 - 152	0.20	0.33	0.41	0.51
	Brass	N2	76 - 152	0.20	0.33	0.41	0.51
	Bronze	N2	76 - 152	0.20	0.33	0.41	0.51
	Copper	N2	30 - 76	0.10 - 0.15	0.20 - 0.25	0.25 - 0.30	0.30 - 0.36
	Copper Alloys	N2	30 - 76	0.10 - 0.15	0.20 - 0.25	0.25 - 0.30	0.30 - 0.36
	Lead Alloys	N2	30 - 76	0.10 - 0.15	0.20 - 0.25	0.25 - 0.30	0.30 - 0.36
	Magnesium Alloys	N2	30 - 76	0.10 - 0.15	0.20 - 0.25	0.25 - 0.30	0.30 - 0.36
	Precious Metals	N2	30 - 76	0.10 - 0.15	0.20 - 0.25	0.25 - 0.30	0.30 - 0.36
Ceramic Matrix Composites	Carbide (green)	N2	15 - 76	0.10 - 0.15	0.20 - 0.25	0.25 - 0.30	0.30 - 0.36
	Ceramic (green)	N2	15 - 76	0.10 - 0.15	0.20 - 0.25	0.25 - 0.30	0.30 - 0.36
	Ceramic (pre-sintered)	N2	15 - 76	0.10 - 0.15	0.20 - 0.25	0.25 - 0.30	0.30 - 0.36

❖ Contact our Application Engineering department for assistance when machining these materials.

Deep Hole Drilling Speed and Feed Adjustment Values

	⚠ Holder Length				
	Extended	Long	Long Plus	XL	3XL
Speed	0.90	0.85	0.80	0.80	0.75
Feed	–	0.95	0.90	0.90	0.90

Recommended Speed and Feed Example (3XL)

	Data	•	Adjustment Value	=	Recommendation for Deep Holes
Speed	50 m/min	•	0.75	=	37.5 m/min
Feed	0.20 mm/rev	•	0.90	=	0.18 mm/rev

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples above.

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Notes

Recommended Drilling Data | Imperial (in)

GEN2 T-A | HIGH-SPEED STEEL

ISO	Material	Hardness (BHN)	HSS Grade	Speed (SFM) TiN	Speed (SFM) AM200®	Feed Rate (IPR) by Diameter Y/Z Series 0.3740" - 0.5109"	Feed Rate (IPR) by Diameter 0 Series 0.5110" - 0.6959"
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 150	HSS	200	325	0.008	0.012
		150 - 200	HSS	180	300	0.007	0.011
		200 - 250	HSS	160	280	0.006	0.010
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	HSS	170	290	0.008 ❖	0.010
		125 - 175	HSS	160	275	0.007 ❖	0.010
		175 - 225	HSS	150	260	0.006 ❖	0.009
		225 - 275	HSS	140	240	0.005 ❖	0.009
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	HSS	160	275	0.007	0.010
		175 - 225	HSS	150	260	0.006	0.009
		225 - 275	HSS	140	240	0.006	0.009
		275 - 325	SC	130	225	0.005	0.008
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	HSS	150	240	0.007	0.010
		175 - 225	HSS	140	225	0.006	0.009
		225 - 275	HSS	130	210	0.006	0.009
		275 - 325	SC	120	195	0.005	0.008
		325 - 375	SC	110	180	0.004	0.007
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	SC	80	125	0.006 ❖	0.009
		300 - 350	SC	60	100	0.005 ❖	0.008
		350 - 400	SC	50	80	0.004 ❖	0.007
	Structural Steel A36, A285, A516, etc.	100 - 150	HSS	140	235	0.008 ❖	0.011
		150 - 250	HSS	120	190	0.006 ❖	0.010
		250 - 350	SC	100	160	0.005 ❖	0.009
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	SC	80	125	0.004	0.007
		200 - 250	SC	60	105	0.004	0.007
M	**Stainless Steel 400 Series** 416, 420, etc.	185 - 275	SC	75	110	0.006 ❖	0.008
		275 - 350	SC	60	100	0.005 ❖	0.007
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	SC	75	110	0.003 ❖	0.007
		185 - 275	SC	60	100	0.003 ❖	0.006
	Super Duplex Stainless Steel	135 - 185	SC	60	85	0.003 ❖	0.007
		185 - 275	SC	50	70	0.003 ❖	0.006
K	**SG / Nodular Cast Iron**	120 - 150	HSS	170	290	0.008	0.012
		150 - 200	HSS	150	260	0.007	0.011
		200 - 220	HSS	130	225	0.006	0.009
		220 - 260	SC	110	190	0.005	0.008
		260 - 320	SC	90	155	0.005	0.007
N	**Cast Aluminum**	30	HSS	600	—	0.009	0.015
		180	HSS	300	—	0.008	0.013
	Wrought Aluminum	30	HSS	600	900	0.005	0.013
		180	HSS	300	650	0.005	0.007
	Aluminum Bronze	100 - 200	SC	170	270	0.006	0.009
		200 - 250	SC	130	210	0.005	0.007
	Brass	100	HSS	300	470	0.007	0.011
	Copper	60	SC	130	190	0.003 ❖	0.004
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 220	SC	30	45	0.004 ❖	0.007
		220 - 310	SC	25	40	0.004 ❖	0.006
	Titanium Alloy	140 - 220	SC	35	55	0.004 ❖	0.007
		220 - 310	SC	30	50	0.003 ❖	0.006
	Aerospace Alloy S82	185 - 275	SC	75	110	0.006 ❖	0.008
		275 - 350	SC	60	100	0.005 ❖	0.007
H	**Wear Plate** Hardox®, AR400, T-1, etc.	400	SC	45	70	0.003 ❖	0.006
		500	SC	35	45	0.002 ❖	0.005
		600	—	—	—	0.004 ❖	0.006
	Hardened Steel	300 - 400	SC	50	95	—	—
		400 - 500	SC	35	45	0.002 ❖	0.005

❖ Contact our Application Engineering department for assistance when machining these materials.

Deep Hole Drilling Speed and Feed Adjustment Values

	⚠ Holder Length				
	Extended	Long	Long Plus	XL	3XL
Speed	0.90	0.85	0.80	0.80	0.75
Feed	–	0.95	0.90	0.90	0.90

Recommended Speed and Feed Example (3XL)

	Data	•	Adjustment Value	=	Recommendation for Deep Holes
Speed	200 SFM	•	0.75	=	150 SFM
Feed	0.008 IPR	•	0.90	=	0.007 IPR

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples above.

Recommended Drilling Data | Imperial (in)

GEN2 T-A | HIGH-SPEED STEEL

Feed Rate (IPR) by Diameter				
1 Series 0.6900" - 0.9609"	**2 Series** 0.9610" - 1.3809"	**3 Series** 1.3530" - 1.8829"	**4 Series** 1.8500" - 2.5709"	**5 - 8 Series** 2.4560" - 4.5070"
0.016	0.019	0.020	0.023	0.028
0.015	0.017	0.020	0.023	0.028
0.014	0.016	0.020	0.023	0.028
0.014	0.018	0.019	0.023	0.027
0.014	0.017	0.019	0.023	0.027
0.013	0.016	0.018	0.021	0.024
0.013	0.016	0.018	0.021	0.024
0.014	0.017	0.019	0.023	0.027
0.013	0.016	0.018	0.021	0.024
0.013	0.016	0.018	0.021	0.024
0.012	0.015	0.016	0.019	0.022
0.014	0.017	0.017	0.019	0.022
0.013	0.016	0.017	0.019	0.022
0.013	0.016	0.017	0.019	0.022
0.012	0.015	0.015	0.017	0.020
0.011	0.014	0.015	0.017	0.020
0.011	0.013	0.014	0.017	0.020
0.010	0.012	0.014	0.017	0.020
0.009	0.011	0.012	0.015	0.018
0.015	0.017	0.018	0.021	0.026
0.013	0.015	0.016	0.019	0.024
0.012	0.013	0.014	0.017	0.020
0.010	0.012	0.012	0.015	0.017
0.010	0.012	0.012	0.015	0.017
0.009	0.011	0.014	0.016	0.020
0.008	0.010	0.012	0.014	0.018
0.008	0.011	0.014	0.016	0.020
0.007	0.010	0.012	0.014	0.018
0.008	0.011	0.014	0.016	0.020
0.007	0.010	0.012	0.014	0.018
0.016	0.020	0.024	0.027	0.030
0.015	0.019	0.022	0.025	0.028
0.013	0.017	0.018	0.021	0.024
0.011	0.014	0.014	0.017	0.020
0.010	0.012	0.012	0.014	0.016
0.018	0.023	0.022	0.025	0.025
0.016	0.020	0.022	0.025	0.025
0.016	0.020	0.022	0.025	0.025
0.012	0.014	0.022	0.025	0.025
0.012	0.015	0.017	0.019	0.021
0.009	0.011	0.014	0.016	0.018
0.013	0.018	0.019	0.021	0.023
0.007	0.010	0.009	0.011	0.012
0.009	0.011	0.012	0.015	0.017
0.008	0.010	0.010	0.012	0.014
0.008	0.010	0.012	0.015	0.017
0.007	0.009	0.010	0.012	0.014
0.009	0.011	0.014	0.016	0.020
0.008	0.010	0.012	0.014	0.018
0.008	0.009	0.012	0.016	0.018
0.007	0.008	0.010	0.012	0.016
0.009	0.011	0.012	0.016	0.018
—	—	—	—	—
0.007	0.009	0.010	0.012	0.016

⚠ WARNING **Tool failure can cause serious injury. To prevent:**

- When using holders without support bushing, use a short T-A holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

Recommended Drilling Data | Imperial (in)

GEN2 T-A | CARBIDE

ISO	Material	Hardness (BHN)	Carbide Grade	Speed (SFM) AM300®
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 150	K35 (C1)	480
		150 - 200	K35 (C1)	415
		200 - 250	K35 (C1)	390
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	K35 (C1)	450
		125 - 175	K35 (C1)	390
		175 - 225	K35 (C1)	355
		225 - 275	K35 (C1)	310
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	K35 (C1)	390
		175 - 225	K35 (C1)	355
		225 - 275	K35 (C1)	310
		275 - 325	K35 (C1)	265
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	K35 (C1)	375
		175 - 225	K35 (C1)	345
		225 - 275	K35 (C1)	310
		275 - 325	K35 (C1)	285
		325 - 375	K35 (C1)	255
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	K35 (C1)	230
		300 - 350	K35 (C1)	205
		350 - 400	K35 (C1)	185
	Structural Steel A36, A285, A516, etc.	100 - 150	K35 (C1)	355
		150 - 250	K35 (C1)	285
		250 - 350	K35 (C1)	265
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	K35 (C1)	255
		200 - 250	K35 (C1)	195
M	**Stainless Steel 400 Series** 416, 420, etc.	185 - 275	K20 (C2)	240
		275 - 350	K20 (C2)	180
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	K20 (C2)	240
		185 - 275	K20 (C2)	180
	Super Duplex Stainless Steel	135 - 185	K20 (C2)	125
		185 - 275	K20 (C2)	100
K	**SG / Nodular Cast Iron**	120 - 150	K20 (C2)	500
		150 - 200	K20 (C2)	480
		200 - 220	K20 (C2)	430
		220 - 260	K20 (C2)	370
		260 - 320	K20 (C2)	335
N	**Cast Aluminum**	30	K20 (C2)	975
		180	K20 (C2)	730
	Wrought Aluminum	30	K20 (C2)	1385
		180	K20 (C2)	975
	Aluminum Bronze	100 - 200	K20 (C2)	360
		200 - 250	K20 (C2)	300
	Brass	100	K20 (C2)	650
	Copper	60	K20 (C2)	420
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 220	K20 (C2)	120
		220 - 310	K20 (C2)	95
	Titanium Alloy	140 - 220	K20 (C2)	140
		220 - 310	K20 (C2)	110
	Aerospace Alloy S82	185 - 275	K20 (C2)	240
		275 - 350	K20 (C2)	180
H	**Wear Plate** Hardox®, AR400, T-1, etc.	400	K20 (C2)	150
		500	K20 (C2)	120
		600	K20 (C2)	100
	Hardened Steel	300 - 400	K35 (C1)	150
		400 - 500	K35 (C1)	120

❖ Contact our Application Engineering department for assistance when machining these materials.

Deep Hole Drilling Speed and Feed Adjustment Values

	⚠ Holder Length				
	Extended	Long	Long Plus	XL	3XL
Speed	0.90	0.85	0.80	0.80	0.75
Feed	–	0.95	0.90	0.90	0.90

Recommended Speed and Feed Example (3XL)

	Data	•	Adjustment Value	=	Recommendation for Deep Holes
Speed	200 SFM	•	0.75	=	150 SFM
Feed	0.008 IPR	•	0.90	=	0.007 IPR

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples above.

Recommended Drilling Data | Imperial (in)

GEN2 T-A | CARBIDE

Feed Rate (IPR) by Diameter			
Y/Z Series 0.3740" - 0.5109"	**0 Series** 0.5110" - 0.6959"	**1 Series** 0.6900" - 0.9609"	**2 Series** 0.9610" - 1.3809"
0.008	0.012	0.016	0.019
0.007	0.011	0.015	0.017
0.006	0.010	0.014	0.016
0.008 ❖	0.010	0.014	0.018
0.007 ❖	0.010	0.014	0.017
0.006 ❖	0.009	0.013	0.016
0.005 ❖	0.009	0.013	0.016
0.007	0.010	0.014	0.017
0.006	0.009	0.013	0.016
0.006	0.009	0.013	0.016
0.005	0.008	0.012	0.015
0.007	0.010	0.014	0.017
0.006	0.009	0.013	0.016
0.006	0.009	0.013	0.016
0.005	0.008	0.012	0.015
0.004	0.007	0.011	0.014
0.006 ❖	0.009	0.011	0.013
0.005 ❖	0.008	0.010	0.012
0.004 ❖	0.007	0.009	0.011
0.008 ❖	0.011	0.015	0.017
0.006 ❖	0.010	0.013	0.015
0.005 ❖	0.009	0.012	0.013
0.007	0.007	0.010	0.012
0.007	0.007	0.010	0.012
0.007 ❖	0.009	0.012	0.014
0.006 ❖	0.008	0.011	0.012
0.006 ❖	0.007	0.009	0.012
0.005 ❖	0.006	0.008	0.009
0.005 ❖	0.007	0.008	0.010
0.004 ❖	0.006	0.007	0.009
0.008	0.012	0.015	0.019
0.007	0.011	0.013	0.017
0.006	0.009	0.012	0.015
0.005	0.008	0.011	0.013
0.005	0.007	0.010	0.011
0.009	0.015	0.018	0.023
0.008	0.013	0.016	0.020
0.005	0.013	0.016	0.020
0.005	0.007	0.012	0.014
0.006	0.009	0.012	0.015
0.005	0.007	0.009	0.011
0.007	0.011	0.013	0.018
0.003 ❖	0.004	0.007	0.010
0.004 ❖	0.007	0.009	0.011
0.004 ❖	0.006	0.008	0.010
0.004 ❖	0.007	0.008	0.011
0.003 ❖	0.006	0.007	0.009
0.005 ❖	0.006	0.007	0.009
0.004 ❖	0.005	0.006	0.008
0.003 ❖	0.005	0.008	0.010
0.002 ❖	0.004	0.006	0.008
0.001 ❖	0.003	0.005	0.006
0.004 ❖	0.006	0.009	0.011
0.003 ❖	0.005	0.008	0.010

⚠ WARNING **Tool failure can cause serious injury. To prevent:**

- When using holders without support bushing, use a short T-A holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

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Recommended Drilling Data | Imperial (in)

T-A | HIGH-SPEED STEEL

ISO	Material	Hardness (BHN)	HSS Grade	Speed (SFM) TiN	TiAlN	TiCN	Feed Rate (IPR) by Diameter Y/Z Series 0.3740" - 0.5109"	0 Series 0.5110" - 0.6959"
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 150	HSS	200	280	260	0.007	0.010
		150 - 200	HSS	180	260	235	0.007	0.010
		200 - 250	HSS	160	240	210	0.006	0.010
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	HSS	170	250	220	0.006 ❖	0.009
		125 - 175	HSS	160	240	210	0.006 ❖	0.009
		175 - 225	HSS	150	225	195	0.005 ❖	0.008
		225 - 275	HSS	140	210	180	0.005 ❖	0.008
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	HSS	160	240	210	0.006	0.009
		175 - 225	HSS	150	225	195	0.005	0.008
		225 - 275	HSS	140	210	180	0.005	0.008
		275 - 325	SC, PC	130	195	170	0.004	0.007
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	HSS	150	210	195	0.006	0.008
		175 - 225	HSS	140	195	180	0.005	0.008
		225 - 275	HSS	130	180	170	0.005	0.007
		275 - 325	SC, PC	120	170	155	0.004	0.006
		325 - 375	SC, PC	110	155	145	0.003	0.006
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	SC, PC	80	110	100	0.005 ❖	0.007
		300 - 350	SC, PC	60	85	80	0.004 ❖	0.007
		350 - 400	PC	50	70	65	0.003 ❖	0.006
	Structural Steel A36, A285, A516, etc.	100 - 150	HSS	140	200	180	0.006 ❖	0.010
		150 - 250	HSS	120	170	155	0.005 ❖	0.009
		250 - 350	SC, PC	100	140	130	0.003 ❖	0.008
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	SC	80	110	105	0.004	0.006
		200 - 250	SC, PC	60	90	85	0.004	0.006
M	**Stainless Steel 400 Series** 416, 420, etc.	185 - 275	SC, PC	75	105	95	0.009	0.010
		275 - 350	SC, PC	60	90	80	0.008	0.009
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	SC, PC	75	105	95	0.007	0.007
		185 - 275	SC, PC	60	90	80	0.006	0.006
	Super Duplex Stainless Steel	135 - 185	SC, PC	60	80	70	0.005	0.005
		185 - 275	SC, PC	50	65	60	0.004	0.005
K	**SG / Nodular Cast Iron**	120 - 150	HSS	170	250	220	0.007	0.012
		150 - 200	HSS	150	225	195	0.006	0.011
		200 - 220	HSS	130	195	170	0.006	0.009
		220 - 260	SC, PC	110	165	145	0.005	0.007
		260 - 320	SC, PC	90	135	120	0.004	0.006
N	**Cast Aluminum**	30	HSS	600	850	750	0.008	0.013
		180	HSS	300	450	400	0.008	0.013
	Wrought Aluminum	30	HSS	600	850	750	0.004	0.006
		180	HSS	300	450	400	0.008	0.013
	Aluminum Bronze	100 - 200	SC	170	250	220	0.006	0.011
		200 - 250	SC	130	190	170	0.005	0.007
	Brass	100	HSS	300	445	400	0.007	0.012
	Copper	60	SC	130	165	150	0.002 ❖	0.003
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 220	SC, PC	30	40	35	0.003 ❖	0.007
		220 - 310	PC	25	35	30	0.003 ❖	0.006
	Titanium Alloy	140 - 220	SC, PC	35	50	45	0.003 ❖	0.007
		220 - 310	PC	30	45	35	0.003 ❖	0.006
	Aerospace Alloy S82	185 - 275	SC, PC	75	105	95	0.006 ❖	0.008
		275 - 350	SC, PC	60	90	80	0.005 ❖	0.007
H	**Wear Plate** Hardox®, AR400, T-1, etc.	400	SC, PC	45	70	55	0.003 ❖	0.006
		500	PC	35	45	40	0.002 ❖	0.005
		600	N/A	—	—	—	—	—
	Hardened Steel	300 - 400	PC	50	95	70	0.003 ❖	0.006
		400 - 500	PC	35	45	40	0.002 ❖	0.005

❖ Contact our Application Engineering department for assistance when machining these materials.

Deep Hole Drilling Speed and Feed Adjustment Values

	⚠ Holder Length				
	Extended	Long	Long Plus	XL	3XL
Speed	0.90	0.85	0.80	0.80	0.75
Feed	–	0.95	0.90	0.90	0.90

Recommended Speed and Feed Example (3XL)

	Data	•	Adjustment Value	=	Recommendation for Deep Holes
Speed	200 SFM	•	0.75	=	150 SFM
Feed	0.008 IPR	•	0.90	=	0.007 IPR

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples above.

Recommended Drilling Data | Imperial (in)

T-A | HIGH-SPEED STEEL

Feed Rate (IPR) by Diameter				
1 Series 0.6900" - 0.9609"	**2 Series** 0.9610" - 1.3809"	**3 Series** 1.3530" - 1.8829"	**4 Series** 1.8500" - 2.5709"	**5 - 8 Series** 2.4560" - 4.5070"
0.013	0.016	0.020	0.023	0.028
0.013	0.016	0.020	0.023	0.028
0.013	0.016	0.020	0.023	0.028
0.012	0.015	0.019	0.023	0.027
0.012	0.015	0.019	0.023	0.027
0.010	0.014	0.018	0.021	0.024
0.010	0.014	0.018	0.021	0.024
0.012	0.015	0.019	0.023	0.027
0.010	0.014	0.018	0.021	0.024
0.010	0.014	0.018	0.021	0.024
0.009	0.012	0.016	0.019	0.022
0.010	0.014	0.017	0.019	0.022
0.010	0.014	0.017	0.019	0.022
0.010	0.014	0.017	0.019	0.022
0.009	0.012	0.015	0.017	0.020
0.009	0.012	0.015	0.017	0.020
0.009	0.010	0.014	0.017	0.020
0.009	0.010	0.014	0.017	0.020
0.008	0.009	0.012	0.015	0.018
0.012	0.014	0.018	0.021	0.026
0.010	0.012	0.016	0.019	0.024
0.009	0.010	0.014	0.017	0.020
0.008	0.010	0.012	0.015	0.017
0.008	0.010	0.012	0.015	0.017
0.011	0.012	0.013	0.014	0.015
0.010	0.011	0.012	0.013	0.014
0.008	0.008	0.009	0.009	0.010
0.007	0.007	0.008	0.008	0.009
0.006	0.006	0.007	0.008	0.008
0.005	0.006	0.006	0.007	0.007
0.016	0.020	0.024	0.027	0.030
0.014	0.018	0.022	0.025	0.028
0.012	0.016	0.018	0.021	0.024
0.009	0.012	0.014	0.017	0.020
0.007	0.009	0.012	0.014	0.016
0.016	0.020	0.022	0.025	0.025
0.016	0.018	0.022	0.025	0.025
0.010	0.012	0.022	0.025	0.025
0.016	0.018	0.022	0.025	0.025
0.014	0.018	0.022	0.026	0.028
0.009	0.012	0.014	0.017	0.020
0.016	0.020	0.024	0.028	0.030
0.006	0.008	0.012	0.014	0.016
0.008	0.010	0.012	0.015	—
0.007	0.008	0.010	0.012	—
0.008	0.010	0.012	0.015	—
0.007	0.008	0.010	0.012	—
0.009	0.010	0.014	0.016	0.020
0.008	0.008	0.012	0.014	0.018
0.008	0.009	0.012	0.016	0.018
0.007	0.008	0.010	0.012	0.016
—	—	—	—	—
0.008	0.009	0.012	0.016	0.018
0.007	0.008	0.010	0.012	0.016

NOTE: For diameters over 4.5070" please reach out to our application engineering department.

⚠ WARNING **Tool failure can cause serious injury. To prevent:**

- When using holders without support bushing, use a short T-A holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

Recommended Drilling Data | Imperial (in)

T-A | CARBIDE

ISO	Material	Hardness (BHN)	Carbide Grade	Speed (SFM) TiN	TiAlN	TiCN
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 150	P40 (C5)	320	420	375
		150 - 200	P40 (C5)	280	360	325
		200 - 250	P40 (C5)	260	340	295
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	P40 (C5)	300	390	360
		125 - 175	P40 (C5)	260	340	295
		175 - 225	P40 (C5)	240	310	270
		225 - 275	P40 (C5)	210	270	245
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	P40 (C5)	260	340	295
		175 - 225	P40 (C5)	240	310	275
		225 - 275	P40 (C5)	210	270	235
		275 - 325	P40 (C5)	180	230	205
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	P40 (C5)	250	325	285
		175 - 225	P40 (C5)	230	300	260
		225 - 275	P40 (C5)	210	270	235
		275 - 325	P40 (C5)	200	250	225
		325 - 375	P40 (C5)	170	220	195
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	P40 (C5)	160	200	180
		300 - 350	P40 (C5)	140	180	160
		350 - 400	P40 (C5)	120	160	140
	Structural Steel A36, A285, A516, etc.	100 - 150	P40 (C5)	240	310	275
		150 - 250	P40 (C5)	200	250	225
		250 - 350	P40 (C5)	180	230	205
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	P40 (C5)	160	220	190
		200 - 250	P40 (C5)	120	170	145
M	**Stainless Steel 400 Series** 416, 420, etc.	185 - 275	K20 (C2)	160	210	185
		275 - 350	K20 (C2)	120	160	140
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	K20 (C2)	160	210	185
		185 - 275	K20 (C2)	120	160	140
	Super Duplex Stainless Steel	135 - 185	K20 (C2)	80	110	95
		185 - 275	K20 (C2)	60	80	70
K	**SG / Nodular Cast Iron**	120 - 150	K20 (C2), K10 (C3)	320	460	415
		150 - 200	K20 (C2), K10 (C3)	270	400	335
		200 - 220	K20 (C2), K10 (C3)	240	360	305
		220 - 260	K20 (C2), K10 (C3)	210	310	260
		260 - 320	K20 (C2), K10 (C3)	180	270	225
N	**Cast Aluminum**	30	K20 (C2)	1200	1500	1330
		180	K20 (C2)	800	1000	900
	Wrought Aluminum	30	K20 (C2)	1200	1500	1330
		180	K20 (C2)	800	1000	900
	Aluminum Bronze	100 - 200	K20 (C2)	275	360	325
		200 - 250	K20 (C2)	210	305	260
	Brass	100	K20 (C2)	425	600	520
	Copper	60	K20 (C2)	260	390	325
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 220	K20 (C2)	80	105	90
		220 - 310	K20 (C2)	60	85	70
	Titanium Alloy	140 - 220	K20 (C2)	100	125	105
		220 - 310	K20 (C2)	80	110	90
	Aerospace Alloy S82	185 - 275	K20 (C2)	160	210	185
		275 - 350	K20 (C2)	120	160	140
H	**Wear Plate** Hardox®, AR400, T-1, etc.	400	P40 (C5)	75	115	100
		500	P40 (C5)	50	85	70
		600	P40 (C5)	35	75	55
	Hardened Steel	300 - 400	P40 (C5)	110	140	130
		400 - 500	P40 (C5)	65	85	75

❖ Contact our Application Engineering department for assistance when machining these materials.

Deep Hole Drilling Speed and Feed Adjustment Values

	⚠ Holder Length				
	Extended	Long	Long Plus	XL	3XL
Speed	0.90	0.85	0.80	0.80	0.75
Feed	–	0.95	0.90	0.90	0.90

Recommended Speed and Feed Example (3XL)

	Data	•	Adjustment Value	=	Recommendation for Deep Holes
Speed	200 SFM	•	0.75	=	150 SFM
Feed	0.008 IPR	•	0.90	=	0.007 IPR

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples above.

T-A | CARBIDE

Feed Rate (IPR) by Diameter				
Y/Z Series 0.3740" - 0.5109"	**0 Series** 0.5110" - 0.6959"	**1 Series** 0.6900" - 0.9609"	**2 Series** 0.9610" - 1.3809"	**3 Series** 1.3530" - 1.8829"
0.008	0.012	0.015	0.018	0.021
0.007	0.011	0.014	0.016	0.019
0.006	0.010	0.013	0.015	0.017
0.008 ❖	0.010	0.013	0.017	0.019
0.007 ❖	0.010	0.013	0.016	0.018
0.006 ❖	0.009	0.012	0.015	0.017
0.005 ❖	0.009	0.012	0.015	0.017
0.007	0.010	0.013	0.016	0.018
0.006	0.009	0.012	0.015	0.017
0.006	0.009	0.012	0.015	0.017
0.005	0.008	0.011	0.014	0.016
0.007	0.010	0.013	0.016	0.018
0.006	0.009	0.012	0.015	0.017
0.006	0.009	0.012	0.015	0.017
0.005	0.008	0.011	0.014	0.016
0.004	0.007	0.010	0.013	0.015
0.006 ❖	0.009	0.010	0.012	0.015
0.005 ❖	0.008	0.009	0.011	0.014
0.004 ❖	0.007	0.008	0.010	0.012
0.008 ❖	0.011	0.014	0.016	0.018
0.006 ❖	0.010	0.012	0.014	0.016
0.005 ❖	0.009	0.011	0.012	0.014
0.004	0.007	0.009	0.011	0.013
0.004	0.007	0.009	0.011	0.013
0.007 ❖	0.008	0.011	0.014	0.016
0.006 ❖	0.007	0.010	0.012	0.014
0.005 ❖	0.007	0.009	0.010	0.012
0.004 ❖	0.006	0.008	0.009	0.010
0.004 ❖	0.007	0.008	0.009	0.011
0.003 ❖	0.006	0.007	0.008	0.009
0.008	0.012	0.015	0.019	0.023
0.007	0.011	0.013	0.017	0.021
0.006	0.009	0.012	0.015	0.018
0.005	0.008	0.011	0.013	0.015
0.005	0.007	0.010	0.011	0.013
0.010	0.013	0.018	0.020	0.022
0.009	0.013	0.016	0.018	0.020
0.004	0.006	0.010	0.012	0.014
0.008	0.013	0.014	0.018	0.020
0.005	0.008	0.010	0.014	0.017
0.004	0.007	0.007	0.010	0.013
0.006	0.009	0.011	0.015	0.018
0.002 ❖	0.003	0.004	0.006	0.010
0.004 ❖	0.007	0.009	0.011	0.013
0.004 ❖	0.006	0.008	0.010	0.012
0.004 ❖	0.007	0.009	0.011	0.013
0.004 ❖	0.006	0.008	0.010	0.012
0.007 ❖	0.006	0.011	0.014	0.016
0.006 ❖	0.008	0.010	0.012	0.014
0.003 ❖	0.006	0.008	0.010	0.012
0.002 ❖	0.005	0.006	0.008	0.010
0.001 ❖	0.004	0.005	0.006	0.008
0.004 ❖	0.006	0.009	0.011	0.013
0.003 ❖	0.005	0.008	0.009	0.011

⚠ WARNING **Tool failure can cause serious injury. To prevent:**

- When using holders without support bushing, use a short T-A holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

Recommended Drilling Data | Imperial (in)

T-A FLAT BOTTOM | HIGH-SPEED STEEL

ISO	Material	Hardness (BHN)	HSS Grade	Speed (SFM) TiN	TiAlN	TiCN	AM200®
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 150	HSS	170	250	230	290
		150 - 200	HSS	155	230	205	265
		200 - 250	HSS	140	210	185	245
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	HSS	150	220	195	255
		125 - 175	HSS	140	210	185	245
		175 - 225	HSS	130	195	175	225
		225 - 275	HSS	120	185	155	215
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	HSS	140	210	185	245
		175 - 225	HSS	130	195	175	225
		225 - 275	HSS	120	185	155	215
		275 - 325	SC	110	175	150	205
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	HSS	130	185	175	215
		175 - 225	HSS	120	175	155	205
		225 - 275	HSS	110	155	145	180
		275 - 325	SC	105	145	135	170
		325 - 375	SC	95	135	125	155
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	SC	70	95	85	110
		300 - 350	SC	50	75	70	90
		350 - 400	SC	45	65	60	75
	Structural Steel A36, A285, A516, etc.	100 - 150	HSS	120	170	155	195
		150 - 250	HSS	105	145	135	170
		250 - 350	SC	85	120	110	140
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	SC	70	95	90	110
		200 - 250	SC	50	80	75	95
M	**Stainless Steel 400 Series** 416, 420, etc.	185 - 275	SC	65	90	85	110
		275 - 350	SC	50	80	70	90
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	SC	65	90	85	110
		185 - 275	SC	50	80	70	90
	Super Duplex Stainless Steel	135 - 185	SC	65	90	85	110
		185 - 275	SC	50	80	70	90
K	**SG / Nodular Cast Iron**	120 - 150	HSS	150	220	195	255
		150 - 200	HSS	130	195	175	225
		200 - 220	HSS	110	175	150	205
		220 - 260	SC	95	150	125	175
		260 - 320	SC	80	120	105	140
N	**Cast Aluminum**	30	HSS	520	750	650	-
		180	HSS	260	400	350	-
	Wrought Aluminum	30	HSS	520	750	650	850
		180	HSS	260	400	350	450
	Aluminum Bronze	100 - 200	SC	130	190	175	230
		200 - 250	SC	95	150	125	165
	Brass	100	HSS	150	220	190	250
	Copper	60	SC	115	150	130	170
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 220	SC	25	35	30	40
		220 - 310	SC	20	30	25	35
	Titanium Alloy	140 - 220	SC	35	45	40	50
		220 - 310	SC	26	40	35	45
	Aerospace Alloy S82	185 - 275	SC	65	90	85	110
		275 - 350	SC	50	80	70	90
H	**Wear Plate** Hardox®, AR400, T-1, etc.	400	SC	—	—	—	—
		500	SC	—	—	—	—
		600	N/A	—	—	—	—
	Hardened Steel	300 - 400	SC	45	65	60	80
		400 - 500	SC	25	40	35	45

❖ Contact our Application Engineering department for assistance when machining these materials.

Deep Hole Drilling Speed and Feed Adjustment Values

	⚠ Holder Length				
	Extended	Long	Long Plus	XL	3XL
Speed	0.90	0.85	0.80	0.80	0.75
Feed	–	0.95	0.90	0.90	0.90

Recommended Speed and Feed Example (3XL)

	Data	•	Adjustment Value	=	Recommendation for Deep Holes
Speed	200 SFM	•	0.75	=	150 SFM
Feed	0.008 IPR	•	0.90	=	0.007 IPR

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples above.

T-A FLAT BOTTOM | HIGH-SPEED STEEL

Feed Rate (mm/rev) by Diameter					
Y/Z Series 0.3740" - 0.5109"	**0 Series** 0.5110" - 0.6959"	**1 Series** 0.6900" - 0.9609"	**2 Series** 0.9610" - 1.3809"	**3 Series** 1.3530" - 1.8829"	**4 Series** 1.8500" - 2.5709"
0.006	0.009	0.011	0.014	0.016	0.018
0.006	0.009	0.011	0.014	0.016	0.018
0.005	0.009	0.011	0.014	0.015	0.017
0.005 ❖	0.008	0.010	0.013	0.015	0.017
0.005 ❖	0.008	0.010	0.013	0.015	0.016
0.004 ❖	0.007	0.009	0.012	0.014	0.016
0.004 ❖	0.007	0.009	0.012	0.014	0.015
0.005	0.008	0.010	0.013	0.015	0.018
0.004	0.007	0.009	0.012	0.014	0.017
0.004	0.007	0.009	0.012	0.014	0.017
0.004	0.006	0.008	0.010	0.013	0.015
0.005	0.007	0.009	0.012	0.013	0.016
0.004	0.007	0.009	0.012	0.013	0.016
0.004	0.006	0.009	0.012	0.013	0.016
0.004	0.005	0.008	0.010	0.012	0.015
0.003	0.005	0.008	0.010	0.012	0.014
0.004 ❖	0.006	0.008	0.009	0.010	0.012
0.003 ❖	0.006	0.008	0.009	0.010	0.012
0.003 ❖	0.005	0.007	0.008	0.009	0.011
0.005 ❖	0.009	0.010	0.012	0.015	0.017
0.004 ❖	0.008	0.009	0.010	0.013	0.016
0.004 ❖	0.007	0.008	0.009	0.012	0.015
0.004	0.005	0.007	0.009	0.010	0.012
0.004	0.005	0.007	0.009	0.009	0.011
0.005 ❖	0.007	0.008	0.010	0.012	0.014
0.004 ❖	0.006	0.007	0.009	0.010	0.011
0.005 ❖	0.007	0.008	0.010	0.012	0.014
0.004 ❖	0.006	0.007	0.009	0.010	0.011
0.005 ❖	0.007	0.008	0.010	0.012	0.014
0.004 ❖	0.006	0.007	0.009	0.010	0.011
0.007	0.012	0.016	0.020	0.024	0.027
0.006	0.011	0.014	0.018	0.022	0.025
0.006	0.009	0.012	0.016	0.018	0.021
0.005	0.007	0.009	0.012	0.014	0.017
0.004	0.006	0.007	0.009	0.012	0.014
0.007	0.011	0.014	0.017	0.018	0.019
0.007	0.011	0.014	0.016	0.017	0.019
0.007	0.011	0.014	0.017	0.018	0.019
0.007	0.011	0.014	0.016	0.017	0.019
0.005	0.009	0.012	0.016	0.020	0.024
0.004	0.006	0.008	0.010	0.012	0.015
0.006	0.010	0.014	0.017	0.021	0.025
0.002 ❖	0.003	0.006	0.008	0.010	0.014
0.003 ❖	0.006	0.007	0.009	0.010	0.012
0.003 ❖	0.005	0.006	0.007	0.008	0.010
0.003 ❖	0.006	0.007	0.009	0.010	0.012
0.003 ❖	0.005	0.006	0.007	0.008	0.010
0.005 ❖	0.007	0.008	0.010	0.012	0.015
0.004 ❖	0.006	0.007	0.009	0.010	0.012
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
0.003 ❖	0.005	0.007	0.008	0.011	0.015
0.002 ❖	0.004	0.006	0.007	0.009	0.011

⚠ WARNING **Tool failure can cause serious injury. To prevent:**

- When using holders without support bushing, use a short T-A holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

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Recommended Drilling Data | Imperial (in)

T-A FLAT BOTTOM | CARBIDE

ISO	Material	Hardness (BHN)	Carbide Grade	Speed (SFM) TiN	TiAlN	TiCN	AM200®
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 150	K20 (C2)	270	380	325	425
		150 - 200	K20 (C2)	240	320	280	375
		200 - 250	K20 (C2)	220	300	260	350
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	K20 (C2)	260	345	315	410
		125 - 175	K20 (C2)	220	300	260	350
		175 - 225	K20 (C2)	200	280	235	320
		225 - 275	K20 (C2)	180	240	215	285
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	K20 (C2)	220	300	260	350
		175 - 225	K20 (C2)	200	280	240	320
		225 - 275	K20 (C2)	180	240	210	285
		275 - 325	K20 (C2)	150	210	180	240
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	K20 (C2)	215	290	250	340
		175 - 225	K20 (C2)	200	270	230	320
		225 - 275	K20 (C2)	180	230	205	290
		275 - 325	K20 (C2)	175	215	190	280
		325 - 375	K20 (C2)	145	190	170	230
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	K20 (C2)	140	170	160	220
		300 - 350	K20 (C2)	120	160	140	190
		350 - 400	K20 (C2)	100	145	120	160
	Structural Steel A36, A285, A516, etc.	100 - 150	K20 (C2)	205	265	240	325
		150 - 250	K20 (C2)	170	215	200	270
		250 - 350	K20 (C2)	155	200	180	240
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	K20 (C2)	140	190	160	220
		200 - 250	K20 (C2)	100	150	120	160
M	**Stainless Steel 400 Series** 416, 420, etc.	185 - 275	K20 (C2)	140	180	165	210
		275 - 350	K20 (C2)	110	140	125	160
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	K20 (C2)	90	120	110	130
		185 - 275	K20 (C2)	70	90	80	105
	Super Duplex Stainless Steel	135 - 185	K20 (C2)	70	95	85	110
		185 - 275	K20 (C2)	55	70	60	85
K	**SG / Nodular Cast Iron**	120 - 150	K20 (C2)	270	405	360	450
		150 - 200	K20 (C2)	230	350	290	390
		200 - 220	K20 (C2)	200	320	260	350
		220 - 260	K20 (C2)	180	270	220	300
		260 - 320	K20 (C2)	160	240	200	265
N	**Cast Aluminum**	30	K20 (C2)	520	750	650	—
		180	K20 (C2)	260	400	350	—
	Wrought Aluminum	30	K20 (C2)	950	1200	1070	1270
		180	K20 (C2)	630	800	715	850
	Aluminum Bronze	100 - 200	K20 (C2)	240	310	280	340
		200 - 250	K20 (C2)	180	265	220	285
	Brass	100	K20 (C2)	370	520	450	600
	Copper	60	K20 (C2)	220	345	280	380
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 220	K20 (C2)	70	90	80	110
		220 - 310	K20 (C2)	50	70	60	80
	Titanium Alloy	140 - 220	K20 (C2)	85	110	90	130
		220 - 310	K20 (C2)	70	95	80	100
	Aerospace Alloy S82	185 - 275	K20 (C2)	140	120	165	130
		275 - 350	K20 (C2)	110	90	125	105
H	**Wear Plate** Hardox®, AR400, T-1, etc.	400	K20 (C2)	65	100	85	130
		500	K20 (C2)	45	75	60	100
		600	K20 (C2)	35	65	45	80
	Hardened Steel	300 - 400	K20 (C2)	100	125	110	135
		400 - 500	K20 (C2)	60	75	65	110

❖ Contact our Application Engineering department for assistance when machining these materials.

Deep Hole Drilling Speed and Feed Adjustment Values

	⚠ Holder Length				
	Extended	Long	Long Plus	XL	3XL
Speed	0.90	0.85	0.80	0.80	0.75
Feed	–	0.95	0.90	0.90	0.90

Recommended Speed and Feed Example (3XL)

	Data	•	Adjustment Value	=	Recommendation for Deep Holes
Speed	200 SFM	•	0.75	=	150 SFM
Feed	0.008 IPR	•	0.90	=	0.007 IPR

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples above.

T-A FLAT BOTTOM | CARBIDE

Feed Rate (IPR) by Diameter			
Y/Z Series 0.3740" - 0.5109"	**0 Series** 0.5110" - 0.6959"	**1 Series** 0.6900" - 0.9609"	**2 Series** 0.9610" - 1.3809"
0.007	0.010	0.013	0.015
0.006	0.009	0.012	0.014
0.005	0.009	0.011	0.013
0.007 ❖	0.009	0.011	0.014
0.006 ❖	0.009	0.011	0.014
0.005 ❖	0.008	0.010	0.013
0.004 ❖	0.008	0.010	0.013
0.006	0.009	0.011	0.014
0.005	0.008	0.010	0.013
0.005	0.008	0.010	0.013
0.004	0.007	0.009	0.012
0.006	0.009	0.011	0.014
0.005	0.008	0.010	0.013
0.005	0.008	0.010	0.013
0.004	0.007	0.009	0.012
0.003	0.006	0.009	0.011
0.005 ❖	0.008	0.009	0.010
0.004 ❖	0.007	0.008	0.009
0.003 ❖	0.006	0.007	0.009
0.007 ❖	0.009	0.012	0.014
0.005 ❖	0.009	0.010	0.012
0.004 ❖	0.008	0.009	0.010
0.003	0.006	0.008	0.009
0.003	0.006	0.008	0.009
0.006 ❖	0.008	0.010	0.012
0.005 ❖	0.007	0.009	0.010
0.005 ❖	0.007	0.008	0.010
0.004 ❖	0.006	0.007	0.009
0.004 ❖	0.006	0.007	0.008
0.003 ❖	0.005	0.006	0.007
0.007	0.010	0.013	0.016
0.006	0.009	0.011	0.014
0.005	0.008	0.010	0.013
0.004	0.007	0.009	0.011
0.004	0.006	0.009	0.009
0.009	0.013	0.016	0.017
0.008	0.012	0.014	0.015
0.005	0.007	0.009	0.010
0.004	0.006	0.008	0.009
0.004	0.006	0.008	0.011
0.003	0.005	0.006	0.008
0.005	0.006	0.008	0.012
0.002 ❖	0.002	0.003	0.005
0.003 ❖	0.006	0.008	0.009
0.003 ❖	0.005	0.007	0.009
0.003 ❖	0.005	0.006	0.008
0.003 ❖	0.004	0.005	0.007
0.006 ❖	0.006	0.010	0.012
0.005 ❖	0.005	0.009	0.010
0.003 ❖	0.004	0.006	0.008
0.002 ❖	0.003	0.005	0.006
0.001 ❖	0.002	0.004	0.005
0.004 ❖	0.006	0.007	0.009
0.003 ❖	0.005	0.006	0.007

⚠ WARNING **Tool failure can cause serious injury. To prevent:**

- When using holders without support bushing, use a short T-A holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

Recommended Drilling Data | Imperial (in)

T-A DIAMOND COATED | CARBIDE

ISO	Material	Carbide Grade	Speed (SFM) Diamond Coating	Feed Rate (IPR) by Diameter			
				Y/Z Series 0.3740" - 0.5109"	0 Series 0.5110" - 0.6959"	1 Series 0.6900" - 0.9609"	2 Series 0.9610" - 1.3809"
Polymer Matrix Composites	Carbon (hard)	N2	1000 - 1500	0.004 - 0.006	0.008 - 0.010	0.010 - 0.012	0.012 - 0.014
	Carbon Fiber	N2	1000 - 1500	0.004 - 0.006	0.008 - 0.010	0.010 - 0.012	0.012 - 0.014
	Carbon / Glass Fiber	N2	1000 - 1500	0.004 - 0.006	0.008 - 0.010	0.010 - 0.012	0.012 - 0.014
	Fiberglass	N2	1000 - 1500	0.004 - 0.006	0.008 - 0.010	0.010 - 0.012	0.012 - 0.014
	Graphite	N2	1000 - 1500	0.004 - 0.006	0.008 - 0.010	0.010 - 0.012	0.012 - 0.014
	Plastics	N2	250 - 1000	0.004 - 0.006	0.008 - 0.010	0.010 - 0.012	0.012 - 0.014
	Epoxy Resin	N2	250 - 1000	0.004 - 0.006	0.008 - 0.010	0.010 - 0.012	0.012 - 0.014
	Bismaleimide Resin	N2	250 - 1000	0.004 - 0.006	0.008 - 0.010	0.010 - 0.012	0.012 - 0.014
	Polyester Resin	N2	250 - 1000	0.004 - 0.006	0.008 - 0.010	0.010 - 0.012	0.012 - 0.014
	Phenolic Resin	N2	250 - 1000	0.004 - 0.006	0.008 - 0.010	0.010 - 0.012	0.012 - 0.014
	Rubber	N2	250 - 1000	0.004 - 0.006	0.008 - 0.010	0.010 - 0.012	0.012 - 0.014
Metal Matrix Composites	Aluminum	N2	1000	0.008	0.013	0.016	0.020
	Si < 10%	N2	1000	0.008	0.013	0.016	0.020
	10% < Si < 15%	N2	850 - 1000	0.008	0.013	0.016	0.020
	15% < SI < 20%	N2	650 - 850	0.008	0.013	0.016	0.020
	20% < Si < 25%	N2	500 - 650	0.008	0.013	0.016	0.020
	25% < Si	N2	200 - 500	0.008	0.013	0.016	0.020
	Brass	N2	250 - 500	0.008	0.013	0.016	0.020
	Bronze	N2	250 - 500	0.008	0.013	0.016	0.020
	Copper	N2	100 - 250	0.004 - 0.006	0.008 - 0.010	0.010 - 0.012	0.012 - 0.014
	Copper Alloys	N2	100 - 250	0.004 - 0.006	0.008 - 0.010	0.010 - 0.012	0.012 - 0.014
	Lead Alloys	N2	100 - 250	0.004 - 0.006	0.008 - 0.010	0.010 - 0.012	0.012 - 0.014
	Magnesium Alloys	N2	100 - 250	0.004 - 0.006	0.008 - 0.010	0.010 - 0.012	0.012 - 0.014
	Precious Metals	N2	100 - 250	0.004 - 0.006	0.008 - 0.010	0.010 - 0.012	0.012 - 0.014
Ceramic Matrix Composites	Carbide (green)	N2	50 - 250	0.004 - 0.006	0.008 - 0.010	0.010 - 0.012	0.012 - 0.014
	Ceramic (green)	N2	50 - 250	0.004 - 0.006	0.008 - 0.010	0.010 - 0.012	0.012 - 0.014
	Ceramic (pre-sintered)	N2	50 - 250	0.004 - 0.006	0.008 - 0.010	0.010 - 0.012	0.012 - 0.014

❖ Contact our Application Engineering department for assistance when machining these materials.

Deep Hole Drilling Speed and Feed Adjustment

	⚠ Holder Length				
	Extended	Long	Long Plus	XL	3XL
Speed	0.90	0.85	0.80	0.80	0.75
Feed	–	0.95	0.90	0.90	0.90

Recommended Speed and Feed Example

If the recommended speed and feed is 200 SFM and 0.008 IPR for a standard length holder, then the speed and feed using a 3XL holder in the same application would be 150 SFM and 0.007 IPR.

200 • 0.75 = 150 SFM	0.008 • 0.90 = 0.007 IPR

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples above.

⚠ WARNING **Tool failure can cause serious injury. To prevent:**

- When using holders without support bushing, use a short T-A holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

Notes

Coolant Recommendations | Metric (mm)

T-A | HIGH-SPEED STEEL

ISO	Material	Pressure or Flow Rate	Y/Z Series 9.50 mm - 12.97 mm	0 Series 12.98 mm - 17.67 mm	1 Series 17.53 mm - 24.40 mm	2 Series 24.41 mm - 35.06 mm	3 Series 34.37 mm - 47.82 mm	4 Series 46.99 mm - 65.30 mm	5 - 8 Series 62.38 mm - 114.48 mm
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	BAR	12 - 13	7 - 8	7 - 10	6 - 8	5 - 7	4	5 - 6
		LPM	9.5 - 9.8	10.6 - 11.4	16.7 - 19.7	26.5 - 30.3	45.4 - 53.0	114 - 125	144 - 167
	Low-Carbon Steel 1010, 1020, 1025, 1522, etc.	BAR	11 - 12	5 - 6	5 - 7	4 - 6	4 - 5	2 - 3	3 - 5
		LPM	9.1 - 9.5	9.1 - 9.8	14.0 - 15.9	22.7 - 26.5	41.6 - 45.4	98 - 114	125 - 144
	Medium-Carbon Steel 1030, 1040, 1050, 1527, etc.	BAR	11	5 - 6	5 - 6	4 - 5	3 - 5	2 - 3	3 - 5
		LPM	8.7 - 9.1	8.7 - 9.8	13.6 - 15.5	18.9 - 22.7	37.9 - 45.4	98 - 114	125 - 144
	Alloy Steel 4140, 5140, 8640, etc.	BAR	11	5	5 - 6	3 - 5	3 - 4	2	3
		LPM	8.7 - 9.1	8.3 - 9.1	13.2 - 14.8	18.9 - 22.7	31.9 - 41.6	98 - 106	114 - 125
	High-Strength Alloy 4340, 4330V, 300M, etc.	BAR	10 - 11	4	3	2	2	1 - 2	2
		LPM	8.7 - 9.1	7.9 - 8.3	11.0 - 11.7	15.1 - 18.9	26.5 - 30.3	79 - 87	87 - 98
	Structural Steel A36, A285, A516, etc.	BAR	11	5 - 6	5 - 6	3 - 4	3	2	3
		LPM	8.7 - 9.1	9.1 - 9.8	13.2 - 14.8	18.9 - 22.7	34.1 - 37.9	87 - 98	114 - 125
	Tool Steel H-13, H-21, A-4, S-3, etc.	BAR	10 - 11	4	3	2	2	1 - 2	2
		LPM	8.7 - 9.1	7.9 - 8.3	11.0 - 11.7	15.1 - 18.9	26.5 - 30.3	79 - 87	87 - 98
M	**Stainless Steel 400 Series** 416, 420, etc.	BAR	11.8	5.9	5.2	3.8	3.5	2	3.1
		LPM	9.5	9.8	14	23	38	98	117
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	BAR	11.8	5.9	5.2	3.8	3.5	2	3.1
		LPM	9.5	9.8	14	23	38	98	117
	Super Duplex Stainless Steel	BAR	11.8	5.9	5.2	3.8	3.5	2	3.1
		LPM	9.5	9.8	14	23	38	98	117
K	**SG / Nodular Cast Iron**	BAR	11	4.5	4.2	2.8	2.4	2	2.4
		LPM	9.1	8.7	12.5	19	34	98	106
	Grey / White Iron	BAR	11	4.5	4.2	2.8	2.4	2	2.4
		LPM	9.1	8.7	12.5	19	34	98	106
N	**Cast Aluminum**	BAR	14.5	12.4	15.8	11	8.6	3.5	5.5
		LPM	10	14	23	34	61	125	159
	Wrought Aluminum	BAR	14.5	12.4	15.8	11	8.6	3.5	5.5
		LPM	10	14	23	34	61	125	159
	Aluminum Bronze	BAR	12.8	8.3	9.65	7.95	6.9	3.5	6.2
		LPM	9.6	11.4	19.7	30.3	53	125	167
	Brass	BAR	11	4.5	4.2	2.8	2.4	2	2.4
		LPM	9.1	8.7	12.5	19	34	98	106
	Copper	BAR	12.8	8.3	9.65	7.95	6.9	3.5	6.2
		LPM	9.6	11.4	19.7	30.3	53	125	167
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	BAR	10 - 11	4 - 5	3 - 4	2	2	2	3
		LPM	8.7 - 9.1	8.3 - 8.7	11.7 - 12.1	15.1 - 18.9	26.5 - 30.3	87 - 98	125
	Titanium Alloy	BAR	10 - 11	4 - 5	3 - 4	2	2	2	3
		LPM	8.7 - 9.1	8.3 - 8.7	11.7 - 12.1	15.1 - 18.9	26.5 - 30.3	87 - 98	125
	Aerospace Alloy S82	BAR	10 - 11	4 - 5	3 - 4	2	2	2	3
		LPM	8.7 - 9.1	8.3 - 8.7	11.7 - 12.1	15.1 - 18.9	26.5 - 30.3	87 - 98	125
H	**Wear Plate** Hardox®, AR400, T-1, etc.	BAR	10.7	4.2	3.5	2	2	1.7	2
		LPM	9.1	8.3	11.7	19	30	87	98
	Hardened Steel	BAR	10.7	4.2	3.5	2	2	1.7	2
		LPM	9.1	8.3	11.7	19	30	87	98

❖ Contact our Application Engineering department for assistance when machining these materials.

Deep Hole Drilling Coolant Adjustment

	⚠ Holder Length				
	Extended	Long	Long Plus	XL	3XL
Pressure and Flow	1.3	1.5	2	2	3

Recommended Coolant Example

If the recommended pressure and flow is 12 bar and 22 LPM for a standard length holder, then the adjusted pressure and flow for a 3XL holder would be 36 bar and 66 LPM.

12 • 3 = 36 bar	22 • 3 = 66 LPM

IMPORTANT: The coolant pressure and flow rate recommendations above represent a good approximation to obtain optimum tool life and chip evacuation at Allied Machine recommended speeds and feeds. If lower coolant capabilities exist in a drilling application, the T-A® drilling system will still function at reduced penetration rates. Contact our Application Engineering department for a more specific recommendation of coolant requirements and/or speeds and feeds.

⚠ WARNING **Tool failure can cause serious injury. To prevent:**

- When using holders without support bushing, use a short T-A holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

Coolant Recommendations | Metric (mm)

T-A | CARBIDE

ISO	Material	Pressure or Flow Rate	Y/Z Series 9.50 mm - 12.97 mm	0 Series 12.98 mm - 17.67 mm	1 Series 17.53 mm - 24.40 mm	2 Series 24.41 mm - 35.06 mm	3 Series 34.37 mm - 47.82 mm
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	BAR	17 - 20	17	15	15	20
		LPM	12.2	16.3	25.2	41.5	71.9
	Low-Carbon Steel 1010, 1020, 1025, 1522, etc.	BAR	18	11	11	12	9
		LPM	11.4	13.3	20.6	36.5	62.0
	Medium-Carbon Steel 1030, 1040, 1050, 1527, etc.	BAR	17	10	10	10	8
		LPM	11.3	12.5	20.0	33.8	57.0
	Alloy Steel 4140, 5140, 8640, etc.	BAR	17	9	10	8	7
		LPM	11.1	12.3	19.3	30.0	55.8
	High-Strength Alloy 4340, 4330V, 300M, etc.	BAR	15	5	4	3	3
		LPM	10.4	9.1	12.6	18.8	33.6
	Structural Steel A36, A285, A516, etc.	BAR	16	9	8	7	5
		LPM	10.8	12.0	17.5	27.8	47.1
	Tool Steel H-13, H-21, A-4, S-3, etc.	BAR	15	5	5	3	3
		LPM	10.4	9.1	13.6	19.7	36.5
M	**Stainless Steel 400 Series** 416, 420, etc.	BAR	22.7	16.5	17.9	17.2	13.1
		LPM	13	16.3	26.3	44.2	75
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	BAR	22.7	16.5	17.9	17.2	13.1
		LPM	13	16.3	26.3	44.2	75
	Super Duplex Stainless Steel	BAR	22.7	16.5	17.9	17.2	13.1
		LPM	13	16.3	26.3	44.2	75
K	**SG / Nodular Cast Iron**	BAR	15.5	7.2	6.2	6.2	5.5
		LPM	10.7	10.8	15.4	26.5	48.7
	Grey / White Iron	BAR	15.5	7.2	6.2	6.2	5.5
		LPM	10.7	10.8	15.4	26.5	48.7
N	**Cast Aluminum**	BAR	24.1	22	21.7	19.6	13.8
		LPM	13.4	18.8	29	47.2	77
	Wrought Aluminum	BAR	24.1	22	21.7	19.6	13.8
		LPM	13.4	18.8	29	47.2	77
	Aluminum Bronze	BAR	20	16.5	16.5	15.2	12
		LPM	12.2	16.3	25.2	41.5	71.9
	Brass	BAR	24.1	22	21.7	19.6	13.8
		LPM	13.4	18.8	29	47.2	77
	Copper	BAR	20	16.5	16.5	15.2	12
		LPM	12.2	16.3	25.2	41.5	71.9
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	BAR	17	11	12	11	9
		LPM	11.1	13.5	21.9	35.4	62.0
	Titanium Alloy	BAR	17	11	12	11	9
		LPM	11.1	13.5	21.9	35.4	62.0
	Aerospace Alloy S82	BAR	17	11	12	11	9
		LPM	11.1	13.5	21.9	35.4	62.0
H	**Wear Plate** Hardox®, AR400, T-1, etc.	BAR	14.5	5.2	4.8	3.4	3.1
		LPM	10.4	9.1	13.6	19.7	36.5
	Hardened Steel	BAR	14.5	5.2	4.8	3.4	3.1
		LPM	10.4	9.1	13.6	19.7	36.5

❖ Contact our Application Engineering department for assistance when machining these materials.

Deep Hole Drilling Coolant Adjustment

	⚠ Holder Length				
	Extended	Long	Long Plus	XL	3XL
Pressure and Flow	1.3	1.5	2	2	3

Recommended Coolant Example

If the recommended pressure and flow is 12 bar and 22 LPM for a standard length holder, then the adjusted pressure and flow for a 3XL holder would be 36 bar and 66 LPM.

12 • 3 = 36 bar	22 • 3 = 66 LPM

IMPORTANT: The coolant pressure and flow rate recommendations above represent a good approximation to obtain optimum tool life and chip evacuation at Allied Machine recommended speeds and feeds. If lower coolant capabilities exist in a drilling application, the T-A® drilling system will still function at reduced penetration rates. Contact our Application Engineering department for a more specific recommendation of coolant requirements and/or speeds and feeds.

⚠ WARNING **Tool failure can cause serious injury. To prevent:**

- When using holders without support bushing, use a short T-A holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

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Coolant Recommendations | Imperial (in)

T-A | HIGH-SPEED STEEL

ISO	Material	Pressure or Flow Rate	Y/Z Series 0.3740" - 0.5109"	0 Series 0.5110" - 0.6959"	1 Series 0.6900" - 0.9609"	2 Series 0.9610" - 1.3809"	3 Series 1.3530" - 1.8829"	4 Series 1.8500" - 2.5709"	5 - 8 Series 2.4560" - 4.5070"
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	PSI	175 - 185	100 - 120	105 - 140	80 - 115	75 - 100	40 - 50	65 - 90
		GPM	2.5 - 2.6	2.8 - 3.0	4.4 - 5.2	7 - 8	12 - 14	30 - 33	38 - 44
	Low-Carbon Steel 1010, 1020, 1025, 1522, etc.	PSI	165 - 170	75 - 90	75 - 95	60 - 80	55 - 75	30 - 40	50 - 65
		GPM	2.4 - 2.5	2.4 - 2.6	3.7 - 4.2	6 - 7	11 - 12	26 - 30	33 - 38
	Medium-Carbon Steel 1030, 1040, 1050, 1527, etc.	PSI	160 - 165	70 - 85	70 - 90	55 - 75	50 - 70	30 - 40	50 - 65
		GPM	2.3 - 2.4	2.3 - 2.6	3.7 - 4.2	5 - 6	10 - 12	26 - 30	33 - 38
	Alloy Steel 4140, 5140, 8640, etc.	PSI	160 - 165	65 - 75	65 - 80	50 - 70	45 - 60	30 - 35	40 - 50
		GPM	2.3 - 2.4	2.2 - 2.4	3.5 - 3.9	5 - 6	10 - 11	26 - 28	30 - 33
	High-Strength Alloy 4340, 4330V, 300M, etc.	PSI	150 - 155	55 - 60	45 - 50	25 - 30	25 - 30	20 - 25	40 - 50
		GPM	2.3 - 2.4	2.1 - 2.2	2.9 - 3.1	4 - 5	7 - 8	21 - 23	23 - 26
	Structural Steel A36, A285, A516, etc.	PSI	160 - 165	75 - 85	65 - 80	40 - 55	40 - 50	25 - 30	40 - 50
		GPM	2.3 - 2.4	2.4 - 2.6	3.5 - 3.9	5 - 6	9 - 10	23 - 26	30 - 33
	Tool Steel H-13, H-21, A-4, S-3, etc.	PSI	150 - 155	55 - 60	45 - 50	25 - 30	25 - 30	20 - 25	25 - 30
		GPM	2.3 - 2.4	2.1 - 2.2	2.9 - 3.1	4 - 5	7 - 8	21 - 23	23 - 26
M	**Stainless Steel 400 Series** 416, 420, etc.	PSI	171	86	75	55	51	29	45
		GPM	3	3	4	6	10	26	31
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	PSI	171	86	75	55	51	29	45
		GPM	3	3	4	6	10	26	31
	Super Duplex Stainless Steel	PSI	171	86	75	55	51	29	45
		GPM	3	3	4	6	10	26	31
K	**SG / Nodular Cast Iron**	PSI	160	65	61	41	35	29	35
		GPM	2	2	3	5	9	26	28
	Grey / White Iron	PSI	160	65	61	41	35	29	35
		GPM	2	2	3	5	9	26	28
N	**Cast Aluminum**	PSI	210	180	230	159	125	51	80
		GPM	3	4	6	9	16	33	42
	Wrought Aluminum	PSI	210	180	230	159	125	51	80
		GPM	3	4	6	9	16	33	42
	Aluminum Bronze	PSI	186	120	140	115	100	51	90
		GPM	2.5	3	5	8	14	33	44
	Brass	PSI	159	65	61	41	35	29	35
		GPM	2	2	3	5	9	26	28
	Copper	PSI	186	120	140	115	100	51	90
		GPM	2.5	3	5	8	14	33	44
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	PSI	150 - 155	60 - 65	50 - 55	30 - 35	25 - 30	25 - 30	44
		GPM	2.3 - 2.4	2.2 - 2.3	3.1 - 3.2	4 - 5	7 - 8	23 - 26	33
	Titanium Alloy	PSI	150 - 155	60 - 65	50 - 55	30 - 35	25 - 30	25 - 30	44
		GPM	2.3 - 2.4	2.2 - 2.3	3.1 - 3.2	4 - 5	7 - 8	23 - 26	33
	Aerospace Alloy S82	PSI	150 - 155	60 - 65	50 - 55	30 - 35	25 - 30	25 - 30	44
		GPM	2.3 - 2.4	2.2 - 2.3	3.1 - 3.2	4 - 5	7 - 8	23 - 26	33
H	**Wear Plate** Hardox®, AR400, T-1, etc.	PSI	155	61	51	29	29	25	29
		GPM	2	2	3	5	8	23	26
	Hardened Steel	PSI	155	61	51	29	29	25	29
		GPM	2	2	3	5	8	23	26

❖ Contact our Application Engineering department for assistance when machining these materials.

Deep Hole Drilling Coolant Adjustment

	⚠ Holder Length				
	Extended	Long	Long Plus	XL	3XL
Pressure and Flow	1.3	1.5	2	2	3

Recommended Coolant Example

If the recommended pressure and flow is 150 PSI and 2.4 GPM for a standard length holder, then the adjusted pressure and flow for a 3XL holder would be 450 PSI and 7.2 GPM.

150 • 3 = 450 PSI	2.4 • 3 = 7.2 GPM

IMPORTANT: The coolant pressure and flow rate recommendations above represent a good approximation to obtain optimum tool life and chip evacuation at Allied Machine recommended speeds and feeds. If lower coolant capabilities exist in a drilling application, the T-A® drilling system will still function at reduced penetration rates. Contact our Application Engineering department for a more specific recommendation of coolant requirements and/or speeds and feeds.

⚠ WARNING **Tool failure can cause serious injury. To prevent:**

- When using holders without support bushing, use a short T-A holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

Coolant Recommendations | Imperial (in)

T-A | CARBIDE

ISO	Material	Pressure or Flow Rate	Y/Z Series 0.3740" - 0.5109"	0 Series 0.5110" - 0.6959"	1 Series 0.6900" - 0.9609"	2 Series 0.9610" - 1.3809"	3 Series 1.3530" - 1.8829"
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	PSI	195	140	160	140	155
		GPM	2.6	3.3	5.5	9	18
	Low-Carbon Steel 1010, 1020, 1025, 1522, etc.	PSI	180	105	105	110	115
		GPM	2.5	2.9	4.4	8	15
	Medium-Carbon Steel 1030, 1040, 1050, 1527, etc.	PSI	175	100	90	70	75
		GPM	2.5	2.8	4.1	7	13
	Alloy Steel 4140, 5140, 8640, etc.	PSI	165	85	100	75	70
		GPM	2.4	2.6	4.3	6	12
	High-Strength Alloy 4340, 4330V, 300M, etc.	PSI	175	115	105	75	70
		GPM	2.4	2.3	3.2	5	8
	Structural Steel A36, A285, A516, etc.	PSI	175	115	105	75	70
		GPM	2.5	3.0	4.4	6	12
	Tool Steel H-13, H-21, A-4, S-3, etc.	PSI	155	60	55	40	35
		GPM	2.4	2.2	3.2	5	8
M	**Stainless Steel 400 Series** 416, 420, etc.	PSI	329	239	260	250	190
		GPM	3	4	7	12	20
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	PSI	329	239	260	250	190
		GPM	3	4	7	12	20
	Super Duplex Stainless Steel	PSI	329	239	260	250	190
		GPM	3	4	7	12	20
K	**SG / Nodular Cast Iron**	PSI	225	104	90	90	80
		GPM	3	3	4	7	13
	Grey / White Iron	PSI	225	104	90	90	80
		GPM	3	3	4	7	13
N	**Cast Aluminum**	PSI	350	319	315	284	200
		GPM	4	5	8	12	20
	Wrought Aluminum	PSI	350	319	315	284	200
		GPM	4	5	8	12	20
	Aluminum Bronze	PSI	290	239	239	220	174
		GPM	3	4	7	11	19
	Brass	PSI	350	319	315	284	200
		GPM	4	5	7	12	20
	Copper	PSI	290	239	239	220	174
		GPM	3	4	7	11	19
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	PSI	247	160	174	160	130
		GPM	3	4	6	9	16
	Titanium Alloy	PSI	247	160	174	160	130
		GPM	3	4	6	9	16
	Aerospace Alloy S82	PSI	247	160	174	160	130
		GPM	3	4	6	9	16
H	**Wear Plate** Hardox®, AR400, T-1, etc.	PSI	210	75	70	49	45
		GPM	3	2	4	5	10
	Hardened Steel	PSI	210	75	70	49	45
		GPM	3	2	4	5	10

❖ Contact our Application Engineering department for assistance when machining these materials.

Deep Hole Drilling Coolant Adjustment

	⚠ Holder Length				
	Extended	Long	Long Plus	XL	3XL
Pressure and Flow	1.3	1.5	2	2	3

Recommended Coolant Example

If the recommended pressure and flow is 150 PSI and 2.4 GPM for a standard length holder, then the adjusted pressure and flow for a 3XL holder would be 450 PSI and 7.2 GPM.

150 • 3 = 450 PSI	2.4 • 3 = 7.2 GPM

IMPORTANT: The coolant pressure and flow rate recommendations above represent a good approximation to obtain optimum tool life and chip evacuation at Allied Machine recommended speeds and feeds. If lower coolant capabilities exist in a drilling application, the T-A® drilling system will still function at reduced penetration rates. Contact our Application Engineering department for a more specific recommendation of coolant requirements and/or speeds and feeds.

⚠ WARNING **Tool failure can cause serious injury. To prevent:**

- When using holders without support bushing, use a short T-A holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

Technical Formulas

Formulas

1. **RPM = (3.82 • SFM) / DIA**

where:

RPM	= revolutions per minute (rev/min)
SFM	= speed (ft/min)
DIA	= diameter of drill (inch)

2. **IPM = RPM • IPR**

where:

IPM	= inches per minute (in/min)
RPM	= revolutions per minute (rev/min)
IPR	= feed rate (in/rev)

3. **SFM = RPM • 0.262 • DIA**

where:

SFM	= speed (ft/min)
RPM	= revolutions per minute (rev/min)
DIA	= diameter of drill (inch)

4. **Thrust = 153,700 • IPR • DIA • K_m**

where:

Thrust	= axial thrust (lbs)
IPR	= feed rate (in/rev)
DIA	= diameter of drill (inch)
K_m	= specific cutting energy (lbs/in^2)

5. **Tool Power = .6991 • IPR • RPM • K_m • DIA^2**

where:

Tool Power	= tool power (HP)
IPR	= feed rate (in/rev)
RPM	= revolutions per minute (rev/min)
K_m	= specific cutting energy (lbs/in^2)
DIA	= diameter of drill (inch)

Material Constants

Type of Material	Hardness	K_m (lbs/in^2)
Plain Carbon and Alloy Steel	85 - 200 BHN	0.79
	200 - 275 BHN	0.94
	275 - 375 BHN	1.00
	375 - 425 BHN	1.15
Stainless Steels	135 - 275 BHN	0.94
	30 - 45 RC	1.08
Cast Iron	100 - 200 BHN	0.50
	200 - 300 BHN	1.08
Copper Alloy	20 - 80 RB	0.43
	80 - 100 RB	0.72
Aluminum Alloy	–	0.22
Magnesium Alloy	–	0.16
High-Temperature Alloys	–	1.44
Titanium Alloy	–	0.72

Formulas

1. **RPM = (318.47 • m/min) / DIA**

where:

RPM	= revolutions per minute (rev/min)
m/min	= speed (m/min)
DIA	= diameter of drill (mm)

2. **mm/min = RPM • mm/rev**

where:

mm/min	= mm per minute (mm/min)
RPM	= revolutions per minute (rev/min)
mm/rev	= feed rate (mm/rev)

3. **m/min = RPM • 0.003 • DIA**

where:

m/min	= speed (m/min)
RPM	= revolutions per minute (rev/min)
DIA	= diameter of drill (mm)

4. **Thrust = 154 • (mm/rev) • DIA • K_m**

where:

Thrust	= axial thrust (N)
mm/rev	= feed rate (mm/rev)
DIA	= diameter of drill (mm)
K_m	= specific cutting energy (kPa)

5. **Tool Power = ((mm/rev) • RPM • K_m • DIA^2)/218604.8**

where:

Tool Power	= tool power (HP)
mm/rev	= feed rate (mm/rev)
RPM	= revolutions per minute (rev/min)
K_m	= specific cutting energy (kPa)
DIA	= diameter of drill (mm)

Material Constants

Type of Material	Hardness	K_m (kPa)
Plain Carbon and Alloy Steel	85 - 200 BHN	5.45
	200 - 275 BHN	6.48
	275 - 375 BHN	6.89
	375 - 425 BHN	7.93
Stainless Steels	135 - 275 BHN	6.48
	30 - 45 RC	7.45
Cast Iron	100 - 200 BHN	3.45
	200 - 300 BHN	7.45
Copper Alloy	20 - 80 RB	2.96
	80 - 100 RB	4.96
Aluminum Alloy	–	1.52
Magnesium Alloy	–	1.10
High-Temperature Alloys	–	9.93
Titanium Alloy	–	4.96

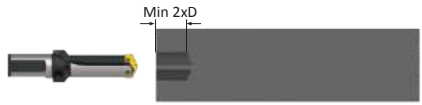
The table and equations on this page are found in the “Machinery’s Handbook.” Permission to simplify and print the equations is granted by the Editor of the “Machinery’s Handbook.”

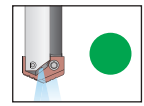
Deep Hole Drilling Guidelines

For Lengths Greater Than 9xD (Standard Plus, Extended, Long, Long Plus, XL, 3XL, and Special Lengths)

1. Pilot Hole
100% RPM
100% mm/rev (IPR)

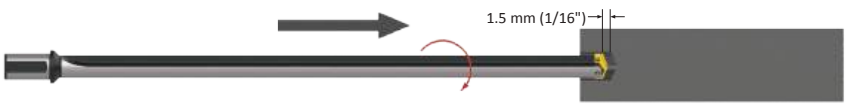
Establish the pilot hole using the same diameter short drill to a depth of 2xD minimum.
Utilize a pilot drill with the same or larger included point angle.

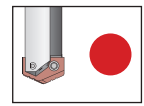




2. Feed-in
50 RPM max
300 mm/min (12 IPM)

Feed the longer drill within 1.5 mm (1/16") short of the established pilot hole bottom at a **maximum of 50 RPM** and 300 mm/min (12 IPM) feed rate.

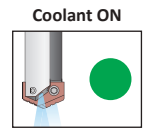




3. Deep Hole Transition Drilling
50% RPM
75% mm/rev (IPR)

Drill additional 1xD past the bottom of the pilot hole at 50% reduction of recommended speed and 25% reduction of recommended feed.
Minimum of one second dwell is required to meet full speed before feeding.

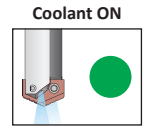




4. Deep Hole Drilling - Blind
100% RPM
100% mm/rev (IPR)

Drill to full depth at recommended speed and feed for longer drill according to Allied speed and feed charts.
No peck cycle recommended.

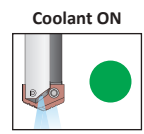




5. Deep Hole Drilling - at Breakout
50% RPM
75% mm/rev (IPR)

For through holes only:
Reduce speed by 50% and feed by 25% prior to breakout.
Do not break out more than 3 mm (1/8") past the full diameter of the drill.

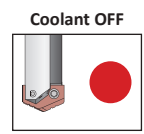




6. Drill Retract
50 RPM max

Reduce speed to a **maximum of 50 RPM** before retracting from the hole.





⚠ WARNING **Tool failure can cause serious injury. To prevent:**

- When using holders without support bushing, use a short T-A holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

Troubleshooting Guide

	Potential Problem																					
	Accelerated corner wear	Barber pole	Bell-mouthed hole	Insert chipping	Blue chips	Built-up Edge (BUE)	Chatter	Chip packing	Chipping of point	Damaged or broken tools	Excessive margin wear	High flank wear	Hole lead off	Hole out of position	Hole out of round	Notching of insert	Oversize hole	Poor hole finish	Poor tool life	Power spikes - Load meter	Step burned on insert	
Setup Condition	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	**Possible Solutions**
⚠ Use of Standard, Standard Plus, Extended, Long, Long Plus, XL, and 3XL holders See page 146 for Deep Hole Drilling guidelines		2	3				7		9				13	14			17					• Start with short holder and drill a minimum depth equal to 2xD (see page A30: 146 for instructions). • Spot hole with stub tool of same or greater included angle as T-A® drill insert. • Decrease feed a minimum of 50% until establishing full diameter. • Use special holder with wear pads or chrome bearing area to work with drill bushings.
Starting on an inclined surface		2					7		9	10	11		13		15							• Spot face surface to provide a flat entry surface. • Spot hole with stub tool of same or greater included angle as T-A® drill insert. • Decrease feed a minimum of 50% until establishing full diameter. • Use special holder with wear pads or chrome bearing area to work with drill bushings.
Worn or misaligned spindle (lathe, screw machine, chucker)	1	2	3				7		9	10	11		13				17	18				• Align spindle and turret or tailstock. • Repair spindle. • Spot hole with stub tool of same or greater included angle as T-A® drill insert.
Use of low rigidity machine tools (radial drills, multi-spindle drill press, etc.)		2	3	4			7		9	10			13	14								• Spot hole with stub tool of same or greater included angle as T-A® drill insert. • Reduce penetration rate to fall within the physical limits of the machine or setup (**NOTICE:** Do not reduce feed below threshold of good chip formation). • Use special holder with wear pads or chrome bearing area to work with drill bushings. • Use tougher tool steel grades with high wear-resistant coatings.
Poor workpiece support.		2		4			7			10	11				15			18				• Provide additional support for the workpiece. Reduce penetration rate to fall within the physical limits of the machine or setup (**NOTICE:** Do not reduce feed below threshold of good chip formation). • Use tougher tool steel grades with high wear-resistant coatings.
Flood coolant, low coolant pressure or low coolant volume	1				5	6		8		10		12					17	18	19	20	21	• Run coolant through tool holder when drilling greater than one times diameter. • Increase coolant pressure and volume through the tool holder. • Reduce penetration rate to fall within the coolant limitations (**NOTICE:** Do not reduce feed below threshold of good chip formation). • Add a peck cycle to help clear chips.

⚠ WARNING **Tool failure can cause serious injury. To prevent:**

- When using holders without support bushing, use a short T-A holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

Troubleshooting Guide

	Potential Problem																					
	Accelerated corner wear	Barber pole	Bell-mouthed hole	Insert chipping	Blue chips	Built-up Edge (BUE)	Chatter	Chip packing	Chipping of point	Damaged or broken tools	Excessive margin wear	High flank wear	Hole lead off	Hole out of position	Hole out of round	Notching of insert	Oversize hole	Poor hole finish	Poor tool life	Power spikes - Load meter	Step burned on insert	
Setup Condition	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	**Possible Solutions**
Interrupted cuts. Entry or exit surfaces that are not perpendicular to the spindle (draft angles, stepped surfaces, cross holes, and cast or forged surfaces)				**4**			**7**		**9**	**10**	**11**		**13**	**14**	**15**		**17**	**18**	**19**			• Premill (spot face) entry or exit surface to remove interruption. • Spot hole with stub tool of same or greater included angle as T-A® drill insert. • Decrease feed as much as 50% through entry or exit interruption. • Use short holders in low impact entry cuts.
Material harder than expected or running tools beyond recommended speeds	**1**				**5**	**6**				**10**		**12**							**19**		**21**	• Reduce speed if a step is worn in the insert, calculate SFM at the worn diameter. Reduce this value by 10% and apply this new value to the original tool diameter. • Increase coolant pressure and volume. • Improve coolant condition by use of quality products and regular maintenance. • Select an insert grade (premium, super cobalt, or carbide) or coating (TiAlN, TiCN, or AM200®) that is more wear- and heat-resistant.
Poor material microstructure or foreign particles (forgings and castings that have not been normalized or annealed, poorly prepared steel, flame cut parts and sand casting)				**4**		**6**				**10**		**12**	**13**			**16**			**19**			• Compare performance of other tools for similar wear problems, which may indicate poor microstructure. Anneal or normalize parts to improve microstructure for machining. • To improve tool life in materials with poor microstructure, try carbide grades. • For hard spots or inclusions, use the tougher insert steel grade with high wear-resistant coatings (TiAlN, TiCN, AM200®). • Reduce feeds (**NOTICE:** Do not reduce feed below threshold of good chip formation).
Poor chip control								**8**		**10**	**11**		**13**				**17**	**18**	**19**	**20**		• Increase feed to recommended levels. Contact Allied's Application Engineering team for technical recommendations. • Increase coolant pressure and volume. • Improve coolant condition by use of quality products and regular maintenance. • See pages A30: 5 - 6 for special purpose geometries.
Spot drilled holes with included angle less than that matching T-A® or cored holes	**1**			**4**			**7**						**13**			**16**			**19**			• Spot hole with short tool of same or greater included angle as T-A® drill insert. • Reduce feed (**NOTICE:** Do not reduce feed below threshold of good chip formation) • If possible, drill from solid.
Use of high wear-resistant insert grades				**4**						**10**												• Use tougher grade of T-A® (from carbide to cobalt to HSS). See wear versus toughness chart on page A30: 10. • Increase rigidity of setup.

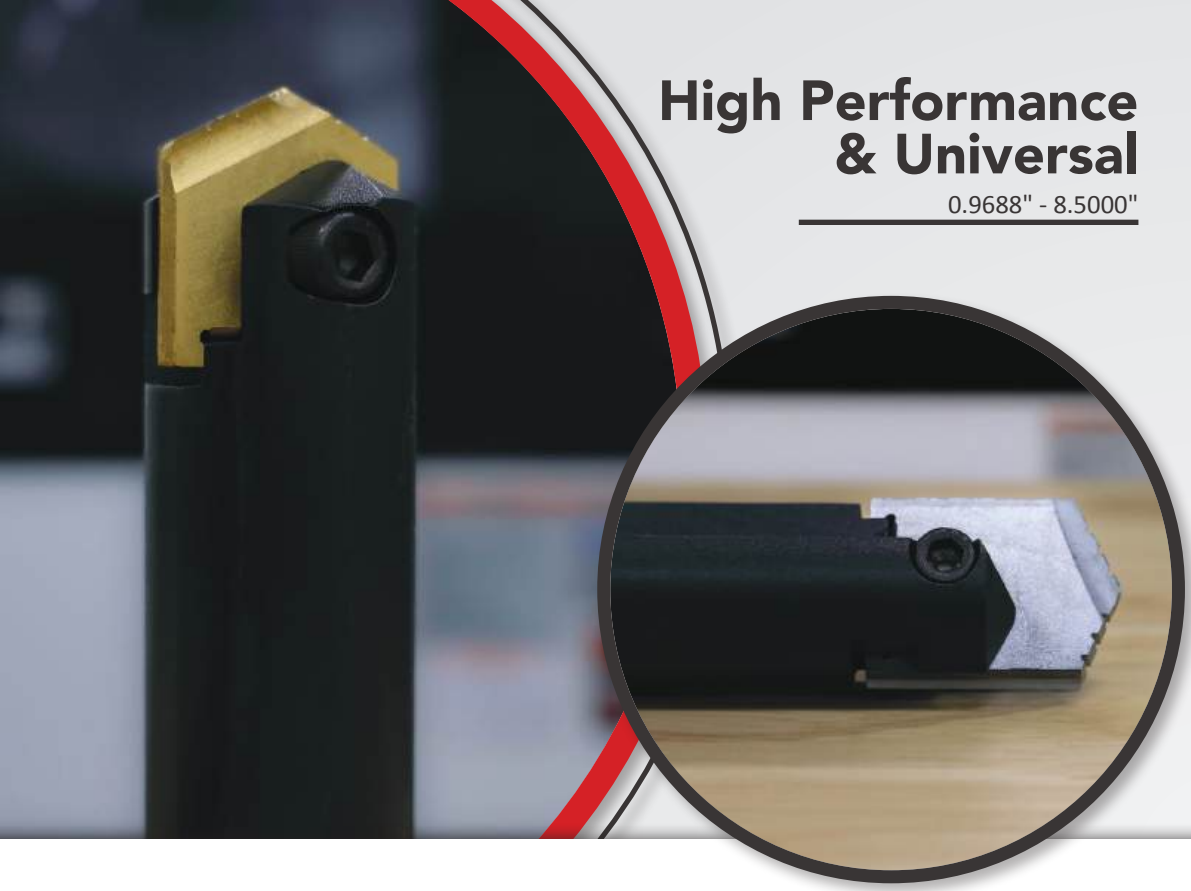
SECTION

A40

High Performance / Universal

High Performance & Universal

0.9688" - 8.5000"



High Performance and Universal

The Universal spade drill is the original design that launched Allied Machine into the holemaking industry. After the T-A® was introduced, customers who already owned the Universal style holders wanted the same benefits offered by the T-A without having to invest in an entirely new system.

The High Performance (HP) insert was created to provide similar performance as the T-A. The HP insert (along with an adapter for larger sizes) fits into existing Universal style holders.

When the customers speak, we listen.

Since the Beginning

- Utilizes ANSI specs.
- High Performance inserts for T-A benefits in Universal holders.

Applicable Industries

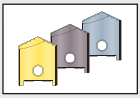
- Aerospace
- Agriculture
- Automotive
- Defense
- General Production
- Heavy Equipment
- Hydraulics
- Marine
- Oil and Gas
- Renewable Energy/ Energy
- Tool, Mold, and Die

Reference Icons

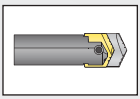
The following icons will appear throughout the catalog to help you navigate between products.



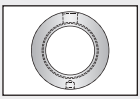
High Performance / Universal Inserts
Refers to the range of inserts that connect with the corresponding holders.



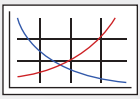
Universal Insert Coating Options
Details and overview of the different coatings available for Universal spade drill inserts.



High Performance / Universal Holders
Refers to the range of holders that connect with the corresponding inserts.



Rotary Coolant Adapter (RCA) Information
Detailed instructions and information regarding the corresponding RCA part.



Recommended Cutting Data
Speed and feed recommendations for optimum and safe drilling.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

WARNING means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

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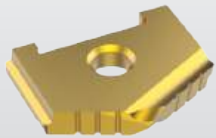
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System Overview

Inserts

High Performance Inserts

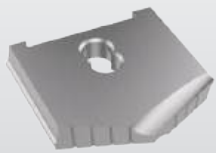


A - C Series

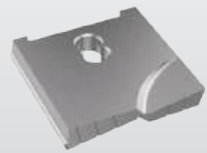
High Performance Inserts

- Increase production 100 - 500% compared to uncoated Universal spade drill inserts.
- Fit into Universal style holders.
- Available in TiN and TiAlN coatings.
- Single-piece design (A - C series) eliminates the need for adapters, which maximizes tool performance in these smaller sizes.

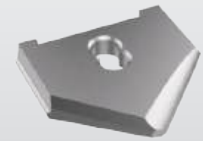
Universal Inserts



130° CPM-M4



Flat Bottom



90° Spot and Chamfer

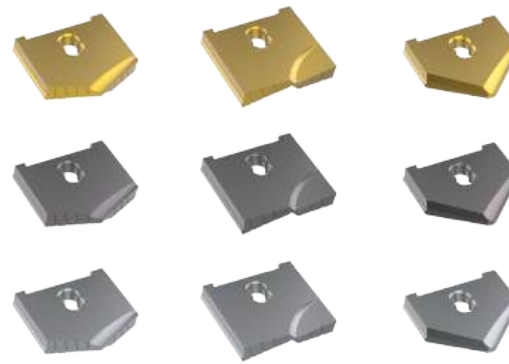
Universal Inserts

- Standard inserts stocked uncoated.
- Also available in TiN, TiAlN, and TiCN coatings, which improve tool life when compared to uncoated inserts.

TiN Coating	
Ordering Code: T	Example: 10224-0116**T**

TiAlN Coating	
Ordering Code: A	Example: 10224-0116**A**

TiCN Coating	
Ordering Code: N	Example: 10224-0116**N**



System Overview

Holders



Straight Shank Holders

- Stub (#125)
- Short (#150)
- Short (#100)
- Standard (#200)
- Long (#250)



Taper Shank Holders

- Short (#300)
- Short (#300 TSC)
- Short (#400 SR)
- Standard (#500 SR)
- Long (#600 SR)
- XL (#700 SR)

Product Nomenclature

High Performance Spade Drill Inserts

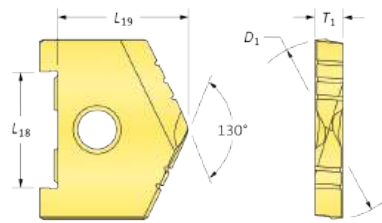
1	02	8	T	–	0406
	Material	**Series**	**Coating**		**Diameter (by 1/32")**
	02 = High-speed steel	**1** = A series **2** = B series **3** = C series	**T** = TiN **A** = TiAlN **N** = TiCN		**0406** = Inch **4.3593** = Decimal

Universal Spade Drill Inserts

1	02	8		4	–	0406	T
	Insert Style	**Series**		**Material**		**Diameter (by 1/32")**	**Coating**
	02 = 130° Spade **04** = Flat Bottom **12** = 90° Spot & Chamfer	**1** = A series **2** = B series **3** = C series **4** = D series **5** = E series	**6** = F series **7** = G series **8** = H1 - H2 series **9** = H3 - H9 series	**4** = High-speed steel (SPM-M4 HSS)		**0406** = Fractional **4.3593** = Decimal	**Blank** = Uncoated **T** = TiN **A** = TiAlN **N** = TiCN

Reference Key

Symbol	Attribute
D_1	Insert diameter
L_{18}	Holder locating area
L_{19}	Reference length



Series	A	B	C	D	E
					
$D_{1\ Max}$	0.9688"	1.2500"	1.5000"	2.0000"	2.5000"
$D_{1\ Min}$	1.2500"	1.7500"	2.3750"	2.8750"	3.3750"

Series	F	G	H1 - H2	H3 - H9
				
$D_{1\ Max}$	3.0000"	3.5000"	4.0000"	5.1250"
$D_{1\ Min}$	3.8750"	4.5000"	5.0000"	8.5000"

Product Nomenclature

High Performance / Universal Spade Drill Insert Holders

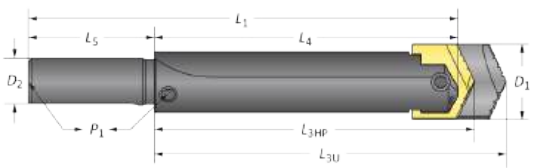
2	22	8	1	–	004
	Classification	Series			Shank Designator

Straight Shank	Taper Shank	Series	Straight Shank	Taper Shank
02 = Stub #125 (NC)	**14** = Short #300 (NC)	**1** = A	**0750** = 0.750"	**0002** = #2 MT
04 = Short #150 (NC)	**15** = Short #300 (TSC)	**2** = B	**1000** = 1.000"	**0003** = #3 MT
06 = Short #100 (C)	**16** = Short #400 SR (RCA)	**3** = C	**1250** = 1.250"	**0004** = #4 MT
08 = Standard #200 (C)	**18** = Standard #500 SR (RCA)	**4** = D	**1500** = 1.500"	**0005** = #5 MT
10 = Long #250 (C) ⚠	**20** = Long #600 SR (RCA) ⚠	**5** = E	**2000** = 2.000"	**0006** = #6 MT
	22 = XL #700 SR SR (RCA) ⚠	**6** = F	**3000** = 3.000"	
		7 = G		
		8 = H		

***C** = Coolant **NC** = No Coolant **TSC** = Through-Shank Coolant **RCA** = Rotary Coolant Adapter*

Reference Key

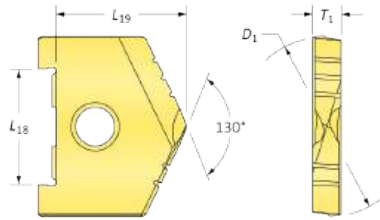
Symbol	Attribute
D_1	Insert diameter
D_2	Shank diameter
L_1	Overall length
L_{3HP}	Reference length (High Performance)
L_{3U}	Reference length (Universal)
L_4	Flute length
L_5	Shank length
P_1	Pipe tap



A Series: 0.9688" - 1.3750"

High Performance and Universal Inserts

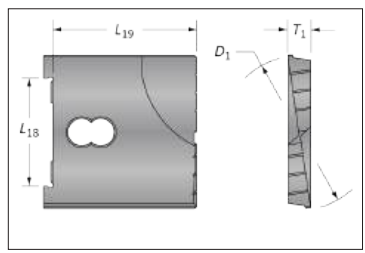




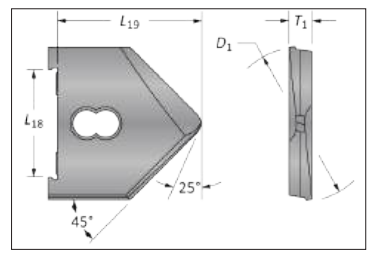
High Performance Inserts

Series	D_1 inch Decimal	D_1 inch Fractional Equivalent	Inserts L_{18}	Inserts L_{19}	Part No. TiN	Part No. TiAlN	Part No. TiCN
A	0.9688	31/32	3/4	7/8	**1021T-0031**	**1021A-0031**	**1021N-0031**
	1.0000	1	3/4	7/8	**1021T-0100**	**1021A-0100**	**1021N-0100**
	1.0313	1-1/32	3/4	7/8	**1021T-0101**	**1021A-0101**	**1021N-0101**
	1.0625	1-1/16	3/4	7/8	**1021T-0102**	**1021A-0102**	**1021N-0102**
	1.0938	1-3/32	3/4	7/8	**1021T-0103**	**1021A-0103**	**1021N-0103**
	1.1250	1-1/8	3/4	7/8	**1021T-0104**	**1021A-0104**	**1021N-0104**
	1.1563	1-5/32	3/4	7/8	**1021T-0105**	**1021A-0105**	**1021N-0105**
	1.1875	1-3/16	3/4	7/8	**1021T-0106**	**1021A-0106**	**1021N-0106**
	1.2188	1-7/32	3/4	7/8	**1021T-0107**	**1021A-0107**	**1021N-0107**
	1.2500	1-1/4	3/4	7/8	**1021T-0108**	**1021A-0108**	**1021N-0108**
A Oversize	1.2813	1-9/32	3/4	7/8	**1021T-0109**	**1021A-0109**	**1021N-0109**
	1.3125	1-5/16	3/4	7/8	**1021T-0110**	**1021A-0110**	**1021N-0110**
	1.3438	1-11/32	3/4	7/8	**1021T-0111**	**1021A-0111**	**1021N-0111**
	1.3750	1-3/8	3/4	7/8	**1021T-0112**	**1021A-0112**	**1021N-0112**





Flat Bottom



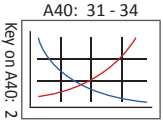
90° Spot & Chamfer

Universal Inserts

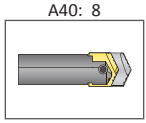
Series	D_1 inch Decimal	D_1 inch Fractional Equivalent	Inserts L_{18}	Inserts L_{19}	Flat Bottom Part No. Uncoated	90° Spot & Chamfer Part No. Uncoated
A	1.0000	1	3/4	1-5/32	**10414-0100**	—
	1.0625	1-1/16	3/4	1-5/32	**10414-0102**	—
	1.1250	1-1/8	3/4	1-5/32	**10414-0104**	—
	1.1875	1-3/16	3/4	1-5/32	**10414-0106**	—
	1.2500	1-1/4	3/4	1-5/32	**10414-0108**	**11214-0108**

A40: 31 - 34

Key on A40: 2



A40: 8



Inserts sold in quantities of 1.

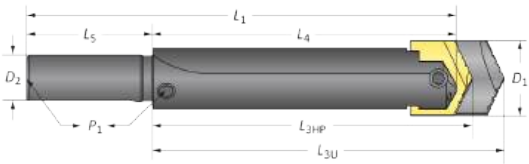
Sizes not shown are available upon request. Example:

Inch:	1-3/64", High Performance (A series), TiN = **1021T-1.0469**
Decimal:	1.2125", High Performance (A series), TiN = **1021T-1.2125**

A Series: 0.9688" - 1.3750"

High Performance / Universal Insert Holders

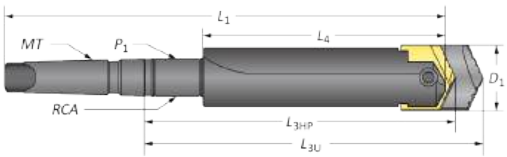




Straight Shank Holders

	Body					Shank				
	Length	L_{3HP}	L_{3U}	L_4	L_1	L_5	D_2	P_1	Style	Part No.
	Short	3.250	3.531	3.000	6.500	3.500	3/4	—	#150	**20411-0750**
	Short	3.250	3.531	3.000	6.500	3.500	1	—	#150	**20411-1000**
	Short	3.250	3.531	3.000	6.500	3.500	1	1/8 NPT	#100	**20611-1000**
ⓘ	Short	3.250	3.531	3.000	6.500	3.500	1-1/2	1/8 NPT	#100	**20611-1500**
	Standard	8.000	8.281	7.750	11.250	3.500	3/4	1/8 NPT	#200	**20811-0750**
	Standard	8.000	8.281	7.750	11.250	3.500	1	1/8 NPT	#200	**20811-1000**
	Standard	8.000	8.281	7.750	11.250	3.500	1-1/2	1/8 NPT	#200	**20811-1500**
	Long	15.250	15.531	15.000	18.500	3.500	1	1/8 NPT	#250	⚠ **21011-1000**





Taper Shank Holders

	Body					Shank				
	Length	L_{3HP}	L_{3U}	L_4	L_1	MT	P_1	RCA	Style	Part No.
	Short	3.437	3.719	3.000	6.875	#3 MT	—	—	#300	**21411-0003**
	Short	3.500	3.719	3.000	7.875	#4 MT	—	—	#300	**21411-0004**
	Short	3.437	3.719	3.000	6.875	#3 MT	—	—	#300 TSC	**21511-0003***
ⓘ	Short	5.188	5.469	3.000	9.563	#4 MT	1/4 NPT	2T-4SR	#400 SR	**21611-0004**
	Standard	9.938	10.219	7.750	14.313	#4 MT	1/4 NPT	2T-4SR	#500 SR	**21811-0004**
	Long	17.188	17.469	15.000	21.563	#4 MT	1/4 NPT	2T-4SR	#600 SR	⚠ **22011-0004**
	XL	23.188	23.469	21.000	27.563	#4 MT	1/4 NPT	2T-4SR	#700 SR	⚠ **22211-0004**

*Through-shank coolant, coolant inlet diameter = 1/4".

Rotary Coolant Adapter (RCA) and Accessories

						RCA O-Rings	
ID	*OD*	L_1	Driving Rod Thread	P_1	Part No.	Kit Part No.	Replacements
1.250	2.500	1.375	3/8" - 16	1/4 NPT	⚠ **2T-4SR**	2T1-4SR	2T1-4OR-10

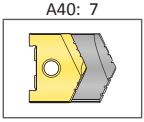
⚠ Refer to page A40: 28 for proper RCA assembly and safety information.

Connection Accessories

Clamping Screw		Blade-Loc Screw		Pipe Plug			
				Straight Shank		MT Shank (with RCA)	
Part No.	Key	Part No.	Key	Part No.	Key	Part No.	Key
772074-1	5/64"	—	—	**710004-1**	5/32"	**710006-1**	7/32"

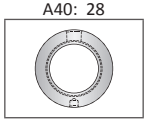
ⓘ = Imperial (in)
ⓜ = Metric (mm)
O-rings sold in packs of 10.

A40: 7



Key on A40: 2

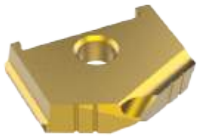
A40: 28

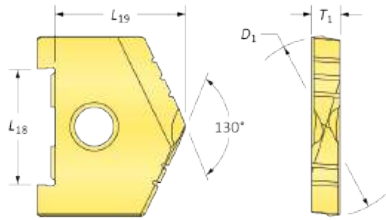


⚠ **WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A40: 35 for deep hole drilling guidelines in this section of the catalog. Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

B Series: 1.2500" - 1.7500"

High Performance and Universal Inserts

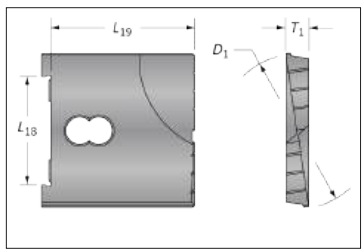




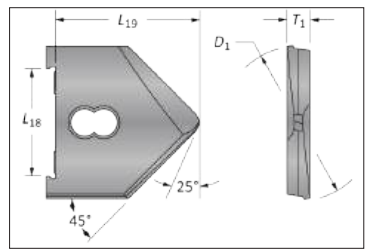
High Performance Inserts

Series	D_1 inch Decimal	D_1 inch Fractional Equivalent	Inserts L_{18}	Inserts L_{19}	Part No. TiN	Part No. TiAlN	Part No. TiCN
B	1.2500	1-1/4	1-1/16	1-3/32	**1022T-0108**	**1022A-0108**	**1022N-0108**
	1.2813	1-9/32	1-1/16	1-3/32	**1022T-0109**	**1022A-0109**	**1022N-0109**
	1.3125	1-5/16	1-1/16	1-3/32	**1022T-0110**	**1022A-0110**	**1022N-0110**
	1.3438	1-11/32	1-1/16	1-3/32	**1022T-0111**	**1022A-0111**	**1022N-0111**
	1.3750	1-3/8	1-1/16	1-3/32	**1022T-0112**	**1022A-0112**	**1022N-0112**
	1.4063	1-13/32	1-1/16	1-3/32	**1022T-0113**	**1022A-0113**	**1022N-0113**
	1.4375	1-7/16	1-1/16	1-3/32	**1022T-0114**	**1022A-0114**	**1022N-0114**
	1.4688	1-15/32	1-1/16	1-3/32	**1022T-0115**	**1022A-0115**	**1022N-0115**
	1.5000	1-1/2	1-1/16	1-3/32	**1022T-0116**	**1022A-0116**	**1022N-0116**
B Oversize	1.5313	1-17/32	1-1/16	1-3/32	**1022T-0117**	**1022A-0117**	**1022N-0117**
	1.5625	1-9/16	1-1/16	1-3/32	**1022T-0118**	**1022A-0118**	**1022N-0118**
	1.5938	1-19/32	1-1/16	1-3/32	**1022T-0119**	**1022A-0119**	**1022N-0119**
	1.6250	1-5/8	1-1/16	1-3/32	**1022T-0120**	**1022A-0120**	**1022N-0120**
	1.6563	1-21/32	1-1/16	1-3/32	**1022T-0121**	**1022A-0121**	**1022N-0121**
	1.6875	1-11/16	1-1/16	1-3/32	**1022T-0122**	**1022A-0122**	**1022N-0122**
	1.7188	1-23/32	1-1/16	1-3/32	**1022T-0123**	**1022A-0123**	**1022N-0123**
	1.7500	1-3/4	1-1/16	1-3/32	**1022T-0124**	**1022A-0124**	**1022N-0124**





Flat Bottom



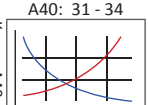
90° Spot & Chamfer

Universal Inserts

Series	D_1 inch Decimal	D_1 inch Fractional Equivalent	Inserts L_{18}	Inserts L_{19}	Flat Bottom Part No. Uncoated	90° Spot & Chamfer Part No. Uncoated
B	1.2500	1-1/4	1-1/16	1-13/32	**10424-0108**	—
	1.3125	1-5/16	1-1/16	1-13/32	**10424-0110**	—
	1.3750	1-3/8	1-1/16	1-13/32	**10424-0112**	—
	1.4375	1-7/16	1-1/16	1-13/32	**10424-0114**	—
	1.5000	1-1/2	1-1/16	1-13/32	**10424-0116**	**11224-0116**

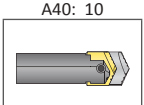
Inserts sold in quantities of 1.

A40: 31 - 34



Key on A40: 2

A40: 10



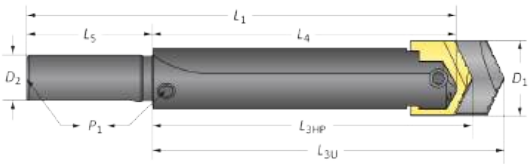
Sizes not shown are available upon request. Example:

Inch:	1-21/64", High Performance (B series), TiN = **1022T-1.3281**
Decimal:	1.4500", High Performance (B series), TiN = **1022T-1.4500**

B Series: 1.2500" - 1.7500"

High Performance / Universal Insert Holders

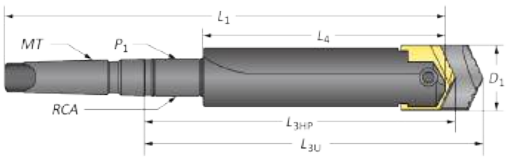




Straight Shank Holders

	Body					Shank				
	Length	L_{3HP}	L_{3U}	L_4	L_1	L_5	D_2	P_1	Style	Part No.
	Short	3.781	4.094	3.500	7.000	3.500	1	—	#150	**20421-1000**
	Short	3.781	4.094	3.500	7.000	3.500	1	1/4 NPT	#100	**20621-1000**
	Short	3.781	4.094	3.500	7.000	3.500	1-1/4	1/4 NPT	#100	**20621-1250**
i	Short	3.781	4.094	3.500	7.000	3.500	1-1/2	1/4 NPT	#100	**20621-1500**
	Standard	8.406	8.719	8.125	11.625	3.500	1	1/4 NPT	#200	**20821-1000**
	Standard	8.406	8.719	8.125	11.625	3.500	1-1/4	1/4 NPT	#200	**20821-1250**
	Standard	8.406	8.719	8.125	11.625	3.500	1-1/2	1/4 NPT	#200	**20821-1500**
	Long	15.281	15.594	15.000	18.500	3.500	1-1/4	1/4 NPT	#250	⚠ **21021-1250**





Taper Shank Holders

	Body					Shank				
	Length	L_{3HP}	L_{3U}	L_4	L_1	*MT*	P_1	*RCA*	Style	Part No.
	Short	3.969	4.281	3.500	7.375	#3 MT	—	—	#300	**21421-0003**
	Short	4.031	4.344	3.500	8.375	#4 MT	—	—	#300	**21421-0004**
	Short	4.031	4.344	3.500	8.375	#4 MT	—	—	#300 TSC	**21521-0004***
i	Short	5.719	6.031	3.500	10.063	#4 MT	1/4 NPT	2T-4SR	#400 SR	**21621-0004**
	Standard	10.344	10.656	8.125	14.688	#4 MT	1/4 NPT	2T-4SR	#500 SR	**21821-0004**
	Long	17.219	17.531	15.000	21.563	#4 MT	1/4 NPT	2T-4SR	#600 SR	⚠ **22021-0004**
	XL	24.219	24.531	22.000	28.563	#4 MT	1/4 NPT	2T-4SR	#700 SR	⚠ **22221-0004**

*Through-shank coolant, coolant inlet diameter = 5/16".

Rotary Coolant Adapter (RCA) and Accessories

						RCA O-Rings	
ID	*OD*	L_1	Driving Rod Thread	P_1	Part No.	Kit Part No.	Replacements
1.250	2.500	1.375	3/8" - 16	1/4 NPT	⚠ **2T-4SR**	2T1-4SR	2T1-4OR-10
1.750	3.000	1.375	3/8" - 16	1/4 NPT	⚠ **2T-5SR**	2T1-5SR	2T1-5OR-10

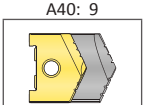
⚠ Refer to page A40: 28 for proper RCA assembly and safety information.

Connection Accessories

Clamping Screw		Blade-Loc Screw		Pipe Plug			
				Straight Shank		MT Shank (with RCA)	
Part No.	Key	Part No.	Key	Part No.	Key	Part No.	Key
772098-1	3/16"	—	—	**710006-1**	7/32"	**710006-1**	7/32"

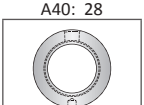
i = Imperial (in)
m = Metric (mm)
O-rings sold in packs of 10.

A40: 9



Key on A40: 2

A40: 28

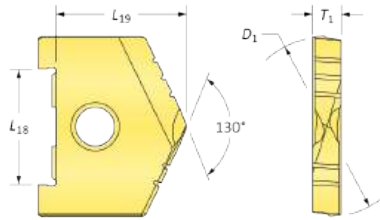


⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A40: 35 for deep hole drilling guidelines in this section of the catalog. Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

C Series: 1.5000" - 2.3750"

High Performance Inserts

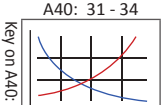




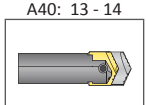
Series	D_1 inch Decimal	D_1 inch Fractional Equivalent	Inserts L_{18}	Inserts L_{19}	Part No. TiN	Part No. TiAlN	Part No. TiCN
C	1.5000	1-1/2	1-1/4	1-19/64	**1023T-0116**	**1023A-0116**	**1023N-0116**
	1.5313	1-17/32	1-1/4	1-19/64	**1023T-0117**	**1023A-0117**	**1023N-0117**
	1.5625	1-9/16	1-1/4	1-19/64	**1023T-0118**	**1023A-0118**	**1023N-0118**
	1.5938	1-19/32	1-1/4	1-19/64	**1023T-0119**	**1023A-0119**	**1023N-0119**
	1.6250	1-5/8	1-1/4	1-19/64	**1023T-0120**	**1023A-0120**	**1023N-0120**
	1.6563	1-21/32	1-1/4	1-19/64	**1023T-0121**	**1023A-0121**	**1023N-0121**
	1.6875	1-11/16	1-1/4	1-19/64	**1023T-0122**	**1023A-0122**	**1023N-0122**
	1.7188	1-23/32	1-1/4	1-19/64	**1023T-0123**	**1023A-0123**	**1023N-0123**
	1.7500	1-3/4	1-1/4	1-19/64	**1023T-0124**	**1023A-0124**	**1023N-0124**
	1.7813	1-25/32	1-1/4	1-19/64	**1023T-0125**	**1023A-0125**	**1023N-0125**
	1.8125	1-13/16	1-1/4	1-19/64	**1023T-0126**	**1023A-0126**	**1023N-0126**
	1.8438	1-27/32	1-1/4	1-19/64	**1023T-0127**	**1023A-0127**	**1023N-0127**
	1.8750	1-7/8	1-1/4	1-19/64	**1023T-0128**	**1023A-0128**	**1023N-0128**
	1.9063	1-29/32	1-1/4	1-19/64	**1023T-0129**	**1023A-0129**	**1023N-0129**
	1.9375	1-15/16	1-1/4	1-19/64	**1023T-0130**	**1023A-0130**	**1023N-0130**
	1.9688	1-31/32	1-1/4	1-19/64	**1023T-0131**	**1023A-0131**	**1023N-0131**
	2.0000	2	1-1/4	1-19/64	**1023T-0200**	**1023A-0200**	**1023N-0200**
C Oversize	2.0313	2-1/32	1-1/4	1-19/64	**1023T-0201**	**1023A-0201**	**1023N-0201**
	2.0625	2-1/16	1-1/4	1-19/64	**1023T-0202**	**1023A-0202**	**1023N-0202**
	2.0938	2-3/32	1-1/4	1-19/64	**1023T-0203**	**1023A-0203**	**1023N-0203**
	2.1250	2-1/8	1-1/4	1-19/64	**1023T-0204**	**1023A-0204**	**1023N-0204**
	2.1563	2-5/32	1-1/4	1-19/64	**1023T-0205**	**1023A-0205**	**1023N-0205**
	2.1875	2-3/16	1-1/4	1-19/64	**1023T-0206**	**1023A-0206**	**1023N-0206**
	2.2188	2-7/32	1-1/4	1-19/64	**1023T-0207**	**1023A-0207**	**1023N-0207**
	2.2500	2-1/4	1-1/4	1-19/64	**1023T-0208**	**1023A-0208**	**1023N-0208**
	2.2813	2-9/32	1-1/4	1-19/64	**1023T-0209**	**1023A-0209**	**1023N-0209**
	2.3125	2-5/16	1-1/4	1-19/64	**1023T-0210**	**1023A-0210**	**1023N-0210**
	2.3438	2-11/32	1-1/4	1-19/64	**1023T-0211**	**1023A-0211**	**1023N-0211**
	2.3750	2-3/8	1-1/4	1-19/64	**1023T-0212**	**1023A-0212**	**1023N-0212**

A40

A40: 31 - 34
Key on A40: 2



A40: 13 - 14



Inserts sold in quantities of 1.

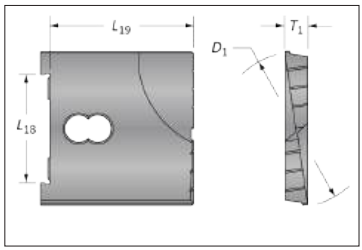
Sizes not shown are available upon request. Example:

Inch:	1-63/64", High Performance (C series), TiN = **1023T-1.9844**
Decimal:	1.9763", High Performance (C series), TiN = **1023T-1.9763**

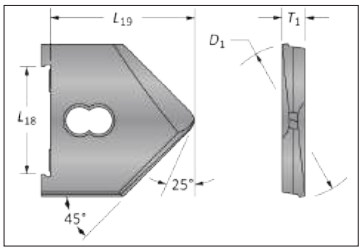
C Series: 1.5000" - 2.3750"

Universal Inserts





Flat Bottom

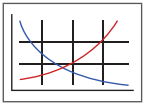


90° Spot & Chamfer

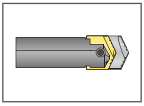
Series	D_1 inch Decimal	D_1 inch Fractional Equivalent	Inserts L_{18}	Inserts L_{19}	Flat Bottom Part No. Uncoated	90° Spot & Chamfer Part No. Uncoated
C	1.5000	1-1/2	1-1/4	2	**10434-0116**	—
	1.5625	1-9/16	1-1/4	2	**10434-0118**	—
	1.6250	1-5/8	1-1/4	2	**10434-0120**	—
	1.6875	1-11/16	1-1/4	2	**10434-0122**	—
	1.7500	1-3/4	1-1/4	2	**10434-0124**	—
	1.8125	1-13/16	1-1/4	2	**10434-0126**	—
	1.8750	1-7/8	1-1/4	2	**10434-0128**	—
	1.9375	1-15/16	1-1/4	2	**10434-0130**	—
	2.0000	2	1-1/4	2	**10434-0200**	**11234-0200**

A40: 31 - 34

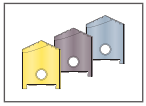
Key on A40: 2



A40: 13 - 14



A40: 3

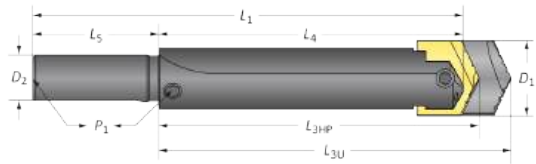


Inserts sold in quantities of 1.

C Series: 1.5000" - 2.3750"

High Performance / Universal Insert Holders





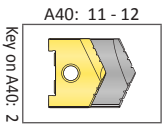
Straight Shank Holders

	Body					Shank				
	Length	L_{3HP}	L_{3U}	L_4	L_1	L_5	D_2	P_1	Style	Part No.
	Stub	2.297	3.000	2.000	6.000	4.000	1-1/2	—	#125	**20231-1500**
	Short	4.297	5.000	4.000	8.000	4.000	1-1/4	—	#150	**20431-1250**
i	Short	4.297	5.000	4.000	8.000	4.000	1-1/4	1/4 NPT	#100	**20631-1250**
i	Short	4.297	5.000	4.000	8.000	4.000	1-1/2	1/4 NPT	#100	**20631-1500**
	Standard	8.797	9.500	8.500	12.500	4.000	1-1/4	1/4 NPT	#200	**20831-1250**
	Standard	8.797	9.500	8.500	12.500	4.000	1-1/2	1/4 NPT	#200	**20831-1500**
	Long	18.297	19.000	18.000	22.000	4.000	1-1/2	1/4 NPT	#250	⚠ **21031-1500**

Connection Accessories

Clamping Screw		Blade-Loc Screw		Pipe Plug			
				Straight Shank		MT Shank (with RCA)	
Part No.	Key	Part No.	Key	Part No.	Key	Part No.	Key
772074-1	5/64"	—	—	**710004-1**	5/32"	**710006-1**	7/32"

i = Imperial (in)
m = Metric (mm)
O-rings sold in packs of 10.

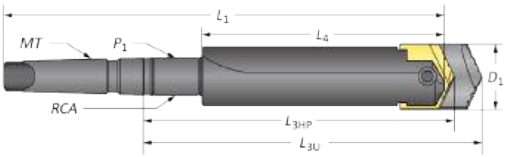


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C Series: 1.5000" - 2.3750"

High Performance / Universal Insert Holders





Taper Shank Holders

	Body					Shank				
	Length	L_{3HP}	L_{3U}	L_4	L_1	MT	P_1	RCA	Style	Part No.
	Short	4.547	5.250	4.000	8.875	#4 MT	—	—	#300	**21431-0004**
	Short	4.547	5.250	4.000	8.875	#4 MT	—	—	#300 TSC	**21531-0004***
	Short	4.547	5.250	4.000	10.125	#5 MT	—	—	#300 TSC	**21531-0005***
	Short	6.234	6.938	4.000	10.563	#4 MT	1/4 NPT	2T-4SR	#400 SR	**21631-0004**
ⓘ	Standard	10.734	11.438	8.500	15.063	#4 MT	1/4 NPT	2T-4SR	#500 SR	**21831-0004**
	Standard	10.734	11.438	8.500	16.313	#5 MT	1/4 NPT	2T-5SR	#500 SR	**21831-0005**
	Long	20.234	20.938	18.000	24.563	#4 MT	1/4 NPT	2T-4SR	#600 SR	⚠ **22031-0004**
	Long	20.234	20.938	18.000	25.813	#5 MT	1/4 NPT	2T-5SR	#600 SR	⚠ **22031-0005**
	XL	28.234	28.938	26.000	32.563	#4 MT	1/4 NPT	2T-4SR	#700 SR	⚠ **22231-0004**
	XL	28.234	28.938	26.000	33.813	#5 MT	1/4 NPT	2T-5SR	#700 SR	⚠ **22231-0005**

*Through-shank coolant, coolant inlet diameter = 5/16".

Rotary Coolant Adapter (RCA) and Accessories

ID	OD	L_1	Driving Rod Thread	P_1	Part No.	RCA O-Rings	
						Kit Part No.	Replacements
1.250	2.500	1.375	3/8" - 16	1/4 NPT	⚠ **2T-4SR**	2T1-4SR	2T1-4OR-10
1.750	3.000	1.375	3/8" - 16	1/4 NPT	⚠ **2T-5SR**	2T1-5SR	2T1-5OR-10

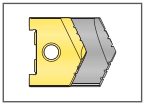
⚠ Refer to page A40: 28 for proper RCA assembly and safety information.

Connection Accessories

Clamping Screw		Blade-Loc Screw		Pipe Plug			
				Straight Shank		MT Shank (with RCA)	
Part No.	Key	Part No.	Key	Part No.	Key	Part No.	Key
772100-1	3/16"	—	—	**710006-1**	7/32"	**710006-1**	7/32"

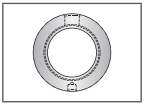
ⓘ = Imperial (in)
ⓜ = Metric (mm)
O-rings sold in packs of 10.

A40: 11 - 12



Key on A40: 2

A40: 28

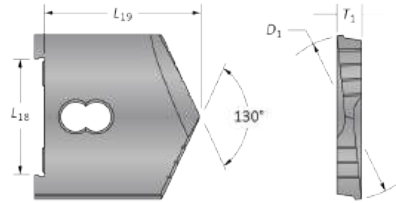


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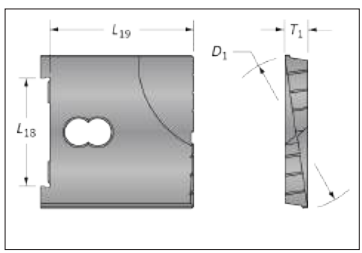
D Series: 2.0000" - 2.8750"

Universal Inserts

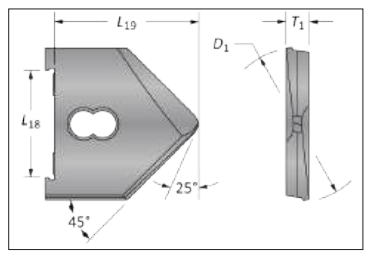




Series	D_1 inch Decimal	D_1 inch Fractional Equivalent	Inserts L_{18}	Inserts L_{19}	Part No. Uncoated	Flat Bottom Part No. Uncoated	90° Spot & Chamfer Part No. Uncoated
D	2	2.0000	1-3/4	2-3/8	**10244-0200**	**10444-0200**	—
	2-1/32	2.0313	1-3/4	2-3/8	**10244-0201**	—	—
	2-1/16	2.0625	1-3/4	2-3/8	**10244-0202**	**10444-0202**	—
	2-3/32	2.0938	1-3/4	2-3/8	**10244-0203**	—	—
	2-1/8	2.1250	1-3/4	2-3/8	**10244-0204**	**10444-0204**	—
	2-5-32	2.1563	1-3/4	2-3/8	**10244-0205**	—	—
	2-3-16	2.1875	1-3/4	2-3/8	**10244-0206**	**10444-0206**	—
	2-7/32	2.2188	1-3/4	2-3/8	**10244-0207**	—	—
	2-1/4	2.2500	1-3/4	2-3/8	**10244-0208**	**10444-0208**	—
	2-9/32	2.2813	1-3/4	2-3/8	**10244-0209**	—	—
	2-5/16	2.3125	1-3/4	2-3/8	**10244-0210**	**10444-0210**	—
	2-11/32	2.3438	1-3/4	2-3/8	**10244-0211**	—	—
	2-3/8	2.3750	1-3/4	2-3/8	**10244-0212**	**10444-0212**	—
	2-13/32	2.4063	1-3/4	2-3/8	**10244-0213**	—	—
	2-7/16	2.4375	1-3/4	2-3/8	**10244-0214**	**10444-0214**	—
	2-15/32	2.4688	1-3/4	2-3/8	**10244-0215**	—	—
	2-1/2	2.5000	1-3/4	2-3/8	**10244-0216**	**10444-0216**	**11244-0216**
D Oversize	2-17/32	2.5313	1-3/4	2-3/8	**10244-0217**	—	—
	2-9/16	2.5625	1-3/4	2-3/8	**10244-0218**	—	—
	2-19/32	2.5938	1-3/4	2-3/8	**10244-0219**	—	—
	2-5/8	2.6250	1-3/4	2-3/8	**10244-0220**	—	—
	2-21/32	2.6563	1-3/4	2-3/8	**10244-0221**	—	—
	2-11/16	2.6875	1-3/4	2-3/8	**10244-0222**	—	—
	2-23/32	2.7188	1-3/4	2-3/8	**10244-0223**	—	—
	2-3/4	2.7500	1-3/4	2-3/8	**10244-0224**	—	—
	2-25/35	2.7813	1-3/4	2-3/8	**10244-0225**	—	—
	2-13/16	2.8125	1-3/4	2-3/8	**10244-0226**	—	—
	2-27/32	2.8438	1-3/4	2-3/8	**10244-0227**	—	—
	2-7/8	2.8750	1-3/4	2-3/8	**10244-0228**	—	—



Flat Bottom



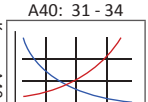
90° Spot & Chamfer

Inserts sold in quantities of 1.

Sizes not shown are available upon request. Example:

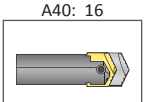
Inch:	2-21/64", Universal (D series), 130° CPM-M4 = **10244-2.3281**
Decimal:	2.4500", Universal (D series), 130° CPM-M4 = **10244-2.4500**

A40: 31 - 34

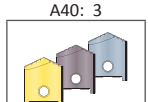


Key on A40: 2

A40: 16



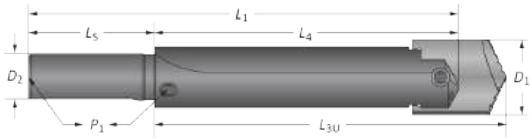
A40: 3



D Series: 2.0000" - 2.8750"

Universal Insert Holders

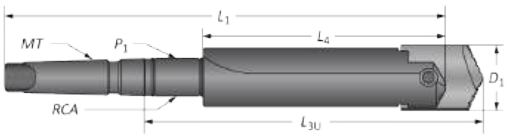




Straight Shank Holders

	Body				Shank				
	Length	L_{3U}	L_4	L_1	L_5	D_2	P_1	Style	Part No.
	Stub	3.250	2.250	6.250	4.000	1-1/2	—	#125	**20241-1500**
	Short	5.500	4.500	8.500	4.000	1-1/2	—	#150	**20441-1500**
ⓘ	Short	5.500	4.500	8.500	4.000	1-1/2	1/4 NPT	#100	**20641-1500**
	Standard	10.000	9.000	13.000	4.000	1-1/2	1/4 NPT	#200	**20841-1500**
	Long	19.000	18.000	22.000	4.000	1-1/2	1/4 NPT	#250	⚠ **21041-1500**





Taper Shank Holders

	Body				Shank				
	Length	L_{3U}	L_4	L_1	*MT*	P_1	*RCA*	Style	Part No.
	Short	5.750	4.500	9.375	#4 MT	—	—	#300	**21441-0004**
	Short	5.750	4.500	10.625	#5 MT	—	—	#300	**21441-0005**
	Short	5.750	4.500	9.375	#4 MT	—	—	#300 TSC	**21541-0004***
	Short	7.438	4.500	11.063	#4 MT	1/4 NPT	2T-4SR	#400 SR	**21641-0004**
ⓘ	Standard	11.938	9.000	15.563	#4 MT	1/4 NPT	2T-4SR	#500 SR	**21841-0004**
	Standard	11.938	9.000	16.813	#5 MT	1/4 NPT	2T-5SR	#500 SR	**21841-0005**
	Long	20.938	18.000	24.563	#4 MT	1/4 NPT	2T-4SR	#600 SR	⚠ **22041-0004**
	Long	20.938	18.000	25.813	#5 MT	1/4 NPT	2T-5SR	#600 SR	⚠ **22041-0005**
	XL	30.938	28.000	34.563	#4 MT	1/4 NPT	2T-4SR	#700 SR	⚠ **22241-0004**
	XL	30.938	28.000	35.813	#5 MT	1/4 NPT	2T-5SR	#700 SR	⚠ **22241-0005**

*Through-shank coolant, coolant inlet diameter = 5/16".

Rotary Coolant Adapter (RCA) and Accessories

ID	*OD*	L_1	Driving Rod Thread	P_1	Part No.	RCA O-Rings	
						Kit Part No.	Replacements
1.250	2.500	1.375	3/8" - 16	1/4 NPT	⚠ **2T-4SR**	2T1-4SR	2T1-4OR-10
1.750	3.000	1.375	3/8" - 16	1/4 NPT	⚠ **2T-5SR**	2T1-5SR	2T1-5OR-10

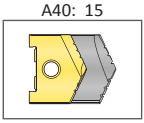
⚠ Refer to page A40: 28 for proper RCA assembly and safety information.

Connection Accessories

Clamping Screw		Blade-Loc Screw		Pipe Plug			
				Straight Shank		MT Shank (with RCA)	
Part No.	Key	Part No.	Key	Part No.	Key	Part No.	Key
772160-1	7/16"	**724050-1**	**1/8"**	**710006-1**	7/32"	**710006-1**	7/32"

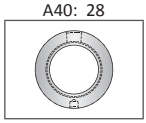
ⓘ = Imperial (in)
Ⓜ = Metric (mm)
O-rings sold in packs of 10.

A40: 15



Key on A40: 2

A40: 28

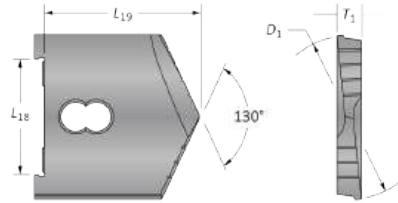


⚠ **WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A40: 35 for deep hole drilling guidelines in this section of the catalog. Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

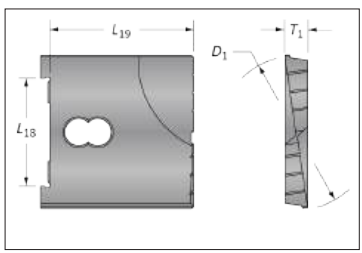
E Series: 2.5000" - 3.3750"

Universal Inserts

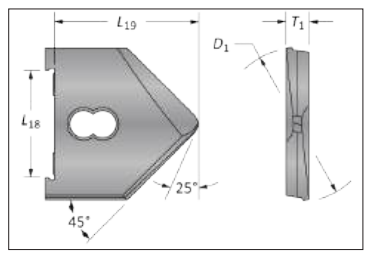




Series	D_1 inch Decimal	D_1 inch Fractional Equivalent	Inserts L_{18}	Inserts L_{19}	Part No. Uncoated	Flat Bottom Part No. Uncoated	90° Spot & Chamfer Part No. Uncoated
E	2-1/2	2.5000	2-1/16	2-5/8	**10254-0216**	**10454-0216**	—
	2-17/32	2.5313	2-1/16	2-5/8	**10254-0217**	—	—
	2-9/16	2.5625	2-1/16	2-5/8	**10254-0218**	**10454-0218**	—
	2-19/32	2.5938	2-1/16	2-5/8	**10254-0219**	—	—
	2-5/8	2.6250	2-1/16	2-5/8	**10254-0220**	**10454-0220**	—
	2-21/32	2.6563	2-1/16	2-5/8	**10254-0221**	—	—
	2-11/16	2.6875	2-1/16	2-5/8	**10254-0222**	**10454-0222**	—
	2-23/32	2.7188	2-1/16	2-5/8	**10254-0223**	—	—
	2-3/4	2.7500	2-1/16	2-5/8	**10254-0224**	**10454-0224**	—
	2-25/32	2.7813	2-1/16	2-5/8	**10254-0225**	—	—
	2-13/16	2.8125	2-1/16	2-5/8	**10254-0226**	**10454-0226**	—
	2-27/32	2.8438	2-1/16	2-5/8	**10254-0227**	—	—
	2-7/8	2.8750	2-1/16	2-5/8	**10254-0228**	**10454-0228**	—
	2-29/32	2.9063	2-1/16	2-5/8	**10254-0229**	—	—
	2-15/16	2.9375	2-1/16	2-5/8	**10254-0230**	**10454-0230**	—
	2-31/32	2.9688	2-1/16	2-5/8	**10254-0231**	—	—
	3	3.0000	2-1/16	2-5/8	**10254-0300**	**10454-0300**	**11254-0300**
E Oversize	3-1/32	3.0313	2-1/16	2-5/8	**10254-0301**	—	—
	3-1/16	3.0625	2-1/16	2-5/8	**10254-0302**	—	—
	3-3/32	3.0938	2-1/16	2-5/8	**10254-0303**	—	—
	3-1/8	3.1250	2-1/16	2-5/8	**10254-0304**	—	—
	3-5/32	3.1563	2-1/16	2-5/8	**10254-0305**	—	—
	3-3/16	3.1875	2-1/16	2-5/8	**10254-0306**	—	—
	3-7/32	3.2188	2-1/16	2-5/8	**10254-0307**	—	—
	3-1/4	3.2500	2-1/16	2-5/8	**10254-0308**	—	—
	3-9/32	3.2813	2-1/16	2-5/8	**10254-0309**	—	—
	3-5/16	3.3125	2-1/16	2-5/8	**10254-0310**	—	—
	3-11/32	3.3438	2-1/16	2-5/8	**10254-0311**	—	—
	3-3/8	3.3750	2-1/16	2-5/8	**10254-0312**	—	—



Flat Bottom



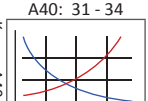
90° Spot & Chamfer

Inserts sold in quantities of 1.

Sizes not shown are available upon request. Example:

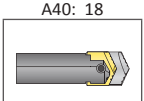
Inch:	2-63/64", Universal (E series), 130° CPM-M4 = **10254-2.9844**
Decimal:	2.9763", Universal (E series), 130° CPM-M4 = **10254-2.9763**

A40: 31 - 34

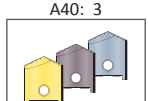


Key on A40: 2

A40: 18



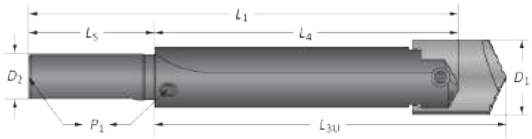
A40: 3



E Series: 2.5000" - 3.3750"

Universal Insert Holders

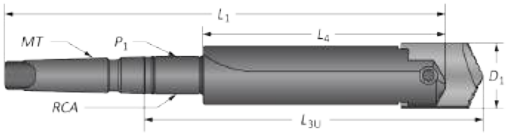




Straight Shank Holders

	Body				Shank				
	Length	L_{3U}	L_4	L_1	L_5	D_2	P_1	Style	Part No.
	Stub	3.563	2.500	6.500	4.000	2	—	#125	**20251-2000**
	Short	6.063	5.000	9.000	4.000	1-3/4	—	#150	**20451-1750**
i	Short	6.063	5.000	9.000	4.000	1-3/4	1/2 NPT	#100	**20651-1750**
	Standard	11.063	10.000	14.000	4.000	2	1/2 NPT	#200	**20851-2000**
	Long	21.063	20.000	24.000	4.000	2	1/2 NPT	#250	⚠ **21051-2000**





Taper Shank Holders

	Body				Shank				
	Length	L_{3U}	L_4	L_1	*MT*	P_1	*RCA*	Style	Part No.
	Short	6.313	5.000	9.875	#4 MT	—	—	#300	**21451-0004**
	Short	6.313	5.000	11.125	#5 MT	—	—	#300	**21451-0005**
	Short	6.313	5.000	11.125	#5 MT	—	—	#300 TSC	**21551-0005***
i	Short	8.626	5.000	13.438	#5 MT	1/2 NPT	2T-6SR	#400 SR	**21651-0005**
	Standard	13.626	10.000	18.438	#5 MT	1/2 NPT	2T-6SR	#500 SR	**21851-0005**
	Long	23.626	20.000	28.438	#5 MT	1/2 NPT	2T-6SR	#600 SR	⚠ **22051-0005**
	XL	33.626	30.000	38.438	#5 MT	1/2 NPT	2T-6SR	#700 SR	⚠ **22251-0005**

*Through-shank coolant, coolant inlet diameter = 3/8".

Rotary Coolant Adapter (RCA) and Accessories

ID	*OD*	L_1	Driving Rod Thread	P_1	Part No.	RCA O-Rings	
						Kit Part No.	Replacements
2.250	3.750	1.750	1/2" - 13	1/2 NPT	⚠ **2T-6SR**	2T1-6SR	2T1-6OR-10

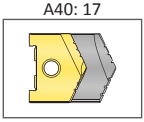
⚠ Refer to page A40: 28 for proper RCA assembly and safety information.

Connection Accessories

Clamping Screw		Blade-Loc Screw		Pipe Plug			
				Straight Shank		MT Shank (with RCA)	
Part No.	Key	Part No.	Key	Part No.	Key	Part No.	Key
772232-1	3/8"	**724050-1**	**1/8"**	**710010-1**	3/8"	**710010-1**	3/8"

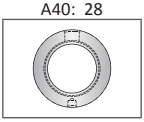
i = Imperial (in)
m = Metric (mm)
O-rings sold in packs of 10.

A40: 17



Key on A40: 2

A40: 28

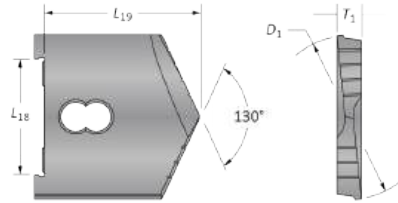


⚠ **WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A40: 35 for deep hole drilling guidelines in this section of the catalog. Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

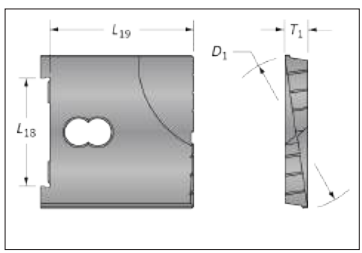
F Series: 3.0000" - 3.8750"

Universal Inserts

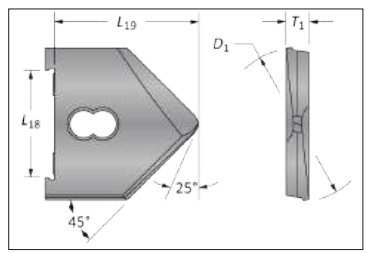




Series	D_1 inch Decimal	D_1 inch Fractional Equivalent	Inserts L_{18}	Inserts L_{19}	Part No. Uncoated	Flat Bottom Part No. Uncoated	90° Spot & Chamfer Part No. Uncoated
F	3	3.0000	2-5/8	3-1/8	**10264-0300**	**10464-0300**	—
	3-1/32	3.0313	2-5/8	3-1/8	**10264-0301**	—	—
	3-1/16	3.0625	2-5/8	3-1/8	**10264-0302**	**10464-0302**	—
	3-3/32	3.0938	2-5/8	3-1/8	**10264-0303**	—	—
	3-1/8	3.1250	2-5/8	3-1/8	**10264-0304**	**10464-0304**	—
	3-5/32	3.1563	2-5/8	3-1/8	**10264-0305**	—	—
	3-3/16	3.1875	2-5/8	3-1/8	**10264-0306**	**10464-0306**	—
	3-7/32	3.2188	2-5/8	3-1/8	**10264-0307**	—	—
	3-1/4	3.2500	2-5/8	3-1/8	**10264-0308**	—	—
	3-9/32	3.2813	2-5/8	3-1/8	**10264-0309**	—	—
	3-5/16	3.3125	2-5/8	3-1/8	**10264-0310**	**10464-0310**	—
	3-11/32	3.3438	2-5/8	3-1/8	**10264-0311**	—	—
	3-3/8	3.3750	2-5/8	3-1/8	**10264-0312**	—	—
	3-13/32	3.4063	2-5/8	3-1/8	**10264-0313**	—	—
	3-7/16	3.4375	2-5/8	3-1/8	**10264-0314**	**10464-0314**	—
	3-15/32	3.4688	2-5/8	3-1/8	**10264-0315**	—	—
	3-1/2	3.5000	2-5/8	3-1/8	**10264-0316**	**10464-0316**	**11264-0316**
F Oversize	3-17/32	3.5313	2-5/8	3-1/8	**10264-0317**	—	—
	3-9/16	3.5625	2-5/8	3-1/8	**10264-0318**	—	—
	3-19/32	3.5938	2-5/8	3-1/8	**10264-0319**	—	—
	3-5/8	3.6250	2-5/8	3-1/8	**10264-0320**	—	—
	3-21/32	3.6563	2-5/8	3-1/8	**10264-0321**	—	—
	3-11/16	3.6875	2-5/8	3-1/8	**10264-0322**	—	—
	3-23/32	3.7188	2-5/8	3-1/8	**10264-0323**	—	—
	3-3/4	3.7500	2-5/8	3-1/8	**10264-0324**	—	—
	3-25/32	3.7813	2-5/8	3-1/8	**10264-0325**	—	—
	3-13/16	3.8125	2-5/8	3-1/8	**10264-0326**	—	—
	3-27/32	3.8438	2-5/8	3-1/8	**10264-0327**	—	—
	3-7/8	3.8750	2-5/8	3-1/8	**10264-0328**	—	—



Flat Bottom



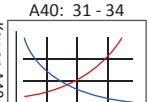
90° Spot & Chamfer

Inserts sold in quantities of 1.

Sizes not shown are available upon request. Example:

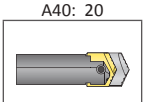
Inch:	3-21/64", Universal (F series), 130° CPM-M4 = **10264-3.3281**
Decimal:	3.4500", Universal (F series), 130° CPM-M4 = **10264-3.4500**

A40: 31 - 34

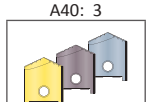


Key on A40: 2

A40: 20



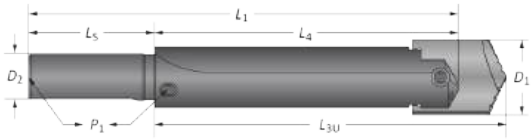
A40: 3



F Series: 3.0000" - 3.8750"

Universal Insert Holders

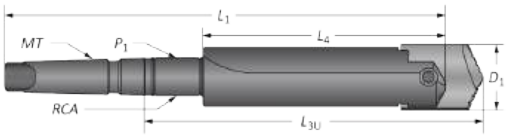




Straight Shank Holders

	Body				Shank				
	Length	L_{3U}	L_4	L_1	L_5	D_2	P_1	Style	Part No.
	Stub	4.000	2.750	6.750	4.000	2-1/2	—	#125	**20261-2500**
	Short	6.750	5.500	9.500	4.000	2	—	#150	**20461-2000**
i	Short	6.750	5.500	9.500	4.000	2	1/2 NPT	#100	**20661-2000**
	Short	6.750	5.500	9.500	4.000	2-1/2	1/2 NPT	#100	**20661-2500**
	Standard	12.750	11.500	15.500	4.000	2	1/2 NPT	#200	**20861-2000**
	Long	21.250	20.000	24.000	4.000	2-1/2	1/2 NPT	#250	⚠ **21061-2500**





Taper Shank Holders

	Body				Shank				
	Length	L_{3U}	L_4	L_1	*MT*	P_1	*RCA*	Style	Part No.
	Short	7.000	5.500	11.625	#5 MT	—	—	#300	**21461-0005**
	Short	7.000	5.500	11.625	#5 MT	—	—	#300 TSC	**21561-0005***
i	Short	9.313	5.500	13.938	#5 MT	1/2 NPT	2T-6SR	#400 SR	**21661-0005**
	Standard	15.313	11.500	19.938	#5 MT	1/2 NPT	2T-6SR	#500 SR	**21861-0005**
	Long	23.813	20.000	28.438	#5 MT	1/2 NPT	2T-6SR	#600 SR	⚠ **22061-0005**
	XL	36.813	33.000	41.438	#5 MT	1/2 NPT	2T-6SR	#700 SR	⚠ **22261-0005**

*Through-shank coolant, coolant inlet diameter = 3/8".

Rotary Coolant Adapter (RCA) and Accessories

						RCA O-Rings	
ID	*OD*	L_1	Driving Rod Thread	P_1	Part No.	Kit Part No.	Replacements
2.250	3.750	1.750	1/2" - 13	1/2 NPT	⚠ **2T-6SR**	2T1-6SR	2T1-6OR-10

⚠ Refer to page A40: 28 for proper RCA assembly and safety information.

Connection Accessories

Clamping Screw		Blade-Loc Screw		Pipe Plug			
				Straight Shank		MT Shank (with RCA)	
Part No.	Key	Part No.	Key	Part No.	Key	Part No.	Key
772272-1	7/16"	**724050-1**	**1/8"**	**710010-1**	3/8"	**710010-1**	3/8"

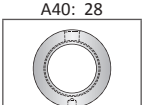
i = Imperial (in)
m = Metric (mm)
O-rings sold in packs of 10.

A40: 19



Key on A40: 2

A40: 28

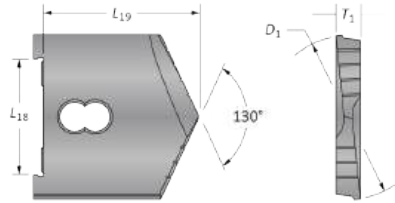


⚠ **WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A40: 35 for deep hole drilling guidelines in this section of the catalog. Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

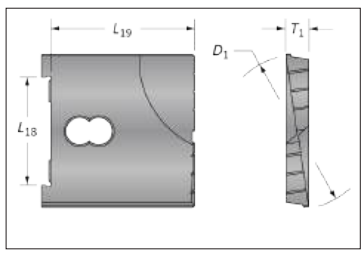
G Series: 3.5000" - 4.5000"

Universal Inserts

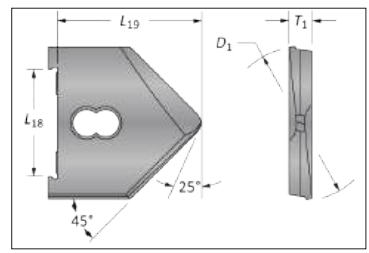




Series	D_1 inch Decimal	D_1 inch Fractional Equivalent	Inserts L_{18}	Inserts L_{19}	Part No. Uncoated	Flat Bottom Part No. Uncoated
G	3-1/2	3.5000	3-1/16	3-3/8	**10274-0316**	**10474-0316**
	3-17/32	3.5313	3-1/16	3-3/8	**10274-0317**	—
	3-9/16	3.5625	3-1/16	3-3/8	**10274-0318**	**10474-0318**
	3-19/32	3.5938	3-1/16	3-3/8	**10274-0319**	—
	3-5/8	3.6250	3-1/16	3-3/8	**10274-0320**	**10474-0320**
	3-21/32	3.6563	3-1/16	3-3/8	**10274-0321**	—
	3-11/16	3.6875	3-1/16	3-3/8	**10274-0322**	**10474-0322**
	3-23/32	3.7188	3-1/16	3-3/8	**10274-0323**	—
	3-3/4	3.7500	3-1/16	3-3/8	**10274-0324**	**10474-0324**
	3-25/32	3.7813	3-1/16	3-3/8	**10274-0325**	—
	3-13/16	3.8125	3-1/16	3-3/8	**10274-0326**	**10474-0326**
	3-27/32	3.8438	3-1/16	3-3/8	**10274-0327**	—
	3-7/8	3.8750	3-1/16	3-3/8	**10274-0328**	**10474-0328**
	3-29/32	3.9063	3-1/16	3-3/8	**10274-0329**	—
	3-15/16	3.9375	3-1/16	3-3/8	**10274-0330**	**10474-0330**
	3-31/32	3.9688	3-1/16	3-3/8	**10274-0331**	—
	4	4.0000	3-1/16	3-3/8	**10274-0400**	**10474-0400**
G Oversize	4-1/16	4.0625	3-1/16	3-3/8	**10274-0402**	—
	4-1/8	4.1250	3-1/16	3-3/8	**10274-0404**	—
	4-3/16	4.1875	3-1/16	3-3/8	**10274-0406**	—
	4-1/4	4.2500	3-1/16	3-3/8	**10274-0408**	—
	4-5/16	4.3125	3-1/16	3-3/8	**10274-0410**	—
	4-3/8	4.3750	3-1/16	3-3/8	**10274-0412**	—
	4-7/16	4.4375	3-1/16	3-3/8	**10274-0414**	—
	4-1/2	4.5000	3-1/16	3-3/8	**10274-0416**	—

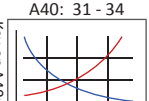


Flat Bottom



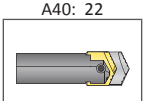
90° Spot & Chamfer

A40: 31 - 34

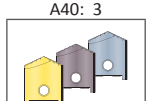


Key on A40: 2

A40: 22



A40: 3



Inserts sold in quantities of 1.

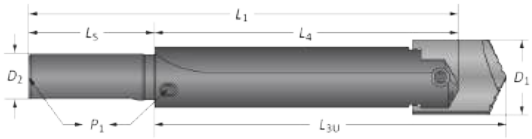
Sizes not shown are available upon request. Example:

Inch:	3-63/64", Universal (G series), 130° CPM-M4 = **10274-3.9844**
Decimal:	3.9763", Universal (G series), 130° CPM-M4 = **10274-3.9763**

G Series: 3.5000" - 4.5000"

Universal Insert Holders

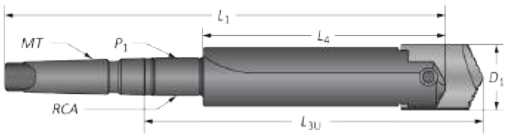




Straight Shank Holders

	Body				Shank				
	Length	L_{3U}	L_4	L_1	L_5	D_2	P_1	Style	Part No.
ⓘ	Short	7.438	6.000	11.000	2-1/2	5.000	1/2 NPT	#100	**20671-2500**
	Standard	14.438	13.000	18.000	2-1/2	5.000	1/2 NPT	#200	**20871-2500**





Taper Shank Holders

	Body				Shank				
	Length	L_{3U}	L_4	L_1	*MT*	P_1	*RCA*	Style	Part No.
	Short	7.688	6.000	12.125	#5 MT	—	—	#300	**21471-0005**
	Short	7.688	6.000	12.125	#5 MT	—	—	#300 TSC	**21571-0005***
ⓘ	Short	10.000	6.000	14.438	#5 MT	1/2 NPT	2T-6SR	#400 SR	**21671-0005**
	Standard	17.000	13.000	21.438	#5 MT	1/2 NPT	2T-6SR	#500 SR	**21871-0005**
	Long	28.000	24.000	32.438	#5 MT	1/2 NPT	2T-6SR	#600 SR	⚠ **22071-0005**
	XL	41.000	37.000	45.438	#5 MT	1/2 NPT	2T-6SR	#700 SR	⚠ **22271-0005**

*Through-shank coolant, coolant inlet diameter = 3/8".

Rotary Coolant Adapter (RCA) and Accessories

						RCA O-Rings	
ID	*OD*	L_1	Driving Rod Thread	P_1	Part No.	Kit Part No.	Replacements
2.250	3.750	1.750	1/2" - 13	1/2 NPT	⚠ **2T-6SR**	2T1-6SR	2T1-6OR-10

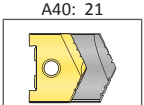
⚠ Refer to page A40: 28 for proper RCA assembly and safety information.

Connection Accessories

Clamping Screw		Blade-Loc Screw		Pipe Plug			
				Straight Shank		MT Shank (with RCA)	
Part No.	Key	Part No.	Key	Part No.	Key	Part No.	Key
772312-1	5/8"	**724050-1**	1/8"	**710010-1**	3/8"	**710010-1**	3/8"

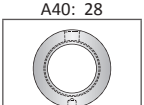
ⓘ = Imperial (in)
ⓜ = Metric (mm)
O-rings sold in packs of 10.

A40: 21



Key on A40: 2

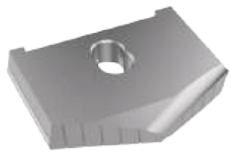
A40: 28

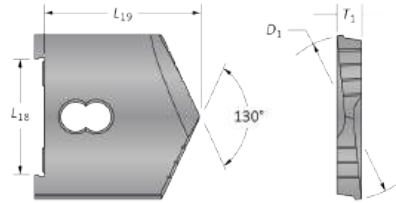


⚠ **WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A40: 35 for deep hole drilling guidelines in this section of the catalog. Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

H Series: 4.0000" - 8.5000"

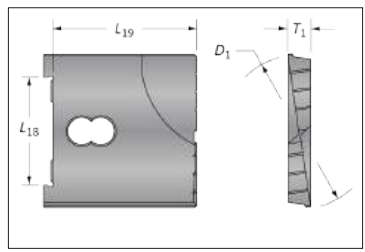
H[1] - H[2] Universal Inserts | Diameter Range: 4.0000" - 5.0000"





H[1] - H[2] Universal Inserts

Series	D_1 inch Decimal	D_1 inch Fractional Equivalent	Inserts L_{18}	Inserts L_{19}	Flat Bottom Part No. Uncoated	Flat Bottom Part No. Uncoated
H[1]	4	4.0000	3-1/2	3-11/16	**10284-0400**	**10484-0400**
	4-1/16	4.0625	3-1/2	3-11/16	**10284-0402**	—
	4-1/8	4.1250	3-1/2	3-11/16	**10284-0404**	**10484-0404**
	4-3/16	4.1875	3-1/2	3-11/16	**10284-0406**	—
	4-1/4	4.2500	3-1/2	3-11/16	**10284-0408**	**10484-0408**
	4-5/16	4.3125	3-1/2	3-11/16	**10284-0410**	—
	4-3/8	4.3750	3-1/2	3-11/16	**10284-0412**	**10484-0412**
	4-7/16	4.4375	3-1/2	3-11/16	**10284-0414**	—
	4-1/2	4.5000	3-1/2	3-11/16	**10284-0416**	**10484-0416**
H[2]	4-9/16	4.5625	3-1/2	3-11/16	**10284-0418**	—
	4-5/8	4.6250	3-1/2	3-11/16	**10284-0420**	**10484-0420**
	4-11/16	4.6875	3-1/2	3-11/16	**10284-0422**	—
	4-3/4	4.7500	3-1/2	3-11/16	**10284-0424**	**10484-0424**
	4-13/16	4.8125	3-1/2	3-11/16	**10284-0426**	—
	4-7/8	4.8750	3-1/2	3-11/16	**10284-0428**	**10484-0428**
	4-15/16	4.9375	3-1/2	3-11/16	**10284-0430**	—
	5	5.0000	3-1/2	3-11/16	**10284-0500**	**10484-0500**



Flat Bottom

Inserts sold in quantities of 1.

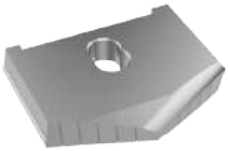
Sizes not shown are available upon request. Example:

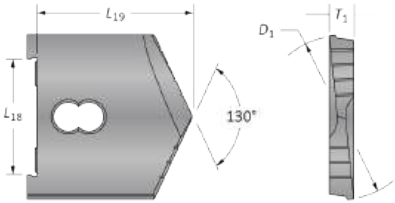
Inch:	4-21/64", Universal (H1 series), 130° CPM-M4 = **10284-4.3281**
Decimal:	4.4500", Universal (H1 series), 130° CPM-M4 = **10284-4.4500**

A40: 31 - 34
Key on A40: 2
A40: 25
A40: 3

H Series: 4.0000" - 8.5000"

H³ - H⁹ Universal Inserts | Diameter Range: 5.0001" - 8.5000"

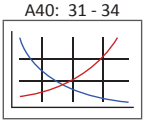




H³ - H⁹ Universal Inserts

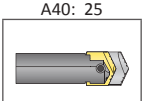
Series	D_1 inch Decimal	D_1 inch Fractional Equivalent	Inserts L_{18}	Inserts L_{19}	Part No. Uncoated
H³	5-1/8	5.1250	3-1/2	3-11/16	**10294-0504**
	5-1/4	5.2500	3-1/2	3-11/16	**10294-0508**
	5-3/8	5.3750	3-1/2	3-11/16	**10294-0512**
	5-1/2	5.5000	3-1/2	3-11/16	**10294-0516**
H⁴	5-5/8	5.6250	3-1/2	3-11/16	**10294-0520**
	5-3/4	5.7500	3-1/2	3-11/16	**10294-0524**
	5-7/8	5.8750	3-1/2	3-11/16	**10294-0528**
	6	6.0000	3-1/2	3-11/16	**10294-0600**
H⁵	6-1/8	6.1250	3-1/2	3-11/16	**10294-0604**
	6-1/4	6.2500	3-1/2	3-11/16	**10294-0608**
	6-3/8	6.3750	3-1/2	3-11/16	**10294-0612**
	6-1/2	6.5000	3-1/2	3-11/16	**10294-0616**
H⁶	6-5/8	6.6250	3-1/2	3-11/16	**10294-0620**
	6-3/4	6.7500	3-1/2	3-11/16	**10294-0624**
	6-7/8	6.8750	3-1/2	3-11/16	**10294-0628**
	7	7.0000	3-1/2	3-11/16	**10294-0700**
H⁷	7-1/8	7.1250	3-1/2	3-11/16	**10294-0704**
	7-1/4	7.2500	3-1/2	3-11/16	**10294-0708**
	7-3/8	7.3750	3-1/2	3-11/16	**10294-0712**
	7-1/2	7.5000	3-1/2	3-11/16	**10294-0716**
H⁸	7-5/8	7.6250	3-1/2	3-11/16	**10294-0720**
	7-3/4	7.7500	3-1/2	3-11/16	**10294-0724**
	7-7/8	7.8750	3-1/2	3-11/16	**10294-0728**
	8	8.0000	3-1/2	3-11/16	**10294-0800**
H⁹	8-1/8	8.1250	3-1/2	3-11/16	**10294-0804**
	8-1/4	8.2500	3-1/2	3-11/16	**10294-0808**
	8-3/8	8.3750	3-1/2	3-11/16	**10294-0812**
	8-1/2	8.5000	3-1/2	3-11/16	**10294-0816**

A40: 31 - 34

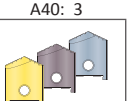


Key on A40: 2

A40: 25



A40: 3



Inserts sold in quantities of 1.

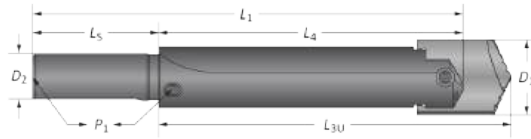
Sizes not shown are available upon request. Example:

Inch:	5-21/64", Universal (H3 series), 130° CPM-M4 = **10294-5.3281**
Decimal:	5.4500", Universal (H3 series), 130° CPM-M4 = **10294-5.4500**

H Series: 4.0000" - 8.5000"

Universal Insert Holders

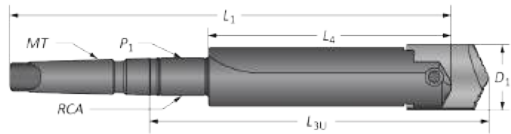




Straight Shank Holders

	Body				Shank				
	Length	L_{3U}	L_4	L_1	L_5	D_2	P_1	Style	Part No.
ⓘ	Short	8.562	7.000	13.000	2-1/2	6.000	1/2 NPT	#100	**20681-2500**
	Standard	16.562	15.000	21.000	2-1/2	6.000	1/2 NPT	#200	**20881-2500**





Taper Shank Holders

	Body				Shank				
	Length	L_{3U}	L_4	L_1	*MT*	P_1	*RCA*	Style	Part No.
	Short	8.812	7.000	13.125	#5 MT	—	-	#300	**21481-0005**
ⓘ	Short	11.125	7.000	15.438	#5 MT	1/2 NPT	2T-6SR	#400 SR	**21681-0005**
ⓘ	Standard	19.125	15.000	23.438	#5 MT	1/2 NPT	2T-6SR	#500 SR	**21881-0005**
ⓘ	Standard	19.187	15.000	25.875	#6 MT	1/2 NPT	2T-55SR	#500 SR	**21881-0006**
	Long	28.187	24.000	34.875	#6 MT	1/2 NPT	2T-55SR	#600 SR	⚠ **22081-0006**
	XL	44.187	40.000	50.875	#6 MT	1/2 NPT	2T-55SR	#700 SR	⚠ **22281-0006**

*Through-shank coolant, coolant inlet diameter = 3/8".

Rotary Coolant Adapter (RCA) and Accessories

ID	*OD*	L_1	Driving Rod Thread	P_1	Part No.	RCA O-Rings	
						Kit Part No.	Replacements
2.250	3.750	1.750	1/2" - 13	1/2 NPT	⚠ **2T-6SR**	2T1-6SR	2T1-6OR-10
2.500	4.000	1.750	1/2" - 13	1/2 NPT	⚠ **2T-55SR**	2T1-55SR	2T1-55OR-10

⚠ Refer to page A40: 28 for proper RCA assembly and safety information.

Connection Accessories

Clamping Screw		Blade-Loc Screw		Pipe Plug			
				Straight Shank		MT Shank (with RCA)	
Part No.	Key	Part No.	Key	Part No.	Key	Part No.	Key
772312-1	5/8"	**724062-1**	3/16"	**710010-1**	3/8"	**710010-1**	3/8"

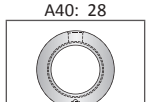
ⓘ = Imperial (in)
ⓜ = Metric (mm)
O-rings sold in packs of 10.

A40: 23 - 24



Key on A40: 2

A40: 28

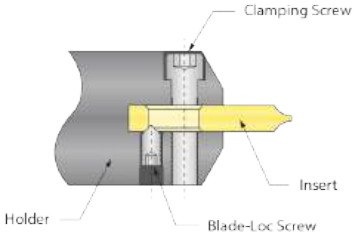


⚠ **WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A40: 35 for deep hole drilling guidelines in this section of the catalog. Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

Notes

Accessories

Blade-Loc Drill Insert Holders | Pipe Plugs



Blade-Loc Drill Holders - Universal

- Helps align the spade drill while locking it in place.
- Protects against tool movement during the drilling cycle and when the tool is being retracted from the hole.
- Standard feature in D - H series holders.

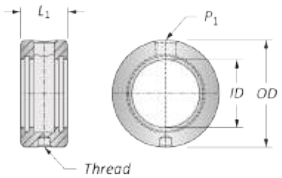
Connection Accessories

	Clamping Screw		Blade-Loc Screw		Pipe Plug			
					Straight Shank		MT Shank (with RCA)	
Series	Part No.	Key	Part No.	Key	Part No.	Key	Part No.	Key
A	**772074-1**	5/64"	—	—	**710004-1**	5/32"	**710006-1**	7/32"
B	**772098-1**	3/16"	—	—	**710006-1**	7/32"	**710006-1**	7/32"
C	**772100-1**	3/16"	—	—	**710006-1**	7/32"	**710006-1**	7/32"
D	**772160-1**	7/16"	**724050-1**	1/8"	**710006-1**	7/32"	**710006-1**	7/32"
E	**772232-1**	3/8"	**724050-1**	1/8"	**710010-1**	3/8"	**710010-1**	3/8"
F	**772272-1**	7/16"	**724050-1**	1/8"	**710010-1**	3/8"	**710010-1**	3/8"
G	**772312-1**	5/8"	**724050-1**	1/8"	**710010-1**	3/8"	**710010-1**	3/8"
H	**772312-1**	5/8"	**724062-1**	3/16"	**710010-1**	3/8"	**710010-1**	3/8"

Accessories

Rotary Coolant Adapters (RCA)

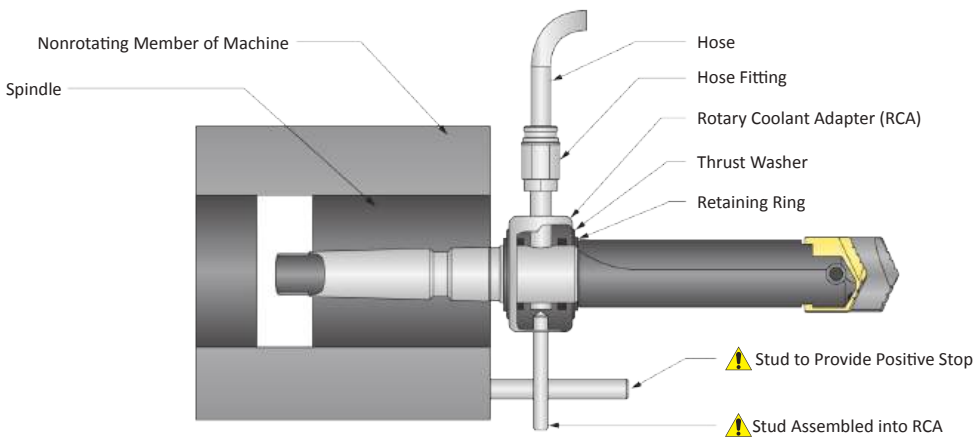




	Holder Series	*ID*	*OD*	L_1	Driving Rod Thread	P_1	Part No.*	Max Recommended RPM	RCA O-Rings	
									Kit Part No.**	Replacements
ⓘ	A, B, C, D	1.250	2.500	1.375	3/8" - 16	1/4 NPT	⚠ 2T-4SR	2000	2T1-4SR	2T1-4OR-10
	B, C, D	1.750	3.000	1.375	3/8" - 16	1/4 NPT	⚠ 2T-5SR	1500	2T1-5SR	2T1-5OR-10
	E, F, G, H	2.250	3.750	1.750	1/2" - 13	1/2 NPT	⚠ 2T-6SR	1100	2T1-6SR	2T1-6OR-10
	H	2.500	4.000	1.750	1/2" - 13	1/2 NPT	⚠ 2T-55SR	1100	2T1-55SR	2T1-55OR-10

*RCA comes complete with (1) RCA, (2) O-rings, (2) snap rings, and (2) thrust washers.
**RCA Repair Kit includes (2) O-rings, (2) snap rings, and (2) thrust washers.
NOTE: Max recommended pressure is 600 PSI (42 bar).
NOTE: Recommendations above are based on water and oil based coolants.



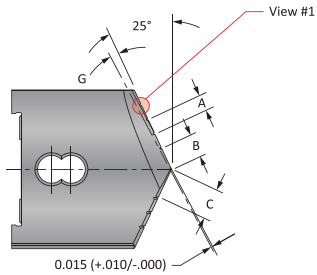


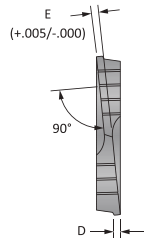
ⓘ = Imperial (in)
ⓜ = Metric (mm)
O-rings sold in packs of 10.

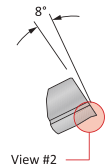
⚠ WARNING RCA rotation during drilling can cause hose and/or hose fitting failure, machinery damage, and/or serious injury. To prevent, use RCA and positive stop studs when drilling. Factory technical assistance is also available for your specific applications.

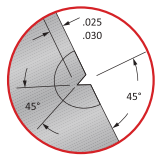
Regrind Charts

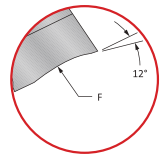
Universal Inserts











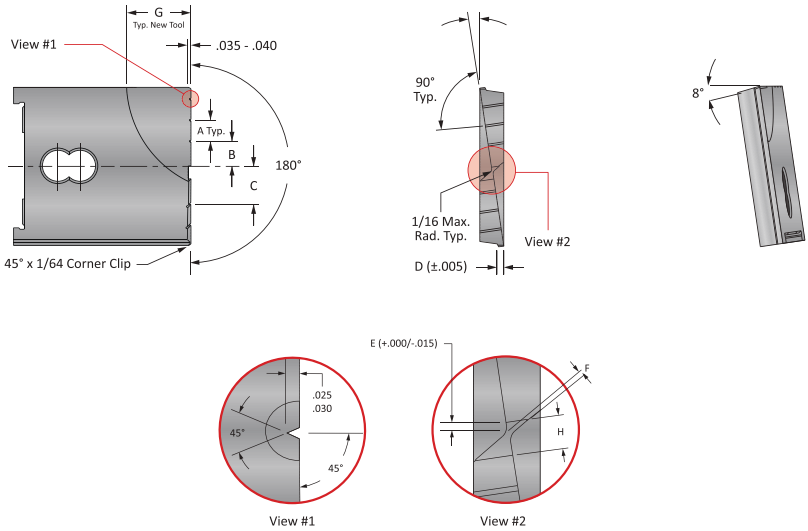
Universal (130°) Spade Drill Inserts

Series	Insert Thickness	Size Range	A	B	C	D	E	F	G
D	3/8	2 - 2-7/8	0.250	0.375	0.500	0.100	0.120	3/8	3°
E	7/16	2-1/2 - 3-3/8	0.300	0.437	0.587	0.100	0.140	3/8	3°
F	1/2	3 - 3-7/8	0.350	0.437	0.612	0.125	0.170	3/8	3°
G	5/8	3-1/2 - 4-1/2	0.350	0.500	0.675	0.140	0.200	3/8	3°
H^1 - H^2	11/16	4 - 5	0.400	0.500	0.700	0.165	0.225	1/2	3°
H^3	11/16	5-1/8 - 5-1/2	0.500	0.500	0.750	0.185	0.250	1/2	3°
H^4 - H^9	11/16	5-5/8 - 8-1/2	0.500	0.500	0.750	0.185	0.250	1/2	2°

NOTE: Maintain cutting edges of the tool within 0.001" T.I.R.

Regrind Charts

Universal Inserts



Flat Bottom Spade Drill Inserts

Series	Insert Thickness	Size Range	A	B	C	D	E	F	G	H
A	3/16	31/32 - 1-3/8	0.150	0.250	0.325	0.065	1/64 - 1/32	0.075	7/16	1/8
B	9/32	1-1/4 - 1-3/4	0.200	0.250	0.350	0.070	1/64 - 1/32	0.075	1/2	1/8
C	5/16	1-1/2 - 2-3/8	0.200	0.250	0.350	0.080	1/32 - 3/64	0.075	5/8	1/8
D	3/8	2 - 2-7/8	0.300	0.375	0.525	0.100	1/32 - 3/64	0.129	7/8	3/16
E	7/16	2-1/2 - 3-3/8	0.300	0.375	0.525	0.100	1/32 - 1/16	0.129	1-1/8	3/16
F	1/2	3 - 3-7/8	0.300	0.500	0.650	0.125	1/32 - 1/16	0.156	1-1/4	1/4
G	5/8	3-1/2 - 4-1/2	0.400	0.500	0.700	0.140	1/32 - 1/16	0.156	1-1/2	1/4
H^1 - H^2	11/16	4 - 5	0.500	0.500	0.750	0.165	1/32 - 1/16	0.156	1-1/2	1/4

NOTE: Grind cutting edge 0.005" above center line at the center of the new tool.
NOTE: Maintain flatness and height across the cutting edges of the tool within 0.001" T.I.R.

Recommended Drilling Data | Imperial (in)

HIGH PERFORMANCE | HIGH-SPEED STEEL

ISO	Material	Hardness (BHN)	Speed (SFM) TiN	TiAlN	TiCN	Feed Rate (IPR) by Diameter A Series 1" - 1-1/4"	B - C Series 1-1/4" - 2"	C - E Series 2" - 3"	E - H Series 3" - 5"
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 150	200	280	260	0.016	0.020	0.023	0.028
		150 - 200	180	260	235	0.016	0.020	0.023	0.028
		200 - 250	160	240	210	0.016	0.020	0.023	0.028
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	170	250	220	0.015	0.019	0.023	0.027
		125 - 175	160	240	210	0.015	0.019	0.023	0.027
		175 - 225	150	225	195	0.014	0.018	0.021	0.024
		225 - 275	140	210	180	0.014	0.018	0.021	0.024
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	160	240	210	0.015	0.019	0.023	0.027
		175 - 225	150	225	195	0.014	0.018	0.021	0.024
		225 - 275	140	210	180	0.014	0.018	0.021	0.024
		275 - 325	130	195	170	0.012	0.016	0.019	0.022
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	150	210	195	0.014	0.017	0.019	0.022
		175 - 225	140	195	180	0.014	0.017	0.019	0.022
		225 - 275	130	180	170	0.014	0.017	0.019	0.022
		275 - 325	120	170	155	0.012	0.015	0.017	0.020
		325 - 375	110	155	145	0.012	0.015	0.017	0.020
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	80	110	100	0.010	0.014	0.017	0.020
		300 - 350	60	85	80	0.010	0.014	0.017	0.020
		350 - 400	50	70	65	0.009	0.012	0.015	0.018
	Structural Steel A36, A285, A516, etc.	100 - 150	140	200	180	0.014	0.018	0.021	0.026
		150 - 250	120	170	155	0.012	0.016	0.019	0.024
		250 - 350	100	140	130	0.010	0.014	0.017	0.020
	Tool Steel H-13, H-21, A-4, 0-2, S-3, etc.	150 - 200	80	110	105	0.010	0.012	0.015	0.017
		200 - 250	60	90	85	0.010	0.012	0.015	0.017
M	**Stainless Steel** 303, 416, 420, 17-4 PH, etc.	135 - 185	75	105	95	0.011	0.014	0.016	0.020
		185 - 275	60	90	80	0.010	0.012	0.014	0.018
K	**Cast Iron**	120 - 150	170	250	220	0.020	0.024	0.027	0.030
		150 - 200	150	225	195	0.018	0.022	0.025	0.028
		200 - 220	130	195	170	0.016	0.018	0.021	0.024
		220 - 260	110	165	145	0.012	0.014	0.017	0.020
		260 - 320	90	135	120	0.009	0.012	0.014	0.016
N	**Aluminum**	30	600	850	750	0.020	0.022	0.025	0.025
		180	300	450	400	0.018	0.022	0.025	0.025
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 220	30	40	35	0.010	0.012	0.015	—
		220 - 310	25	35	30	0.008	0.010	0.012	—

Deep Hole Drilling Speed and Feed Adjustment Values

	⚠ Holder Length	
	Long	XL
Speed	0.90	0.80
Feed	–	0.90

Recommended Speed and Feed Example (XL)

	Data	•	Adjustment Value	=	Recommendation for Deep Holes
Speed	200 SFM	•	0.80	=	160 SFM
Feed	0.016 IPR	•	0.90	=	0.014 IPR

⚠ WARNING **Tool failure can cause serious injury. To prevent:**

- When using holders without support bushing, use a short length holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples above.

Coolant Recommendations | Imperial (in)

HIGH PERFORMANCE | HIGH-SPEED STEEL

ISO	Material	Data Metrics	Data by Diameter A Series 1" - 1-1/4"	B - C Series 1-1/4" - 2"	C - E Series 2" - 3"	E - H Series 3" - 5"
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	Hardness (BHN)	100 - 250	100 - 250	100 - 250	100 - 250
		Coolant Pressure (PSI)	105 - 150	55 - 75	45 - 60	35 - 45
		Coolant Volumetric Flow Rate (GPM)	6.3 - 7.6	15 - 18	31 - 36	47 - 53
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	Hardness (BHN)	85 - 275	85 - 275	85 - 275	85 - 275
		Coolant Pressure (PSI)	80 - 115	45 - 55	35 - 45	30 - 35
		Coolant Volumetric Flow Rate (GPM)	5.5 - 6.6	14 - 15	28 - 31	43 - 46
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	Hardness (BHN)	125 - 325	125 - 325	125 - 325	125 - 325
		Coolant Pressure (PSI)	70 - 100	40 - 50	35 - 40	30 - 35
		Coolant Volumetric Flow Rate (GPM)	5.2 - 6.2	13 - 15	28 - 30	43 - 46
	Alloy Steel 4140, 5140, 8640, etc.	Hardness (BHN)	125 - 375	125 - 375	125 - 375	125 - 375
		Coolant Pressure (PSI)	60 - 85	30 - 40	30 - 35	25 - 30
		Coolant Volumetric Flow Rate (GPM)	4.8 - 5.7	11 - 13	26 - 28	39 - 43
	High-Strength Alloy 4340, 4330V, 300M, etc.	Hardness (BHN)	225 - 400	225 - 400	225 - 400	225 - 400
		Coolant Pressure (PSI)	25 - 30	20 - 25	20 - 25	20 - 25
		Coolant Volumetric Flow Rate (GPM)	3.1 - 3.4	9 - 10	21 - 23	35 - 39
	Structural Steel A36, A285, A516, etc.	Hardness (BHN)	100 - 350	100 - 350	100 - 350	100 - 350
		Coolant Pressure (PSI)	50 - 70	30 - 35	25 - 30	25 - 30
		Coolant Volumetric Flow Rate (GPM)	4.4 - 5.2	11 - 12	23 - 26	39 - 43
	Tool Steel H-13, H-21, A-4, 0-2, S-3, etc.	Hardness (BHN)	150 - 250	150 - 250	150 - 250	150 - 250
		Coolant Pressure (PSI)	25 - 30	20 - 25	20 - 25	20 - 25
		Coolant Volumetric Flow Rate (GPM)	3.1 - 3.4	9 - 10	21 - 23	35 - 43
M	**Stainless Steel** 303, 416, 420, 17-4 PH, etc.	Hardness (BHN)	135 - 275	135 - 275	135 - 275	135 - 275
		Coolant Pressure (PSI)	50 - 65	30 - 35	25 - 30	25 - 30
		Coolant Volumetric Flow Rate (GPM)	4.4 - 5.0	11 - 12	23 - 26	39 - 43
K	**Cast Iron**	Hardness (BHN)	120 - 320	120 - 320	120 - 320	120 - 320
		Coolant Pressure (PSI)	40 - 50	25 - 30	25 - 30	20 - 25
		Coolant Volumetric Flow Rate (GPM)	3.9 - 4.4	10 - 11	23 - 26	35 - 43
N	**Aluminum**	Hardness (BHN)	30 - 180	30 - 180	30 - 180	30 - 180
		Coolant Pressure (PSI)	150 - 220	80 - 115	60 - 80	55 - 70
		Coolant Volumetric Flow Rate (GPM)	7.6 - 9.1	19 - 22	36 - 42	59 - 66
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	Hardness (BHN)	140 - 310	140 - 310	140 - 310	140 - 310
		Coolant Pressure (PSI)	35 - 40	25 - 30	25 - 30	—
		Coolant Volumetric Flow Rate (GPM)	3.6 - 3.9	10 - 11	23 - 26	—

Deep Hole Drilling Coolant Adjustment Values

	⚠ Holder Length	
	Long	XL
Pressure and Flow	1.3	2

Recommended Coolant Example (XL)

	Data	•	Adjustment Value	=	Recommendation for Deep Holes
Pressure	150 PSI	•	2	=	300 PSI
Flow	6.3 GPM	•	2	=	12.6 GPM

⚠ WARNING **Tool failure can cause serious injury. To prevent:**

- When using holders without support bushing, use a short length holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

IMPORTANT: The coolant pressure and flow rate recommendations above represent a good approximation to obtain optimum tool life and chip evacuation at the recommended speeds and feeds. If lower coolant capabilities exist in a drilling application, the HP/Universal drilling system will still function at reduced penetration rates. Contact our Application Engineering department for more specific recommendations of coolant requirements and/or speeds and feeds.

Recommended Drilling Data | Imperial (in)

UNIVERSAL | HIGH-SPEED STEEL

ISO	Material	Hardness (BHN)	SFM	Feed Rate (IPR) by Diameter A Series 1" - 1-1/4"	B - C Series 1-1/4" - 2"	C - E Series 2" - 3"	E - H Series 3" - 5"
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 150	100	0.014	0.016	0.020	0.024
		150 - 200	90	0.013	0.015	0.019	0.022
		200 - 250	80	0.012	0.014	0.018	0.020
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	80	0.012	0.015	0.018	0.020
		125 - 175	75	0.012	0.014	0.017	0.020
		175 - 225	60	0.010	0.014	0.016	0.018
		225 - 275	55	0.010	0.013	0.016	0.018
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	65	0.010	0.014	0.018	0.020
		175 - 225	60	0.010	0.014	0.016	0.020
		225 - 275	50	0.008	0.013	0.016	0.018
		275 - 325	45	0.008	0.012	0.014	0.016
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	60	0.010	0.014	0.018	0.020
		175 - 225	55	0.010	0.014	0.016	0.020
		225 - 275	45	0.008	0.013	0.016	0.018
		275 - 325	35	0.008	0.012	0.014	0.016
		325 - 375	30	0.008	0.012	0.014	0.016
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	40	0.008	0.012	0.014	0.016
		300 - 350	30	0.006	0.010	0.014	0.016
		350 - 400	25	0.006	0.008	0.014	0.016
	Structural Steel A36, A285, A516, etc.	100 - 150	70	0.012	0.016	0.018	0.020
		150 - 250	60	0.010	0.014	0.016	0.018
		250 - 350	50	0.008	0.012	0.014	0.016
	Tool Steel H-13, H-21, A-4, 0-2, S-3, etc.	150 - 200	50	0.009	0.011	0.014	0.016
		200 - 250	40	0.008	0.010	0.013	0.015
M	**Stainless Steel** 303, 416, 420, 17-4 PH, etc.	135 - 185	45	0.008	0.012	0.015	0.018
		185 - 275	35	0.007	0.010	0.013	0.016
K	**Cast Iron**	120 - 150	100	0.016	0.020	0.022	0.025
		150 - 200	80	0.015	0.018	0.020	0.022
		200 - 220	70	0.011	0.014	0.018	0.020
		220 - 260	60	0.008	0.012	0.015	0.017
		260 - 320	45	0.008	0.010	0.012	0.014
N	**Aluminum**	30	275	0.018	0.026	0.032	0.042
		180	200	0.018	0.026	0.032	0.042
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 220	20	0.008	0.010	0.012	—
		220 - 310	15	0.007	0.009	0.011	—

Deep Hole Drilling Speed and Feed Adjustment Values

	⚠ Holder Length	
	Long	XL
Speed	0.90	0.80
Feed	–	0.90

Recommended Speed and Feed Example (XL)

	Data	•	Adjustment Value	=	Recommendation for Deep Holes
Speed	100 SFM	•	0.80	=	80 SFM
Feed	0.016 IPR	•	0.90	=	0.014 IPR

⚠ WARNING **Tool failure can cause serious injury. To prevent:**

- When using holders without support bushing, use a short length holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples above.

Coolant Recommendations | Imperial (in)

UNIVERSAL | HIGH-SPEED STEEL

ISO	Material	Data Metrics	Data by Diameter A Series 1" - 1-1/4"	B - C Series 1-1/4" - 2"	C - E Series 2" - 3"	E - H Series 3" - 5"
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	Hardness (BHN)	100 - 250	100 - 250	100 - 250	100 - 250
		Coolant Pressure (PSI)	40	25	25	20
		Coolant Volumetric Flow Rate (GPM)	3.9	10	23	35
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	Hardness (BHN)	85 - 275	85 - 275	85 - 275	85 - 275
		Coolant Pressure (PSI)	30	20	20	20
		Coolant Volumetric Flow Rate (GPM)	3.4	9	21	35
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	Hardness (BHN)	125 - 325	125 - 325	125 - 325	125 - 325
		Coolant Pressure (PSI)	25	20	20	20
		Coolant Volumetric Flow Rate (GPM)	3.1	9	21	35
	Alloy Steel 4140, 5140, 8640, etc.	Hardness (BHN)	125 - 375	125 - 375	125 - 375	125 - 375
		Coolant Pressure (PSI)	20	20	20	20
		Coolant Volumetric Flow Rate (GPM)	2.8	9	21	35
	High-Strength Alloy 4340, 4330V, 300M, etc.	Hardness (BHN)	225 - 400	225 - 400	225 - 400	225 - 400
		Coolant Pressure (PSI)	25	20	20	20
		Coolant Volumetric Flow Rate (GPM)	3.1	9	21	35
	Structural Steel A36, A285, A516, etc.	Hardness (BHN)	100 - 350	100 - 350	100 - 350	100 - 350
		Coolant Pressure (PSI)	25	20	20	20
		Coolant Volumetric Flow Rate (GPM)	3.1	9	21	35
	Tool Steel H-13, H-21, A-4, 0-2, S-3, etc.	Hardness (BHN)	150 - 250	150 - 250	150 - 250	150 - 250
		Coolant Pressure (PSI)	25	20	20	20
		Coolant Volumetric Flow Rate (GPM)	3.1	9	21	35
M	**Stainless Steel** 303, 416, 420, 17-4 PH, etc.	Hardness (BHN)	135 - 275	135 - 275	135 - 275	135 - 275
		Coolant Pressure (PSI)	25	25	20	20
		Coolant Volumetric Flow Rate (GPM)	3.1	10	21	35
K	**Cast Iron**	Hardness (BHN)	120 - 320	120 - 320	120 - 320	120 - 320
		Coolant Pressure (PSI)	25	20	20	20
		Coolant Volumetric Flow Rate (GPM)	3.1	9	21	35
N	**Aluminum**	Hardness (BHN)	30 - 180	30 - 180	30 - 180	30 - 180
		Coolant Pressure (PSI)	55	35	30	30
		Coolant Volumetric Flow Rate (GPM)	4.6	12	26	40
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	Hardness (BHN)	140 - 310	140 - 310	140 - 310	140 - 310
		Coolant Pressure (PSI)	25	20	20	20
		Coolant Volumetric Flow Rate (GPM)	3.1	9	21	35

Deep Hole Drilling Coolant Adjustment Values

	⚠ Holder Length	
	Long	XL
Pressure and Flow	1.3	2

Recommended Coolant Example (XL)

	Data	•	Adjustment Value	=	Recommendation for Deep Holes
Pressure	150 PSI	•	2	=	300 PSI
Flow	6.3 GPM	•	2	=	12.6 GPM

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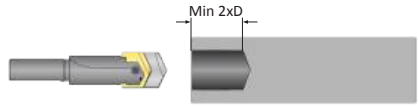
IMPORTANT: The coolant pressure and flow rate recommendations above represent a good approximation to obtain optimum tool life and chip evacuation at the recommended speeds and feeds. If lower coolant capabilities exist in a drilling application, the HP/Universal drilling system will still function at reduced penetration rates. Contact our Application Engineering department for more specific recommendations of coolant requirements and/or speeds and feeds.

Deep Hole Drilling Guidelines

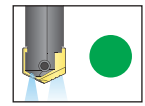
For Lengths Greater Than 9xD (Standard Plus, Extended, Long, Long Plus, XL, 3XL, and Special Lengths)

1. Pilot Hole
100% RPM
100% mm/rev (IPR)

Establish the pilot hole using the same diameter short drill to a depth of 2xD minimum.
Utilize a pilot drill with the same or larger included point angle.

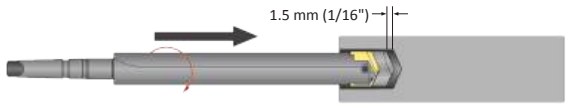


Coolant ON

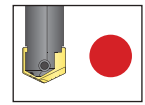


2. Feed-in
⚠ 50 RPM max
300 mm/min (12 IPM)

Feed the longer drill within 1.5 mm (1/16") short of the established pilot hole bottom at a **maximum of 50 RPM** and 300 mm/min (12 IPM) feed rate.

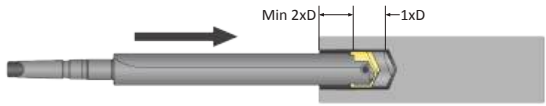


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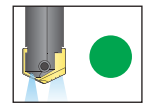


3. Deep Hole Transition Drilling
50% RPM
75% mm/rev (IPR)

Drill additional 1xD past the bottom of the pilot hole at 50% reduction of recommended speed and 25% reduction of recommended feed.
Minimum of one second dwell is required to meet full speed before feeding.



Coolant ON



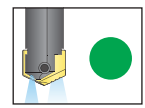
4. Deep Hole Drilling - Blind
100% RPM
100% mm/rev (IPR)

Drill to full depth at recommended speed and feed for longer drill according to Allied speed and feed charts.
No peck cycle recommended.





Coolant ON

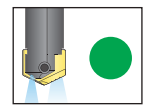


5. Deep Hole Drilling - at Breakout
50% RPM
75% mm/rev (IPR)

For through holes only:
Reduce speed by 50% and feed by 25% prior to breakout.
Do not break out more than 3 mm (1/8") past the full diameter of the drill.



Coolant ON

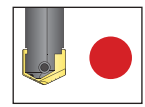


6. Drill Retract
⚠ 50 RPM max

Reduce speed to a **maximum of 50 RPM** before retracting from the hole.



Coolant OFF



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Notes

SECTION

A50

APX™ Drill

APX™ Drill

33.00 mm - 101.60 mm (1.2991" - 4.0001")





APX Drill

The APX deep hole/large diameter drilling system delivers the strength and versatility needed for any deep hole drilling application. The breakthrough geometry is designed to increase penetration rates and tool life. By allowing for higher spindle speeds, the APX lets you take advantage of the power curve on modern CNC machines.

Deep hole/Large diameter | Reliable performance

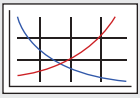
- Improves hole quality and surface finish.
- Provides maximum durability and stability.
- Excellent chip control.

Applicable Industries

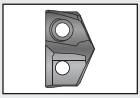
- Aerospace
- Agriculture
- Automotive
- Defense
- General Production
- Heavy Equipment
- Marine
- Oil and Gas
- Renewable Energy/ Energy
- Structural Steel Fabricator
- Tool, Mold, and Die

Reference Icons

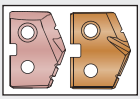
The following icons will appear throughout the catalog to help you navigate between products.



Recommended Cutting Data
Speed and feed recommendations for optimum and safe drilling.



GEN3SYS® Pilot Inserts
Lists the GEN3SYS XT Pro pilot ISO insert options for each APX drill series.



T-A® Pilot Inserts
Lists the T-A® and T-A Pro® pilot insert options for each APX drill series.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

WARNING means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

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33 Series: 33.00 mm - 37.99 mm (1.2991" - 1.4958")
Heads 7
33 Series: 33.00 mm - 37.99 mm (1.2991" - 1.4958")
Holders 8
38 Series: 38.00 mm - 43.99 mm (1.4959" - 1.7320")
Heads 9
38 Series: 38.00 mm - 43.99 mm (1.4959" - 1.7320")
Holders 10
44 Series: 44.00 mm - 50.99 mm (1.7321" - 2.0076")
Heads 11
44 Series: 44.00 mm - 50.99 mm (1.7321" - 2.0076")
Holders 12
51 Series: 51.00 mm - 56.99 mm (2.0077" - 2.2438")
Heads 13
51 Series: 51.00 mm - 56.99 mm (2.0077" - 2.2438")
Holders 14
57 Series: 57.00 mm - 62.99 mm (2.2439" - 2.4801")
Heads 15
Holders 16
63 Series: 63.00 mm - 69.99 mm (2.4802" - 2.7557")
Heads 17
Holders 18
70 Series: 70.00 mm - 75.99 mm (2.7558" - 2.9919")
Heads 19
Holders 20
76 Series: 76.00 mm - 82.99 mm (2.9920" - 3.2675")
Heads 21
Holders 22
83 Series: 83.00 mm - 88.99 mm (3.2676" - 3.5037")
Heads 23
Holders 24
89 Series: 89.00 mm - 94.99 mm (3.5038" - 3.7399")
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95 Series: 95.00 mm - 101.60 mm (3.7400" - 4.0001")
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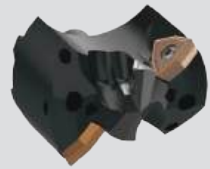
System Overview

Series	33	38	44	51	57
					
D_1 mm	33.00 - 37.99	38.00 - 43.99	44.00 - 50.99	51.00 - 56.99	57.00 - 62.99
D_1 inch	1.2991 - 1.4958	1.4959 - 1.7320	1.7321 - 2.0076	2.0077 - 2.2438	2.2439 - 2.4801
ISO Material	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H
IC Insert Size (mm)	7.94	9.53	9.53, 12.70	12.70, 14.29	14.29
IC Insert Size (inch)	5/16	3/8	3/8, 1/2	1/2, 9/16	9/16
Cutting Style	Double Effective	Double Effective	Double Effective	Double Effective	Double Effective
Wear Pads	✕	✕	✕	✕	✕
Holders					
Drill Depth (mm)	131.4 - 397.4	149.3 - 457.3	169.7 - 526.7	180.3 - 579.2	197.4 - 638.4
Drill Depth (inch)	5.174 - 15.646	5.878 - 18.003	6.681 - 20.735	7.097 - 22.805	7.772 - 25.133
Pilot Insert Series					
T-A	0, 1	0, 1	1	1	1, 2
GEN3SYS XT Pro	–	15, 17, 18, 20	17, 18, 22	18, 20, 22	22, 24, 26



T-A® Style Head

- Utilizes both T-A Pro and T-A inserts (0 - 2 series).
- Multiple geometry options are available to achieve optimal results in different types of applications.



GEN3SYS® Style Head

- Utilizes both GEN3SYS XT and XT Pro inserts (15 - 32 series).
- ISO geometry options are available to achieve optimal results in different types of applications.



IC Insert AM300®

- The design allows for excellent chip control and aggressive penetration rates.
- The proprietary AM300 coatings increase tool life above competitors' premium coatings.

Insert Application Recommendations

Carbide Grade Options	
P35 (C5)	General purpose carbide grade suitable for most applications. ▶ *Common application in steels and stainless steels.*
K35 (C1)	Toughest carbide grade. Provides the best combination of edge strength and tool life. ▶ *Recommended for less rigid applications.*
K25 (C2)	Higher wear-resistant carbide suitable for abrasive material applications. ▶ *Recommended for grey, ductile, and nodular irons.*
Additional Geometry Option	
High Rake (HR)	Provides superior chip control and tool life in long-chipping carbon and alloy steels below 200 BHN.



Flanged Straight Shank



CAT40 / CAT50 Integral Shank

System Overview

63	70	76	83	89	95
					
63.00 - 69.99	70.00 - 75.99	76.00 - 82.99	83.00 - 88.99	89.00 - 94.99	95.00 - 101.60
2.4802 - 2.7557	2.7558 - 2.9919	2.9920 - 3.2675	3.2676 - 3.5037	3.5038 - 3.7399	3.7400 - 4.0001
P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H
14.29	9.53	12.70	12.70	14.29	14.29
9/16	3/8	1/2	1/2	9/16	9/16
Double Effective	Single Effective	Single Effective	Single Effective	Single Effective	Single Effective
✗	✓	✓	✓	✓	✓
217.1 - 695.3	235.1 - 716.5	255.8 - 836.7	272.8 - 895.7	291.4 - 913.7	316.9 - 916.3
8.549 - 27.375	9.258 - 28.207	10.070 - 32.942	10.741 - 35.262	11.474 - 35.971	12.477 - 36.077
2	2	2	2	2	2
26, 29, 32	29	29	32	29	32

Assembly Instructions



Step 1:
Lower the APX head assembly onto the APX holder.

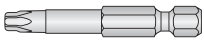


Step 2:
Insert the head mounting screws into points A and B. Tighten until the head is properly secured to the holder.



Step 3:
Tighten with the head mounting driver using the torque setting chart below.

Torque Setting Chart

Series	Screw	Driver		Torque
33 - 63	75020-IP20-1		8IP-20	678 N-cm (60 in-lb)
70 - 95	78027-IP30-1		8IP-30B	2825 N-cm (250 in-lb)

System Overview

T-A® Style Pilot Inserts



T-A Pro®



- Serves as the perfect solution for high penetration drilling applications where chip formation and tool life are critical.
- Utilizes material-specific geometries for ISO material classes:
  P M K N X

GEN2 T-A®



- Notch Point®, curved cutting edge, and cam ground clearance provide superior hole centering, lower drilling forces, and improved chip formation.
- Features Allied's exclusive AM300® and AM200® coatings for increased tool life.

T-A®



- Available in both high-speed steel and carbide options.
- Offers common industry coating options such as TiN, TiCN, TiAlN, as well as Allied's proprietary AM200 coating.
- Geometry, substrate, and coating options can be mixed and matched to target a specific need.

GEN3SYS® Style Pilot Inserts

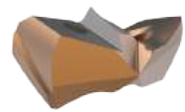


GEN3SYS® XT Pro



- Combines a coating and geometry specifically designed to achieve optimal results in ISO material drilling applications:
  P M K N

GEN3SYS® XT



- Available in 4 geometries: Standard (XT), Austenitic Stainless Steel (AS), Cast Iron (CI) and Low Rake (LR).
- Provides excellent chip control, improved durability, and added stability.

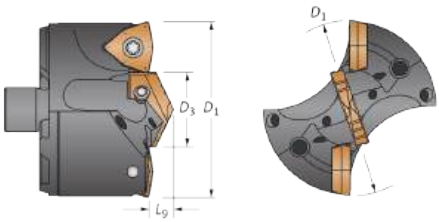
Product Nomenclature

APX Drill Heads

V	38		15			D	–	0116
	Series		Pilot Series			Effective Cutting		Major Diameter
	33	70	T-A® Pilot Insert	GEN3SYS® XT Pro Pilot Insert		D = Double effective		**0116** = Fractional (in)
	38	76	**00** = 0 series	**15** = 15 series	**24** = 24 series	S = Single effective		**1.5153** = Decimal (in)
	44	83	**01** = 1 series	**17** = 17 series	**26** = 26 series			**68** = Metric (mm)
	51	89	**02** = 2 series	**18** = 18 series	**29** = 29 series			
	57	95		**20** = 20 series	**32** = 32 series			
	63			**22** = 22 series				

Reference Key

Symbol	Attribute
D_1	Major cutting diameter
D_3	Pilot insert diameter
L_9	Pilot insert length



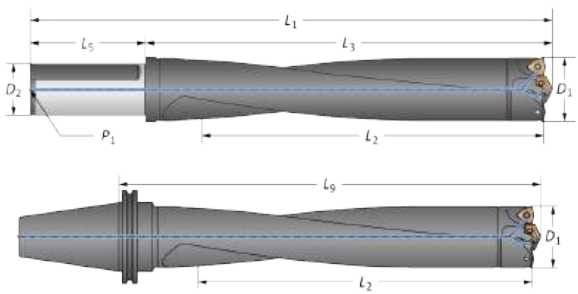
A50

APX Drill Holders

W	38		05	H	–	200F
	Series		Drill Length	Flute Style		Shank
	33	70	**03** = 3xD	**H** = Helical		**150F** = 1-1/2" flanged straight shank
	38	76	**05** = 5xD			**200F** = 2" flanged straight shank
	44	83	**08** = 8xD ⚠			**40FM** = 40 mm flanged straight shank
	51	89	**10** = 10xD ⚠			**50FM** = 50 mm flanged straight shank
	57	95				**CV40** = CAT40 integral shank
	63					**CV50** = CAT50 integral shank

Reference Key

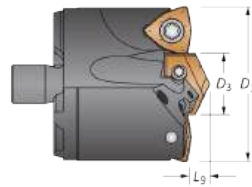
Symbol	Attribute
D_1	Major cutting diameter
D_2	Shank diameter
L_1	Overall length
L_2	Drill depth
L_3	Holder reference length
L_5	Shank length
L_9	Gauge Length
P_1	Rear pipe tap

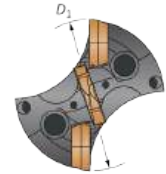


33 Series: 33.00 mm - 37.99 mm (1.2991" - 1.4958")

Heads







T-A® Style Head

APX Heads

D_1			D_3		T-A Style Head L_9			IC Insert Size	
mm	inch	Fractional	mm	inch	mm	inch	Part No.	mm	inch
33.00	1.2992	—	16.00	0.6299	5.6	0.221	**V3300D-33**	7.94	5/16
33.34	1.3125	1-5/16	16.00	0.6299	5.6	0.221	**V3300D-0110**	7.94	5/16
34.00	1.3386	—	18.00	0.7087	6.1	0.239	**V3301D-34**	7.94	5/16
34.13	1.3438	1-11/32	18.00	0.7087	6.1	0.239	**V3301D-0111**	7.94	5/16
34.93	1.3750	1-3/8	18.00	0.7087	6.1	0.239	**V3301D-0112**	7.94	5/16
35.00	1.3780	—	18.00	0.7087	6.1	0.239	**V3301D-35**	7.94	5/16
35.72	1.4063	1-13/32	18.00	0.7087	6.1	0.239	**V3301D-0113**	7.94	5/16
36.00	1.4173	—	20.00	0.7874	6.5	0.256	**V3301D-36**	7.94	5/16
36.51	1.4375	1-7/16	20.00	0.7874	6.5	0.256	**V3301D-0114**	7.94	5/16
37.00	1.4567	—	20.00	0.7874	6.5	0.256	**V3301D-37**	7.94	5/16
37.31	1.4688	1-15/32	20.00	0.7874	6.5	0.256	**V3301D-0115**	7.94	5/16

Pilot Inserts

D_1 Range		D_3		T-A Style Head		
mm	inch	mm	inch	Pilot Series	T-A Pro®	T-A (-TC)
33.00 - 33.99	1.2991 - 1.3383	16.00	0.6299	0	**TA#0-16.00**	**1C10H-16-TC**
34.00 - 35.99	1.3384 - 1.4171	18.00	0.7087	1	**TA#1-18.00**	**1C11H-18-TC**
36.00 - 37.99	1.4172 - 1.4958	20.00	0.7874	1	**TA#1-20.00**	**1C11H-20-TC**

#: Denotes ISO material/geometry (P= steel, M= stainless steel, K= cast iron, N= nonferrous, and X= high-speed steel substrate). Please note, X is only available in T-A Pro inserts.

IC Inserts - AM300® Coated

Size			Part No.				Insert	Admissible
mm	inch	Geometry	K35 (C1)	P35 (C5)	K25 (C2)	Insert Screw	Driver	Tightening Torque*
7.94	5/16	Standard	**OP-05T308-1PW**	**OP-05T308-PW**	**OP-05T308-2PW**	IS-10-1	8T-9	305 N-cm (27.0 in-lbs)
		High Rake	—	**OP-05T308-PWHR**	—			

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

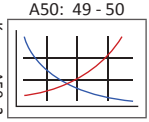
Pilot Accessories

Series	Insert Screws	Insert Driver	Admissible Tightening Torque*
0	72567-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
1	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

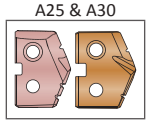
NOTE: For standard metric sized pilot inserts, please see the cross reference on ***pg. A50: 33***.

A50: 49 - 50



Key on A50: 2

A25 & A30



IC inserts sold in multiples of 2.
Insert screws sold in multiples of 10.

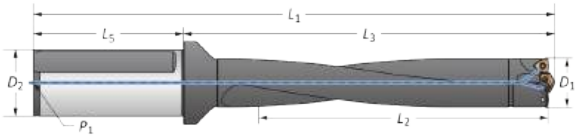
For nonstocked diameters, follow the below examples:

Metric	33 series, T-A (1 series), 34.25 mm	**= V3301D-34.25**
Inch	33 series, T-A (1 series), 1.3400"	**= V3301D-1.3400**

33 Series: 33.00 mm - 37.99 mm (1.2991" - 1.4958")

Holders

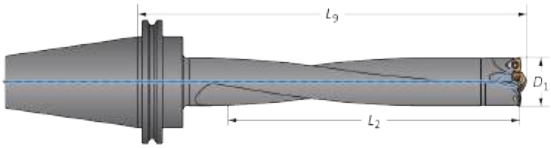




Straight Shank

	Length	Body L_2	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No.
m	3xD	131.4	167.4	237.4	70.0	40	1/4 BSPT	W3303H-40FM
	5xD	207.4	243.4	313.4	70.0	40	1/4 BSPT	W3305H-40FM
	8xD	321.4	357.4	427.4	70.0	40	1/4 BSPT	⚠ W3308H-40FM
	10xD	397.4	433.4	503.4	70.0	40	1/4 BSPT	⚠ W3310H-40FM
i	3xD	5.174	6.590	9.278	2.688	1-1/2	1/4 NPT	W3303H-150F
	5xD	8.166	9.582	12.270	2.688	1-1/2	1/4 NPT	W3305H-150F
	8xD	12.654	14.070	16.758	2.688	1-1/2	1/4 NPT	⚠ W3308H-150F
	10xD	15.646	17.062	19.750	2.688	1-1/2	1/4 NPT	⚠ W3310H-150F





CAT Integral Shank

Length	Body L_2	Body L_9	Shank	Part No.
3xD	5.174	7.473	CAT40	W3303H-CV40
5xD	8.166	10.465	CAT40	W3305H-CV40
8xD	12.654	14.953	CAT40	⚠ W3308H-CV40
10xD	15.646	17.945	CAT40	⚠ W3310H-CV40
3xD	5.174	7.473	CAT50	W3303H-CV50
5xD	8.166	10.465	CAT50	W3305H-CV50
8xD	12.654	14.953	CAT50	⚠ W3308H-CV50
10xD	15.646	17.945	CAT50	⚠ W3310H-CV50

Connection Accessories

Mounting Screw	Mounting Screw Driver	Admissible Tightening Torque*
75020-IP20-1	8IP-20	678 N-cm (60 in-lb)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

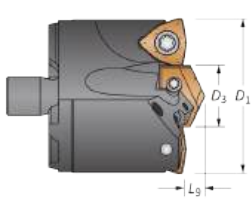
⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds and page **A50: 34** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

ⓜ = Metric (mm)
ⓘ = Imperial (in)

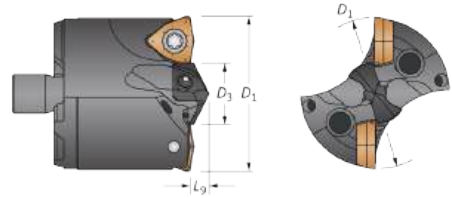
Mounting screws sold in multiples of 4.

38 Series: 38.00 mm - 43.99 mm (1.4959" - 1.7320")

Heads



T-A® Style Head



GEN3SYS® Style Head

APX Heads

D_1			D_3		T-A Style Head L_9			GEN3SYS Style Head L_9			IC Insert Size	
mm	inch	Fractional	mm	inch	mm	inch	Part No.	mm	inch	Part No.	mm	inch
38.00	1.4961	—	15.88	5/8	5.7	0.226	**V3800D-38**	4.9	0.195	**V3815D-38**	9.53	3/8
38.10	1.5000	1-1/2	15.88	5/8	5.7	0.226	**V3800D-0116**	4.9	0.195	**V3815D-0116**	9.53	3/8
38.90	1.5313	1-17/32	15.88	5/8	5.7	0.226	**V3800D-0117**	4.9	0.195	**V3815D-0117**	9.53	3/8
39.00	1.5354	—	15.88	5/8	5.7	0.226	**V3800D-39**	4.9	0.195	**V3815D-39**	9.53	3/8
39.69	1.5625	1-9/16	15.88	5/8	5.7	0.226	**V3800D-0118**	4.9	0.195	**V3815D-0118**	9.53	3/8
40.00	1.5748	—	17.46	11/16	6.1	0.240	**V3800D-40**	5.2	0.205	**V3817D-40**	9.53	3/8
40.48	1.5938	1-19/32	17.46	11/16	6.1	0.240	**V3800D-0119**	5.2	0.205	**V3817D-0119**	9.53	3/8
41.00	1.6142	—	17.46	11/16	6.1	0.240	**V3800D-41**	5.2	0.205	**V3817D-41**	9.53	3/8
41.28	1.6250	1-5/8	17.46	11/16	6.1	0.240	**V3800D-0120**	5.2	0.205	**V3817D-0120**	9.53	3/8
42.00	1.6535	—	19.05	3/4	6.5	0.254	**V3801D-42**	5.5	0.216	**V3818D-42**	9.53	3/8
42.07	1.6563	1-21/32	19.05	3/4	6.5	0.254	**V3801D-0121**	5.5	0.216	**V3818D-0121**	9.53	3/8
42.86	1.6875	1-11/16	19.05	3/4	6.5	0.254	**V3801D-0122**	5.5	0.216	**V3818D-0122**	9.53	3/8
43.00	1.6929	—	20.64	13/16	6.8	0.268	**V3801D-43**	5.8	0.227	**V3820D-43**	9.53	3/8
43.66	1.7188	1-23/32	20.64	13/16	6.8	0.268	**V3801D-0123**	5.8	0.227	**V3820D-0123**	9.53	3/8

Pilot Inserts

D_1 Range		D_3		T-A Style Head			GEN3SYS Style Head	
mm	inch	mm	inch	Pilot Series	T-A Pro®	T-A (-TC)	Pilot Series	XT Pro
38.00 - 39.72	1.4959 - 1.5639	15.88	5/8	0	**TA#0-15.50**	**1C10H-0020-TC**	15	**XT#15-15.88**
39.73 - 41.30	1.5640 - 1.6261	17.46	11/16	0	**TA#0-17.46**	**1C10H-0022-TC**	17	**XT#17-17.46**
41.31 - 42.90	1.6262 - 1.6891	19.05	3/4	1	**TA#1-19.05**	**1C11H-0024-TC**	18	**XT#18-19.05**
42.91 - 43.99	1.6892 - 1.7320	20.64	13/16	1	**TA#1-20.64**	**1C11H-0026-TC**	20	**XT#20-20.64**

#: Denotes ISO material/geometry (P= steel, M= stainless steel, K= cast iron, N= nonferrous, and X= high-speed steel substrate). Please note, X is only available in T-A Pro inserts.

IC Inserts - AM300® Coated

Size			Part No.			Insert Screw	Insert Driver	Admissible Tightening Torque*
mm	inch	Geometry	K35 (C1)	P35 (C5)	K25 (C2)			
9.53	3/8	Standard	**OP-060408-1PW**	**OP-060408-PW**	**OP-060408-2PW**	73595-IP15-1	8IP-15	465 N-cm (41.0 in-lbs)
		High Rake	—	**OP-060408-PWHR**	—			

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

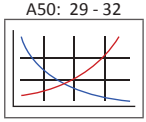
Pilot Accessories

T-A Series	GEN3SYS Series	Insert Screws	Insert Driver	Admissible Tightening Torque*
—	15	7247-IP7-1	8IP-7	84 N-cm (7.4 in-lbs)
0	17	72567-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
1	18	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
	20			

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

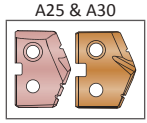
NOTE: For standard metric sized pilot inserts, please see the cross reference on ***pg. A50: 33***.

A50: 29 - 32

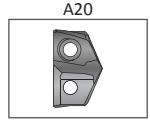


Key on A50: 2

A25 & A30



A20



IC inserts sold in multiples of 2.
Insert screws sold in multiples of 10.

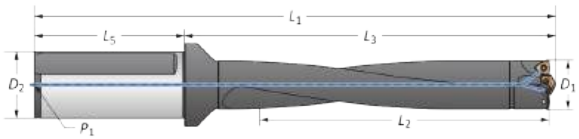
For nonstocked diameters, follow the below examples:

Metric	38 series, T-A (0 series), 41.25 mm	**= V3800D-41.25**
Inch	38 series, GEN3 (17 series), 1.6200"	**= V3817D-1.6200**

38 Series: 38.00 mm - 43.99 mm (1.4959" - 1.7320")

Holders

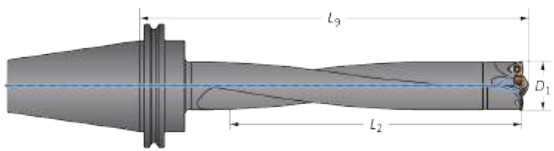




Straight Shank

	Length	Body L_2	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No.
m	3xD	149.3	195.7	265.7	70.0	40	1/4 BSPT	W3803H-40FM
	5xD	237.3	283.7	353.7	70.0	40	1/4 BSPT	W3805H-40FM
	8xD	369.3	415.7	485.7	70.0	40	1/4 BSPT	⚠ W3808H-40FM
	10xD	457.3	503.7	573.7	70.0	40	1/4 BSPT	⚠ W3810H-40FM
	3xD	149.3	195.7	275.7	80.0	50	1/4 BSPT	W3803H-50FM
	5xD	237.3	283.7	363.7	80.0	50	1/4 BSPT	W3805H-50FM
	8xD	369.3	415.7	495.7	80.0	50	1/4 BSPT	⚠ W3808H-50FM
	10xD	457.3	503.7	583.7	80.0	50	1/4 BSPT	⚠ W3810H-50FM
i	3xD	5.878	7.704	10.392	2.688	1-1/2	1/4 NPT	W3803H-150F
	5xD	9.342	11.168	13.856	2.688	1-1/2	1/4 NPT	W3805H-150F
	8xD	14.539	16.365	19.053	2.688	1-1/2	1/4 NPT	⚠ W3808H-150F
	10xD	18.003	19.829	22.517	2.688	1-1/2	1/4 NPT	⚠ W3810H-150F
	3xD	5.878	7.704	12.204	4.500	2	1/4 NPT	W3803H-200F
	5xD	9.342	11.168	15.668	4.500	2	1/4 NPT	W3805H-200F
	8xD	14.539	16.365	20.865	4.500	2	1/4 NPT	⚠ W3808H-200F
	10xD	18.003	19.829	24.329	4.500	2	1/4 NPT	⚠ W3810H-200F





CAT Integral Shank

Length	Body L_2	Body L_9	Shank	Part No.
3xD	5.878	8.304	CAT40	W3803H-CV40
5xD	9.342	11.768	CAT40	W3805H-CV40
8xD	14.539	16.965	CAT40	⚠ W3808H-CV40
10xD	18.003	20.429	CAT40	⚠ W3810H-CV40
3xD	5.878	8.304	CAT50	W3803H-CV50
5xD	9.342	11.768	CAT50	W3805H-CV50
8xD	14.539	16.965	CAT50	⚠ W3808H-CV50
10xD	18.003	20.429	CAT50	⚠ W3810H-CV50

Connection Accessories

Mounting Screw	Mounting Screw Driver	Admissible Tightening Torque*
75020-IP20-1	8IP-20	678 N-cm (60 in-lb)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

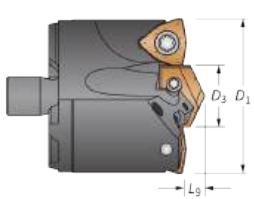
⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds and page **A50: 34** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

m = Metric (mm)
i = Imperial (in)

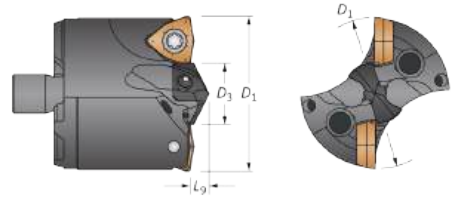
Mounting screws sold in multiples of 4.

44 Series: 44.00 mm - 50.99 mm (1.7321" - 2.0076")

Heads



T-A® Style Head



GEN3SYS® Style Head

APX Heads

D_1			D_3		T-A Style Head L_9			GEN3SYS Style Head L_9			IC Insert Size	
mm	inch	Fractional	mm	inch	mm	inch	Part No.	mm	inch	Part No.	mm	inch
44.00	1.7323	—	22.23	7/8	7.2	0.282	**V4401D-44**	6.0	0.238	**V4422D-44**	9.53	3/8
44.45	1.7500	1-3/4	22.23	7/8	7.2	0.282	**V4401D-0124**	6.0	0.238	**V4422D-0124**	9.53	3/8
45.00	1.7717	—	22.23	7/8	7.2	0.282	**V4401D-45**	6.0	0.238	**V4422D-45**	9.53	3/8
45.25	1.7813	1-25/32	22.23	7/8	7.2	0.282	**V4401D-0125**	6.0	0.238	**V4422D-0125**	9.53	3/8
46.00	1.8110	—	23.81	15/16	7.5	0.296	**V4401D-46**	6.3	0.248	**V4422D-46**	9.53	3/8
46.04	1.8125	1-13/16	23.81	15/16	7.5	0.296	**V4401D-0126**	6.3	0.248	**V4422D-0126**	9.53	3/8
46.83	1.8438	1-27/32	23.81	15/16	7.5	0.296	**V4401D-0127**	6.3	0.248	**V4422D-0127**	9.53	3/8
47.00	1.8504	—	23.81	15/16	7.5	0.296	**V4401D-47**	6.3	0.248	**V4422D-47**	9.53	3/8
47.63	1.8750	1-7/8	23.81	15/16	7.5	0.296	**V4401D-0128**	6.3	0.248	**V4422D-0128**	9.53	3/8
48.00	1.8898	—	17.86	45/64	6.6	0.258	**V4401D-48**	5.7	0.223	**V4417D-48**	12.70	1/2
48.42	1.9063	1-29/32	17.86	45/64	6.6	0.258	**V4401D-0129**	5.7	0.223	**V4417D-0129**	12.70	1/2
49.00	1.9291	—	17.86	45/64	6.6	0.258	**V4401D-49**	5.7	0.223	**V4417D-49**	12.70	1/2
49.21	1.9375	1-15/16	17.86	45/64	6.6	0.258	**V4401D-0130**	5.7	0.223	**V4417D-0130**	12.70	1/2
50.00	1.9685	—	18.65	47/64	6.7	0.265	**V4401D-50**	5.8	0.228	**V4418D-50**	12.70	1/2
50.01	1.9688	1-31/32	18.65	47/64	6.7	0.265	**V4401D-0131**	5.8	0.228	**V4418D-0131**	12.70	1/2
50.80	2.0000	2	18.65	47/64	6.7	0.265	**V4401D-0200**	5.8	0.228	**V4418D-0200**	12.70	1/2

Pilot Inserts

D_1 Range		D_3		T-A Style Head			GEN3SYS Style Head	
mm	inch	mm	inch	Pilot Series	T-A Pro	T-A (-TC)	Pilot Series	XT Pro
44.00 - 45.26	1.7321 - 1.7820	22.23	7/8	1**	**TA#1-22.23**	**1C11H-0028-TC**	22	**XT#22-22.23**
45.27 - 47.90	1.7821 - 1.8860	23.81	15/16	1**	**TA#1-23.81**	**1C11H-0030-TC**	22	**XT#22-23.81**
47.91 - 49.99	1.8861 - 1.9683	17.86	45/64	1	**TA#1-17.86**	**1C11H-.703-TC**	17	**XT#17-17.86**
50.00 - 50.99	1.9684 - 2.0076	18.65	47/64	1	**TA#1-18.65**	**1C11H-.734-TC**	18	**XT#18-18.65**

#: Denotes ISO material/geometry (P= steel, M= stainless steel, K= cast iron, N= nonferrous, and X= high-speed steel substrate). X is only available in T-A Pro inserts.
****NOTE:** Coordinating screw in accessory table below.

IC Inserts - AM300® Coated

Size			Part No.				Insert	Admissible
mm	inch	Geometry	K35 (C1)	P35 (C5)	K25 (C2)	Insert Screw	Driver	Tightening Torque*
9.53	3/8	Standard	**OP-060408-1PW**	**OP-060408-PW**	**OP-060408-2PW**	73595-IP15-1	8IP-15	465 N-cm (41.0 in-lbs)
		High Rake	—	**OP-060408-PWHR**	—			
12.70	1/2	Standard	**OP-080508-1PW**	**OP-080508-PW**	**OP-080508-2PW**	74012-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
		High Rake	—	**OP-080508-PWHR**	—			

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

Pilot Accessories

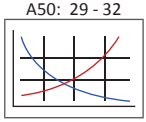
T-A Series	GEN3SYS Series	Insert Screws	Insert Driver	Admissible Tightening Torque*
—	17	72567-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
1	18	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
1**	22	739-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

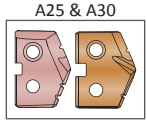
NOTE: For standard metric sized pilot inserts, please see the cross reference on ***pg. A50: 33***.

A50: 29 - 32

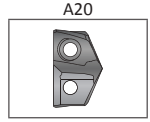
Key on A50: 2



A25 & A30



A20



IC inserts sold in multiples of 2.
Insert screws sold in multiples of 10.

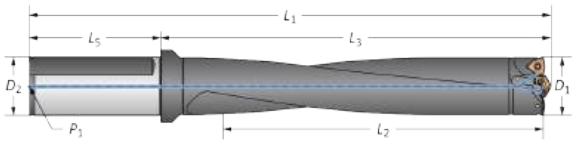
For nonstocked diameters, follow the below examples:

Metric	44 series, T-A (1 series), 47.25 mm	**= V4401D-47.25**
Inch	44 series, GEN3 (22 series), 1.8450"	**= V4422D-1.8450**

44 Series: 44.00 mm - 50.99 mm (1.7321" - 2.0076")

Holders

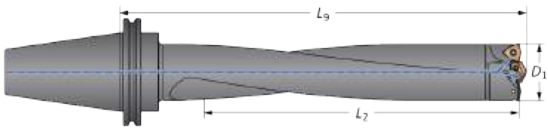




Straight Shank

	Length	Body L_2	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No.
m	3xD	169.7	216.9	286.9	70.0	40	1/4 BSPT	W4403H-40FM
	5xD	271.7	318.9	388.9	70.0	40	1/4 BSPT	W4405H-40FM
	8xD	424.7	471.9	541.9	70.0	40	1/4 BSPT	⚠ W4408H-40FM
	10xD	526.7	573.8	643.8	70.0	40	1/4 BSPT	⚠ W4410H-40FM
	3xD	169.7	216.9	296.9	80.0	50	1/4 BSPT	W4403H-50FM
	5xD	271.7	318.9	398.9	80.0	50	1/4 BSPT	W4405H-50FM
	8xD	424.7	471.9	551.9	80.0	50	1/4 BSPT	⚠ W4408H-50FM
	10xD	526.7	573.8	653.8	80.0	50	1/4 BSPT	⚠ W4410H-50FM
i	3xD	6.681	8.538	11.226	2.688	1-1/2	1/4 NPT	W4403H-150F
	5xD	10.697	12.554	15.242	2.688	1-1/2	1/4 NPT	W4405H-150F
	8xD	16.720	18.577	21.265	2.688	1-1/2	1/4 NPT	⚠ W4408H-150F
	10xD	20.735	22.592	25.280	2.688	1-1/2	1/4 NPT	⚠ W4410H-150F
	3xD	6.681	8.538	13.038	4.500	2	1/4 NPT	W4403H-200F
	5xD	10.697	12.554	17.054	4.500	2	1/4 NPT	W4405H-200F
	8xD	16.720	18.577	23.077	4.500	2	1/4 NPT	⚠ W4408H-200F
	10xD	20.735	22.592	27.092	4.500	2	1/4 NPT	⚠ W4410H-200F





CAT Integral Shank

Length	Body L_2	Body L_9	Shank	Part No.
3xD	6.681	9.253	CAT40	W4403H-CV40
5xD	10.697	13.269	CAT40	W4405H-CV40
8xD	16.720	19.292	CAT40	⚠ W4408H-CV40
10xD	20.735	23.307	CAT40	⚠ W4410H-CV40
3xD	6.681	9.253	CAT50	W4403H-CV50
5xD	10.697	13.269	CAT50	W4405H-CV50
8xD	16.720	19.292	CAT50	⚠ W4408H-CV50
10xD	20.735	23.307	CAT50	⚠ W4410H-CV50

Connection Accessories

Mounting Screw	Mounting Screw Driver	Admissible Tightening Torque*
75020-IP20-1	8IP-20	678 N-cm (60 in-lb)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

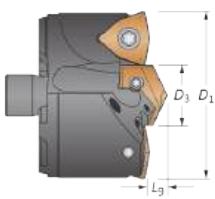
⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds and page **A50: 34** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

m = Metric (mm)
i = Imperial (in)

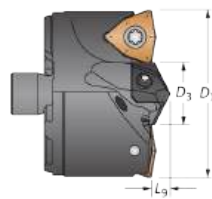
Mounting screws sold in multiples of 4.

51 Series: 51.00 mm - 56.99 mm (2.0077" - 2.2438")

Heads



T-A® Style Head



GEN3SYS® Style Head

APX Heads

D_1			D_3		T-A Style Head L_9			GEN3SYS Style Head L_9			IC Insert Size	
mm	inch	Fractional	mm	inch	mm	inch	Part No.	mm	inch	Part No.	mm	inch
51.00	2.0079	—	19.84	25/32	7.0	0.275	**V5101D-51**	6.0	0.236	**V5118D-51**	12.70	1/2
51.60	2.0313	2-1/32	19.84	25/32	7.0	0.275	**V5101D-0201**	6.0	0.236	**V5118D-0201**	12.70	1/2
52.00	2.0472	—	19.84	25/32	7.0	0.275	**V5101D-52**	6.0	0.236	**V5118D-52**	12.70	1/2
52.39	2.0625	2-1/16	19.84	25/32	7.0	0.275	**V5101D-0202**	6.0	0.236	**V5118D-0202**	12.70	1/2
53.00	2.0866	—	21.43	27/32	7.3	0.289	**V5101D-53**	6.3	0.247	**V5120D-53**	12.70	1/2
53.18	2.0938	2-3/32	21.43	27/32	7.3	0.289	**V5101D-0203**	6.3	0.247	**V5120D-0203**	12.70	1/2
53.98	2.1250	2-1/8	21.43	27/32	7.3	0.289	**V5101D-0204**	6.3	0.247	**V5120D-0204**	12.70	1/2
54.00	2.1260	—	23.81	15/16	7.9	0.310	**V5101D-54**	6.7	0.263	**V5122D-54**	12.70	1/2
54.77	2.1563	2-5/32	23.81	15/16	7.9	0.310	**V5101D-0205**	6.7	0.263	**V5122D-0205**	12.70	1/2
55.00	2.1654	—	23.81	15/16	7.9	0.310	**V5101D-55**	6.7	0.263	**V5122D-55**	12.70	1/2
55.56	2.1875	2-3/16	23.81	15/16	7.9	0.310	**V5101D-0206**	6.7	0.263	**V5122D-0206**	12.70	1/2
56.00	2.2047	—	23.81	15/16	7.9	0.310	**V5101D-56**	6.7	0.263	**V5122D-56**	12.70	1/2
56.36	2.2188	2-7/32	20.64	13/16	7.3	0.288	**V5101D-0207**	6.3	0.247	**V5120D-0207**	14.29	9/16

Pilot Inserts

D_1 Range		D_3		T-A Style Head			GEN3SYS Style Head	
mm	inch	mm	inch	Pilot Series	T-A Pro®	T-A (-TC)	Pilot Series	XT Pro
51.00 - 52.42	2.0077 - 2.0639	19.84	25/32	1	**TA#1-19.84**	**1C11H-0025-TC**	18	**XT#18-19.84**
52.43 - 53.99	2.0640 - 2.1257	21.43	27/32	1	**TA#1-21.43**	**1C11H-0027-TC**	20	**XT#20-21.43**
54.00 - 56.15	2.1258 - 2.2108	23.81	15/16	1**	**TA#1-23.81**	**1C11H-0030-TC**	22	**XT#22-23.81**
56.16 - 56.99	2.2109 - 2.2438	20.64	13/16	1	**TA#1-20.64**	**1C11H-0026-TC**	20	**XT#20-20.64**

#: Denotes ISO material/geometry (P= steel, M= stainless steel, K= cast iron, N= nonferrous, and X= high-speed steel substrate). X is only available in T-A Pro inserts.
****NOTE:** Coordinating screw in accessory table below.

IC Inserts - AM300® Coated

Size			Part No.						
mm	inch	Geometry	K35 (C1)	P35 (C5)	K25 (C2)	Insert Screw	Insert Driver	Admissible Tightening Torque*
12.70	1/2	Standard	**OP-080508-1PW**	**OP-080508-PW**	**OP-080508-2PW**	74012-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
		High Rake	—	**OP-080508-PWHR**	—			
14.29	9/16	Standard	**OP-090608-1PW**	**OP-090608-PW**	**OP-090608-2PW**	75014-IP20-1	8IP-20	1370 N-cm (121.0 in-lbs)
		High Rake	—	**OP-090608-PWHR**	—			

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

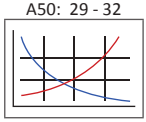
Pilot Accessories

T-A Series	GEN3SYS Series	Insert Screws	Insert Driver	Admissible Tightening Torque*
1	18	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
	20			
1**	22	739-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

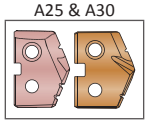
NOTE: For standard metric sized pilot inserts, please see the cross reference on ***pg. A50: 33***.

A50: 29 - 32

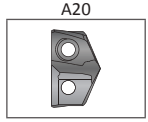


Key on A50: 2

A25 & A30



A20



IC inserts sold in multiples of 2.
Insert screws sold in multiples of 10.

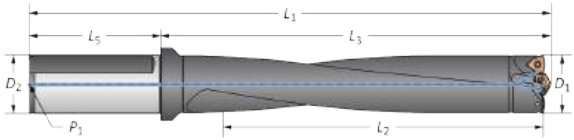
For nonstocked diameters, follow the below examples:

Metric	51 series, T-A (1 series), 53.25 mm	**= V5101D-53.25**
Inch	51 series, GEN3 (20 series), 2.1000"	**= V5120D-2.1000**

51 Series: 51.00 mm - 56.99 mm (2.0077" - 2.2438")

Holders

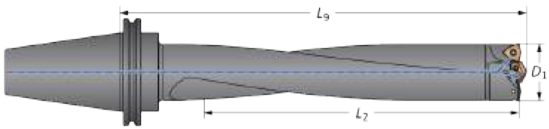




Straight Shank

	Length	Body L_2	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No.
m	3xD	180.3	225.6	305.6	80.0	50	1/4 BSPT	W5103H-50FM
m	5xD	294.2	339.5	419.6	80.0	50	1/4 BSPT	W5105H-50FM
m	8xD	465.2	510.5	590.6	80.0	50	1/4 BSPT	⚠ W5108H-50FM
m	10xD	579.2	624.5	704.5	80.0	50	1/4 BSPT	⚠ W5110H-50FM
i	3xD	7.097	8.880	13.380	4.500	2	1/4 NPT	W5103H-200F
i	5xD	11.585	13.368	17.868	4.500	2	1/4 NPT	W5105H-200F
i	8xD	18.317	20.100	24.600	4.500	2	1/4 NPT	⚠ W5108H-200F
i	10xD	22.805	24.588	29.088	4.500	2	1/4 NPT	⚠ W5110H-200F





CAT Integral Shank

Length	Body L_2	Body L_9	Shank	Part No.
3xD	7.097	9.732	CAT50	W5103H-CV50
5xD	11.585	14.220	CAT50	W5105H-CV50
8xD	18.317	20.952	CAT50	⚠ W5108H-CV50
10xD	22.805	25.440	CAT50	⚠ W5110H-CV50

Connection Accessories

Mounting Screw	Mounting Screw Driver	Admissible Tightening Torque*
75020-IP20-1	8IP-20	678 N-cm (60 in-lb)

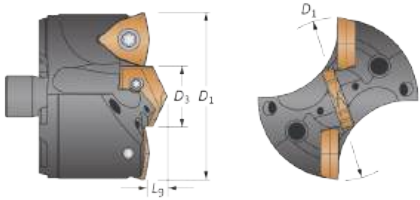
*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds and page **A50: 34** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

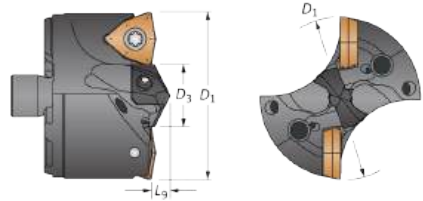
m = Metric (mm)
i = Imperial (in)
Mounting screws sold in multiples of 4.

57 Series: 57.00 mm - 62.99 mm (2.2439" - 2.4801")

Heads



T-A® Style Head



GEN3SYS® Style Head

APX Heads

D_1			D_3		T-A Style Head L_9			GEN3SYS Style Head L_9			IC Insert Size	
mm	inch	Fractional	mm	inch	mm	inch	Part No.	mm	inch	Part No.	mm	inch
57.00	2.2441	—	23.02	29/32	7.9	0.309	**V5701D-57**	6.7	0.263	**V5722D-57**	14.29	9/16
57.15	2.2500	2-1/4	23.02	29/32	7.9	0.309	**V5701D-0208**	6.7	0.263	**V5722D-0208**	14.29	9/16
57.95	2.2813	2-9/32	23.02	29/32	7.9	0.309	**V5701D-0209**	6.7	0.263	**V5722D-0209**	14.29	9/16
58.00	2.2835	—	23.02	29/32	7.9	0.309	**V5701D-58**	6.7	0.263	**V5722D-58**	14.29	9/16
58.74	2.3125	2-5/16	23.02	29/32	7.9	0.309	**V5701D-0210**	6.7	0.263	**V5722D-0210**	14.29	9/16
59.00	2.3228	—	23.81	15/16	8.0	0.316	**V5701D-59**	6.8	0.269	**V5722D-59**	14.29	9/16
59.53	2.3438	2-11/32	23.81	15/16	8.0	0.316	**V5701D-0211**	6.8	0.269	**V5722D-0211**	14.29	9/16
60.00	2.3622	—	23.81	15/16	8.0	0.316	**V5701D-60**	6.8	0.269	**V5722D-60**	14.29	9/16
60.33	2.3750	2-3/8	23.81	15/16	8.0	0.316	**V5701D-0212**	6.8	0.269	**V5722D-0212**	14.29	9/16
61.00	2.4016	—	25.40	1	8.4	0.330	**V5702D-61**	7.1	0.280	**V5724D-61**	14.29	9/16
61.12	2.4063	2-13/32	25.40	1	8.4	0.330	**V5702D-0213**	7.1	0.280	**V5724D-0213**	14.29	9/16
61.91	2.4375	2-7/16	25.40	1	8.4	0.330	**V5702D-0214**	7.1	0.280	**V5724D-0214**	14.29	9/16
62.00	2.4409	—	26.99	1-1/16	8.7	0.344	**V5702D-62**	7.4	0.290	**V5726D-62**	14.29	9/16
62.71	2.4688	2-15/32	26.99	1-1/16	8.7	0.344	**V5702D-0215**	7.4	0.290	**V5726D-0215**	14.29	9/16

Pilot Inserts

D_1 Range		D_3		T-A Style Head			GEN3SYS Style Head	
mm	inch	mm	inch	Pilot Series	T-A Pro®	T-A (-TC)	Pilot Series	XT Pro
57.00 - 58.77	2.2439 - 2.3139	23.02	29/32	1	**TA#1-23.02**	**1C11H-0029-TC**	22	**XT#22-23.02**
58.78 - 60.35	2.3140 - 2.3761	23.81	15/16	1	**TA#1-23.81**	**1C11H-0030-TC**	22	**XT#22-23.81**
60.36 - 61.95	2.3762 - 2.4391	25.40	1	2	**TA#2-25.40**	**1C12H-0100-TC**	24	**XT#24-25.40**
61.96 - 62.99	2.4392 - 2.4801	26.99	1-1/16	2	**TA#2-26.99**	**1C12H-0102-TC**	26	**XT#26-26.99**

#: Denotes ISO material/geometry (P= steel, M= stainless steel, K= cast iron, N= nonferrous, and X= high-speed steel substrate). X is only available in T-A Pro inserts.

IC Inserts - AM300® Coated

Size			Part No.			Insert Screw	Insert Driver	Admissible Tightening Torque*
mm	inch	Geometry	K35 (C1)	P35 (C5)	K25 (C2)			
14.29	9/16	Standard	**OP-090608-1PW**	**OP-090608-PW**	**OP-090608-2PW**	75014-IP20-1	8IP-20	1370 N-cm (121.0 in-lbs)
		High Rake	—	**OP-090608-PWHR**	—			

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

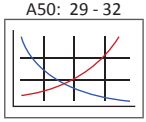
Pilot Accessories

T-A Series	GEN3SYS Series	Insert Screws	Insert Driver	Admissible Tightening Torque*
1	22	739-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
	24			
2	26	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

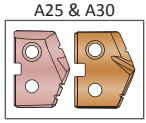
NOTE: For standard metric sized pilot inserts, please see the cross reference on ***pg. A50: 33***.

A50: 29 - 32

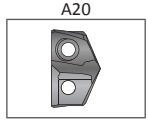


Key on A50: 2

A25 & A30



A20



IC inserts sold in multiples of 2.
Insert screws sold in multiples of 10.

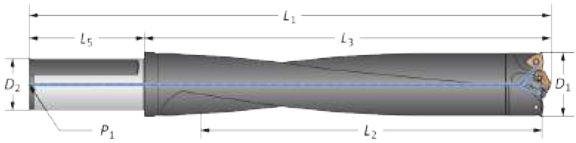
For nonstocked diameters, follow the below examples:

Metric	57 series, T-A (1 series), 60.25 mm	**= V5701D-60.25**
Inch	57 series, GEN3 (22 series), 2.3450"	**= V5722D-2.3450**

57 Series: 57.00 mm - 62.99 mm (2.2439" - 2.4801")

Holders

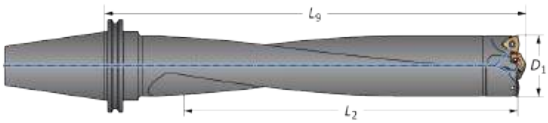




Straight Shank

	Length	Body L_2	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No.
m	3xD	197.4	242.7	322.7	80.0	50	1/4 BSPT	W5703H-50FM
m	5xD	323.4	368.7	448.7	80.0	50	1/4 BSPT	W5705H-50FM
m	8xD	512.4	557.7	637.7	80.0	50	1/4 BSPT	⚠ W5708H-50FM
m	10xD	638.4	683.7	763.7	80.0	50	1/4 BSPT	⚠ W5710H-50FM
i	3xD	7.772	9.556	14.056	4.500	2	1/4 NPT	W5703H-200F
i	5xD	12.732	14.516	19.016	4.500	2	1/4 NPT	W5705H-200F
i	8xD	20.173	21.957	26.457	4.500	2	1/4 NPT	⚠ W5708H-200F
i	10xD	25.133	26.917	31.417	4.500	2	1/4 NPT	⚠ W5710H-200F





CAT Integral Shank

Length	Body L_2	Body L_9	Shank	Part No.
3xD	7.772	10.528	CAT50	W5703H-CV50
5xD	12.732	15.489	CAT50	W5705H-CV50
8xD	20.173	22.929	CAT50	⚠ W5708H-CV50
10xD	25.133	27.890	CAT50	⚠ W5710H-CV50

Connection Accessories

Mounting Screw	Mounting Screw Driver	Admissible Tightening Torque*
75020-IP20-1	8IP-20	678 N-cm (60 in-lb)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

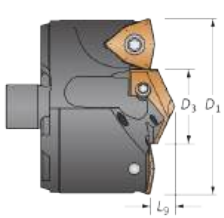
⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds and page **A50: 34** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

ⓜ = Metric (mm)
ⓘ = Imperial (in)

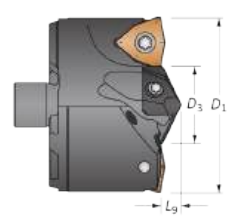
Mounting screws sold in multiples of 4.

63 Series: 63.00 mm - 69.99 mm (2.4802" - 2.7557")

Heads



T-A® Style Head



GEN3SYS® Style Head

APX Heads

D_1			D_3		T-A Style Head L_9			GEN3SYS Style Head L_9			IC Insert Size	
mm	inch	Fractional	mm	inch	mm	inch	Part No.	mm	inch	Part No.	mm	inch
63.00	2.4803	—	28.58	1-1/8	9.1	0.358	**V6302D-63**	7.6	0.301	**V6326D-63**	14.29	9/16
63.50	2.5000	2-1/2	28.58	1-1/8	9.1	0.358	**V6302D-0216**	7.6	0.301	**V6326D-0216**	14.29	9/16
64.00	2.5197	—	28.58	1-1/8	9.1	0.358	**V6302D-64**	7.6	0.301	**V6326D-64**	14.29	9/16
64.30	2.5313	2-17/32	28.58	1-1/8	9.1	0.358	**V6302D-0217**	7.6	0.301	**V6326D-0217**	14.29	9/16
65.00	2.5591	—	28.58	1-1/8	9.1	0.358	**V6302D-65**	7.6	0.301	**V6326D-65**	14.29	9/16
65.09	2.5625	2-9/16	30.16	1-3/16	9.4	0.372	**V6302D-0218**	7.9	0.312	**V6329D-0218**	14.29	9/16
65.88	2.5938	2-19/32	30.16	1-3/16	9.4	0.372	**V6302D-0219**	7.9	0.312	**V6329D-0219**	14.29	9/16
66.00	2.5984	—	30.16	1-3/16	9.4	0.372	**V6302D-66**	7.9	0.312	**V6329D-66**	14.29	9/16
66.68	2.6250	2-5/8	30.16	1-3/16	9.4	0.372	**V6302D-0220**	7.9	0.312	**V6329D-0220**	14.29	9/16
67.00	2.6378	—	31.75	1-1/4	9.8	0.386	**V6302D-67**	8.2	0.323	**V6329D-67**	14.29	9/16
67.47	2.6563	2-21/32	31.75	1-1/4	9.8	0.386	**V6302D-0221**	8.2	0.323	**V6329D-0221**	14.29	9/16
68.00	2.6772	—	31.75	1-1/4	9.8	0.386	**V6302D-68**	8.2	0.323	**V6329D-68**	14.29	9/16
68.26	2.6875	2-11/16	31.75	1-1/4	9.8	0.386	**V6302D-0222**	8.2	0.323	**V6329D-0222**	14.29	9/16
69.00	2.7165	—	33.34	1-5/16	10.1	0.400	**V6302D-69**	8.5	0.333	**V6332D-69**	14.29	9/16
69.06	2.7188	2-23/32	33.34	1-5/16	10.1	0.400	**V6302D-0223**	8.5	0.333	**V6332D-0223**	14.29	9/16
69.85	2.7500	2-3/4	33.34	1-5/16	10.1	0.400	**V6302D-0224**	8.5	0.333	**V6332D-0224**	14.29	9/16

Pilot Inserts

D_1 Range		D_3		T-A Style Head			GEN3SYS Style Head	
mm	inch	mm	inch	Pilot Series	T-A Pro®	T-A (-TC)	Pilot Series	XT Pro
63.00 - 65.07	2.4802 - 2.5620	28.58	1-1/8	2	**TA#2-28.58**	**1C12H-0104-TC**	26	**XT#26-28.58**
65.08 - 66.70	2.5621 - 2.6261	30.16	1-3/16	2	**TA#2-30.16**	**1C12H-0106-TC**	29	**XT#29-30.16**
66.71 - 68.30	2.6262 - 2.6891	31.75	1-1/4	2	**TA#2-31.75**	**1C12H-0108-TC**	29	**XT#29-31.75**
68.31 - 69.99	2.6892 - 2.7557	33.34	1-5/16	2	**TA#2-33.34**	**1C12H-0110-TC**	32	**XT#32-33.34**

#: Denotes ISO material/geometry (P= steel, M= stainless steel, K= cast iron, N= nonferrous, and X= high-speed steel substrate). X is only available in T-A Pro inserts.

IC Inserts - AM300® Coated

Size			Part No.						
mm	inch	Geometry	K35 (C1)	P35 (C5)	K25 (C2)	Insert Screw	Insert Driver	Admissible Tightening Torque*
14.29	9/16	Standard	**OP-090608-1PW**	**OP-090608-PW**	**OP-090608-2PW**	75014-IP20-1	8IP-20	1370 N-cm (121.0 in-lbs)
		High Rake	—	**OP-090608-PWHR**	—			

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

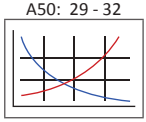
Pilot Accessories

T-A Series	GEN3SYS Series	Insert Screws	Insert Driver	Admissible Tightening Torque*
2	26	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
	29			
	32			

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

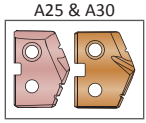
NOTE: For standard metric sized pilot inserts, please see the cross reference on ***pg. A50: 33***.

A50: 29 - 32

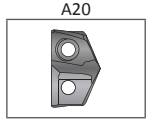


Key on A50: 2

A25 & A30



A20



IC inserts sold in multiples of 2.
Insert screws sold in multiples of 10.

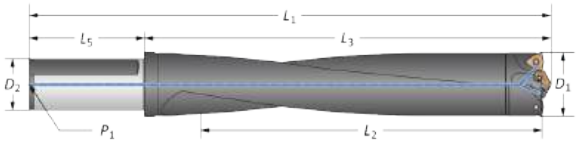
For nonstocked diameters, follow the below examples:

Metric	63 series, T-A (2 series), 66.25 mm	**= V6302D-66.25**
Inch	63 series, GEN3 (29 series), 2.5450"	**= V6329D-2.5450**

63 Series: 63.00 mm - 69.99 mm (2.4802" - 2.7557")

Holders

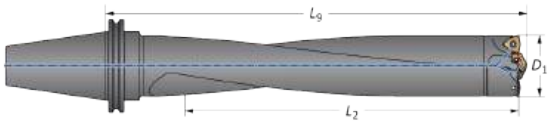




Straight Shank

	Length	Body L_2	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No.
m	3xD	217.1	262.6	342.6	80.0	50	1/4 BSPT	**W6303H-50FM**
m	5xD	357.2	402.6	482.7	80.0	50	1/4 BSPT	**W6305H-50FM**
m	8xD	567.1	612.6	692.6	80.0	50	1/4 BSPT	⚠ **W6308H-50FM**
m	10xD	695.3	740.8	820.8	80.0	50	1/4 BSPT	⚠ **W6310H-50FM**
i	3xD	8.549	10.340	14.840	4.500	2	1/4 NPT	**W6303H-200F**
i	5xD	14.061	15.852	20.352	4.500	2	1/4 NPT	**W6305H-200F**
i	8xD	22.328	24.119	28.619	4.500	2	1/4 NPT	⚠ **W6308H-200F**
i	10xD	27.375	29.166	33.666	4.500	2	1/4 NPT	⚠ **W6310H-200F**





CAT Integral Shank

Length	Body L_2	Body L_9	Shank	Part No.
3xD	8.549	11.430	CAT50	**W6303H-CV50**
5xD	14.061	16.942	CAT50	**W6305H-CV50**
8xD	22.328	25.209	CAT50	⚠ **W6308H-CV50**
10xD	26.785	29.665	CAT50	⚠ **W6310H-CV50**

Connection Accessories

Mounting Screw	Mounting Screw Driver	Admissible Tightening Torque*
75020-IP20-1	8IP-20	678 N-cm (60 in-lb)

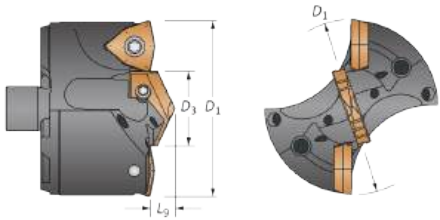
*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

⚠ **WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds and page **A50: 34** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

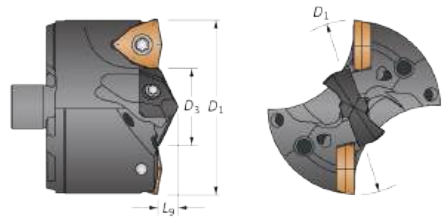
m = Metric (mm)
i = Imperial (in)
Mounting screws sold in multiples of 4.

70 Series: 70.00 mm - 75.99 mm (2.7558" - 2.9919")

Heads



T-A® Style Head



GEN3SYS® Style Head

APX Heads

D_1			D_3		T-A Style Head L_9			GEN3SYS Style Head L_9			IC Insert Size	
mm	inch	Fractional	mm	inch	mm	inch	Part No.	mm	inch	Part No.	mm	inch
70.00	2.7559	—	30.96	1-7/32	9.1	0.358	**V7002S-70**	7.5	0.297	**V7029S-70**	9.53	3/8
71.44	2.8125	2-13/16	30.96	1-7/32	9.1	0.358	**V7002S-0226**	7.5	0.297	**V7029S-0226**	9.53	3/8
72.00	2.8346	—	30.96	1-7/32	9.1	0.358	**V7002S-72**	7.5	0.297	**V7029S-72**	9.53	3/8
73.03	2.8750	2-7/8	30.96	1-7/32	9.1	0.358	**V7002S-0228**	7.5	0.297	**V7029S-0228**	9.53	3/8
74.00	2.9134	—	30.96	1-7/32	9.1	0.358	**V7002S-74**	7.5	0.297	**V7029S-74**	9.53	3/8
74.61	2.9375	2-15/16	30.96	1-7/32	9.1	0.358	**V7002S-0230**	7.5	0.297	**V7029S-0230**	9.53	3/8

Pilot Inserts

D_1 Range		D_3		T-A Style Head			GEN3SYS Style Head	
mm	inch	mm	inch	Pilot Series	T-A Pro®	T-A (-TC)	Pilot Series	XT Pro
70.00 - 75.99	2.7558 - 2.9919	30.96	1-7/32	2	**TA#2-30.96**	**1C12H-0107-TC**	29	**XT#29-30.96**

#: Denotes ISO material/geometry (P= steel, M= stainless steel, K= cast iron, N= nonferrous, and X= high-speed steel substrate). X is only available in T-A Pro inserts.

IC Inserts - AM300® Coated

Size			Part No.			Insert Screw	Insert Driver	Admissible Tightening Torque*
mm	inch	Geometry	K35 (C1)	P35 (C5)	K25 (C2)			
9.53	3/8	Standard	**OP-060408-1PW**	**OP-060408-PW**	**OP-060408-2PW**	73595-IP15-1	8IP-15	465 N-cm (41.0 in-lbs)
9.53	3/8	High Rake	—	**OP-060408-PWHR**	—			

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

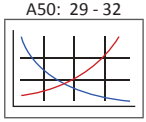
Pilot Accessories

T-A Series	GEN3SYS Series	Insert Screws	Insert Driver	Admissible Tightening Torque*
2	29	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

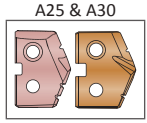
NOTE: For standard metric sized pilot inserts, please see the cross reference on ***pg. A50: 33***.

A50: 29 - 32

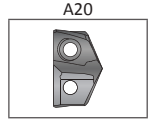


Key on A50: 2

A25 & A30



A20



Wear pads sold in multiples of 2.
Wear pad screws sold in multiples of 4.
IC inserts sold in multiples of 2.
Insert screws sold in multiples of 10.

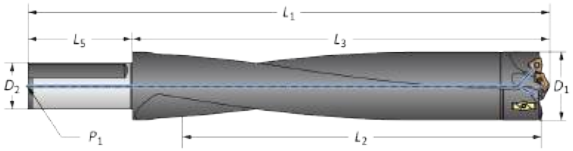
For nonstocked diameters, follow the below examples:

Metric	70 series, T-A (2 series), 73.25 mm	**= V7002S-73.25**
Inch	70 series, GEN3 (29 series), 2.8450"	**= V7029S-2.8450**

70 Series: 70.00 mm - 75.99 mm (2.7558" - 2.9919")

Holders

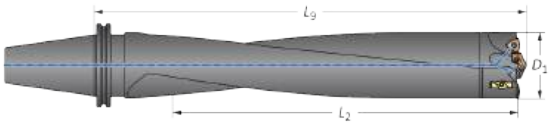




Straight Shank

	Length	Body L_2	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No.
m	3xD	235.1	269.1	349.1	80.0	50	1/4 BSPT	**W7003H-50FM**
m	5xD	387.1	421.1	501.1	80.0	50	1/4 BSPT	**W7005H-50FM**
m	8xD	615.1	649.1	729.1	80.0	50	1/4 BSPT	⚠ **W7008H-50FM**
m	10xD	716.5	750.4	830.4	80.0	50	1/4 BSPT	⚠ **W7010H-50FM**
i	3xD	9.258	10.594	15.094	4.500	2	1/4 NPT	**W7003H-200F**
i	5xD	15.242	16.578	21.078	4.500	2	1/4 NPT	**W7005H-200F**
i	8xD	24.218	25.554	30.054	4.500	2	1/4 NPT	⚠ **W7008H-200F**
i	10xD	28.207	29.543	34.043	4.500	2	1/4 NPT	⚠ **W7010H-200F**





CAT Integral Shank

Length	Body L_2	Body L_9	Shank	Part No.
3xD	9.258	12.219	CAT50	**W7003H-CV50**
5xD	15.242	18.203	CAT50	**W7005H-CV50**
8xD	24.218	27.179	CAT50	⚠ **W7008H-CV50**
10xD	27.080	29.948	CAT50	⚠ **W7010H-CV50**

Connection Accessories

Mounting Screw	Mounting Screw Driver	Admissible Tightening Torque*
78027-IP30-1	8IP-30B	2825 N-cm (250 in-lb)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

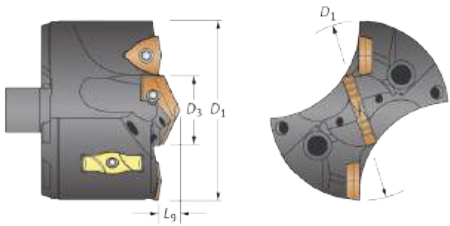
⚠ **WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds and page **A50: 34** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

ⓜ = Metric (mm)
ⓘ = Imperial (in)

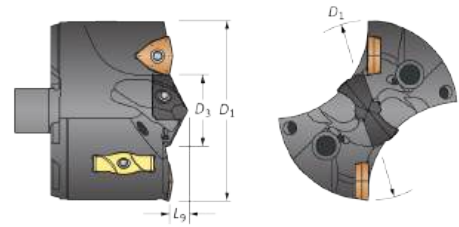
Mounting screws sold in multiples of 4.

76 Series: 76.00 mm - 82.99 mm (2.9920" - 3.2675")

Heads



T-A® Style Head



GEN3SYS® Style Head

APX Heads

D_1			D_3		T-A Style Head L_9			GEN3SYS Style Head L_9			IC Insert Size	
mm	inch	Fractional	mm	inch	mm	inch	Part No.	mm	inch	Part No.	mm	inch
76.00	2.9921	—	30.96	1-7/32	9.5	0.373	**V7602S-76**	7.9	0.311	**V7629S-76**	12.70	1/2
76.20	3.0000	3	30.96	1-7/32	9.5	0.373	**V7602S-0300**	7.9	0.311	**V7629S-0300**	12.70	1/2
77.79	3.0625	3-1/16	30.96	1-7/32	9.5	0.373	**V7602S-0302**	7.9	0.311	**V7629S-0302**	12.70	1/2
78.00	3.0709	—	30.96	1-7/32	9.5	0.373	**V7602S-78**	7.9	0.311	**V7629S-78**	12.70	1/2
79.38	3.1250	3-1/8	30.96	1-7/32	9.5	0.373	**V7602S-0304**	7.9	0.311	**V7629S-0304**	12.70	1/2
80.00	3.1496	—	30.96	1-7/32	9.5	0.373	**V7602S-80**	7.9	0.311	**V7629S-80**	12.70	1/2
80.96	3.1875	3-3/16	30.96	1-7/32	9.5	0.373	**V7602S-0306**	7.9	0.311	**V7629S-0306**	12.70	1/2
82.00	3.2283	—	30.96	1-7/32	9.5	0.373	**V7602S-82**	7.9	0.311	**V7629S-82**	12.70	1/2
82.55	3.2500	3-1/4	30.96	1-7/32	9.5	0.373	**V7602S-0308**	7.9	0.311	**V7629S-0308**	12.70	1/2

Pilot Inserts

D_1 Range		D_3		T-A Style Head			GEN3SYS Style Head	
mm	inch	mm	inch	Pilot Series	T-A Pro®	T-A (-TC)	Pilot Series	XT Pro
76.00 - 82.99	2.9920 - 3.2675	30.96	1-7/32	2	**TA#2-30.96**	**1C12H-0107-TC**	29	**XT#29-30.96**

#: Denotes ISO material/geometry (P= steel, M= stainless steel, K= cast iron, N= nonferrous, and X= high-speed steel substrate). X is only available in T-A Pro inserts.

IC Inserts - AM300® Coated

Size			Part No.					
mm	inch	Geometry	K35 (C1)	P35 (C5)	K25 (C2)	Insert Screw	Insert Driver	Admissible Tightening Torque*
12.70	1/2	Standard	**OP-080508-1PW**	**OP-080508-PW**	**OP-080508-2PW**	74012-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
		High Rake	—	**OP-080508-PWHR**	—			

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

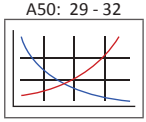
Pilot Accessories

T-A Series	GEN3SYS Series	Insert Screws	Insert Driver	Admissible Tightening Torque*
2	29	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

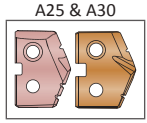
NOTE: For standard metric sized pilot inserts, please see the cross reference on ***pg. A50: 33***.

A50: 29 - 32

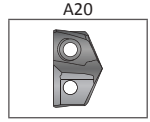


Key on A50: 2

A25 & A30



A20



Wear pads sold in multiples of 2.
Wear pad screws sold in multiples of 4.
IC inserts sold in multiples of 2.
Insert screws sold in multiples of 10.

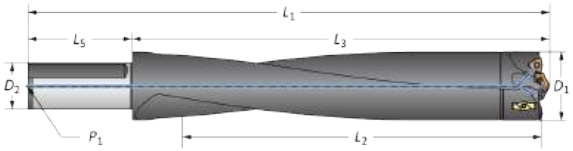
For nonstocked diameters, follow the below examples:

Metric	76 series, T-A (2 series), 79.25 mm	**= V7602S-79.25**
Inch	76 series, GEN3 (29 series), 3.1450"	**= V7629S-3.1450**

76 Series: 76.00 mm - 82.99 mm (2.9920" - 3.2675")

Holders

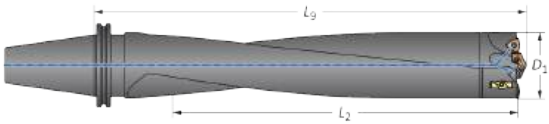




Straight Shank

	Length	Body L_2	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No.
m	3xD	255.8	292.4	372.4	80.0	50	1/4 BSPT	W7603H-50FM
m	5xD	421.8	458.4	538.4	80.0	50	1/4 BSPT	W7605H-50FM
m	8xD	670.7	707.4	787.4	80.0	50	1/4 BSPT	⚠ W7608H-50FM
m	10xD	836.7	873.4	953.4	80.0	50	1/4 BSPT	⚠ W7610H-50FM
i	3xD	10.070	11.513	16.013	4.500	2	1/4 NPT	W7603H-200F
i	5xD	16.605	18.048	22.548	4.500	2	1/4 NPT	W7605H-200F
i	8xD	26.407	27.850	32.350	4.500	2	1/4 NPT	⚠ W7608H-200F
i	10xD	32.942	34.385	38.885	4.500	2	1/4 NPT	⚠ W7610H-200F





CAT Integral Shank

Length	Body L_2	Body L_9	Shank	Part No.
3xD	10.070	12.888	CAT50	W7603H-CV50
5xD	16.605	19.422	CAT50	W7605H-CV50
8xD	26.407	29.225	CAT50	⚠ W7608H-CV50
10xD	32.942	35.760	CAT50	⚠ W7610H-CV50

Connection Accessories

Mounting Screw	Mounting Screw Driver	Admissible Tightening Torque*
78027-IP30-1	8IP-30B	2825 N-cm (250 in-lb)

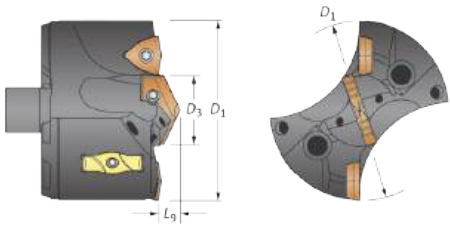
*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds and page **A50: 34** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

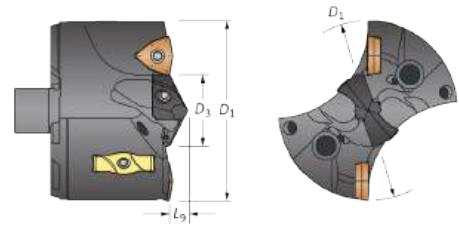
ⓜ = Metric (mm)
ⓘ = Imperial (in)
Mounting screws sold in multiples of 4.

83 Series: 83.00 mm - 88.99 mm (3.2676" - 3.5037")

Heads



T-A® Style Head



GEN3SYS® Style Head

APX Heads

D_1			D_3		T-A Style Head L_9			GEN3SYS Style Head L_9			IC Insert Size	
mm	inch	Fractional	mm	inch	mm	inch	Part No.	mm	inch	Part No.	mm	inch
84.00	3.3071	—	34.93	1-3/8	10.4	0.408	**V8302S-84**	8.6	0.338	**V8332S-84**	12.70	1/2
84.14	3.3125	3-5/16	34.93	1-3/8	10.4	0.408	**V8302S-0310**	8.6	0.338	**V8332S-0310**	12.70	1/2
85.73	3.3750	3-3/8	34.93	1-3/8	10.4	0.408	**V8302S-0312**	8.6	0.338	**V8332S-0312**	12.70	1/2
86.00	3.3858	—	34.93	1-3/8	10.4	0.408	**V8302S-86**	8.6	0.338	**V8332S-86**	12.70	1/2
87.31	3.4375	3-7/16	34.93	1-3/8	10.4	0.408	**V8302S-0314**	8.6	0.338	**V8332S-0314**	12.70	1/2
88.00	3.4646	—	34.93	1-3/8	10.4	0.408	**V8302S-88**	8.6	0.338	**V8332S-88**	12.70	1/2
88.90	3.5000	3-1/2	34.93	1-3/8	10.4	0.408	**V8302S-0316**	8.6	0.338	**V8332S-0316**	12.70	1/2

Pilot Inserts

D_1 Range		D_3		T-A Style Head			GEN3SYS Style Head	
mm	inch	mm	inch	Pilot Series	T-A Pro®	T-A (-TC)	Pilot Series	XT Pro
83.00 - 88.99	3.2676 - 3.5037	34.93	1-3/8	2	**TA#2-34.93**	**1C12H-0112-TC**	32	**XT#32-34.93**

#: Denotes ISO material/geometry (P= steel, M= stainless steel, K= cast iron, N= nonferrous, and X= high-speed steel substrate). X is only available in T-A Pro inserts.

IC Inserts - AM300® Coated

Size			Part No.					
mm	inch	Geometry	K35 (C1)	P35 (C5)	K25 (C2)	Insert Screw	Insert Driver	Admissible Tightening Torque*
12.70	1/2	Standard	**OP-080508-1PW**	**OP-080508-PW**	**OP-080508-2PW**	74012-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
		High Rake	—	**OP-080508-PWHR**	—			

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

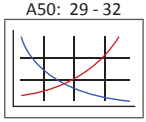
Pilot Accessories

T-A Series	GEN3SYS Series	Insert Screws	Insert Driver	Admissible Tightening Torque*
2	32	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)

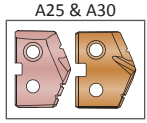
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NOTE: For standard metric sized pilot inserts, please see the cross reference on ***pg. A50: 33***.

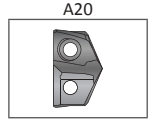
A50: 29 - 32



A25 & A30



A20



Key on A50: 2

Wear pads sold in multiples of 2.
Wear pad screws sold in multiples of 4.
IC inserts sold in multiples of 2.
Insert screws sold in multiples of 10.

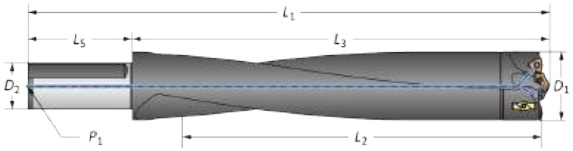
For nonstocked diameters, follow the below examples:

Metric	83 series, T-A (2 series), 86.25 mm	**= V8302S-86.25**
Inch	83 series, GEN3 (32 series), 3.3250"	**= V8332S-3.3250**

83 Series: 83.00 mm - 88.99 mm (3.2676" - 3.5037")

Holders

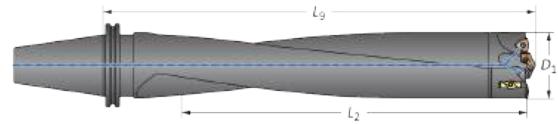




Straight Shank

	Length	Body L_2	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No.
m	3xD	272.8	312.6	392.6	80.0	50	1/4 BSPT	W8303H-50FM
	5xD	450.8	490.6	570.6	80.0	50	1/4 BSPT	W8305H-50FM
	8xD	710.8	750.5	830.5	80.0	50	1/4 BSPT	⚠ W8308H-50FM
	10xD	895.7	935.4	1015.4	80.0	50	1/4 BSPT	⚠ W8310H-50FM
i	3xD	10.741	12.307	16.807	4.500	2	1/4 NPT	W8303H-200F
	5xD	17.747	19.313	23.813	4.500	2	1/4 NPT	W8305H-200F
	8xD	27.982	29.548	34.048	4.500	2	1/4 NPT	⚠ W8308H-200F
	10xD	35.262	36.828	41.328	4.500	2	1/4 NPT	⚠ W8310H-200F





CAT Integral Shank

Length	Body L_2	Body L_9	Shank	Part No.
3xD	10.741	13.682	CAT50	W8303H-CV50
5xD	17.747	20.687	CAT50	W8305H-CV50
8xD	27.102	30.042	CAT50	⚠ W8308H-CV50
10xD	35.262	38.203	CAT50	⚠ W8310H-CV50

Connection Accessories

Mounting Screw	Mounting Screw Driver	Admissible Tightening Torque*
75020-IP20-1	8IP-20	678 N-cm (60 in-lb)

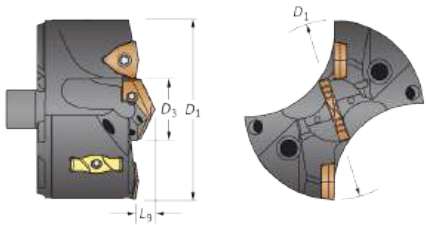
*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds and page **A50: 34** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

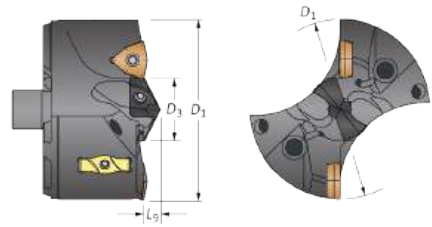
m = Metric (mm)
i = Imperial (in)
Mounting screws sold in multiples of 4.

89 Series: 89.00 mm - 94.99 mm (3.5038" - 3.7399")

Heads



T-A® Style Head



GEN3SYS® Style Head

APX Heads

D_1			D_3		T-A Style Head L_9			GEN3SYS Style Head L_9			IC Insert Size	
mm	inch	Fractional	mm	inch	mm	inch	Part No.	mm	inch	Part No.	mm	inch
90.00	3.5433	—	31.75	1-1/4	9.8	0.386	**V8902S-90**	8.2	0.323	**V8929S-90**	14.29	9/16
90.49	3.5625	3-9/16	31.75	1-1/4	9.8	0.386	**V8902S-0318**	8.2	0.323	**V8929S-0318**	14.29	9/16
92.00	3.6220	—	31.75	1-1/4	9.8	0.386	**V8902S-92**	8.2	0.323	**V8929S-92**	14.29	9/16
92.08	3.6250	3-5/8	31.75	1-1/4	9.8	0.386	**V8902S-0320**	8.2	0.323	**V8929S-0320**	14.29	9/16
93.66	3.6875	3-11/16	31.75	1-1/4	9.8	0.386	**V8902S-0322**	8.2	0.323	**V8929S-0322**	14.29	9/16
94.00	3.7008	—	31.75	1-1/4	9.8	0.386	**V8902S-94**	8.2	0.323	**V8929S-94**	14.29	9/16

Pilot Inserts

D_1 Range		D_3		T-A Style Head			GEN3SYS Style Head	
mm	inch	mm	inch	Pilot Series	T-A Pro®	T-A (-TC)	Pilot Series	XT Pro
89.00 - 94.99	3.5038 - 3.7399	31.75	1-1/4	2	**TA#2-31.75**	**1C12H-0108-TC**	29	**XT#29-31.75**

#: Denotes ISO material/geometry (P= steel, M= stainless steel, K= cast iron, N= nonferrous, and X= high-speed steel substrate). X is only available in T-A Pro inserts.

IC Inserts - AM300® Coated

Size			Part No.			Insert Screw	Insert Driver	Admissible Tightening Torque*
mm	inch	Geometry	K35 (C1)	P35 (C5)	K25 (C2)			
14.29	9/16	Standard	**OP-090608-1PW**	**OP-090608-PW**	**OP-090608-2PW**	75014-IP20-1	8IP-20	1370 N-cm (121.0 in-lbs)
		High Rake	—	**OP-090608-PWHR**	—			

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

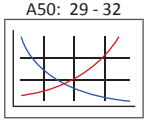
Pilot Accessories

T-A Series	GEN3SYS Series	Insert Screws	Insert Driver	Admissible Tightening Torque*
2	29	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

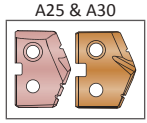
NOTE: For standard metric sized pilot inserts, please see the cross reference on ***pg. A50: 33***.

A50: 29 - 32

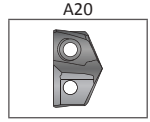


Key on A50: 2

A25 & A30



A20



Wear pads sold in multiples of 2.
Wear pad screws sold in multiples of 4.
IC inserts sold in multiples of 2.
Insert screws sold in multiples of 10.

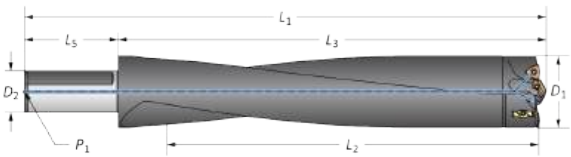
For nonstocked diameters, follow the below examples:

Metric	89 series, T-A (2 series), 91.25 mm	**= V8902S-91.25**
Inch	89 series, GEN3 (29 series), 3.6500"	**= V8929S-3.6500**

89 Series: 89.00 mm - 94.99 mm (3.5038" - 3.7399")

Holders

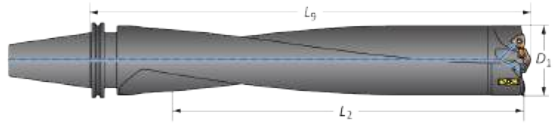




Straight Shank

	Length	Body L_2	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No.
m	3xD	291.4	333.6	413.6	80.0	50	1/4 BSPT	W8903H-50FM
m	5xD	481.4	523.6	603.6	80.0	50	1/4 BSPT	W8905H-50FM
m	8xD	708.1	750.3	830.3	80.0	50	1/4 BSPT	⚠ W8908H-50FM
m	10xD	913.7	955.9	1035.9	80.0	50	1/4 BSPT	⚠ W8910H-50FM
i	3xD	11.474	13.135	17.635	4.500	2	1/4 NPT	W8903H-200F
i	5xD	18.954	20.615	25.115	4.500	2	1/4 NPT	W8905H-200F
i	8xD	27.879	29.540	34.040	4.500	2	1/4 NPT	⚠ W8908H-200F
i	10xD	35.971	37.632	42.132	4.500	2	1/4 NPT	⚠ W8910H-200F





CAT Integral Shank

Length	Body L_2	Body L_9	Shank	Part No.
3xD	11.474	14.510	CAT50	W8903H-CV50
5xD	18.954	21.990	CAT50	W8905H-CV50
8xD	26.999	30.035	CAT50	⚠ W8908H-CV50
10xD	35.971	39.007	CAT50	⚠ W8910H-CV50

Connection Accessories

Mounting Screw	Mounting Screw Driver	Admissible Tightening Torque*
78027-IP30-1	8IP-30B	2825 N-cm (250 in-lb)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

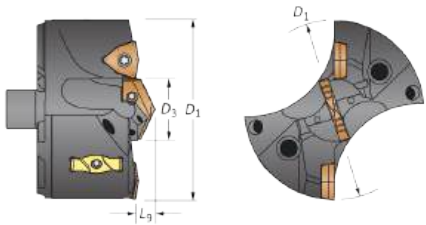
⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds and page **A50: 34** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

m = Metric (mm)
i = Imperial (in)

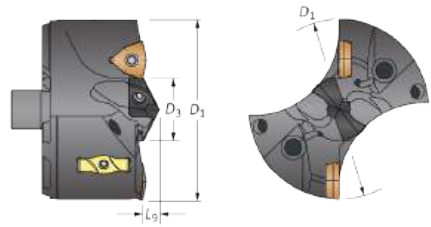
Mounting screws sold in multiples of 4.

95 Series: 95.00 mm - 101.60 mm (3.7400" - 4.0001")

Heads



T-A® Style Head



GEN3SYS® Style Head

APX Heads

D_1			D_3		T-A Style Head L_9			GEN3SYS Style Head L_9			IC Insert Size	
mm	inch	Fractional	mm	inch	mm	inch	Part No.	mm	inch	Part No.	mm	inch
95.25	3.7500	3-3/4	34.93	1-3/8	10.5	0.414	**V9502S-0324**	8.7	0.344	**V9532S-0324**	14.29	9/16
96.00	3.7795	—	34.93	1-3/8	10.5	0.414	**V9502S-96**	8.7	0.344	**V9532S-96**	14.29	9/16
96.84	3.8125	3-13/16	34.93	1-3/8	10.5	0.414	**V9502S-0326**	8.7	0.344	**V9532S-0326**	14.29	9/16
98.00	3.8583	—	34.93	1-3/8	10.5	0.414	**V9502S-98**	8.7	0.344	**V9532S-98**	14.29	9/16
98.43	3.8750	3-7/8	34.93	1-3/8	10.5	0.414	**V9502S-0328**	8.7	0.344	**V9532S-0328**	14.29	9/16
100.00	3.9370	—	34.93	1-3/8	10.5	0.414	**V9502S-100**	8.7	0.344	**V9532S-100**	14.29	9/16
100.01	3.9375	3-15/16	34.93	1-3/8	10.5	0.414	**V9502S-0330**	8.7	0.344	**V9532S-0330**	14.29	9/16
101.60	4.0000	4	34.93	1-3/8	10.5	0.414	**V9502S-0400**	8.7	0.344	**V9532S-0400**	14.29	9/16

Pilot Inserts

D_1 Range		D_3		T-A Style Head			GEN3SYS Style Head	
mm	inch	mm	inch	Pilot Series	T-A Pro®	T-A (-TC)	Pilot Series	XT Pro
95.00 - 101.60	3.7400 - 4.0001	34.93	1-3/8	2	**TA#2-34.93**	**1C12H-0112-TC**	29	**XT#32-34.93**

#: Denotes ISO material/geometry (P= steel, M= stainless steel, K= cast iron, N= nonferrous, and X= high-speed steel substrate). X is only available in T-A Pro inserts.

IC Inserts - AM300® Coated

Size			Part No.					
mm	inch	Geometry	K35 (C1)	P35 (C5)	K25 (C2)	Insert Screw	Insert Driver	Admissible Tightening Torque*
14.29	9/16	Standard	**OP-090608-1PW**	**OP-090608-PW**	**OP-090608-2PW**	75014-IP20-1	8IP-20	1370 N-cm (121.0 in-lbs)
		High Rake	—	**OP-090608-PWHR**	—			

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

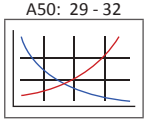
Pilot Accessories

T-A Series	GEN3SYS Series	Insert Screws	Insert Driver	Admissible Tightening Torque*
2	32	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

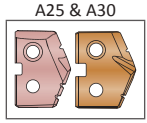
NOTE: For standard metric sized pilot inserts, please see the cross reference on ***pg. A50: 33***.

A50: 29 - 32

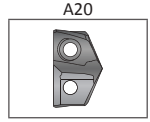


Key on A50: 2

A25 & A30



A20



Wear pads sold in multiples of 2.
Wear pad screws sold in multiples of 4.
IC inserts sold in multiples of 2.
Insert screws sold in multiples of 10.

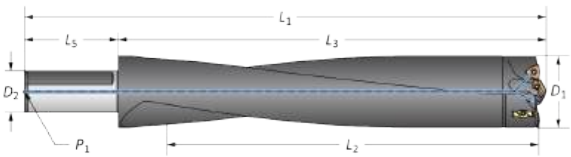
For nonstocked diameters, follow the below examples:

Metric	95 series, T-A (2 series), 100.25 mm	**= V9502S-100.25**
Inch	95 series, GEN3 (32 series), 3.9450"	**= V9532S-3.9450**

95 Series: 95.00 mm - 101.60 mm (3.7400" - 4.0001")

Holders

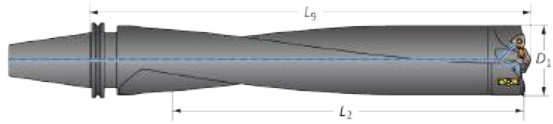




Straight Shank

	Length	Body L_2	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No.
m	3xD	316.9	362.8	442.8	80.0	50	1/4 BSPT	W9503H-50FM
	5xD	520.1	566.0	646.0	80.0	50	1/4 BSPT	W9505H-50FM
	8xD	712.0	756.7	836.7	80.0	50	1/4 BSPT	⚠ W9508H-50FM
	10xD	916.3	962.3	1042.3	80.0	50	1/4 BSPT	⚠ W9510H-50FM
i	3xD	12.477	14.285	18.785	4.500	2	1/4 NPT	W9503H-200F
	5xD	20.477	22.285	26.785	4.500	2	1/4 NPT	W9505H-200F
	8xD	27.982	29.790	34.290	4.500	2	1/4 NPT	⚠ W9508H-200F
	10xD	36.077	37.885	42.385	4.500	2	1/4 NPT	⚠ W9510H-200F





CAT Integral Shank

Length	Body L_2	Body L_9	Shank	Part No.
3xD	12.477	15.660	CAT50	W9503H-CV50
5xD	20.477	23.660	CAT50	W9505H-CV50
8xD	27.102	30.285	CAT50	⚠ W9508H-CV50
10xD	36.077	39.260	CAT50	⚠ W9510H-CV50

Connection Accessories

Mounting Screw	Mounting Screw Driver	Admissible Tightening Torque*
78027-IP30-1	8IP-30B	2825 N-cm (250 in-lb)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds and page **A50: 34** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Mounting screws sold in multiples of 4.

Recommended Drilling Data | Metric (mm)

APX DRILL

ISO	Material	Hardness (BHN)	Outboard Insert Speed (m/min)	Outboard Insert Pilot Style	Feed Rate (mm/rev) 7.94 mm IC 33 Series 33.00 mm - 37.99 mm
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 250	137 - 229	T-A/GEN3SYS	0.15 - 0.28
P	**Low-Carbon Steel** 1010, 1020, 1025, 1522, 1144, etc.	85 - 275	137 - 229	T-A/GEN3SYS	0.15 - 0.28
P	**Medium-Carbon Steel** 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 325	137 - 229	T-A/GEN3SYS	0.15 - 0.28
P	**Alloy Steel** 4140, 5140, 8640, etc.	125 - 375	122 - 213	T-A/GEN3SYS	0.13 - 0.18
P	**High-Strength Alloy** 4340, 4330V, 300M, etc.	225 - 400	91 - 152	T-A/GEN3SYS	0.13 - 0.15
P	**Structural Steel** A36, A285, A516, etc.	100 - 350	137 - 229	T-A/GEN3SYS	0.15 - 0.20
P	**Tool Steel** H-13, H-21, A-4, S-3, etc.	150 - 250	91 - 152	T-A/GEN3SYS	0.13 - 0.15
M	**Stainless Steel 400 Series** 416, 420, etc.	185 - 350	91 - 152	T-A/GEN3SYS	0.15 - 0.20
M	**Stainless Steel 300 Series** 304, 316, 17-4PH, etc.	135 - 275	91 - 152	T-A/GEN3SYS	0.13 - 0.18
M	**Super Duplex Stainless Steel**	135 - 275	76 - 137	T-A/GEN3SYS	0.10 - 0.15
K	**SG / Nodular Cast Iron**	120 - 320	152 - 244	T-A/GEN3SYS	0.13 - 0.23
N	**Cast Aluminum**	30 - 180	183 - 244	T-A/GEN3SYS	0.23 - 0.30
N	**Wrought Aluminum**	30 - 180	183 - 244	T-A/GEN3SYS	0.18 - 0.28
N	**Aluminum Bronze**	100 - 250	123 - 213	T-A/GEN3SYS	0.13 - 0.18
N	**Brass**	30 - 100	244	T-A/GEN3SYS	0.15 - 0.20
N	**Copper**	60	213	T-A/GEN3SYS	0.05 - 0.13
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 310	61 - 122	T-A	0.10 - 0.13
S	**Titanium Alloy**	140 - 310	91 - 152	T-A	0.13 - 0.18
S	**Aerospace Alloy** S82	185 - 350	122 - 183	T-A/GEN3SYS	0.10 - 0.15
H	**Wear Plate** Hardox®, AR400, T-1, etc.	400 - 600	91 - 152	T-A	0.07 - 0.13
H	**Hardened Steel**	300 - 500	91 - 152	T-A	0.10 - 0.13

Coolant Recommendations

Series	33	38	44	51	57	63	70	76	83	89	95
Pressure (BAR)	24	21	19	17	16	14	10	7	7	7	7
Flow Rate (LPM)	38	38	45	68	76	83	95	106	114	125	125

Calculations

Value	m/min	RPM	mm/min
Formula	RPM • 0.003 • Diameter	(m/min • 318.47) / Diameter	RPM • mm/rev

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation chart for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department.

IMPORTANT: The coolant pressure and flow rate recommendations above represent a good approximation to obtain optimum tool life and chip evacuation at Allied Machine recommended speeds and feeds. If lower coolant capabilities exist in a drilling application, the APX drilling system will still function at reduced penetration rates. Contact our Application Engineering department for a more specific recommendation of coolant requirements and/or speeds and feeds.

⚠ WARNING **Tool failure can cause serious injury. To prevent:**

- Do not rotate tool more than 50 RPM unless it is engaged with the workpiece or fixture.

Refer to page A50: 34 for Deep Hole Drilling Guidelines in this section of the catalog. Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

Recommended Drilling Data | Metric (mm)

APX DRILL

Feed Rate (mm/rev)					
9.53 mm IC	12.70 mm IC	14.29 mm IC	9.53 mm IC	12.70 mm IC	14.29 mm IC
38 - 44 Series 38.00 mm - 47.89 mm	44 - 51 Series 47.90 mm - 56.15 mm	51 - 63 Series 56.16 mm - 69.99 mm	70 Series 70.00 mm - 75.99 mm	76 - 83 Series 76.00 mm - 88.99 mm	89 - 95 Series 89.00 mm - 101.60 mm
0.18 - 0.30	0.23 - 0.30	0.23 - 0.30	0.15 - 0.25	0.18 - 0.28	0.18 - 0.30
0.18 - 0.30	0.23 - 0.30	0.23 - 0.30	0.15 - 0.25	0.18 - 0.28	0.18 - 0.30
0.18 - 0.30	0.23 - 0.30	0.23 - 0.30	0.15 - 0.25	0.18 - 0.28	0.18 - 0.30
0.13 - 0.23	0.18 - 0.25	0.18 - 0.28	0.13 - 0.23	0.15 - 0.25	0.15 - 0.25
0.13 - 0.18	0.13 - 0.20	0.15 - 0.23	0.13 - 0.18	0.13 - 0.20	0.15 - 0.20
0.18 - 0.23	0.20 - 0.25	0.23 - 0.28	0.13 - 0.23	0.15 - 0.25	0.15 - 0.25
0.13 - 0.18	0.18 - 0.23	0.20 - 0.25	0.13 - 0.18	0.15 - 0.23	0.18 - 0.25
0.18 - 0.23	0.20 - 0.25	0.23 - 0.28	0.13 - 0.18	0.18 - 0.23	0.18 - 0.25
0.15 - 0.20	0.18 - 0.23	0.20 - 0.25	0.10 - 0.20	0.15 - 0.25	0.15 - 0.25
0.13 - 0.18	0.18 - 0.23	0.18 - 0.23	0.10 - 0.18	0.15 - 0.23	0.18 - 0.25
0.15 - 0.25	0.20 - 0.30	0.25 - 0.30	0.20 - 0.25	0.23 - 0.28	0.25 - 0.30
0.25 - 0.36	0.30 - 0.40	0.30 - 0.40	0.15 - 0.23	0.20 - 0.28	0.20 - 0.30
0.20 - 0.30	0.25 - 0.36	0.25 - 0.36	0.15 - 0.23	0.20 - 0.28	0.20 - 0.30
0.13 - 0.20	0.18 - 0.25	0.23 - 0.28	0.15 - 0.23	0.18 - 0.25	0.20 - 0.30
0.18 - 0.23	0.20 - 0.25	0.23 - 0.30	0.15 - 0.20	0.18 - 0.23	0.20 - 0.25
0.08 - 0.15	0.15 - 0.20	0.20 - 0.25	0.08 - 0.15	0.15 - 0.20	0.15 - 0.20
0.10 - 0.18	0.15 - 0.23	0.18 - 0.23	0.10 - 0.15	0.13 - 0.18	0.13 - 0.18
0.15 - 0.20	0.18 - 0.23	0.20 - 0.25	0.10 - 0.15	0.13 - 0.18	0.13 - 0.18
0.13 - 0.18	0.15 - 0.20	0.15 - 0.20	0.10 - 0.15	0.13 - 0.18	0.13 - 0.18
0.10 - 0.15	0.15 - 0.20	0.18 - 0.23	0.08 - 0.13	0.10 - 0.15	0.10 - 0.15
0.13 - 0.15	0.15 - 0.20	0.15 - 0.20	0.08 - 0.13	0.10 - 0.20	0.10 - 0.20

⚠ WARNING **Tool failure can cause serious injury. To prevent:**
- Do not rotate tool more than 50 RPM unless it is engaged with the workpiece or fixture.
Refer to page A50: 34 for Deep Hole Drilling Guidelines in this section of the catalog. Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

Recommended Drilling Data | Imperial (in)

APX DRILL

ISO	Material	Hardness (BHN)	Outboard Insert Speed (SFM)	Outboard Insert Pilot Style	Feed Rate (IPR) 5/16" IC 33 Series 1.2992" - 1.4960"
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 250	450 - 750	T-A/GEN3SYS	0.006 - 0.011
P	**Low-Carbon Steel** 1010, 1020, 1025, 1522, 1144, etc.	85 - 275	450 - 750	T-A/GEN3SYS	0.006 - 0.011
P	**Medium-Carbon Steel** 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 325	450 - 750	T-A/GEN3SYS	0.006 - 0.011
P	**Alloy Steel** 4140, 5140, 8640, etc.	125 - 375	400 - 700	T-A/GEN3SYS	0.005 - 0.007
P	**High-Strength Alloy** 4340, 4330V, 300M, etc.	225 - 400	300 - 500	T-A/GEN3SYS	0.005 - 0.006
P	**Structural Steel** A36, A285, A516, etc.	100 - 350	450 - 750	T-A/GEN3SYS	0.006 - 0.008
P	**Tool Steel** H-13, H-21, A-4, S-3, etc.	150 - 250	300 - 500	T-A/GEN3SYS	0.005 - 0.006
M	**Stainless Steel 400 Series** 416, 420, etc.	185 - 350	300 - 500	T-A/GEN3SYS	0.006 - 0.008
M	**Stainless Steel 300 Series** 304, 316, 17-4PH, etc.	135 - 275	300 - 500	T-A/GEN3SYS	0.005 - 0.007
M	**Super Duplex Stainless Steel**	135 - 275	250 - 450	T-A/GEN3SYS	0.004 - 0.006
K	**SG / Nodular Cast Iron**	120 - 320	500 - 800	T-A/GEN3SYS	0.005 - 0.009
N	**Cast Aluminum**	30 - 180	600 - 800	T-A/GEN3SYS	0.009 - 0.012
N	**Wrought Aluminum**	30 - 180	600 - 800	T-A/GEN3SYS	0.007 - 0.011
N	**Aluminum Bronze**	100 - 250	400 - 700	T-A/GEN3SYS	0.005 - 0.007
N	**Brass**	30 - 100	800	T-A/GEN3SYS	0.006 - 0.008
N	**Copper**	60	700	T-A/GEN3SYS	0.002 - 0.005
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 310	200 - 400	T-A	0.004 - 0.005
S	**Titanium Alloy**	140 - 310	300 - 500	T-A	0.005 - 0.007
S	**Aerospace Alloy** S82	185 - 350	400 - 600	T-A/GEN3SYS	0.004 - 0.006
H	**Wear Plate** Hardox®, AR400, T-1, etc.	400 - 600	300 - 500	T-A	0.003 - 0.005
H	**Hardened Steel**	300 - 500	300 - 500	T-A	0.004 - 0.005

Coolant Recommendations

Series	33	38	44	51	57	63	70	76	83	89	95
Pressure (PSI)	350	300	275	250	225	200	150	100	100	100	100
Flow Rate (GPM)	10	10	12	18	20	22	25	28	30	33	33

Calculations

Value	SFM	RPM	IPM
Formula	RPM • 0.262 • Diameter	(SFM • 3.82) / Diameter	RPM • IPR

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation chart for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department.

IMPORTANT: The coolant pressure and flow rate recommendations above represent a good approximation to obtain optimum tool life and chip evacuation at Allied Machine recommended speeds and feeds. If lower coolant capabilities exist in a drilling application, the APX drilling system will still function at reduced penetration rates. Contact our Application Engineering department for a more specific recommendation of coolant requirements and/or speeds and feeds.

⚠ WARNING **Tool failure can cause serious injury. To prevent:**
- Do not rotate tool more than 50 RPM unless it is engaged with the workpiece or fixture.
Refer to page A50: 34 for Deep Hole Drilling Guidelines in this section of the catalog. Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

Recommended Drilling Data | Imperial (in)

APX DRILL

Feed Rate (IPR)					
3/8" IC	1/2" IC	9/16" IC	3/8" IC	1/2" IC	9/16" IC
38 - 44 Series 1.4961" - 1.8859"	44 - 51 Series 1.8860" - 2.2109"	51 - 63 Series 2.2110" - 2.7558"	70 Series 2.7559" - 2.9920"	76 - 83 Series 2.9921" - 3.5038"	89 - 95 Series 3.5039" - 4.0000"
0.007 - 0.012	0.009 - 0.012	0.009 - 0.012	0.006 - 0.010	0.007 - 0.011	0.007 - 0.012
0.007 - 0.012	0.009 - 0.012	0.009 - 0.012	0.006 - 0.010	0.007 - 0.011	0.007 - 0.012
0.007 - 0.012	0.009 - 0.012	0.009 - 0.012	0.006 - 0.010	0.007 - 0.011	0.007 - 0.012
0.005 - 0.009	0.007 - 0.010	0.007 - 0.011	0.005 - 0.009	0.006 - 0.010	0.006 - 0.010
0.005 - 0.007	0.005 - 0.008	0.006 - 0.009	0.005 - 0.007	0.005 - 0.008	0.006 - 0.008
0.007 - 0.009	0.008 - 0.010	0.009 - 0.011	0.005 - 0.009	0.006 - 0.010	0.007 - 0.010
0.005 - 0.007	0.007 - 0.009	0.008 - 0.010	0.005 - 0.007	0.006 - 0.009	0.007 - 0.010
0.007 - 0.009	0.008 - 0.010	0.009 - 0.011	0.005 - 0.007	0.007 - 0.009	0.007 - 0.010
0.006 - 0.008	0.007 - 0.009	0.008 - 0.010	0.004 - 0.008	0.006 - 0.010	0.006 - 0.010
0.005 - 0.007	0.007 - 0.009	0.007 - 0.009	0.004 - 0.007	0.006 - 0.009	0.007 - 0.010
0.006 - 0.010	0.008 - 0.012	0.010 - 0.012	0.008 - 0.010	0.009 - 0.011	0.010 - 0.012
0.010 - 0.014	0.012 - 0.016	0.012 - 0.016	0.006 - 0.009	0.008 - 0.011	0.008 - 0.012
0.008 - 0.012	0.010 - 0.014	0.010 - 0.014	0.006 - 0.009	0.008 - 0.011	0.008 - 0.012
0.005 - 0.008	0.007 - 0.010	0.009 - 0.011	0.006 - 0.009	0.007 - 0.010	0.008 - 0.012
0.007 - 0.009	0.008 - 0.010	0.009 - 0.012	0.006 - 0.008	0.007 - 0.009	0.008 - 0.012
0.003 - 0.006	0.006 - 0.008	0.008 - 0.010	0.006 - 0.008	0.006 - 0.008	0.006 - 0.008
0.004 - 0.007	0.006 - 0.009	0.007 - 0.009	0.004 - 0.006	0.005 - 0.007	0.005 - 0.007
0.006 - 0.008	0.007 - 0.009	0.008 - 0.010	0.004 - 0.006	0.005 - 0.007	0.005 - 0.007
0.005 - 0.007	0.006 - 0.008	0.006 - 0.008	0.004 - 0.006	0.005 - 0.007	0.005 - 0.007
0.004 - 0.006	0.006 - 0.008	0.007 - 0.009	0.003 - 0.005	0.004 - 0.006	0.004 - 0.006
0.005 - 0.006	0.006 - 0.008	0.006 - 0.008	0.003 - 0.005	0.004 - 0.006	0.004 - 0.006

⚠ WARNING **Tool failure can cause serious injury. To prevent:**
- Do not rotate tool more than 50 RPM unless it is engaged with the workpiece or fixture.
Refer to page A50: 34 for Deep Hole Drilling Guidelines in this section of the catalog. Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

Metric Standard Pilot Cross Reference

Pilot Inserts

APX Series	D_1 Range		T-A® Style Head			GEN3SYS® Style Head	
	mm	Fractional	Pilot Series	T-A Pro®	T-A (-TC)	Pilot Series	XT Pro
33	33.00 - 33.99	1.2991 - 1.3383	0	**TA#0-16.00**	**1C10H-16-TC**	—	—
	34.00 - 35.99	1.3384 - 1.4171	1	**TA#1-18.00**	**1C11H-18-TC**	—	—
	36.00 - 37.99	1.4172 - 1.4958	1	**TA#1-20.00**	**1C11H-20-TC**	—	—
38	38.00 - 39.72	1.4959 - 1.5639	0	**TA#0-15.90**	**1C10H-15.9-TC**	15	**XT#15-15.90**
	39.73 - 41.30	1.5640 - 1.6261	0	**TA#0-17.50**	**1C10H-17.5-TC**	17	**XT#17-17.50**
	41.31 - 42.90	1.6262 - 1.6891	1	**TA#1-19.50**	**1C11H-19.5-TC**	18	**XT#18-19.50**
	42.91 - 43.99	1.6892 - 1.7320	1	**TA#1-21.00**	**1C11H-21-TC**	20	**XT#20-21.00**
44	44.00 - 45.26	1.7321 - 1.7820	1**	**TA#1-23.00**	**1C11H-23-TC**	22	**XT#22-23.00**
	45.27 - 47.90	1.7821 - 1.8860	1**	**TA#1-24.00**	**1C11H-24-TC**	22	**XT#22-23.80**
	47.91 - 49.99	1.8861 - 1.9683	1	**TA#1-18.00**	**1C11H-18-TC**	17	**XT#17-17.90**
	50.00 - 50.99	1.9684 - 2.0076	1	**TA#1-19.00**	**1C11H-19-TC**	18	**XT#18-19.00**
51	51.00 - 52.42	2.0077 - 2.0639	1	**TA#1-20.00**	**1C11H-20-TC**	18	**XT#18-19.80**
	52.43 - 53.99	2.0640 - 2.1257	1**	**TA#1-21.50**	**1C11H-21.5-TC**	20	**XT#20-21.50**
	54.00 - 56.15	2.1258 - 2.2108	1**	**TA#1-24.00**	**1C11H-24-TC**	22	**XT#22-23.80**
	56.16 - 56.99	2.2109 - 2.2438	1**	**TA#1-21.00**	**1C11H-21-TC**	20	**XT#20-21.00**
57	57.00 - 58.77	2.2439 - 2.3139	1	**TA#1-23.00**	**1C11H-23-TC**	22	**XT#22-23.00**
	58.78 - 60.35	2.3140 - 2.3761	1	**TA#1-24.00**	**1C11H-24-TC**	22	**XT#22-23.80**
	60.36 - 61.95	2.3762 - 2.4391	2	**TA#2-25.50**	**1C12H-25.5-TC**	24	**XT#24-25.50**
	61.96 - 62.99	2.4392 - 2.4801	2	**TA#2-27.00**	**1C12H-27-TC**	26	**XT#26-27.00**
63	63.00 - 65.07	2.4802 - 2.5620	2	**TA#2-28.50**	**1C12H-28.5-TC**	26	**XT#26-28.50**
	65.08 - 66.70	2.5621 - 2.6261	2	**TA#2-31.00**	**1C12H-31-TC**	29	**XT#29-31.00**
	66.71 - 68.30	2.6262 - 2.6891	2	**TA#2-32.00**	**1C12H-32-TC**	29	**XT#29-31.80**
	68.31 - 69.99	2.6892 - 2.7557	2	**TA#2-34.00**	**1C12H-34-TC**	32	**XT#32-34.00**
70	70.00 - 75.99	2.7558 - 2.9919	2	**TA#2-31.00**	**1C12H-31-TC**	29	**XT#29-31.00**
76	76.00 - 82.99	2.9920 - 3.2675	2	**TA#2-31.00**	**1C12H-315-TC**	29	**XT#29-31.00**
83	83.00 - 88.99	3.2676 - 3.5037	2	**TA#2-35.00**	**1C12H-35-TC**	32	**XT#32-35.00**
89	89.00 - 94.99	3.5038 - 3.7399	2	**TA#2-32.00**	**1C12H-32-TC**	29	**XT#29-31.80**
95	95.00 - 101.60	3.7400 - 4.0001	2	**TA#2-35.00**	**1C12H-35-TC**	29	**XT#32-35.00**

#: Denotes ISO material/geometry (P= steel, M= stainless steel, K= cast iron, N= nonferrous, and X= high-speed steel substrate). X is only available in T-A Pro inserts.
****NOTE:** coordinating screw in accessory table below.

Pilot Accessories

T-A Series	GEN3SYS Series	Insert Screws	Insert Driver	Admissible Tightening Torque*
—	15	7247-IP7-1	8IP-7	84 N-cm (7.4 in-lbs)
0	17	72567-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
1	18	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
	20			
1**	22	739-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
	24			
2	26	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
	29			
	32			

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

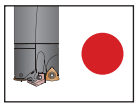
Deep Hole Drilling Guidelines

1. Approach
⚠ 50 RPM max
300 mm/min (12 IPM)

Feed the longer drill within 1.5 mm (1/16") short of the workpiece at a maximum of 50 RPM and 300 mm/min (12 IPM) feed rate.



Coolant OFF

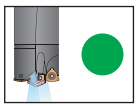


2. Feed-in
75% Speed
50% Feed

Drill 19.05 mm (0.75") deep at 75% recommended speed and 50% recommended feed to establish the hole.



Coolant ON

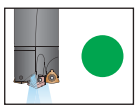


3. Deep Hole Drilling - Blind
100% RPM
100% mm/rev (IPR)

Drill to full depth at recommended speed and feed for longer drill according to Allied speed and feed charts.
No peck cycle recommended.



Coolant ON

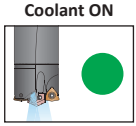


4. Deep Hole Drilling - at Breakout
50% RPM
100% mm/rev (IPR)

For through holes only:
Reduce speed by 50% prior to breakout.
Do not break out more than 3.00 mm (0.125") past the full diameter of the drill.



Coolant ON

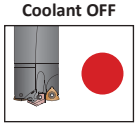


5. Drill Retract
⚠ 50 RPM max

Reduce speed to a **maximum of 50 RPM** before retracting from the hole.



Coolant OFF



A50

⚠ WARNING **Tool failure can cause serious injury. To prevent:**
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SECTION

A55

4TEX® Drill

4TEX® Drill

12.00 mm - 47.00 mm (0.472" - 1.850")



4TEX Drill

The 4TEX indexable carbide drill provides increased penetration rates on light duty machines due to the single effective design. With twisted coolant outlets and increased core strength, the design provides improved hole size and finish.

The four-sided 4TEX inserts are designed to use two sides in the center pocket and two sides in the periphery pocket for an improved cost per hole. With insert geometries available for all ISO material classes and a robust body design, the 4TEX is suited for your difficult applications.

Don’t Let Your Machine Slow You Down

- Improved hole size and finish.
- Superior chip evacuation.
- Increased penetration rates.

Applicable Industries

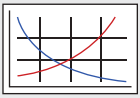
- Aerospace
- Agriculture
- Automotive
- Defense
- General Production
- Heavy Equipment
- Oil and Gas
- Renewable Energy/ Energy
- Structural Steel Fabricator
- Tool, Mold, and Die

Reference Icons

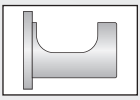
The following icons will appear throughout the catalog to help you navigate between products.



Setup / Assembly Information
Detailed instructions and information regarding the corresponding part(s).



Recommended Cutting Data
Speed and feed recommendations for optimum and safe drilling.



Eccentric Sleeves
Refers to the corresponding eccentric sleeve for the holder.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

WARNING means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

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05 Series: 15.50 mm - 18.49 mm (0.611" - 0.728")
Metric Shank 11
Imperial Shank 12
06 Series: 18.50 mm - 21.99 mm (0.728" - 0.866")
Metric Shank 13
Imperial Shank 14
07 Series: 22.00 mm - 26.49 mm (0.867" - 1.043")
Metric Shank 15
Imperial Shank 16
09 Series: 26.50 mm - 31.99 mm (1.044" - 1.259")
Metric Shank 17
Imperial Shank 19
11 Series: 32.00 mm - 38.99 mm (1.260" - 1.535")
Metric Shank 21
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14 Series: 39.00 mm - 47.00 mm (1.536" - 1.850")
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Safety Information

Mechanical / Physical Hazards

Operating cutting tools may present both mechanical and physical hazards. These hazards can result in serious injury to workers or those near machines and damage to machines and the cutting tools. Cutting tools and/or assemblies may break or come loose when in operation causing projectile metal fragments. Metal chips produced by cutting tools have sharp edges and may be very hot. To minimize the risk of mechanical or physical hazards:

- Always secure all components of the cutting tool assembly before operating.
- Wear cut-resistant gloves when handling cutting tool components and assemblies.
- Do not touch metal chips produced by the cutting tools with your hands.
- Always wear appropriate personal protective equipment including safety goggles or glasses with side shields.
- Immediately discontinue use of damaged cutting tools.
- To avoid machine tool damage, make sure the machine has adequate power and torque for the cutting tool when operating. See catalog for power and torque requirements.
- Operating long cutting tools at high spindle speeds can result in a high risk of tool failure and serious injury.

Dust and Fume Hazards

Grinding, welding, cutting, or burning hard metals such as high-speed steel, cobalt, or carbides produces hazardous dust and/or fumes. Continued long-term exposure to hazardous dust and fumes can cause serious health issues. To minimize the risk of dust and fume hazards:

- Do not regrind or sharpen cutting tools without using adequate ventilation.
- Use appropriate personal protective equipment such as approved respirator to avoid inhalation, swallowing, or skin contact with the hazardous dust and/or fumes.
- Do not eat, drink, or smoke in the machine operation area. Always wash skin prior to eating, drinking, or smoking to avoid hazardous ingestion.

Sensitizing Hazards

Components of an assembled cutting tool are made from a variety of metal elements that may cause allergic skin reactions with prolonged skin contact. To minimize the risk of allergic skin reactions:

- Avoid skin contact with cutting tools.
- Wear appropriate gloves and protective clothing.
- Wash skin and launder clothing after handling cutting tools to reduce the risk of skin allergies.

Preventive Safety Measure Applicable to all Hazards

- Prior to using cutting tools, always read Allied Machine's Safety Data Sheets, product catalog, and product labels for additional warnings for the Allied Machine product being used.
- For machining safety, only operate equipment when all necessary guards, interlocks, and other safety devices are in place and functional. Use all appropriate safety guards or machine encapsulations to securely collect particles such as chips or cutting elements that may become projectiles.

Through Hole

- With through holes, a **sharp-edged disk** is created as tool breakout occurs.

⚠ Proper personal protective equipment must be used to prevent injury (e.g. wear cut-resistant gloves).



Case Study

4TEX® DRILL
INDEXABLE CARBIDE



Pump Bodies | Ductile Iron

Hole Ø:	29.36 mm (1.1560")	**Holder, 2xD length:**	D2091156I-125F
Hole Depth:	50.80 mm (2.0000")	**Insert, K (cast iron):**	4T-09T306-K

K - Cast Iron



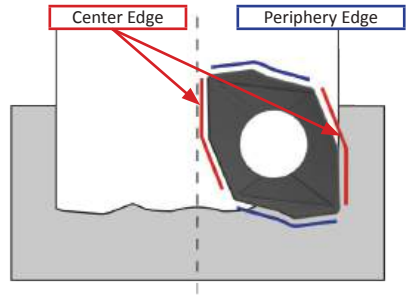
- 400% increase in tool life.
- 59% decrease in cycle time.

	RPM	SPEED	FEED IN	CYCLE TIME	TOOL LIFE
Competitor	991	91.44 m/min (300 SFM)	0.04 mm/rev (0.0015 IPR)	1 min 20 sec	56 holes
Allied	**770**	**71.02 m/min (233 SFM)**	**0.12 mm/rev (0.0048 IPR)**	**32 sec**	**280 holes**

Insert Information

4 CUTTING EDGES

- Each insert has two inner cutting edges and two outer cutting edges.
- Economical solution that increases tool life because of the rotation ability of the inserts.
- Available in ISO material-specific geometry/coating combinations.



Periphery Insert



Center Insert





Periphery edge chip formation:



Center edge chip formation:

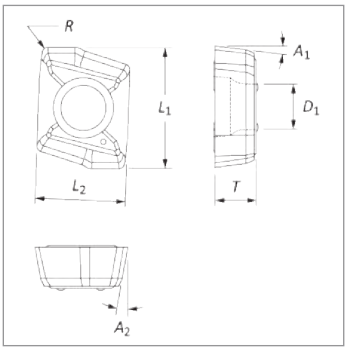


ISO	Geometry	Coating	Description
P	General Rake	AM480	A general purpose geometry that provides excellent chip formation in most steels including free-machining, medium- and high-carbon steels. A P30 carbide substrate for improved toughness and AM480 coating, a proprietary wear-resistant multilayer PVD coating to improve tool life.
S M	High Rake	AM485	A higher rake geometry that provides excellent chip formation in both stainless steels and high-temperature alloys. A tough M25 carbide substrate coated with AM485, a high heat-resistant proprietary multilayer PVD coating.
K	General Rake	AM480	With a general purpose geometry, the K inserts can be used in grey cast irons as well as ductile irons. A high wear-resistant K10 carbide substrate to improve tool life and coated with AM480, a proprietary multilayer PVD coating to improve resistance against tool wear.
N	High Rake	TiCN	A higher rake cutting geometry provides excellent chip formation in nonferrous materials. An M15/K15 carbide substrate paired with TiCN coating for improved lubricity to resist built-up material, increasing tool life and maintaining chip formation.
H	Low Rake	AM480	A lower rake geometry to improve edge strength in both hardened tool steels and high-strength alloys. With a P30 carbide substrate for improved toughness and coated with AM480, a proprietary multilayer PVD coating to improve resistance against tool wear.

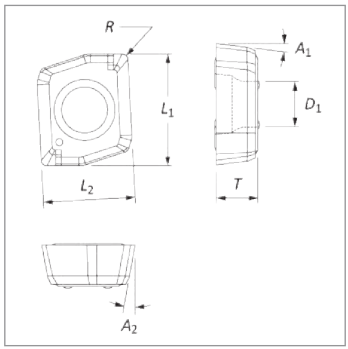
Insert Information

Series	Insert Prefix	Dimension (mm)					Angle		Shape
		L_1	L_2	T	D_1	R	A_1	A_2	
03	**4T-030203C-x**	5.60	4.80	2.30	2.40	0.30	7°	10°	 Style 1
	4T-030203P-x	6.38	4.77	2.30	2.40	0.30	7°	10°	 Style 2
04	**4T-040203-x**	6.21	5.06	2.60	2.45	0.30	13°	10°	 Style 3
05	**4T-05T203-x**	7.26	5.48	2.76	2.55	0.30	13°	7°	
06	**4T-06T204-x**	8.59	6.44	2.89	2.79	0.40	13°	7°	
07	**4T-070305-x**	10.21	8.02	3.24	3.00	0.50	13°	7°	
09	**4T-09T306-x**	12.18	9.55	4.03	3.64	0.60	13°	7°	
11	**4T-11T306-x**	14.50	11.61	4.06	4.62	0.60	13°	7°	
14	**4T-140408-x**	17.99	14.40	4.88	5.76	0.80	13°	7°	

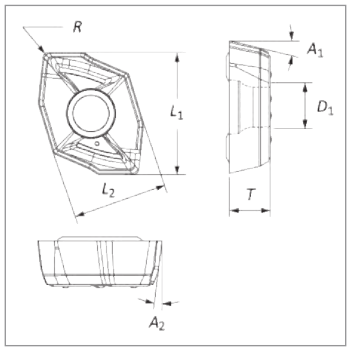
Style 1



Style 2



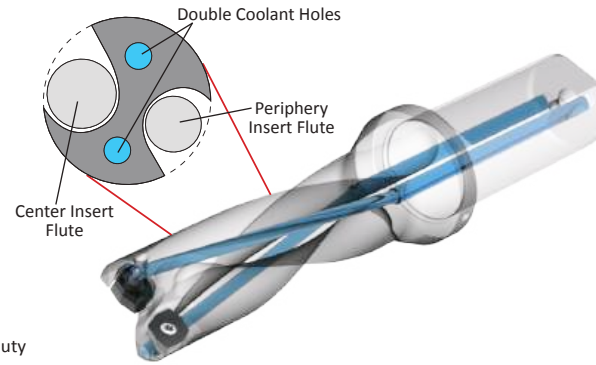
Style 3



System Overview

4TEX Drill ***Advantages***

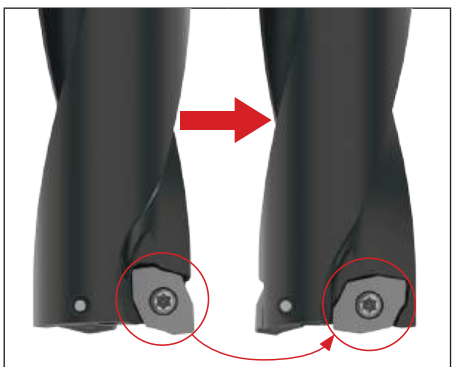
- ***Superior chip evacuation***
  provided by the two twisted coolant holes.
- ***Improved hole size***
  from the increased holder rigidity.
- ***Longer tool life***
  provided by the four-sided insert design.
- ***Optimal chip formation***
  with ISO-specific insert geometry/coating combinations.
- ***Competitive cycle times***
  due to single effective cutting when using light duty machines.



DESIGNED TO GIVE YOU IMPROVED HOLE SIZE AND STRAIGHTNESS

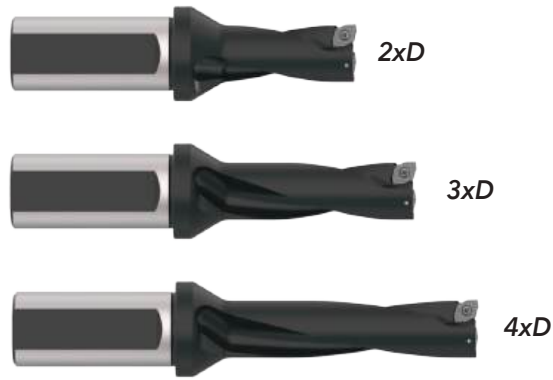
- The two twisted coolant holes allow the core to remain intact, making the core thicker and stronger for improved hole straightness even in uneven surfaces.
- The enlarged dual coolant outlets increase the coolant volume, which improves the chip evacuation resulting in improved hole size.
- The flute space of the internal cutting edge side (where chips get stuck most often) is 1.6x larger than typical IC drills, helping to mitigate catastrophic failures and improve hole size.

LONGER TOOL LIFE



The 4 Edge Advantage
When the cutting edge on the periphery insert wears down, it can be rotated and moved to the center insert position.

AVAILABLE *LENGTHS*



Product Nomenclature

4TEX Drill Holders

D4	03	1200	M	–	075	F
Drill Length	Series	Diameter*	Diameter Style		Shank Diameter	Shank Style
D2 = 2xD	**03** **09**	**1200** = 12 mm	**M** = Metric		Metric / Imperial	**FM** = Metric flanged shank
D3 = 3xD	**04** **11**	**0750** = 0.075"	**I** = Imperial			**F** = Imperial flanged shank
D4 = 4xD	**05** **14**					
	06					
	07					

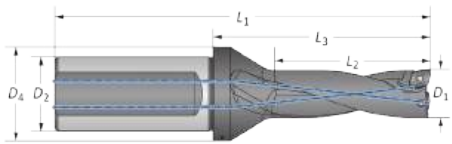
Shank Diameter	
Metric	**Imperial**
20 = 20 mm	**075** = 0.075"
25 = 25 mm	**100** = 1.000"
32 = 32 mm	**125** = 1.250"
40 = 40 mm	**150** = 1.500"

***Ordering Nonstocked Diameters:**
Nonstocked diameters are available upon request. Please refer to price list for applicable process fees.

Ordering example:
Metric: 03 Series (12.65 mm) = D2031265M-20FM
Inch: 03 Series (Ø 0.480") = D2030480I-075F

Reference Key

Symbol	Attribute
D_1	Drill diameter
D_2	Shank diameter
D_4	Flange diameter
L_1	Assembled overall length
L_2	Drill depth
L_3	Reference length



A55

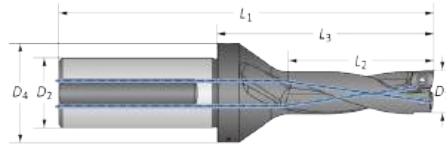
Series Details

Series		3 Series	4 Series	5 Series	6 Series	7 Series	9 Series	11 Series	14 Series
Cutter Ø	mm	12.00 - 13.49	13.50 - 15.49	15.50 - 18.49	18.50 - 21.99	22.00 - 26.49	26.50 - 31.99	32.00 - 38.99	39.00 - 47.00
	inch	0.472 - 0.531	0.532 - 0.610	0.611 - 0.728	0.728 - 0.866	0.867 - 1.043	1.044 - 1.259	1.260 - 1.535	1.536 - 1.850
Shank Ø	mm	20.00	20.00	25.00	25.00	25.00	32.00	40.00	40.00
	inch	0.750	0.750	1.000	1.000	1.000	1.250	1.500	1.500
Insert Prefix		4T-030203C-x 4T-030203P-x	4T-040203-x	4T-05T203-x	4T-06T204-x	4T-070305-x	4T-09T306-x	4T-11T306-x	4T-140408-x
# of Inserts		2	2	2	2	2	2	2	2

03 Series: 12.00 mm - 13.49 mm (0.472" - 0.531")

Holders





	Length	D_1 mm	D_1 in	Body L_2	Body L_3	Body L_1	Shank D_2	Shank D_4	Max Offset	Part No.
m	2xD	12.00	0.472	24.00	45.40	88.40	20.00	27.00	0.50	**D2031200M-20FM**
		12.50	0.492	25.00	46.40	89.40	20.00	27.00	0.40	**D2031250M-20FM**
		12.70	0.500	25.40	46.40	89.40	20.00	27.00	0.35	**D2030500I-20FM**
		13.00	0.512	26.00	47.40	90.40	20.00	27.00	0.30	**D2031300M-20FM**
	3xD	12.00	0.472	36.00	57.40	100.40	20.00	27.00	0.50	**D3031200M-20FM**
		12.50	0.492	37.50	58.90	101.90	20.00	27.00	0.40	**D3031250M-20FM**
		12.70	0.500	38.10	58.90	101.90	20.00	27.00	0.35	**D3030500I-20FM**
		13.00	0.512	39.00	60.40	103.40	20.00	27.00	0.30	**D3031300M-20FM**
	4xD	12.00	0.472	48.00	69.40	112.40	20.00	27.00	0.50	**D4031200M-20FM**
		12.50	0.492	50.00	71.40	114.40	20.00	27.00	0.40	**D4031250M-20FM**
		12.70	0.500	50.80	71.40	114.40	20.00	27.00	0.35	**D4030500I-20FM**
		13.00	0.512	52.00	73.40	116.40	20.00	27.00	0.30	**D4031300M-20FM**
i	2xD	12.00	0.472	0.945	1.787	3.480	0.750	1.063	0.020	**D2031200M-075F**
		12.50	0.492	0.984	1.827	3.520	0.750	1.063	0.016	**D2031250M-075F**
		12.70	0.500	1.000	1.827	3.520	0.750	1.063	0.014	**D2030500I-075F**
		13.00	0.512	1.024	1.866	3.559	0.750	1.063	0.012	**D2031300M-075F**
	3xD	12.00	0.472	1.417	2.260	3.953	0.750	1.063	0.020	**D3031200M-075F**
		12.50	0.492	1.476	2.319	4.012	0.750	1.063	0.016	**D3031250M-075F**
		12.70	0.500	1.500	2.319	4.012	0.750	1.063	0.014	**D3030500I-075F**
		13.00	0.512	1.535	2.378	4.071	0.750	1.063	0.012	**D3031300M-075F**
	4xD	12.00	0.472	1.890	2.732	4.425	0.750	1.063	0.020	**D4031200M-075F**
		12.50	0.492	1.969	2.811	4.504	0.750	1.063	0.016	**D4031250M-075F**
		12.70	0.500	2.000	2.811	4.504	0.750	1.063	0.014	**D4030500I-075F**
		13.00	0.512	2.047	2.890	4.583	0.750	1.063	0.012	**D4031300M-075F**

IC Inserts

ISO	Style	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	Center	**4T-030203C-P**	7241-T6-1	8T-6	0.5 N-m (4.4 in-lbs)
	Periphery	**4T-030203P-P**			
S M	Center	**4T-030203C-M**			
	Periphery	**4T-030203P-M**			
K	Center	**4T-030203C-K**			
	Periphery	**4T-030203P-K**			
N	Center	**4T-030203C-N**			
	Periphery	**4T-030203P-N**			
H	Center	**4T-030203C-H**			
	Periphery	**4T-030203P-H**			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.10 + 0.20	- 0.004 + 0.008
3xD	- 0.10 + 0.20	- 0.004 + 0.008
4xD	- 0.10 + 0.25	- 0.004 + 0.010

A55: 33 - 36
Key on A55: 2
A55: 30 -32
A55: 29

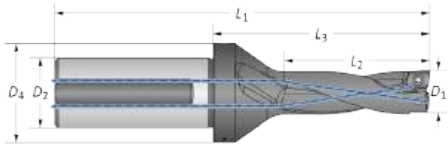
m = Metric (mm)
i = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

04 Series: 13.50 mm - 15.49 mm (0.532" - 0.610")

Holders





	Length	D_1 mm	D_1 in	Body L_2	Body L_3	Body L_1	Shank D_2	Shank D_4	Max Offset	Part No.
m	2xD	13.50	0.531	27.00	48.40	91.40	20.00	27.00	20.00	D2041350M-20FM
		14.00	0.551	28.00	49.40	92.40	20.00	27.00	20.00	D2041400M-20FM
		14.29	0.563	28.55	49.40	92.40	20.00	27.00	20.00	D2040562I-20FM
		14.50	0.571	29.00	50.40	93.40	20.00	27.00	20.00	D2041450M-20FM
		15.00	0.591	30.00	51.40	94.40	20.00	27.00	20.00	D2041500M-20FM
	3xD	13.50	0.531	40.50	61.90	104.90	20.00	27.00	20.00	D3041350M-20FM
		14.00	0.551	42.00	63.40	106.40	20.00	27.00	20.00	D3041400M-20FM
		14.29	0.563	42.82	63.40	106.40	20.00	27.00	20.00	D3040562I-20FM
		14.50	0.571	43.50	64.90	107.90	20.00	27.00	20.00	D3041450M-20FM
		15.00	0.591	45.00	66.40	109.40	20.00	27.00	20.00	D3041500M-20FM
	4xD	13.50	0.531	54.00	75.40	118.40	20.00	27.00	20.00	D4041350M-20FM
		14.00	0.551	56.00	77.40	120.40	20.00	27.00	20.00	D4041400M-20FM
		14.29	0.563	57.10	77.40	120.40	20.00	27.00	20.00	D4040562I-20FM
		14.50	0.571	58.00	79.40	122.40	20.00	27.00	20.00	D4041450M-20FM
		15.00	0.591	60.00	81.40	124.40	20.00	27.00	20.00	D4041500M-20FM
i	2xD	13.50	0.531	1.063	1.906	3.598	0.750	1.063	0.020	D2041350M-075F
		14.00	0.551	1.102	1.945	3.638	0.750	1.063	0.016	D2041400M-075F
		14.29	0.563	1.124	1.945	3.638	0.750	1.063	0.013	D2040562I-075F
		14.50	0.571	1.142	1.984	3.677	0.750	1.063	0.012	D2041450M-075F
		15.00	0.591	1.181	2.024	3.717	0.750	1.063	0.008	D2041500M-075F
	3xD	13.50	0.531	1.594	2.437	4.130	0.750	1.063	0.020	D3041350M-075F
		14.00	0.551	1.654	2.496	4.189	0.750	1.063	0.016	D3041400M-075F
		14.29	0.563	1.686	2.496	4.189	0.750	1.063	0.013	D3040562I-075F
		14.50	0.571	1.713	2.555	4.248	0.750	1.063	0.012	D3041450M-075F
		15.00	0.591	1.772	2.614	4.307	0.750	1.063	0.008	D3041500M-075F
	4xD	13.50	0.531	2.126	2.969	4.661	0.750	1.063	0.020	D4041350M-075F
		14.00	0.551	2.205	3.047	4.740	0.750	1.063	0.016	D4041400M-075F
		14.29	0.563	2.248	3.047	4.740	0.750	1.063	0.013	D4040562I-075F
		14.50	0.571	2.283	3.126	4.819	0.750	1.063	0.012	D4041450M-075F
		15.00	0.591	2.362	3.205	4.898	0.750	1.063	0.008	D4041500M-075F

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-040203-P	7241-T6-1	8T-6	0.5 N-m (4.4 in-lbs)
S M	4T-040203-M			
K	4T-040203-K			
N	4T-040203-N			
H	4T-040203-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.004 + 0.008	- 0.10 + 0.20
3xD	- 0.004 + 0.008	- 0.10 + 0.20
4xD	- 0.004 + 0.010	- 0.10 + 0.25

A55: 33 - 36
Key on A55: 2
A55: 30 -32
A55: 29

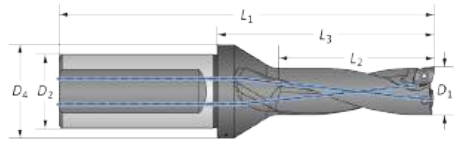
m = Metric (mm)
i = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

05 Series: 15.50 mm - 18.49 mm (0.611" - 0.728")

Holders





Metric Shank

Length	D_1 mm	D_1 in	Body L_2	Body L_3	Body L_1	Shank D_2	Shank D_4	Max Offset	Part No.
2xD	15.50	0.610	31.00	54.50	108.50	25.00	32.00	0.80	D2051550M-25FM
	15.88	0.625	31.75	54.50	108.50	25.00	32.00	0.70	D2050625I-25FM
	16.00	0.630	32.00	55.50	109.50	25.00	32.00	0.70	D2051600M-25FM
	16.50	0.650	33.00	56.50	110.50	25.00	32.00	0.50	D2051650M-25FM
	16.66	0.656	33.32	56.49	110.50	25.00	32.00	0.40	D2050656I-25FM
	17.00	0.669	34.00	57.50	111.50	25.00	32.00	0.40	D2051700M-25FM
	17.46	0.687	34.90	57.50	111.50	25.00	32.00	0.30	D2050687I-25FM
	17.50	0.689	35.00	58.50	112.50	25.00	32.00	0.30	D2051750M-25FM
	18.00	0.709	36.00	59.50	113.50	25.00	32.00	0.20	D2051800M-25FM
	18.24	0.718	36.47	59.51	113.51	25.00	32.00	0.15	D2050718I-25FM
3xD	15.50	0.610	46.50	70.00	124.00	25.00	32.00	0.80	D3051550M-25FM
	15.88	0.625	47.63	70.00	124.00	25.00	32.00	0.70	D3050625I-25FM
	16.00	0.630	48.00	71.50	125.50	25.00	32.00	0.70	D3051600M-25FM
	16.50	0.650	49.50	73.00	127.00	25.00	32.00	0.50	D3051650M-25FM
	16.66	0.656	49.98	73.00	127.00	25.00	32.00	0.40	D3050656I-25FM
	17.00	0.669	51.00	74.50	128.50	25.00	32.00	0.40	D3051700M-25FM
	17.46	0.687	52.35	74.50	128.50	25.00	32.00	0.30	D3050687I-25FM
	17.50	0.689	52.50	76.00	130.00	25.00	32.00	0.30	D3051750M-25FM
	18.00	0.709	54.00	77.50	131.50	25.00	32.00	0.20	D3051800M-25FM
	18.24	0.718	54.71	77.50	131.50	25.00	32.00	0.15	D3050718I-25FM
4xD	15.50	0.610	62.00	85.50	139.50	25.00	32.00	0.80	D4051550M-25FM
	15.88	0.625	63.50	85.50	139.50	25.00	32.00	0.70	D4050625I-25FM
	16.00	0.630	64.00	87.50	141.50	25.00	32.00	0.70	D4051600M-25FM
	16.50	0.650	66.00	89.50	143.50	25.00	32.00	0.50	D4051650M-25FM
	16.66	0.656	66.64	89.51	143.51	25.00	32.00	0.40	D4050656I-25FM
	17.00	0.669	68.00	91.50	145.50	25.00	32.00	0.40	D4051700M-25FM
	17.46	0.687	69.80	91.50	145.50	25.00	32.00	0.30	D4050687I-25FM
	17.50	0.689	70.00	93.50	147.50	25.00	32.00	0.30	D4051750M-25FM
	18.00	0.709	72.00	95.50	149.50	25.00	32.00	0.20	D4051800M-25FM
	18.24	0.718	72.95	95.50	149.50	25.00	32.00	0.15	D4050718I-25FM

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-05T203-P	7243-T6-1	8T-6	0.5 N-m (4.4 in-lbs)
S M	4T-05T203-M			
K	4T-05T203-K			
N	4T-05T203-N			
H	4T-05T203-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.10 + 0.20	- 0.004 + 0.008
3xD	- 0.10 + 0.20	- 0.004 + 0.008
4xD	- 0.10 + 0.25	- 0.004 + 0.010

A55: 33 - 36
Key on A55: 2
A55: 30 -32
A55: 29

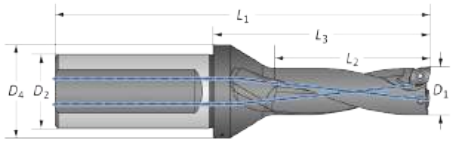
Ⓜ = Metric (mm)
ⓘ = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

05 Series: 15.50 mm - 18.49 mm (0.611" - 0.728")

Holders





Imperial Shank

Length	D_1 mm	D_1 in	Body L_2	Body L_3	Body L_1	Shank D_2	Shank D_4	Max Offset	Part No.
2xD	15.50	0.610	1.220	2.146	4.272	1.000	1.260	0.031	**D2051550M-100F**
	15.88	0.625	1.250	2.146	4.272	1.000	1.260	0.029	**D2050625I-100F**
	16.00	0.630	1.260	2.185	4.311	1.000	1.260	0.028	**D2051600M-100F**
	16.50	0.650	1.299	2.224	4.350	1.000	1.260	0.020	**D2051650M-100F**
	16.66	0.656	1.312	2.224	4.350	1.000	1.260	0.016	**D2050656I-100F**
	17.00	0.669	1.339	2.264	4.390	1.000	1.260	0.016	**D2051700M-100F**
	17.46	0.687	1.374	2.264	4.390	1.000	1.260	0.012	**D2050687I-100F**
	17.50	0.689	1.378	2.303	4.429	1.000	1.260	0.012	**D2051750M-100F**
	18.00	0.709	1.417	2.343	4.469	1.000	1.260	0.008	**D2051800M-100F**
	18.24	0.718	1.436	2.343	4.469	1.000	1.260	0.006	**D2050718I-100F**
3xD	15.50	0.610	1.831	2.756	4.882	1.000	1.260	0.031	**D3051550M-100F**
	15.88	0.625	1.875	2.756	4.882	1.000	1.260	0.029	**D3050625I-100F**
	16.00	0.630	1.890	2.815	4.941	1.000	1.260	0.028	**D3051600M-100F**
	16.50	0.650	1.949	2.874	5.000	1.000	1.260	0.020	**D3051650M-100F**
	16.66	0.656	1.968	2.784	5.000	1.000	1.260	0.016	**D3050656I-100F**
	17.00	0.669	2.008	2.933	5.059	1.000	1.260	0.016	**D3051700M-100F**
	17.46	0.687	2.061	2.933	5.059	1.000	1.260	0.012	**D3050687I-100F**
	17.50	0.689	2.067	2.992	5.118	1.000	1.260	0.012	**D3051750M-100F**
	18.00	0.709	2.126	3.051	5.177	1.000	1.260	0.008	**D3051800M-100F**
	18.24	0.718	2.154	3.051	5.177	1.000	1.260	0.006	**D3050718I-100F**
4xD	15.50	0.610	2.441	3.366	5.492	1.000	1.260	0.031	**D4051550M-100F**
	15.88	0.625	2.500	3.366	5.492	1.000	1.260	0.029	**D4050625I-100F**
	16.00	0.630	2.520	3.445	5.571	1.000	1.260	0.028	**D4051600M-100F**
	16.50	0.650	2.598	3.524	5.650	1.000	1.260	0.020	**D4051650M-100F**
	16.66	0.656	2.624	3.524	5.650	1.000	1.260	0.016	**D4050656I-100F**
	17.00	0.669	2.677	3.602	5.728	1.000	1.260	0.016	**D4051700M-100F**
	17.46	0.687	2.748	3.602	5.728	1.000	1.260	0.012	**D4050687I-100F**
	17.50	0.689	2.756	3.681	5.807	1.000	1.260	0.012	**D4051750M-100F**
	18.00	0.709	2.835	3.760	5.886	1.000	1.260	0.008	**D4051800M-100F**
	18.24	0.718	2.872	3.760	5.886	1.000	1.260	0.006	**D4050718I-100F**

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	**4T-05T203-P**	7243-T6-1	8T-6	0.5 N-m (4.4 in-lbs)
S M	**4T-05T203-M**			
K	**4T-05T203-K**			
N	**4T-05T203-N**			
H	**4T-05T203-H**			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.10 + 0.20	- 0.004 + 0.008
3xD	- 0.10 + 0.20	- 0.004 + 0.008
4xD	- 0.10 + 0.25	- 0.004 + 0.010

A55: 33 - 36
A55: 30 -32
A55: 29
Key on A55: 2

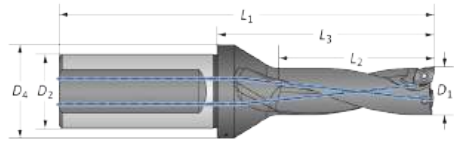
Ⓜ = Metric (mm)
ⓘ = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

06 Series: 18.50 mm - 21.99 mm (0.728" - 0.866")

Holders





Metric Shank

Length	D_1 mm	D_1 in	Body L_2	Body L_3	Body L_1	Shank D_2	Shank D_4	Max Offset	Part No.
2xD	18.50	0.728	37.00	58.40	112.40	25.00	32.00	0.90	D2061850M-25FM
	19.00	0.748	38.00	59.40	113.40	25.00	32.00	0.80	D2061900M-25FM
	19.05	0.750	38.10	59.40	113.40	25.00	32.00	0.80	D2060750I-25FM
	19.43	0.765	38.86	59.41	113.41	25.00	32.00	0.70	D2060765I-25FM
	19.50	0.768	39.00	60.40	114.40	25.00	32.00	0.70	D2061950M-25FM
	20.00	0.787	40.00	61.40	115.40	25.00	32.00	0.50	D2062000M-25FM
	20.50	0.807	41.00	62.40	116.40	25.00	32.00	0.40	D2062050M-25FM
	20.64	0.813	41.25	62.40	116.40	25.00	32.00	0.40	D2060812I-25FM
	21.00	0.827	42.00	63.40	117.40	25.00	32.00	0.30	D2062100M-25FM
	21.50	0.846	43.00	64.40	118.40	25.00	32.00	0.20	D2062150M-25FM
3xD	18.50	0.728	55.00	76.90	130.90	25.00	32.00	0.90	D3061850M-25FM
	19.00	0.748	57.00	78.40	132.40	25.00	32.00	0.80	D3061900M-25FM
	19.05	0.750	57.15	78.40	132.40	25.00	32.00	0.80	D3060750I-25FM
	19.43	0.765	58.29	78.41	132.41	25.00	32.00	0.70	D3060765I-25FM
	19.50	0.768	58.50	79.90	133.90	25.00	32.00	0.70	D3061950M-25FM
	20.00	0.787	60.00	81.40	135.40	25.00	32.00	0.50	D3062000M-25FM
	20.50	0.807	61.50	82.90	136.90	25.00	32.00	0.40	D3062050M-25FM
	20.64	0.813	61.87	82.90	136.90	25.00	32.00	0.40	D3060812I-25FM
	21.00	0.827	63.00	84.40	138.40	25.00	32.00	0.30	D3062100M-25FM
	21.50	0.846	64.50	85.90	139.90	25.00	32.00	0.20	D3062150M-25FM
4xD	18.50	0.728	74.00	95.40	149.40	25.00	32.00	0.90	D4061850M-25FM
	19.00	0.748	76.00	97.40	151.40	25.00	32.00	0.80	D4061900M-25FM
	19.05	0.750	76.20	97.40	151.40	25.00	32.00	0.80	D4060750I-25FM
	19.43	0.765	77.72	97.41	151.41	25.00	32.00	0.70	D4060765I-25FM
	19.50	0.768	78.00	99.40	153.40	25.00	32.00	0.70	D4061950M-25FM
	20.00	0.787	80.00	101.40	155.40	25.00	32.00	0.50	D4062000M-25FM
	20.50	0.807	82.00	103.40	157.40	25.00	32.00	0.40	D4062050M-25FM
	20.64	0.813	82.49	103.40	157.40	25.00	32.00	0.40	D4060812I-25FM
	21.00	0.827	84.00	105.40	159.40	25.00	32.00	0.30	D4062100M-25FM
	21.50	0.846	86.00	107.40	161.40	25.00	32.00	0.20	D4062150M-25FM

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-06T204-P	72251-T7-1	8T-7	0.8 N-m (7.1 in-lbs)
S M	4T-06T204-M			
K	4T-06T204-K			
N	4T-06T204-N			
H	4T-06T204-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.10 + 0.20	- 0.004 + 0.008
3xD	- 0.10 + 0.20	- 0.004 + 0.008
4xD	- 0.10 + 0.25	- 0.004 + 0.010

A55: 33 - 36
Key on A55: 2
A55: 30 -32
A55: 29

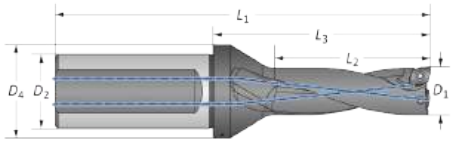
Ⓜ = Metric (mm)
ⓘ = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

06 Series: 18.50 mm - 21.99 mm (0.728" - 0.866")

Holders





Imperial Shank

Length	D_1 mm	D_1 in	Body L_2	Body L_3	Body L_1	Shank D_2	Shank D_4	Max Offset	Part No.
2xD	18.50	0.728	1.457	2.299	4.425	1.000	1.260	0.035	**D2061850M-100F**
	19.00	0.748	1.496	2.339	4.465	1.000	1.260	0.031	**D2061900M-100F**
	19.05	0.750	1.500	2.339	4.465	1.000	1.260	0.031	**D2060750I-100F**
	19.43	0.765	1.530	2.339	4.465	1.000	1.260	0.028	**D2060765I-100F**
	19.50	0.768	1.535	2.378	4.504	1.000	1.260	0.028	**D2061950M-100F**
	20.00	0.787	1.575	2.417	4.543	1.000	1.260	0.020	**D2062000M-100F**
	20.50	0.807	1.614	2.457	4.583	1.000	1.260	0.016	**D2062050M-100F**
	20.64	0.813	1.624	2.457	4.583	1.000	1.260	0.015	**D2060812I-100F**
	21.00	0.827	1.654	2.496	4.622	1.000	1.260	0.012	**D2062100M-100F**
	21.50	0.846	1.693	2.535	4.661	1.000	1.260	0.008	**D2062150M-100F**
3xD	18.50	0.728	2.165	3.028	5.154	1.000	1.260	0.035	**D3061850M-100F**
	19.00	0.748	2.244	3.087	5.213	1.000	1.260	0.031	**D3061900M-100F**
	19.05	0.750	2.250	3.087	5.213	1.000	1.260	0.031	**D3060750I-100F**
	19.43	0.765	2.295	3.087	5.213	1.000	1.260	0.028	**D3060765I-100F**
	19.50	0.768	2.303	3.146	5.272	1.000	1.260	0.028	**D3061950M-100F**
	20.00	0.787	2.362	3.205	5.331	1.000	1.260	0.020	**D3062000M-100F**
	20.50	0.807	2.421	3.264	5.390	1.000	1.260	0.016	**D3062050M-100F**
	20.64	0.813	2.436	3.264	5.390	1.000	1.260	0.015	**D3060812I-100F**
	21.00	0.827	2.480	3.323	5.449	1.000	1.260	0.012	**D3062100M-100F**
	21.50	0.846	2.539	3.382	5.508	1.000	1.260	0.008	**D3062150M-100F**
4xD	18.50	0.728	2.913	3.756	5.882	1.000	1.260	0.035	**D4061850M-100F**
	19.00	0.748	2.992	3.835	5.961	1.000	1.260	0.031	**D4061900M-100F**
	19.05	0.750	3.000	3.835	5.961	1.000	1.260	0.031	**D4060750I-100F**
	19.43	0.765	3.060	3.835	5.961	1.000	1.260	0.028	**D4060765I-100F**
	19.50	0.768	3.071	3.913	6.039	1.000	1.260	0.028	**D4061950M-100F**
	20.00	0.787	3.150	3.992	6.118	1.000	1.260	0.020	**D4062000M-100F**
	20.50	0.807	3.228	4.071	6.197	1.000	1.260	0.016	**D4062050M-100F**
	20.64	0.813	3.248	4.071	6.197	1.000	1.260	0.015	**D4060812I-100F**
	21.00	0.827	3.307	4.150	6.276	1.000	1.260	0.012	**D4062100M-100F**
	21.50	0.846	3.386	4.228	6.354	1.000	1.260	0.008	**D4062150M-100F**

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	**4T-06T204-P**	72251-T7-1	8T-7	0.8 N-m (7.1 in-lbs)
S M	**4T-06T204-M**			
K	**4T-06T204-K**			
N	**4T-06T204-N**			
H	**4T-06T204-H**			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.10 + 0.20	- 0.004 + 0.008
3xD	- 0.10 + 0.20	- 0.004 + 0.008
4xD	- 0.10 + 0.25	- 0.004 + 0.010

A55: 33 - 36
Key on A55: 2
A55: 30 -32
A55: 29

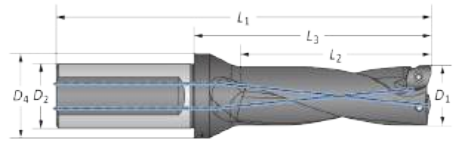
Ⓜ = Metric (mm)
ⓘ = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

07 Series: 22.00 mm - 26.49 mm (0.867" - 1.043")

Holders





Metric Shank

Length	D_1 mm	D_1 in	Body L_2	Body L_3	Body L_1	Shank D_2	Shank D_4	Max Offset	Part No.
2xD	22.00	0.866	44.00	64.90	118.90	25.00	33.00	1.20	D2072200M-25FM
	22.22	0.875	44.45	64.90	118.90	25.00	33.00	1.10	D2070875I-25FM
	22.50	0.886	45.00	65.90	119.90	25.00	33.00	1.00	D2072250M-25FM
	23.00	0.906	46.00	66.90	120.90	25.00	33.00	0.90	D2072300M-25FM
	23.50	0.925	47.00	67.90	121.90	25.00	33.00	0.80	D2072350M-25FM
	23.81	0.937	47.60	67.90	121.90	25.00	33.00	7.40	D2070937I-25FM
	24.00	0.945	48.00	68.90	122.90	25.00	33.00	0.70	D2072400M-25FM
	24.50	0.965	49.00	69.90	123.90	25.00	33.00	0.50	D2072450M-25FM
	25.00	0.984	50.00	70.90	124.90	25.00	33.00	0.40	D2072500M-25FM
	25.40	1.000	50.80	70.90	124.90	25.00	33.00	0.30	D2071000I-25FM
	25.50	1.004	51.00	71.90	125.90	25.00	33.00	0.30	D2072550M-25FM
	26.00	1.024	52.00	72.90	126.90	25.00	33.00	0.20	D2072600M-25FM
3xD	22.00	0.866	66.00	86.90	140.90	25.00	33.00	1.20	D3072200M-25FM
	22.22	0.875	66.68	86.90	140.90	25.00	33.00	1.10	D3070875I-25FM
	22.50	0.886	67.50	88.40	142.40	25.00	33.00	1.00	D3072250M-25FM
	23.00	0.906	69.00	89.90	143.90	25.00	33.00	0.90	D3072300M-25FM
	23.50	0.925	70.50	91.40	145.40	25.00	33.00	0.80	D3072350M-25FM
	23.81	0.937	71.40	91.40	145.40	25.00	33.00	7.40	D3070937I-25FM
	24.00	0.945	72.00	92.90	146.90	25.00	33.00	0.70	D3072400M-25FM
	24.50	0.965	73.50	94.40	148.40	25.00	33.00	0.50	D3072450M-25FM
	25.00	0.984	75.00	95.90	149.90	25.00	33.00	0.40	D3072500M-25FM
	25.40	1.000	76.20	95.90	149.90	25.00	33.00	0.30	D3071000I-25FM
	25.50	1.004	76.50	97.00	151.00	25.00	33.00	0.30	D3072550M-25FM
	26.00	1.024	78.00	99.00	153.00	25.00	33.00	0.20	D3072600M-25FM
4xD	22.00	0.866	88.00	109.00	163.00	25.00	33.00	1.20	D4072200M-25FM
	22.22	0.875	88.90	108.90	162.90	25.00	33.00	1.10	D4070875I-25FM
	22.50	0.886	90.00	111.00	165.00	25.00	33.00	1.00	D4072250M-25FM
	23.00	0.906	92.00	113.00	167.00	25.00	33.00	0.90	D4072300M-25FM
	23.50	0.925	94.00	115.00	169.00	25.00	33.00	0.80	D4072350M-25FM
	23.81	0.937	95.20	114.90	168.90	25.00	33.00	7.40	D4070937I-25FM
	24.00	0.945	96.00	117.00	171.00	25.00	33.00	0.70	D4072400M-25FM
	24.50	0.965	98.00	119.00	173.00	25.00	33.00	0.50	D4072450M-25FM
	25.00	0.984	100.00	121.00	175.00	25.00	33.00	0.40	D4072500M-25FM
	25.40	1.000	101.60	120.90	174.90	25.00	33.00	0.30	D4071000I-25FM
	25.50	1.004	102.00	123.00	177.00	25.00	33.00	0.30	D4072550M-25FM
	26.00	1.024	104.00	125.00	179.00	25.00	33.00	0.20	D4072600M-25FM

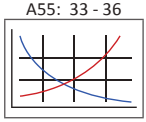
IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-070305-P	72568-T8-1	8T-8	1.2 N-m (10.6 in-lbs)
S M	4T-070305-M			
K	4T-070305-K			
N	4T-070305-N			
H	4T-070305-H			

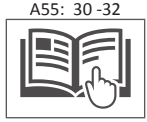
Expected Hole Tolerances

Length	mm	in
2xD	- 0.10 + 0.20	- 0.004 + 0.008
3xD	- 0.10 + 0.20	- 0.004 + 0.008
4xD	- 0.10 + 0.25	- 0.004 + 0.010

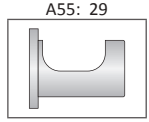
A55: 33 - 36
Key on A55: 2



A55: 30 -32



A55: 29



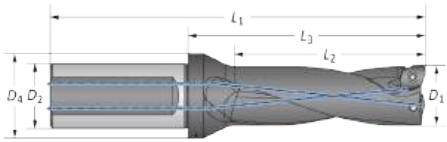
(m) = Metric (mm)
(i) = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

07 Series: 22.00 mm - 26.49 mm (0.867" - 1.043")

Holders





Imperial Shank

Length	D_1 mm	D_1 in	Body L_2	Body L_3	Body L_1	Shank D_2	Shank D_4	Max Offset	Part No.
2xD	22.00	0.866	1.732	2.555	4.681	1.000	1.299	0.047	D2072200M-100F
	22.22	0.875	1.750	2.555	4.681	1.000	1.299	0.043	D2070875I-100F
	22.50	0.886	1.772	2.594	4.720	1.000	1.299	0.039	D2072250M-100F
	23.00	0.906	1.811	2.634	4.760	1.000	1.299	0.035	D2072300M-100F
	23.50	0.925	1.850	2.673	4.799	1.000	1.299	0.031	D2072350M-100F
	23.81	0.937	1.874	2.673	4.799	1.000	1.299	0.292	D2070937I-100F
	24.00	0.945	1.890	2.713	4.839	1.000	1.299	0.028	D2072400M-100F
	24.50	0.965	1.929	2.752	4.878	1.000	1.299	0.020	D2072450M-100F
	25.00	0.984	1.969	2.791	4.917	1.000	1.299	0.016	D2072500M-100F
	25.40	1.000	2.000	2.791	4.917	1.000	1.299	0.013	D2071000I-100F
	25.50	1.004	2.008	2.831	4.957	1.000	1.299	0.012	D2072550M-100F
	26.00	1.024	2.047	2.870	4.996	1.000	1.299	0.008	D2072600M-100F
3xD	22.00	0.866	2.598	3.421	5.547	1.000	1.299	0.047	D3072200M-100F
	22.22	0.875	2.625	3.421	5.547	1.000	1.299	0.043	D3070875I-100F
	22.50	0.886	2.657	3.480	5.606	1.000	1.299	0.039	D3072250M-100F
	23.00	0.906	2.717	3.539	5.665	1.000	1.299	0.035	D3072300M-100F
	23.50	0.925	2.776	3.598	5.724	1.000	1.299	0.031	D3072350M-100F
	23.81	0.937	2.811	3.598	5.724	1.000	1.299	0.292	D3070937I-100F
	24.00	0.945	2.835	3.657	5.783	1.000	1.299	0.028	D3072400M-100F
	24.50	0.965	2.894	3.717	5.843	1.000	1.299	0.020	D3072450M-100F
	25.00	0.984	2.953	3.776	5.902	1.000	1.299	0.016	D3072500M-100F
	25.40	1.000	3.000	3.776	5.902	1.000	1.299	0.013	D3071000I-100F
	25.50	1.004	3.012	3.835	5.961	1.000	1.299	0.012	D3072550M-100F
	26.00	1.024	3.071	3.894	6.020	1.000	1.299	0.008	D3072600M-100F
4xD	22.00	0.866	3.465	4.287	6.413	1.000	1.299	0.047	D4072200M-100F
	22.22	0.875	3.500	4.287	6.413	1.000	1.299	0.043	D4070875I-100F
	22.50	0.886	3.543	4.366	6.492	1.000	1.299	0.039	D4072250M-100F
	23.00	0.906	3.622	4.445	6.571	1.000	1.299	0.035	D4072300M-100F
	23.50	0.925	3.701	4.524	6.650	1.000	1.299	0.031	D4072350M-100F
	23.81	0.937	3.748	4.524	6.650	1.000	1.299	0.292	D4070937I-100F
	24.00	0.945	3.780	4.602	6.728	1.000	1.299	0.028	D4072400M-100F
	24.50	0.965	3.858	4.681	6.807	1.000	1.299	0.020	D4072450M-100F
	25.00	0.984	3.937	4.760	6.886	1.000	1.299	0.016	D4072500M-100F
	25.40	1.000	4.000	4.760	6.886	1.000	1.299	0.013	D4071000I-100F
	25.50	1.004	4.016	4.839	6.965	1.000	1.299	0.012	D4072550M-100F
	26.00	1.024	4.094	4.917	7.043	1.000	1.299	0.008	D4072600M-100F

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-070305-P	72568-T8-1	8T-8	1.2 N-m (10.6 in-lbs)
S M	4T-070305-M			
K	4T-070305-K			
N	4T-070305-N			
H	4T-070305-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.10 + 0.20	- 0.004 + 0.008
3xD	- 0.10 + 0.20	- 0.004 + 0.008
4xD	- 0.10 + 0.25	- 0.004 + 0.010

A55: 33 - 36
Key on A55: 2
A55: 30 -32
A55: 29

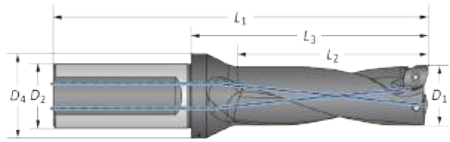
Ⓜ = Metric (mm)
ⓘ = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

09 Series: 26.50 mm - 31.99 mm (1.044" - 1.259")

Holders





Metric Shank

	Length	D_1 mm	D_1 in	Body L_2	Body L_3	Body L_1	Shank D_2	Shank D_4	Max Offset	Part No.
m	2xD	26.50	1.043	53.00	75.70	134.70	32.00	41.00	1.68	D2092650M-32FM
		27.00	1.063	54.00	76.70	135.70	32.00	41.00	1.60	D2092700M-32FM
		27.50	1.083	55.00	77.70	136.70	32.00	41.00	1.45	D2092750M-32FM
		28.00	1.102	56.00	78.70	137.70	32.00	41.00	1.30	D2092800M-32FM
		28.50	1.122	57.00	79.70	138.70	32.00	41.00	1.21	D2092850M-32FM
		28.58	1.125	57.15	79.70	138.70	32.00	41.00	1.20	D2091125I-32FM
		29.00	1.142	58.00	80.70	139.70	32.00	41.00	1.10	D2092900M-32FM
		29.50	1.161	59.00	81.70	140.70	32.00	41.00	0.97	D2092950M-32FM
		30.00	1.181	60.00	82.70	141.70	32.00	41.00	0.80	D2093000M-32FM
		30.15	1.187	60.30	82.70	141.70	32.00	41.00	0.82	D2091187I-32FM
		30.50	1.201	61.00	83.70	142.70	32.00	41.00	0.74	D2093050M-32FM
		31.00	1.220	62.00	84.70	143.70	32.00	41.00	0.60	D2093100M-32FM
		31.50	1.240	63.00	85.70	144.70	32.00	41.00	0.50	D2093150M-32FM
		31.75	1.250	63.50	85.70	144.70	32.00	41.00	0.50	D2091250I-32FM
	3xD	26.50	1.043	79.50	102.20	161.20	32.00	41.00	1.68	D3092650M-32FM
		27.00	1.063	81.00	103.70	162.70	32.00	41.00	1.60	D3092700M-32FM
		27.50	1.083	82.50	105.20	164.20	32.00	41.00	1.45	D3092750M-32FM
		28.00	1.102	84.00	106.70	165.70	32.00	41.00	1.30	D3092800M-32FM
		28.50	1.122	85.50	108.20	167.20	32.00	41.00	1.21	D3092850M-32FM
		28.58	1.125	85.73	108.20	167.20	32.00	41.00	1.20	D3091125I-32FM
		29.00	1.142	87.00	109.70	168.70	32.00	41.00	1.10	D3092900M-32FM
		29.50	1.161	88.50	111.20	170.20	32.00	41.00	0.97	D3092950M-32FM
		30.00	1.181	90.00	112.70	171.70	32.00	41.00	0.80	D3093000M-32FM
		30.15	1.187	90.45	112.70	171.70	32.00	41.00	0.82	D3091187I-32FM
		30.50	1.201	91.50	114.20	173.20	32.00	41.00	0.74	D3093050M-32FM
		31.00	1.220	93.00	115.70	174.70	32.00	41.00	0.60	D3093100M-32FM
		31.50	1.240	94.50	117.00	176.20	32.00	41.00	0.50	D3093150M-32FM
		31.75	1.250	95.25	117.20	176.20	32.00	41.00	0.50	D3091250I-32FM

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-09T306-P	738-T10-1	8T-10	2.0 N-m (17.7 in-lbs)
S M	4T-09T306-M			
K	4T-09T306-K			
N	4T-09T306-N			
H	4T-09T306-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.15 + 0.25	- 0.006 + 0.010
3xD	- 0.15 + 0.25	- 0.006 + 0.010
4xD	- 0.15 + 0.30	- 0.006 + 0.012

A55: 33 - 36
Key on A55: 2
A55: 30 -32
A55: 29

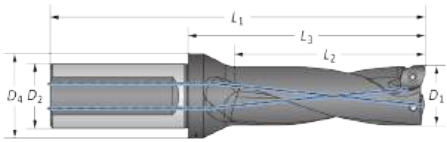
m = Metric (mm)
i = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

09 Series: 26.50 mm - 31.99 mm (1.044" - 1.259")

Holders





Metric Shank

Length	D_1 mm	D_1 in	Body L_2	Body L_3	Body L_1	Shank D_2	Shank D_4	Max Offset	Part No.
4xD	26.50	1.043	106.00	128.70	187.70	32.00	41.00	1.68	**D4092650M-32FM**
	27.00	1.063	108.00	130.70	189.70	32.00	41.00	1.60	**D4092700M-32FM**
	27.50	1.083	110.00	132.70	191.70	32.00	41.00	1.45	**D4092750M-32FM**
	28.00	1.102	112.00	134.70	193.70	32.00	41.00	1.30	**D4092800M-32FM**
	28.50	1.122	114.00	136.70	195.70	32.00	41.00	1.21	**D4092850M-32FM**
	28.58	1.125	114.30	136.70	195.70	32.00	41.00	1.20	**D4091125I-32FM**
	29.00	1.142	116.00	138.70	197.70	32.00	41.00	1.10	**D4092900M-32FM**
	29.50	1.161	118.00	140.70	199.70	32.00	41.00	0.97	**D4092950M-32FM**
	30.00	1.181	120.00	142.70	201.70	32.00	41.00	0.80	**D4093000M-32FM**
	30.15	1.187	120.60	142.70	201.70	32.00	41.00	0.82	**D4091187I-32FM**
	30.50	1.201	122.00	144.70	203.70	32.00	41.00	0.74	**D4093050M-32FM**
	31.00	1.220	124.00	146.70	205.70	32.00	41.00	0.60	**D4093100M-32FM**
	31.50	1.240	126.00	148.70	207.70	32.00	41.00	0.50	**D4093150M-32FM**
	31.75	1.250	127.00	148.70	207.70	32.00	41.00	0.50	**D4091250I-32FM**

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	**4T-09T306-P**	738-T10-1	8T-10	2.0 N-m (17.7 in-lbs)
S M	**4T-09T306-M**			
K	**4T-09T306-K**			
N	**4T-09T306-N**			
H	**4T-09T306-H**			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.15 + 0.25	- 0.006 + 0.010
3xD	- 0.15 + 0.25	- 0.006 + 0.010
4xD	- 0.15 + 0.30	- 0.006 + 0.012

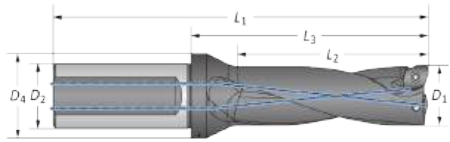
A55: 33 - 36
Key on A55: 2
A55: 30 -32
A55: 29

Ⓜ = Metric (mm)
ⓘ = Imperial (in)
IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

09 Series: 26.50 mm - 31.99 mm (1.044" - 1.259")

Holders





Imperial Shank

Length	D_1 mm	D_1 in	Body L_2	Body L_3	Body L_1	Shank D_2	Shank D_4	Max Offset	Part No.
2xD	26.50	1.043	2.087	2.980	5.303	1.250	1.614	0.066	**D2092650M-125F**
	27.00	1.063	2.126	3.020	5.343	1.250	1.614	0.063	**D2092700M-125F**
	27.50	1.083	2.165	3.059	5.382	1.250	1.614	0.057	**D2092750M-125F**
	28.00	1.102	2.205	3.098	5.421	1.250	1.614	0.051	**D2092800M-125F**
	28.50	1.122	2.244	3.138	5.461	1.250	1.614	0.048	**D2092850M-125F**
	28.58	1.125	2.250	3.138	5.461	1.250	1.614	0.046	**D2091125I-125F**
	29.00	1.142	2.283	3.177	5.500	1.250	1.614	0.043	**D2092900M-125F**
	29.50	1.161	2.323	3.217	5.539	1.250	1.614	0.038	**D2092950M-125F**
	30.00	1.181	2.362	3.256	5.579	1.250	1.614	0.031	**D2093000M-125F**
	30.15	1.187	2.374	3.256	5.579	1.250	1.614	0.032	**D2091187I-125F**
	30.50	1.201	2.402	3.295	5.618	1.250	1.614	0.029	**D2093050M-125F**
	31.00	1.220	2.441	3.335	5.657	1.250	1.614	0.024	**D2093100M-125F**
	31.50	1.240	2.480	3.374	5.697	1.250	1.614	0.020	**D2093150M-125F**
	31.75	1.250	2.500	3.374	5.697	1.250	1.614	0.019	**D2091250I-125F**
3xD	26.50	1.043	3.130	4.024	6.346	1.250	1.614	0.066	**D3092650M-125F**
	27.00	1.063	3.189	4.083	6.406	1.250	1.614	0.063	**D3092700M-125F**
	27.50	1.083	3.248	4.142	6.465	1.250	1.614	0.057	**D3092750M-125F**
	28.00	1.102	3.307	4.201	6.524	1.250	1.614	0.051	**D3092800M-125F**
	28.50	1.122	3.366	4.260	6.583	1.250	1.614	0.048	**D3092850M-125F**
	28.58	1.125	3.375	4.260	6.583	1.250	1.614	0.046	**D3091125I-125F**
	29.00	1.142	3.425	4.319	6.642	1.250	1.614	0.043	**D3092900M-125F**
	29.50	1.161	3.484	4.378	6.701	1.250	1.614	0.038	**D3092950M-125F**
	30.00	1.181	3.543	4.437	6.760	1.250	1.614	0.031	**D3093000M-125F**
	30.15	1.187	3.561	4.437	6.760	1.250	1.614	0.032	**D3091187I-125F**
	30.50	1.201	3.602	4.496	6.819	1.250	1.614	0.029	**D3093050M-125F**
	31.00	1.220	3.661	4.555	6.878	1.250	1.614	0.024	**D3093100M-125F**
	31.50	1.240	3.720	4.614	6.937	1.250	1.614	0.020	**D3093150M-125F**
	31.75	1.250	3.750	4.614	6.937	1.250	1.614	0.019	**D3091250I-125F**

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	**4T-09T306-P**	738-T10-1	8T-10	2.0 N-m (17.7 in-lbs)
S M	**4T-09T306-M**			
K	**4T-09T306-K**			
N	**4T-09T306-N**			
H	**4T-09T306-H**			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.15 + 0.25	- 0.006 + 0.010
3xD	- 0.15 + 0.25	- 0.006 + 0.010
4xD	- 0.15 + 0.30	- 0.006 + 0.012

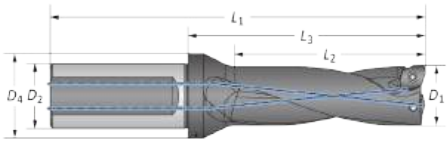
A55: 33 - 36
Key on A55: 2
A55: 30 -32
A55: 29

Ⓜ = Metric (mm)
ⓘ = Imperial (in)
IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

09 Series: 26.50 mm - 31.99 mm (1.044" - 1.259")

Holders





Imperial Shank

Length	D_1 mm	D_1 in	Body L_2	Body L_3	Body L_1	Shank D_2	Shank D_4	Max Offset	Part No.
4xD	26.50	1.043	4.173	5.067	7.390	1.250	1.614	0.066	**D4092650M-125F**
	27.00	1.063	4.252	5.146	7.469	1.250	1.614	0.063	**D4092700M-125F**
	27.50	1.083	4.331	5.224	7.547	1.250	1.614	0.057	**D4092750M-125F**
	28.00	1.102	4.409	5.303	7.626	1.250	1.614	0.051	**D4092800M-125F**
	28.50	1.122	4.488	5.382	7.705	1.250	1.614	0.048	**D4092850M-125F**
	28.58	1.125	4.500	5.382	7.705	1.250	1.614	0.046	**D4091125I-125F**
	29.00	1.142	4.567	5.461	7.783	1.250	1.614	0.043	**D4092900M-125F**
	29.50	1.161	4.646	5.539	7.862	1.250	1.614	0.038	**D4092950M-125F**
	30.00	1.181	4.724	5.618	7.941	1.250	1.614	0.031	**D4093000M-125F**
	30.15	1.187	4.748	5.618	7.941	1.250	1.614	0.032	**D4091187I-125F**
	30.50	1.201	4.803	5.697	8.020	1.250	1.614	0.029	**D4093050M-125F**
	31.00	1.220	4.882	5.776	8.098	1.250	1.614	0.024	**D4093100M-125F**
	31.50	1.240	4.961	5.854	8.177	1.250	1.614	0.020	**D4093150M-125F**
	31.75	1.250	5.000	5.854	8.177	1.250	1.614	0.019	**D4091250I-125F**

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	**4T-09T306-P**	738-T10-1	8T-10	2.0 N-m (17.7 in-lbs)
S M	**4T-09T306-M**			
K	**4T-09T306-K**			
N	**4T-09T306-N**			
H	**4T-09T306-H**			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.15 + 0.25	- 0.006 + 0.010
3xD	- 0.15 + 0.25	- 0.006 + 0.010
4xD	- 0.15 + 0.30	- 0.006 + 0.012

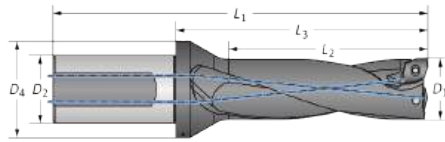
A55: 33 - 36
Key on A55: 2
A55: 30 -32
A55: 29

Ⓜ = Metric (mm)
ⓘ = Imperial (in)
IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

11 Series: 32.00 mm - 38.99 mm (1.260" - 1.535")

Holders





Metric Shank

Length	D_1 mm	D_1 in	Body L_2	Body L_3	Body L_1	Shank D_2	Shank D_4	Max Offset	Part No.
2xD	32.00	1.260	64.00	100.40	169.40	40.00	54.00	2.20	**D2113200M-40FM**
	32.50	1.280	65.00	100.40	169.40	40.00	54.00	2.05	**D2113250M-40FM**
	33.00	1.299	66.00	102.40	171.40	40.00	54.00	1.90	**D2113300M-40FM**
	33.32	1.312	66.65	102.40	171.40	40.00	54.00	1.84	**D2111312I-40FM**
	33.50	1.319	67.00	102.40	171.40	40.00	54.00	1.80	**D2113350M-40FM**
	34.00	1.339	68.00	104.40	173.40	40.00	54.00	1.70	**D2113400M-40FM**
	34.50	1.358	69.00	104.40	173.40	40.00	54.00	1.55	**D2113450M-40FM**
	34.92	1.375	69.85	104.40	173.40	40.00	54.00	1.42	**D2111375I-40FM**
	35.00	1.378	70.00	106.40	175.40	40.00	54.00	1.40	**D2113500M-40FM**
	35.50	1.398	71.00	106.40	175.40	40.00	54.00	1.30	**D2113550M-40FM**
	36.00	1.417	72.00	108.40	177.40	40.00	54.00	1.20	**D2113600M-40FM**
	36.50	1.437	73.00	108.40	177.40	40.00	54.00	1.06	**D2113650M-40FM**
	37.00	1.457	74.00	110.40	179.40	40.00	54.00	0.90	**D2113700M-40FM**
	37.50	1.476	75.00	110.40	179.40	40.00	54.00	0.81	**D2113750M-40FM**
	38.00	1.496	76.00	112.40	181.40	40.00	54.00	0.70	**D2113800M-40FM**
	38.10	1.500	76.20	112.40	181.40	40.00	54.00	0.69	**D2111500I-40FM**
	38.50	1.516	77.00	112.40	181.40	40.00	54.00	0.56	**D2113850M-40FM**
3xD	32.00	1.260	96.00	132.40	201.40	40.00	54.00	2.20	**D3113200M-40FM**
	32.50	1.280	97.50	132.40	201.40	40.00	54.00	2.05	**D3113250M-40FM**
	33.00	1.299	99.00	135.40	204.40	40.00	54.00	1.90	**D3113300M-40FM**
	33.32	1.312	99.97	135.40	204.40	40.00	54.00	1.84	**D3111312I-40FM**
	33.50	1.319	100.50	135.40	204.40	40.00	54.00	1.80	**D3113350M-40FM**
	34.00	1.339	102.00	138.40	207.40	40.00	54.00	1.70	**D3113400M-40FM**
	34.50	1.358	103.50	138.40	207.40	40.00	54.00	1.55	**D3113450M-40FM**
	34.92	1.375	104.78	138.40	207.40	40.00	54.00	1.42	**D3111375I-40FM**
	35.00	1.378	105.00	141.40	210.40	40.00	54.00	1.40	**D3113500M-40FM**
	35.50	1.398	106.50	141.40	210.40	40.00	54.00	1.30	**D3113550M-40FM**
	36.00	1.417	108.00	144.40	213.40	40.00	54.00	1.20	**D3113600M-40FM**
	36.50	1.437	109.50	144.40	213.40	40.00	54.00	1.06	**D3113650M-40FM**
	37.00	1.457	111.00	147.40	216.40	40.00	54.00	0.90	**D3113700M-40FM**
	37.50	1.476	112.50	147.40	216.40	40.00	54.00	0.81	**D3113750M-40FM**
	38.00	1.496	114.00	150.40	219.40	40.00	54.00	0.70	**D3113800M-40FM**
	38.10	1.500	114.30	150.40	219.40	40.00	54.00	0.69	**D3111500I-40FM**
	38.50	1.516	115.50	150.40	219.40	40.00	54.00	0.56	**D3113850M-150FM**

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	**4T-11T306-P**	7488-T15-1	8T-15	3.5 N-m (30.9 in-lbs)
S M	**4T-11T306-M**			
K	**4T-11T306-K**			
N	**4T-11T306-N**			
H	**4T-11T306-H**			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.15 + 0.25	- 0.006 + 0.010
3xD	- 0.15 + 0.25	- 0.006 + 0.010
4xD	- 0.15 + 0.30	- 0.006 + 0.012

A55: 33 - 36
Key on A55: 2
A55: 30 -32
A55: 29

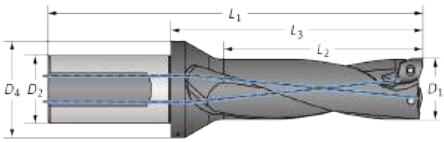
Ⓜ = Metric (mm)
Ⓘ = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

11 Series: 32.00 mm - 38.99 mm (1.260" - 1.535")

Holders





Metric Shank

Length	D_1 mm	D_1 in	Body L_2	Body L_3	Body L_1	Shank D_2	Shank D_4	Max Offset	Part No.
4xD	32.00	1.260	128.00	154.40	223.40	40.00	54.00	2.20	**D4113200M-40FM**
	32.50	1.280	130.00	154.40	223.40	40.00	54.00	2.05	**D4113250M-40FM**
	33.00	1.299	132.00	158.40	227.40	40.00	54.00	1.90	**D4113300M-40FM**
	33.32	1.312	133.30	158.40	227.40	40.00	54.00	1.84	**D4111312I-40FM**
	33.50	1.319	134.00	158.40	227.40	40.00	54.00	1.80	**D4113350M-40FM**
	34.00	1.339	136.00	162.40	231.40	40.00	54.00	1.70	**D4113400M-40FM**
	34.50	1.358	138.00	162.40	231.40	40.00	54.00	1.55	**D4113450M-40FM**
	34.92	1.375	139.70	162.40	231.40	40.00	54.00	1.42	**D4111375I-40FM**
	35.00	1.378	140.00	166.40	235.40	40.00	54.00	1.40	**D4113500M-40FM**
	35.50	1.398	142.00	166.40	235.40	40.00	54.00	1.30	**D4113550M-40FM**
	36.00	1.417	144.00	170.40	239.40	40.00	54.00	1.20	**D4113600M-40FM**
	36.50	1.437	146.00	170.40	239.40	40.00	54.00	1.06	**D4113650M-40FM**
	37.00	1.457	148.00	174.40	243.40	40.00	54.00	0.90	**D4113700M-40FM**
	37.50	1.476	150.00	174.40	243.40	40.00	54.00	0.81	**D4113750M-40FM**
	38.00	1.496	152.00	178.40	247.40	40.00	54.00	0.70	**D4113800M-40FM**
	38.10	1.500	152.40	178.40	247.40	40.00	54.00	0.69	**D4111500I-40FM**
	38.50	1.516	154.00	178.40	247.40	40.00	54.00	0.56	**D4113850M-40FM**

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	**4T-11T306-P**	7488-T15-1	8T-15	3.5 N-m (30.9 in-lbs)
S M	**4T-11T306-M**			
K	**4T-11T306-K**			
N	**4T-11T306-N**			
H	**4T-11T306-H**			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.15 + 0.25	- 0.006 + 0.010
3xD	- 0.15 + 0.25	- 0.006 + 0.010
4xD	- 0.15 + 0.30	- 0.006 + 0.012

A55

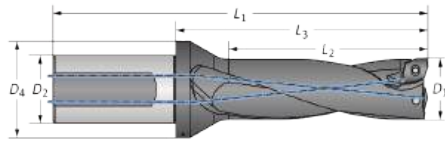
Key on A55: 2
A55: 33 - 36
A55: 30 -32
A55: 29

m = Metric (mm)
i = Imperial (in)
IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

11 Series: 32.00 mm - 38.99 mm (1.260" - 1.535")

Holders





Imperial Shank

Length	D_1 mm	D_1 in	Body L_2	Body L_3	Body L_1	Shank D_2	Shank D_4	Max Offset	Part No.
2xD	32.00	1.260	2.520	3.953	6.669	1.500	2.126	0.087	**D2113200M-150F**
	32.50	1.280	2.559	3.953	6.669	1.500	2.126	0.081	**D2113250M-150F**
	33.00	1.299	2.598	4.031	6.748	1.500	2.126	0.075	**D2113300M-150F**
	33.32	1.312	2.624	4.031	6.748	1.500	2.126	0.073	**D2111312I-150F**
	33.50	1.319	2.638	4.031	6.748	1.500	2.126	0.071	**D2113350M-150F**
	34.00	1.339	2.677	4.110	6.827	1.500	2.126	0.067	**D2113400M-150F**
	34.50	1.358	2.717	4.110	6.827	1.500	2.126	0.061	**D2113450M-150F**
	34.92	1.375	2.750	4.110	6.827	1.500	2.126	0.056	**D2111375I-150F**
	35.00	1.378	2.756	4.189	6.906	1.500	2.126	0.055	**D2113500M-150F**
	35.50	1.398	2.795	4.189	6.906	1.500	2.126	0.051	**D2113550M-150F**
	36.00	1.417	2.835	4.268	6.984	1.500	2.126	0.047	**D2113600M-150F**
	36.50	1.437	2.874	4.268	6.984	1.500	2.126	0.042	**D2113650M-150F**
	37.00	1.457	2.913	4.346	7.063	1.500	2.126	0.035	**D2113700M-150F**
	37.50	1.476	2.953	4.346	7.063	1.500	2.126	0.032	**D2113750M-150F**
	38.00	1.496	2.992	4.425	7.142	1.500	2.126	0.028	**D2113800M-150F**
	38.10	1.500	3.000	4.425	7.142	1.500	2.126	0.027	**D2111500I-150F**
	38.50	1.516	3.031	4.425	7.142	1.500	2.126	0.022	**D2113850M-150F**
3xD	32.00	1.260	3.780	5.213	7.929	1.500	2.126	0.087	**D3113200M-150F**
	32.50	1.280	3.839	5.213	7.929	1.500	2.126	0.081	**D3113250M-150F**
	33.00	1.299	3.898	5.331	8.047	1.500	2.126	0.075	**D3113300M-150F**
	33.32	1.312	3.936	5.331	8.047	1.500	2.126	0.073	**D3111312I-150F**
	33.50	1.319	3.957	5.331	8.047	1.500	2.126	0.071	**D3113350M-150F**
	34.00	1.339	4.016	5.449	8.165	1.500	2.126	0.067	**D3113400M-150F**
	34.50	1.358	4.075	5.449	8.165	1.500	2.126	0.061	**D3113450M-150F**
	34.92	1.375	4.125	5.449	8.165	1.500	2.126	0.056	**D3111375I-150F**
	35.00	1.378	4.134	5.567	8.283	1.500	2.126	0.055	**D3113500M-150F**
	35.50	1.398	4.193	5.567	8.283	1.500	2.126	0.051	**D3113550M-150F**
	36.00	1.417	4.252	5.685	8.402	1.500	2.126	0.047	**D3113600M-150F**
	36.50	1.437	4.311	5.685	8.402	1.500	2.126	0.042	**D3113650M-150F**
	37.00	1.457	4.370	5.803	8.520	1.500	2.126	0.035	**D3113700M-150F**
	37.50	1.476	4.429	5.803	8.520	1.500	2.126	0.032	**D3113750M-150F**
	38.00	1.496	4.488	5.921	8.638	1.500	2.126	0.028	**D3113800M-150F**
	38.10	1.500	4.500	5.921	8.638	1.500	2.126	0.027	**D3111500I-150F**
	38.50	1.516	4.547	5.921	8.638	1.500	2.126	0.022	**D3113850M-150F**

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	**4T-11T306-P**	7488-T15-1	8T-15	3.5 N-m (30.9 in-lbs)
S M	**4T-11T306-M**			
K	**4T-11T306-K**			
N	**4T-11T306-N**			
H	**4T-11T306-H**			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.15 + 0.25	- 0.006 + 0.010
3xD	- 0.15 + 0.25	- 0.006 + 0.010
4xD	- 0.15 + 0.30	- 0.006 + 0.012

A55: 33 - 36
Key on A55: 2
A55: 30 -32
A55: 29

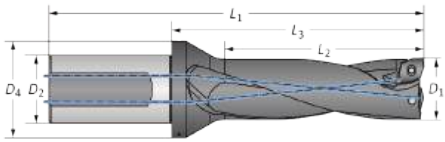
Ⓜ = Metric (mm)
ⓘ = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

11 Series: 32.00 mm - 38.99 mm (1.260" - 1.535")

Holders





Imperial Shank

Length	D_1 mm	D_1 in	Body L_2	Body L_3	Body L_1	Shank D_2	Shank D_4	Max Offset	Part No.
4xD	32.00	1.260	5.039	6.079	8.795	1.500	2.126	0.087	**D4113200M-150F**
	32.50	1.280	5.118	6.079	8.795	1.500	2.126	0.081	**D4113250M-150F**
	33.00	1.299	5.197	6.236	8.953	1.500	2.126	0.075	**D4113300M-150F**
	33.32	1.312	5.248	6.236	8.953	1.500	2.126	0.073	**D4111312I-150F**
	33.50	1.319	5.276	6.236	8.953	1.500	2.126	0.071	**D4113350M-150F**
	34.00	1.339	5.354	6.394	9.110	1.500	2.126	0.067	**D4113400M-150F**
	34.50	1.358	5.433	6.394	9.110	1.500	2.126	0.061	**D4113450M-150F**
	34.92	1.375	5.500	6.394	9.110	1.500	2.126	0.056	**D4111375I-150F**
	35.00	1.378	5.512	6.551	9.268	1.500	2.126	0.055	**D4113500M-150F**
	35.50	1.398	5.591	6.551	9.268	1.500	2.126	0.051	**D4113550M-150F**
	36.00	1.417	5.669	6.709	9.425	1.500	2.126	0.047	**D4113600M-150F**
	36.50	1.437	5.748	6.709	9.425	1.500	2.126	0.042	**D4113650M-150F**
	37.00	1.457	5.827	6.866	9.583	1.500	2.126	0.035	**D4113700M-150F**
	37.50	1.476	5.906	6.866	9.583	1.500	2.126	0.032	**D4113750M-150F**
	38.00	1.496	5.984	7.024	9.740	1.500	2.126	0.028	**D4113800M-150F**
	38.10	1.500	6.000	7.024	9.740	1.500	2.126	0.027	**D4111500I-150F**
	38.50	1.516	6.063	7.024	9.740	1.500	2.126	0.022	**D4113850M-150F**

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	**4T-11T306-P**	7488-T15-1	8T-15	3.5 N-m (30.9 in-lbs)
S M	**4T-11T306-M**			
K	**4T-11T306-K**			
N	**4T-11T306-N**			
H	**4T-11T306-H**			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.15 + 0.25	- 0.006 + 0.010
3xD	- 0.15 + 0.25	- 0.006 + 0.010
4xD	- 0.15 + 0.30	- 0.006 + 0.012

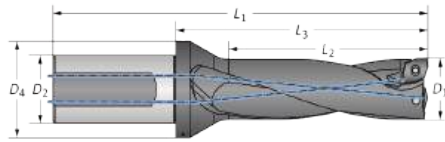
A55: 33 - 36
Key on A55: 2
A55: 30 -32
A55: 29

Ⓜ = Metric (mm)
ⓘ = Imperial (in)
IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

14 Series: 39.00 mm - 47.00 mm (1.536" - 1.850")

Holders





Metric Shank

Length	D_1 mm	D_1 in	Body L_2	Body L_3	Body L_1	Shank D_2	Shank D_4	Max Offset	Part No.
2xD	39.00	1.535	78.00	110.40	179.40	40.00	54.00	2.80	**D2143900M-40FM**
	39.50	1.555	79.00	110.40	179.40	40.00	54.00	2.66	**D2143950M-40FM**
	39.67	1.562	79.40	110.40	179.40	40.00	54.00	2.61	**D2141562I-40FM**
	40.00	1.575	80.00	112.40	181.40	40.00	54.00	2.50	**D2144000M-40FM**
	40.50	1.594	81.00	112.40	181.40	40.00	54.00	2.41	**D2144050M-40FM**
	41.00	1.614	82.00	114.40	183.40	40.00	54.00	2.30	**D2144100M-40FM**
	41.28	1.625	82.55	114.40	183.40	40.00	54.00	2.23	**D2141625I-40FM**
	41.50	1.634	83.00	114.40	183.40	40.00	54.00	2.16	**D2144150M-40FM**
	42.00	1.654	84.00	116.40	185.40	40.00	54.00	2.00	**D2144200M-40FM**
	42.50	1.673	85.00	116.40	185.40	40.00	54.00	1.90	**D2144250M-40FM**
	42.85	1.687	85.70	116.40	185.40	40.00	54.00	1.82	**D2141687I-40FM**
	43.00	1.693	86.00	118.40	187.40	40.00	59.00	1.80	**D2144300M-40FM**
	43.50	1.713	87.00	118.40	187.40	40.00	59.00	1.65	**D2144350M-40FM**
	44.00	1.732	88.00	120.40	189.40	40.00	59.00	1.50	**D2144400M-40FM**
	44.45	1.750	88.90	120.40	189.40	40.00	59.00	1.41	**D2141750I-40FM**
	44.50	1.752	89.00	120.40	189.40	40.00	59.00	1.40	**D2144450M-40FM**
	45.00	1.772	90.00	122.40	191.40	40.00	59.00	1.30	**D2144500M-40FM**
	45.50	1.791	91.00	122.40	191.40	40.00	59.00	1.15	**D2144550M-40FM**
	46.02	1.812	92.10	124.40	193.40	40.00	59.00	1.02	**D2141812I-40FM**
	46.00	1.811	92.00	124.40	193.40	40.00	59.00	1.00	**D2144600M-40FM**
	46.50	1.831	93.00	124.40	193.40	40.00	59.00	0.90	**D2144650M-40FM**
	47.00	1.850	94.00	126.40	195.40	40.00	59.00	0.80	**D2144700M-40FM**
3xD	39.00	1.535	117.00	149.40	218.40	40.00	54.00	2.80	**D3143900M-40FM**
	39.50	1.555	118.50	149.40	218.40	40.00	54.00	2.66	**D3143950M-40FM**
	39.67	1.562	119.02	149.40	218.40	40.00	54.00	2.61	**D3141562I-40FM**
	40.00	1.575	120.00	152.40	221.40	40.00	54.00	2.50	**D3144000M-40FM**
	40.50	1.594	121.50	152.40	221.40	40.00	54.00	2.41	**D3144050M-40FM**
	41.00	1.614	123.00	155.40	224.40	40.00	54.00	2.30	**D3144100M-40FM**
	41.28	1.625	123.83	155.40	224.40	40.00	54.00	2.23	**D3141625I-40FM**
	41.50	1.634	124.50	155.40	224.40	40.00	54.00	2.16	**D3144150M-40FM**
	42.00	1.654	126.00	158.40	227.40	40.00	54.00	2.00	**D3144200M-40FM**
	42.50	1.673	127.50	158.40	227.40	40.00	54.00	1.90	**D3144250M-40FM**
	42.85	1.687	128.55	158.40	227.40	40.00	54.00	1.82	**D3141687I-40FM**
	43.00	1.693	129.00	161.40	230.40	40.00	59.00	1.80	**D3144300M-40FM**

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-140408-P	7595-T20-1	8T-20	4.5 N-m (39.8 in-lbs)
S M	4T-140408-M			
K	4T-140408-K			
N	4T-140408-N			
H	4T-140408-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.20 + 0.30	- 0.008 + 0.012
3xD	- 0.20 + 0.30	- 0.008 + 0.012
4xD	- 0.20 + 0.35	- 0.008 + 0.014

A55: 33 - 36
Key on A55: 2
A55: 30 -32
A55: 29

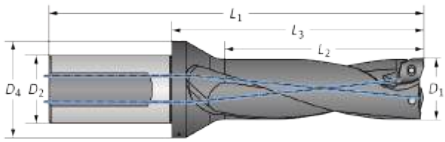
Ⓜ = Metric (mm)
Ⓘ = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

14 Series: 39.00 mm - 47.00 mm (1.536" - 1.850")

Holders





Metric Shank

Length	D_1 mm	D_1 in	Body L_2	Body L_3	Body L_1	Shank D_2	Shank D_4	Max Offset	Part No.
3xD	43.50	1.713	130.50	161.40	230.40	40.00	59.00	1.65	D3144350M-40FM
	44.00	1.732	132.00	164.40	233.40	40.00	59.00	1.50	D3144400M-40FM
	44.45	1.750	133.35	164.40	233.40	40.00	59.00	1.41	D3141750I-40FM
	44.50	1.752	133.50	164.40	233.40	40.00	59.00	1.40	D3144450M-40FM
	45.00	1.772	135.00	167.40	236.40	40.00	59.00	1.30	D3144500M-40FM
	45.50	1.791	136.50	167.40	236.40	40.00	59.00	1.15	D3144550M-40FM
	46.00	1.811	138.00	170.40	239.40	40.00	59.00	1.00	D3144600M-40FM
	46.02	1.812	138.07	170.40	239.40	40.00	59.00	1.02	D3141812I-40FM
	46.50	1.831	139.50	170.40	239.40	40.00	59.00	0.90	D3144650M-40FM
	47.00	1.850	141.00	173.40	242.40	40.00	59.00	0.80	D3144700M-40FM
4xD	39.00	1.535	156.00	188.40	257.40	40.00	54.00	2.80	D4143900M-40FM
	39.50	1.555	158.00	188.40	257.40	40.00	54.00	2.66	D4143950M-40FM
	39.67	1.562	158.70	188.40	257.40	40.00	54.00	2.61	D4141562I-40FM
	40.00	1.575	160.00	192.40	261.40	40.00	54.00	2.50	D4144000M-40FM
	40.50	1.594	162.00	192.40	261.40	40.00	54.00	2.41	D4144050M-40FM
	41.00	1.614	164.00	196.40	265.40	40.00	54.00	2.30	D4144100M-40FM
	41.28	1.625	165.10	196.40	265.40	40.00	54.00	2.23	D4141625I-40FM
	41.50	1.634	166.00	196.40	265.40	40.00	54.00	2.16	D4144150M-40FM
	42.00	1.654	168.00	200.40	269.40	40.00	54.00	2.00	D4144200M-40FM
	42.50	1.673	170.00	200.40	269.40	40.00	54.00	1.90	D4144250M-40FM
	42.85	1.687	171.40	200.40	269.40	40.00	54.00	1.82	D4141687I-40FM
	43.00	1.693	172.00	204.40	273.40	40.00	59.00	1.80	D4144300M-40FM
	43.50	1.713	174.00	204.40	273.40	40.00	59.00	1.65	D4144350M-40FM
	44.00	1.732	176.00	208.40	277.40	40.00	59.00	1.50	D4144400M-40FM
	44.45	1.750	177.80	208.40	277.40	40.00	59.00	1.41	D4141750I-40FM
	44.50	1.752	178.00	208.40	277.40	40.00	59.00	1.40	D4144450M-40FM
	45.00	1.772	180.00	212.40	281.40	40.00	59.00	1.30	D4144500M-40FM
	45.50	1.791	182.00	212.40	281.40	40.00	59.00	1.15	D4144550M-40FM
	46.00	1.811	184.00	216.40	285.40	40.00	59.00	1.00	D4144600M-40FM
	46.02	1.812	184.10	216.40	285.40	40.00	59.00	1.02	D4141812I-40FM
	46.50	1.831	186.00	216.40	285.40	40.00	59.00	0.90	D4144650M-40FM
	47.00	1.850	188.00	220.40	289.40	40.00	59.00	0.80	D4144700M-40FM

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-140408-P	7595-T20-1	8T-20	4.5 N-m (39.8 in-lbs)
S M	4T-140408-M			
K	4T-140408-K			
N	4T-140408-N			
H	4T-140408-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.20 + 0.30	- 0.008 + 0.012
3xD	- 0.20 + 0.30	- 0.008 + 0.012
4xD	- 0.20 + 0.35	- 0.008 + 0.014

A55: 33 - 36
A55: 30 -32
A55: 29
Key on A55: 2

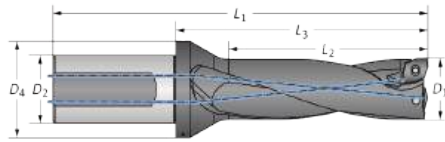
ⓜ = Metric (mm)
ⓘ = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

14 Series: 39.00 mm - 47.00 mm (1.536" - 1.850")

Holders





Imperial Shank

Length	D_1 mm	D_1 in	Body L_2	Body L_3	Body L_1	Shank D_2	Shank D_4	Max Offset	Part No.
2xD	39.00	1.535	3.071	4.346	7.063	1.500	2.126	0.110	D2143900M-150F
	39.50	1.555	3.110	4.346	7.063	1.500	2.126	0.105	D2143950M-150F
	39.67	1.562	3.124	4.346	7.063	1.500	2.126	0.103	D2141562I-150F
	40.00	1.575	3.150	4.425	7.142	1.500	2.126	0.098	D2144000M-150F
	40.50	1.594	3.189	4.425	7.142	1.500	2.126	0.095	D2144050M-150F
	41.00	1.614	3.228	4.504	7.220	1.500	2.126	0.091	D2144100M-150F
	41.28	1.625	3.250	4.504	7.220	1.500	2.126	0.088	D2141625I-150F
	41.50	1.634	3.268	4.504	7.220	1.500	2.126	0.085	D2144150M-150F
	42.00	1.654	3.307	4.583	7.299	1.500	2.126	0.079	D2144200M-150F
	42.50	1.673	3.346	4.583	7.299	1.500	2.126	0.075	D2144250M-150F
	42.85	1.687	3.374	4.583	7.299	1.500	2.126	0.072	D2141687I-150F
	43.00	1.693	3.386	4.661	7.378	1.500	2.323	0.071	D2144300M-150F
	43.50	1.713	3.425	4.661	7.378	1.500	2.323	0.065	D2144350M-150F
	44.00	1.732	3.465	4.740	7.457	1.500	2.323	0.059	D2144400M-150F
	44.45	1.750	3.500	4.740	7.457	1.500	2.323	0.055	D2141750I-150F
	44.50	1.752	3.504	4.740	7.457	1.500	2.323	0.055	D2144450M-150F
	45.00	1.772	3.543	4.819	7.535	1.500	2.323	0.051	D2144500M-150F
	45.50	1.791	3.583	4.819	7.535	1.500	2.323	0.045	D2144550M-150F
	46.02	1.812	3.624	4.898	7.614	1.500	2.323	0.040	D2141812I-150F
	46.00	1.811	3.622	4.898	7.614	1.500	2.323	0.039	D2144600M-150F
	46.50	1.831	3.661	4.898	7.614	1.500	2.323	0.036	D2144650M-150F
	47.00	1.850	3.701	4.976	7.693	1.500	2.323	0.031	D2144700M-150F
3xD	39.00	1.535	4.606	5.882	8.598	1.500	2.126	0.110	D3143900M-150F
	39.50	1.555	4.665	5.882	8.598	1.500	2.126	0.105	D3143950M-150F
	39.67	1.562	4.686	5.882	8.598	1.500	2.126	0.103	D3141562I-150F
	40.00	1.575	4.724	6.000	8.717	1.500	2.126	0.098	D3144000M-150F
	40.50	1.594	4.783	6.000	8.717	1.500	2.126	0.095	D3144050M-150F
	41.00	1.614	4.843	6.118	8.835	1.500	2.126	0.091	D3144100M-150F
	41.28	1.625	4.875	6.118	8.835	1.500	2.126	0.088	D3141625I-150F
	41.50	1.634	4.902	6.118	8.835	1.500	2.126	0.085	D3144150M-150F
	42.00	1.654	4.961	6.236	8.953	1.500	2.126	0.079	D3144200M-150F
	42.50	1.673	5.020	6.236	8.953	1.500	2.126	0.075	D3144250M-150F
	42.85	1.687	5.061	6.236	8.953	1.500	2.126	0.072	D3141687I-150F
	43.00	1.693	5.079	6.354	9.071	1.500	2.323	0.071	D3144300M-150F

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-140408-P	7595-T20-1	8T-20	4.5 N-m (39.8 in-lbs)
S M	4T-140408-M			
K	4T-140408-K			
N	4T-140408-N			
H	4T-140408-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.20 + 0.30	- 0.008 + 0.012
3xD	- 0.20 + 0.30	- 0.008 + 0.012
4xD	- 0.20 + 0.35	- 0.008 + 0.014

A55: 33 - 36
Key on A55: 2
A55: 30 -32
A55: 29

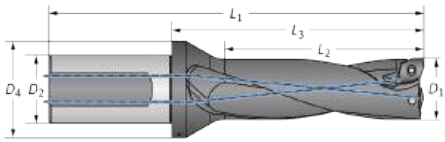
Ⓜ = Metric (mm)
ⓘ = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

14 Series: 39.00 mm - 47.00 mm (1.536" - 1.850")

Holders





Imperial Shank

Length	D_1 mm	D_1 in	Body L_2	Body L_3	Body L_1	Shank D_2	Shank D_4	Max Offset	Part No.
3xD	43.50	1.713	5.138	6.354	9.071	1.500	2.323	0.065	D3144350M-150F
	44.00	1.732	5.197	6.472	9.189	1.500	2.323	0.059	D3144400M-150F
	44.45	1.750	5.250	6.472	9.189	1.500	2.323	0.055	D3141750I-150F
	44.50	1.752	5.256	6.472	9.189	1.500	2.323	0.055	D3144450M-150F
	45.00	1.772	5.315	6.591	9.307	1.500	2.323	0.051	D3144500M-150F
	45.50	1.791	5.374	6.591	9.307	1.500	2.323	0.045	D3144550M-150F
	46.00	1.811	5.433	6.709	9.425	1.500	2.323	0.039	D3144600M-150F
	46.02	1.812	5.436	6.709	9.425	1.500	2.323	0.040	D3141812I-150F
	46.50	1.831	5.492	6.709	9.425	1.500	2.323	0.036	D3144650M-150F
	47.00	1.850	5.551	6.827	9.543	1.500	2.323	0.031	D3144700M-150F
4xD	39.00	1.535	6.142	7.417	10.134	1.500	2.126	0.110	D4143900M-150F
	39.50	1.555	6.220	7.417	10.134	1.500	2.126	0.105	D4143950M-150F
	39.67	1.562	6.248	7.417	10.134	1.500	2.126	0.103	D4141562I-150F
	40.00	1.575	6.299	7.575	10.291	1.500	2.126	0.098	D4144000M-150F
	40.50	1.594	6.378	7.575	10.291	1.500	2.126	0.095	D4144050M-150F
	41.00	1.614	6.457	7.732	10.449	1.500	2.126	0.091	D4144100M-150F
	41.28	1.625	6.500	7.732	10.449	1.500	2.126	0.088	D4141625I-150F
	41.50	1.634	6.535	7.732	10.449	1.500	2.126	0.085	D4144150M-150F
	42.00	1.654	6.614	7.890	10.606	1.500	2.126	0.079	D4144200M-150F
	42.50	1.673	6.693	7.890	10.606	1.500	2.126	0.075	D4144250M-150F
	42.85	1.687	6.748	7.890	10.606	1.500	2.126	0.072	D4141687I-150F
	43.00	1.693	6.772	8.047	10.764	1.500	2.323	0.071	D4144300M-150F
	43.50	1.713	6.850	8.047	10.764	1.500	2.323	0.065	D4144350M-150F
	44.00	1.732	6.929	8.205	10.921	1.500	2.323	0.059	D4144400M-150F
	44.45	1.750	7.000	8.205	10.921	1.500	2.323	0.055	D4141750I-150F
	44.50	1.752	7.008	8.205	10.921	1.500	2.323	0.055	D4144450M-150F
	45.00	1.772	7.087	8.362	11.079	1.500	2.323	0.051	D4144500M-150F
	45.50	1.791	7.165	8.362	11.079	1.500	2.323	0.045	D4144550M-150F
	46.00	1.811	7.244	8.520	11.236	1.500	2.323	0.039	D4144600M-150F
	46.02	1.812	7.248	8.520	11.236	1.500	2.323	0.040	D4141812I-150F
	46.50	1.831	7.323	8.520	11.236	1.500	2.323	0.036	D4144650M-150F
	47.00	1.850	7.402	8.677	11.394	1.500	2.323	0.031	D4144700M-150F

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-140408-P	7595-T20-1	8T-20	4.5 N-m (39.8 in-lbs)
S M	4T-140408-M			
K	4T-140408-K			
N	4T-140408-N			
H	4T-140408-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.20 + 0.30	- 0.008 + 0.012
3xD	- 0.20 + 0.30	- 0.008 + 0.012
4xD	- 0.20 + 0.35	- 0.008 + 0.014

A55: 33 - 36
Key on A55: 2
A55: 30 -32
A55: 29

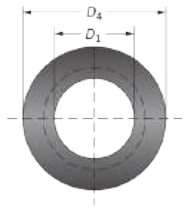
Ⓜ = Metric (mm)
ⓘ = Imperial (in)

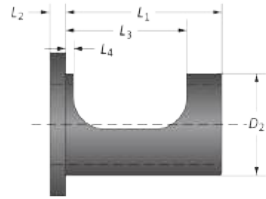
IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

Accessories

Eccentric Sleeves







	Sleeve Dimensions								Adjustment Range	
	D_1	D_2	D_4	L_2	L_3	L_4	L_1	Part No.	Diameter*	Center Height
m	25.00	32.00	49.00	6.00	39.00	2.50	54.00	**SLEEVE-25FM**	-0.20 to +0.40	-0.15 to +0.20
	32.00	40.00	58.00	6.00	43.00	2.50	59.00	**SLEEVE-32FM**	-0.20 to +0.40	-0.15 to +0.20
	40.00	50.00	74.00	6.00	49.00	3.00	69.00	**SLEEVE-40FM**	-0.20 to +0.40	-0.20 to +0.30
i	0.750	1.000	1.614	0.157	1.593	0.118	1.837	**SLEEVE-075F**	-0.008 to +0.016	-0.006 to +0.008
	1.000	1.250	1.929	0.236	1.593	0.098	1.995	**SLEEVE-100F**	-0.008 to +0.016	-0.006 to +0.008
	1.250	1.500	2.283	0.236	1.693	0.098	2.087	**SLEEVE-125F**	-0.008 to +0.016	-0.006 to +0.008
	1.500	2.000	2.913	0.236	1.929	0.118	2.481	**SLEEVE-150F**	-0.008 to +0.024	-0.008 to +0.012

*Diameter adjustment range refers to the cutting diameter.



Milling Applications
Peripheral Adjustment Position



Lathe Applications
Front Adjustment Position

m = Metric (mm)
i = Imperial (in)

Cutting Diameter and Center Height Adjustment

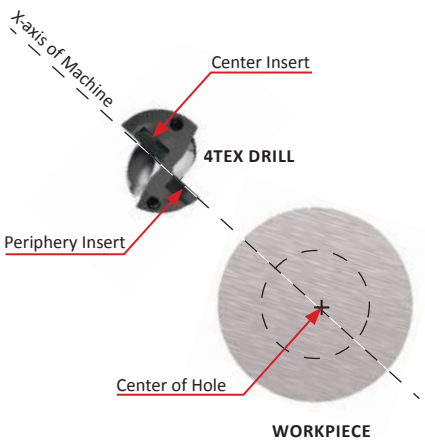
Milling and Lathe Diameter Adjustments

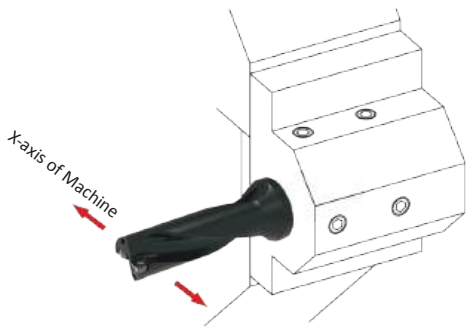


For Milling Applications

1. Assemble the 4TEX drill, eccentric sleeve, and tool holder. Do not tighten the tool holder set screws.
2. Using the peripheral marks for milling machines, align the reference indentation on the holder with the 0 (zero) mark on the eccentric sleeve to have no offset.
3. Rotate the sleeve in the (+) or (-) direction to increase or decrease the nominal diameter.
4. Once the drill has arrived at the desired diameter, firmly tighten the top set screw first and then tighten the bottom set screw.

NOTICE: Eccentric sleeves are to be used with side-locking tool holders only. Damage may result with other styles of tool holders.





For Lathe Applications

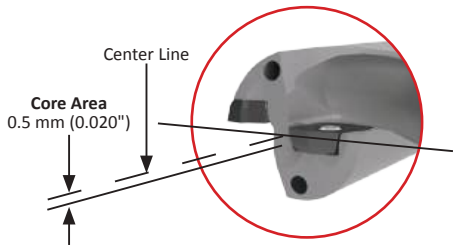
1. Assemble the 4TEX drill into the lathe turret with the top face of the inserts parallel to the x-axis of the machine. This will allow for the diameter offsets to be made using the lathe's x-axis.
2. To increase the nominal diameter, offset the x-axis so the periphery insert moves away from the center of the hole.
3. To decrease the nominal diameter, offset the x-axis so the periphery insert moves toward the center of the hole.

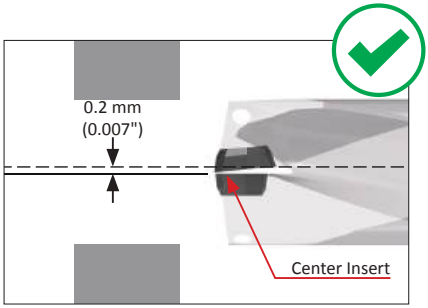
NOTE: Eccentric sleeve is not required when adjusting the diameter of the hole on a lathe.

Cutting Diameter and Center Height Adjustment

Center Height Alignment: Proper Center Line Position

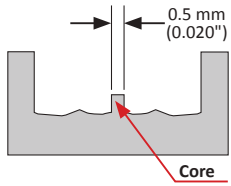


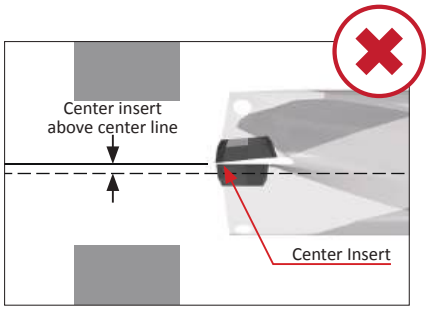




Proper Center Height Alignment

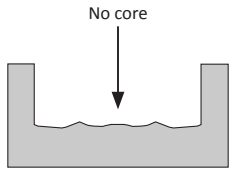
- The correct center height alignment will position the center insert 0.2 mm (0.007") below the center line.

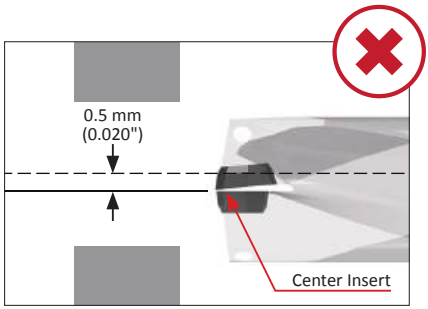




Center Insert Above the Center Line

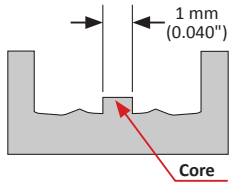
- This will cause fracturing of the center insert.
- Requires center height adjustment.





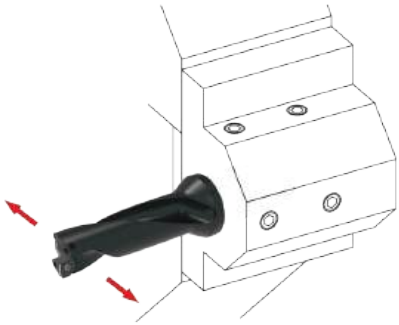
Center Insert Too Far Below Center Line

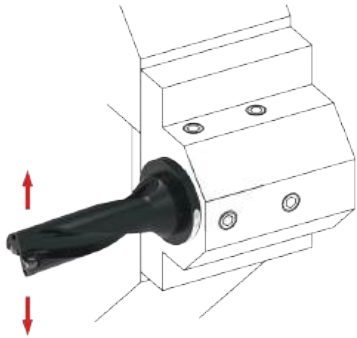
- This will cause the drill to interfere with the drilled hole.
- This will impede chip evacuation on the periphery insert.
- Requires center height adjustment.



Cutting Diameter and Center Height Adjustment

Center Height Alignment: How to Correct Issues





Method 1: Adjustment with X-Axis

1. Rotate the drill body so the position of the center line of the inserts is perpendicular to the lathe's x-axis.
2. Use the x-axis to offset the position of the center line in a (+) or (-) direction to increase or decrease the center core diameter at the bottom of the hole.

NOTE: This method does not allow diameter adjustments using the x-axis.

Method 2: Adjustment with Eccentric Sleeve

1. Assemble the drill to the turret using the eccentric sleeve, positioning the center line of the inserts parallel to the x-axis.
2. Align the reference indentation on the drill to the "0" setting on the flange face.
3. Rotate the sleeve (+) or (-) to increase or decrease the center height of the inserts in order to increase or decrease the core diameter at the bottom of the hole.

NOTE: This method still allows diameter adjustments using the x-axis.

NOTE (applies to both methods): Adjusting the center line of the inserts may affect the hole diameter produced. Method two is preferred to make center height adjustments and compensate for hole diameter with the x-axis.

Recommended Drilling Data | Metric (mm)

4TEX DRILL

ISO	Material	Hardness (BHN)	Speed (m/min) P K H AM480	Speed (m/min) M AM485	Speed (m/min) N TiCN
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 150	125 - 365	125 - 365	—
		150 - 200	125 - 305	125 - 305	—
		200 - 250	125 - 245	125 - 245	—
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	125 - 305	125 - 305	—
		125 - 175	125 - 305	125 - 305	—
		175 - 225	125 - 245	125 - 245	—
		225 - 275	125 - 245	125 - 245	—
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	100 - 245	100 - 245	—
		175 - 225	100 - 245	100 - 245	—
		225 - 275	100 - 245	100 - 245	—
		275 - 325	100 - 245	100 - 185	—
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	100 - 245	—	—
		175 - 225	100 - 245	—	—
		225 - 275	100 - 245	—	—
		275 - 325	100 - 245	—	—
		325 - 375	100 - 245	—	—
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	100 - 165	—	—
		300 - 350	100 - 185	—	—
		350 - 400	100 - 185	—	—
	Structural Steel A36, A285, A516, etc.	100 - 150	100 - 185	100 - 185	—
		150 - 250	100 - 185	100 - 185	—
		250 - 350	100 - 185	—	—
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	85 - 185	85 - 185	—
		200 - 250	85 - 185	—	—
M	**Stainless Steel 400 Series** 416, 420, etc.	185 - 275	75 - 185	75 - 215	—
		275 - 350	75 - 145	75 - 155	—
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	75 - 185	75 - 215	—
		185 - 275	75 - 145	75 - 155	—
	Super Duplex Stainless Steel	135 - 185	75 - 185	75 - 215	—
		185 - 275	75 - 145	75 - 155	—
K	**Nodular, Grey, Ductile Cast Iron**	120 - 150	90 - 245	—	—
		150 - 200	90 - 245	—	—
		200 - 220	90 - 155	—	—
		220 - 260	80 - 125	—	—
		260 - 320	80 - 125	—	—
N	**Cast Aluminum**	30	—	—	245 - 610
		180	—	—	245 - 610
	Wrought Aluminum	30	—	—	245 - 610
		180	—	—	245 - 610
	Aluminum Bronze	100 - 200	150 - 305	—	150 - 305
		200 - 250	150 - 305	—	150 - 305
	Brass	100	150 - 305	—	150 - 305
	Copper	60	—	—	150 - 305
S	**High-Temp Alloy*** Hastelloy® B, Inconel® 600, etc.	140 - 220	30 - 80	30 - 80	—
		220 - 310	30 - 60	30 - 60	—
	Titanium Alloy*	140 - 220	40 - 155	40 - 155	—
		220 - 310	40 - 90	40 - 90	—
	Aerospace Alloy* S82	185 - 275	30 - 80	30 - 80	—
		275 - 350	30 - 60	31 - 60	—
H	**Wear Plate** Hardox®, AR400, T-1, etc.	400	30 - 60	—	—
		500	30 - 60	—	—
		600	30 - 60	—	—
	Hardened Steel	300 - 400	30 - 60	—	—
		400 - 500	30 - 60	—	—

*For high-temp materials, 70 bar is recommended as well as a quality synthetic coolant at approximately 10% emulsion.
**For 4xD tools, begin at low end of feed recommendation.

Recommended Drilling Data | Metric (mm)

4TEX DRILL

Feed Rate (mm/rev) by Diameter - 2xD, 3xD**			
03, 04 series 12.00 mm - 15.49 mm	05 series 15.50 mm - 18.49 mm	06, 07 series 18.50 mm - 26.49 mm	09, 11, 14 series 26.50 mm - 47.00 mm
0.07 - 0.10	0.07 - 0.12	0.08 - 0.14	0.08 - 0.14
0.07 - 0.10	0.07 - 0.12	0.08 - 0.14	0.08 - 0.14
0.07 - 0.10	0.07 - 0.12	0.08 - 0.14	0.08 - 0.14
0.07 - 0.10	0.07 - 0.12	0.08 - 0.14	0.08 - 0.14
0.07 - 0.10	0.07 - 0.12	0.08 - 0.14	0.08 - 0.14
0.07 - 0.10	0.07 - 0.12	0.08 - 0.14	0.08 - 0.14
0.07 - 0.10	0.07 - 0.12	0.08 - 0.14	0.08 - 0.14
0.05 - 0.14	0.07 - 0.17	0.08 - 0.21	0.08 - 0.21
0.05 - 0.14	0.07 - 0.17	0.08 - 0.21	0.08 - 0.21
0.05 - 0.14	0.07 - 0.17	0.08 - 0.21	0.08 - 0.21
0.05 - 0.14	0.07 - 0.17	0.08 - 0.21	0.08 - 0.21
0.05 - 0.14	0.07 - 0.17	0.08 - 0.21	0.08 - 0.21
0.05 - 0.14	0.07 - 0.17	0.08 - 0.21	0.08 - 0.21
0.05 - 0.14	0.07 - 0.17	0.08 - 0.21	0.08 - 0.21
0.05 - 0.14	0.07 - 0.17	0.08 - 0.21	0.08 - 0.21
0.05 - 0.14	0.07 - 0.17	0.08 - 0.21	0.08 - 0.21
0.05 - 0.14	0.07 - 0.17	0.08 - 0.21	0.08 - 0.21
0.05 - 0.14	0.07 - 0.17	0.08 - 0.21	0.08 - 0.21
0.05 - 0.14	0.07 - 0.17	0.08 - 0.21	0.08 - 0.21
0.05 - 0.13	0.07 - 0.13	0.08 - 0.13	0.08 - 0.13
0.05 - 0.13	0.07 - 0.13	0.08 - 0.13	0.08 - 0.13
0.05 - 0.13	0.07 - 0.13	0.08 - 0.13	0.08 - 0.13
0.05 - 0.08	0.07 - 0.12	0.08 - 0.15	0.08 - 0.15
0.05 - 0.08	0.07 - 0.12	0.08 - 0.15	0.08 - 0.15
0.05 - 0.10	0.07 - 0.12	0.07 - 0.14	0.07 - 0.14
0.05 - 0.10	0.07 - 0.12	0.07 - 0.14	0.07 - 0.14
0.05 - 0.10	0.07 - 0.12	0.07 - 0.14	0.07 - 0.14
0.05 - 0.10	0.07 - 0.12	0.07 - 0.14	0.07 - 0.14
0.05 - 0.10	0.07 - 0.12	0.07 - 0.14	0.07 - 0.14
0.05 - 0.10	0.07 - 0.12	0.07 - 0.14	0.07 - 0.14
0.08 - 0.14	0.08 - 0.19	0.08 - 0.21	0.08 - 0.21
0.08 - 0.14	0.08 - 0.19	0.08 - 0.21	0.08 - 0.21
0.08 - 0.14	0.08 - 0.19	0.08 - 0.21	0.08 - 0.21
0.08 - 0.14	0.08 - 0.19	0.08 - 0.21	0.08 - 0.21
0.08 - 0.14	0.08 - 0.19	0.08 - 0.21	0.08 - 0.21
0.07 - 0.12	0.08 - 0.14	0.08 - 0.17	0.08 - 0.21
0.07 - 0.12	0.08 - 0.14	0.08 - 0.17	0.08 - 0.21
0.07 - 0.12	0.08 - 0.14	0.08 - 0.17	0.08 - 0.21
0.07 - 0.12	0.08 - 0.14	0.08 - 0.17	0.08 - 0.21
0.07 - 0.12	0.08 - 0.14	0.08 - 0.17	0.08 - 0.21
0.07 - 0.12	0.08 - 0.14	0.08 - 0.17	0.08 - 0.21
0.07 - 0.12	0.08 - 0.14	0.08 - 0.17	0.08 - 0.21
0.06 - 0.08	0.06 - 0.08	0.07 - 0.10	0.07 - 0.10
0.06 - 0.08	0.06 - 0.08	0.07 - 0.10	0.07 - 0.10
0.06 - 0.08	0.06 - 0.08	0.07 - 0.10	0.07 - 0.10
0.06 - 0.08	0.06 - 0.08	0.07 - 0.10	0.07 - 0.10
0.06 - 0.08	0.06 - 0.08	0.07 - 0.10	0.07 - 0.10
0.06 - 0.08	0.06 - 0.08	0.07 - 0.10	0.07 - 0.10
0.05 - 0.08	0.07 - 0.12	0.08 - 0.15	0.08 - 0.15
0.05 - 0.08	0.07 - 0.12	0.08 - 0.15	0.08 - 0.15
0.05 - 0.08	0.07 - 0.12	0.08 - 0.15	0.08 - 0.15
0.05 - 0.08	0.07 - 0.12	0.08 - 0.15	0.08 - 0.15
0.05 - 0.08	0.07 - 0.12	0.08 - 0.15	0.08 - 0.15

*For high-temp materials, 70 bar is recommended as well as a quality synthetic coolant at approximately 10% emulsion.
**For 4xD tools, begin at low end of feed recommendation.

Recommended Drilling Data | Imperial (in)

4TEX DRILL

ISO	Material	Hardness (BHN)	Speed (SFM) P K H AM480	Speed (SFM) M AM485	Speed (SFM) N TiCN
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 150	400 - 1200	400 - 1200	—
		150 - 200	400 - 1000	400 - 1000	—
		200 - 250	400 - 800	400 - 800	—
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	400 - 1000	400 - 1000	—
		125 - 175	400 - 1000	400 - 1000	—
		175 - 225	400 - 800	400 - 800	—
		225 - 275	400 - 800	400 - 800	—
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	330 - 800	330 - 800	—
		175 - 225	330 - 800	330 - 800	—
		225 - 275	330 - 800	330 - 800	—
		275 - 325	330 - 600	330 - 600	—
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	330 - 800	—	—
		175 - 225	330 - 800	—	—
		225 - 275	330 - 800	—	—
		275 - 325	330 - 800	—	—
		325 - 375	330 - 800	—	—
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	330 - 600	—	—
		300 - 350	330 - 600	—	—
		350 - 400	330 - 600	—	—
	Structural Steel A36, A285, A516, etc.	100 - 150	330 - 600	330 - 600	—
		150 - 250	330 - 600	330 - 600	—
		250 - 350	330 - 600	—	—
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	270 - 600	270 - 600	—
		200 - 250	270 - 600	—	—
M	**Stainless Steel 400 Series** 416, 420, etc.	185 - 275	240 - 600	240 - 700	—
		275 - 350	240 - 470	240 - 500	—
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	240 - 600	240 - 700	—
		185 - 275	240 - 470	240 - 500	—
	Super Duplex Stainless Steel	135 - 185	240 - 600	240 - 700	—
		185 - 275	240 - 470	240 - 500	—
K	**Nodular, Grey, Ductile Cast Iron**	120 - 150	300 - 800	—	—
		150 - 200	300 - 800	—	—
		200 - 220	300 - 500	—	—
		220 - 260	270 - 400	—	—
		260 - 320	270 - 400	—	—
N	**Cast Aluminum**	30	—	—	800 - 2000
		180	—	—	800 - 2000
	Wrought Aluminum	30	—	—	800 - 2000
		180	—	—	800 - 2000
	Aluminum Bronze	100 - 200	500 - 1000	—	500 - 1000
		200 - 250	500 - 1000	—	500 - 1000
	Brass	100	500 - 1000	—	500 - 1000
	Copper	60	—	—	500 - 1000
S	**High-Temp Alloy*** Hastelloy® B, Inconel® 600, etc.	140 - 220	100 - 250	100 - 250	—
		220 - 310	100 - 200	100 - 200	—
	Titanium Alloy*	140 - 220	140 - 500	140 - 500	—
		220 - 310	140 - 300	140 - 300	—
	Aerospace Alloy* S82	185 - 275	100 - 250	100 - 250	—
		275 - 350	100 - 200	100 - 200	—
H	**Wear Plate** Hardox®, AR400, T-1, etc.	400	100 - 200	—	—
		500	100 - 200	—	—
		600	100 - 200	—	—
	Hardened Steel	300 - 400	100 - 300	—	—
		400 - 500	100 - 200	—	—

*For high-temp materials, 1000 PSI is recommended as well as a quality synthetic coolant at approximately 10% emulsion.
**For 4xD tools, begin at low end of feed recommendation.

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Factory technical assistance is also available through our Application Engineering Team: **appeng@alliedmachine.com.**

Recommended Drilling Data | Imperial (in)

4TEX DRILL

Feed Rate (IPR) by Diameter - 2xD, 3xD**			
03, 04 series 0.472" - 0.610"	05 series 0.611" - 0.728"	06, 07 series 0.728" - 1.043"	09, 11, 14 series 1.044" - 1.850"
0.0025 - 0.0040	0.0025 - 0.0050	0.0030 - 0.0055	0.0030 - 0.0055
0.0025 - 0.0040	0.0025 - 0.0050	0.0030 - 0.0055	0.0030 - 0.0055
0.0025 - 0.0040	0.0025 - 0.0050	0.0030 - 0.0055	0.0030 - 0.0055
0.0025 - 0.0040	0.0025 - 0.0050	0.0030 - 0.0055	0.0030 - 0.0055
0.0025 - 0.0040	0.0025 - 0.0050	0.0030 - 0.0055	0.0030 - 0.0055
0.0025 - 0.0040	0.0025 - 0.0050	0.0030 - 0.0055	0.0030 - 0.0055
0.0025 - 0.0040	0.0025 - 0.0050	0.0030 - 0.0055	0.0030 - 0.0055
0.0015 - 0.0055	0.0025 - 0.0065	0.0030 - 0.0080	0.0030 - 0.0080
0.0015 - 0.0055	0.0025 - 0.0065	0.0030 - 0.0080	0.0030 - 0.0080
0.0015 - 0.0055	0.0025 - 0.0065	0.0030 - 0.0080	0.0030 - 0.0080
0.0015 - 0.0055	0.0025 - 0.0065	0.0030 - 0.0080	0.0030 - 0.0080
0.0015 - 0.0055	0.0025 - 0.0065	0.0030 - 0.0080	0.0030 - 0.0080
0.0015 - 0.0055	0.0025 - 0.0065	0.0030 - 0.0080	0.0030 - 0.0080
0.0015 - 0.0055	0.0025 - 0.0065	0.0030 - 0.0080	0.0030 - 0.0080
0.0015 - 0.0055	0.0025 - 0.0065	0.0030 - 0.0080	0.0030 - 0.0080
0.0015 - 0.0055	0.0025 - 0.0065	0.0030 - 0.0080	0.0030 - 0.0080
0.0015 - 0.0055	0.0025 - 0.0065	0.0030 - 0.0080	0.0030 - 0.0080
0.0015 - 0.0055	0.0025 - 0.0065	0.0030 - 0.0080	0.0030 - 0.0080
0.0015 - 0.0055	0.0025 - 0.0065	0.0030 - 0.0080	0.0030 - 0.0080
0.0015 - 0.0030	0.0025 - 0.0050	0.0030 - 0.0060	0.0030 - 0.0060
0.0015 - 0.0030	0.0025 - 0.0050	0.0030 - 0.0060	0.0030 - 0.0060
0.0015 - 0.0040	0.0025 - 0.0050	0.0025 - 0.0055	0.0025 - 0.0055
0.0015 - 0.0040	0.0025 - 0.0050	0.0025 - 0.0055	0.0025 - 0.0055
0.0015 - 0.0040	0.0025 - 0.0050	0.0025 - 0.0055	0.0025 - 0.0055
0.0015 - 0.0040	0.0025 - 0.0050	0.0025 - 0.0055	0.0025 - 0.0055
0.0015 - 0.0040	0.0025 - 0.0050	0.0025 - 0.0055	0.0025 - 0.0055
0.0015 - 0.0040	0.0025 - 0.0050	0.0025 - 0.0055	0.0025 - 0.0055
0.0030 - 0.0055	0.0030 - 0.0070	0.0030 - 0.0080	0.0030 - 0.0080
0.0030 - 0.0055	0.0030 - 0.0070	0.0030 - 0.0080	0.0030 - 0.0080
0.0030 - 0.0055	0.0030 - 0.0070	0.0030 - 0.0080	0.0030 - 0.0080
0.0030 - 0.0055	0.0030 - 0.0070	0.0030 - 0.0080	0.0030 - 0.0080
0.0030 - 0.0055	0.0030 - 0.0070	0.0030 - 0.0080	0.0030 - 0.0080
0.0025 - 0.0050	0.0030 - 0.0055	0.0030 - 0.0065	0.0030 - 0.0080
0.0025 - 0.0050	0.0030 - 0.0055	0.0030 - 0.0065	0.0030 - 0.0080
0.0025 - 0.0050	0.0030 - 0.0055	0.0030 - 0.0065	0.0030 - 0.0080
0.0025 - 0.0050	0.0030 - 0.0055	0.0030 - 0.0065	0.0030 - 0.0080
0.0025 - 0.0050	0.0030 - 0.0055	0.0030 - 0.0065	0.0030 - 0.0080
0.0025 - 0.0050	0.0030 - 0.0055	0.0030 - 0.0065	0.0030 - 0.0080
0.0025 - 0.0050	0.0030 - 0.0055	0.0030 - 0.0065	0.0030 - 0.0080
0.0025 - 0.0050	0.0030 - 0.0055	0.0030 - 0.0065	0.0030 - 0.0080
0.0020 - 0.0030	0.0020 - 0.0030	0.0025 - 0.0040	0.0025 - 0.0040
0.0020 - 0.0030	0.0020 - 0.0030	0.0025 - 0.0040	0.0025 - 0.0040
0.0020 - 0.0030	0.0020 - 0.0030	0.0025 - 0.0040	0.0025 - 0.0040
0.0020 - 0.0030	0.0020 - 0.0030	0.0025 - 0.0040	0.0025 - 0.0040
0.0020 - 0.0030	0.0020 - 0.0030	0.0025 - 0.0040	0.0025 - 0.0040
0.0020 - 0.0030	0.0020 - 0.0030	0.0025 - 0.0040	0.0025 - 0.0040
0.0015 - 0.0030	0.0025 - 0.0050	0.0030 - 0.0060	0.0030 - 0.0060
0.0015 - 0.0030	0.0025 - 0.0050	0.0030 - 0.0060	0.0030 - 0.0060
0.0015 - 0.0030	0.0025 - 0.0050	0.0030 - 0.0060	0.0030 - 0.0060
0.0015 - 0.0030	0.0025 - 0.0050	0.0030 - 0.0060	0.0030 - 0.0060
0.0015 - 0.0030	0.0025 - 0.0050	0.0030 - 0.0060	0.0030 - 0.0060

*For high-temp materials, 1000 PSI is recommended as well as a quality synthetic coolant at approximately 10% emulsion.
**For 4xD tools, begin at low end of feed recommendation.

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Factory technical assistance is also available through our Application Engineering Team: **appeng@alliedmachine.com.**

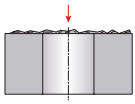
Insert Geometry Recommendations

4TEX DRILL

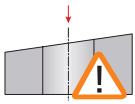
ISO	Material	Hardness (BHN)	Geometry P	M	K	N	H
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 150	○	●			
		150 - 200	●	○			
		200 - 250	●	○			
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	○	●			
		125 - 175	○	●			
		175 - 225	○	●			
		225 - 275	●	○			
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	○	●			
		175 - 225	○	●			
		225 - 275	●	○			
		275 - 325	●				○
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	○	●			
		175 - 225	●	○			
		225 - 275	●				○
		275 - 325	●				○
		325 - 375	○				●
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	●				
		300 - 350	○				●
		350 - 400	○				●
	Structural Steel A36, A285, A516, etc.	100 - 150	○	●			
		150 - 250	○	●			
		250 - 350	●				○
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	●	○			
		200 - 250	●				○
M	**Stainless Steel 400 Series** 416, 420, etc.	185 - 275	○	●			
		275 - 350	○	●			
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	○	●			
		185 - 275	○	●			
	Super Duplex Stainless Steel	135 - 185	○	●			
		185 - 275	○	●			
K	**Nodular, Grey, Ductile Cast Iron**	120 - 150	●				
		150 - 200	●				
		200 - 220	●				
		220 - 260					
		260 - 320					
N	**Cast Aluminum**	30				●	
		180				●	
	Wrought Aluminum	30				●	
		180				●	
	Aluminum Bronze	100 - 200	○			●	
		200 - 250	○			●	
	Brass	100	○			●	
	Copper	60				●	
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 220	○	●			
		220 - 310	○	●			
	Titanium Alloy	140 - 220	○	●			
		220 - 310	○	●			
	Aerospace Alloy S82	185 - 275	○	●			
		275 - 350	○	●			
H	**Wear Plate** Hardox®, AR400, T-1, etc.	400	○				●
		500	○				●
		600	○				●
	Hardened Steel	300 - 400	○				●
		400 - 500	○				●

● Best ○ Good

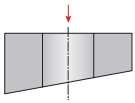
Troubleshooting

1. 

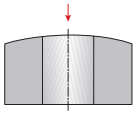
Starting on Uneven Surfaces
- Reduce entry feed by 50% if necessary.

2. 

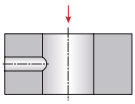
Starting on Angled Surfaces
- Reduce entry feed by 20 - 50%.
- Use lower rake geometry if insert chipping occurs.

3. 

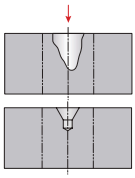
Angled Bore Exit
- Reduce entry feed by 50% on breakout.
- Use tough insert and stable corner radius.

4. 

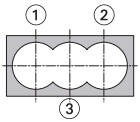
Starting on Convex Surfaces
- Reduce entry feed by 50%.
- Use lower rake geometry if insert chipping occurs.

5. 

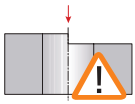
Drilling Through a Cross Hole
- Reduce feed rate 50% if necessary.
- Use good coolant flow and monitor chip packing.
- Use lower rake geometry if insert chipping occurs.

6. 

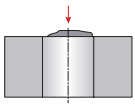
Drilling on a Groove or Large Centering Box
- Reduce entry feed.
- Use lower rake geometry for center insert.

7. 

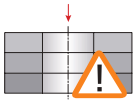
Chain Drilling
- Use good coolant flow.
- Reduce feed rate by 50% for interrupted cut.
- Use lower rake geometry if insert chipping occurs.

8. 

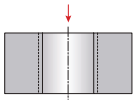
Starting on an Edge
- Reduce entry feed rate by 50%.
- Use lower rake geometry if insert chipping occurs.

9. 

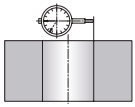
Starting on a Welded Seam
- Reduce entry feed rate by 50%.
- Use lower rake geometry if insert chipping occurs.

10. 

Drilling Through Stacked Plates
- Not recommended.

11. 

Opening an Existing Hole
- Use flood coolant.

12. 

Adjustable
- For mills, use eccentric sleeve with end mill holder.
- For lathes, use x-axis to adjust offset Ø.

NOTE: Refer to maximum offset Ø in data tables.

A55

SECTION A60

Revolution Drill®

Revolution Drill®

47.63 mm - 101.60 mm (1.8750" - 4.0000")



Revolution Drill

The Revolution Drill has an innovative design that allows for adjustability of 5.10 mm (0.200") on diameter. This eliminates the need for special tooling and/or subsequent boring operations.

With the ability to drill from solid, the Revolution Drill does not require a previously drilled pilot hole. The replaceable cartridges reduce setup time, and the indexable inserts protect your investment. The insert design provides excellent chip control and aggressive penetration rates.

Large Scale Innovation

- Drills from solid.
- Drill depths up to 4.5xD.
- Excellent chip control.

Applicable Industries

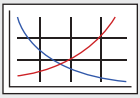
- Aerospace
- Agriculture
- Automotive
- Defense
- General Production
- Heavy Equipment
- Marine
- Oil and Gas
- Renewable Energy/ Energy
- Structural Steel Fabricator
- Tool, Mold, and Die

Reference Icons

The following icons will appear throughout the catalog to help you navigate between products.



Setup / Assembly Information
Detailed instructions and information regarding the corresponding part(s).



Recommended Cutting Data
Speed and feed recommendations for optimum and safe drilling.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

WARNING means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

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CAT Integral Shank 8
36 Series: 50.80 mm - 55.88 mm (2.0000" - 2.2000")
Straight Shank 9
CAT Integral Shank 10
38 Series: 55.88 mm - 60.96 mm (2.2000" - 2.4000")
Straight Shank 11
CAT Integral Shank 12
42 Series: 60.96 mm - 66.04 mm (2.4000" - 2.6000")
Straight Shank 13
CAT Integral Shank 14
44 Series: 66.04 mm - 71.12 mm (2.6000" - 2.8000")
Straight Shank 15
CAT Integral Shank 16
46 Series: 71.12 mm - 76.20 mm (2.8000" - 3.0000")
Straight Shank 17
CAT Integral Shank 18
48 Series: 76.20 mm - 81.28 mm (3.0000" - 3.2000")
Straight Shank 19
CAT Integral Shank 20
52 Series: 81.28 mm - 86.36 mm (3.2000" - 3.4000")
Straight Shank 21
CAT Integral Shank 22
54 Series: 86.36 mm - 91.44 mm (3.4000" - 3.6000")
Straight Shank 23
CAT Integral Shank 24
56 Series: 91.44 mm - 96.52 mm (3.6000" - 3.8000")
Straight Shank 25
CAT Integral Shank 26
58 Series: 96.52 mm - 101.60 mm (3.8000" - 4.0000")
Straight Shank 27
CAT Integral Shank 28

Recommended Drilling Data

Metric (mm) 29
Imperial (in) 30

System Overview

Features & Benefits

Revolution Drill

Series	Diameter Range		Length-to-Diameter Ratio					Shank Options			Inserts per Cartridge
	Metric (mm)	Imperial (in)	1.0xD	2.2xD	2.5xD	3.5xD	4.5xD	Straight	CAT40	CAT50	
34	47.63 - 50.80	1.8750 - 2.0000		●		●	●	●	●	●	2
36	50.80 - 55.88	2.0000 - 2.2000		●		●	●	●	●	●	2
38	55.88 - 60.96	2.2000 - 2.4000		●		●	●	●	●	●	2
42	60.96 - 66.04	2.4000 - 2.6000		●		●	●	●	●	●	2
44	66.04 - 71.12	2.6000 - 2.8000		●		●		●		●	3
46	71.12 - 76.20	2.8000 - 3.0000		●		●		●		●	3
48	76.20 - 81.28	3.0000 - 3.2000	●		●			●		●	3
52	81.28 - 86.36	3.2000 - 3.4000	●		●			●		●	3
54	86.36 - 91.44	3.4000 - 3.6000	●		●			●		●	3
56	91.44 - 96.52	3.6000 - 3.8000	●		●			●		●	4
58	96.52 - 101.60	3.8000 - 4.0000	●		●			●		●	4

NOTE: Stacked plate styles are also available.

Features & Benefits

- Adjustability of 5.10 mm (0.200") on diameter.
- Drill depths up to 4.5xD (standard).
- The replaceable cartridges protect your investment.
- Adjustable diameter reduces inventory and cost.
- The insert design allows for excellent chip control and aggressive penetration rates.
- No pilot hole needed.



2 Inserts
(34 - 42 series)



3 Inserts
(44 - 54 series)



4 Inserts
(56 - 58 series)



Body Lengths

- 1.0xD (48, 52, 54, 56, 58 series)
- 2.2xD (34, 36, 38, 42, 44, 46 series)
- 2.5xD (48, 52, 54, 56, 58 series)
- 3.5xD (34, 36, 38, 42, 44, 46 series)
- 4.5xD (34, 36, 38, 42, 44, 46 series)

Shank Options



Straight Shank
(all series)



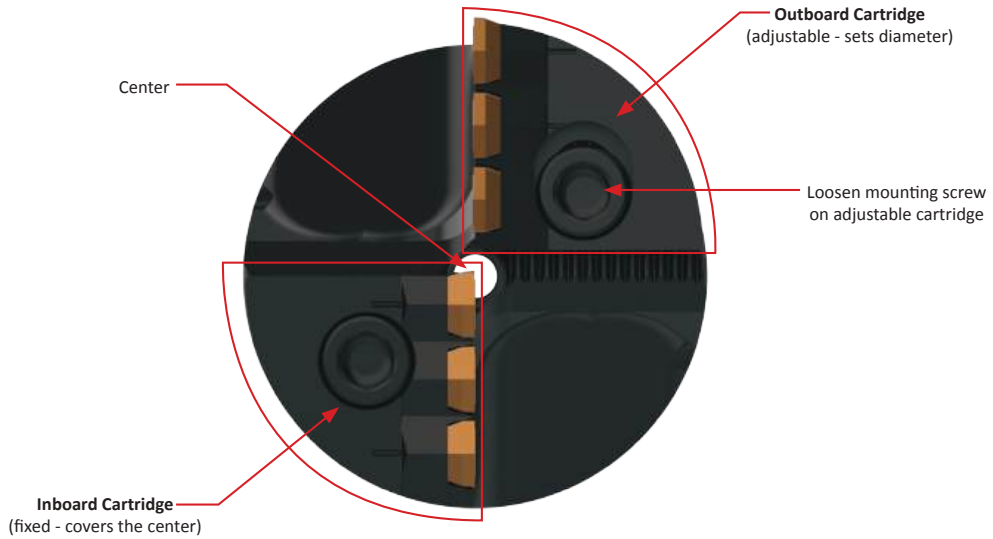
CAT40 Shank
(34, 36, 38, 42 series)

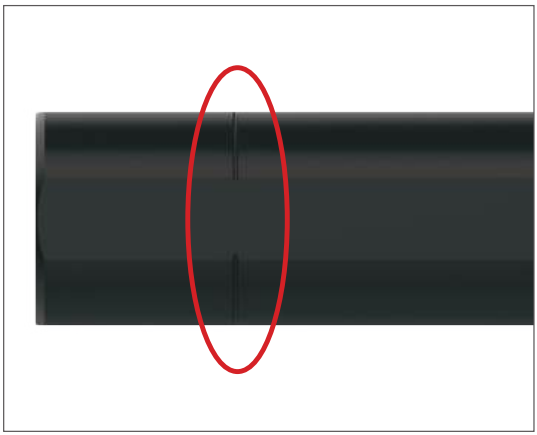


CAT50 Shank
(all series)

System Overview

Product Overview





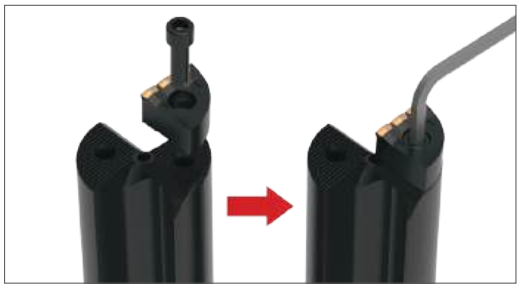
Straight Shanks

- Designed for lathe applications.
- Can be cut off for use in end mill holders.
- The score mark (circled above) is provided for recommended cut length.
- Cut and deburr at the score mark.
- This improves rigidity when the body sits against the face of an end mill holder.



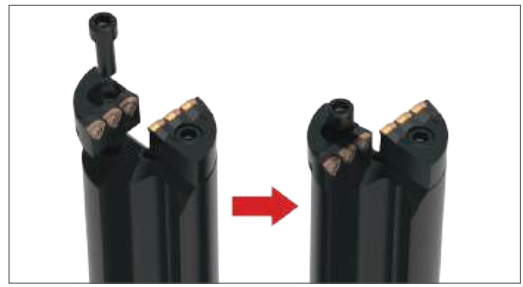
System Overview

Setup Instructions



Step 1:

Mount the fixed cartridge and tighten the mounting screw to 15-19 N-m (11-14 ft-lbf).



Step 2:

Finger-tighten the mounting screw on the adjustable cartridge.



Step 3:

Set the diameter using the adjustment screw against the mounting screw. Place the drill in a presetter to ensure the correct diameter setting.



Step 4:

Tighten the mounting screw to 15-19 N-m (11-14 ft-lbf).

IC Inserts

- The design allows for excellent chip control and aggressive penetration rates.
- The proprietary AM200® and AM300® coatings increase tool life above competitors' premium coatings.
- The same inserts are used for both Revolution Drill® and Opening Drill® products.



AM300®



AM200®



TiN

Insert Application Recommendations

Carbide Grade Options	
P35 (C5)	General purpose carbide grade suitable for most applications. ▶ *Common application in steels and stainless steels.*
K35 (C1)	Toughest carbide grade. Provides the best combination of edge strength and tool life. ▶ *Recommended for less rigid applications.*
K25 (C2)	Higher wear-resistant carbide suitable for abrasive material applications. ▶ *Recommended for grey, ductile, and nodular irons.*
Additional Geometry Option	
High Rake (HR)	Provides superior chip control and tool life in long chipping carbon and alloy steels below 200 BHN.

Product Nomenclature

Revolution Drill Holders

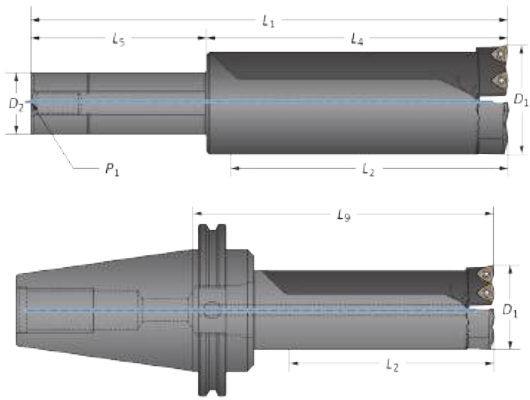
R	34		X	22	–	150L
Drill Style	**Series**			**Drill Length**		**Shank Style**
R = Standard	**34**	**48**		**10** = 1.0xD		**150L** = 1.500 Ø straight
SP = Stacked Plate	**36**	**52**		**22** = 2.2xD		**200L** = 2.000 Ø straight
	38	**54**		**25** = 2.5xD		**40M** = 40 mm ISO 9766
	42	**56**		**35** = 3.5xD		**50M** = 50 mm ISO 9766
	44	**58**		**45** = 4.5xD		**CV40** = CAT40
	46					**CV50** = CAT50

Revolution Drill & Opening Drill Inserts

OP	–	05	T3	08	–	1	H		HR
		IC Type	**Thickness**	**Radius**		**Carbide Grade**	**Shank Style**		**Geometry**
		05 = 5/16"	**T3** = 5/32"	**08** = 1/32"		**Blank** = P35 (C5)	**P** = AM300®	**A** = TiAlN	**Blank** = General Purpose
						1 = K35 (C1)	**H** = AM200®	**N** = TiCN	**HR** = High Rake
						2 = K25 (C2)	**T** = TiN	**U** = Uncoated	

Reference Key

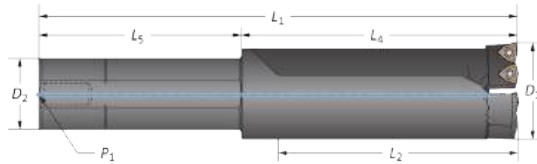
Symbol	Attribute
D_1	Drill diameter range
D_2	Shank diameter
L_1	Overall length
L_2	Maximum drill depth
L_4	Holder length
L_5	Shank length
L_9	Gauge length
P_1	Rear pipe tap



34 Series: 47.63 mm - 50.80 mm (1.8750" - 2.0000")

Straight Shank Holders





Straight Shank

	Style	Length	Holder L_2	Holder L_4	Holder L_1	Shank D_2	Shank L_5	Shank P_1	Part No.	Cartridges
m	Standard	2.2xD	114.9	139.2	209.2	40	70.0	—	**R34X22-40M**	C34-...
		3.5xD	178.4	202.7	272.7	40	70.0	—	**R34X35-40M**	
		4.5xD	229.2	253.5	323.5	40	70.0	—	**R34X45-40M**	
	Stacked Plate	2.2xD	114.9	139.4	209.4	40	70.0	—	**SP34X22-40M**	C34SP-...
i	Standard	2.2xD	4.525	5.481	9.481	1-1/2	4.000	1/4 NPT	**R34X22-150L**	C34-...
		3.5xD	7.025	7.981	11.981	1-1/2	4.000	1/4 NPT	**R34X35-150L**	
		4.5xD	9.025	9.981	13.981	1-1/2	4.000	1/4 NPT	**R34X45-150L**	
	Stacked Plate	2.2xD	4.525	5.488	9.488	1-1/2	4.000	1/4 NPT	**SP34X22-150L**	C34SP-...

NOTE: Holder includes cartridges; however, inserts are sold separately.

Cartridges

Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R34...	**C34-FIX**	2	MS-17M-1	5 mm	AS-16T9-1	8T-9
	C34-ADJ					
SP34...	**C34SP-FIX**	2	MS-17M-1	5 mm	AS-16T9-1	8T-9
	C34SP-ADJ					

IC Inserts

Carbide Grade	Geometry	Part No. AM300®	Part No. AM200®	Part No. TiN	Insert Screws*	Driver
P35 (C5)	Standard	**OP-05T308-P**	**OP-05T308-H**	**OP-05T308-T**	IS-10-1	8T-9
K35 (C1)		**OP-05T308-1P**	**OP-05T308-1H**	**OP-05T308-1T**		
K25 (C2)		**OP-05T308-2P**	**OP-05T308-2H**	—		
P35 (C5)	High Rake	**OP-05T308-PHR**	**OP-05T308-HHR**	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A60

A60: 29 - 30
Key on A60: 2

A60: 3 - 5

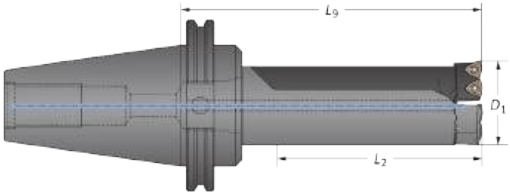
m = Metric (mm)
i = Imperial (in)

Mounting and adjusting screws sold in quantities of 4.
IC inserts and insert screws sold in quantities of 10.

34 Series: 47.63 mm - 50.80 mm (1.8750" - 2.0000")

Holders with Integrated CAT Shank





CAT Integral Shank

Style		Length	Holder L_2	Holder L_9	Part No. CAT40	Part No. CAT50	Cartridges
Standard		2.2xD	4.525	6.856	**R34X22-CV40**	**R34X22-CV50**	C34-...
		3.5xD	7.025	9.356	**R34X35-CV40**	**R34X35-CV50**	
		4.5xD	9.025	11.356	**R34X45-CV40**	**R34X45-CV50**	
Stacked Plate		2.2xD	4.525	6.863	**SP34X22-CV40**	**SP34X22-CV50**	C34SP-...

NOTE: Holder includes cartridges; however, inserts are sold separately.

Cartridges

Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R34...	**C34-FIX**	2	MS-17M-1	5 mm	AS-16T9-1	8T-9
	C34-ADJ					
SP34...	**C34SP-FIX**	2	MS-17M-1	5 mm	AS-16T9-1	8T-9
	C34SP-ADJ					

IC Inserts

Carbide Grade	Geometry	Part No. AM300®	Part No. AM200®	Part No. TiN	Insert Screws*	Driver
P35 (C5)	Standard	**OP-05T308-P**	**OP-05T308-H**	**OP-05T308-T**	IS-10-1	8T-9
K35 (C1)		**OP-05T308-1P**	**OP-05T308-1H**	**OP-05T308-1T**		
K25 (C2)		**OP-05T308-2P**	**OP-05T308-2H**	—		
P35 (C5)	High Rake	**OP-05T308-PHR**	**OP-05T308-HHR**	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A60: 29 - 30
Key on A60: 2
A60: 3 - 5

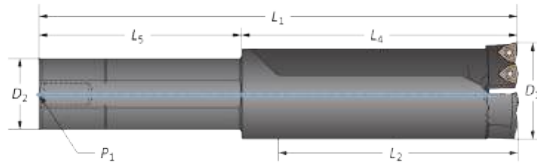
Ⓜ = Metric (mm)
ⓘ = Imperial (in)

Mounting and adjusting screws sold in quantities of 4.
IC inserts and insert screws sold in quantities of 10.

36 Series: 50.80 mm - 55.88 mm (2.0000" - 2.2000")

Straight Shank Holders





Straight Shank

	Style	Length	Holder L_2	Holder L_4	Holder L_1	Shank D_2	Shank L_5	Shank P_1	Part No.	Cartridges
m	Standard	2.2xD	126.0	151.9	221.9	40	70.0	—	**R36X22-40M**	C36-...
		3.5xD	195.8	221.8	291.8	40	70.0	—	**R36X35-40M**	
		4.5xD	253.0	278.9	348.9	40	70.0	—	**R36X45-40M**	
	Stacked Plate	2.2xD	126.0	152.1	222.1	40	70.0	—	**SP36X22-40M**	C36SP-...
i	Standard	2.2xD	4.959	5.982	9.982	1-1/2	4.000	1/4 NPT	**R36X22-150L**	C36-...
		3.5xD	7.709	8.732	12.732	1-1/2	4.000	1/4 NPT	**R36X35-150L**	
		4.5xD	9.959	10.982	14.982	1-1/2	4.000	1/4 NPT	**R36X45-150L**	
	Stacked Plate	2.2xD	4.959	5.988	9.988	1-1/2	4.000	1/4 NPT	**SP36X22-150L**	C36SP-...

NOTE: Holder includes cartridges; however, inserts are sold separately.

Cartridges

Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R36...	**C36-FIX**	2	MS-17M-1	5 mm	AS-18T9-1	8T-9
	C36-ADJ					
SP36...	**C36SP-FIX**	2	MS-17M-1	5 mm	AS-18T9-1	8T-9
	C36SP-ADJ					

IC Inserts

Carbide Grade	Geometry	Part No. AM300®	Part No. AM200®	Part No. TiN	Insert Screws*	Driver
P35 (C5)	Standard	**OP-05T308-P**	**OP-05T308-H**	**OP-05T308-T**	IS-10-1	8T-9
K35 (C1)		**OP-05T308-1P**	**OP-05T308-1H**	**OP-05T308-1T**		
K25 (C2)		**OP-05T308-2P**	**OP-05T308-2H**	—		
P35 (C5)	High Rake	**OP-05T308-PHR**	**OP-05T308-HHR**	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A60

A60: 29 - 30
Key on A60: 2

A60: 3 - 5

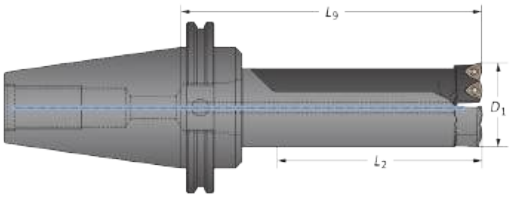
m = Metric (mm)
i = Imperial (in)

Mounting and adjusting screws sold in quantities of 4.
IC inserts and insert screws sold in quantities of 10.

36 Series: 50.80 mm - 55.88 mm (2.0000" - 2.2000")

Holders with Integrated CAT Shank





CAT Integral Shank

Style		Length	Holder L_2	Holder L_9	Part No. CAT40	Part No. CAT50	Cartridges
Standard		2.2xD	4.959	7.357	**R36X22-CV40**	**R36X22-CV50**	C36-...
		3.5xD	7.709	10.107	**R36X35-CV40**	**R36X35-CV50**	
		4.5xD	9.959	12.357	**R36X45-CV40**	**R36X45-CV50**	
Stacked Plate		2.2xD	4.959	7.363	**SP36X22-CV40**	**SP36X22-CV50**	C36SP-...

NOTE: Holder includes cartridges; however, inserts are sold separately.

Cartridges

Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R36...	**C36-FIX** **C36-ADJ**	2	MS-17M-1	5 mm	AS-18T9-1	8T-9
SP36...	**C36SP-FIX** **C36SP-ADJ**	2	MS-17M-1	5 mm	AS-18T9-1	8T-9

IC Inserts

Carbide Grade	Geometry	Part No. AM300®	Part No. AM200®	Part No. TiN	Insert Screws*	Driver
P35 (C5)	Standard	**OP-05T308-P**	**OP-05T308-H**	**OP-05T308-T**	IS-10-1	8T-9
K35 (C1)		**OP-05T308-1P**	**OP-05T308-1H**	**OP-05T308-1T**		
K25 (C2)		**OP-05T308-2P**	**OP-05T308-2H**	—		
P35 (C5)	High Rake	**OP-05T308-PHR**	**OP-05T308-HHR**	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A60: 29 - 30
Key on A60: 2
A60: 3 - 5

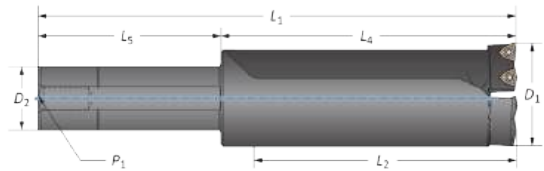
Ⓜ = Metric (mm)
ⓘ = Imperial (in)

Mounting and adjusting screws sold in quantities of 4.
IC inserts and insert screws sold in quantities of 10.

38 Series: 55.88 mm - 60.96 mm (2.2000" - 2.4000")

Straight Shank Holders





Straight Shank

	Style	Length	Holder L_2	Holder L_4	Holder L_1	Shank D_2	Shank L_5	Shank P_1	Part No.	Cartridges
m	Standard	2.2xD	138.7	164.6	234.6	40	70.0	—	**R38X22-40M**	C38-...
		3.5xD	214.9	240.8	310.8	40	70.0	—	**R38X35-40M**	
		4.5xD	278.4	304.3	374.3	40	70.0	—	**R38X45-40M**	
	Stacked Plate	2.2xD	138.7	164.8	234.8	40	70.0	—	**SP38X22-40M**	C38SP-...
i	Standard	2.2xD	5.459	6.482	10.482	1-1/2	4.000	1/4 NPT	**R38X22-150L**	C38-...
		3.5xD	8.459	9.482	13.482	1-1/2	4.000	1/4 NPT	**R38X35-150L**	
		4.5xD	10.959	11.982	15.982	1-1/2	4.000	1/4 NPT	**R38X45-150L**	
	Stacked Plate	2.2xD	5.459	6.488	10.488	1-1/2	4.000	1/4 NPT	**SP38X22-150L**	C38SP-...

NOTE: Holder includes cartridges; however, inserts are sold separately.

Cartridges

Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R38...	**C38-FIX**	2	MS-17M-1	5 mm	AS-18T9-1	8T-9
	C38-ADJ					
SP38...	**C38SP-FIX**	2	MS-17M-1	5 mm	AS-18T9-1	8T-9
	C38SP-ADJ					

IC Inserts

Carbide Grade	Geometry	Part No. AM300®	Part No. AM200®	Part No. TiN	Insert Screws*	Driver
P35 (C5)	Standard	**OP-05T308-P**	**OP-05T308-H**	**OP-05T308-T**	IS-10-1	8T-9
K35 (C1)		**OP-05T308-1P**	**OP-05T308-1H**	**OP-05T308-1T**		
K25 (C2)		**OP-05T308-2P**	**OP-05T308-2H**	—		
P35 (C5)	High Rake	**OP-05T308-PHR**	**OP-05T308-HHR**	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A60

A60: 29 - 30
Key on A60: 2

A60: 3 - 5

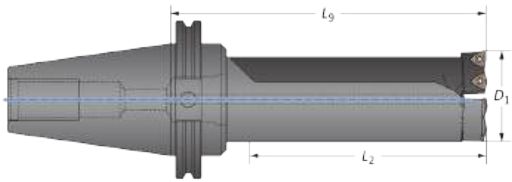
m = Metric (mm)
i = Imperial (in)

Mounting and adjusting screws sold in quantities of 4.
IC inserts and insert screws sold in quantities of 10.

38 Series: 55.88 mm - 60.96 mm (2.2000" - 2.4000")

Holders with Integrated CAT Shank





CAT Integral Shank

Style		Length	Holder L_2	Holder L_9	Part No. CAT40	Part No. CAT50	Cartridges
Standard		2.2xD	5.459	7.857	**R38X22-CV40**	**R38X22-CV50**	C38-...
		3.5xD	8.459	10.857	**R38X35-CV40**	**R38X35-CV50**	
		4.5xD	10.959	13.357	**R38X45-CV40**	**R38X45-CV50**	
Stacked Plate		2.2xD	5.459	7.863	**SP38X22-CV40**	**SP38X22-CV50**	C38SP-...

NOTE: Holder includes cartridges; however, inserts are sold separately.

Cartridges

Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R38...	**C38-FIX**	2	MS-17M-1	5 mm	AS-18T9-1	8T-9
	C38-ADJ					
SP38...	**C38SP-FIX**	2	MS-17M-1	5 mm	AS-18T9-1	8T-9
	C38SP-ADJ					

IC Inserts

Carbide Grade	Geometry	Part No. AM300®	Part No. AM200®	Part No. TiN	Insert Screws*	Driver
P35 (C5)	Standard	**OP-05T308-P**	**OP-05T308-H**	**OP-05T308-T**	IS-10-1	8T-9
K35 (C1)		**OP-05T308-1P**	**OP-05T308-1H**	**OP-05T308-1T**		
K25 (C2)		**OP-05T308-2P**	**OP-05T308-2H**	—		
P35 (C5)	High Rake	**OP-05T308-PHR**	**OP-05T308-HHR**	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A60: 29 - 30
Key on A60: 2

A60: 3 - 5

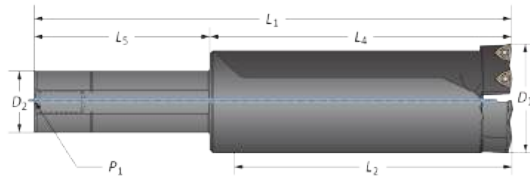
Ⓜ = Metric (mm)
ⓘ = Imperial (in)

Mounting and adjusting screws sold in quantities of 4.
IC inserts and insert screws sold in quantities of 10.

42 Series: 60.96 mm - 66.04 mm (2.4000" - 2.6000")

Straight Shank Holders





Straight Shank

	Style	Length	Holder L_2	Holder L_4	Holder L_1	Shank D_2	Shank L_5	Shank P_1	Part No.	Cartridges
m	Standard	2.2xD	144.9	174.2	244.2	40	70.0	—	**R42X22-40M**	C42-...
		3.5xD	233.8	263.1	333.1	40	70.0	—	**R42X35-40M**	
		4.5xD	297.3	326.6	396.6	40	70.0	—	**R42X45-40M**	
	Stacked Plate	2.2xD	144.9	177.9	247.9	40	70.0	—	**SP42X22-40M**	C42SP-...
i	Standard	2.2xD	5.704	6.859	10.859	1-1/2	4.000	1/4 NPT	**R42X22-150L**	C42-...
		3.5xD	9.204	10.359	14.359	1-1/2	4.000	1/4 NPT	**R42X35-150L**	
		4.5xD	11.704	12.859	16.859	1-1/2	4.000	1/4 NPT	**R42X45-150L**	
	Stacked Plate	2.2xD	5.704	7.005	11.005	1-1/2	4.000	1/4 NPT	**SP42X22-150L**	C42SP-...

NOTE: Holder includes cartridges; however, inserts are sold separately.

Cartridges

Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R42...	**C42-FIX**	2	MS-19M-1	6 mm	AS-18T9-1	8T-9
	C42-ADJ					
SP42...	**C42SP-FIX**	2	MS-19M-1	6 mm	AS-18T9-1	8T-9
	C42SP-ADJ					

IC Inserts

Carbide Grade	Geometry	Part No. AM300®	Part No. AM200®	Part No. TiN	Insert Screws*	Driver
P35 (C5)	Standard	**OP-05T308-P**	**OP-05T308-H**	**OP-05T308-T**	IS-10-1	8T-9
K35 (C1)		**OP-05T308-1P**	**OP-05T308-1H**	**OP-05T308-1T**		
K25 (C2)		**OP-05T308-2P**	**OP-05T308-2H**	—		
P35 (C5)	High Rake	**OP-05T308-PHR**	**OP-05T308-HHR**	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A60

A60: 29 - 30
Key on A60: 2
A60: 3 - 5

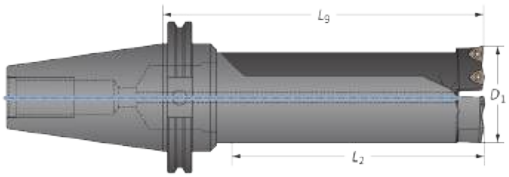
m = Metric (mm)
i = Imperial (in)

Mounting and adjusting screws sold in quantities of 4.
IC inserts and insert screws sold in quantities of 10.

42 Series: 60.96 mm - 66.04 mm (2.4000" - 2.6000")

Holders with Integrated CAT Shank





CAT Integral Shank

	Style	Length	Holder L_2	Holder L_9	Part No. CAT40	Part No. CAT50	Cartridges
ⓘ	Standard	2.2xD	5.704	8.234	**R42X22-CV40**	**R42X22-CV50**	C42-...
		3.5xD	9.204	11.734	**R42X35-CV40**	**R42X35-CV50**	
		4.5xD	11.704	14.234	**R42X45-CV40**	**R42X45-CV50**	
	Stacked Plate	2.2xD	5.704	8.380	**SP42X22-CV40**	**SP42X22-CV50**	C42SP-...

NOTE: Holder includes cartridges; however, inserts are sold separately.

Cartridges

Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R42...	**C42-FIX** **C42-ADJ**	2	MS-19M-1	6 mm	AS-18T9-1	8T-9
SP42...	**C42SP-FIX** **C42SP-ADJ**	2	MS-19M-1	6 mm	AS-18T9-1	8T-9

IC Inserts

Carbide Grade	Geometry	Part No. AM300®	Part No. AM200®	Part No. TiN	Insert Screws*	Driver
P35 (C5)	Standard	**OP-05T308-P**	**OP-05T308-H**	**OP-05T308-T**	IS-10-1	8T-9
K35 (C1)		**OP-05T308-1P**	**OP-05T308-1H**	**OP-05T308-1T**		
K25 (C2)		**OP-05T308-2P**	**OP-05T308-2H**	—		
P35 (C5)	High Rake	**OP-05T308-PHR**	**OP-05T308-HHR**	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A60: 29 - 30
Key on A60: 2

A60: 3 - 5

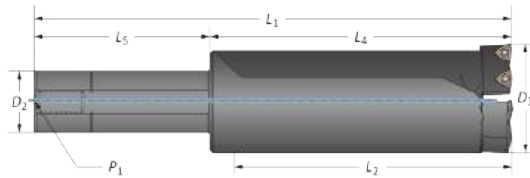
ⓜ = Metric (mm)
ⓘ = Imperial (in)

Mounting and adjusting screws sold in quantities of 4.
IC inserts and insert screws sold in quantities of 10.

44 Series: 66.04 mm - 71.12 mm (2.6000" - 2.8000")

Straight Shank Holders





Straight Shank

	Style	Length	Holder L_2	Holder L_4	Holder L_1	Shank D_2	Shank L_5	Shank P_1	Part No.	Cartridges
m	Standard	2.2xD	157.6	193.4	263.4	40	70.0	—	**R44X22-40M**	C44-...
		3.5xD	252.9	288.6	358.6	40	70.0	—	**R44X35-40M**	
	Stacked Plate	2.2xD	157.6	197.1	267.1	40	70.0	—	**SP44X22-40M**	C44SP-...
i	Standard	2.2xD	6.206	7.614	11.614	1-1/2	4.000	1/4 NPT	**R44X22-150L**	C44-...
		3.5xD	9.956	11.364	15.364	1-1/2	4.000	1/4 NPT	**R44X35-150L**	
	Stacked Plate	2.2xD	6.206	7.760	11.760	1-1/2	4.000	1/4 NPT	**SP44X22-150L**	C44SP-...

NOTE: Holder includes cartridges; however, inserts are sold separately.

Cartridges

Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R44...	**C44-FIX** **C44-ADJ**	3	MS-19M-1	6 mm	AS-18T9-1	8T-9
SP44...	**C44SP-FIX** **C44SP-ADJ**	3	MS-19M-1	6 mm	AS-18T9-1	8T-9

IC Inserts

Carbide Grade	Geometry	Part No. AM300®	Part No. AM200®	Part No. TiN	Insert Screws*	Driver
P35 (C5)	Standard	**OP-05T308-P**	**OP-05T308-H**	**OP-05T308-T**	IS-10-1	8T-9
K35 (C1)		**OP-05T308-1P**	**OP-05T308-1H**	**OP-05T308-1T**		
K25 (C2)		**OP-05T308-2P**	**OP-05T308-2H**	—		
P35 (C5)	High Rake	**OP-05T308-PHR**	**OP-05T308-HHR**	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A60: 29 - 30
Key on A60: 2
A60: 3 - 5

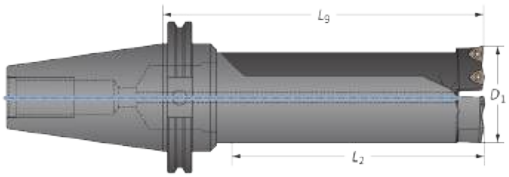
m = Metric (mm)
i = Imperial (in)

Mounting and adjusting screws sold in quantities of 4.
IC inserts and insert screws sold in quantities of 10.

44 Series: 66.04 mm - 71.12 mm (2.6000" - 2.8000")

Holders with Integrated CAT Shank





CAT Integral Shank

Style		Length	Holder L_2	Holder L_9	Part No. CAT50	Cartridges
Standard		2.2xD	6.206	8.989	**R44X22-CV50**	C44-...
		3.5xD	9.956	12.739	**R44X35-CV50**	
Stacked Plate		2.2xD	6.206	9.135	**SP44X22-CV50**	C44SP-...

NOTE: Holder includes cartridges; however, inserts are sold separately.

Cartridges

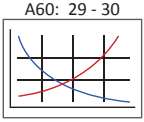
Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R44...	**C44-FIX** **C44-ADJ**	3	MS-19M-1	6 mm	AS-18T9-1	8T-9
SP44...	**C44SP-FIX** **C44SP-ADJ**	3	MS-19M-1	6 mm	AS-18T9-1	8T-9

IC Inserts

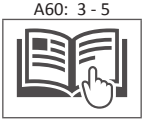
Carbide Grade	Geometry	Part No. AM300®	Part No. AM200®	Part No. TiN	Insert Screws*	Driver
P35 (C5)	Standard	**OP-05T308-P**	**OP-05T308-H**	**OP-05T308-T**	IS-10-1	8T-9
K35 (C1)		**OP-05T308-1P**	**OP-05T308-1H**	**OP-05T308-1T**		
K25 (C2)		**OP-05T308-2P**	**OP-05T308-2H**	—		
P35 (C5)	High Rake	**OP-05T308-PHR**	**OP-05T308-HHR**	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A60: 29 - 30
Key on A60: 2



A60: 3 - 5



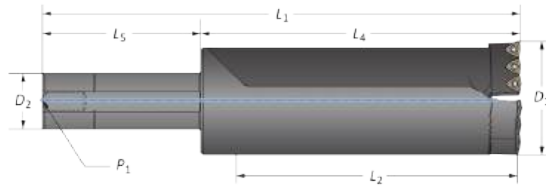
ⓜ = Metric (mm)
ⓘ = Imperial (in)

Mounting and adjusting screws sold in quantities of 4.
IC inserts and insert screws sold in quantities of 10.

46 Series: 71.12 mm - 76.20 mm (2.8000" - 3.0000")

Straight Shank Holders





Straight Shank

	Style	Length	Holder L_2	Holder L_4	Holder L_1	Shank D_2	Shank L_5	Shank P_1	Part No.	Cartridges
m	Standard	2.2xD	170.4	206.2	276.2	40	70.0	—	**R46X22-40M**	C46-...
		3.5xD	265.6	301.4	371.4	40	70.0	—	**R46X35-40M**	
	Stacked Plate	2.2xD	170.4	210.0	280.0	40	70.0	—	**SP46X22-40M**	C46SP-...
i	Standard	2.2xD	6.707	8.117	12.117	1-1/2	4.000	1/4 NPT	**R46X22-150L**	C46-...
		3.5xD	10.457	11.867	15.867	1-1/2	4.000	1/4 NPT	**R46X35-150L**	
	Stacked Plate	2.2xD	6.707	8.266	12.266	1-1/2	4.000	1/4 NPT	**SP46X22-150L**	C46SP-...

NOTE: Holder includes cartridges; however, inserts are sold separately.

Cartridges

Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R46...	**C46-FIX** **C46-ADJ**	3	MS-21M-1	8 mm	AS-18T9-1	8T-9
SP46...	**C46SP-FIX** **C46SP-ADJ**	3	MS-21M-1	8 mm	AS-18T9-1	8T-9

IC Inserts

Carbide Grade	Geometry	Part No. AM300®	Part No. AM200®	Part No. TiN	Insert Screws*	Driver
P35 (C5)	Standard	**OP-05T308-P**	**OP-05T308-H**	**OP-05T308-T**	IS-10-1	8T-9
K35 (C1)		**OP-05T308-1P**	**OP-05T308-1H**	**OP-05T308-1T**		
K25 (C2)		**OP-05T308-2P**	**OP-05T308-2H**	—		
P35 (C5)	High Rake	**OP-05T308-PHR**	**OP-05T308-HHR**	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A60

A60: 29 - 30
Key on A60: 2
A60: 3 - 5

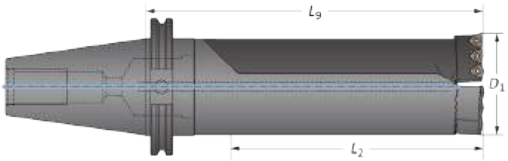
m = Metric (mm)
i = Imperial (in)

Mounting and adjusting screws sold in quantities of 4.
IC inserts and insert screws sold in quantities of 10.

46 Series: 71.12 mm - 76.20 mm (2.8000" - 3.0000")

Holders with Integrated CAT Shank





CAT Integral Shank

	Style	Length	Holder L_2	Holder L_9	Part No. CAT50	Cartridges
ⓘ	Standard	2.2xD	6.707	9.492	**R46X22-CV50**	C46-...
ⓘ	Standard	3.5xD	10.457	13.242	**R46X35-CV50**	C46-...
	Stacked Plate	2.2xD	6.707	9.641	**SP46X22-CV50**	C46SP-...

NOTE: Holder includes cartridges; however, inserts are sold separately.

Cartridges

Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R46...	**C46-FIX** **C46-ADJ**	3	MS-21M-1	8 mm	AS-18T9-1	8T-9
SP46...	**C46SP-FIX** **C46SP-ADJ**	3	MS-21M-1	8 mm	AS-18T9-1	8T-9

IC Inserts

Carbide Grade	Geometry	Part No. AM300®	Part No. AM200®	Part No. TiN	Insert Screws*	Driver
P35 (C5)	Standard	**OP-05T308-P**	**OP-05T308-H**	**OP-05T308-T**	IS-10-1	8T-9
K35 (C1)	Standard	**OP-05T308-1P**	**OP-05T308-1H**	**OP-05T308-1T**	IS-10-1	8T-9
K25 (C2)	Standard	**OP-05T308-2P**	**OP-05T308-2H**	—	IS-10-1	8T-9
P35 (C5)	High Rake	**OP-05T308-PHR**	**OP-05T308-HHR**	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A60: 29 - 30
Key on A60: 2
A60: 3 - 5

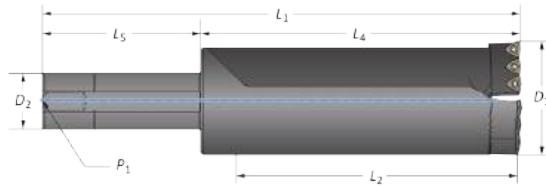
ⓜ = Metric (mm)
ⓘ = Imperial (in)

Mounting and adjusting screws sold in quantities of 4.
IC inserts and insert screws sold in quantities of 10.

48 Series: 76.20 mm - 81.28 mm (3.0000" - 3.2000")

Straight Shank Holders





Straight Shank

	Style	Length	Holder L_2	Holder L_4	Holder L_1	Shank D_2	Shank L_5	Shank P_1	Part No.	Cartridges
m	Standard	1.0xD	80.2	117.4	197.4	50	80.0	—	**R48X10-50M**	C48-...
		2.5xD	200.9	238.0	318.1	50	80.0	—	**R48X25-50M**	
	Stacked Plate	1.0xD	80.2	122.5	202.5	50	80.0	—	**SP48X10-50M**	C48SP-...
		2.5xD	200.9	243.1	323.1	50	80.0	—	**SP48X25-50M**	
i	Standard	1.0xD	3.158	4.622	9.122	2	4.500	1/4 NPT	**R48X10-200L**	C48-...
		2.5xD	7.908	9.372	13.872	2	4.500	1/4 NPT	**R48X25-200L**	
	Stacked Plate	1.0xD	3.158	4.821	9.321	2	4.500	1/4 NPT	**SP48X10-200L**	C48SP-...
		2.5xD	7.908	9.571	14.071	2	4.500	1/4 NPT	**SP48X25-200L**	

NOTE: Holder includes cartridges; however, inserts are sold separately.

Cartridges

Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R48...	**C48-FIX**	3	MS-21M-1	8 mm	AS-18T9-1	8T-9
	C48-ADJ					
SP48...	**C48SP-FIX**	3	MS-21M-1	8 mm	AS-18T9-1	8T-9
	C48SP-ADJ					

IC Inserts

Carbide Grade	Geometry	Part No. AM300®	Part No. AM200®	Part No. TiN	Insert Screws*	Driver
P35 (C5)	Standard	**OP-05T308-P**	**OP-05T308-H**	**OP-05T308-T**	IS-10-1	8T-9
K35 (C1)		**OP-05T308-1P**	**OP-05T308-1H**	**OP-05T308-1T**		
K25 (C2)		**OP-05T308-2P**	**OP-05T308-2H**	—		
P35 (C5)	High Rake	**OP-05T308-PHR**	**OP-05T308-HHR**	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A60

A60: 29 - 30
Key on A60: 2
A60: 3 - 5

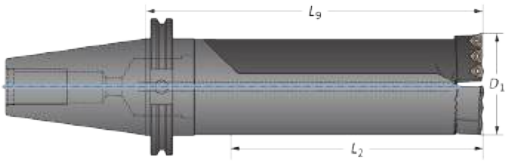
m = Metric (mm)
i = Imperial (in)

Mounting and adjusting screws sold in quantities of 4.
IC inserts and insert screws sold in quantities of 10.

48 Series: 76.20 mm - 81.28 mm (3.0000" - 3.2000")

Holders with Integrated CAT Shank





CAT Integral Shank

Style		Length	Holder L_2	Holder L_9	Part No. CAT50	Cartridges
Standard		1.0xD	3.158	5.997	**R48X10-CV50**	C48-...
		2.5xD	7.908	10.747	**R48X25-CV50**	
Stacked Plate		1.0xD	3.158	6.196	**SP48X10-CV50**	C48SP-...
		2.5xD	7.908	10.946	**SP48X25-CV50**	

NOTE: Holder includes cartridges; however, inserts are sold separately.

Cartridges

Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R48...	**C48-FIX**	3	MS-21M-1	8 mm	AS-18T9-1	8T-9
	C48-ADJ					
SP48...	**C48SP-FIX**	3	MS-21M-1	8 mm	AS-18T9-1	8T-9
	C48SP-ADJ					

IC Inserts

Carbide Grade	Geometry	Part No. AM300®	Part No. AM200®	Part No. TiN	Insert Screws*	Driver
P35 (C5)	Standard	**OP-05T308-P**	**OP-05T308-H**	**OP-05T308-T**	IS-10-1	8T-9
K35 (C1)		**OP-05T308-1P**	**OP-05T308-1H**	**OP-05T308-1T**		
K25 (C2)		**OP-05T308-2P**	**OP-05T308-2H**	—		
P35 (C5)	High Rake	**OP-05T308-PHR**	**OP-05T308-HHR**	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A60: 29 - 30
Key on A60: 2
A60: 3 - 5

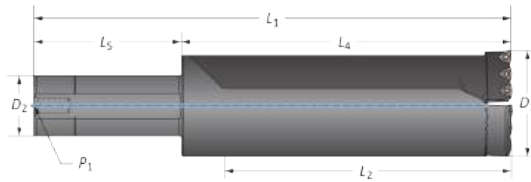
Ⓜ = Metric (mm)
ⓘ = Imperial (in)

Mounting and adjusting screws sold in quantities of 4.
IC inserts and insert screws sold in quantities of 10.

52 Series: 81.28 mm - 86.36 mm (3.2000" - 3.4000")

Straight Shank Holders





Straight Shank

	Style	Length	Holder L_2	Holder L_4	Holder L_1	Shank D_2	Shank L_5	Shank P_1	Part No.	Cartridges
m	Standard	1.0xD	86.7	130.2	210.2	50	80.0	—	**R52X10-50M**	C52-...
		2.5xD	213.7	257.2	337.2	50	80.0	—	**R52X25-50M**	
	Stacked Plate	1.0xD	86.7	135.3	215.3	50	80.0	—	**SP52X10-50M**	C52SP-...
		2.5xD	213.7	262.3	342.3	50	80.0	—	**SP52X25-50M**	
i	Standard	1.0xD	3.414	5.125	9.625	2	4.500	1/4 NPT	**R52X10-200L**	C52-...
		2.5xD	8.414	10.125	14.625	2	4.500	1/4 NPT	**R52X25-200L**	
	Stacked Plate	1.0xD	3.414	5.326	9.826	2	4.500	1/4 NPT	**SP52X10-200L**	C52SP-...
		2.5xD	8.414	10.326	14.826	2	4.500	1/4 NPT	**SP52X25-200L**	

NOTE: Holder includes cartridges; however, inserts are sold separately.

Cartridges

Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R52...	**C52-FIX**	3	MS-19M-1	6 mm	AS-18T9-1	8T-9
	C52-ADJ					
SP52...	**C52SP-FIX**	3	MS-19M-1	6 mm	AS-18T9-1	8T-9
	C52SP-ADJ					

IC Inserts

Carbide Grade	Geometry	Part No. AM300®	Part No. AM200®	Part No. TiN	Insert Screws*	Driver
P35 (C5)	Standard	**OP-05T308-P**	**OP-05T308-H**	**OP-05T308-T**	IS-10-1	8T-9
K35 (C1)		**OP-05T308-1P**	**OP-05T308-1H**	**OP-05T308-1T**		
K25 (C2)		**OP-05T308-2P**	**OP-05T308-2H**	—		
P35 (C5)	High Rake	**OP-05T308-PHR**	**OP-05T308-HHR**	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A60

A60: 29 - 30
Key on A60: 2
A60: 3 - 5

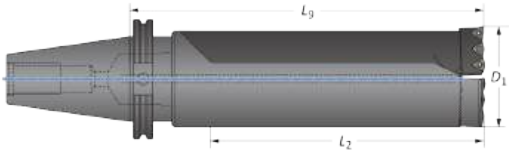
m = Metric (mm)
i = Imperial (in)

Mounting and adjusting screws sold in quantities of 4.
IC inserts and insert screws sold in quantities of 10.

52 Series: 81.28 mm - 86.36 mm (3.2000" - 3.4000")

Holders with Integrated CAT Shank





CAT Integral Shank

Style		Length	Holder L_2	Holder L_9	Part No. CAT50	Cartridges
Standard		1.0xD	3.414	6.500	**R52X10-CV50**	C52-...
		2.5xD	8.414	11.500	**R52X25-CV50**	
Stacked Plate		1.0xD	3.414	6.701	**SP52X10-CV50**	C52SP-...
		2.5xD	8.414	11.701	**SP52X25-CV50**	

NOTE: Holder includes cartridges; however, inserts are sold separately.

Cartridges

Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R52...	**C52-FIX** **C52-ADJ**	3	MS-19M-1	6 mm	AS-18T9-1	8T-9
SP52...	**C52SP-FIX** **C52SP-ADJ**	3	MS-19M-1	6 mm	AS-18T9-1	8T-9

IC Inserts

Carbide Grade	Geometry	Part No. AM300®	Part No. AM200®	Part No. TiN	Insert Screws*	Driver
P35 (C5)	Standard	**OP-05T308-P**	**OP-05T308-H**	**OP-05T308-T**	IS-10-1	8T-9
K35 (C1)		**OP-05T308-1P**	**OP-05T308-1H**	**OP-05T308-1T**		
K25 (C2)		**OP-05T308-2P**	**OP-05T308-2H**	—		
P35 (C5)	High Rake	**OP-05T308-PHR**	**OP-05T308-HHR**	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A60: 29 - 30
Key on A60: 2
A60: 3 - 5

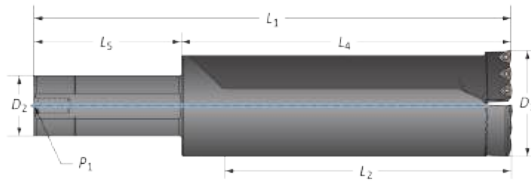
Ⓜ = Metric (mm)
ⓘ = Imperial (in)

Mounting and adjusting screws sold in quantities of 4.
IC inserts and insert screws sold in quantities of 10.

54 Series: 86.36 mm - 91.44 mm (3.4000" - 3.6000")

Straight Shank Holders





Straight Shank

	Style	Length	Holder L_2	Holder L_4	Holder L_1	Shank D_2	Shank L_5	Shank P_1	Part No.	Cartridges
m	Standard	1.0xD	92.9	136.5	216.5	50	80.0	—	**R54X10-50M**	C54-...
		2.5xD	226.3	269.9	349.9	50	80.0	—	**R54X25-50M**	
	Stacked Plate	1.0xD	92.9	141.6	221.6	50	80.0	—	**SP54X10-50M**	C54SP-...
		2.5xD	226.3	275.0	355.0	50	80.0	—	**SP54X25-50M**	
i	Standard	1.0xD	3.659	5.375	9.875	2	4.500	1/4 NPT	**R54X10-200L**	C54-...
		2.5xD	8.909	10.625	15.125	2	4.500	1/4 NPT	**R54X25-200L**	
	Stacked Plate	1.0xD	3.659	5.576	10.076	2	4.500	1/4 NPT	**SP54X10-200L**	C54SP-...
		2.5xD	8.909	10.826	15.326	2	4.500	1/4 NPT	**SP54X25-200L**	

NOTE: Holder includes cartridges; however, inserts are sold separately.

Cartridges

Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R54...	**C54-FIX**	3	MS-19M-1	6 mm	AS-18T9-1	8T-9
	C54-ADJ					
SP54...	**C54SP-FIX**	3	MS-19M-1	6 mm	AS-18T9-1	8T-9
	C54SP-ADJ					

IC Inserts

Carbide Grade	Geometry	Part No. AM300®	Part No. AM200®	Part No. TiN	Insert Screws*	Driver
P35 (C5)	Standard	**OP-05T308-P**	**OP-05T308-H**	**OP-05T308-T**	IS-10-1	8T-9
K35 (C1)		**OP-05T308-1P**	**OP-05T308-1H**	**OP-05T308-1T**		
K25 (C2)		**OP-05T308-2P**	**OP-05T308-2H**	—		
P35 (C5)	High Rake	**OP-05T308-PHR**	**OP-05T308-HHR**	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A60

A60: 29 - 30
Key on A60: 2

A60: 3 - 5

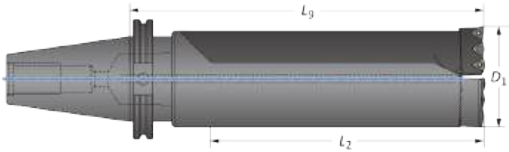
m = Metric (mm)
i = Imperial (in)

Mounting and adjusting screws sold in quantities of 4.
IC inserts and insert screws sold in quantities of 10.

54 Series: 86.36 mm - 91.44 mm (3.4000" - 3.6000")

Holders with Integrated CAT Shank





CAT Integral Shank

Style		Length	Holder L_2	Holder L_9	Part No. CAT50	Cartridges
Standard		1.0xD	3.659	6.751	**R54X10-CV50**	C54-...
		2.5xD	8.909	12.000	**R54X25-CV50**	
Stacked Plate		1.0xD	3.659	6.951	**SP54X10-CV50**	C54SP-...
		2.5xD	8.909	12.201	**SP54X25-CV50**	

NOTE: Holder includes cartridges; however, inserts are sold separately.

Cartridges

Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R54...	**C54-FIX**	3	MS-19M-1	6 mm	AS-18T9-1	8T-9
	C54-ADJ					
SP54...	**C54SP-FIX**	3	MS-19M-1	6 mm	AS-18T9-1	8T-9
	C54SP-ADJ					

IC Inserts

Carbide Grade	Geometry	Part No. AM300®	Part No. AM200®	Part No. TiN	Insert Screws*	Driver
P35 (C5)	Standard	**OP-05T308-P**	**OP-05T308-H**	**OP-05T308-T**	IS-10-1	8T-9
K35 (C1)		**OP-05T308-1P**	**OP-05T308-1H**	**OP-05T308-1T**		
K25 (C2)		**OP-05T308-2P**	**OP-05T308-2H**	—		
P35 (C5)	High Rake	**OP-05T308-PHR**	**OP-05T308-HHR**	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A60: 29 - 30
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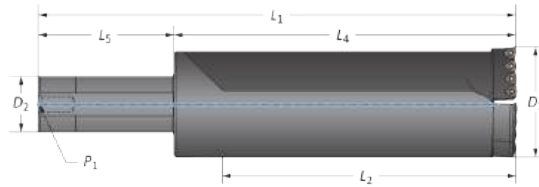
Ⓜ = Metric (mm)
ⓘ = Imperial (in)

Mounting and adjusting screws sold in quantities of 4.
IC inserts and insert screws sold in quantities of 10.

56 Series: 91.44 mm - 96.52 mm (3.6000" - 3.8000")

Straight Shank Holders





Straight Shank

	Style	Length	Holder L_2	Holder L_4	Holder L_1	Shank D_2	Shank L_5	Shank P_1	Part No.	Cartridges
m	Standard	1.0xD	98.6	149.4	229.4	50	80.0	—	**R56X10-50M**	C56-...
		2.5xD	238.3	289.1	369.1	50	80.0	—	**R56X25-50M**	
	Stacked Plate	1.0xD	98.6	154.4	234.4	50	80.0	—	**SP56X10-50M**	C56SP-...
		2.5xD	238.3	294.1	374.1	50	80.0	—	**SP56X25-50M**	
i	Standard	1.0xD	3.882	5.880	10.380	2	4.500	1/4 NPT	**R56X10-200L**	C56-...
		2.5xD	9.382	11.380	15.880	2	4.500	1/4 NPT	**R56X25-200L**	
	Stacked Plate	1.0xD	3.882	6.079	10.579	2	4.500	1/4 NPT	**SP56X10-200L**	C56SP-...
		2.5xD	9.382	11.579	16.079	2	4.500	1/4 NPT	**SP56X25-200L**	

NOTE: Holder includes cartridges; however, inserts are sold separately.

Cartridges

Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R56...	**C56-FIX**	4	MS-21M-1	8 mm	AS-18T9-1	8T-9
	C56-ADJ					
SP56...	**C56SP-FIX**	4	MS-21M-1	8 mm	AS-18T9-1	8T-9
	C56SP-ADJ					

IC Inserts

Carbide Grade	Geometry	Part No. AM300®	Part No. AM200®	Part No. TiN	Insert Screws*	Driver
P35 (C5)	Standard	**OP-05T308-P**	**OP-05T308-H**	**OP-05T308-T**	IS-10-1	8T-9
K35 (C1)		**OP-05T308-1P**	**OP-05T308-1H**	**OP-05T308-1T**		
K25 (C2)		**OP-05T308-2P**	**OP-05T308-2H**	—		
P35 (C5)	High Rake	**OP-05T308-PHR**	**OP-05T308-HHR**	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A60

A60: 29 - 30
Key on A60: 2

A60: 3 - 5

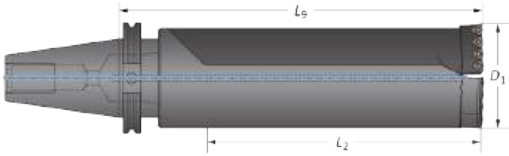
m = Metric (mm)
i = Imperial (in)

Mounting and adjusting screws sold in quantities of 4.
IC inserts and insert screws sold in quantities of 10.

56 Series: 91.44 mm - 96.52 mm (3.6000" - 3.8000")

Holders with Integrated CAT Shank





CAT Integral Shank

Style		Length	Holder L_2	Holder L_9	Part No. CAT50	Cartridges
Standard		1.0xD	3.882	7.255	**R56X10-CV50**	C56-...
		2.5xD	9.382	12.755	**R56X25-CV50**	
Stacked Plate		1.0xD	3.882	7.454	**SP56X10-CV50**	C56SP-...
		2.5xD	9.382	12.954	**SP56X25-CV50**	

NOTE: Holder includes cartridges; however, inserts are sold separately.

Cartridges

Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R56...	**C56-FIX** **C56-ADJ**	4	MS-21M-1	8 mm	AS-18T9-1	8T-9
SP56...	**C56SP-FIX** **C56SP-ADJ**	4	MS-21M-1	8 mm	AS-18T9-1	8T-9

IC Inserts

Carbide Grade	Geometry	Part No. AM300®	Part No. AM200®	Part No. TiN	Insert Screws*	Driver
P35 (C5)	Standard	**OP-05T308-P**	**OP-05T308-H**	**OP-05T308-T**	IS-10-1	8T-9
K35 (C1)		**OP-05T308-1P**	**OP-05T308-1H**	**OP-05T308-1T**		
K25 (C2)		**OP-05T308-2P**	**OP-05T308-2H**	—		
P35 (C5)	High Rake	**OP-05T308-PHR**	**OP-05T308-HHR**	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A60: 29 - 30
Key on A60: 2
A60: 3 - 5

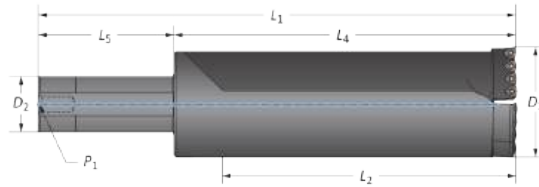
Ⓜ = Metric (mm)
ⓘ = Imperial (in)

Mounting and adjusting screws sold in quantities of 4.
IC inserts and insert screws sold in quantities of 10.

58 Series: 96.52 mm - 101.60 mm (3.8000" - 4.0000")

Straight Shank Holders





Straight Shank

	Style	Length	Holder L_2	Holder L_4	Holder L_1	Shank D_2	Shank L_5	Shank P_1	Part No.	Cartridges
m	Standard	1.0xD	98.6	149.4	229.4	50	80.0	—	**R58X10-50M**	C58-...
		2.5xD	251.0	301.8	381.8	50	80.0	—	**R58X25-50M**	
	Stacked Plate	1.0xD	98.6	154.5	234.5	50	80.0	—	**SP58X10-50M**	C58SP-...
		2.5xD	251.0	306.9	386.9	50	80.0	—	**SP58X25-50M**	
i	Standard	1.0xD	3.882	5.883	10.383	2	4.500	1/4 NPT	**R58X10-200L**	C58-...
		2.5xD	9.882	11.883	16.383	2	4.500	1/4 NPT	**R58X25-200L**	
	Stacked Plate	1.0xD	3.882	6.082	10.582	2	4.500	1/4 NPT	**SP58X10-200L**	C58SP-...
		2.5xD	9.882	12.082	16.582	2	4.500	1/4 NPT	**SP58X25-200L**	

NOTE: Holder includes cartridges; however, inserts are sold separately.

Cartridges

Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R58...	**C58-FIX**	4	MS-21M-1	8 mm	AS-18T9-1	8T-9
	C58-ADJ					
SP58...	**C58SP-FIX**	4	MS-21M-1	8 mm	AS-18T9-1	8T-9
	C58SP-ADJ					

IC Inserts

Carbide Grade	Geometry	Part No. AM300®	Part No. AM200®	Part No. TiN	Insert Screws*	Driver
P35 (C5)	Standard	**OP-05T308-P**	**OP-05T308-H**	**OP-05T308-T**	IS-10-1	8T-9
K35 (C1)		**OP-05T308-1P**	**OP-05T308-1H**	**OP-05T308-1T**		
K25 (C2)		**OP-05T308-2P**	**OP-05T308-2H**	—		
P35 (C5)	High Rake	**OP-05T308-PHR**	**OP-05T308-HHR**	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A60

A60: 29 - 30
Key on A60: 2

A60: 3 - 5

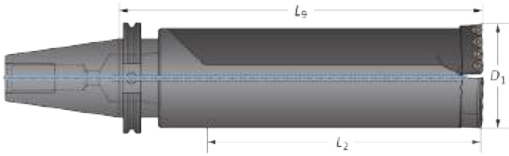
m = Metric (mm)
i = Imperial (in)

Mounting and adjusting screws sold in quantities of 4.
IC inserts and insert screws sold in quantities of 10.

58 Series: 96.52 mm - 101.60 mm (3.8000" - 4.0000")

Holders with Integrated CAT Shank





CAT Integral Shank

Style		Length	Holder L_2	Holder L_9	Part No. CAT50	Cartridges
Standard		1.0xD	3.882	7.258	**R58X10-CV50**	C58-...
		2.5xD	9.882	13.258	**R58X25-CV50**	
Stacked Plate		1.0xD	3.882	7.457	**SP58X10-CV50**	C58SP-...
		2.5xD	9.882	13.457	**SP58X25-CV50**	

NOTE: Holder includes cartridges; however, inserts are sold separately.

Cartridges

Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R58...	**C58-FIX**	4	MS-21M-1	8 mm	AS-18T9-1	8T-9
	C58-ADJ					
SP58...	**C58SP-FIX**	4	MS-21M-1	8 mm	AS-18T9-1	8T-9
	C58SP-ADJ					

IC Inserts

Carbide Grade	Geometry	Part No. AM300®	Part No. AM200®	Part No. TiN	Insert Screws*	Driver
P35 (C5)	Standard	**OP-05T308-P**	**OP-05T308-H**	**OP-05T308-T**	IS-10-1	8T-9
K35 (C1)		**OP-05T308-1P**	**OP-05T308-1H**	**OP-05T308-1T**		
K25 (C2)		**OP-05T308-2P**	**OP-05T308-2H**	—		
P35 (C5)	High Rake	**OP-05T308-PHR**	**OP-05T308-HHR**	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A60: 29 - 30
Key on A60: 2
A60: 3 - 5

Ⓜ = Metric (mm)
ⓘ = Imperial (in)

Mounting and adjusting screws sold in quantities of 4.
IC inserts and insert screws sold in quantities of 10.

Recommended Drilling Data | Metric (mm)

REVOLUTION DRILL

ISO	Material	Hardness (BHN)	Speed (m/min) AM300®	AM200®	TiN	Feed Rate (mm/rev)
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 250	274 - 396	259 - 366	213 - 274	0.09 - 0.18
P	**Low-Carbon Steel** 1010, 1020, 1025, etc.	85 - 275	259 - 381	244 - 351	198 - 259	0.08 - 0.17
P	**Medium-Carbon Steel** 1030, 1040, 1050, etc.	125 - 325	244 - 320	229 - 290	183 - 259	0.09 - 0.17
P	**Alloy Steel** 4140, 5140, 8640, etc.	125 - 375	229 - 305	213 - 274	183 - 259	0.09 - 0.17
P	**High-Strength Alloy** 4340, 4330V, 300M, etc.	225 - 400	183 - 259	168 - 229	122 - 198	0.08 - 0.13
P	**Structural Steel** A36, A285, A516, etc.	100 - 350	259 - 320	244 - 290	198 - 259	0.08 - 0.17
P	**Tool Steel** H-13, H-21, A-4, S-3, etc.	150 - 250	122 - 244	107 - 213	76 - 198	0.06 - 0.13
M	**Stainless Steel 400 Series** 416, 420, etc.	185 - 350	183 - 259	168 - 229	122 - 198	0.08 - 0.15
M	**Stainless Steel 300 Series** 304, 316, 17-4PH, etc.	135 - 275	183 - 259	168 - 229	122 - 198	0.08 - 0.15
M	**Super Duplex Stainless Steel**	135 - 275	152 - 228	137 - 198	91 - 152	0.05 - 0.12
K	**Nodular, Grey, Ductile Cast Iron**	120 - 320	213 - 274	198 - 244	152 - 213	0.10 - 0.20
N	**Cast Aluminum**	30 - 180	381 - 503	381 - 472	290 - 335	0.15 - 0.30
N	**Wrought Aluminum**	30 - 180	381 - 503	381 - 472	290 - 335	0.15 - 0.30
N	**Brass**	30 - 100	290 - 411	274 - 381	229 - 335	0.13 - 0.23
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 310	76 - 137	76 - 107	46 - 91	0.06 - 0.11

Material Constants

Type of Material	Hardness (BHN)	K_m (kPa)
Free-Machining Steel	100 - 250	5.17
Low-Carbon Steel	85 - 275	5.86
Medium-Carbon Steel	125 - 325	6.21
Alloy Steel	125 - 375	6.90
High-Strength Steel	225 - 400	7.93
Structural Steel	100 - 350	6.90
Tool Steel	150 - 250	6.21
Stainless Steel 400 Series	185 - 350	7.45
Stainless Steel 300 Series	135 - 275	6.48
Super Duplex Stainless Steel	135 - 275	6.48
Nodular, Ductile Cast Iron	120 - 320	4.48
Grey Cast Iron	120 - 320	5.17
Cast Aluminum	30 - 180	2.76
Wrought Aluminum	30 - 180	2.76
Aluminum Bronze	100 - 250	3.45
Brass	100	2.41
Copper	60	2.07
High-Temperature Alloy	140 - 310	9.93
Titanium Alloy	140 - 310	4.97
Aerospace Alloy	185 - 350	4.48
Wear Plate	400 - 600	11.04
Hardened Steel	300 - 500	9.66

Formulas

1.	**RPM**	**= (318.31 • m/min) / DIA**
	RPM	= revolutions per minute (rev/min)
	m/min	= speed (m/min)
	DIA	= diameter of drill (mm)
2.	**HP**	**= (DIA^2 • mm/rev • RPM • K_m) / 181,018**
	kW	= tool power (kW)
	DIA	= diameter of drill (mm)
	mm/rev	= feed rate (mm/rev)
	RPM	= revolutions per minute (rev/min)
	K_m	= specific cutting energy (kPa) machine efficiency (using 181,018 as constant)
3.	**Thrust**	**= 148.78 • mm/rev • DIA • K_m**
	Thrust	= axial thrust (N)
	mm/rev	= feed rate (mm/rev)
	DIA	= diameter of drill (mm)
	K_m	= specific cutting energy (kPa)
4.	**Torque**	**= (kW • 9549.3) / RPM**
	Torque	= torque (N·m)
	kW	= tool power (kW)
	RPM	= revolutions per minute (rev/min)

The table and equations on this page are found in the "Machinery's Handbook." Permission to simplify and print the equations is granted by the Editor of the "Machinery's Handbook."

IMPORTANT: The speeds and feeds listed above are considered a general starting point for all applications. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

Recommended Drilling Data | Imperial (in)

REVOLUTION DRILL

ISO	Material	Hardness (BHN)	Speed (SFM) AM300®	AM200®	TiN	Feed Rate (IPR)
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 250	900 - 1300	850 - 1200	700 - 900	0.0035 - 0.0070
P	**Low-Carbon Steel** 1010, 1020, 1025, etc.	85 - 275	850 - 1250	800 - 1150	650 - 850	0.0030 - 0.0065
P	**Medium-Carbon Steel** 1030, 1040, 1050, etc.	125 - 325	800 - 1050	750 - 950	600 - 850	0.0035 - 0.0065
P	**Alloy Steel** 4140, 5140, 8640, etc.	125 - 375	750 - 1000	700 - 900	600 - 850	0.0035 - 0.0065
P	**High-Strength Alloy** 4340, 4330V, 300M, etc.	225 - 400	600 - 850	550 - 750	400 - 650	0.0030 - 0.0050
P	**Structural Steel** A36, A285, A516, etc.	100 - 350	850 - 1050	800 - 950	650 - 850	0.0030 - 0.0065
P	**Tool Steel** H-13, H-21, A-4, S-3, etc.	150 - 250	400 - 800	350 - 700	250 - 650	0.0025 - 0.0050
M	**Stainless Steel 400 Series** 416, 420, etc.	185 - 350	600 - 850	550 - 750	400 - 650	0.0030 - 0.0060
M	**Stainless Steel 300 Series** 304, 316, 17-4PH, etc.	135 - 275	600 - 850	550 - 750	400 - 650	0.0030 - 0.0060
M	**Super Duplex Stainless Steel**	135 - 275	500 - 750	450 - 650	300 - 550	0.0020 - 0.0050
K	**Nodular, Grey, Ductile Cast Iron**	120 - 320	700 - 900	650 - 800	500 - 700	0.0040 - 0.0080
N	**Cast Aluminum**	30 - 180	1250 - 1650	1200 - 1550	950 - 1100	0.0060 - 0.0120
N	**Wrought Aluminum**	30 - 180	1250 - 1650	1200 - 1550	950 - 1100	0.0060 - 0.0120
N	**Brass**	30 - 100	950 - 1350	900 - 1250	750 - 1100	0.0050 - 0.0090
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 310	250 - 450	250 - 350	150 - 300	0.0025 - 0.0050

Material Constants

Type of Material	Hardness (BHN)	K_m (lbs/in²)
Free-Machining Steel	100 - 250	0.75
Low-Carbon Steel	85 - 275	0.85
Medium-Carbon Steel	125 - 325	0.90
Alloy Steel	125 - 375	1.00
High-Strength Steel	225 - 400	1.15
Structural Steel	100 - 350	1.00
Tool Steel	150 - 250	0.90
Stainless Steel 400 Series	185 - 350	1.08
Stainless Steel 300 Series	135 - 275	0.94
Super Duplex Stainless Steel	135 - 275	0.94
Nodular, Ductile Cast Iron	120 - 320	0.65
Grey Cast Iron	120 - 320	0.75
Cast Aluminum	30 - 180	0.40
Wrought Aluminum	30 - 180	0.40
Aluminum Bronze	100 - 250	0.50
Brass	100	0.35
Copper	60	0.30
High-Temperature Alloy	140 - 310	1.44
Titanium Alloy	140 - 310	0.72
Aerospace Alloy	185 - 350	0.70
Wear Plate	400 - 600	1.60
Hardened Steel	300 - 500	1.40

Formulas

1.	**RPM**	**= (3.82 • SFM) / DIA**
	RPM	= revolutions per minute (rev/min)
	SFM	= speed (ft/min)
	DIA	= diameter of drill (inch)
2.	**HP**	**= (0.6676 • DIA² • IPR • RPM • K_m) / 0.80**
	HP	= tool power (HP)
	DIA	= diameter of drill (inch)
	IPR	= feed rate (in/rev)
	RPM	= revolutions per minute (rev/min)
	K_m	= specific cutting energy (lbs/in²) machine efficiency (using 0.80 as constant)
3.	**Thrust**	**= 148,500 • IPR • DIA • K_m**
	Thrust	= axial thrust (lbs)
	IPR	= feed rate (in/rev)
	DIA	= diameter of drill (inch)
	K_m	= specific cutting energy (lbs/in²)
4.	**Torque**	**= (HP • 5252) / RPM**
	Torque	= torque (ft-lbs)
	HP	= tool power (HP)
	RPM	= revolutions per minute (rev/min)

The table and equations on this page are found in the "Machinery's Handbook." Permission to simplify and print the equations is granted by the Editor of the "Machinery's Handbook."

IMPORTANT: The speeds and feeds listed above are considered a general starting point for all applications. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

SECTION A70

Opening Drill®

Opening Drill®

50.80 mm - 142.75 mm (2.0000" - 5.6200")



Opening Drill

The Opening Drill is an extremely effective tool designed to enlarge existing holes. It is available in nine different shank styles: Straight, ABS 63, CAT V40, CAT V50, HSK 63A/C, HSK 100A/C, BT 40, BT 50, and DIN50.

In a single operation, an existing hole can be opened and large amounts of material can be removed. The insert design reduces chip size and improves evacuation. Also, inventory and cost are reduced by the adjustable diameters.

Need larger holes | No problem

- Excellent chip control.
- Improves hole quality and surface finish.
- Provides maximum durability and stability.

Applicable Industries

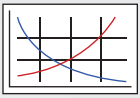
- Aerospace
- Agriculture
- Automotive
- Defense
- General Production
- Heavy Equipment
- Marine
- Oil and Gas
- Renewable Energy/ Energy
- Structural Steel Fabricator
- Tool, Mold, and Die

Reference Icons

The following icons will appear throughout the catalog to help you navigate between products.



Setup / Assembly Information
Detailed instructions and information regarding the corresponding part(s).



Recommended Cutting Data
Speed and feed recommendations for optimum and safe drilling.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

WARNING means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

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Product Overview 4
Setup Instructions 5
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Drill Series

Opening Drill: 50.80 mm - 142.75 mm (2.0000" - 5.6200")

Straight Shank 7
CAT Integral Shank 8
BT Integral Shank 9
HSK Integral Shank 10
ABS63 Integral Shank 11
DIN50 Integral Shank 12

Recommended Drilling Data

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Imperial (in) 14
Minimum Pilot Hole Diameter 15

System Overview

Features & Benefits



2 Inserts
(OP1 - OP3 series)



3 Inserts
(OP4 series)

Features & Benefits

- Opens an existing hole in a single operation.
- Can be used as a rotating or stationary tool.
- Can be used in rough boring operations.
- Smooth cutting action and quiet operations in lathes and mills.
- Unique design enables larger holes to be made on low horsepower machines.
- Ignores core shifts up to 3.18 mm (1/8") providing straight and true holes without the need for boring.

		OP1 47.63 mm - 50.80 mm 1.8750" - 2.0000"	OP2 47.63 mm - 50.80 mm 1.8750" - 2.0000"	OP3 47.63 mm - 50.80 mm 1.8750" - 2.0000"	OP4 47.63 mm - 50.80 mm 1.8750" - 2.0000"
Shank Options	Straight (mm)	40	40	40	50
	Straight (in)	1.500	1.500	1.500	2.000
	HSK63*	●	●	●	●
	HSK100	●	●	●	●
	BT40*	●	●	●	●
	BT50	●	●	●	●
	CAT40*	●	●	●	●
	CAT50	●	●	●	●
	ABS63*	●	●	●	●
	DIN50	●	●	●	●
Inserts per Cartridge		2	2	2	3

**Long length not available for OP4 series.*

Shank Options



Straight



CAT40



CAT50



BT40



BT50



HSK63



HSK100



DIN50



ABS63

System Overview

Product Overview

IC Inserts

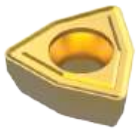
- The design allows for excellent chip control and aggressive penetration rates.
- The proprietary AM200® and AM300® coatings increase tool life above competitors' premium coatings.
- The same inserts are used for both Revolution Drill® and Opening Drill® products.



AM300®



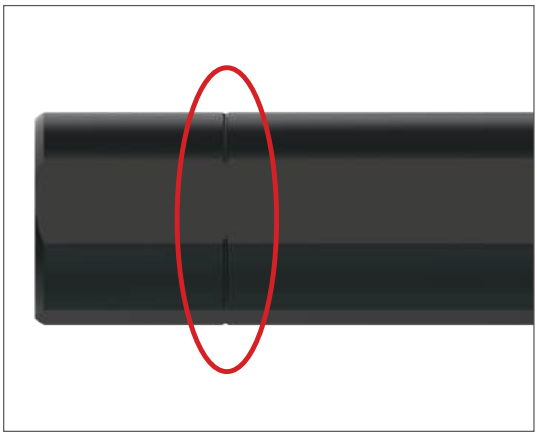
AM200®



TiN

Insert Application Recommendations

Carbide Grade Options	
P35 (C5)	General purpose carbide grade suitable for most applications. ▶ *Common application in steels and stainless steels.*
K35 (C1)	Toughest carbide grade. Provides the best combination of edge strength and tool life. ▶ *Recommended for less rigid applications.*
K25 (C2)	Higher wear-resistant carbide suitable for abrasive material applications. ▶ *Recommended for grey, ductile, and nodular irons.*
Additional Geometry Option	
High Rake (HR)	Provides superior chip control and tool life in long chipping carbon and alloy steels below 200 BHN.



Straight Shanks

- Designed for lathe applications.
- Can be cut off for use in end mill holders.
- The score mark (circled above) is provided for recommended cut length.
- Cut and deburr at the score mark.
- This improves rigidity when the body sits against the face of an end mill holder.



System Overview

Setup Instructions



Step 1:

Loosen the mounting screws on both cartridges.



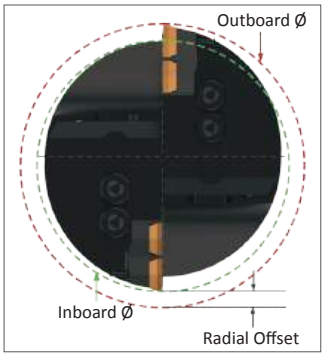
Step 2:

Set one cartridge to the finish diameter by tightening the adjustment screw against the adjustment pin.



Step 3:

Tighten the mounting screws on the cartridge to 15-19 N-m (11-14 ft-lbf).



Step 4:

Set the opposing cartridge with 4.06 mm - 5.08 mm (0.200" - 0.160") radial offset inward by tightening the adjustment screw against the adjustment pin (optimum situation for each insert to remove equal material).



Step 5:

Tighten the mounting screws on the cartridge to 15-19 N-m (11-14 ft-lbf).

System Overview

Product Nomenclature

Opening Drill Holders

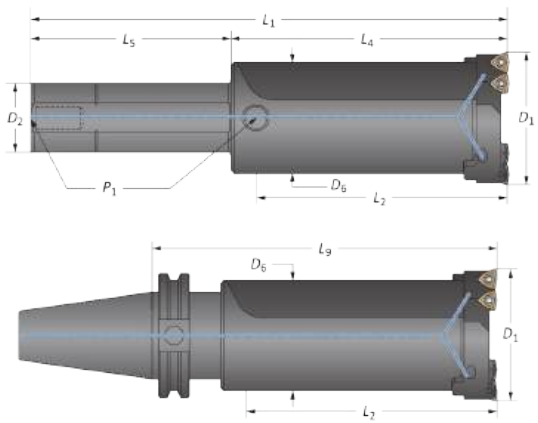
OP1	–	1S	–	SS1.5	
Series		**Drill Length**		**Shank Style**	
OP1		**1S** = Short		**40M** = 40 mm straight	**BT40** = BT40
OP2		**1L** = Long		**50M** = 50 mm straight	**BT50** = BT50
OP3				**SS1.5** = 1.500 Ø straight	**CV40** = CAT40
OP4				**SS2.0** = 2.000 Ø straight	**CV50** = CAT50
				HSK63 = HSK 63A/C	**ABS63** = ABS63
				HSK100 = HSK 100A/C	**DV50** = DIN50

Revolution Drill & Opening Drill Inserts

OP	–	05	T3	08	–	1	H		HR
		IC Type	**Thickness**	**Radius**		**Carbide Grade**	**Shank Style**		**Geometry**
		05 = 5/16"	**T3** = 5/32"	**08** = 1/32"		**Blank** = P35 (C5)	**P** = AM300®	**A** = TiAlN	**Blank** = General Purpose
						1 = K35 (C1)	**H** = AM200®	**N** = TiCN	**HR** = High Rake
						2 = K25 (C2)	**T** = TiN	**U** = Uncoated	

Reference Key

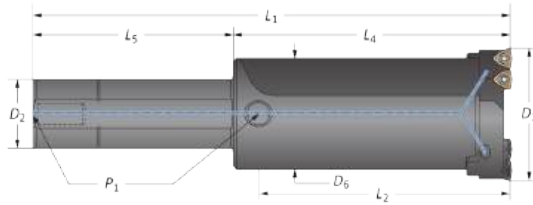
Symbol	Attribute
D_1	Drill diameter range
D_2	Shank diameter
D_6	Body diameter
L_1	Overall length
L_2	Maximum drill depth
L_4	Holder length
L_5	Shank length
L_9	Gauge length
P_1	Rear pipe tap



Opening Drill: 50.80 mm - 142.75 mm (2.0000" - 5.6200")

Straight Shank





	D_1 Range	Length	Holder D_6	Holder L_2	Holder L_4	Holder L_1	Shank D_2	Shank L_5	Shank P_1	Part No.	Cartridges
m	50.80 - 63.50	Short	46.7	83.5	104.4	174.4	40	70.0	—	**OP1-1S-40M**	OP1-WC05
		Long	46.7	140.6	161.6	231.6	40	70.0	—	**OP1-1L-40M**	
	63.50 - 76.20	Short	56.4	118.5	141.2	211.3	40	70.0	—	**OP2-1S-40M**	OP2-WC05
		Long	56.4	194.7	217.4	287.5	40	70.0	—	**OP2-1L-40M**	
	76.20 - 104.65	Short	71.3	129.9	153.9	224.0	40	70.0	—	**OP3-1S-40M**	OP3-WC05
		Long	71.3	231.5	255.5	325.6	40	70.0	—	**OP3-1L-40M**	
	104.65 - 142.75	Short	88.9	127.4	153.9	234.0	50	80.0	—	**OP4-1S-50M**	OP4-WC05
		Long	88.9	267.1	293.6	373.7	50	80.0	—	**OP4-1L-50M**	
i	2.0000 - 2.5000	Short	1.840	3.286	4.112	8.112	1-1/2	4.000	1/4 NPT	**OP1-1S-SS1.5**	OP1-WC05
		Long	1.840	5.536	6.362	10.362	1-1/2	4.000	1/4 NPT	**OP1-1L-SS1.5**	
	2.5000 - 3.0000	Short	2.220	4.666	5.561	9.561	1-1/2	4.000	1/4 NPT	**OP2-1S-SS1.5**	OP2-WC05
		Long	2.220	7.666	8.561	12.561	1-1/2	4.000	1/4 NPT	**OP2-1L-SS1.5**	
	3.0000 - 4.1200	Short	2.806	5.114	6.061	10.061	1-1/2	4.000	1/4 NPT	**OP3-1S-SS1.5**	OP3-WC05
		Long	2.806	9.114	10.061	14.061	1-1/2	4.000	1/4 NPT	**OP3-1L-SS1.5**	
	4.1200 - 5.6200	Short	3.500	5.017	6.061	10.561	2	4.500	1/4 NPT	**OP4-1S-SS2.0**	OP4-WC05
		Long	3.500	10.517	11.561	16.061	2	4.500	1/4 NPT	**OP4-1L-SS2.0**	

NOTE: Holder includes cartridges; however, inserts are sold separately.

Cartridges

Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
OP1-WC05	2	MS-13M-1	5 mm	AS-10T9-1	8T-9
OP2-WC05	2	MS-15M-1	5 mm	AS-10T9-1	8T-9
OP3-WC05	2	MS-15M-1	5 mm	AS-12T9-1	8T-9
OP4-WC05	3	MS-15M-1	5 mm	AS-14T9-1	8T-9

IC Inserts

Carbide Grade	Geometry	Part No. AM300®	Part No. AM200®	Part No. TiN	Insert Screws*	Driver
P35 (C5)	Standard	**OP-05T308-P**	**OP-05T308-H**	**OP-05T308-T**	IS-10-1	8T-9
K35 (C1)		**OP-05T308-1P**	**OP-05T308-1H**	**OP-05T308-1T**		
K25 (C2)		**OP-05T308-2P**	**OP-05T308-2H**	—		
P35 (C5)	High Rake	**OP-05T308-PHR**	**OP-05T308-HHR**	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A70: 13 - 14
Key on A70: 2

A70: 3 - 4

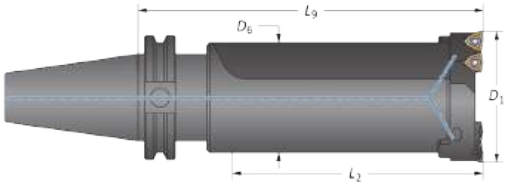
m = Metric (mm)
i = Imperial (in)

Mounting and adjusting screws sold in quantities of 4.
IC inserts and insert screws sold in quantities of 10.

Opening Drill: 50.80 mm - 142.75 mm (2.0000" - 5.6200")

CAT Integral Shank





CAT40 Shanks

	D_1 Range	Length	Holder D_6	Holder L_2	Holder L_9	Part No.	Cartridges
	2.0000 - 2.5000	Short	1.840	3.286	5.487	**OP1-1S-CV40**	OP1-WC05
		Long	1.840	5.536	7.737	**OP1-1L-CV40**	
ⓘ	2.5000 - 3.0000	Short	2.220	4.666	6.936	**OP2-1S-CV40**	OP2-WC05
		Long	2.220	7.666	9.936	**OP2-1L-CV40**	
	3.0000 - 4.1200	Short	2.806	5.114	7.436	**OP3-1S-CV40**	OP3-WC05
		Long	2.806	9.114	11.436	**OP3-1L-CV40**	
	4.1200 - 5.6200	Short	3.500	5.017	7.436	**OP4-1S-CV40**	OP4-WC05

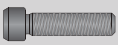
NOTE: Holder includes cartridges; however, inserts are sold separately.

CAT50 Shanks

	D_1 Range	Length	Holder D_6	Holder L_2	Holder L_9	Part No.	Cartridges
	2.0000 - 2.5000	Short	1.840	3.286	5.487	**OP1-1S-CV50**	OP1-WC05
		Long	1.840	5.536	7.737	**OP1-1L-CV50**	
	2.5000 - 3.0000	Short	2.220	4.666	6.936	**OP2-1S-CV50**	OP2-WC05
ⓘ		Long	2.220	7.666	9.936	**OP2-1L-CV50**	
	3.0000 - 4.1200	Short	2.806	5.114	7.436	**OP3-1S-CV50**	OP3-WC05
		Long	2.806	9.114	11.436	**OP3-1L-CV50**	
	4.1200 - 5.6200	Short	3.500	5.017	7.436	**OP4-1S-CV50**	OP4-WC05
		Long	3.500	10.517	12.936	**OP4-1L-CV50**	

NOTE: Holder includes cartridges; however, inserts are sold separately.

Cartridges

 Replacement Cartridges	Qty. Inserts Needed	 Mounting Screw	Key Size	 Adjusting Screw	Driver
OP1-WC05	2	MS-13M-1	5 mm	AS-10T9-1	8T-9
OP2-WC05	2	MS-15M-1	5 mm	AS-10T9-1	8T-9
OP3-WC05	2	MS-15M-1	5 mm	AS-12T9-1	8T-9
OP4-WC05	3	MS-15M-1	5 mm	AS-14T9-1	8T-9

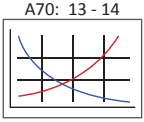
IC Inserts

Carbide Grade	Geometry	Part No.  AM300®	Part No.  AM200®	Part No.  TiN	Insert Screws*	Driver
P35 (C5)	Standard	**OP-05T308-P**	**OP-05T308-H**	**OP-05T308-T**	IS-10-1	8T-9
K35 (C1)		**OP-05T308-1P**	**OP-05T308-1H**	**OP-05T308-1T**		
K25 (C2)		**OP-05T308-2P**	**OP-05T308-2H**	—		
P35 (C5)	High Rake	**OP-05T308-PHR**	**OP-05T308-HHR**	—	IS-10-1	8T-9

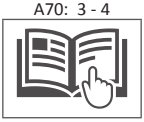
*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A70: 13 - 14

Key on A70: 2



A70: 3 - 4



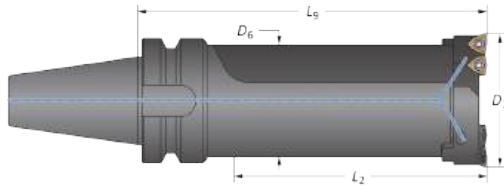
ⓜ = Metric (mm)
ⓘ = Imperial (in)

Mounting and adjusting screws sold in quantities of 4.
IC inserts and insert screws sold in quantities of 10.

Opening Drill: 50.80 mm - 142.75 mm (2.0000" - 5.6200")

BT Integral Shank





BT40 Shanks

	D_1 Range	Length	Holder D_6	Holder L_2	Holder L_9	Part No.	Cartridges
ⓜ	50.80 - 63.50	Short	46.7	83.5	139.4	**OP1-1S-BT40**	OP1-WC05
		Long	46.7	140.6	196.5	**OP1-1L-BT40**	
	63.50 - 76.20	Short	56.4	118.5	176.2	**OP2-1S-BT40**	OP2-WC05
		Long	56.4	194.7	252.4	**OP2-1L-BT40**	
	76.20 - 104.65	Short	71.3	129.9	188.9	**OP3-1S-BT40**	OP3-WC05
		Long	71.3	231.5	290.5	**OP3-1L-BT40**	
	104.65 - 142.75	Short	88.9	127.4	188.9	**OP4-1S-BT40**	OP4-WC05

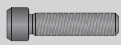
NOTE: Holder includes cartridges; however, inserts are sold separately.

BT50 Shanks

	D_1 Range	Length	Holder D_6	Holder L_2	Holder L_9	Part No.	Cartridges
ⓜ	50.80 - 63.50	Short	46.7	83.5	148.9	**OP1-1S-BT50**	OP1-WC05
		Long	46.7	140.6	206.0	**OP1-1L-BT50**	
	63.50 - 76.20	Short	56.4	118.5	185.7	**OP2-1S-BT50**	OP2-WC05
		Long	56.4	194.7	261.9	**OP2-1L-BT50**	
	76.20 - 104.65	Short	71.3	129.9	198.4	**OP3-1S-BT50**	OP3-WC05
		Long	71.3	231.5	300.0	**OP3-1L-BT50**	
	104.65 - 142.75	Short	88.9	127.4	198.4	**OP4-1S-BT50**	OP4-WC05
		Long	88.9	267.1	338.1	**OP4-1L-BT50**	

NOTE: Holder includes cartridges; however, inserts are sold separately.

Cartridges

 Replacement Cartridges	Qty. Inserts Needed	 Mounting Screw	Key Size	 Adjusting Screw	Driver
OP1-WC05	2	MS-13M-1	5 mm	AS-10T9-1	8T-9
OP2-WC05	2	MS-15M-1	5 mm	AS-10T9-1	8T-9
OP3-WC05	2	MS-15M-1	5 mm	AS-12T9-1	8T-9
OP4-WC05	3	MS-15M-1	5 mm	AS-14T9-1	8T-9

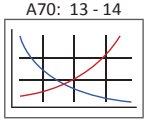
IC Inserts

Carbide Grade	Geometry	Part No.  AM300®	Part No.  AM200®	Part No.  TiN	Insert Screws*	Driver
P35 (C5)	Standard	**OP-05T308-P**	**OP-05T308-H**	**OP-05T308-T**	IS-10-1	8T-9
K35 (C1)		**OP-05T308-1P**	**OP-05T308-1H**	**OP-05T308-1T**		
K25 (C2)		**OP-05T308-2P**	**OP-05T308-2H**	—		
P35 (C5)	High Rake	**OP-05T308-PHR**	**OP-05T308-HHR**	—	IS-10-1	8T-9

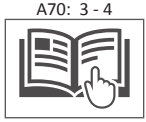
*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A70: 13 - 14

Key on A70: 2



A70: 3 - 4



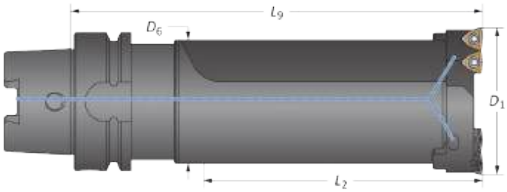
ⓜ = Metric (mm)
ⓘ = Imperial (in)

Mounting and adjusting screws sold in quantities of 4.
IC inserts and insert screws sold in quantities of 10.

Opening Drill: 50.80 mm - 142.75 mm (2.0000" - 5.6200")

HSK Integral Shank





HSK63 Shanks

	D_1 Range	Length	Holder D_6	Holder L_2	Holder L_9	Part No.	Cartridges
	50.80 - 63.50	Short	46.7	83.5	150.1	**OP1-1S-HSK63**	OP1-WC05
		Long	46.7	140.6	207.3	**OP1-1L-HSK63**	
ⓘ	63.50 - 76.20	Short	56.4	118.5	186.9	**OP2-1S-HSK63**	OP2-WC05
		Long	56.4	194.7	263.1	**OP2-1L-HSK63**	
	76.20 - 104.65	Short	71.3	129.9	199.6	**OP3-1S-HSK63**	OP3-WC05
		Long	71.3	231.5	301.2	**OP3-1L-HSK63**	
	104.65 - 142.75	Short	88.9	127.4	199.6	**OP4-1S-HSK63**	OP4-WC05

NOTE: Holder includes cartridges; however, inserts are sold separately.

HSK100 Shanks

	D_1 Range	Length	Holder D_6	Holder L_2	Holder L_9	Part No.	Cartridges
	50.80 - 63.50	Short	46.7	83.5	152.6	**OP1-1S-HSK100**	OP1-WC05
		Long	46.7	140.6	209.8	**OP1-1L-HSK100**	
	63.50 - 76.20	Short	56.4	118.5	189.4	**OP2-1S-HSK100**	OP2-WC05
ⓘ		Long	56.4	194.7	265.6	**OP2-1L-HSK100**	
	76.20 - 104.65	Short	71.3	129.9	202.1	**OP3-1S-HSK100**	OP3-WC05
		Long	71.3	231.5	303.7	**OP3-1L-HSK100**	
	104.65 - 142.75	Short	88.9	127.4	202.1	**OP4-1S-HSK100**	OP4-WC05
		Long	88.9	267.1	341.8	**OP4-1L-HSK100**	

NOTE: Holder includes cartridges; however, inserts are sold separately.

Cartridges

Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
OP1-WC05	2	MS-13M-1	5 mm	AS-10T9-1	8T-9
OP2-WC05	2	MS-15M-1	5 mm	AS-10T9-1	8T-9
OP3-WC05	2	MS-15M-1	5 mm	AS-12T9-1	8T-9
OP4-WC05	3	MS-15M-1	5 mm	AS-14T9-1	8T-9

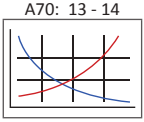
IC Inserts

Carbide Grade	Geometry	Part No. AM300®	Part No. AM200®	Part No. TiN	Insert Screws*	Driver
P35 (C5)	Standard	**OP-05T308-P**	**OP-05T308-H**	**OP-05T308-T**	IS-10-1	8T-9
K35 (C1)		**OP-05T308-1P**	**OP-05T308-1H**	**OP-05T308-1T**		
K25 (C2)		**OP-05T308-2P**	**OP-05T308-2H**	—		
P35 (C5)	High Rake	**OP-05T308-PHR**	**OP-05T308-HHR**	—	IS-10-1	8T-9

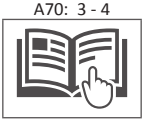
*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A70: 13 - 14

Key on A70: 2



A70: 3 - 4



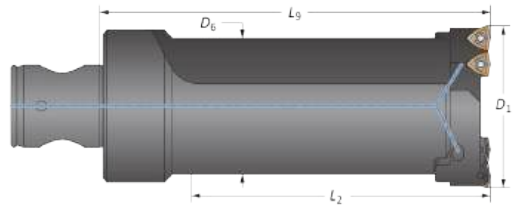
ⓜ = Metric (mm)
ⓘ = Imperial (in)

Mounting and adjusting screws sold in quantities of 4.
IC inserts and insert screws sold in quantities of 10.

Opening Drill: 50.80 mm - 142.75 mm (2.0000" - 5.6200")

ABS63 Integral Shank





ABS63 Shanks

D_1 Range	Length	Holder D_6	Holder L_2	Holder L_9	Part No.	Cartridges
50.80 - 63.50	Short	46.7	83.5	141.3	**OP1-1S-ABS63**	OP1-WC05
	Long	46.7	140.6	198.5	**OP1-1L-ABS63**	
63.50 - 76.20	Short	56.4	118.5	160.3	**OP2-1S-ABS63**	OP2-WC05
	Long	56.4	194.7	236.5	**OP2-1L-ABS63**	
76.20 - 104.65	Short	71.3	129.9	173.0	**OP3-1S-ABS63**	OP3-WC05
	Long	71.3	231.5	274.6	**OP3-1L-ABS63**	
104.65 - 142.75	Short	88.9	127.4	173.0	**OP4-1S-ABS63**	OP4-WC05

NOTE: Holder includes cartridges; however, inserts are sold separately.

Cartridges

Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
OP1-WC05	2	MS-13M-1	5 mm	AS-10T9-1	8T-9
OP2-WC05	2	MS-15M-1	5 mm	AS-10T9-1	8T-9
OP3-WC05	2	MS-15M-1	5 mm	AS-12T9-1	8T-9
OP4-WC05	3	MS-15M-1	5 mm	AS-14T9-1	8T-9

IC Inserts

Carbide Grade	Geometry	Part No. AM300®	Part No. AM200®	Part No. TiN	Insert Screws*	Driver
P35 (C5)	Standard	**OP-05T308-P**	**OP-05T308-H**	**OP-05T308-T**	IS-10-1	8T-9
K35 (C1)		**OP-05T308-1P**	**OP-05T308-1H**	**OP-05T308-1T**		
K25 (C2)		**OP-05T308-2P**	**OP-05T308-2H**	—		
P35 (C5)	High Rake	**OP-05T308-PHR**	**OP-05T308-HHR**	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A70: 13 - 14

Key on A70: 2

A70: 3 - 4

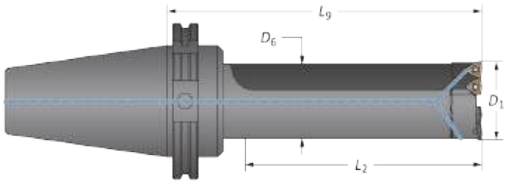
Ⓜ = Metric (mm)
ⓘ = Imperial (in)

Mounting and adjusting screws sold in quantities of 4.
IC inserts and insert screws sold in quantities of 10.

Opening Drill: 50.80 mm - 142.75 mm (2.0000" - 5.6200")

DIN50 Integral Shank



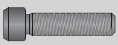


DIN50 Shanks

	D_1 Range	Length	Holder D_6	Holder L_2	Holder L_9	Part No.	Cartridges
ⓜ	50.80 - 63.50	Short	46.7	83.5	139.4	**OP1-1S-DV50**	OP1-WC05
		Long	46.7	140.6	196.6	**OP1-1L-DV50**	
	63.50 - 76.20	Short	56.4	118.5	176.3	**OP2-1S-DV50**	OP2-WC05
		Long	56.4	194.7	252.5	**OP2-1L-DV50**	
	76.20 - 104.65	Short	71.3	129.9	189.0	**OP3-1S-DV50**	OP3-WC05
		Long	71.3	231.5	290.6	**OP3-1L-DV50**	
	104.65 - 142.75	Short	88.9	127.4	189.0	**OP4-1S-DV50**	OP4-WC05
		Long	88.9	267.1	328.7	**OP4-1L-DV50**	

NOTE: Holder includes cartridges; however, inserts are sold separately.

Cartridges

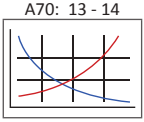
 Replacement Cartridges	Qty. Inserts Needed	 Mounting Screw	Key Size	 Adjusting Screw	Driver
OP1-WC05	2	MS-13M-1	5 mm	AS-10T9-1	8T-9
OP2-WC05	2	MS-15M-1	5 mm	AS-10T9-1	8T-9
OP3-WC05	2	MS-15M-1	5 mm	AS-12T9-1	8T-9
OP4-WC05	3	MS-15M-1	5 mm	AS-14T9-1	8T-9

IC Inserts

Carbide Grade	Geometry	Part No.  AM300®	Part No.  AM200®	Part No.  TiN	Insert Screws*	Driver
P35 (C5)	Standard	**OP-05T308-P**	**OP-05T308-H**	**OP-05T308-T**	IS-10-1	8T-9
K35 (C1)		**OP-05T308-1P**	**OP-05T308-1H**	**OP-05T308-1T**		
K25 (C2)		**OP-05T308-2P**	**OP-05T308-2H**	—		
P35 (C5)	High Rake	**OP-05T308-PHR**	**OP-05T308-HHR**	—	IS-10-1	8T-9

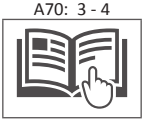
*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A70: 13 - 14



Key on A70: 2

A70: 3 - 4



ⓜ = Metric (mm)
ⓘ = Imperial (in)

Mounting and adjusting screws sold in quantities of 4.
IC inserts and insert screws sold in quantities of 10.

Recommended Drilling Data | Metric (mm)

OPENING DRILL

ISO	Material	Hardness (BHN)	Speed (m/min) AM300®	AM200®	TiN	Feed Rate (mm/rev)
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 250	274 - 396	259 - 366	213 - 274	0.09 - 0.18
P	**Low-Carbon Steel** 1010, 1020, 1025, etc.	85 - 275	259 - 381	244 - 351	198 - 259	0.08 - 0.17
P	**Medium-Carbon Steel** 1030, 1040, 1050, etc.	125 - 325	244 - 320	229 - 290	183 - 259	0.09 - 0.17
P	**Alloy Steel** 4140, 5140, 8640, etc.	125 - 375	229 - 305	213 - 274	183 - 259	0.09 - 0.17
P	**High-Strength Alloy** 4340, 4330V, 300M, etc.	225 - 400	183 - 259	168 - 229	122 - 198	0.08 - 0.13
P	**Structural Steel** A36, A285, A516, etc.	100 - 350	259 - 320	244 - 290	198 - 259	0.08 - 0.17
P	**Tool Steel** H-13, H-21, A-4, S-3, etc.	150 - 250	122 - 244	107 - 213	76 - 198	0.06 - 0.13
M	**Stainless Steel 400 Series** 416, 420, etc.	185 - 350	183 - 259	168 - 229	122 - 198	0.08 - 0.15
M	**Stainless Steel 300 Series** 304, 316, 17-4PH, etc.	135 - 275	183 - 259	168 - 229	122 - 198	0.08 - 0.15
M	**Super Duplex Stainless Steel**	135 - 275	152 - 228	137 - 198	91 - 152	0.05 - 0.12
K	**Nodular, Grey, Ductile Cast Iron**	120 - 320	213 - 274	198 - 244	152 - 213	0.10 - 0.20
N	**Cast Aluminum**	30 - 180	381 - 503	381 - 472	290 - 335	0.15 - 0.30
N	**Wrought Aluminum**	30 - 180	381 - 503	381 - 472	290 - 335	0.15 - 0.30
N	**Brass**	30 - 100	290 - 411	274 - 381	229 - 335	0.13 - 0.23
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 310	76 - 137	76 - 107	46 - 91	0.06 - 0.11

Material Constants

Type of Material	Hardness (BHN)	K_m (kPa)
Free-Machining Steel	100 - 250	5.17
Low-Carbon Steel	85 - 275	5.86
Medium-Carbon Steel	125 - 325	6.21
Alloy Steel	125 - 375	6.90
High-Strength Steel	225 - 400	7.93
Structural Steel	100 - 350	6.90
Tool Steel	150 - 250	6.21
Stainless Steel 400 Series	185 - 350	7.45
Stainless Steel 300 Series	135 - 275	6.48
Super Duplex Stainless Steel	135 - 275	6.48
Nodular, Ductile Cast Iron	120 - 320	4.48
Grey Cast Iron	120 - 320	5.17
Cast Aluminum	30 - 180	2.76
Wrought Aluminum	30 - 180	2.76
Aluminum Bronze	100 - 250	3.45
Brass	100	2.41
Copper	60	2.07
High-Temperature Alloy	140 - 310	9.93
Titanium Alloy	140 - 310	4.97
Aerospace Alloy	185 - 350	4.48
Wear Plate	400 - 600	11.04
Hardened Steel	300 - 500	9.66

Formulas

1. **RPM = (318.31 • m/min) / DIA_F**
   - RPM = revolutions per minute (rev/min)
   - m/min = speed (m/min)
   - DIA_F = finish diameter of drill (mm)
2. **kW = ((DIA_F^2 - DIA_P^2) • mm/rev • RPM • K_m) / 205,154**
   - kW = tool power (kW)
   - DIA_F = finish diameter of drill (mm)
   - DIA_P = pre-drill diameter (mm)
   - mm/rev = feed rate (mm/rev)
   - RPM = revolutions per minute (rev/min)
   - K_m = specific cutting energy (kPa)
     machine efficiency (using 205,154 as constant)
3. **Thrust = 148.78 • mm/rev • (DIA_F - DIA_P) • K_m**
   - Thrust = axial thrust (N)
   - IPR = feed rate (mm/rev)
   - DIA_F = finish diameter of drill (mm)
   - DIA_P = pre-drill diameter (mm)
   - K_m = specific cutting energy (kPa)
4. **Torque = (kW • 9549.3) / RPM**
   - Torque = torque (N·m)
   - HP = tool power (kW)
   - RPM = revolutions per minute (rev/min)

The table and equations on this page are found in the "Machinery's Handbook." Permission to simplify and print the equations is granted by the Editor of the "Machinery's Handbook."

IMPORTANT: The speeds and feeds listed above are considered a general starting point for all applications. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

Recommended Drilling Data | Imperial (in)

OPENING DRILL

ISO	Material	Hardness (BHN)	Speed (SFM) AM300®	AM200®	TiN	Feed Rate (IPR)
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 250	900 - 1300	850 - 1200	700 - 900	0.0035 - 0.0070
P	**Low-Carbon Steel** 1010, 1020, 1025, etc.	85 - 275	850 - 1250	800 - 1150	650 - 850	0.0030 - 0.0065
P	**Medium-Carbon Steel** 1030, 1040, 1050, etc.	125 - 325	800 - 1050	750 - 950	600 - 850	0.0035 - 0.0065
P	**Alloy Steel** 4140, 5140, 8640, etc.	125 - 375	750 - 1000	700 - 900	600 - 850	0.0035 - 0.0065
P	**High-Strength Alloy** 4340, 4330V, 300M, etc.	225 - 400	600 - 850	550 - 750	400 - 650	0.0030 - 0.0050
P	**Structural Steel** A36, A285, A516, etc.	100 - 350	850 - 1050	800 - 950	650 - 850	0.0030 - 0.0065
P	**Tool Steel** H-13, H-21, A-4, S-3, etc.	150 - 250	400 - 800	350 - 700	250 - 650	0.0025 - 0.0050
M	**Stainless Steel 400 Series** 416, 420, etc.	185 - 350	600 - 850	550 - 750	400 - 650	0.0030 - 0.0060
M	**Stainless Steel 300 Series** 304, 316, 17-4PH, etc.	135 - 275	600 - 850	550 - 750	400 - 650	0.0030 - 0.0060
M	**Super Duplex Stainless Steel**	135 - 275	500 - 750	450 - 650	300 - 550	0.0020 - 0.0050
K	**Nodular, Grey, Ductile Cast Iron**	120 - 320	700 - 900	650 - 800	500 - 700	0.0040 - 0.0080
N	**Cast Aluminum**	30 - 180	1250 - 1650	1200 - 1550	950 - 1100	0.0060 - 0.0120
N	**Wrought Aluminum**	30 - 180	1250 - 1650	1200 - 1550	950 - 1100	0.0060 - 0.0120
N	**Brass**	30 - 100	950 - 1350	900 - 1250	750 - 1100	0.0050 - 0.0090
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 310	250 - 450	250 - 350	150 - 300	0.0025 - 0.0050

Material Constants

Type of Material	Hardness (BHN)	K_m (lbs/in²)
Free-Machining Steel	100 - 250	0.75
Low-Carbon Steel	85 - 275	0.85
Medium-Carbon Steel	125 - 325	0.90
Alloy Steel	125 - 375	1.00
High-Strength Steel	225 - 400	1.15
Structural Steel	100 - 350	1.00
Tool Steel	150 - 250	0.90
Stainless Steel 400 Series	185 - 350	1.08
Stainless Steel 300 Series	135 - 275	0.94
Super Duplex Stainless Steel	135 - 275	0.94
Nodular, Ductile Cast Iron	120 - 320	0.65
Grey Cast Iron	120 - 320	0.75
Cast Aluminum	30 - 180	0.40
Wrought Aluminum	30 - 180	0.40
Aluminum Bronze	100 - 250	0.50
Brass	100	0.35
Copper	60	0.30
High-Temperature Alloy	140 - 310	1.44
Titanium Alloy	140 - 310	0.72
Aerospace Alloy	185 - 350	0.70
Wear Plate	400 - 600	1.60
Hardened Steel	300 - 500	1.40

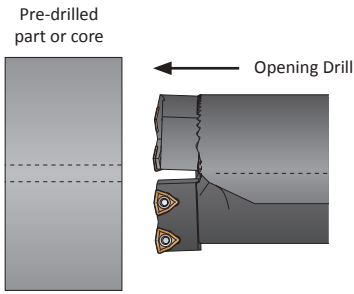
Formulas

1.	**RPM**	**= (3.82 • SFM) / DIA_F**
	RPM	= revolutions per minute (rev/min)
	SFM	= speed (ft/min)
	DIA_F	= finish diameter of drill (inch)
2.	**HP**	**= (0.5891 • (DIA_F^2 - DIA_P^2) • IPR • RPM • K_m) / 0.80**
	HP	= tool power (HP)
	DIA_F	= finish diameter of drill (inch)
	DIA_P	= pre-drill diameter (inch)
	IPR	= feed rate (in/rev)
	RPM	= revolutions per minute (rev/min)
	K_m	= specific cutting energy (lbs/in²) machine efficiency (using 0.80 as constant)
3.	**Thrust**	**= 148,500 • IPR • (DIA_F – DIA_P) • K_m**
	Thrust	= axial thrust (lbs)
	IPR	= feed rate (in/rev)
	DIA_F	= finish diameter of drill (inch)
	DIA_P	= pre-drill diameter (inch)
	K_m	= specific cutting energy (lbs/in²)
4.	**Torque**	**= (HP • 5252) / RPM**
	Torque	= torque (ft-lbs)
	HP	= tool power (HP)
	RPM	= revolutions per minute (rev/min)

The table and equations on this page are found in the "Machinery's Handbook." Permission to simplify and print the equations is granted by the Editor of the "Machinery's Handbook."

IMPORTANT: The speeds and feeds listed above are considered a general starting point for all applications. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

Minimum Pilot Hole Diameter



Metric Minimum Pilot Hole Diameter

Minimum Pilot Hole Diameter = Finish Diameter – C
To open an existing diameter hole to 69.85 mm diameter, an OP2 tool would be used. The minimum pilot hole diameter would be: **69.85 mm - 47.75 = 22.10 mm**

Opening Drill Series	Drill Diameter Range	C
OP1	50.80 - 63.50	47.75
OP2	63.50 - 76.20	47.75
OP3	76.20 - 104.65	47.75
OP4	104.65 - 142.75	68.07

Imperial Minimum Pilot Hole Diameter

Minimum Pilot Hole Diameter = Finish Diameter – C
To open an existing diameter hole to 2.7500" diameter, an OP2 tool would be used. The minimum pilot hole diameter would be: **2.7500" - 1.880 = 0.8700"**

Opening Drill Series	Drill Diameter Range	C
OP1	2.0000 - 2.5000	1.880
OP2	2.5000 - 3.0000	1.880
OP3	3.0000 - 4.1200	1.880
OP4	4.1200 - 5.6200	2.680

Notes

SECTION

A93

BT-A Drill

BT-A Drill

12.98 mm - 47.82 mm (0.5110" - 1.8829")



BTA (STS) Deep Hole Machining System

The BT-A drill (using the single tube system or STS) conquers deep hole applications in ways other drills simply cannot. The internal ejection system flushes chips and debris from the hole with no interference to the cutting process.

By utilizing the countless advantages of the T-A® drill insert, the BT-A design significantly increases penetration rates over brazed heads and traditional gun drills. A specific BT geometry has also been developed to increase productivity in these types of drilling applications.

Material Ejection with Efficiency

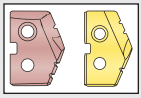
- Excellent hole size and finish.
- Optimizes chip evacuation.
- Up to 2x the penetration rate of traditional BTA heads.

Applicable Industries

- Aerospace
- Defense
- Heavy Equipment
- Oil and Gas
- Renewable Energy/ Energy
- Tool, Mold, and Die

Reference Icons

The following icons will appear throughout the catalog to help you navigate between products.



T-A® Inserts
Refers to the range of inserts that connect with the corresponding holders.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

WARNING means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

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Introduction Information

System Overview 3
Product Nomenclature 4

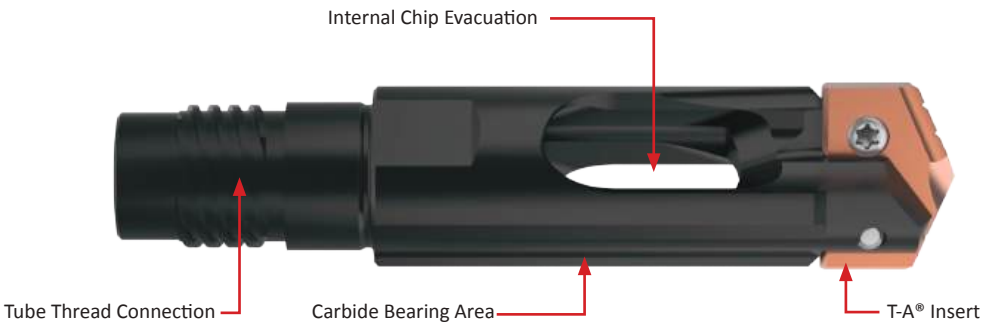
Drill Series

0 Series: 12.98 mm - 17.67 mm (0.5110" - 0.6959"). 5
1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609"). 6
2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809"). 7
3 Series: 34.37 mm - 47.82 mm (1.3530" - 1.8829"). 8

System Overview

BTA Machining

BTA machining is the reverse of typical gun drilling systems. The BT-A drill is a drill head consisting of a holder body and a replaceable tip T-A® insert. The drill head threads into an STS (single tube system) cylindrical tube with a diameter smaller than the drill head. The difference in diameter forms an annular area between the hole and the tube OD. This allows high-volume coolant to be directed to the cutting edge.



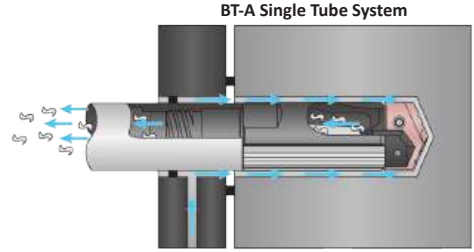
- ***Improve hole straightness***
  with the laser clad bearing area.
- ***Eliminate the need for resharpening***
  with replaceable cutting edges.
- ***Reduce your inventory***
  with the replaceable T-A® feature.
- ***Compatibility***
  heads are compatible with standard BTA-STS systems.
- ***Balanced cutting forces.***
- ***Patented design.***

T-A Insert: BT-A Geometry (-BT)

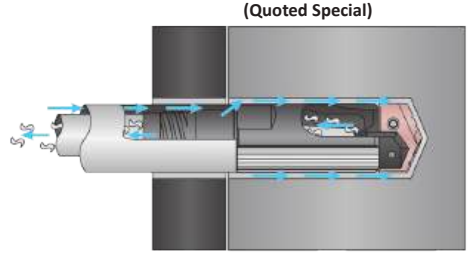
- Low thrust web geometry reduces z-axis requirements.
- Lip geometry identical to the tiny chip (-TC) for improved chip formation.
- Polished cutting surface eliminates material buildup.



BT-A Single Tube System



BT-A Double Tube (Ejector) System (Quoted Special)



2x *INCREASE* in penetration rates over traditional BTA heads

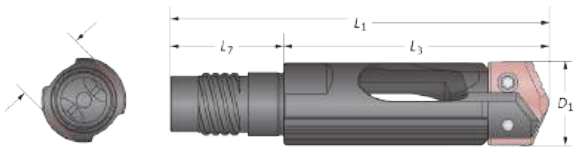
Product Nomenclature

BT-A Head

BTA	2	804					–	1.1299
	Series	Tube Size						Diameter
	0	794	798	802	806	810		**25.00** = Metric
	1	795	799	803	807	811		**0.7344** = Inch
	2	796	800	804	808			
	3	797	801	805	809			

Reference Key

Symbol	Attribute
D_1	Drill insert range
L_1	Overall length
L_3	Holder reference length
L_5	Shank length

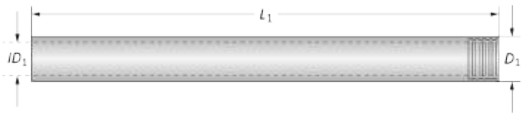


BT-A Tube

BTAT	–	804					–	63
		Tube Size						Length
		794	798	802	806	810		**63** = Standard
		795	799	803	807	811		**102** = Long
		796	800	804	808			
		797	801	805	809			

Reference Key

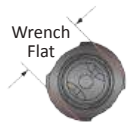
Symbol	Attribute
D_6	Body diameter
ID_1	Internal diameter
L_1	Overall length

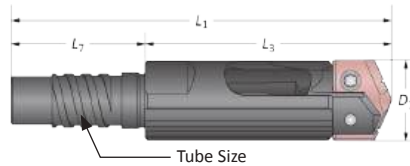


A93

0 Series: 12.98 mm - 17.67 mm (0.5110" - 0.6959")

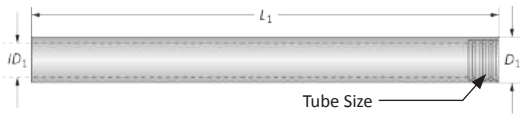






Heads

	Tube Size	D_1	Holder L_3	Holder L_1	Holder L_5	Part No.	Carbide: K35 (C1) Part No. AM200®	Wrench Flat (mm)
ⓜ	794	12.98 - 13.61	43.36	66.37	23.01	**BTA0-794-XX.XX**	1C10H-XXXX-BT	11
	795	13.61 - 14.63	44.63	67.64	23.01	**BTA0-795-XX.XX**	1C10H-XXXX-BT	12
	796	14.63 - 15.62	45.90	69.90	24.00	**BTA0-796-XX.XX**	1C10H-XXXX-BT	13
	797	15.62 - 16.71	45.90	69.90	24.00	**BTA0-797-XX.XX**	1C10H-XXXX-BT	14
	798	16.71 - 17.70	45.26	69.27	24.00	**BTA0-798-XX.XX**	1C10H-XXXX-BT	15
ⓘ	794	0.5110 - 0.5359	1.7070	2.6130	0.9060	**BTA0-794-X.XXXX**	1C10H-XXXX-BT	11
	795	0.5360 - 0.5759	1.7570	2.6630	0.9060	**BTA0-795-X.XXXX**	1C10H-XXXX-BT	12
	796	0.5760 - 0.6149	1.8070	2.7520	0.9450	**BTA0-796-X.XXXX**	1C10H-XXXX-BT	13
	797	0.6150 - 0.6579	1.8070	2.7520	0.9450	**BTA0-797-X.XXXX**	1C10H-XXXX-BT	14
	798	0.6580 - 0.6969	1.7820	2.7270	0.9450	**BTA0-798-X.XXXX**	1C10H-XXXX-BT	15



Tubes

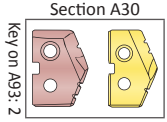
Tube Size	Metric (mm) D_6	Metric (mm) ID_1	Imperial (in) D_6	Imperial (in) ID_1	Tube Length	L_1 Metric (cm)	L_1 Imperial (in)	Part No.
794	11.00	7.00	0.4331	0.2756	Short	160	63	**BTAT794-63**
					Long	260	102	**BTAT794-102**
795	12.00	8.00	0.4724	0.3150	Short	160	63	**BTAT795-63**
					Long	260	102	**BTAT795-102**
796	13.00	8.50	0.5118	0.3346	Short	160	63	**BTAT796-63**
					Long	260	102	**BTAT796-102**
797	14.00	9.00	0.5512	0.3543	Short	160	63	**BTAT797-63**
					Long	260	102	**BTAT797-102**
798	15.00	10.00	0.5906	0.3937	Short	160	63	**BTAT798-63**
					Long	260	102	**BTAT798-102**

Connection Accessories

Insert Series	D_1	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
0	0.5110 - 0.6093	72556-IP8-1	72556N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)
0.5	0.6094 - 0.6959	72567-IP8-1	72567N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

Section A30

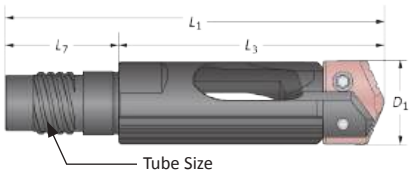


ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")

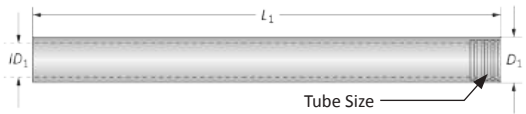






Heads

	Tube Size	D_1	Holder L_3	Holder L_1	Holder L_5	Part No.	Carbide: K35 (C1) Part No. AM200®	Wrench Flat (mm)
ⓜ	799	17.70 - 18.92	58.17	83.16	24.00	**BTA1-799-XX.XX**	1C11H-XXXX-BT	16
	800	18.92 - 20.01	58.80	86.79	28.00	**BTA1-800-XX.XX**	1C11H-XXXX-BT	17
	801	20.02 - 21.82	59.44	89.94	30.51	**BTA1-801-XX.XX**	1C11H-XXXX-BT	18
	802	21.82 - 24.10	60.71	93.70	32.99	**BTA1-802-XX.XX**	1C11H-XXXX-BT	19
	803	24.10 - 24.41	63.88	96.88	32.99	**BTA1-803-XX.XX**	1C11H-XXXX-BT	21
ⓘ	799	0.6970 - 0.7449	2.2900	3.2740	0.9840	**BTA1-799-X.XXXX**	1C11H-XXXX-BT	16
	800	0.7450 - 0.7879	2.3150	3.4170	1.1020	**BTA1-800-X.XXXX**	1C11H-XXXX-BT	17
	801	0.7880 - 0.8589	2.3400	3.5410	1.2010	**BTA1-801-X.XXXX**	1C11H-XXXX-BT	18
	802	0.8590 - 0.9489	2.3900	3.6890	1.2990	**BTA1-802-X.XXXX**	1C11H-XXXX-BT	19
	803	0.9490 - 0.9609	2.5150	3.8140	1.2990	**BTA1-803-X.XXXX**	1C11H-XXXX-BT	21



Tubes

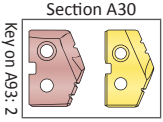
Tube Size	Metric (mm) D_6	Metric (mm) ID_1	Imperial (in) D_6	Imperial (in) ID_1	Tube Length	L_1 Metric (cm)	L_1 Imperial (in)	Part No.
799	16.00	10.50	0.6299	0.4134	Short	160	63	**BTAT799-63**
					Long	260	102	**BTAT797-102**
800	17.00	11.50	0.6693	0.4528	Short	160	63	**BTAT800-63**
					Long	260	102	**BTAT800-102**
801	18.00	12.00	0.7087	0.4724	Short	160	63	**BTAT801-63**
					Long	260	102	**BTAT801-102**
802	20.00	13.00	0.7874	0.5118	Short	160	63	**BTAT802-63**
					Long	260	102	**BTAT802-102**
803	22.00	14.00	0.8661	0.5512	Short	160	63	**BTAT803-63**
					Long	260	102	**BTAT803-102**

Connection Accessories

Insert Series	D_1	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
1	0.6900 - 0.8593	7375-IP9-1	7375N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)
1.5	0.8594 - 0.9609	739-IP9-1	739N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

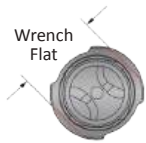
Section A30

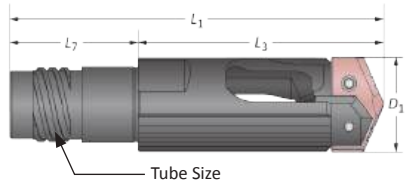


ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

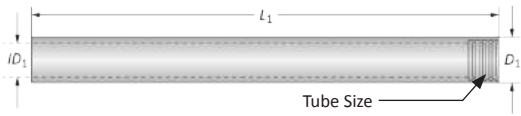






Heads

	Tube Size	D_1	Holder L_3	Holder L_1	Holder L_5	Part No.	Carbide: K35 (C1) Part No. AM200®	Wrench Flat (mm)
ⓜ	803	24.41 - 26.41	78.49	111.48	32.99	**BTA2-803-XX.XX**	1C12H-XXXX-BT	21
	804	26.42 - 28.70	75.95	103.94	28.00	**BTA2-804-XX.XX**	1C12H-XXXX-BT	22
	805	28.70 - 31.01	75.44	111.43	35.99	**BTA2-805-XX.XX**	1C12H-XXXX-BT	25
	806	31.01 - 33.32	77.85	113.84	35.99	**BTA2-806-XX.XX**	1C12H-XXXX-BT	27
	807	33.32 - 35.05	77.85	113.84	35.99	**BTA2-807-XX.XX**	1C12H-XXXX-BT	30
ⓘ	803	0.9610 - 1.0399	3.0900	4.3890	1.2990	**BTA2-803-X.XXXX**	1C12H-XXXX-BT	21
	804	1.0400 - 1.1299	2.9900	4.0920	1.1020	**BTA2-804-X.XXXX**	1C12H-XXXX-BT	22
	805	1.1300 - 1.2209	2.9700	4.3870	1.4170	**BTA2-805-X.XXXX**	1C12H-XXXX-BT	25
	806	1.2210 - 1.3119	3.0650	4.4820	1.4170	**BTA2-806-X.XXXX**	1C12H-XXXX-BT	27
	807	1.3120 - 1.3800	3.0650	4.4820	1.4170	**BTA2-807-X.XXXX**	1C12H-XXXX-BT	30



Tubes

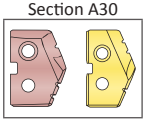
Tube Size	Metric (mm) D_6	Metric (mm) ID_1	Imperial (in) D_6	Imperial (in) ID_1	Tube Length	L_1 Metric (cm)	L_1 Imperial (in)	Part No.
803	22.00	14.00	0.8661	0.5512	Short	160	63	**BTAT803-63**
					Long	260	102	**BTAT803-102**
804	24.00	15.50	0.9449	0.6102	Short	160	63	**BTAT804-63**
					Long	260	102	**BTAT804-102**
805	26.00	17.00	1.0236	0.6693	Short	160	63	**BTAT805-63**
					Long	260	102	**BTAT805-102**
806	28.00	18.50	1.1024	0.7283	Long	260	102	**BTAT806-102**
807	30.00	20.00	1.1811	0.7874	Long	260	102	**BTAT807-102**

Connection Accessories

Insert Series	D_1	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
2	0.9610 - 1.3809	7495-IP15-1	7495N-IP15-1	8IP-15	8IP-15TL	8IP-15B	690 N-cm (61.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

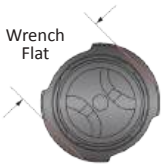
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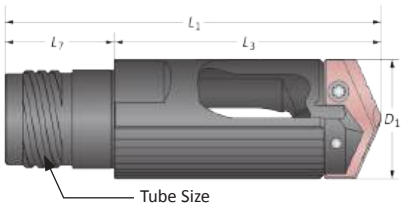


ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

3 Series: 34.37 mm - 47.82 mm (1.3530" - 1.8829")

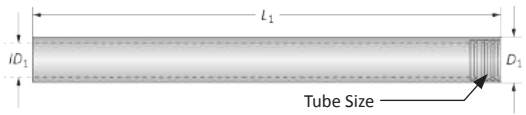






Heads

	Tube Size	D_1	Holder L_3	Holder L_1	Holder L_5	Part No.	Carbide: K35 (C1) Part No. AM200®	Wrench Flat (mm)
	807	34.37 - 36.22	96.82	132.82	35.99	**BTA3-807-XX.XX**	1C13H-XXXX-BT	30
	808	36.22 - 39.62	100.00	144.45	44.45	**BTA3-808-XX.XX**	1C13H-XXXX-BT	32
ⓜ	809	39.62 - 43.00	103.17	146.18	43.00	**BTA3-809-XX.XX**	1C13H-XXXX-BT	36
	810	43.00 - 47.01	101.90	144.91	43.00	**BTA3-810-XX.XX**	1C13H-XXXX-BT	41
	811	47.02 - 47.83	103.17	146.18	43.00	**BTA3-811-XX.XX**	1C13H-XXXX-BT	41
	807	1.3530 - 1.4259	3.8120	5.2290	1.4170	**BTA3-807-X.XXXX**	1C13H-XXXX-BT	30
	808	1.4260 - 1.5599	3.9370	5.6870	1.7500	**BTA3-808-X.XXXX**	1C13H-XXXX-BT	32
ⓘ	809	1.5600 - 1.6929	4.0620	5.7550	1.6930	**BTA3-809-X.XXXX**	1C13H-XXXX-BT	36
	810	1.6930 - 1.8509	4.0120	5.7050	1.6930	**BTA3-810-X.XXXX**	1C13H-XXXX-BT	41
	811	1.8510 - 1.8829	4.0620	5.7550	1.6930	**BTA3-811-X.XXXX**	1C13H-XXXX-BT	41



Tubes

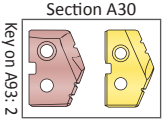
Tube Size	Metric (mm) D_6	Metric (mm) ID_1	Imperial (in) D_6	Imperial (in) ID_1	Tube Length	L_1 Metric (cm)	L_1 Imperial (in)	Part No.
807	30.00	20.00	1.1811	0.7874	Long	260	102	**BTAT807-102**
808	33.00	23.00	1.2992	0.9055	Long	260	102	**BTAT808-102**
809	36.00	25.00	1.4173	0.9843	Long	260	102	**BTAT809-102**
810	39.00	28.00	1.5354	1.1024	Long	260	102	**BTAT810-102**
811	43.00	31.00	1.6929	1.2205	Long	260	102	**BTAT811-102**

Connection Accessories

Insert Series	D_1	Insert Screws	Nylon Locking Screws	Insert Driver	Admissible Tightening Torque*
3	1.3530 - 1.8829	7495-IP15-1	7495N-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

Section A30



ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

STRUCTURAL STEEL DRILLING PRODUCT CATALOG







ALLIED MACHINE & ENGINEERING

www.alliedmachine.com

SECTION

A91-SSD

Structural Steel Solutions

Structural Steel Drilling Solutions



Take on Tough Drilling

Allied Machine's structural steel drilling system is designed for maximum performance in structural steel materials and applications. These solutions utilize the T-A, GEN2 T-A, GEN3SYS XT Pro, and 4TEX drill designs and capabilities.

With multiple geometries and coatings, you're sure to find the solution that is right for you. Tough drilling is tough no more.

- T-A® and GEN2 T-A®
  - 14.00 mm - 47.82 mm (0.5512" - 1.8829")
- GEN3SYS® XT Pro
  - 12.00 mm - 35.00 mm (0.4724" - 1.3780")
- 4TEX® Drill
  - 12.00 mm - 39.67 mm (0.472" - 1.562")

Applicable Industries

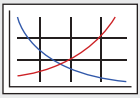
Structural Steel Fabricator

Reference Icons

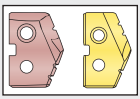
The following icons will appear throughout the catalog to help you navigate between products.



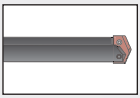
Setup / Assembly Information
Detailed instructions and information regarding the corresponding part(s).



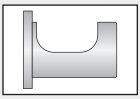
Recommended Cutting Data
Speed and feed recommendations for optimum and safe drilling.



T-A Inserts
Range of inserts that connect with the corresponding holders.



T-A Holders
Range of holders that connect with the corresponding inserts.



Eccentric Sleeves
Refers to the corresponding eccentric sleeve for the holder.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

WARNING means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

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Structural Steel Drilling

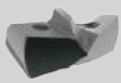
Overview

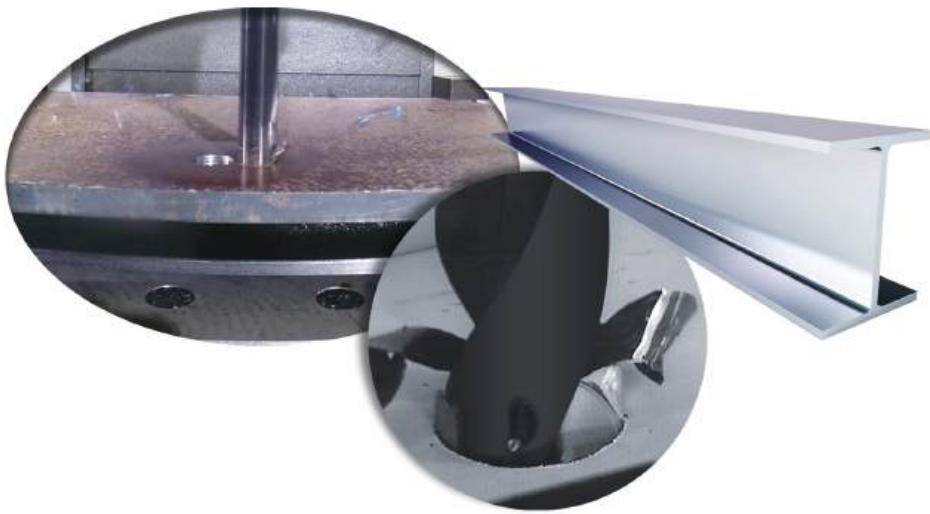
Achieving Optimal Results in Structural Steel

Drilling in structural steel materials can be a difficult process, and achieving optimal results becomes a major issue. Allied Machine's structural steel drilling solutions have been specifically designed to produce the best results in the toughest materials. With solutions in both the T-A® and GEN3SYS® XT Pro product lines, you have multiple options to solve your application problems.



Insert Style Comparison

	 GEN3SYS® XT Pro Structural Steel	 T-A® Thin Wall	 T-A® Notch Point®	 T-A®150° Structural Steel	 GEN2 T-A® High Efficiency
High penetration	✓				
Material less than 11.5 mm (7/16") thick		✓			
Material over 11.5 mm (7/16") thick	✓		✓	✓	✓
Reduced exit burr			✓	✓	
Includes Notch Point® geometry			✓	✓	✓
Available from carbide	✓				✓
Stocked in common sizes for the structural steel industry	✓	✓	✓	✓	✓



T-A® and GEN2 T-A® Structural Steel Drilling System

Case Study

CASE STUDY



Project Profile:	Structural Steel I-Beam Construction
Tooling Solution:	T-A® Structural Steel Drilling System

The Problem:

Previously, the customer was using a competitor spade drill running at the following parameters:

- 650 RPM
- 0.25 mm/rev (0.010 IPR)
- 165.1 mm/min (6.5 IPM)

The tool drilled a 22.23 mm (0.875") diameter hole to a 11.11 mm (0.4375") depth. The drill had a tool life of **only 20 holes**.

The poor tool performance was brought to the attention of the technician, who was familiar with Allied Machine products. The following day, Allied Machine tooling was brought in for testing. The customer needed improvement in the tool life of the inserts.

The Solution:

Allied Machine recommended the T-A structural steel drilling system.

- **Insert** = 151A-0028-TW (#1 series T-A insert with TiAlN coating and thin wall geometry)
- **Holder** = 25010H-004IS052 (#1 series T-A holder with #4 Morse Taper shank and helical flute)

The tool ran at the following parameters:

- 440 RPM
- 0.25 mm/rev (0.010 IPR)
- 111.7 mm/min (4.4 IPM)

The tool achieved the desired diameter and depth. But most of all, the tool produced **1,500 holes**.

Summary:

The customer was able to take advantage of Allied Machine's vast experience in the structural steel drilling niche. Allied's wide variety of stocked solutions for specific customer problems allows for a remarkable increase in tool life.

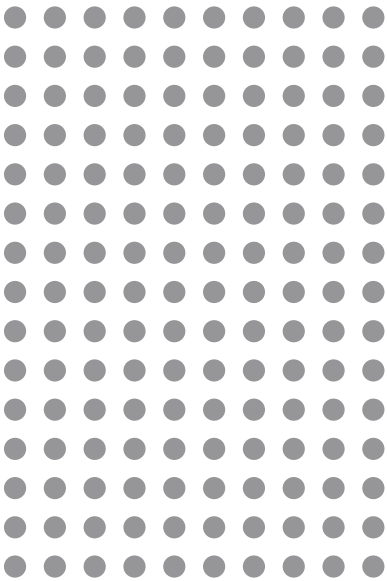
The T-A structural steel drilling system defeated the competition, resulting in a **cost per hole savings of 89%** for the customer.

The **PROOF** is in the **NUMBERS**

Competitor Insert Tool Life
(number of holes = 20)



T-A Structural Steel Insert Tool Life
(number of holes = 1,500)



Overall ***SAVINGS*** of

89%

PREMIUM SOLUTION



T-A® and GEN2 T-A® Structural Steel Drilling System

System Overview

STRUCTURAL STEEL **ENHANCEMENTS** T-A® & GEN2 T-A®

GEN2 T-A Insert

Available in AM300® and AM200® Coating



High Efficiency (-HE)

- Improves performance.
- Improves tool life.
- Improves chip formation in structural steel materials.

T-A Inserts

Available in AM200® and TiAlN Coatings



Thin Wall (-TW)

- Designed for drilling 11.5 mm (7/16") thick or less I-beam or structural materials.
- Increases hole diameter tolerance.
- Improves hole roundness.
- Decreases material deflection.



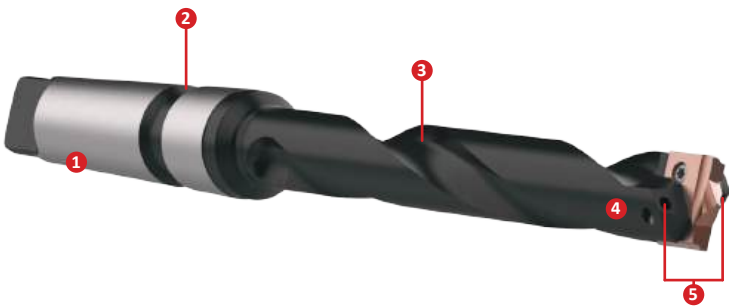
Notch Point® (-NP)

- Provides excellent self-centering characteristics.
- Reduces bellmouth and tool lead-off.
- Reduces axial thrust requirements.



Structural Steel (-SS)

- Designed for drilling 11.5 mm (7/16") thick or thicker I-beam or structural materials.
- Reduces exit burrs, increases stability, and lowers drilling forces.
- Includes Notch Point® web geometry.



Holder Anatomy

1. Morse taper shank
2. Coolant inlet
3. Flute (straight or helical)
4. Built-up body diameter
5. Coolant outlets



Straight Flute



Helical Flute

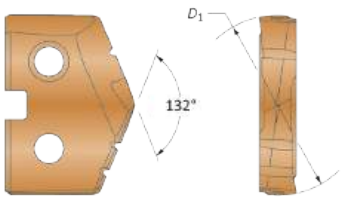
Product Nomenclature

T-A Drill Inserts

4	5	3	H	–	0115	-HE
Insert	**Material**	**Series**	**Coating**		**Diameter**	**Geometry**
1 = T-A®	**5** = Super cobalt	**0**	**P** = AM300®		**13** = Metric (mm)	**TW** = Thin Wall
4 = GEN2 T-A®	**C1** =K35 (C1) carbide	**1**	**H** = AM200®		**.515** = Decimal (in)	**NP** = Notch Point®
		2	**A** = TiAlN		**0017** = Fractional (in)	**SS** = 150° Structural
		3				**HE** = High Efficiency

Reference Key

Symbol	Attribute
D_1	Insert diameter

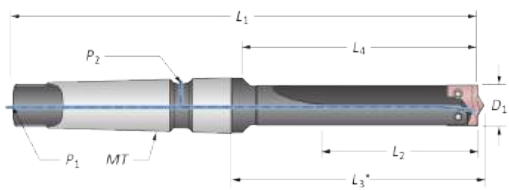


T-A Drill Holders

2	40	20	S	–	004	IS	060
	Drill Length	**Series**	**Flute**		**Shank Designator**	**Shank Code**	**Minimum Insert Diameter**
	20 = Short	**00** = 0	**S** = Straight		**Morse Taper**	**IS** = Imperial Morse taper structural steel	In increments of 1/64 of an inch In increments of 0.0156"
	40 = Standard	**05** = 0.5	**H** = Helical		**003** = 3MT		
	50 = Extended ⚠	**10** = 1			**004** = 4MT		
	60 = Long ⚠	**15** = 1.5					
		20 = 2					
		25 = 2.5					
		30 = 3					

Reference Key

Symbol	Attribute
D_1	Drill insert range
L_1	Overall length
L_2	Drill depth
L_3	Holder reference length
L_4	Holder length
P_1	Rear pipe tap
P_2	Side pipe tap
MT	Morse taper size



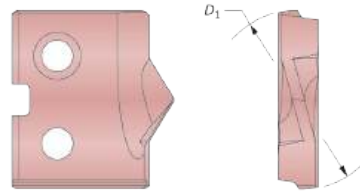
*L_3 is 1.60 mm (0.063") shorter if using a structural steel holder with Notch Point®, GEN2 T-A®, or 150° structural steel T-A® drill insert geometry.

0 Series: 14.00 mm - 17.67 mm (0.5112" - 0.6959")

T-A® Structural Steel Drill Inserts

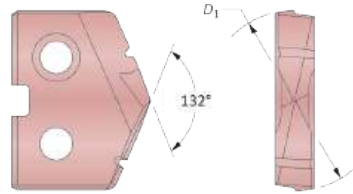
Thin Wall
For material up to 11.5 mm (7/16") thick.





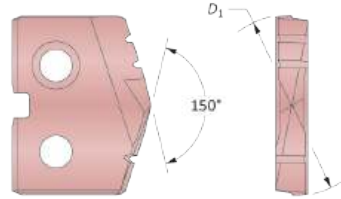
Notch Point®
For material over 11.5 mm (7/16") thick.





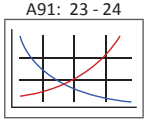
150° Structural Steel
For material over 11.5 mm (7/16") thick and for reduced exit burr.



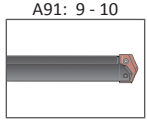


Series	Insert D_1 mm	Insert D_1 inch	Insert Fractional Equivalent	Geometry	HSS: Super Cobalt AM200®	HSS: Super Cobalt TiAlN
0	14.00	0.5512	—	Thin Wall	**150H-14-TW**	**150A-14-TW**
				Notch Point®	**150H-14-NP**	**150A-14-NP**
				150° Structural Steel	**150H-14-SS**	**150A-14-SS**
	14.29	0.5625	9/16	Thin Wall	**150H-0018-TW**	**150A-0018-TW**
				Notch Point®	**150H-0018-NP**	**150A-0018-NP**
				150° Structural Steel	**150H-0018-SS**	**150A-0018-SS**
0.5	15.88	0.6250	5/8	Thin Wall	**150H-0020-TW**	**150A-0020-TW**
				Notch Point®	**150H-0020-NP**	**150A-0020-NP**
				150° Structural Steel	**150H-0020-SS**	**150A-0020-SS**
	16.00	0.6299	—	Thin Wall	**150H-16-TW**	**150A-16-TW**
				Notch Point®	**150H-16-NP**	**150A-16-NP**
				150° Structural Steel	**150H-16-SS**	**150A-16-SS**
	17.46	0.6875	11/16	Thin Wall	**150H-0022-TW**	**150A-0022-TW**
				Notch Point®	**150H-0022-NP**	**150A-0022-NP**
				150° Structural Steel	**150H-0022-SS**	**150A-0022-SS**

A91: 23 - 24



A91: 9 - 10

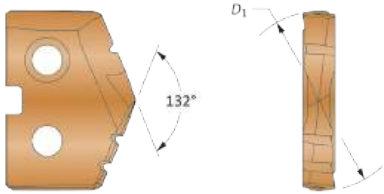


Inserts sold in quantities of 2.

0 Series: 14.00 mm - 17.67 mm (0.5112" - 0.6959")

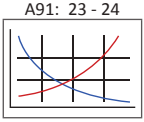
GEN2 T-A® Structural Steel Drill Inserts





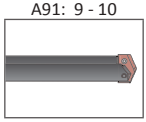
Series	Insert D_1 mm	Insert D_1 inch	Fractional Equivalent	HSS: Super Cobalt AM200®	Carbide: K35 (C1) AM300®
0	14.00	0.5512	—	**450H-14-HE**	**4C10P-14-HE**
	14.29	0.5625	9/16	**450H-0018-HE**	**4C10P-0018-HE**
0.5	15.88	0.6250	5/8	**450H-0020-HE**	**4C10P-0020-HE**
	16.00	0.6299	—	**450H-16-HE**	**4C10P-16-HE**
	17.46	0.6875	11/16	**450H-0022-HE**	**4C10P-0022-HE**

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Key on A91: 2

A91: 9 - 10

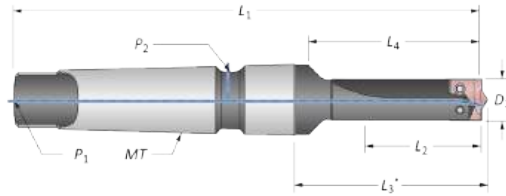


Inserts sold in quantities of 2.

0 Series: 14.00 mm - 17.67 mm (0.5112" - 0.6959")

T-A® Structural Steel Drill Insert Holders





Metric #3 Taper Shank Holders

	Flute	Series	Body						Shank			Part No.
			Length	D_1	L_2	L_4	L_3*	L_1	MT	P_1	P_2	
m	Straight	0	Short	14.29	30.51	57.94	59.89	156.36	#3	TTC	TSC	**22000S-003IS036**
		0.5	Short	15.88	30.86	57.94	59.89	156.36	#3	TTC	TSC	**22005S-003IS040**
			Short	17.46	30.58	57.94	59.89	156.36	#3	TTC	TSC	**22005S-003IS044**
	Helical	0	Standard	14.29	76.23	86.51	88.47	184.94	#3	TTC	TSC	**24000H-003IS036**
			Extended	14.29	180.37	242.21	244.17	340.64	#3	TTC	TSC	⚠ **25000H-003IS036**
		0.5	Standard	15.88	76.58	86.51	88.47	184.94	#3	TTC	TSC	**24005H-003IS040**
			Standard	17.46	76.94	86.51	88.47	184.94	#3	TTC	TSC	**24005H-003IS044**
			Extended	17.46	181.08	242.21	244.17	340.64	#3	TTC	TSC	⚠ **25005H-003IS044**

*L_3 is 1.60 mm (0.063") shorter if using a structural steel holder with Notch Point®, GEN2 T-A®, or 150° structural steel T-A® drill insert geometry.

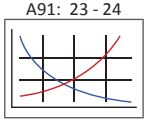
Connection Accessories

Series	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
0	**72556-IP8-1**	**72556N-IP8-1**	**8IP-8**	**8IP-8TL**	**8IP-8B**	175 N-cm (15.5 in-lbs)
0.5	**72567-IP8-1**	**72567N-IP8-1**	**8IP-8**	**8IP-8TL**	**8IP-8B**	175 N-cm (15.5 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

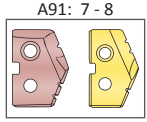
⚠ **WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A91: 22** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

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Key on A91: 2

A91: 7 - 8

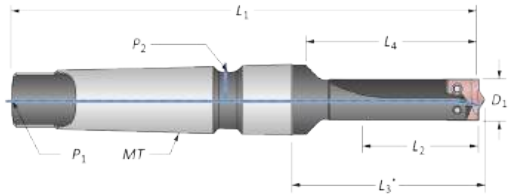


m = Metric (mm)
i = Imperial (in)
Screws sold in multiples of 10.

0 Series: 14.00 mm - 17.67 mm (0.5112" - 0.6959")

T-A® Structural Steel Drill Insert Holders





Imperial #3 Taper Shank Holders

	Flute	Series	Body						Shank			Part No.
			Length	D_1	L_2	L_4	L_3*	L_1	MT	P_1	P_2	
	Straight	0	Short	0.5625	1.201	2.281	2.358	6.156	#3	TTC	TSC	**22000S-003IS036**
		0.5	Short	0.6250	1.215	2.281	2.358	6.156	#3	TTC	TSC	**22005S-003IS040**
			Short	0.6875	1.204	2.281	2.358	6.156	#3	TTC	TSC	**22005S-003IS044**
	Helical	0	Standard	0.5625	3.001	3.406	3.483	7.281	#3	TTC	TSC	**24000H-003IS036**
			Extended	0.5625	7.101	9.536	9.613	13.411	#3	TTC	TSC	⚠ **25000H-003IS036**
		0.5	Standard	0.6250	3.015	3.406	3.483	7.281	#3	TTC	TSC	**24005H-003IS040**
			Standard	0.6875	3.029	3.406	3.483	7.281	#3	TTC	TSC	**24005H-003IS044**
			Extended	0.6875	7.129	9.536	9.613	13.411	#3	TTC	TSC	⚠ **25005H-003IS044**

*L_3 is 1.60 mm (0.063") shorter if using a structural steel holder with Notch Point®, GEN2 T-A®, or 150° structural steel T-A® drill insert geometry.

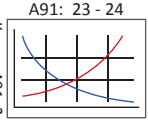
Connection Accessories

Series	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
0	**72556-IP8-1**	**72556N-IP8-1**	**8IP-8**	**8IP-8TL**	**8IP-8B**	175 N-cm (15.5 in-lbs)
0.5	**72567-IP8-1**	**72567N-IP8-1**	**8IP-8**	**8IP-8TL**	**8IP-8B**	175 N-cm (15.5 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

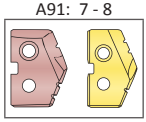
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A91: 23 - 24



Key on A91: 2

A91: 7 - 8



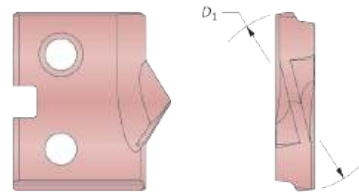
Ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")

T-A® Structural Steel Drill Inserts

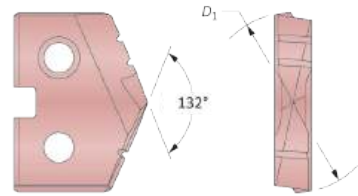
Thin Wall
For material up to 11.5 mm (7/16") thick.





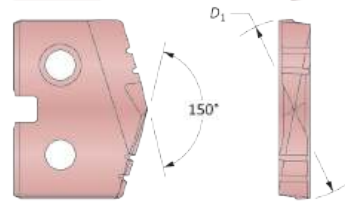
Notch Point®
For material over 11.5 mm (7/16") thick.





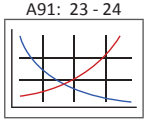
150° Structural Steel
For material over 11.5 mm (7/16") thick and for reduced exit burr.





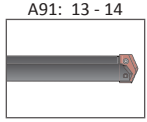
Series	Insert D_1 mm	Insert D_1 inch	Insert Fractional Equivalent	Geometry	HSS: Super Cobalt AM200®	HSS: Super Cobalt TiAlN
1	18.00	0.7087	—	Thin Wall	**151H-18-TW**	**151A-18-TW**
				Notch Point®	**151H-18-NP**	**151A-18-NP**
				150° Structural Steel	**151H-18-SS**	**151A-18-SS**
	20.64	0.8125	13/16	Thin Wall	**151H-0026-TW**	**151A-0026-TW**
				Notch Point®	**151H-0026-NP**	**151A-0026-NP**
				150° Structural Steel	**151H-0026-SS**	**151A-0026-SS**
	21.00	0.8268	—	Thin Wall	**151H-21-TW**	**151A-21-TW**
				Notch Point®	**151H-21-NP**	**151A-21-NP**
				150° Structural Steel	**151H-21-SS**	**151A-21-SS**
	22.00	0.8661	—	Thin Wall	**151H-22-TW**	**151A-22-TW**
				Notch Point®	**151H-22-NP**	**151A-22-NP**
				150° Structural Steel	**151H-22-SS**	**151A-22-SS**
1.5	22.23	0.8750	7/8	Thin Wall	**151H-0028-TW**	**151A-0028-TW**
				Notch Point®	**151H-0028-NP**	**151A-0028-NP**
				150° Structural Steel	**151H-0028-SS**	**151A-0028-SS**
	23.81	0.9375	15/16	Thin Wall	**151H-0030-TW**	**151A-0030-TW**
				Notch Point®	**151H-0030-NP**	**151A-0030-NP**
				150° Structural Steel	**151H-0030-SS**	**151A-0030-SS**
	24.00	0.9449	—	Thin Wall	**151H-24-TW**	**151A-24-TW**
				Notch Point®	**151H-24-NP**	**151A-24-NP**
				150° Structural Steel	**151H-24-SS**	**151A-24-SS**

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Key on A91: 2

A91: 13 - 14

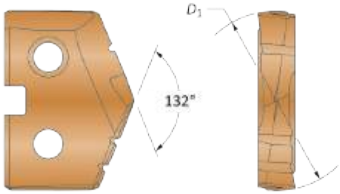


Inserts sold in quantities of 2.

1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")

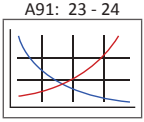
GEN2 T-A® Structural Steel Drill Inserts





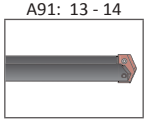
Series	Insert D_1 mm	Insert D_1 inch	Fractional Equivalent	HSS: Super Cobalt AM200®	Carbide: K35 (C1) AM300®
1	18.00	0.7087	—	**451H-18-HE**	**4C11P-18-HE**
	20.64	0.8125	13/16	**451H-0026-HE**	**4C11P-0026-HE**
	21.00	0.8268	—	**451H-21-HE**	**4C11P-21-HE**
	22.00	0.8661	—	**451H-22-HE**	**4C11P-22-HE**
1.5	22.23	0.8750	7/8	**451H-0028-HE**	**4C11P-0028-HE**
	23.81	0.9375	15/16	**451H-0030-HE**	**4C11P-0030-HE**
	24.00	0.9449	—	**451H-24-HE**	**4C11P-24-HE**

A91: 23 - 24



Key on A91: 2

A91: 13 - 14

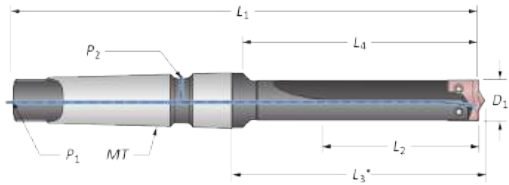


Inserts sold in quantities of 2.

1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")

T-A® Structural Steel Drill Insert Holders





Metric #3 Taper Shank Holders

	Flute	Series	Body Length	D_1	L_2	L_4	L_3*	L_1	Shank MT	P_1	P_2	Part No.
ⓜ	Straight	1	Short	17.86	64.97	100.43	103.58	198.86	#3	TTC	TSC	22010S-003IS045
			Short	20.64	64.97	100.43	103.58	198.86	#3	TTC	TSC	22010S-003IS052
		1.5	Short	22.23	65.33	100.43	103.58	198.86	#3	TTC	TSC	22015S-003IS056
			Short	23.81	65.68	100.43	103.58	198.86	#3	TTC	TSC	22015S-003IS060
	Helical	1	Standard	17.86	137.74	151.23	154.38	249.66	#3	TTC	TSC	24010H-003IS045
			Standard	20.64	137.74	151.23	154.38	249.66	#3	TTC	TSC	24010H-003IS052
			Extended	17.86	180.54	239.34	242.49	337.77	#3	TTC	TSC	⚠ 25010H-003IS045
			Extended	20.64	180.54	239.34	242.49	337.77	#3	TTC	TSC	⚠ 25010H-003IS052
		1.5	Standard	22.23	140.18	151.23	154.38	249.66	#3	TTC	TSC	24015H-003IS056
			Standard	23.81	140.44	151.23	154.38	249.66	#3	TTC	TSC	24015H-003IS060
			Extended	23.81	181.25	239.34	242.49	337.77	#3	TTC	TSC	⚠ 25015H-003IS060

Metric #4 Taper Shank Holders

	Flute	Series	Body Length	D_1	L_2	L_4	L_3*	L_1	Shank MT	P_1	P_2	Part No.
ⓜ	Straight	1	Short	17.86	64.97	100.43	103.58	224.26	#4	TTC	TSC	22010S-004IS045
			Short	20.64	64.97	100.43	103.58	224.26	#4	TTC	TSC	22010S-004IS052
		1.5	Short	22.23	65.33	100.43	103.58	224.26	#4	TTC	TSC	22015S-004IS056
			Short	23.81	65.68	100.43	103.58	224.26	#4	TTC	TSC	22015S-004IS060
	Helical	1	Standard	17.86	134.57	151.23	154.38	275.06	#4	TTC	TSC	24010H-004IS045
			Standard	20.64	134.57	151.23	154.38	275.06	#4	TTC	TSC	24010H-004IS052
			Extended	20.64	169.88	237.74	240.89	361.57	#4	TTC	TSC	⚠ 25010H-004IS052
			Long	20.64	166.7	402.77	405.92	526.59	#4	TTC	TSC	⚠ 26010H-004IS052
		1.5	Standard	22.23	136.42	151.23	154.38	275.06	#4	TTC	TSC	24015H-004IS056
			Standard	23.81	137.44	151.23	154.38	275.06	#4	TTC	TSC	24015H-004IS060
			Extended	23.81	173.13	237.74	240.89	361.57	#4	TTC	TSC	⚠ 25015H-004IS060
			Long	23.81	173.13	403.58	406.73	527.41	#4	TTC	TSC	⚠ 26015H-004IS060

*L_3 is 1.60 mm (0.063") shorter if using a structural steel holder with Notch Point®, GEN2 T-A®, or 150° structural steel T-A® drill insert geometry.

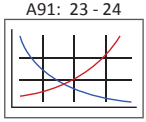
Connection Accessories

Series	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
1	7375-IP9-1	7375N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)
1.5	739-IP9-1	739N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

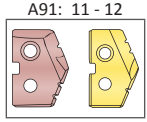
⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A91: 22** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

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Key on A91: 2

A91: 11 - 12

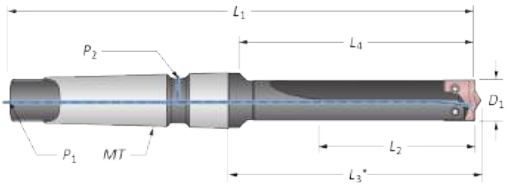


ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")

T-A® Structural Steel Drill Insert Holders





Imperial #3 Taper Shank Holders

Flute	Series	Length	Body D_1	Body L_2	Body L_4	Body L_3*	Body L_1	Shank MT	Shank P_1	Shank P_2	Part No.
Straight	1	Short	0.7031	2.558	3.954	4.078	7.829	#3	TTC	TSC	22010S-003IS045
			0.8125	2.558	3.954	4.078	7.829	#3	TTC	TSC	22010S-003IS052
	1.5	Short	0.8750	2.572	3.954	4.078	7.829	#3	TTC	TSC	22015S-003IS056
			0.9375	2.586	3.954	4.078	7.829	#3	TTC	TSC	22015S-003IS060
Helical	1	Standard	0.7031	5.423	5.954	6.078	9.829	#3	TTC	TSC	24010H-003IS045
		Standard	0.8125	5.423	5.954	6.078	9.829	#3	TTC	TSC	24010H-003IS052
		Extended	0.7031	7.108	9.423	9.547	13.298	#3	TTC	TSC	⚠ 25010H-003IS045
		Extended	0.8125	7.108	9.423	9.547	13.298	#3	TTC	TSC	⚠ 25010H-003IS052
	1.5	Standard	0.8750	5.519	5.954	6.078	9.829	#3	TTC	TSC	24015H-003IS056
		Standard	0.9375	5.529	5.954	6.078	9.829	#3	TTC	TSC	24015H-003IS060
		Extended	0.9375	7.136	9.423	9.547	13.298	#3	TTC	TSC	⚠ 25015H-003IS060

Imperial #4 Taper Shank Holders

Flute	Series	Length	Body D_1	Body L_2	Body L_4	Body L_3*	Body L_1	Shank MT	Shank P_1	Shank P_2	Part No.
Straight	1	Short	0.7031	2.558	3.954	4.078	8.829	#4	TTC	TSC	22010S-004IS045
		Short	0.8125	2.558	3.954	4.078	8.829	#4	TTC	TSC	22010S-004IS052
	1.5	Short	0.8750	2.572	3.954	4.078	8.829	#4	TTC	TSC	22015S-004IS056
		Short	0.9375	2.586	3.954	4.078	8.829	#4	TTC	TSC	22015S-004IS060
Helical	1	Standard	17.86	134.57	151.23	154.38	275.06	#4	TTC	TSC	24010H-004IS045
		Standard	20.64	134.57	151.23	154.38	275.06	#4	TTC	TSC	24010H-004IS052
		Extended	20.64	169.88	237.74	240.89	361.57	#4	TTC	TSC	⚠ 25010H-004IS052
		Long	20.64	166.7	402.77	405.92	526.59	#4	TTC	TSC	⚠ 26010H-004IS052
	1.5	Standard	22.23	136.42	151.23	154.38	275.06	#4	TTC	TSC	24015H-004IS056
		Standard	23.81	137.44	151.23	154.38	275.06	#4	TTC	TSC	24015H-004IS060
		Extended	23.81	173.13	237.74	240.89	361.57	#4	TTC	TSC	⚠ 25015H-004IS060
		Long	23.81	173.13	403.58	406.73	527.41	#4	TTC	TSC	⚠ 26015H-004IS060

*L_3 is 1.60 mm (0.063") shorter if using a structural steel holder with Notch Point®, GEN2 T-A®, or 150° structural steel T-A® drill insert geometry.

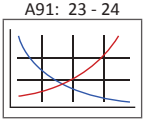
Connection Accessories

Series	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
1	7375-IP9-1	7375N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)
1.5	739-IP9-1	739N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

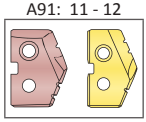
⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A91: 22** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

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Key on A91: 2

A91: 11 - 12



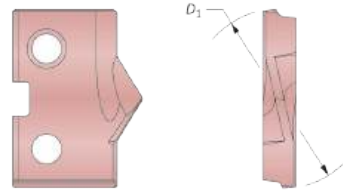
Ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

T-A® Structural Steel Drill Inserts

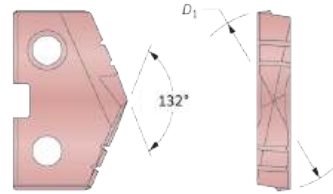
Thin Wall
For material up to 11.5 mm (7/16") thick.





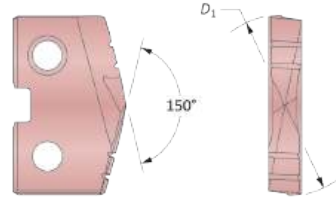
Notch Point®
For material over 11.5 mm (7/16") thick.





150° Structural Steel
For material over 11.5 mm (7/16") thick and for reduced exit burr.



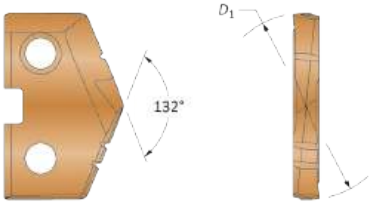


Series	Insert D_1 mm	Insert D_1 inch	Insert Fractional Equivalent	Geometry	HSS: Super Cobalt AM200®	HSS: Super Cobalt TiAlN
2	25.40	1.0000	1	Thin Wall	152H-0100-TW	152A-0100-TW
				Notch Point®	152H-0100-NP	152A-0100-NP
				150° Structural Steel	152H-0100-SS	152A-0100-SS
	26.00	1.0236	—	Thin Wall	152H-26-TW	152A-26-TW
				Notch Point®	152H-26-NP	152A-26-NP
				150° Structural Steel	152H-26-SS	152A-26-SS
	26.99	1.0625	1-1/16	Thin Wall	152H-0102-TW	152A-0102-TW
				Notch Point®	152H-0102-NP	152A-0102-NP
				150° Structural Steel	152H-0102-SS	152A-0102-SS
	27.00	1.0630	—	Thin Wall	152H-27-TW	152A-27-TW
				Notch Point®	152H-27-NP	152A-27-NP
				150° Structural Steel	152H-27-SS	152A-27-SS
	28.58	1.1250	1-1/8	Thin Wall	152H-0104-TW	152A-0104-TW
				Notch Point®	152H-0104-NP	152A-0104-NP
				150° Structural Steel	152H-0104-SS	152A-0104-SS
2.5	30.16	1.1875	1-3/16	Thin Wall	152H-0106-TW	152A-0106-TW
				Notch Point®	152H-0106-NP	152A-0106-NP
				150° Structural Steel	152H-0106-SS	152A-0106-SS
	31.00	1.2205	—	Thin Wall	152H-31-TW	152A-31-TW
				Notch Point®	152H-31-NP	152A-31-NP
				150° Structural Steel	152H-31-SS	152A-31-SS
	31.75	1.2500	1-1/4	Thin Wall	152H-0108-TW	152A-0108-TW
				Notch Point®	152H-0108-NP	152A-0108-NP
				150° Structural Steel	152H-0108-SS	152A-0108-SS
	33.00	1.2992	—	Thin Wall	152H-33-TW	152A-33-TW
				Notch Point®	152H-33-NP	152A-33-NP
				150° Structural Steel	152H-33-SS	152A-33-SS
	33.34	1.3125	1-5/16	Thin Wall	152H-0110-TW	152A-0110-TW
				Notch Point®	152H-0110-NP	152A-0110-NP
				150° Structural Steel	152H-0110-SS	152A-0110-SS
	34.93	1.3750	1-3/8	Thin Wall	152H-0112-TW	152A-0112-TW
				Notch Point®	152H-0112-NP	152A-0112-NP
				150° Structural Steel	152H-0112-SS	152A-0112-SS

2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

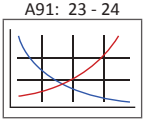
GEN2 T-A® Structural Steel Drill Inserts





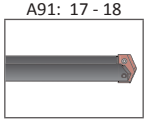
Series	Insert D_1 mm	Insert D_1 inch	Fractional Equivalent	HSS: Super Cobalt AM200®	Carbide: K35 (C1) AM300®
2	25.40	1.0000	1	**452H-0100-HE**	**4C12P-0100-HE**
	26.00	1.0236	—	**452H-26-HE**	**4C12P-26-HE**
	26.99	1.0625	1-1/16	**452H-0102-HE**	**4C12P-0102-HE**
	27.00	1.0630	—	**452H-27-HE**	**4C12P-27-HE**
	28.58	1.1250	1-1/8	**452H-0104-HE**	**4C12P-0104-HE**
2.5	30.16	1.1875	1-3/16	**452H-0106-HE**	**4C12P-0106-HE**
	31.00	1.2205	—	**452H-31-HE**	**4C12P-31-HE**
	31.75	1.2500	1-1/4	**452H-0108-HE**	**4C12P-0108-HE**
	33.00	1.2992	—	**452H-33-HE**	**4C12P-33-HE**
	33.34	1.3125	1-5/16	**452H-0110-HE**	**4C12P-0110-HE**
	34.93	1.3750	1-3/8	**452H-0112-HE**	**4C12P-0112-HE**

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Key on A91: 2

A91: 17 - 18

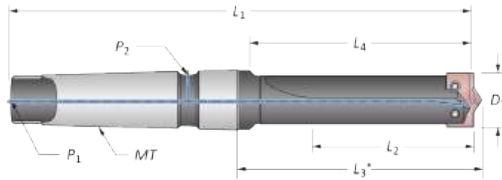


Inserts sold in quantities of 2.

2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

T-A® Structural Steel Drill Insert Holders





Metric #3 Taper Shank Holders

	Flute	Series	Body Length	Body D_1	Body L_2	Body L_4	Body L_3*	Body L_1	Shank MT	Shank P_1	Shank P_2	Part No.
m	Helical	2	Extended	25.40	181.41	239.06	242.9	337.49	#3	TTC	TSC	⚠ 25020H-003IS100

Metric #4 Taper Shank Holders

	Flute	Series	Body Length	Body D_1	Body L_2	Body L_4	Body L_3*	Body L_1	Shank MT	Shank P_1	Shank P_2	Part No.
m	Straight	2	Short	25.40	81.56	116.18	120.02	240.00	#4	TTC	TSC	22020S-004IS100
		2.5	Short	30.16	82.63	116.18	120.02	240.00	#4	TTC	TSC	22025S-004IS112
	Helical	2	Standard	25.40	148.72	166.98	170.82	290.80	#4	TTC	TSC	24020H-004IS100
			Extended	25.40	172.01	237.62	241.45	361.44	#4	TTC	TSC	⚠ 25020H-004IS100
			Long	25.40	172.01	408.20	412.04	532.03	#4	TTC	TSC	⚠ 26020H-004IS100
		2.5	Standard	30.16	148.72	166.98	170.82	290.80	#4	TTC	TSC	24025H-004IS112

*L_3 is 1.60 mm (0.063") shorter if using a structural steel holder with Notch Point®, GEN2 T-A®, or 150° structural steel T-A® drill insert geometry.

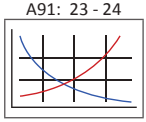
Connection Accessories

 Insert Screws	 Nylon Locking Screws	 Insert Driver	 Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
7495-IP15-1	7495N-IP15-1	8IP-15	8IP-15TL	8IP-15B	690 N-cm (61.0 in-lbs)

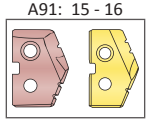
*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A91: 22** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A91: 23 - 24



A91: 15 - 16



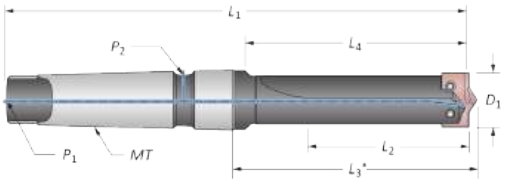
Key on A91: 2

m = Metric (mm)
i = Imperial (in)
Screws sold in multiples of 10.

2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

T-A® Structural Steel Drill Insert Holders





Imperial #3 Taper Shank Holders

	Flute	Series	Body Length	D_1	L_2	L_4	L_3*	L_1	Shank MT	P_1	P_2	Part No.
i	Helical	2	Extended	1.0000	7.142	9.412	9.563	13.287	#3	TTC	TSC	⚠ 25020H-003IS100

Imperial #4 Taper Shank Holders

	Flute	Series	Body Length	D_1	L_2	L_4	L_3*	L_1	Shank MT	P_1	P_2	Part No.
i	Straight	2	Short	1.0000	3.211	4.574	4.725	9.449	#4	TTC	TSC	22020S-004IS100
		2.5	Short	1.1875	3.253	4.574	4.725	9.449	#4	TTC	TSC	22025S-004IS112
	Helical	2	Standard	1.0000	5.855	6.574	6.725	11.449	#4	TTC	TSC	24020H-004IS100
			Extended	1.0000	6.772	9.355	9.506	14.230	#4	TTC	TSC	⚠ 25020H-004IS100
			Long	1.0000	6.772	16.071	16.222	20.946	#4	TTC	TSC	⚠ 26020H-004IS100
		2.5	Standard	1.1875	5.855	6.574	6.725	11.449	#4	TTC	TSC	24025H-004IS112

*L_3 is 1.60 mm (0.063") shorter if using a structural steel holder with Notch Point®, GEN2 T-A®, or 150° structural steel T-A® drill insert geometry.

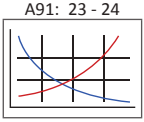
Connection Accessories

 Insert Screws	 Nylon Locking Screws	 Insert Driver	 Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
7495-IP15-1	7495N-IP15-1	8IP-15	8IP-15TL	8IP-15B	690 N-cm (61.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

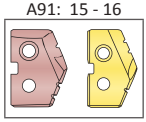
⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A91: 22** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A91: 23 - 24



Key on A91: 2

A91: 15 - 16



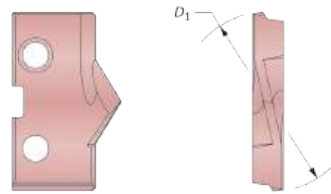
ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

3 Series: 34.37 mm - 47.82 mm (1.3530" - 1.8829")

T-A® Structural Steel Drill Inserts

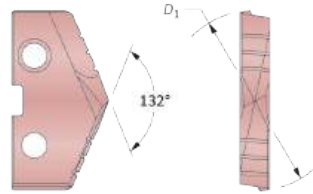
Thin Wall
For material up to 11.5 mm (7/16") thick.





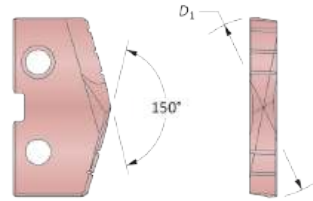
Notch Point®
For material over 11.5 mm (7/16") thick.





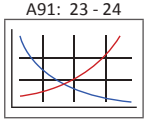
150° Structural Steel
For material over 11.5 mm (7/16") thick and for reduced exit burr.



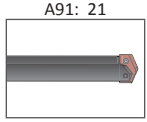


Insert				HSS: Super Cobalt	
D_1 mm	D_1 inch	Fractional Equivalent	Geometry	AM200®	TiAlN
36.51	1.4375	1-7/16	Thin Wall	**153H-0114-TW**	**153A-0114-TW**
			Notch Point®	**153H-0114-NP**	**153A-0114-NP**
			150° Structural Steel	**153H-0114-SS**	**153A-0114-SS**
38.10	1.5000	1-1/2	Thin Wall	**153H-0116-TW**	**153A-0116-TW**
			Notch Point®	**153H-0116-NP**	**153A-0116-NP**
			150° Structural Steel	**153H-0116-SS**	**153A-0116-SS**
39.00	1.5354	—	Thin Wall	**153H-39-TW**	**153A-39-TW**
			Notch Point®	**153H-39-NP**	**153A-39-NP**
			150° Structural Steel	**153H-39-SS**	**153A-39-SS**
39.69	1.5625	1-9/16	Thin Wall	**153H-0118-TW**	**153A-0118-TW**
			Notch Point®	**153H-0118-NP**	**153A-0118-NP**
			150° Structural Steel	**153H-0118-SS**	**153A-0118-SS**

A91: 23 - 24



A91: 21

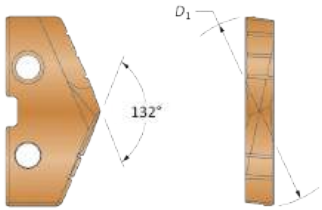


Inserts sold in quantities of 1.

3 Series: 34.37 mm - 47.82 mm (1.3530" - 1.8829")

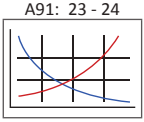
GEN2 T-A® Structural Steel Drill Inserts





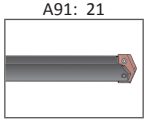
Insert			HSS: Super Cobalt
D_1 mm	D_1 inch	Fractional Equivalent	AM200®
36.51	1.4375	1-7/16	**453H-0114-HE**
38.10	1.5000	1-1/2	**453H-0116-HE**
39.00	1.5354	—	**453H-39-HE**
39.69	1.5625	1-9/16	**453H-0118-HE**

A91: 23 - 24



Key on A91: 2

A91: 21

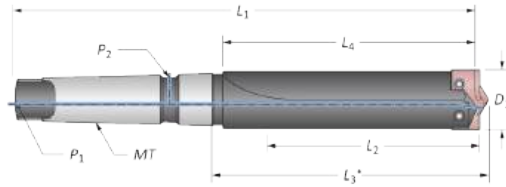


Inserts sold in quantities of 1.

3 Series: 34.37 mm - 47.82 mm (1.3530" - 1.8829")

T-A® Structural Steel Drill Insert Holders





Imperial #4 Taper Shank Holders

	Flute	Body Length	Body D_1	Body L_2	Body L_4	Body L_3*	Body L_1	Shank MT	Shank P_1	Shank P_2	Part No.
i	Straight	Short	1.4063	4.441	6.037	6.250	10.912	#4	TTC	TSC	**22030S-004IS126**
	Helical	Standard	1.4063	7.118	7.787	8.000	12.662	#4	TTC	TSC	**24030H-004IS126**

*L_3 is 1.60 mm (0.063") shorter if using a structural steel holder with Notch Point®, GEN2 T-A®, or 150° structural steel T-A® drill insert geometry.

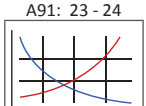
Connection Accessories

 Insert Screws	 Nylon Locking Screws	 Insert Driver	Admissible Tightening Torque*
7514-IP20-1	**7514N-IP20-1**	**8IP-20**	1370 N-cm (121.3 in-lbs)

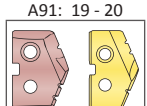
*Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A91: 22** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

A91: 23 - 24



A91: 19 - 20



Key on A91: 2

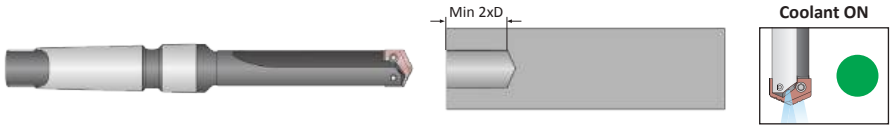
ⓜ = Metric (mm)
ⓘ = Imperial (in)
Screws sold in multiples of 10.

Deep Hole Drilling Guidelines

For Lengths Greater Than 9xD (Standard Plus, Extended, Long, Long Plus, XL, 3XL, and Special Lengths)

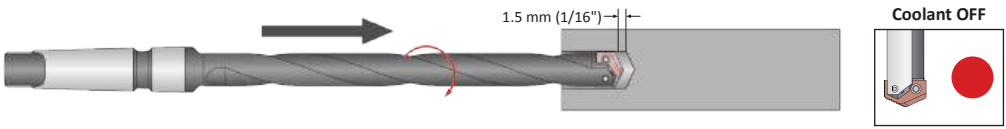
1. Pilot Hole
100% RPM
100% mm/rev (IPR)

Establish the pilot hole using the same diameter short drill to a depth of 2xD minimum.
Utilize a pilot drill with the same or larger included point angle.



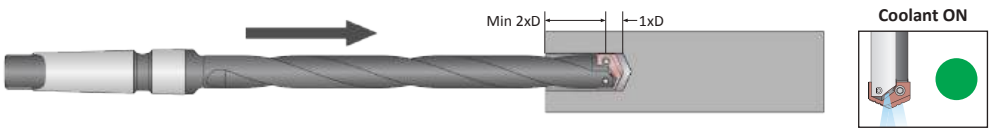
2. Feed-in
⚠ 50 RPM max
300 mm/min (12 IPM)

Feed the longer drill within 1.5 mm (1/16") short of the established pilot hole bottom at a **maximum of 50 RPM** and 300 mm/min (12 IPM) feed rate.



3. Deep Hole Transition Drilling
50% RPM
75% mm/rev (IPR)

Drill additional 1xD past the bottom of the pilot hole at 50% reduction of recommended speed and 25% reduction of recommended feed.
Minimum of one second dwell is required to meet full speed before feeding.



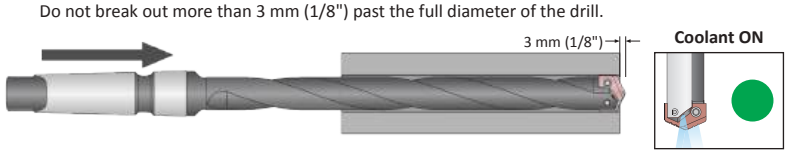
4. Deep Hole Drilling - Blind
100% RPM
100% mm/rev (IPR)

Drill to full depth at recommended speed and feed for longer drill according to Allied speed and feed charts.
No peck cycle recommended.



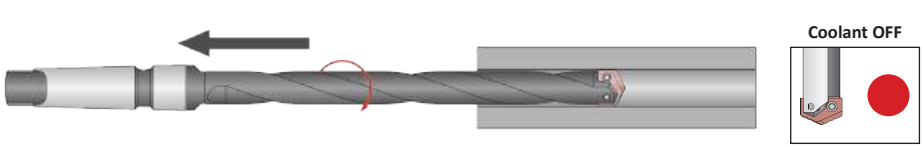
5. Deep Hole Drilling - at Breakout
50% RPM
75% mm/rev (IPR)

For through holes only:
Reduce speed by 50% and feed by 25% prior to breakout.
Do not break out more than 3 mm (1/8") past the full diameter of the drill.



6. Drill Retract
⚠ 50 RPM max

Reduce speed to a **maximum of 50 RPM** before retracting from the hole.



⚠ WARNING **Tool failure can cause serious injury. To prevent:**

- When using holders without support bushing, use a short T-A holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

Recommended Drilling Data | Metric (mm)



THIN WALL | SUPER COBALT

ISO	Material	Hardness (BHN)	Speed (m/min) - Mist Coolant		Feed Rate (mm/rev) by Diameter			
					0 series	1 series	2 series	3 series
			AM200®	TiAlN	12.98 mm - 17.67 mm	17.53 mm - 24.40 mm	24.41 mm - 35.06 mm	34.37 mm - 47.82 mm
P	**Structural Steel** A36, A285, A516, etc.	100 - 150	39	34	0.30	0.45	0.48	0.50
		150 - 250	35	31	0.28	0.40	0.43	0.48
		250 - 350	32	28	0.25	0.36	0.40	0.45





NOTCH POINT & 150° STRUCTURAL STEEL | SUPER COBALT

ISO	Material	Hardness (BHN)	Speed (m/min) - Mist Coolant		Feed Rate (mm/rev) by Diameter			
					0 series	1 series	2 series	3 series
			AM200®	TiAlN	12.98 mm - 17.67 mm	17.53 mm - 24.40 mm	24.41 mm - 35.06 mm	34.37 mm - 47.82 mm
P	**Structural Steel** A36, A285, A516, etc.	100 - 150	39	34	0.25	0.30	0.36	0.45
		150 - 250	35	31	0.23	0.28	0.30	0.40
		250 - 350	35	28	0.20	0.25	0.28	0.36



GEN2 T-A HIGH EFFICIENCY | SUPER COBALT

ISO	Material	Hardness (BHN)	Speed (m/min) - Mist Coolant	Feed Rate (mm/rev) by Diameter			
				0 series	1 series	2 series	3 series
			AM200®	12.98 mm - 17.67 mm	17.53 mm - 24.40 mm	24.41 mm - 35.06 mm	34.37 mm - 47.82 mm
P	**Structural Steel** A36, A285, A516, etc.	100 - 150	39	0.25	0.30	0.36	0.46
		150 - 250	35	0.23	0.28	0.30	0.40
		250 - 350	35	0.20	0.25	0.28	0.36

GEN2 T-A HIGH EFFICIENCY | CARBIDE K35 (C1)

ISO	Material	Hardness (BHN)	Speed (m/min) - Mist Coolant	Feed Rate (mm/rev) by Diameter			
				0 series	1 series	2 series	3 series
			AM300®	12.98 mm - 17.67 mm	17.53 mm - 24.40 mm	24.41 mm - 35.06 mm	34.37 mm - 47.82 mm
P	**Structural Steel** A36, A285, A516, etc.	100 - 150	50	0.20	0.28	0.38	0.43
		150 - 250	47	0.15	0.25	0.33	0.38
		250 - 350	43	0.13	0.23	0.30	0.33

Recommended Drilling Data | Imperial (in)



THIN WALL | SUPER COBALT

ISO	Material	Hardness (BHN)	Speed (SFM) - Mist Coolant		Feed Rate (IPR) by Diameter			
					0 series	1 series	2 series	3 series
			AM200®	TiAlN	0.5110" - 0.6959"	0.6900" - 0.9609"	0.9610" - 1.3809"	1.3530" - 1.8829"
P	**Structural Steel** A36, A285, A516, etc.	100 - 150	125	110	0.012	0.018	0.019	0.020
		150 - 250	115	100	0.011	0.016	0.017	0.019
		250 - 350	105	90	0.010	0.014	0.016	0.018





NOTCH POINT & 150° STRUCTURAL STEEL | SUPER COBALT

ISO	Material	Hardness (BHN)	Speed (SFM) - Mist Coolant		Feed Rate (IPR) by Diameter			
					0 series	1 series	2 series	3 series
			AM200®	TiAlN	0.5110" - 0.6959"	0.6900" - 0.9609"	0.9610" - 1.3809"	1.3530" - 1.8829"
P	**Structural Steel** A36, A285, A516, etc.	100 - 150	125	110	0.010	0.012	0.014	0.018
		150 - 250	115	100	0.009	0.011	0.012	0.016
		250 - 350	105	90	0.008	0.010	0.011	0.014



GEN2 T-A HIGH EFFICIENCY | SUPER COBALT

ISO	Material	Hardness (BHN)	Speed (SFM) - Mist Coolant	Feed Rate (IPR) by Diameter			
				0 series	1 series	2 series	3 series
			AM200®	0.5110" - 0.6959"	0.6900" - 0.9609"	0.9610" - 1.3809"	1.3530" - 1.8829"
P	**Structural Steel** A36, A285, A516, etc.	100 - 150	125	0.010	0.012	0.014	0.018
		150 - 250	115	0.009	0.011	0.012	0.016
		250 - 350	105	0.008	0.010	0.011	0.014

GEN2 T-A HIGH EFFICIENCY | CARBIDE K35 (C1)

ISO	Material	Hardness (BHN)	Speed (SFM) - Mist Coolant	Feed Rate (IPR) by Diameter			
				0 series	1 series	2 series	3 series
			AM300®	0.5110" - 0.6959"	0.6900" - 0.9609"	0.9610" - 1.3809"	1.3530" - 1.8829"
P	**Structural Steel** A36, A285, A516, etc.	100 - 150	165	0.008	0.011	0.015	0.017
		150 - 250	155	0.006	0.010	0.013	0.015
		250 - 350	140	0.005	0.009	0.012	0.013

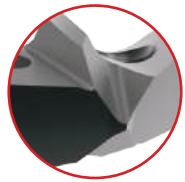
GEN3SYS® XT Pro Structural Steel Drilling System

System Overview

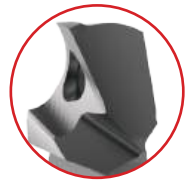




New Point Design
Increases stability without hindering penetration.



Redesigned Insert
Provides consistent performance and adds durability.



Improved Geometry
Extends tool life and increases insert strength without increasing horsepower consumption.

AM420

AM420 Coating
Increases heat threshold and extends tool life.



Get the Consistency You Need

The challenge of drilling structural steel materials is about to get easier. Developed through a rigorous and thorough testing process, the modified and improved XTST insert is a product of innovation.

Achieve the ***consistent performance*** you need while matching or even exceeding your current parameters.

Tough Drilling is Tough No More

Structural steel applications can prove to be difficult to machine, so you need a drill that's been put through the fire to ensure it can conquer those challenging applications.

Rigorous testing and countless hours of design and programming make the XT Pro structural steel insert the optimal drill for structural steel applications.

- Diameter range: 12.00 mm - 35.00 mm (0.4724" - 1.3780").
- Holders available in 1.5xD, 3xD, 5xD, and 7xD lengths.
- Flanged shank with flat.



NOTICE: Structural steel GEN3SYS holders are specifically designed to be used only with GEN3SYS XT Pro structural steel geometry inserts. Using other GEN3SYS XT or XT Pro insert geometries in these holders could lead to chip packing and tool failure. Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

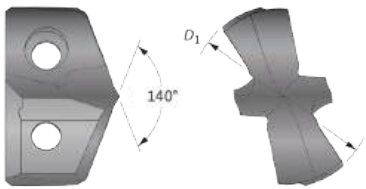
Product Nomenclature

GEN3SYS XT Pro Drill Inserts

XT	ST	20	–	20.00
	ISO Material	Series		Diameter (mm)
	ST = Structural steel	**12** **13** **14** **15** **16** / **17** **18** **20** **22** **24** / **26** **29** **32**		To order nonstocked standard diameters, see table below.

*Available in 12-32 series only.

Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	20.10 mm, 20 series = use Part No. **XTST20-20.10**
Imperial:	0.7913", 20 series = use Part No. **XTST20-20.10**



Reference Key

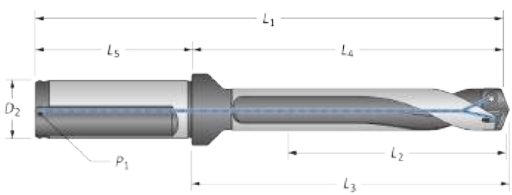
Symbol	Attribute
D_1	Insert diameter

GEN3SYS XT and XT Pro Drill Holders

ST	03	12	0	–	20	FM
	Drill Length	Series	Flute		Shank Diameter	Shank Style
	01 = 1.5xD **03** = 3xD **05** = 5xD **07** = 7xD	**12** **13** **14** **15** **16** **17** **18** / **20** **22** **24** **26** **29** **32**	**0** = Standard **5** = Oversize		Metric (mm): **16** = 16 mm, **20** = 20 mm, **25** = 25 mm, **32** = 32 mm, **40** = 40 mm Imperial (in): **063** = 0.625", **075** = 0.750", **100** = 1.000", **125** = 1.250", **150** = 1.500"	**FM** = Flanged metric (with flat) **CM** = Cylindrical metric (no flat) **F** = Flanged (with flat) **C** = Cylindrical (no flat)

Reference Key

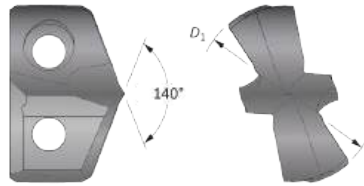
Symbol	Attribute
D_2	Shank diameter
L_1	Overall length
L_2	Drill depth
L_3	Holder reference length
L_4	Holder length
L_5	Shank length
P_1	Rear pipe tap



12 Series: 12.00 mm - 12.99 mm (0.4724" - 0.5117")

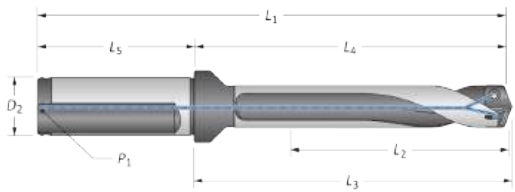
GEN3SYS® XT Pro Structural Steel Drilling System





Insert			Part No.
D_1 mm	D_1 inch	Fractional Equivalent	XTST
12.00	0.4724	—	**XTST12-12.00**





	Body					Shank			Part No.
	Length	L_2	L_4	L_3	L_1	L_5	D_2	P_1	With Flat
m	1.5xD	19.5	47.1	49.3	97.1	50.0	20	1/8 BSPT	**ST01120-20FM**
m	3xD	39.0	66.6	68.8	116.6	50.0	20	1/8 BSPT	**ST03120-20FM**
m	5xD	65.0	92.6	94.8	142.6	50.0	20	1/8 BSPT	**ST05120-20FM**
m	7xD	90.9	118.5	120.8	168.6	50.0	20	1/8 BSPT	**ST07120-20FM**
i	1.5xD	0.766	1.859	1.938	3.891	2.031	3/4	1/8 NPT	**ST01120-075F**
i	3xD	1.531	2.625	2.703	4.656	2.031	3/4	1/8 NPT	**ST03120-075F**
i	5xD	2.563	3.641	3.734	5.672	2.031	3/4	1/8 NPT	**ST05120-075F**
i	7xD	3.578	4.672	4.750	6.688	2.031	3/4	1/8 NPT	**ST07120-075F**

A91: 41 - 42
Key on A91: 2

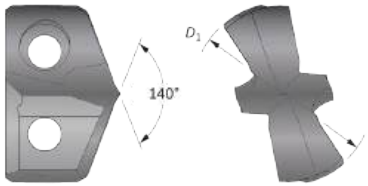
m = Metric (mm)
i = Imperial (in)

Inserts sold in multiples of 1. | Screws sold in multiples of 10.

13 Series: 13.00 mm - 13.99 mm (0.5118" - 0.5511")

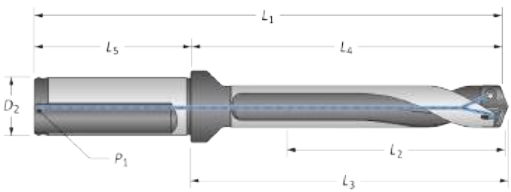
GEN3SYS® XT Pro Structural Steel Drilling System





Insert			Part No.
D_1 mm	D_1 inch	Fractional Equivalent	XTST
13.00	0.5118	—	**XTST13-13.00**





	Body					Shank			Part No.
	Length	L_2	L_4	L_3	L_1	L_5	D_2	P_1	With Flat
m	1.5xD	21.1	48.1	50.3	99.7	50.0	20	1/8 BSPT	**ST01130-20FM**
	3xD	42.1	69.1	71.3	120.7	50.0	20	1/8 BSPT	**ST03130-20FM**
	5xD	69.9	97.2	99.4	148.8	50.0	20	1/8 BSPT	**ST05130-20FM**
	7xD	97.9	125.4	127.6	177.0	50.0	20	1/8 BSPT	**ST07130-20FM**
i	1.5xD	0.828	1.891	1.984	3.922	2.031	3/4	1/8 NPT	**ST01130-075F**
	3xD	1.656	2.719	2.813	4.750	2.031	3/4	1/8 NPT	**ST03130-075F**
	5xD	2.750	3.828	3.906	5.859	2.031	3/4	1/8 NPT	**ST05130-075F**
	7xD	3.859	4.938	5.031	6.969	2.031	3/4	1/8 NPT	**ST07130-075F**

A91: 41 - 42
Key on A91: 2

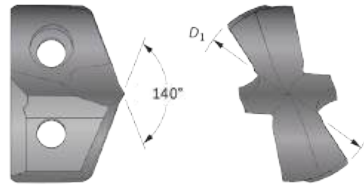
m = Metric (mm)
i = Imperial (in)

Inserts sold in multiples of 1. | Screws sold in multiples of 10.

14 Series: 14.00 mm - 14.99 mm (0.5512" - 0.5905")

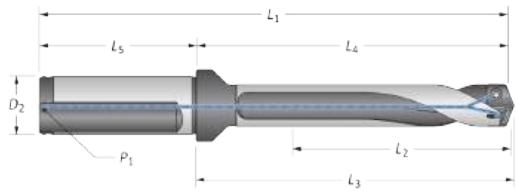
GEN3SYS® XT Pro Structural Steel Drilling System





Insert D_1 mm	Insert D_1 inch	Fractional Equivalent	Part No. XTST
14.00	0.5512	—	**XTST14-14.00**
14.29	0.5626	9/16	**XTST14-14.29**





	Body Length	L_2	L_4	L_3	L_1	Shank L_5	D_2	P_1	Part No. With Flat
m	1.5xD	22.5	49.9	52.5	99.9	50.0	20	1/8 BSPT	**ST01140-20FM**
m	3xD	45.0	72.4	75.0	122.4	50.0	20	1/8 BSPT	**ST03140-20FM**
m	5xD	75.0	102.4	104.9	152.4	50.0	20	1/8 BSPT	**ST05140-20FM**
m	7xD	104.9	132.3	134.9	182.3	50.0	20	1/8 BSPT	**ST07140-20FM**
i	1.5xD	0.906	1.953	2.063	3.984	2.031	3/4	1/8 NPT	**ST01140-075F**
i	3xD	1.781	2.844	2.953	4.875	2.031	3/4	1/8 NPT	**ST03140-075F**
i	5xD	2.953	4.031	4.125	6.063	2.031	3/4	1/8 NPT	**ST05140-075F**
i	7xD	4.141	5.203	5.313	7.234	2.031	3/4	1/8 NPT	**ST07140-075F**

A91: 41 - 42
Key on A91: 2

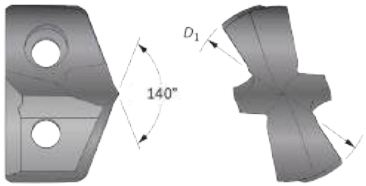
m = Metric (mm)
i = Imperial (in)

Inserts sold in multiples of 1. | Screws sold in multiples of 10.

15 Series: 15.00 mm - 15.99 mm (0.5906" - 0.6298")

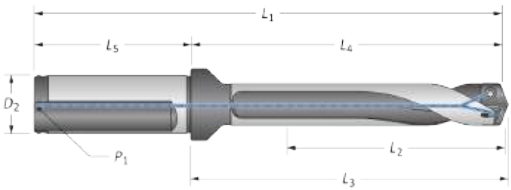
GEN3SYS® XT Pro Structural Steel Drilling System





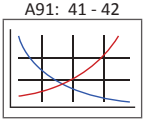
Insert D_1 mm	Insert D_1 inch	Fractional Equivalent	Part No. XTST
15.00	0.5906	—	**XTST15-15.00**
15.88	0.6252	5/8	**XTST15-15.88**





	Body Length	L_2	L_4	L_3	L_1	Shank L_5	D_2	P_1	Part No. With Flat
m	1.5xD	24.0	51.1	53.6	101.1	50.0	20	1/8 BSPT	**ST01150-20FM**
	3xD	48.0	75.1	77.6	125.1	50.0	20	1/8 BSPT	**ST03150-20FM**
	5xD	80.0	107.0	109.6	157.0	50.0	20	1/8 BSPT	**ST05150-20FM**
	7xD	111.9	139.0	141.6	189.0	50.0	20	1/8 BSPT	**ST07150-20FM**
i	1.5xD	0.953	2.016	2.109	4.047	2.031	3/4	1/8 NPT	**ST01150-075F**
	3xD	1.891	2.953	3.047	4.984	2.031	3/4	1/8 NPT	**ST03150-075F**
	5xD	3.156	4.219	4.313	6.234	2.031	3/4	1/8 NPT	**ST05150-075F**
	7xD	4.422	5.469	5.578	7.500	2.031	3/4	1/8 NPT	**ST07150-075F**

A91: 41 - 42



Key on A91: 2

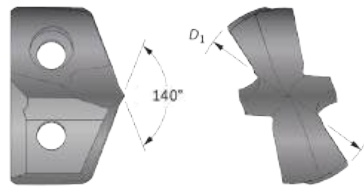
m = Metric (mm)
i = Imperial (in)

Inserts sold in multiples of 1. | Screws sold in multiples of 10.

16 Series: 16.00 mm - 16.99 mm (0.6299" - 0.6692")

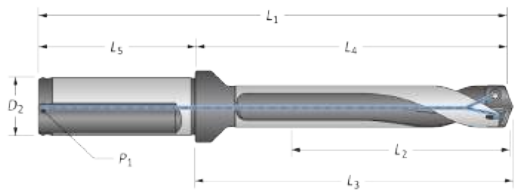
GEN3SYS® XT Pro Structural Steel Drilling System





Insert D_1 mm	Insert D_1 inch	Fractional Equivalent	Part No. XTST
16.00	0.6299	—	**XTST16-16.00**





	Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No. With Flat
m	1.5xD	25.5	55.8	58.7	105.8	50.0	20	1/8 BSPT	**ST01160-20FM**
m	3xD	51.0	81.3	84.2	131.3	50.0	20	1/8 BSPT	**ST03160-20FM**
m	5xD	84.9	115.3	118.2	165.3	50.0	20	1/8 BSPT	**ST05160-20FM**
m	7xD	118.9	149.3	152.2	199.3	50.0	20	1/8 BSPT	**ST07160-20FM**
i	1.5xD	1.016	2.203	2.313	4.234	2.031	3/4	1/8 NPT	**ST01160-075F**
i	3xD	3.016	3.203	3.313	5.234	2.031	3/4	1/8 NPT	**ST03160-075F**
i	5xD	3.359	4.531	4.656	6.563	2.031	3/4	1/8 NPT	**ST05160-075F**
i	7xD	4.688	5.875	5.984	7.906	2.031	3/4	1/8 NPT	**ST07160-075F**

A91: 41 - 42
Key on A91: 2

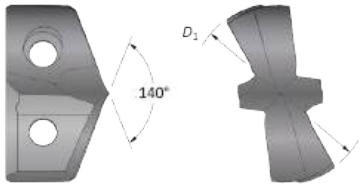
m = Metric (mm)
i = Imperial (in)

Inserts sold in multiples of 1. | Screws sold in multiples of 10.

17 Series: 17.00 mm - 17.99 mm (0.6693" - 0.7086")

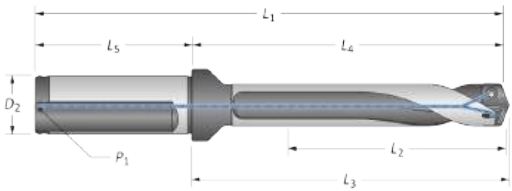
GEN3SYS® XT Pro Structural Steel Drilling System





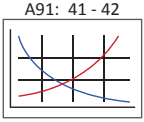
Insert D_1 mm	Insert D_1 inch	Fractional Equivalent	Part No. XTST
17.00	0.6693	—	**XTST17-17.00**
17.46	0.6876	11/16	**XTST17-17.46**





	Body Length	L_2	L_4	L_3	L_1	Shank L_5	D_2	P_1	Part No. With Flat
m	1.5xD	27.0	57.1	60.0	107.1	50.0	20	1/8 BSPT	**ST01170-20FM**
	3xD	54.0	84.1	87.0	134.1	50.0	20	1/8 BSPT	**ST03170-20FM**
	5xD	89.9	120.0	122.9	170.0	50.0	20	1/8 BSPT	**ST05170-20FM**
	7xD	125.9	156.0	158.9	206.0	50.0	20	1/8 BSPT	**ST07170-20FM**
i	1.5xD	1.063	2.250	2.359	4.281	2.031	3/4	1/8 NPT	**ST01170-075F**
	3xD	2.125	3.313	3.422	5.344	2.031	3/4	1/8 NPT	**ST03170-075F**
	5xD	3.547	4.719	4.844	6.750	2.031	3/4	1/8 NPT	**ST05170-075F**
	7xD	4.969	6.141	6.250	8.172	2.031	3/4	1/8 NPT	**ST07170-075F**

A91: 41 - 42



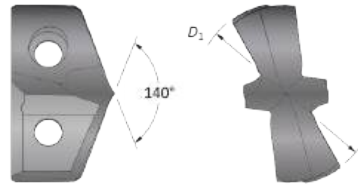
m = Metric (mm)
i = Imperial (in)

Inserts sold in multiples of 1. | Screws sold in multiples of 10.

18 Series: 18.00 mm - 19.99 mm (0.7087" - 0.7873")

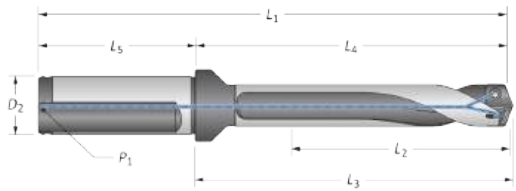
GEN3SYS® XT Pro Structural Steel Drilling System





Insert D_1 mm	Insert D_1 inch	Fractional Equivalent	Part No. XTST
18.00	0.7087	—	**XTST18-18.00**
19.00	0.7480	—	**XTST18-19.00**





	Body Length	L_2	L_4	L_3	L_1	Shank L_5	D_2	P_1	Part No. With Flat
m	1.5xD	30.0	64.0	67.1	114.0	50.0	20	1/8 BSPT	**ST01180-20FM**
	3xD	60.0	94.0	97.1	144.0	50.0	20	1/8 BSPT	**ST03180-20FM**
	5xD	99.9	134.0	137.1	184.0	50.0	20	1/8 BSPT	**ST05180-20FM**
	7xD	139.9	174.0	177.1	224.0	50.0	20	1/8 BSPT	**ST07180-20FM**
i	1.5xD	1.188	2.531	2.641	4.797	2.281	1	1/8 NPT	**ST01180-100F**
	3xD	2.375	3.703	3.828	5.984	2.281	1	1/8 NPT	**ST03180-100F**
	5xD	3.938	5.281	5.391	7.563	2.281	1	1/8 NPT	**ST05180-100F**
	7xD	5.516	6.844	6.969	9.125	2.281	1	1/8 NPT	**ST07180-100F**

A91: 41 - 42
Key on A91: 2

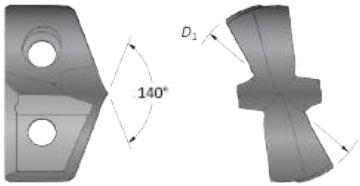
m = Metric (mm)
i = Imperial (in)

Inserts sold in multiples of 1. | Screws sold in multiples of 10.

20 Series: 20.00 mm - 21.99 mm (0.7874" - 0.8660")

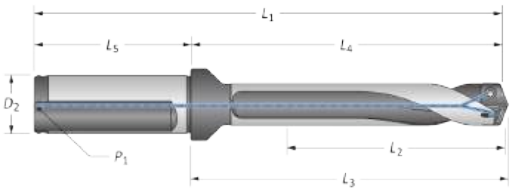
GEN3SYS® XT Pro Structural Steel Drilling System





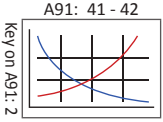
Insert D_1 mm	Insert D_1 inch	Fractional Equivalent	Part No. XTST
20.00	0.7874	—	**XTST20-20.00**
20.64	0.8126	13/16	**XTST20-20.64**
21.00	0.8268	—	**XTST20-21.00**
21.82	0.8591	—	**XTST20-21.82**





	Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No. With Flat
m	1.5xD	33.0	67.1	70.3	123.1	56.0	25	1/8 BSPT	**ST01200-25FM**
m	3xD	66.0	100.1	103.3	156.1	56.0	25	1/8 BSPT	**ST03200-25FM**
m	5xD	110.0	144.1	147.2	200.1	56.0	25	1/8 BSPT	**ST05200-25FM**
m	7xD	153.9	188.1	191.2	244.1	56.0	25	1/8 BSPT	**ST07200-25FM**
i	1.5xD	1.234	2.641	2.766	4.922	2.281	1	1/8 NPT	**ST01200-100F**
i	3xD	2.531	3.938	4.063	6.219	2.281	1	1/8 NPT	**ST03200-100F**
i	5xD	4.344	5.672	5.797	7.953	2.281	1	1/8 NPT	**ST05200-100F**
i	7xD	6.063	7.406	7.531	9.688	2.281	1	1/8 NPT	**ST07200-100F**

A91: 41 - 42



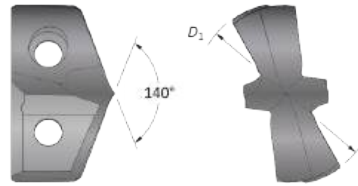
m = Metric (mm)
i = Imperial (in)

Inserts sold in multiples of 1. | Screws sold in multiples of 10.

22 Series: 22.00 mm - 23.99 mm (0.8661" - 0.9448")

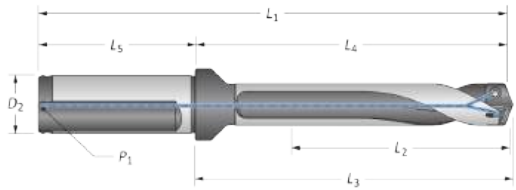
GEN3SYS® XT Pro Structural Steel Drilling System





Insert D_1 mm	Insert D_1 inch	Fractional Equivalent	Part No. XTST
22.00	0.8661	—	**XTST22-22.00**
22.23	0.8752	7/8	**XTST22-22.23**
23.00	0.9055	—	**XTST22-23.00**
23.81	0.9374	15/16	**XTST22-23.81**





	Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No. With Flat
m	1.5xD	36.0	69.3	72.7	125.3	56.0	25	1/8 BSPT	**ST01220-25FM**
									ST01225-25FM*
	3xD	72.0	105.3	108.7	161.3	56.0	25	1/8 BSPT	**ST03220-25FM**
									ST03225-25FM*
	5xD	119.9	153.3	156.7	209.3	56.0	25	1/8 BSPT	**ST05220-25FM**
									ST05225-25FM*
	7xD	167.9	201.3	204.7	257.3	56.0	25	1/8 BSPT	**ST07220-25FM**
									ST07225-25FM*
i	1.5xD	1.406	2.719	2.859	5.000	2.281	1	1/8 NPT	**ST01220-100F**
									ST01225-100F*
	3xD	2.828	4.141	4.281	6.422	2.281	1	1/8 NPT	**ST03220-100F**
									ST03225-100F*
	5xD	4.719	6.031	6.172	8.313	2.281	1	1/8 NPT	**ST05220-100F**
									ST05225-100F*
	7xD	6.609	7.922	8.063	10.203	2.281	1	1/8 NPT	**ST07220-100F**
									ST07225-100F*

*Oversized body holder (minimum drill diameter = 23.00 mm (0.9055")).

A91: 41 - 42
Key on A91: 2

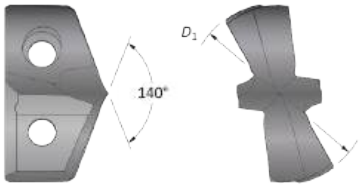
m = Metric (mm)
i = Imperial (in)

Inserts sold in multiples of 1. | Screws sold in multiples of 10.

24 Series: 24.00 mm - 25.99 mm (0.9449" - 1.0235")

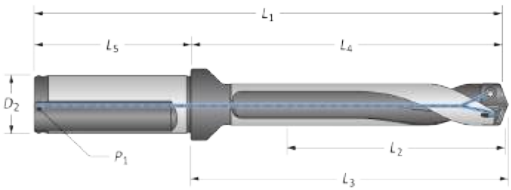
GEN3SYS® XT Pro Structural Steel Drilling System





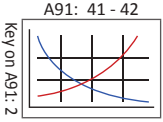
D_1 mm	Insert D_1 inch	Fractional Equivalent	Part No. XTST
24.00	0.9449	—	**XTST24-24.00**
24.60	0.9685	—	**XTST24-24.60**
25.40	1.0000	1	**XTST24-25.40**
25.78	1.0150	—	**XTST24-25.78**





	Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No. With Flat
m	1.5xD	39.0	74.8	78.3	130.8	56.0	25	1/8 BSPT	**ST01240-25FM**
m	3xD	78.0	113.8	117.3	169.8	56.0	25	1/8 BSPT	**ST03240-25FM**
m	5xD	129.9	165.8	169.2	221.8	56.0	25	1/8 BSPT	**ST05240-25FM**
m	7xD	181.9	217.8	221.2	273.8	56.0	25	1/8 BSPT	**ST07240-25FM**
i	1.5xD	1.547	2.953	3.094	5.234	2.281	1	1/8 NPT	**ST01240-100F**
i	3xD	3.078	4.484	4.625	6.766	2.281	1	1/8 NPT	**ST03240-100F**
i	5xD	5.125	6.531	6.656	8.813	2.281	1	1/8 NPT	**ST05240-100F**
i	7xD	7.172	8.578	8.703	10.859	2.281	1	1/8 NPT	**ST07240-100F**

A91: 41 - 42



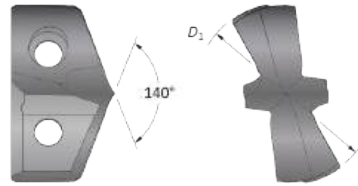
(m) = Metric (mm)
(i) = Imperial (in)

Inserts sold in multiples of 1. | Screws sold in multiples of 10.

26 Series: 26.00 mm - 28.99 mm (1.0236" - 1.1416")

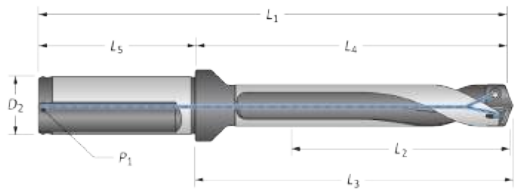
GEN3SYS® XT Pro Structural Steel Drilling System





D_1 mm	Insert D_1 inch	Fractional Equivalent	Part No. XTST
26.00	1.0236	—	**XTST26-26.00**
26.99	1.0626	1-1/16	**XTST26-26.99**
27.00	1.0630	—	**XTST26-27.00**
28.00	1.1024	—	**XTST26-28.00**
28.58	1.1252	1-1/8	**XTST26-28.58**





	Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No. With Flat
m	1.5xD	43.5	84.6	87.9	144.6	60.0	32	1/4 BSPT	**ST01260-32FM**
m	3xD	87.0	128.1	131.4	188.1	60.0	32	1/4 BSPT	**ST03260-32FM**
m	5xD	145.0	186.1	189.4	246.1	60.0	32	1/4 BSPT	**ST05260-32FM**
m	7xD	202.9	244.0	247.4	304.0	60.0	32	1/4 BSPT	**ST07260-32FM**
i	1.5xD	1.703	3.344	3.469	5.625	2.281	1-1/4	1/4 NPT	**ST01260-125F**
i	3xD	3.422	5.063	5.188	7.344	2.281	1-1/4	1/4 NPT	**ST03260-125F**
i	5xD	5.719	7.344	7.484	9.625	2.281	1-1/4	1/4 NPT	**ST05260-125F**
i	7xD	7.984	9.625	9.766	11.906	2.281	1-1/4	1/4 NPT	**ST07260-125F**

A91: 41 - 42
Key on A91: 2

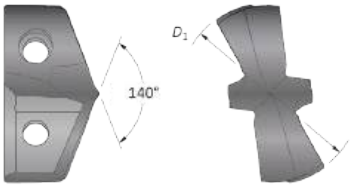
m = Metric (mm)
i = Imperial (in)

Inserts sold in multiples of 1. | Screws sold in multiples of 10.

29 Series: 29.00 mm - 31.99 mm (1.1417" - 1.2597")

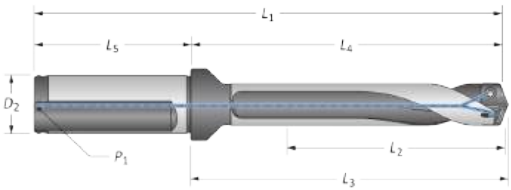
GEN3SYS® XT Pro Structural Steel Drilling System





Insert D_1 mm	Insert D_1 inch	Fractional Equivalent	Part No. XTST
29.00	1.1417	—	**XTST29-29.00**
30.00	1.1811	—	**XTST29-30.00**
30.16	1.1874	1-3/16	**XTST29-30.16**
31.00	1.2205	—	**XTST29-31.00**
31.75	1.2500	1-1/4	**XTST29-31.75**





	Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No. With Flat
m	1.5xD	48.0	88.2	91.7	148.2	60.0	32	1/4 BSPT	**ST01290-32FM**
m	3xD	96.0	136.2	139.7	196.2	60.0	32	1/4 BSPT	**ST03290-32FM**
m	5xD	159.9	200.1	203.7	260.1	60.0	32	1/4 BSPT	**ST05290-32FM**
m	7xD	223.9	264.1	267.7	324.1	60.0	32	1/4 BSPT	**ST07290-32FM**
i	1.5xD	1.891	3.328	3.625	5.766	2.281	1-1/4	1/4 NPT	**ST01290-125F**
i	3xD	3.781	5.375	5.516	7.656	2.281	1-1/4	1/4 NPT	**ST03290-125F**
i	5xD	6.297	7.906	8.047	10.188	2.281	1-1/4	1/4 NPT	**ST05290-125F**
i	7xD	8.813	10.422	10.563	12.703	2.281	1-1/4	1/4 NPT	**ST07290-125F**

A91: 41 - 42
Key on A91: 2

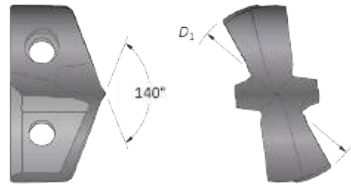
m = Metric (mm)
i = Imperial (in)

Inserts sold in multiples of 1. | Screws sold in multiples of 10.

32 Series: 32.00 mm - 35.00 mm (1.2598" -1.3780")

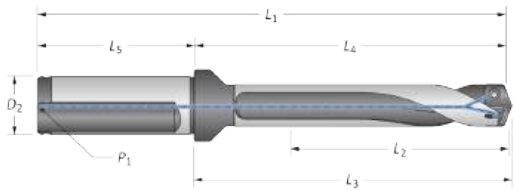
GEN3SYS® XT Pro Structural Steel Drilling System





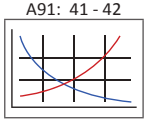
Insert D_1 mm	Insert D_1 inch	Fractional Equivalent	Part No. XTST
32.00	1.2598	—	**XTST32-32.00**
33.00	1.2992	—	**XTST32-33.00**
33.34	1.3126	1-5/16	**XTST32-33.34**
34.00	1.3386	—	**XTST32-34.00**
34.93	1.3752	1-3/8	**XTST32-34.93**





	Length	Body L_2	Body L_4	Body L_3	Body L_1	Shank L_5	Shank D_2	Shank P_1	Part No. With Flat
ⓜ	1.5xD	52.5	105.2	109.5	165.2	60.0	32	1/4 BSPT	**ST01320-32FM**
					173.5	70.0	40	1/4 BSPT	**ST01320-40FM**
	3xD	105.0	157.7	162.0	217.7	60.0	32	1/4 BSPT	**ST03320-32FM**
					227.7	70.0	40	1/4 BSPT	**ST03320-40FM**
	5xD	175.0	227.7	232.0	287.7	60.0	32	1/4 BSPT	**ST05320-32FM**
					297.7	70.0	40	1/4 BSPT	**ST05320-40FM**
	7xD	244.9	297.7	302.2	357.7	60.0	32	1/4 BSPT	**ST07320-32FM**
					367.7	70.0	40	1/4 BSPT	**ST07320-40FM**
ⓘ	1.5xD	2.078	4.156	4.313	6.828	2.688	1-1/2	1/4 NPT	**ST01320-150F**
	3xD	4.141	6.219	6.375	8.891	2.688	1-1/2	1/4 NPT	**ST03320-150F**
	5xD	6.922	8.969	9.125	11.656	2.688	1-1/2	1/4 NPT	**ST05320-150F**
	7xD	9.641	11.719	11.891	14.406	2.688	1-1/2	1/4 NPT	**ST07320-150F**

A91: 41 - 42



ⓜ = Metric (mm)
ⓘ = Imperial (in)

Inserts sold in multiples of 1. | Screws sold in multiples of 10.

Notes

Recommended Drilling Data | Metric (mm)



METRIC (mm)

ISO	Material	Hardness (BHN)	Speed (m/min) - Mist Coolant AM420	Feed Rate (mm/rev) by Diameter			
				12 series 12.00 mm - 12.99 mm	13 series 13.00 mm - 13.99 mm	14 series 14.00 mm - 14.99 mm	15 series 15.00 mm - 15.99 mm
P	**Structural Steel** A36, A285, A516, etc.	100 - 150	107	0.20	0.22	0.25	0.25
		150 - 250	91	0.18	0.20	0.23	0.23
		250 - 350	79	0.15	0.17	0.20	0.20

IMPERIAL (in)

ISO	Material	Hardness (BHN)	Speed (SFM) - Mist Coolant AM420	Feed Rate (IPR) by Diameter			
				12 series 12.00 mm - 12.99 mm	13 series 13.00 mm - 13.99 mm	14 series 14.00 mm - 14.99 mm	15 series 15.00 mm - 15.99 mm
P	**Structural Steel** A36, A285, A516, etc.	100 - 150	350	0.008	0.009	0.010	0.010
		150 - 250	300	0.007	0.008	0.009	0.009
		250 - 350	260	0.006	0.007	0.008	0.008

Speed and Feed Multiplier

	Depth of Cut	
	<= 1.5xD	> 1.5xD
Speed	See above chart	0.75
Feed	See above chart	0.90

NOTE:
- The speeds and feeds listed above are based on a rigid setup using air mist through-tool coolant. Speed may be increased up to 50% if using **high-pressure flood** or through coolant.
- If drilling dry without coolant, speed must be reduced significantly based on setup, drill depth, and material hardness. Up to 50% speed and feed reduction may be necessary in these types of applications.
- If drilling material thickness of 12.7 mm (0.500") or less, a minimum of 10% reduction in feed is required to minimize material deflection.

Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

Recommended Drilling Data | Imperial (in)

Feed Rate (mm/rev) by Diameter								
16 series	**17 series**	**18 series**	**20 series**	**22 series**	**24 series**	**26 series**	**29 series**	**32 series**
16.00 mm - 16.99 mm	**17.00 mm - 17.99 mm**	**18.00 mm - 19.99 mm**	**20.00 mm - 21.99 mm**	**22.00 mm - 23.99 mm**	**24.00 mm - 25.99 mm**	**26.00 mm - 28.99 mm**	**29.00 mm - 31.99 mm**	**32.00 mm - 35.00 mm**
0.30	0.30	0.36	0.38	0.41	0.43	0.46	0.48	0.48
0.25	0.25	0.30	0.36	0.38	0.41	0.43	0.46	0.46
0.23	0.23	0.28	0.30	0.33	0.36	0.38	0.41	0.41

Feed Rate (IPR) by Diameter								
16 series	**17 series**	**18 series**	**20 series**	**22 series**	**24 series**	**26 series**	**29 series**	**32 series**
16.00 mm - 16.99 mm	**17.00 mm - 17.99 mm**	**18.00 mm - 19.99 mm**	**20.00 mm - 21.99 mm**	**22.00 mm - 23.99 mm**	**24.00 mm - 25.99 mm**	**26.00 mm - 28.99 mm**	**29.00 mm - 31.99 mm**	**32.00 mm - 35.00 mm**
0.012	0.012	0.014	0.015	0.016	0.017	0.018	0.019	0.019
0.010	0.010	0.012	0.014	0.015	0.016	0.017	0.018	0.018
0.009	0.009	0.011	0.012	0.013	0.014	0.015	0.016	0.016

NOTE:
- The speeds and feeds listed above are based on a rigid setup using air mist through-tool coolant. Speed may be increased up to 50% if using **high-pressure flood** or through coolant.
- If drilling dry without coolant, speed must be reduced significantly based on setup, drill depth, and material hardness. Up to 50% speed and feed reduction may be necessary in these types of applications.
- If drilling material thickness of 12.7 mm (0.500") or less, a minimum of 10% reduction in feed is required to minimize material deflection.

Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

Safety Information

Mechanical / Physical Hazards

Operating cutting tools may present both mechanical and physical hazards. These hazards can result in serious injury to workers or those near machines and damage to machines and the cutting tools. Cutting tools and/or assemblies may break or come loose when in operation causing projectile metal fragments. Metal chips produced by cutting tools have sharp edges and may be very hot. To minimize the risk of mechanical or physical hazards:

- Always secure all components of the cutting tool assembly before operating.
- Wear cut-resistant gloves when handling cutting tool components and assemblies.
- Do not touch metal chips produced by the cutting tools with your hands.
- Always wear appropriate personal protective equipment including safety goggles or glasses with side shields.
- Immediately discontinue use of damaged cutting tools.
- To avoid machine tool damage, make sure the machine has adequate power and torque for the cutting tool when operating. See catalog for power and torque requirements.
- Operating long cutting tools at high spindle speeds can result in a high risk of tool failure and serious injury.

Dust and Fume Hazards

Grinding, welding, cutting, or burning hard metals such as high-speed steel, cobalt, or carbides produces hazardous dust and/or fumes. Continued long-term exposure to hazardous dust and fumes can cause serious health issues. To minimize the risk of dust and fume hazards:

- Do not regrind or sharpen cutting tools without using adequate ventilation.
- Use appropriate personal protective equipment such as approved respirator to avoid inhalation, swallowing, or skin contact with the hazardous dust and/or fumes.
- Do not eat, drink, or smoke in the machine operation area. Always wash skin prior to eating, drinking, or smoking to avoid hazardous ingestion.

Sensitizing Hazards

Components of an assembled cutting tool are made from a variety of metal elements that may cause allergic skin reactions with prolonged skin contact. To minimize the risk of allergic skin reactions:

- Avoid skin contact with cutting tools.
- Wear appropriate gloves and protective clothing.
- Wash skin and launder clothing after handling cutting tools to reduce the risk of skin allergies.

Preventive Safety Measure Applicable to all Hazards

- Prior to using cutting tools, always read Allied Machine's Safety Data Sheets, product catalog, and product labels for additional warnings for the Allied Machine product being used.
- For machining safety, only operate equipment when all necessary guards, interlocks, and other safety devices are in place and functional. Use all appropriate safety guards or machine encapsulations to securely collect particles such as chips or cutting elements that may become projectiles.

Through Hole

- With through holes, a **sharp-edged disk** is created as tool breakout occurs.

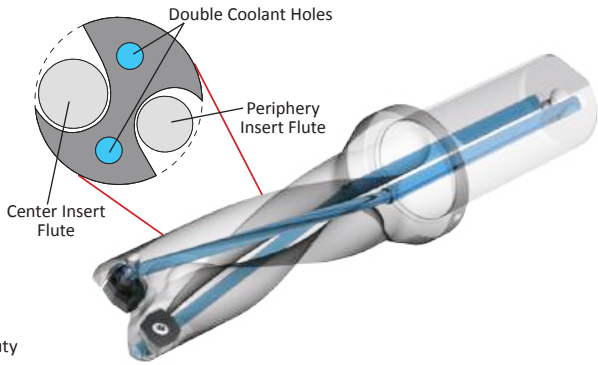
⚠ Proper personal protective equipment must be used to prevent injury (e.g. wear cut-resistant gloves).



System Overview

4TEX Drill ***Advantages***

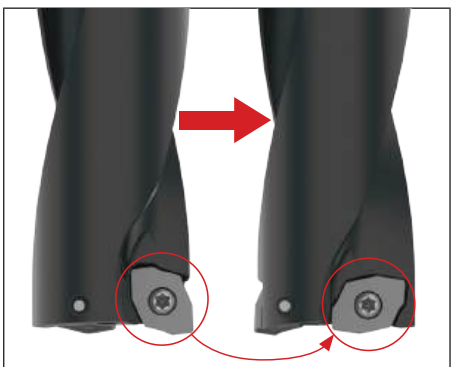
- ***Superior chip evacuation***
  provided by the two twisted coolant holes.
- ***Improved hole size***
  from the increased holder rigidity.
- ***Longer tool life***
  provided by the four-sided insert design.
- ***Optimal chip formation***
  with ISO-specific insert geometry/coating combinations.
- ***Competitive cycle times***
  due to single effective cutting when using light duty machines.



DESIGNED TO GIVE YOU IMPROVED HOLE SIZE AND STRAIGHTNESS

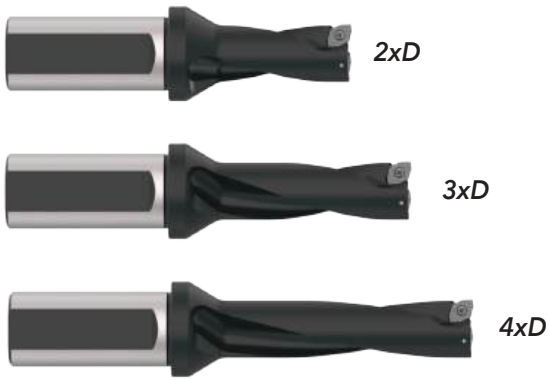
- The two twisted coolant holes allow the core to remain intact, making the core thicker and stronger for improved hole straightness even in uneven surfaces.
- The enlarged dual coolant outlets increase the coolant volume, which improves the chip evacuation resulting in improved hole size.
- The flute space of the internal cutting edge side (where chips get stuck most often) is 1.6x larger than typical IC drills, helping to mitigate catastrophic failures and improve hole size.

LONGER TOOL LIFE



The 4 Edge Advantage
When the cutting edge on the periphery insert wears down, it can be rotated and moved to the center insert position.

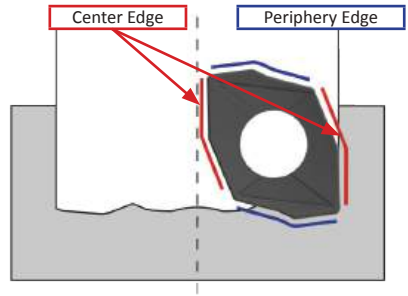
AVAILABLE *LENGTHS*



Insert Information

4 CUTTING EDGES

- Each insert has two inner cutting edges and two outer cutting edges.
- Economical solution that increases tool life because of the rotation ability of the inserts.
- Available in ISO material-specific geometry/coating combinations.



Periphery Insert



Periphery edge chip formation:





Center Insert



Center edge chip formation:

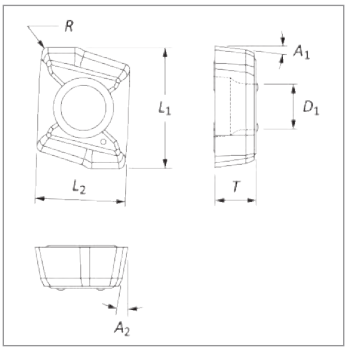


ISO	Geometry	Coating	Description
P	General Rake	AM480	A general purpose geometry that provides excellent chip formation in most steels including free-machining, medium- and high-carbon steels. A P30 carbide substrate for improved toughness and AM480 coating, a proprietary wear-resistant multilayer PVD coating to improve tool life.
S M	High Rake	AM485	A higher rake geometry that provides excellent chip formation in both stainless steels and high-temperature alloys. A tough M25 carbide substrate coated with AM485, a high heat-resistant proprietary multilayer PVD coating.
K	General Rake	AM480	With a general purpose geometry, the K inserts can be used in grey cast irons as well as ductile irons. A high wear-resistant K10 carbide substrate to improve tool life and coated with AM480, a proprietary multilayer PVD coating to improve resistance against tool wear.
N	High Rake	TiCN	A higher rake cutting geometry provides excellent chip formation in nonferrous materials. An M15/K15 carbide substrate paired with TiCN coating for improved lubricity to resist built-up material, increasing tool life and maintaining chip formation.
H	Low Rake	AM480	A lower rake geometry to improve edge strength in both hardened tool steels and high-strength alloys. With a P30 carbide substrate for improved toughness and coated with AM480, a proprietary multilayer PVD coating to improve resistance against tool wear.

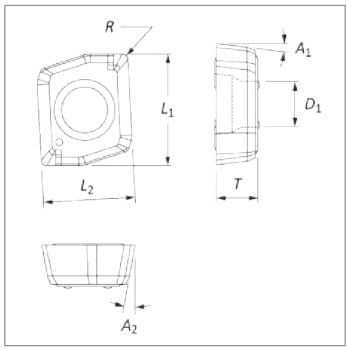
Insert Information

Series	Insert Prefix	Dimension (mm)					Angle		Shape
		L_1	L_2	T	D_1	R	A_1	A_2	
03	**4T-030203C-x**	5.60	4.80	2.30	2.40	0.30	7°	10°	 Style 1
	4T-030203P-x	6.38	4.77	2.30	2.40	0.30	7°	10°	 Style 2
04	**4T-040203-x**	6.21	5.06	2.60	2.45	0.30	13°	10°	 Style 3
05	**4T-05T203-x**	7.26	5.48	2.76	2.55	0.30	13°	7°	
06	**4T-06T204-x**	8.59	6.44	2.89	2.79	0.40	13°	7°	
07	**4T-070305-x**	10.21	8.02	3.24	3.00	0.50	13°	7°	
09	**4T-09T306-x**	12.18	9.55	4.03	3.64	0.60	13°	7°	
11	**4T-11T306-x**	14.50	11.61	4.06	4.62	0.60	13°	7°	
14	**4T-140408-x**	17.99	14.40	4.88	5.76	0.80	13°	7°	

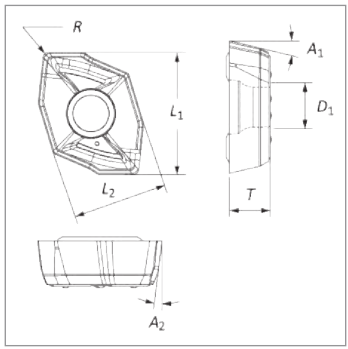
Style 1



Style 2



Style 3



Product Nomenclature

4TEX Drill Holders

D4	03	1200	M	–	075	F
Drill Length	Series	Diameter*	Diameter Style		Shank Diameter	Shank Style
D2 = 2xD	**03** **09**	**1200** = 12 mm	**M** = Metric		Metric / Imperial	**FM** = Metric flanged shank
D3 = 3xD	**04** **11**	**0750** = 0.075"	**I** = Imperial			**F** = Imperial flanged shank
D4 = 4xD	**05** **14**					
	06					
	07					

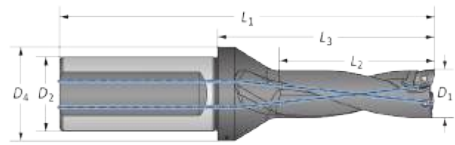
Shank Diameter	
Metric	**Imperial**
20 = 20 mm	**075** = 0.075"
25 = 25 mm	**100** = 1.000"
32 = 32 mm	**125** = 1.250"
40 = 40 mm	**150** = 1.500"

***Ordering Nonstocked Diameters:**
Nonstocked diameters are available upon request. Please refer to price list for applicable process fees.

Ordering example:
Metric: 03 Series (12.65 mm) = D2031265M-20FM
Inch: 03 Series (Ø 0.480") = D2030480I-075F

Reference Key

Symbol	Attribute
D_1	Drill diameter
D_2	Shank diameter
D_4	Flange diameter
L_1	Assembled overall length
L_2	Drill depth
L_3	Reference length



Series Details

Series		3 Series	4 Series	5 Series	6 Series	7 Series	9 Series	11 Series	14 Series
Cutter Ø	mm	12.00 - 13.49	13.50 - 15.49	15.50 - 18.49	18.50 - 21.99	22.00 - 26.49	26.50 - 31.99	32.00 - 38.99	39.00 - 47.00
	inch	0.472 - 0.531	0.532 - 0.610	0.611 - 0.728	0.728 - 0.866	0.867 - 1.043	1.044 - 1.259	1.260 - 1.535	1.536 - 1.850
Shank Ø	mm	20.00	20.00	25.00	25.00	25.00	32.00	40.00	40.00
	inch	0.750	0.750	1.000	1.000	1.000	1.250	1.500	1.500
Insert Prefix		4T-030203C-x 4T-030203P-x	4T-040203-x	4T-05T203-x	4T-06T204-x	4T-070305-x	4T-09T306-x	4T-11T306-x	4T-140408-x
# of Inserts		2	2	2	2	2	2	2	2

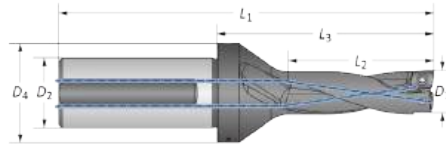
Notes

03 Series: 12.00 mm - 13.00 mm (0.472" - 0.512")

Holders

NOTE: For full diameter range offerings, see the 4TEX section of our drilling catalog.





	Length	D_1 mm	D_1 in	Body L_2	Body L_3	Body L_1	Shank D_2	Shank D_4	Max Offset	Part No.
m	2xD	12.00	0.472	24.00	45.40	88.40	20.00	27.00	0.50	**D2031200M-20FM**
		13.00	0.512	26.00	47.40	90.40	20.00	27.00	0.30	**D2031300M-20FM**
	3xD	12.00	0.472	36.00	57.40	100.40	20.00	27.00	0.50	**D3031200M-20FM**
		13.00	0.512	39.00	60.40	103.40	20.00	27.00	0.30	**D3031300M-20FM**
	4xD	12.00	0.472	48.00	69.40	112.40	20.00	27.00	0.50	**D4031200M-20FM**
		13.00	0.512	52.00	73.40	116.40	20.00	27.00	0.30	**D4031300M-20FM**
i	2xD	12.00	0.472	0.945	1.787	3.480	0.750	1.063	0.020	**D2031200M-075F**
		13.00	0.512	1.024	1.866	3.559	0.750	1.063	0.012	**D2031300M-075F**
	3xD	12.00	0.472	1.417	2.260	3.953	0.750	1.063	0.020	**D3031200M-075F**
		13.00	0.512	1.535	2.378	4.071	0.750	1.063	0.012	**D3031300M-075F**
	4xD	12.00	0.472	1.890	2.732	4.425	0.750	1.063	0.020	**D4031200M-075F**
		13.00	0.512	2.047	2.890	4.583	0.750	1.063	0.012	**D4031300M-075F**

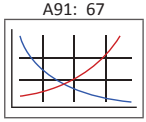
IC Inserts

ISO	Style	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	Center	**4T-030203C-P**	**7241-T6-1**	**8T-6**	0.5 N-m (4.4 in-lbs)
	Periphery	**4T-030203P-P**			
S M	Center	**4T-030203C-M**			
	Periphery	**4T-030203P-M**			
K	Center	**4T-030203C-K**			
	Periphery	**4T-030203P-K**			
N	Center	**4T-030203C-N**			
	Periphery	**4T-030203P-N**			
H	Center	**4T-030203C-H**			
	Periphery	**4T-030203P-H**			

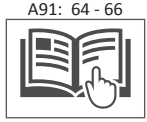
Expected Hole Tolerances

Length	mm	in
2xD	- 0.10 + 0.20	- 0.004 + 0.008
3xD	- 0.10 + 0.20	- 0.004 + 0.008
4xD	- 0.10 + 0.25	- 0.004 + 0.010

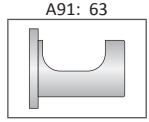
A91: 67
Key on A91: 2



A91: 64 - 66



A91: 63



m = Metric (mm)
i = Imperial (in)

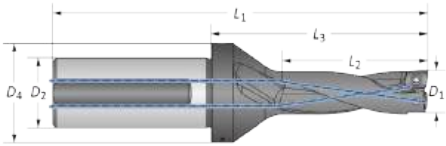
IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

04 Series: 14.00 mm - 15.00 mm (0.551" - 0.591")

Holders

NOTE: For full diameter range offerings, see the 4TEX section of our drilling catalog.





	Length	D_1 mm	D_1 in	Body L_2	Body L_3	Body L_1	Shank D_2	Shank D_4	Max Offset	Part No.
m	2xD	14.00	0.551	28.00	49.40	92.40	20.00	27.00	20.00	**D2041400M-20FM**
		14.29	0.563	28.55	49.40	92.40	20.00	27.00	20.00	**D2040562I-20FM**
		15.00	0.591	30.00	51.40	94.40	20.00	27.00	20.00	**D2041500M-20FM**
	3xD	14.00	0.551	42.00	63.40	106.40	20.00	27.00	20.00	**D3041400M-20FM**
		14.29	0.563	42.82	63.40	106.40	20.00	27.00	20.00	**D3040562I-20FM**
		15.00	0.591	45.00	66.40	109.40	20.00	27.00	20.00	**D3041500M-20FM**
	4xD	14.00	0.551	56.00	77.40	120.40	20.00	27.00	20.00	**D4041400M-20FM**
		14.29	0.563	57.10	77.40	120.40	20.00	27.00	20.00	**D4040562I-20FM**
		15.00	0.591	60.00	81.40	124.40	20.00	27.00	20.00	**D4041500M-20FM**
i	2xD	14.00	0.551	1.102	1.945	3.638	0.750	1.063	0.016	**D2041400M-075F**
		14.29	0.563	1.124	1.945	3.638	0.750	1.063	0.013	**D2040562I-075F**
		15.00	0.591	1.181	2.024	3.717	0.750	1.063	0.008	**D2041500M-075F**
	3xD	14.00	0.551	1.654	2.496	4.189	0.750	1.063	0.016	**D3041400M-075F**
		14.29	0.563	1.686	2.496	4.189	0.750	1.063	0.013	**D3040562I-075F**
		15.00	0.591	1.772	2.614	4.307	0.750	1.063	0.008	**D3041500M-075F**
	4xD	14.00	0.551	2.205	3.047	4.740	0.750	1.063	0.016	**D4041400M-075F**
		14.29	0.563	2.248	3.047	4.740	0.750	1.063	0.013	**D4040562I-075F**
		15.00	0.591	2.362	3.205	4.898	0.750	1.063	0.008	**D4041500M-075F**

IC Inserts

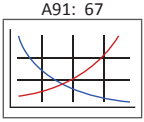
ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-040203-P	7241-T6-1	8T-6	0.5 N-m (4.4 in-lbs)
S M	4T-040203-M			
K	4T-040203-K			
N	4T-040203-N			
H	4T-040203-H			

Expected Hole Tolerances

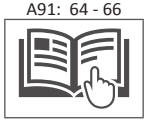
Length	mm	in
2xD	- 0.004 + 0.008	- 0.10 + 0.20
3xD	- 0.004 + 0.008	- 0.10 + 0.20
4xD	- 0.004 + 0.010	- 0.10 + 0.25

A91: 67

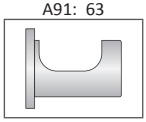
Key on A91: 2



A91: 64 - 66



A91: 63



m = Metric (mm)
i = Imperial (in)

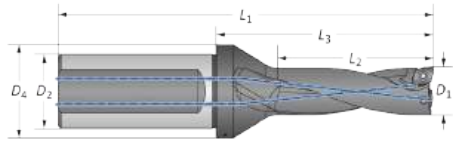
IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

05 Series: 15.88 mm - 18.00 mm (0.625" - 0.709")

Holders

NOTE: For full diameter range offerings, see the 4TEX section of our drilling catalog.





Metric Shank

	Length	D_1 mm	D_1 in	Body L_2	Body L_3	Body L_1	Shank D_2	Shank D_4	Max Offset	Part No.
m	2xD	15.88	0.625	31.75	54.50	108.50	25.00	32.00	0.70	**D2050625I-25FM**
		16.00	0.630	32.00	55.50	109.50	25.00	32.00	0.70	**D2051600M-25FM**
		17.00	0.669	34.00	57.50	111.50	25.00	32.00	0.40	**D2051700M-25FM**
		17.46	0.687	34.90	57.50	111.50	25.00	32.00	0.30	**D2050687I-25FM**
		18.00	0.709	36.00	59.50	113.50	25.00	32.00	0.20	**D2051800M-25FM**
	3xD	15.88	0.625	47.63	70.00	124.00	25.00	32.00	0.70	**D3050625I-25FM**
		16.00	0.630	48.00	71.50	125.50	25.00	32.00	0.70	**D3051600M-25FM**
		17.00	0.669	51.00	74.50	128.50	25.00	32.00	0.40	**D3051700M-25FM**
		17.46	0.687	52.35	74.50	128.50	25.00	32.00	0.30	**D3050687I-25FM**
		18.00	0.709	54.00	77.50	131.50	25.00	32.00	0.20	**D3051800M-25FM**
	4xD	15.88	0.625	63.50	85.50	139.50	25.00	32.00	0.70	**D4050625I-25FM**
		16.00	0.630	64.00	87.50	141.50	25.00	32.00	0.70	**D4051600M-25FM**
		17.00	0.669	68.00	91.50	145.50	25.00	32.00	0.40	**D4051700M-25FM**
		17.46	0.687	69.80	91.50	145.50	25.00	32.00	0.30	**D4050687I-25FM**
		18.00	0.709	72.00	95.50	149.50	25.00	32.00	0.20	**D4051800M-25FM**

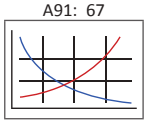
IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-05T203-P	7243-T6-1	8T-6	0.5 N-m (4.4 in-lbs)
S M	4T-05T203-M			
K	4T-05T203-K			
N	4T-05T203-N			
H	4T-05T203-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.10 + 0.20	- 0.004 + 0.008
3xD	- 0.10 + 0.20	- 0.004 + 0.008
4xD	- 0.10 + 0.25	- 0.004 + 0.010

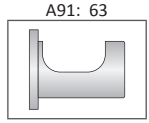
A91: 67
Key on A91: 2



A91: 64 - 66



A91: 63



m = Metric (mm)
i = Imperial (in)

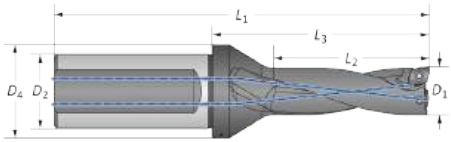
IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

05 Series: 15.88 mm - 18.00 mm (0.625" - 0.709")

Holders

NOTE: For full diameter range offerings, see the 4TEX section of our drilling catalog.





Imperial Shank

Length	D_1 mm	D_1 in	Body L_2	Body L_3	Body L_1	Shank D_2	Shank D_4	Max Offset	Part No.
2xD	15.88	0.625	1.250	2.146	4.272	1.000	1.260	0.029	**D2050625I-100F**
	16.00	0.630	1.260	2.185	4.311	1.000	1.260	0.028	**D2051600M-100F**
	17.00	0.669	1.339	2.264	4.390	1.000	1.260	0.016	**D2051700M-100F**
	17.46	0.687	1.374	2.264	4.390	1.000	1.260	0.012	**D2050687I-100F**
	18.00	0.709	1.417	2.343	4.469	1.000	1.260	0.008	**D2051800M-100F**
3xD	15.88	0.625	1.875	2.756	4.882	1.000	1.260	0.029	**D3050625I-100F**
	16.00	0.630	1.890	2.815	4.941	1.000	1.260	0.028	**D3051600M-100F**
	17.00	0.669	2.008	2.933	5.059	1.000	1.260	0.016	**D3051700M-100F**
	17.46	0.687	2.061	2.933	5.059	1.000	1.260	0.012	**D3050687I-100F**
	18.00	0.709	2.126	3.051	5.177	1.000	1.260	0.008	**D3051800M-100F**
4xD	15.88	0.625	2.500	3.366	5.492	1.000	1.260	0.029	**D4050625I-100F**
	16.00	0.630	2.520	3.445	5.571	1.000	1.260	0.028	**D4051600M-100F**
	17.00	0.669	2.677	3.602	5.728	1.000	1.260	0.016	**D4051700M-100F**
	17.46	0.687	2.748	3.602	5.728	1.000	1.260	0.012	**D4050687I-100F**
	18.00	0.709	2.835	3.760	5.886	1.000	1.260	0.008	**D4051800M-100F**

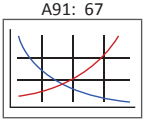
IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	**4T-05T203-P**	**7243-T6-1**	**8T-6**	0.5 N-m (4.4 in-lbs)
S M	**4T-05T203-M**			
K	**4T-05T203-K**			
N	**4T-05T203-N**			
H	**4T-05T203-H**			

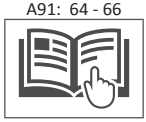
Expected Hole Tolerances

Length	mm	in
2xD	- 0.10 + 0.20	- 0.004 + 0.008
3xD	- 0.10 + 0.20	- 0.004 + 0.008
4xD	- 0.10 + 0.25	- 0.004 + 0.010

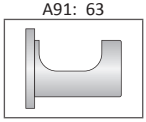
A91: 67
Key on A91: 2



A91: 64 - 66



A91: 63



Ⓜ = Metric (mm)
ⓘ = Imperial (in)

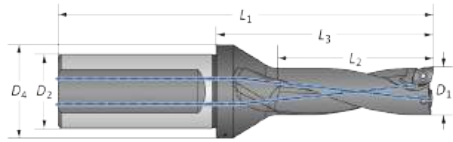
IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

06 Series: 19.00 mm - 21.00 mm (0.748" - 0.827")

Holders

NOTE: For full diameter range offerings, see the 4TEX section of our drilling catalog.





Metric Shank

	Length	D_1 mm	D_1 in	Body L_2	Body L_3	Body L_1	Shank D_2	Shank D_4	Max Offset	Part No.
m	2xD	19.00	0.748	38.00	59.40	113.40	25.00	32.00	0.80	**D2061900M-25FM**
		20.00	0.787	40.00	61.40	115.40	25.00	32.00	0.50	**D2062000M-25FM**
		20.64	0.813	41.25	62.40	116.40	25.00	32.00	0.40	**D2060812I-25FM**
		21.00	0.827	42.00	63.40	117.40	25.00	32.00	0.30	**D2062100M-25FM**
	3xD	19.00	0.748	57.00	78.40	132.40	25.00	32.00	0.80	**D3061900M-25FM**
		20.00	0.787	60.00	81.40	135.40	25.00	32.00	0.50	**D3062000M-25FM**
		20.64	0.813	61.87	82.90	136.90	25.00	32.00	0.40	**D3060812I-25FM**
		21.00	0.827	63.00	84.40	138.40	25.00	32.00	0.30	**D3062100M-25FM**
	4xD	19.00	0.748	76.00	97.40	151.40	25.00	32.00	0.80	**D4061900M-25FM**
		20.00	0.787	80.00	101.40	155.40	25.00	32.00	0.50	**D4062000M-25FM**
		20.64	0.813	82.49	103.40	157.40	25.00	32.00	0.40	**D4060812I-25FM**
		21.00	0.827	84.00	105.40	159.40	25.00	32.00	0.30	**D4062100M-25FM**

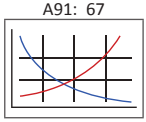
IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-06T204-P	72251-T7-1	8T-7	0.8 N-m (7.1 in-lbs)
S M	4T-06T204-M			
K	4T-06T204-K			
N	4T-06T204-N			
H	4T-06T204-H			

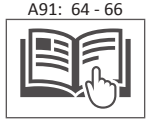
Expected Hole Tolerances

Length	mm	in
2xD	- 0.10 + 0.20	- 0.004 + 0.008
3xD	- 0.10 + 0.20	- 0.004 + 0.008
4xD	- 0.10 + 0.25	- 0.004 + 0.010

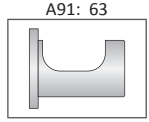
A91: 67
Key on A91: 2



A91: 64 - 66



A91: 63



m = Metric (mm)
i = Imperial (in)

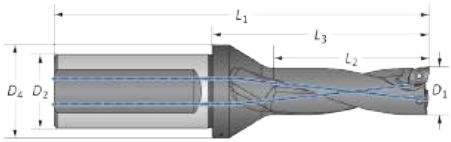
IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

06 Series: 19.00 mm - 21.00 mm (0.748" - 0.827")

Holders

NOTE: For full diameter range offerings, see the 4TEX section of our drilling catalog.





Imperial Shank

Length	D_1 mm	D_1 in	Body L_2	Body L_3	Body L_1	Shank D_2	Shank D_4	Max Offset	Part No.
2xD	19.00	0.748	1.496	2.339	4.465	1.000	1.260	0.031	**D2061900M-100F**
	20.00	0.787	1.575	2.417	4.543	1.000	1.260	0.020	**D2062000M-100F**
	20.64	0.813	1.624	2.457	4.583	1.000	1.260	0.015	**D2060812I-100F**
	21.00	0.827	1.654	2.496	4.622	1.000	1.260	0.012	**D2062100M-100F**
3xD	19.00	0.748	2.244	3.087	5.213	1.000	1.260	0.031	**D3061900M-100F**
	20.00	0.787	2.362	3.205	5.331	1.000	1.260	0.020	**D3062000M-100F**
	20.64	0.813	2.436	3.264	5.390	1.000	1.260	0.015	**D3060812I-100F**
	21.00	0.827	2.480	3.323	5.449	1.000	1.260	0.012	**D3062100M-100F**
4xD	19.00	0.748	2.992	3.835	5.961	1.000	1.260	0.031	**D4061900M-100F**
	20.00	0.787	3.150	3.992	6.118	1.000	1.260	0.020	**D4062000M-100F**
	20.64	0.813	3.248	4.071	6.197	1.000	1.260	0.015	**D4060812I-100F**
	21.00	0.827	3.307	4.150	6.276	1.000	1.260	0.012	**D4062100M-100F**

IC Inserts

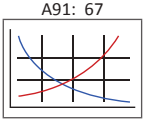
ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	**4T-06T204-P**	**72251-T7-1**	**8T-7**	0.8 N-m (7.1 in-lbs)
S M	**4T-06T204-M**			
K	**4T-06T204-K**			
N	**4T-06T204-N**			
H	**4T-06T204-H**			

Expected Hole Tolerances

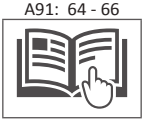
Length	mm	in
2xD	- 0.10 + 0.20	- 0.004 + 0.008
3xD	- 0.10 + 0.20	- 0.004 + 0.008
4xD	- 0.10 + 0.25	- 0.004 + 0.010

Key on A91: 2

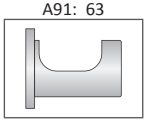
A91: 67



A91: 64 - 66



A91: 63



Ⓜ = Metric (mm)
ⓘ = Imperial (in)

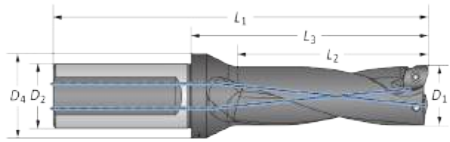
IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

07 Series: 22.00 mm - 26.00 mm (0.866" - 1.024")

Holders

NOTE: For full diameter range offerings, see the 4TEX section of our drilling catalog.





Metric Shank

	Length	D_1 mm	D_1 in	Body L_2	Body L_3	Body L_1	Shank D_2	Shank D_4	Max Offset	Part No.
m	2xD	22.00	0.866	44.00	64.90	118.90	25.00	33.00	1.20	**D2072200M-25FM**
		22.22	0.875	44.45	64.90	118.90	25.00	33.00	1.10	**D2070875I-25FM**
		23.00	0.906	46.00	66.90	120.90	25.00	33.00	0.90	**D2072300M-25FM**
		23.81	0.937	47.60	67.90	121.90	25.00	33.00	7.40	**D2070937I-25FM**
		24.00	0.945	48.00	68.90	122.90	25.00	33.00	0.70	**D2072400M-25FM**
		25.40	1.000	50.80	70.90	124.90	25.00	33.00	0.30	**D2071000I-25FM**
		26.00	1.024	52.00	72.90	126.90	25.00	33.00	0.20	**D2072600M-25FM**
	3xD	22.00	0.866	66.00	86.90	140.90	25.00	33.00	1.20	**D3072200M-25FM**
		22.22	0.875	66.68	86.90	140.90	25.00	33.00	1.10	**D3070875I-25FM**
		23.00	0.906	69.00	89.90	143.90	25.00	33.00	0.90	**D3072300M-25FM**
		23.81	0.937	71.40	91.40	145.40	25.00	33.00	7.40	**D3070937I-25FM**
		24.00	0.945	72.00	92.90	146.90	25.00	33.00	0.70	**D3072400M-25FM**
		25.40	1.000	76.20	95.90	149.90	25.00	33.00	0.30	**D3071000I-25FM**
		26.00	1.024	78.00	99.00	153.00	25.00	33.00	0.20	**D3072600M-25FM**
	4xD	22.00	0.866	88.00	109.00	163.00	25.00	33.00	1.20	**D4072200M-25FM**
		22.22	0.875	88.90	108.90	162.90	25.00	33.00	1.10	**D4070875I-25FM**
		23.00	0.906	92.00	113.00	167.00	25.00	33.00	0.90	**D4072300M-25FM**
		23.81	0.937	95.20	114.90	168.90	25.00	33.00	7.40	**D4070937I-25FM**
		24.00	0.945	96.00	117.00	171.00	25.00	33.00	0.70	**D4072400M-25FM**
		25.40	1.000	101.60	120.90	174.90	25.00	33.00	0.30	**D4071000I-25FM**
		26.00	1.024	104.00	125.00	179.00	25.00	33.00	0.20	**D4072600M-25FM**

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-070305-P	72568-T8-1	8T-8	1.2 N-m (10.6 in-lbs)
S M	4T-070305-M			
K	4T-070305-K			
N	4T-070305-N			
H	4T-070305-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.10 + 0.20	- 0.004 + 0.008
3xD	- 0.10 + 0.20	- 0.004 + 0.008
4xD	- 0.10 + 0.25	- 0.004 + 0.010

A91: 67
Key on A91: 2
A91: 64 - 66
A91: 63

m = Metric (mm)
i = Imperial (in)

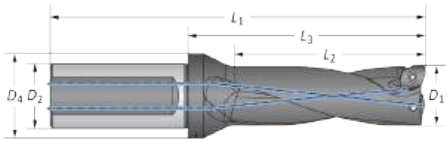
IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

07 Series: 22.00 mm - 26.00 mm (0.866" - 1.024")

Holders

NOTE: For full diameter range offerings, see the 4TEX section of our drilling catalog.





Imperial Shank

Length	D_1 mm	D_1 in	Body L_2	Body L_3	Body L_1	Shank D_2	Shank D_4	Max Offset	Part No.
2xD	22.00	0.866	1.732	2.555	4.681	1.000	1.299	0.047	**D2072200M-100F**
	22.22	0.875	1.750	2.555	4.681	1.000	1.299	0.043	**D2070875I-100F**
	23.00	0.906	1.811	2.634	4.760	1.000	1.299	0.035	**D2072300M-100F**
	23.81	0.937	1.874	2.673	4.799	1.000	1.299	0.292	**D2070937I-100F**
	24.00	0.945	1.890	2.713	4.839	1.000	1.299	0.028	**D2072400M-100F**
	25.40	1.000	2.000	2.791	4.917	1.000	1.299	0.013	**D2071000I-100F**
	26.00	1.024	2.047	2.870	4.996	1.000	1.299	0.008	**D2072600M-100F**
3xD	22.00	0.866	2.598	3.421	5.547	1.000	1.299	0.047	**D3072200M-100F**
	22.22	0.875	2.625	3.421	5.547	1.000	1.299	0.043	**D3070875I-100F**
	23.00	0.906	2.717	3.539	5.665	1.000	1.299	0.035	**D3072300M-100F**
	23.81	0.937	2.811	3.598	5.724	1.000	1.299	0.292	**D3070937I-100F**
	24.00	0.945	2.835	3.657	5.783	1.000	1.299	0.028	**D3072400M-100F**
	25.40	1.000	3.000	3.776	5.902	1.000	1.299	0.013	**D3071000I-100F**
	26.00	1.024	3.071	3.894	6.020	1.000	1.299	0.008	**D3072600M-100F**
4xD	22.00	0.866	3.465	4.287	6.413	1.000	1.299	0.047	**D4072200M-100F**
	22.22	0.875	3.500	4.287	6.413	1.000	1.299	0.043	**D4070875I-100F**
	23.00	0.906	3.622	4.445	6.571	1.000	1.299	0.035	**D4072300M-100F**
	23.81	0.937	3.748	4.524	6.650	1.000	1.299	0.292	**D4070937I-100F**
	24.00	0.945	3.780	4.602	6.728	1.000	1.299	0.028	**D4072400M-100F**
	25.40	1.000	4.000	4.760	6.886	1.000	1.299	0.013	**D4071000I-100F**
	26.00	1.024	4.094	4.917	7.043	1.000	1.299	0.008	**D4072600M-100F**

IC Inserts

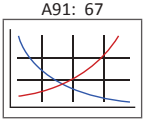
ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-070305-P	72568-T8-1	8T-8	1.2 N-m (10.6 in-lbs)
S M	4T-070305-M			
K	4T-070305-K			
N	4T-070305-N			
H	4T-070305-H			

Expected Hole Tolerances

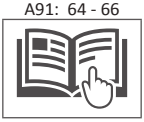
Length	mm	in
2xD	- 0.10 + 0.20	- 0.004 + 0.008
3xD	- 0.10 + 0.20	- 0.004 + 0.008
4xD	- 0.10 + 0.25	- 0.004 + 0.010

Key on A91: 2

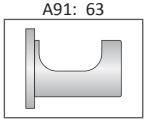
A91: 67



A91: 64 - 66



A91: 63



ⓜ = Metric (mm)
ⓘ = Imperial (in)

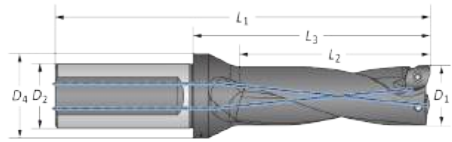
IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

09 Series: 27.00 mm - 31.75 mm (1.063" - 1.250")

Holders

NOTE: For full diameter range offerings, see the 4TEX section of our drilling catalog.





Metric Shank

Length	D_1 mm	D_1 in	Body L_2	Body L_3	Body L_1	Shank D_2	Shank D_4	Max Offset	Part No.
2xD	27.00	1.063	54.00	76.70	135.70	32.00	41.00	1.60	**D2092700M-32FM**
	28.00	1.102	56.00	78.70	137.70	32.00	41.00	1.30	**D2092800M-32FM**
	28.58	1.125	57.15	79.70	138.70	32.00	41.00	1.20	**D2091125I-32FM**
	29.00	1.142	58.00	80.70	139.70	32.00	41.00	1.10	**D2092900M-32FM**
	30.00	1.181	60.00	82.70	141.70	32.00	41.00	0.80	**D2093000M-32FM**
	30.15	1.187	60.30	82.70	141.70	32.00	41.00	0.82	**D2091187I-32FM**
	31.00	1.220	62.00	84.70	143.70	32.00	41.00	0.60	**D2093100M-32FM**
	31.75	1.250	63.50	85.70	144.70	32.00	41.00	0.50	**D2091250I-32FM**
3xD	27.00	1.063	81.00	103.70	162.70	32.00	41.00	1.60	**D3092700M-32FM**
	28.00	1.102	84.00	106.70	165.70	32.00	41.00	1.30	**D3092800M-32FM**
	28.58	1.125	85.73	108.20	167.20	32.00	41.00	1.20	**D3091125I-32FM**
	29.00	1.142	87.00	109.70	168.70	32.00	41.00	1.10	**D3092900M-32FM**
	30.00	1.181	90.00	112.70	171.70	32.00	41.00	0.80	**D3093000M-32FM**
	30.15	1.187	90.45	112.70	171.70	32.00	41.00	0.82	**D3091187I-32FM**
	31.00	1.220	93.00	115.70	174.70	32.00	41.00	0.60	**D3093100M-32FM**
	31.75	1.250	95.25	117.20	176.20	32.00	41.00	0.50	**D3091250I-32FM**
4xD	27.00	1.063	108.00	130.70	189.70	32.00	41.00	1.60	**D4092700M-32FM**
	28.00	1.102	112.00	134.70	193.70	32.00	41.00	1.30	**D4092800M-32FM**
	28.58	1.125	114.30	136.70	195.70	32.00	41.00	1.20	**D4091125I-32FM**
	29.00	1.142	116.00	138.70	197.70	32.00	41.00	1.10	**D4092900M-32FM**
	30.00	1.181	120.00	142.70	201.70	32.00	41.00	0.80	**D4093000M-32FM**
	30.15	1.187	120.60	142.70	201.70	32.00	41.00	0.82	**D4091187I-32FM**
	31.00	1.220	124.00	146.70	205.70	32.00	41.00	0.60	**D4093100M-32FM**
	31.75	1.250	127.00	148.70	207.70	32.00	41.00	0.50	**D4091250I-32FM**

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	**4T-09T306-P**	**738-T10-1**	**8T-10**	2.0 N-m (17.7 in-lbs)
S M	**4T-09T306-M**			
K	**4T-09T306-K**			
N	**4T-09T306-N**			
H	**4T-09T306-H**			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.15 + 0.25	- 0.006 + 0.010
3xD	- 0.15 + 0.25	- 0.006 + 0.010
4xD	- 0.15 + 0.30	- 0.006 + 0.012

A91: 67
Key on A91: 2
A91: 64 - 66
A91: 63

Ⓜ = Metric (mm)
ⓘ = Imperial (in)

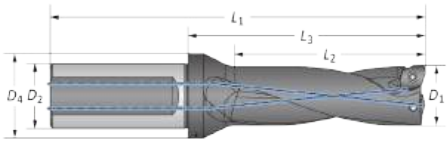
IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

09 Series: 27.00 mm - 31.75 mm (1.063" - 1.250")

Holders

NOTE: For full diameter range offerings, see the 4TEX section of our drilling catalog.





Imperial Shank

Length	D_1 mm	D_1 in	Body L_2	Body L_3	Body L_1	Shank D_2	Shank D_4	Max Offset	Part No.
2xD	27.00	1.063	2.126	3.020	5.343	1.250	1.614	0.063	D2092700M-125F
	28.00	1.102	2.205	3.098	5.421	1.250	1.614	0.051	D2092800M-125F
	28.58	1.125	2.250	3.138	5.461	1.250	1.614	0.046	D2091125I-125F
	29.00	1.142	2.283	3.177	5.500	1.250	1.614	0.043	D2092900M-125F
	30.00	1.181	2.362	3.256	5.579	1.250	1.614	0.031	D2093000M-125F
	30.15	1.187	2.374	3.256	5.579	1.250	1.614	0.032	D2091187I-125F
	31.00	1.220	2.441	3.335	5.657	1.250	1.614	0.024	D2093100M-125F
	31.75	1.250	2.500	3.374	5.697	1.250	1.614	0.019	D2091250I-125F
3xD	27.00	1.063	3.189	4.083	6.406	1.250	1.614	0.063	D3092700M-125F
	28.00	1.102	3.307	4.201	6.524	1.250	1.614	0.051	D3092800M-125F
	28.58	1.125	3.375	4.260	6.583	1.250	1.614	0.046	D3091125I-125F
	29.00	1.142	3.425	4.319	6.642	1.250	1.614	0.043	D3092900M-125F
	30.00	1.181	3.543	4.437	6.760	1.250	1.614	0.031	D3093000M-125F
	30.15	1.187	3.561	4.437	6.760	1.250	1.614	0.032	D3091187I-125F
	31.00	1.220	3.661	4.555	6.878	1.250	1.614	0.024	D3093100M-125F
	31.75	1.250	3.750	4.614	6.937	1.250	1.614	0.019	D3091250I-125F
4xD	27.00	1.063	4.252	5.146	7.469	1.250	1.614	0.063	D4092700M-125F
	28.00	1.102	4.409	5.303	7.626	1.250	1.614	0.051	D4092800M-125F
	28.58	1.125	4.500	5.382	7.705	1.250	1.614	0.046	D4091125I-125F
	29.00	1.142	4.567	5.461	7.783	1.250	1.614	0.043	D4092900M-125F
	30.00	1.181	4.724	5.618	7.941	1.250	1.614	0.031	D4093000M-125F
	30.15	1.187	4.748	5.618	7.941	1.250	1.614	0.032	D4091187I-125F
	31.00	1.220	4.882	5.776	8.098	1.250	1.614	0.024	D4093100M-125F
	31.75	1.250	5.000	5.854	8.177	1.250	1.614	0.019	D4091250I-125F

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-09T306-P	738-T10-1	8T-10	2.0 N-m (17.7 in-lbs)
S M	4T-09T306-M			
K	4T-09T306-K			
N	4T-09T306-N			
H	4T-09T306-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.15 + 0.25	- 0.006 + 0.010
3xD	- 0.15 + 0.25	- 0.006 + 0.010
4xD	- 0.15 + 0.30	- 0.006 + 0.012

A91: 67
Key on A91: 2
A91: 64 - 66
A91: 63

Ⓜ = Metric (mm)
ⓘ = Imperial (in)

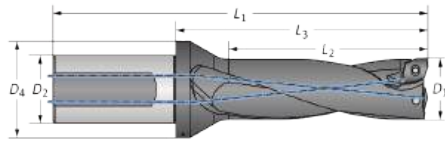
IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

11 Series: 32.00 mm - 38.10 mm (1.260" - 1.500")

Holders

NOTE: For full diameter range offerings, see the 4TEX section of our drilling catalog.





Metric Shank

	Length	D_1 mm	D_1 in	Body L_2	Body L_3	Body L_1	Shank D_2	Shank D_4	Max Offset	Part No.
m	2xD	32.00	1.260	64.00	100.40	169.40	40.00	54.00	2.20	**D2113200M-40FM**
		33.00	1.299	66.00	102.40	171.40	40.00	54.00	1.90	**D2113300M-40FM**
		33.32	1.312	66.65	102.40	171.40	40.00	54.00	1.84	**D2111312I-40FM**
		34.00	1.339	68.00	104.40	173.40	40.00	54.00	1.70	**D2113400M-40FM**
		34.92	1.375	69.85	104.40	173.40	40.00	54.00	1.42	**D2111375I-40FM**
		38.10	1.500	76.20	112.40	181.40	40.00	54.00	0.69	**D2111500I-40FM**
	3xD	32.00	1.260	96.00	132.40	201.40	40.00	54.00	2.20	**D3113200M-40FM**
		33.00	1.299	99.00	135.40	204.40	40.00	54.00	1.90	**D3113300M-40FM**
		33.32	1.312	99.97	135.40	204.40	40.00	54.00	1.84	**D3111312I-40FM**
		34.00	1.339	102.00	138.40	207.40	40.00	54.00	1.70	**D3113400M-40FM**
		34.92	1.375	104.78	138.40	207.40	40.00	54.00	1.42	**D3111375I-40FM**
		38.10	1.500	114.30	150.40	219.40	40.00	54.00	0.69	**D3111500I-40FM**
	4xD	32.00	1.260	128.00	154.40	223.40	40.00	54.00	2.20	**D4113200M-40FM**
		33.00	1.299	132.00	158.40	227.40	40.00	54.00	1.90	**D4113300M-40FM**
		33.32	1.312	133.30	158.40	227.40	40.00	54.00	1.84	**D4111312I-40FM**
		34.00	1.339	136.00	162.40	231.40	40.00	54.00	1.70	**D4113400M-40FM**
		34.92	1.375	139.70	162.40	231.40	40.00	54.00	1.42	**D4111375I-40FM**
		38.10	1.500	152.40	178.40	247.40	40.00	54.00	0.69	**D4111500I-40FM**

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	**4T-11T306-P**	**7488-T15-1**	**8T-15**	3.5 N-m (30.9 in-lbs)
S M	**4T-11T306-M**			
K	**4T-11T306-K**			
N	**4T-11T306-N**			
H	**4T-11T306-H**			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.15 + 0.25	- 0.006 + 0.010
3xD	- 0.15 + 0.25	- 0.006 + 0.010
4xD	- 0.15 + 0.30	- 0.006 + 0.012

A91: 67
Key on A91: 2
A91: 64 - 66
A91: 63

m = Metric (mm)
i = Imperial (in)

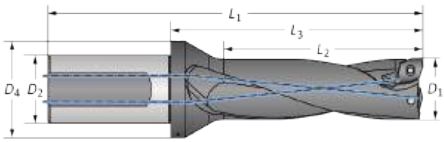
IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

11 Series: 32.00 mm - 38.10 mm (1.260" - 1.500")

Holders

NOTE: For full diameter range offerings, see the 4TEX section of our drilling catalog.





Imperial Shank

Length	D_1 mm	D_1 in	Body L_2	Body L_3	Body L_1	Shank D_2	Shank D_4	Max Offset	Part No.
2xD	32.00	1.260	2.520	3.953	6.669	1.500	2.126	0.087	**D2113200M-150F**
	33.00	1.299	2.598	4.031	6.748	1.500	2.126	0.075	**D2113300M-150F**
	33.32	1.312	2.624	4.031	6.748	1.500	2.126	0.073	**D2111312I-150F**
	34.00	1.339	2.677	4.110	6.827	1.500	2.126	0.067	**D2113400M-150F**
	34.92	1.375	2.750	4.110	6.827	1.500	2.126	0.056	**D2111375I-150F**
	38.10	1.500	3.000	4.425	7.142	1.500	2.126	0.027	**D2111500I-150F**
3xD	32.00	1.260	3.780	5.213	7.929	1.500	2.126	0.087	**D3113200M-150F**
	33.00	1.299	3.898	5.331	8.047	1.500	2.126	0.075	**D3113300M-150F**
	33.32	1.312	3.936	5.331	8.047	1.500	2.126	0.073	**D3111312I-150F**
	34.00	1.339	4.016	5.449	8.165	1.500	2.126	0.067	**D3113400M-150F**
	34.92	1.375	4.125	5.449	8.165	1.500	2.126	0.056	**D3111375I-150F**
	38.10	1.500	4.500	5.921	8.638	1.500	2.126	0.027	**D3111500I-150F**
4xD	32.00	1.260	5.039	6.079	8.795	1.500	2.126	0.087	**D4113200M-150F**
	33.00	1.299	5.197	6.236	8.953	1.500	2.126	0.075	**D4113300M-150F**
	33.32	1.312	5.248	6.236	8.953	1.500	2.126	0.073	**D4111312I-150F**
	34.00	1.339	5.354	6.394	9.110	1.500	2.126	0.067	**D4113400M-150F**
	34.92	1.375	5.500	6.394	9.110	1.500	2.126	0.056	**D4111375I-150F**
	38.10	1.500	6.000	7.024	9.740	1.500	2.126	0.027	**D4111500I-150F**

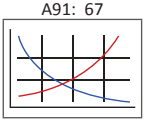
IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	**4T-11T306-P**	**7488-T15-1**	**8T-15**	3.5 N-m (30.9 in-lbs)
S M	**4T-11T306-M**			
K	**4T-11T306-K**			
N	**4T-11T306-N**			
H	**4T-11T306-H**			

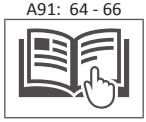
Expected Hole Tolerances

Length	mm	in
2xD	- 0.15 + 0.25	- 0.006 + 0.010
3xD	- 0.15 + 0.25	- 0.006 + 0.010
4xD	- 0.15 + 0.30	- 0.006 + 0.012

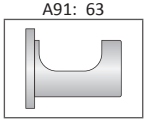
A91: 67
Key on A91: 2



A91: 64 - 66



A91: 63



Ⓜ = Metric (mm)
ⓘ = Imperial (in)

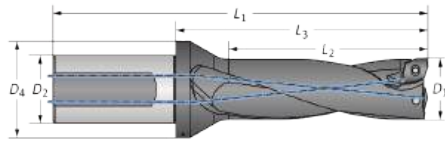
IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

14 Series: 39.00 mm - 39.67 mm (1.535" - 1.562")

Holders

NOTE: For full diameter range offerings, see the 4TEX section of our drilling catalog.





Metric Shank

	Length	D_1 mm	D_1 in	Body L_2	Body L_3	Body L_1	Shank D_2	Shank D_4	Max Offset	Part No.
ⓜ	2xD	39.00	1.535	78.00	110.40	179.40	40.00	54.00	2.80	**D2143900M-40FM**
		39.67	1.562	79.40	110.40	179.40	40.00	54.00	2.61	**D2141562I-40FM**
ⓜ	3xD	39.00	1.535	117.00	149.40	218.40	40.00	54.00	2.80	**D3143900M-40FM**
		39.67	1.562	119.02	149.40	218.40	40.00	54.00	2.61	**D3141562I-40FM**
	4xD	39.00	1.535	156.00	188.40	257.40	40.00	54.00	2.80	**D4143900M-40FM**
		39.67	1.562	158.70	188.40	257.40	40.00	54.00	2.61	**D4141562I-40FM**

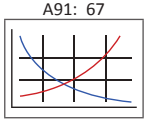
IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-140408-P	7595-T20-1	8T-20	4.5 N-m (39.8 in-lbs)
S M	4T-140408-M			
K	4T-140408-K			
N	4T-140408-N			
H	4T-140408-H			

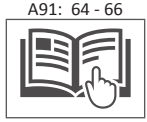
Expected Hole Tolerances

Length	mm	in
2xD	- 0.20 + 0.30	- 0.008 + 0.012
3xD	- 0.20 + 0.30	- 0.008 + 0.012
4xD	- 0.20 + 0.35	- 0.008 + 0.014

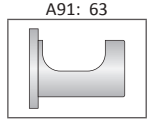
A91: 67
Key on A91: 2



A91: 64 - 66



A91: 63



ⓜ = Metric (mm)
ⓘ = Imperial (in)

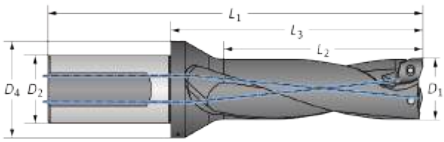
IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

14 Series: 39.00 mm - 39.67 mm (1.535" - 1.562")

Holders

NOTE: For full diameter range offerings, see the 4TEX section of our drilling catalog.





Imperial Shank

	Length	D_1 mm	D_1 in	Body L_2	Body L_3	Body L_1	Shank D_2	Shank D_4	Max Offset	Part No.
	2xD	39.00	1.535	3.071	4.346	7.063	1.500	2.126	0.110	**D2143900M-150F**
		39.67	1.562	3.124	4.346	7.063	1.500	2.126	0.103	**D2141562I-150F**
ⓘ	3xD	39.00	1.535	4.606	5.882	8.598	1.500	2.126	0.110	**D3143900M-150F**
		39.67	1.562	4.686	5.882	8.598	1.500	2.126	0.103	**D3141562I-150F**
	4xD	39.00	1.535	6.142	7.417	10.134	1.500	2.126	0.110	**D4143900M-150F**
		39.67	1.562	6.248	7.417	10.134	1.500	2.126	0.103	**D4141562I-150F**

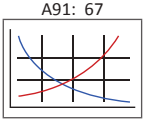
IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-140408-P	7595-T20-1	8T-20	4.5 N-m (39.8 in-lbs)
S M	4T-140408-M			
K	4T-140408-K			
N	4T-140408-N			
H	4T-140408-H			

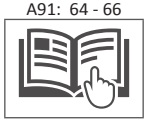
Expected Hole Tolerances

Length	mm	in
2xD	- 0.20 + 0.30	- 0.008 + 0.012
3xD	- 0.20 + 0.30	- 0.008 + 0.012
4xD	- 0.20 + 0.35	- 0.008 + 0.014

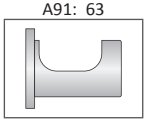
A91: 67
Key on A91: 2



A91: 64 - 66



A91: 63



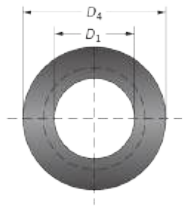
ⓜ = Metric (mm)
ⓘ = Imperial (in)

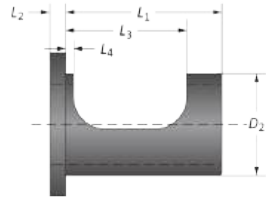
IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

Accessories

Eccentric Sleeves







	Sleeve Dimensions							Part No.	Adjustment Range	
	D_1	D_2	D_4	L_2	L_3	L_4	L_1		Diameter*	Center Height
m	25.00	32.00	49.00	6.00	39.00	2.50	54.00	**SLEEVE-25FM**	-0.20 to +0.40	-0.15 to +0.20
m	32.00	40.00	58.00	6.00	43.00	2.50	59.00	**SLEEVE-32FM**	-0.20 to +0.40	-0.15 to +0.20
m	40.00	50.00	74.00	6.00	49.00	3.00	69.00	**SLEEVE-40FM**	-0.20 to +0.40	-0.20 to +0.30
i	0.750	1.000	1.614	0.157	1.593	0.118	1.837	**SLEEVE-075F**	-0.008 to +0.016	-0.006 to +0.008
i	1.000	1.250	1.929	0.236	1.593	0.098	1.995	**SLEEVE-100F**	-0.008 to +0.016	-0.006 to +0.008
i	1.250	1.500	2.283	0.236	1.693	0.098	2.087	**SLEEVE-125F**	-0.008 to +0.016	-0.006 to +0.008
i	1.500	2.000	2.913	0.236	1.929	0.118	2.481	**SLEEVE-150F**	-0.008 to +0.024	-0.008 to +0.012

*Diameter adjustment range refers to the cutting diameter.



Milling Applications
Peripheral Adjustment Position



Lathe Applications
Front Adjustment Position

m = Metric (mm)
i = Imperial (in)

Cutting Diameter and Center Height Adjustment

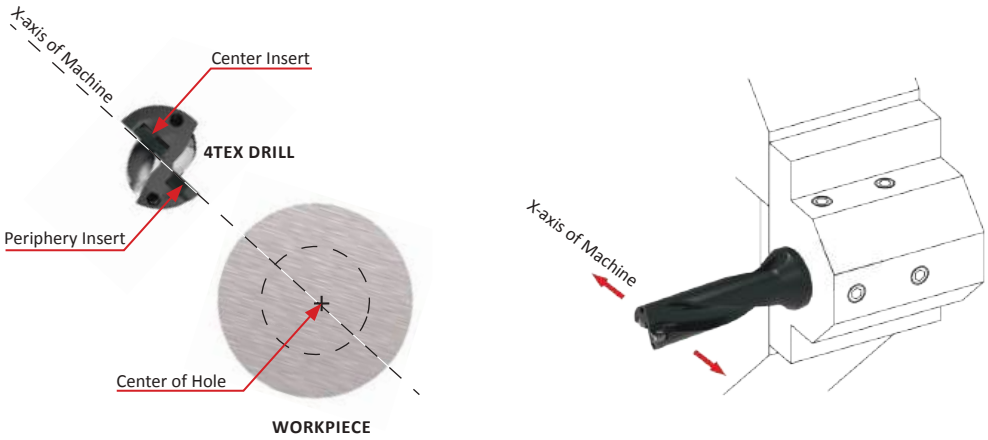
Milling and Lathe Diameter Adjustments



For Milling Applications

1. Assemble the 4TEX drill, eccentric sleeve, and tool holder. Do not tighten the tool holder set screws.
2. Using the peripheral marks for milling machines, align the reference indentation on the holder with the 0 (zero) mark on the eccentric sleeve to have no offset.
3. Rotate the sleeve in the (+) or (-) direction to increase or decrease the nominal diameter.
4. Once the drill has arrived at the desired diameter, firmly tighten the top set screw first and then tighten the bottom set screw.

NOTICE: Eccentric sleeves are to be used with side-locking tool holders only. Damage may result with other styles of tool holders.



For Lathe Applications

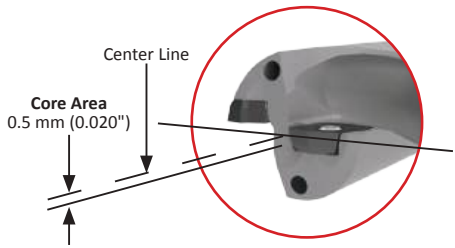
1. Assemble the 4TEX drill into the lathe turret with the top face of the inserts parallel to the x-axis of the machine. This will allow for the diameter offsets to be made using the lathe's x-axis.
2. To increase the nominal diameter, offset the x-axis so the periphery insert moves away from the center of the hole.
3. To decrease the nominal diameter, offset the x-axis so the periphery insert moves toward the center of the hole.

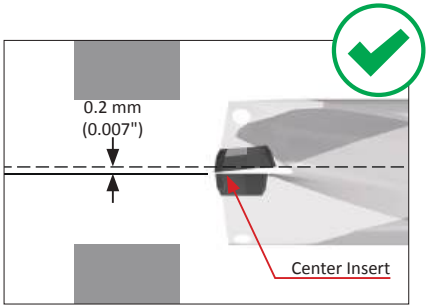
NOTE: Eccentric sleeve is not required when adjusting the diameter of the hole on a lathe.

Cutting Diameter and Center Height Adjustment

Center Height Alignment: Proper Center Line Position

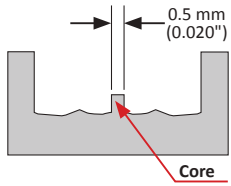


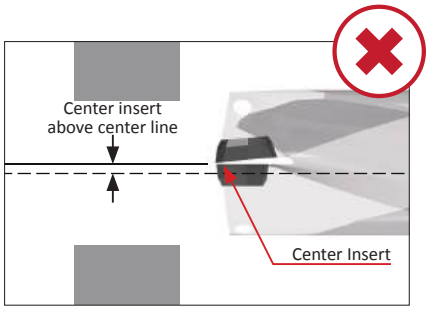




Proper Center Height Alignment

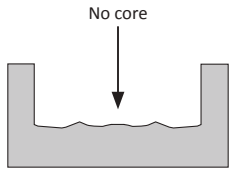
- The correct center height alignment will position the center insert 0.2 mm (0.007") below the center line.

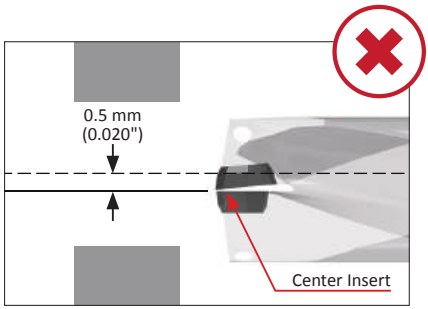




Center Insert Above the Center Line

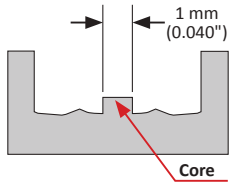
- This will cause fracturing of the center insert.
- Requires center height adjustment.





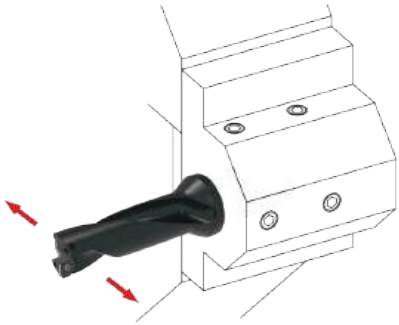
Center Insert Too Far Below Center Line

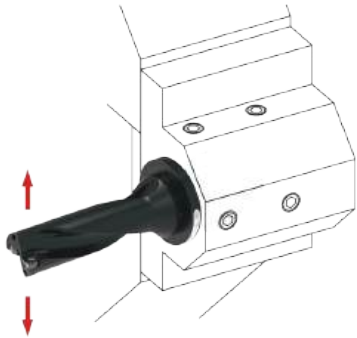
- This will cause the drill to interfere with the drilled hole.
- This will impede chip evacuation on the periphery insert.
- Requires center height adjustment.



Cutting Diameter and Center Height Adjustment

Center Height Alignment: How to Correct Issues





Method 1: Adjustment with X-Axis

1. Rotate the drill body so the position of the center line of the inserts is perpendicular to the lathe's x-axis.
2. Use the x-axis to offset the position of the center line in a (+) or (-) direction to increase or decrease the center core diameter at the bottom of the hole.

NOTE: This method does not allow diameter adjustments using the x-axis.

Method 2: Adjustment with Eccentric Sleeve

1. Assemble the drill to the turret using the eccentric sleeve, positioning the center line of the inserts parallel to the x-axis.
2. Align the reference indentation on the drill to the "0" setting on the flange face.
3. Rotate the sleeve (+) or (-) to increase or decrease the center height of the inserts in order to increase or decrease the core diameter at the bottom of the hole.

NOTE: This method still allows diameter adjustments using the x-axis.

NOTE (applies to both methods): Adjusting the center line of the inserts may affect the hole diameter produced. Method two is preferred to make center height adjustments and compensate for hole diameter with the x-axis.

Recommended Drilling Data

4TEX DRILL | METRIC (mm)

ISO	Material	Hardness (BHN)	Speed (m/min)	Feed Rate (mm/rev) by Diameter - 2xD, 3xD*			
				03, 04 series	05 series	06, 07 series	09, 11, 14 series
				12.00 mm - 15.49 mm	15.50 mm - 18.49 mm	18.50 mm - 26.49 mm	26.50 mm - 47.00 mm
P	**Structural Steel** A36, A285, A516, etc.	100 - 150	100 - 185	0.05 - 0.13	0.07 - 0.13	0.08 - 0.13	0.08 - 0.13
		150 - 250	100 - 185	0.05 - 0.13	0.07 - 0.13	0.08 - 0.13	0.08 - 0.13
		250 - 350	100 - 185	0.05 - 0.13	0.07 - 0.13	0.08 - 0.13	0.08 - 0.13

*For 4xD tools, begin at low end of feed recommendation.

4TEX DRILL | IMPERIAL (in)

ISO	Material	Hardness (BHN)	Speed (SFM)	Feed Rate (IPR) by Diameter - 2xD, 3xD*			
				03, 04 series	05 series	06, 07 series	09, 11, 14 series
				0.472" - 0.610"	0.611" - 0.728"	0.728" - 1.043"	1.044" - 1.850"
P	**Structural Steel** A36, A285, A516, etc.	100 - 150	330 - 600	0.0015 - 0.0055	0.0025 - 0.0065	0.0030 - 0.0080	0.0030 - 0.0080
		150 - 250	330 - 600	0.0015 - 0.0055	0.0025 - 0.0065	0.0030 - 0.0080	0.0030 - 0.0080
		250 - 350	330 - 600	0.0015 - 0.0055	0.0025 - 0.0065	0.0030 - 0.0080	0.0030 - 0.0080

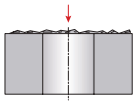
*For 4xD tools, begin at low end of feed recommendation.

INSERT GEOMETRY RECOMMENDATIONS

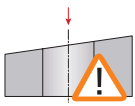
ISO	Material	Hardness (BHN)	Geometry				
			P	M	K	N	H
P	**Structural Steel** A36, A285, A516, etc.	100 - 150	○	●			
		150 - 250	○	●			
		250 - 350	●				○

● Best ○ Good

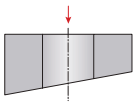
Troubleshooting

1. 

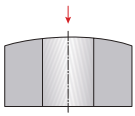
Starting on Uneven Surfaces
- Reduce entry feed by 50% if necessary.

2. 

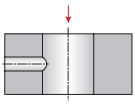
Starting on Angled Surfaces
- Reduce entry feed by 20 - 50%.
- Use lower rake geometry if insert chipping occurs.

3. 

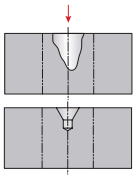
Angled Bore Exit
- Reduce entry feed by 50% on breakout.
- Use tough insert and stable corner radius.

4. 

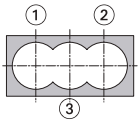
Starting on Convex Surfaces
- Reduce entry feed by 50%.
- Use lower rake geometry if insert chipping occurs.

5. 

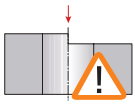
Drilling Through a Cross Hole
- Reduce feed rate 50% if necessary.
- Use good coolant flow and monitor chip packing.
- Use lower rake geometry if insert chipping occurs.

6. 

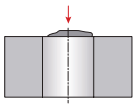
Drilling on a Groove or Large Centering Box
- Reduce entry feed.
- Use lower rake geometry for center insert.

7. 

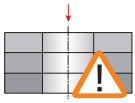
Chain Drilling
- Use good coolant flow.
- Reduce feed rate by 50% for interrupted cut.
- Use lower rake geometry if insert chipping occurs.

8. 

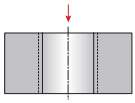
Starting on an Edge
- Reduce entry feed rate by 50%.
- Use lower rake geometry if insert chipping occurs.

9. 

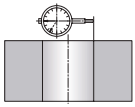
Starting on a Welded Seam
- Reduce entry feed rate by 50%.
- Use lower rake geometry if insert chipping occurs.

10. 

Drilling Through Stacked Plates
- Not recommended.

11. 

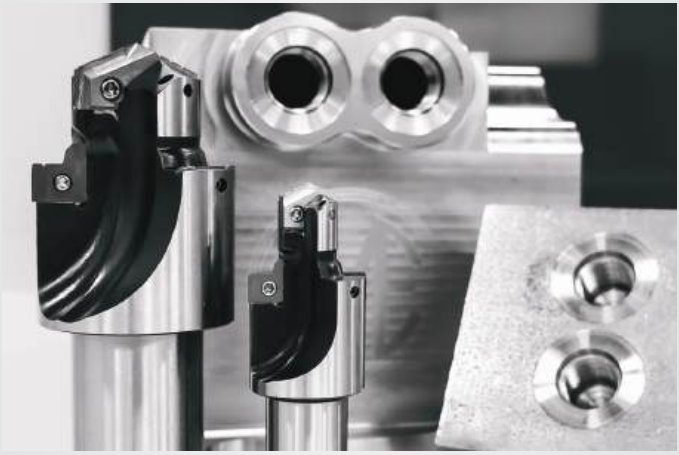
Opening an Existing Hole
- Use flood coolant.

12. 

Adjustable
- For mills, use eccentric sleeve with end mill holder.
- For lathes, use x-axis to adjust offset Ø.

NOTE: Refer to maximum offset Ø in data tables.

ACCUPORT 432®
PORTING
PRODUCT CATALOG







ALLIED MACHINE & ENGINEERING

www.alliedmachine.com

SECTION

A92-ACP

AccuPort 432®

AccuPort 432®



High Performance Multistep Action

Durable and precise, the AccuPort 432 holders provide a strong and rigid platform for the drilling of hydraulic ports. The precision ground insert location on each holder ensures total repeatability and simple changing of the replaceable inserts.

With the AccuPort technology, you can drill and finish port forms in ***ONE*** operation. Save time and money with AccuPort.

- Single operation hydraulic port cutting system.
- No pre-drilling required.
- Replaceable inserts eliminate regrinding and resetting.

Applicable Industries

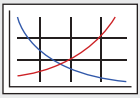
- Aerospace
- Agriculture
- Automotive
- Defense
- Heavy Equipment
- Hydraulics
- Oil and Gas
- Renewable Energy/ Energy
- Tool, Mold, and Die

Reference Icons

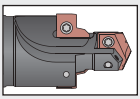
The following icons will appear throughout the catalog to help you navigate between products.



Setup / Assembly Information
Detailed instructions and information regarding the corresponding part(s).



Recommended Cutting Data
Speed and feed recommendations for optimum and safe drilling.



Accuport 432 Holders
Refers to the full details of the holder items included in each kit.



Port and Thread Finishing Kits
Lists the available kits complete with AccuPort tool and AccuThread® solid carbide thread mill.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

WARNING means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

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Product Overview

Port Specification

ONE TOOL | **FOUR** OPERATIONS



4 IN 1

Advanced Solutions, Outstanding Results

As designers and manufacturing engineers push the limits of production technology to improve productivity and performance, Allied Machine has continued to innovate and develop new solutions like the unique AccuPort 432 hydraulic port contour cutter system. Every product in the AccuPort system is designed to deliver maximum performance in a diverse range of hydraulic port cutting applications and demanding manufacturing environments.

Using precision replaceable inserts for both the drilling and port forming operations, AccuPort eliminates the need for tool regrinding and enables absolute repeatability, excellent surface finish, and reduced cost per hole. The AccuPort drills, forms, and precision-finishes the hydraulic port in **one** pass. This replaces up to three separate cutting operations in a single tool to deliver outstanding improvements in productivity, accuracy, and repeatability.

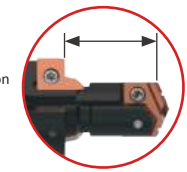
Hydraulic systems are present in an incredibly diverse range of industries. Anywhere a hydraulic port is required, AccuPort can provide a more cost-effective and higher performance solution in a fraction of the time taken for traditional methods using separate drills, special forming tools, and spot facers.



Solid Carbide AccuPort: -2 to -4



Replaceable Insert AccuPort: -4 to -32

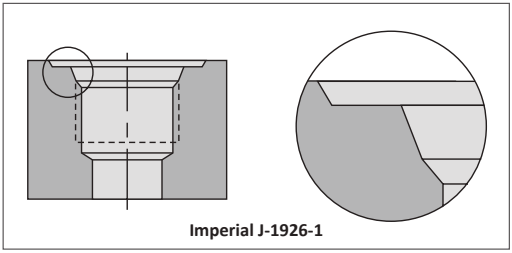
Port Specification	Notes
Imperial SAE J-1926 ISO 11926-1 MS-16142 	Extended minor diameter length option also available. 
Metric ISO 6149-1:2006 SAE J-2244/1 	Holders made with ID ridge. Utilizes inserts with or without ID ridge.  ID ridge  No ID ridge 
Military SAE AS5202 	Also conforms to AND10050 specification by using an alternate tap drill size for a UN thread.
John Deere® JDS-G173.1 	Adheres to John Deere port standards.

Product Overview

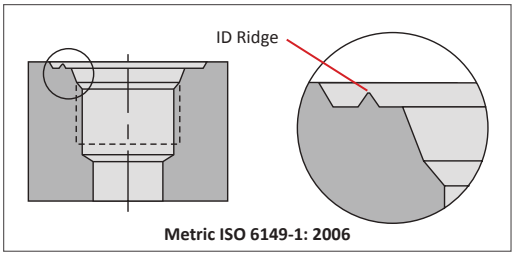
Port Specification & Solid Carbide Regrinds

Choosing the Right System

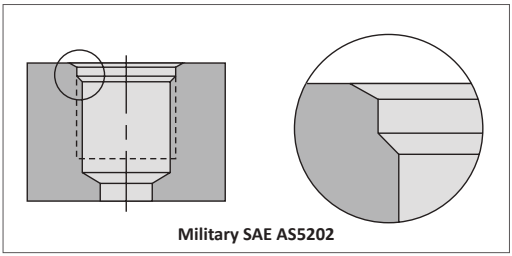
Every product in the AccuPort 432 product line is designed to deliver maximum performance in a diverse range of hydraulic port cutting applications and demanding manufacturing environments. The innovative design delivers the best possible range of benefits in terms of productivity, cost per hole, and tool life.



Imperial J-1926-1



Metric ISO 6149-1: 2006



Military SAE AS5202

Common Industry Sectors and Components

Aerospace
Pumps
Landing Gear
Brake Cylinders
Manifolds

Agriculture
Pumps
Manifolds
Cylinders and Rams
Gear Pumps

Automotive
Motor Valves
Relief Valves
Brake Cylinders
Power Steering
Pumps

Marine / Shipbuilding
Pumps
Cylinders and Rams
Motors
Manifolds

Solid Carbide Factory Regrind & Recoat

1. Send tools to Superion for regrind and recoat.



Parts for regrind
(packaged safely)

Paperwork included in shipment package must include:
- Distributor name
- Distributor contact
- Distributor email

Superion®
Attention: Regrind Department
1285 S Patton St.
Xenia, OH 45385
United States

2. Submit purchase order after tools have been inspected and quoted.

New item:
J1926-02S-10CM

Regrind item:
J1926-02G-10CM

3. Regrind and recoat in Xenia, OH (16 day lead time).

4. Tools returned at supplied address.

Product Overview

Replaceable Inserts Overview

T-A® Drill Insert Grades			
HSS Super Cobalt (T-A / GEN2 T-A) Suited for good-to-rigid machining applications, used for drilling exotic and high-alloy materials, or general use when surface speed needs to be increased. For use in material hardness up to 350 BHN.	**Carbide P40 (C5)** (T-A) Excellent for drilling free-machining steel, low/ medium-carbon steels, alloy steels, high-strength steels, tool steels, and hardened steels.	**Carbide K35 (C1)** (T-A / GEN2 T-A) Excellent for drilling free-machining steels, low/ medium-carbon steels, alloy steels, high-strength steels, tool steels, and hardened steels.	**Carbide K10 (C3)** (T-A) Designed for drilling grey/ white cast irons. The special geometry offers substantial increase in penetration rates and provides exceptional edge strength and tool life.

Port Form Inserts		GEN2 T-A Inserts		T-A Inserts
				
AM200®	TiAlN	AM300®	AM200®	TiN

GEN2 T-A®



Standard

- Offers substantial increases in penetration rates and tool life.
- Improves centering, drill stability, chip formation, and lowers drill forces.
- Provides smoother breakout on through-hole applications.

T-A®



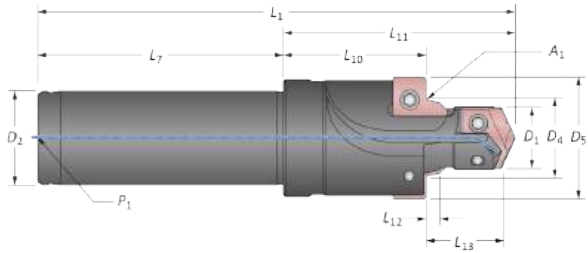
Standard

- Offers excellent penetration rates and tool life.
- Smooth breakout on through holes.
- Increases drill stability and chip formation.
- Ideally suited for low-to-high rigidity machining applications.

Made-to-Order Tool Specifications

Scan and email a copy of the table below to Allied's Application Engineering Department to receive pricing for a made-to-order AccuPort 432 Port Contour Cutter.

Send emails to appeng@alliedmachine.com.



Tube Dash No.	Specification	Port Thread Size	D_1	L_{13}	D_5	L_{10}	L_1	D_2	L_7
	☐ J1926								
	☐ ISO 6149								
	☐ ISO 6149 (no ridge)								
	☐ JDS-G173.1								
	☐ AS5202								

Company Name

Contact Name

Phone

Distributor Name

Fax

Product Overview

Product Nomenclature

AccuPort 432 Port Bodies

J1926	–	04		Y		–	20FM		
Port Specifications		Port Tube Dash No.		T-A® Insert Series			Shank Diameter		
							Solid Carbide	Replaceable Insert	
							Metric (mm)	Metric (mm)	Imperial (inch)
J1926 = Imperial		**04**	**14**	**Y**	**4**		**10CM** = 10	**16FM** = 16	**063F** = 0.750
X1926 = Imperial (extended minor length)		**05**	**16**	**Z**	**S***		**14CM** = 14	**20FM** = 20	**075F** = 0.750
		06	**18**	**0**	**G** = Regrind*		**16CM** = 16	**25FM** = 25	**100F** = 1.000
I6149 = Metric (ISO)		**08**	**20**	**1**				**32FM** = 32	**125F** = 1.250
G1731 = John Deere®		**10**	**24**	**2**					**150F** = 1.500
AS5202 = Military		**12**	**32**	**3**					

*Solid carbide porting bodies.

AccuPort 432 Port Form Inserts

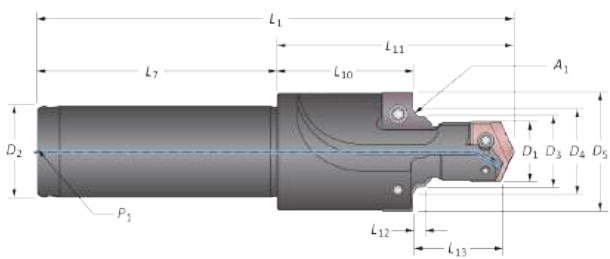
J1926	–	02				R	–	C5	A
Port Specifications		Insert Size				Port Specifications		Diameter	Coating
J1926 = Imperial		**02**	**06**	**10**	**16**	**Blank =** No ID ridge		**C5 =** P40 (C5)	**A =** TiAlN
I6149 = Metric (ISO)		**03**	**07**	**11**	**20**	**R =** ID ridge (I6149 only)		**C3 =** K10 (C3)	**H =** AM200®
G1731 = John Deere®		**04**	**07**	**12**	**24**				
AS5202 = Military		**05**	**09**	**14**	**32**				

T-A® / GEN2 T-A® Pilot Insert

4	5		Y		H	–	.386	-HE
Insert	Material		Series		Coating		Diameter	Geometry
1 = T-A®	**High-Speed Steel**	**Carbide**	**Y**	**4**	**P** = AM300®		**13** = Metric (mm)	**Blank** = Standard
4 = GEN2 T-A®	**3** = HSS	**C1** =K35 (C1)	**Z**		**H** = AM200®		**.515** = Decimal (in)	**-HE** = High Efficiency
	5 = Super cobalt	**C2** = K20 (C2)	**0**		**A** = TiAlN		**0017** = Fractional (in)	
	8 = Premium cobalt	**C3** = K10 (C3)	**1**		**N** = TiCN			
		C5 = P40 (C5)	**2**		**T** = TiN			
			3					

Reference Key

Symbol	Attribute
A_1	Seal angle
D_1	Minor diameter
D_2	Shank diameter
D_3	Pilot diameter
D_4	Seal angle diameter
D_5	Spot face diameter
L_1	Overall length
L_7	Shank length
L_{10}	Spot face to shoulder length
L_{11}	Total head length
L_{12}	Seal angle length
L_{13}	Minor diameter length
P_1	Rear pipe tap

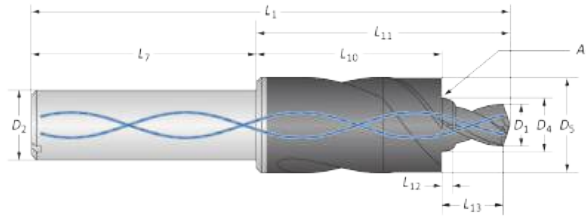


SAE J-1926 / ISO 11926-1 / MS-16142

Metric Shank Holders

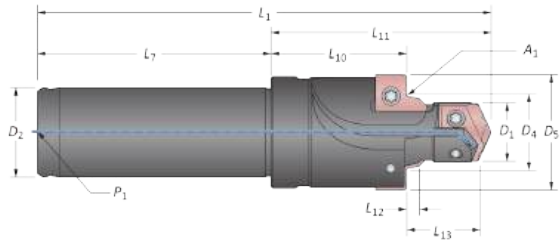
Solid Carbide





Replaceable Insert





Metric (mm)

Tube Dash No.	Cutting D_1	Cutting L_{13}	Cutting D_5	Seal Angle A_1	Seal Angle D_4	Seal Angle L_{12}	Holder L_{11}	Holder L_{10}	Holder L_1	Shank L_7	Shank D_2	Shank P_1	Port Thread Size	Part No.
Solid Carbide														
-2	6.90	12.2	17.25	12°	9.20	2.10	50.80	37.40	90.9	40.01	10	—	5/16-24 UNF-2B	**J1926-02S-10CM**
-3	8.40	12.2	19.25	12°	10.80	2.10	50.80	37.10	96.0	45.01	14	—	3/8-24 UNF-2B	**J1926-03S-14CM**
-4	9.90	16.3	21.26	12°	12.50	2.60	46.50	28.30	94.5	48.01	16	—	7/16-20 UNF-2B	**J1926-04S-16CM**
Replaceable Insert														
-4	9.80	14.0	21.34	12°	12.50	2.70	38.8	22.80	78.4	41.91	16	1/16 BSPT	7/16-20 UNF-2B	**J1926-04Y-16FM**
-5	11.50	14.0	23.51	12°	14.10	2.70	38.8	22.50	78.4	41.91	16	1/16 BSPT	1/2-20 UNF-2B	**J1926-05Z-16FM**
-6	13.00	15.5	25.13	12°	15.70	2.70	47.2	29.00	86.4	41.91	20	1/8 BSPT	9/16-18 UNF-2B	**J1926-060-20FM**
-8	17.50	17.5	30.62	15°	20.70	2.70	50.3	29.20	89.5	41.91	20	1/8 BSPT	3/4-16 UNF-2B	**J1926-080-20FM**
-10	20.50	20.0	34.13	15°	24.00	2.70	54.4	30.10	103.9	53.09	25	1/8 BSPT	7/8-14 UNF-2B	**J1926-101-25FM**
-12	25.00	23.0	42.03	15°	29.20	3.50	67.1	38.90	121.4	57.91	32	1/4 BSPT	1-1/16-12 UN-2B	**J1926-122-32FM**
-14	28.00	23.0	45.24	15°	32.40	3.50	67.1	38.20	121.4	57.91	32	1/4 BSPT	1-3/16-12 UN-2B	**J1926-142-32FM**
-16	31.20	23.0	49.13	15°	35.60	3.50	67.1	37.50	121.4	57.91	32	1/4 BSPT	1-5/16-12 UN-2B	**J1926-162-32FM**
-20	39.00	23.0	58.57	15°	43.60	3.50	77.8	46.60	130.9	57.91	32	1/4 BSPT	1-5/8-12 UN-2B	**J1926-203-32FM***
-24	45.50	23.0	65.13	15°	49.90	3.50	77.8	45.20	130.9	57.91	32	1/4 BSPT	1-7/8-12 UN-2B	**J1926-243-32FM***
-32	61.50	23.0	88.12	15°	65.80	3.50	103.2	60.80	150.0	57.91	32	1/4 BSPT	2-1/2-12 UN-2B	**J1926-324-32FM***

Imperial (in)

Tube Dash No.	Cutting D_1	Cutting L_{13}	Cutting D_5	Seal Angle A_1	Seal Angle D_4	Seal Angle L_{12}	Holder L_{11}	Holder L_{10}	Holder L_1	Shank L_7	Shank D_2	Shank P_1	Port Thread Size	Part No.
Solid Carbide														
-2	0.272	0.480	0.6791	12°	0.362	0.083	2.000	1.472	3.579	1.575	10 mm	—	5/16-24 UNF-2B	**J1926-02S-10CM**
-3	0.331	0.480	0.7579	12°	0.425	0.083	2.000	1.461	3.780	1.772	14 mm	—	3/8-24 UNF-2B	**J1926-03S-14CM**
-4	0.390	0.642	0.8370	12°	0.492	0.102	1.831	1.114	3.720	1.890	16 mm	—	7/16-20 UNF-2B	**J1926-04S-16CM**
Replaceable Insert														
-4	0.386	0.551	0.8402	12°	0.492	0.106	1.528	0.898	3.087	1.650	0.630	1/16 BSPT	7/16-20 UNF-2B	**J1926-04Y-16FM**
-5	0.453	0.551	0.9255	12°	0.555	0.106	1.528	0.886	3.087	1.650	0.630	1/16 BSPT	1/2-20 UNF-2B	**J1926-05Z-16FM**
-6	0.512	0.610	0.9894	12°	0.618	0.106	1.858	1.142	3.402	1.650	0.787	1/8 BSPT	9/16-18 UNF-2B	**J1926-060-20FM**
-8	0.689	0.689	1.2056	15°	0.815	0.106	1.980	1.150	3.524	1.650	0.787	1/8 BSPT	3/4-16 UNF-2B	**J1926-080-20FM**
-10	0.807	0.787	1.3437	15°	0.945	0.106	2.142	1.185	4.091	2.090	0.984	1/8 BSPT	7/8-14 UNF-2B	**J1926-101-25FM**
-12	0.984	0.906	1.6549	15°	1.150	0.138	2.642	1.531	4.780	2.280	1.260	1/4 BSPT	1-1/16-12 UN-2B	**J1926-122-32FM**
-14	1.102	0.906	1.7812	15°	1.276	0.138	2.642	1.504	4.780	2.280	1.260	1/4 BSPT	1-3/16-12 UN-2B	**J1926-142-32FM**
-16	1.231	0.906	1.9341	15°	1.402	0.138	2.642	1.476	4.780	2.280	1.260	1/4 BSPT	1-5/16-12 UN-2B	**J1926-162-32FM**
-20	1.535	0.906	2.3058	15°	1.717	0.138	3.063	1.835	5.154	2.280	1.260	1/4 BSPT	1-5/8-12 UN-2B	**J1926-203-32FM***
-24	1.791	0.906	2.5641	15°	1.965	0.138	3.063	1.780	5.154	2.280	1.260	1/4 BSPT	1-7/8-12 UN-2B	**J1926-243-32FM***
-32	2.421	0.906	3.4694	15°	2.591	0.138	4.063	2.394	5.906	2.280	1.260	1/4 BSPT	2-1/2-12 UN-2B	**J1926-324-32FM***

***NOTICE:** Due to the cutting forces generated by this tool, a mechanical chuck is required. Please contact Application Engineering with any questions: **appeng@alliedmachine.com.**

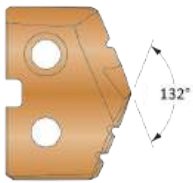
A92: 34 - 44
Key on A92: 2
A92: 3 - 5
A92: 21 - 22

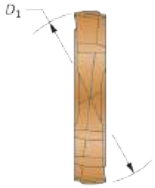
ⓜ = Metric (mm)
ⓘ = Imperial (in)

SAE J-1926 / ISO 11926-1 / MS-16142

Inserts







See section A30 in A00-DRL for complete T-A insert details.

T-A® / GEN2 T-A® Drill Inserts

Tube Dash No.	AccuPort Part No.	T-A® Insert Series	Part No. Super Cobalt AM200®	Part No. Carbide AM300®	Insert Screw	Insert Driver	Admissible Tightening Torque**
-4	J1926-04Y-16FM	Y	45YH-.386	4C1YP-.386	724-IP7-1	8IP-7	84 N-cm (7.4 in-lbs)
-5	J1926-05Z-16FM	Z	45ZH-11.5	4C1ZP-11.5	7247-IP7-1	8IP-7	84 N-cm (7.4 in-lbs)
-6	J1926-060-20FM	0	450H-13	4C10P-13	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-8	J1926-080-20FM	0	450H-0022	4C10P-0022	72567-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-10	J1926-101-25FM	1	451H-20.5	4C11P-20.5	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-12	J1926-122-32FM	2	452H-25	4C12P-25	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-14	J1926-142-32FM	2	452H-28	4C12P-28	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-16	J1926-162-32FM	2	452H-1.231	4C12P-1.231	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-20	J1926-203-32FM*	3	453H-39	1C53A-39	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)
-24	J1926-243-32FM*	3	453H-45.5	1C53A-45.5	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)
-32	J1926-324-32FM*	4	454H-61.5	—	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)

Port Form Drill Inserts

Tube Dash No.	AccuPort Part No.	Part No. C3 Carbide AM200®	Part No. C5 Carbide TiAlN	Insert Screw	Insert Driver	Admissible Tightening Torque**
-4	J1926-04Y-16FM	J1926-02-C3H	J1926-02-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-5	J1926-05Z-16FM	J1926-03-C3H	J1926-03-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-6	J1926-060-20FM	J1926-03-C3H	J1926-03-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-8	J1926-080-20FM	J1926-07-C3H	J1926-07-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-10	J1926-101-25FM	J1926-04-C3H	J1926-04-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-12	J1926-122-32FM	J1926-08-C3H	J1926-08-C5A	7375-IP9-1	8IP-9	175 N-cm (15.5 in-lbs)
-14	J1926-142-32FM	J1926-08-C3H	J1926-08-C5A	7375-IP9-1	8IP-9	175 N-cm (15.5 in-lbs)
-16	J1926-162-32FM	J1926-09-C3H	J1926-09-C5A	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-20	J1926-203-32FM*	J1926-10-C3H	J1926-10-C5A	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-24	J1926-243-32FM*	J1926-11-C3H	J1926-11-C5A	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-32	J1926-324-32FM*	J1926-12-C3H	J1926-12-C5A	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)

***NOTICE:** Due to the cutting forces generated by this tool, a mechanical chuck is required. Please contact Application Engineering with any questions: **appeng@alliedmachine.com.**

**Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

A92: 34 - 44
Key on A92: 2

A92: 3 - 5

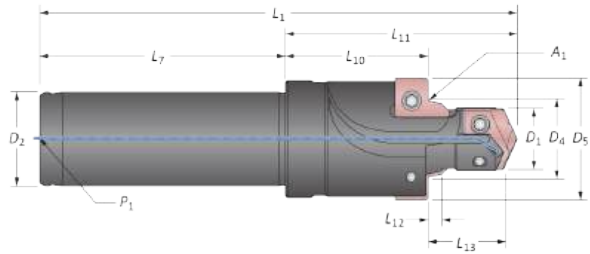
A92: 21 - 22

Y - 2 series T-A inserts sold in multiples of 2.
3 - 4 series T-A inserts sold in multiples of 1.
Port form inserts sold in multiples of 2.
Insert screws sold in multiples of 10.

SAE J-1926 / ISO 11926-1 / MS-16142

Imperial Shank Holders





Metric (mm)

Tube Dash No.	Cutting D_1	Cutting L_{13}	Cutting D_5	Seal Angle A_1	Seal Angle D_4	Seal Angle L_{12}	Holder L_{11}	Holder L_{10}	Holder L_1	Shank L_7	Shank D_2	Shank P_1	Port Thread Size	Part No.
-4	9.80	14.00	21.34	12°	12.45	2.79	38.79	22.86	84.12	47.63	15.88	1/16 NPT	7/16-20 UNF-2B	**J1926-04Y-063F**
-5	11.50	14.00	23.51	12°	13.97	2.79	38.79	22.61	84.12	47.63	15.88	1/16 NPT	1/2-20 UNF-2B	**J1926-05Z-063F**
-6	13.00	15.49	25.13	12°	15.75	2.79	47.17	28.96	94.46	50.01	19.05	1/8 NPT	9/16-18 UNF-2B	**J1926-060-075F**
-8	17.50	17.50	30.62	15°	20.57	2.79	50.34	29.21	97.64	50.01	19.05	1/8 NPT	3/4-16 UNF-2B	**J1926-080-075F**
-10	20.50	19.99	34.13	15°	24.13	2.79	54.36	30.23	108.74	57.94	25.40	1/8 NPT	7/8-14 UNF-2B	**J1926-101-100F**
-12	25.00	23.01	42.03	15°	29.21	3.56	67.06	38.86	121.44	57.94	31.75	1/4 NPT	1-1/16-12 UN-2B	**J1926-122-125F**
-14	28.00	23.01	45.24	15°	32.51	3.56	67.06	38.10	121.44	57.94	31.75	1/4 NPT	1-3/16-12 UN-2B	**J1926-142-125F**
-16	31.20	23.01	49.13	15°	35.56	3.56	67.06	37.59	121.44	57.94	31.75	1/4 NPT	1-5/16-12 UN-2B	**J1926-162-125F**
-20	39.00	23.01	58.57	15°	43.69	3.56	77.77	46.74	141.30	68.28	38.10	1/4 NPT	1-5/8-12 UN-2B	**J1926-203-150F**
-24	45.50	23.01	65.13	15°	50.04	3.56	77.77	45.21	141.30	68.28	38.10	1/4 NPT	1-7/8-12 UN-2B	**J1926-243-150F**
-32	61.50	23.01	88.12	15°	65.79	3.56	96.82	60.71	160.35	68.28	38.10	1/4 NPT	2-1/2-12 UN-2B	**J1926-324-150F**

Imperial (in)

Tube Dash No.	Cutting D_1	Cutting L_{13}	Cutting D_5	Seal Angle A_1	Seal Angle D_4	Seal Angle L_{12}	Holder L_{11}	Holder L_{10}	Holder L_1	Shank L_7	Shank D_2	Shank P_1	Port Thread Size	Part No.
-4	0.386	0.551	0.8402	12°	0.490	0.110	1.527	0.900	3.312	1.875	5/8	1/16 NPT	7/16-20 UNF-2B	**J1926-04Y-063F**
-5	0.453	0.551	0.9255	12°	0.550	0.110	1.527	0.890	3.312	1.875	5/8	1/16 NPT	1/2-20 UNF-2B	**J1926-05Z-063F**
-6	0.512	0.610	0.9894	12°	0.620	0.110	1.857	1.140	3.719	1.969	3/4	1/8 NPT	9/16-18 UNF-2B	**J1926-060-075F**
-8	0.689	0.689	1.2056	15°	0.810	0.110	1.982	1.150	3.844	1.969	3/4	1/8 NPT	3/4-16 UNF-2B	**J1926-080-075F**
-10	0.807	0.787	1.3437	15°	0.950	0.110	2.140	1.190	4.281	2.281	1	1/8 NPT	7/8-14 UNF-2B	**J1926-101-100F**
-12	0.984	0.906	1.6549	15°	1.150	0.140	2.640	1.530	4.781	2.281	1-1/4	1/4 NPT	1-1/16-12 UN-2B	**J1926-122-125F**
-14	1.102	0.906	1.7812	15°	1.280	0.140	2.640	1.500	4.781	2.281	1-1/4	1/4 NPT	1-3/16-12 UN-2B	**J1926-142-125F**
-16	1.231	0.906	1.9341	15°	1.400	0.140	2.640	1.480	4.781	2.281	1-1/4	1/4 NPT	1-5/16-12 UN-2B	**J1926-162-125F**
-20	1.535	0.906	2.3058	15°	1.720	0.140	3.062	1.840	5.563	2.688	1-1/2	1/4 NPT	1-5/8-12 UN-2B	**J1926-203-150F**
-24	1.791	0.906	2.5641	15°	1.970	0.140	3.062	1.780	5.563	2.688	1-1/2	1/4 NPT	1-7/8-12 UN-2B	**J1926-243-150F**
-32	2.421	0.906	3.4694	15°	2.590	0.140	3.812	2.390	6.313	2.688	1-1/2	1/4 NPT	2-1/2-12 UN-2B	**J1926-324-150F**

NOTE: Port contour cutters are available with extended pilot length (**L_{13}**). See page A92: 13 for items.

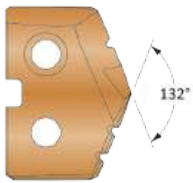
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Key on A92: 2
A92: 3 - 5
A92: 23 - 24

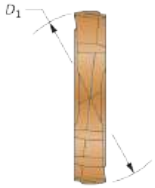
Ⓜ = Metric (mm)
ⓘ = Imperial (in)

SAE J-1926 / ISO 11926-1 / MS-16142

Inserts







See section A30 in A00-DRL for complete T-A insert details.

T-A® / GEN2 T-A® Drill Inserts

Tube Dash No.	AccuPort Part No.	T-A® Insert Series	Part No. Super Cobalt AM200®	Part No. Carbide AM300®	Insert Screw	Insert Driver	Admissible Tightening Torque**
-4	J1926-04Y-063F	Y	45YH-.386	4C1YP-.386	724-IP7-1	8IP-7	84 N-cm (7.4 in-lbs)
-5	J1926-05Z-063F	Z	45ZH-11.5	4C1ZP-11.5	7247-IP7-1	8IP-7	84 N-cm (7.4 in-lbs)
-6	J1926-060-075F	0	450H-13	4C10P-13	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-8	J1926-080-075F	0	450H-0022	4C10P-0022	72567-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-10	J1926-101-100F	1	451H-20.5	4C11P-20.5	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-12	J1926-122-125F	2	452H-25	4C12P-25	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-14	J1926-142-125F	2	452H-28	4C12P-28	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-16	J1926-162-125F	2	452H-1.231	4C12P-1.231	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-20	J1926-203-150F	3	453H-39	1C53A-39	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)
-24	J1926-243-150F	3	453H-45.5	1C53A-45.5	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)
-32	J1926-324-150F	4	454H-61.5	—	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)

Port Form Drill Inserts

Tube Dash No.	AccuPort Part No.	Part No. C3 Carbide AM200®	Part No. C5 Carbide TiAlN	Insert Screw	Insert Driver	Admissible Tightening Torque**
-4	J1926-04Y-063F	J1926-02-C3H	J1926-02-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-5	J1926-05Z-063F	J1926-03-C3H	J1926-03-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-6	J1926-060-075F	J1926-03-C3H	J1926-03-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-8	J1926-080-075F	J1926-07-C3H	J1926-07-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-10	J1926-101-100F	J1926-04-C3H	J1926-04-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-12	J1926-122-125F	J1926-08-C3H	J1926-08-C5A	7375-IP9-1	8IP-9	175 N-cm (15.5 in-lbs)
-14	J1926-142-125F	J1926-08-C3H	J1926-08-C5A	7375-IP9-1	8IP-9	175 N-cm (15.5 in-lbs)
-16	J1926-162-125F	J1926-09-C3H	J1926-09-C5A	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-20	J1926-203-150F	J1926-10-C3H	J1926-10-C5A	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-24	J1926-243-150F	J1926-11-C3H	J1926-11-C5A	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-32	J1926-324-150F	J1926-12-C3H	J1926-12-C5A	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)

**Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

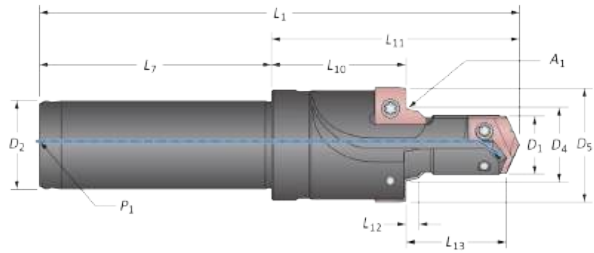
A92: 34 - 44
Key on A92: 2
A92: 3 - 5
A92: 23 - 24

Y - 2 series T-A inserts sold in multiples of 2.
3 - 4 series T-A inserts sold in multiples of 1.
Port form inserts sold in multiples of 2.
Insert screws sold in multiples of 10.

SAE J-1926 / ISO 11926-1 / MS-16142

Imperial Extended Minor Diameter Length Holders





Metric (mm)

Tube Dash No.	Cutting D_1	Cutting L_{13}	Cutting D_5	Seal Angle A_1	Seal Angle D_4	Seal Angle L_{12}	Holder L_{11}	Holder L_{10}	Holder L_1	Shank L_7	Shank D_2	Shank P_1	Port Thread Size	Part No.
-4	9.80	20.35	21.34	12°	12.45	2.69	45.14	22.76	90.47	47.63	15.88	1/16 NPT	7/16-20 UNF-2B	**X1926-04Y-063F**
-5	11.50	20.35	23.51	12°	14.05	2.69	45.14	22.48	90.47	47.63	15.88	1/16 NPT	1/2-20 UNF-2B	**X1926-05Z-063F**
-6	13.00	21.84	25.13	12°	15.70	2.69	53.52	29.06	100.81	50.01	19.05	1/8 NPT	9/16-18 UNF-2B	**X1926-060-075F**
-8	17.50	23.85	30.62	15°	20.65	2.69	56.69	29.21	103.99	50.01	19.05	1/8 NPT	3/4-16 UNF-2B	**X1926-080-075F**
-10	20.50	26.34	34.13	15°	24.00	2.69	60.71	30.10	115.09	57.94	25.40	1/8 NPT	7/8-14 UNF-2B	**X1926-101-100F**
-12	25.00	29.36	42.03	15°	29.21	3.51	73.41	38.86	127.79	57.94	31.75	1/4 NPT	1-1/16-12 UN-2B	**X1926-122-125F**
-14	28.00	29.36	45.24	15°	32.41	3.51	73.41	38.20	127.79	57.94	31.75	1/4 NPT	1-3/16-12 UN-2B	**X1926-142-125F**
-16	31.20	29.36	49.13	15°	35.56	3.51	73.41	37.52	127.79	57.94	31.75	1/4 NPT	1-5/16-12 UN-2B	**X1926-162-125F**
-20	39.00	29.36	58.57	15°	43.56	3.51	84.12	46.61	147.65	68.28	38.10	1/4 NPT	1-5/8-12 UN-2B	**X1926-203-150F**
-24	45.50	29.36	65.13	15°	49.91	3.51	84.12	45.16	147.65	68.28	38.10	1/4 NPT	1-7/8-12 UN-2B	**X1926-243-150F**
-32	61.50	29.36	88.12	15°	65.76	3.51	103.17	60.78	166.70	68.28	38.10	1/4 NPT	2-1/2-12 UN-2B	**X1926-324-150F**

Imperial (in)

Tube Dash No.	Cutting D_1	Cutting L_{13}	Cutting D_5	Seal Angle A_1	Seal Angle D_4	Seal Angle L_{12}	Holder L_{11}	Holder L_{10}	Holder L_1	Shank L_7	Shank D_2	Shank P_1	Port Thread Size	Part No.
-4	0.386	0.801	0.8402	12°	0.490	0.106	1.777	0.896	3.562	1.875	5/8	1/16 NPT	7/16-20 UNF-2B	**X1926-04Y-063F**
-5	0.453	0.801	0.9255	12°	0.553	0.106	1.777	0.885	3.562	1.875	5/8	1/16 NPT	1/2-20 UNF-2B	**X1926-05Z-063F**
-6	0.512	0.860	0.9894	12°	0.618	0.106	2.107	1.144	3.969	1.969	3/4	1/8 NPT	9/16-18 UNF-2B	**X1926-060-075F**
-8	0.689	0.939	1.2056	15°	0.813	0.106	2.232	1.150	4.094	1.969	3/4	1/8 NPT	3/4-16 UNF-2B	**X1926-080-075F**
-10	0.807	1.037	1.3437	15°	0.945	0.106	2.390	1.185	4.531	2.281	1	1/8 NPT	7/8-14 UNF-2B	**X1926-101-100F**
-12	0.984	1.156	1.6549	15°	1.150	0.138	2.890	1.530	5.031	2.281	1-1/4	1/4 NPT	1-1/16-12 UN-2B	**X1926-122-125F**
-14	1.102	1.156	1.7812	15°	1.276	0.138	2.890	1.504	5.031	2.281	1-1/4	1/4 NPT	1-3/16-12 UN-2B	**X1926-142-125F**
-16	1.231	1.156	1.9341	15°	1.400	0.138	2.890	1.477	5.031	2.281	1-1/4	1/4 NPT	1-5/16-12 UN-2B	**X1926-162-125F**
-20	1.535	1.156	2.3058	15°	1.715	0.138	3.312	1.835	5.813	2.688	1-1/2	1/4 NPT	1-5/8-12 UN-2B	**X1926-203-150F**
-24	1.791	1.156	2.5641	15°	1.965	0.138	3.312	1.778	5.813	2.688	1-1/2	1/4 NPT	1-7/8-12 UN-2B	**X1926-243-150F**
-32	2.421	1.156	3.4694	15°	2.589	0.138	4.062	2.393	6.563	2.688	1-1/2	1/4 NPT	2-1/2-12 UN-2B	**X1926-324-150F**

NOTE: Port contour cutters are available with extended pilot length (L_{13}). See page A92: 13 for items.

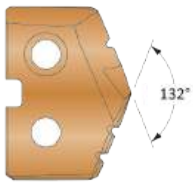
A92: 34 - 44
Key on A92: 2
A92: 3 - 5

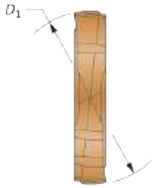
(m) = Metric (mm)
(i) = Imperial (in)

SAE J-1926 / ISO 11926-1 / MS-16142

Inserts







See section A30 in A00-DRL for complete T-A insert details.

T-A® / GEN2 T-A® Drill Inserts

Tube Dash No.	AccuPort Part No.	T-A® Insert Series	Part No. Super Cobalt AM200®	Part No. Carbide AM300®	Insert Screw	Insert Driver	Admissible Tightening Torque**
-4	X1926-04Y-063F	Y	45YH-.386	4C1YP-.386	724-IP7-1	8IP-7	84 N-cm (7.4 in-lbs)
-5	X1926-05Z-063F	Z	45ZH-11.5	4C1ZP-11.5	7247-IP7-1	8IP-7	84 N-cm (7.4 in-lbs)
-6	X1926-060-075F	0	450H-13	4C10P-13	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-8	X1926-080-075F	0	450H-0022	4C10P-0022	72567-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-10	X1926-101-100F	1	451H-20.5	4C11P-20.5	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-12	X1926-122-125F	2	452H-25	4C12P-25	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-14	X1926-142-125F	2	452H-28	4C12P-28	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-16	X1926-162-125F	2	452H-1.231	4C12P-1.231	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-20	X1926-203-150F	3	453H-39	1C53A-39	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)
-24	X1926-243-150F	3	453H-45.5	1C53A-45.5	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)
-32	X1926-324-150F	4	454H-61.5	—	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)

Port Form Drill Inserts

Tube Dash No.	AccuPort Part No.	Part No. C3 Carbide AM200®	Part No. C5 Carbide TiAlN	Insert Screw	Insert Driver	Admissible Tightening Torque**
-4	X1926-04Y-063F	J1926-02-C3H	J1926-02-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-5	X1926-05Z-063F	J1926-03-C3H	J1926-03-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-6	X1926-060-075F	J1926-03-C3H	J1926-03-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-8	X1926-080-075F	J1926-07-C3H	J1926-07-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-10	X1926-101-100F	J1926-04-C3H	J1926-04-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-12	X1926-122-125F	J1926-08-C3H	J1926-08-C5A	7375-IP9-1	8IP-9	175 N-cm (15.5 in-lbs)
-14	X1926-142-125F	J1926-08-C3H	J1926-08-C5A	7375-IP9-1	8IP-9	175 N-cm (15.5 in-lbs)
-16	X1926-162-125F	J1926-09-C3H	J1926-09-C5A	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-20	X1926-203-150F	J1926-10-C3H	J1926-10-C5A	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-24	X1926-243-150F	J1926-11-C3H	J1926-11-C5A	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-32	X1926-324-150F	J1926-12-C3H	J1926-12-C5A	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)

**Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A92: 34 - 44
Key on A92: 2
A92: 3 - 5

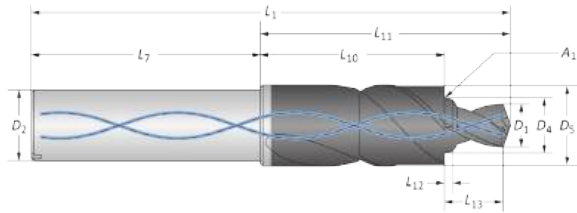
Y - 2 series T-A inserts sold in multiples of 2.
3 - 4 series T-A inserts sold in multiples of 1.
Port form inserts sold in multiples of 2.
Insert screws sold in multiples of 10.

ISO 6149-1:2006 / SAE J-2244/1

Metric Shank Holders

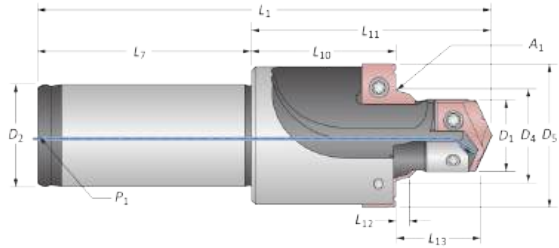
Solid Carbide





Replaceable Insert





Metric (mm)

Tube Dash No.	Cutting D_1	Cutting L_{13}	Cutting D_5	Seal Angle A_1	Seal Angle D_4	Seal Angle L_{12}	Holder L_{11}	Holder L_{10}	Holder L_1	Shank L_7	Shank D_2	Shank P_1	Port Thread Size	Part No.
Solid Carbide														
-2	7.00	11.5	14.00	12°	9.10	1.60	50.8	38.10	90.9	40.01	10	—	M8 X 1	**I6149-02S-10CM**
-3	8.50	11.5	16.00	12°	11.10	1.60	49.3	36.20	94.2	45.01	14	—	M10 X 1	**I6149-03S-14CM**
-4	10.50	15.0	19.00	12°	13.80	2.40	46.5	29.50	94.5	48.01	16	—	M12 X 1.5	**I6149-04S-16CM**
Replaceable Insert														
-4	10.50	14.4	23.98	15°	13.81	2.60	38.8	22.20	78.4	41.91	16	1/16 BSPT	M12 X 1.5	**I6149-04RY-16FM**
-5	12.50	14.4	25.99	15°	15.80	2.60	38.8	21.80	78.4	41.91	16	1/16 BSPT	M14 X 1.5	**I6149-05RZ-16FM**
-6	14.50	15.9	27.99	15°	17.80	2.60	47.2	28.30	86.4	41.91	20	1/8 BSPT	M16 X 1.5	**I6149-06R0-20FM**
-8	16.50	17.4	30.00	15°	19.80	2.60	50.3	29.60	89.5	41.91	20	1/8 BSPT	M18 X 1.5	**I6149-08R0-20FM**
-10	20.50	18.4	33.97	15°	23.80	2.60	54.4	31.60	103.9	53.09	25	1/8 BSPT	M22 X 1.5	**I6149-10R1-25FM**
-12	25.00	22.4	39.95	15°	29.40	3.30	67.1	39.40	121.4	57.91	32	1/4 BSPT	M27 X 2	**I6149-12R2-32FM**
-14	28.00	22.4	44.00	15°	32.40	3.30	67.1	38.80	121.4	57.91	32	1/4 BSPT	M30 X 2	**I6149-14R2-32FM**
-16	31.00	22.4	48.97	15°	35.40	3.30	67.1	38.10	121.4	57.91	32	1/4 BSPT	M33 X 2	**I6149-16R2-32FM**
-20	40.00	23.0	59.92	15°	44.40	3.30	77.8	46.40	130.9	57.91	32	1/4 BSPT	M42 X 2	**I6149-20R3-32FM***
-24	46.00	25.5	66.10	15°	50.40	3.30	77.8	42.60	130.9	57.91	32	1/4 BSPT	M48 X 2	**I6149-24R3-32FM***
-32	58.00	28.0	75.95	15°	62.40	3.30	103.2	56.60	150.0	57.91	32	1/4 BSPT	M60 X 2	**I6149-32R4-32FM***

Imperial (in)

Tube Dash No.	Cutting D_1	Cutting L_{13}	Cutting D_5	Seal Angle A_1	Seal Angle D_4	Seal Angle L_{12}	Holder L_{11}	Holder L_{10}	Holder L_1	Shank L_7	Shank D_2	Shank P_1	Port Thread Size	Part No.
Solid Carbide														
-2	0.276	0.453	0.5512	12°	0.358	0.063	2.000	1.500	3.579	1.575	10 mm	—	M8 X 1	**I6149-02S-10CM**
-3	0.335	0.453	0.6299	12°	0.437	0.063	1.941	1.425	3.709	1.772	14 mm	—	M10 X 1	**I6149-03S-14CM**
-4	0.413	0.591	0.7480	12°	0.543	0.094	1.831	1.161	3.720	1.890	16 mm	—	M12 X 1.5	**I6149-04S-16CM**
Replaceable Insert														
-4	0.413	0.567	0.9441	15°	0.544	0.102	1.528	0.874	3.087	1.650	0.630	1/16 BSPT	M12 X 1.5	**I6149-04RY-16FM**
-5	0.492	0.567	1.0232	15°	0.622	0.102	1.528	0.858	3.087	1.650	0.630	1/16 BSPT	M14 X 1.5	**I6149-05RZ-16FM**
-6	0.571	0.626	1.1020	15°	0.701	0.102	1.858	1.114	3.402	1.650	0.787	1/8 BSPT	M16 X 1.5	**I6149-06R0-20FM**
-8	0.650	0.685	1.1811	15°	0.780	0.102	1.980	1.165	3.524	1.650	0.787	1/8 BSPT	M18 X 1.5	**I6149-08R0-20FM**
-10	0.807	0.724	1.3374	15°	0.937	0.102	2.142	1.244	4.091	2.090	0.984	1/8 BSPT	M22 X 1.5	**I6149-10R1-25FM**
-12	0.984	0.882	1.5728	15°	1.157	0.130	2.642	1.551	4.780	2.280	1.260	1/4 BSPT	M27 X 2	**I6149-12R2-32FM**
-14	1.102	0.882	1.7323	15°	1.276	0.130	2.642	1.528	4.780	2.280	1.260	1/4 BSPT	M30 X 2	**I6149-14R2-32FM**
-16	1.220	0.882	1.9280	15°	1.394	0.130	2.642	1.500	4.780	2.280	1.260	1/4 BSPT	M33 X 2	**I6149-16R2-32FM**
-20	1.575	0.906	2.3591	15°	1.748	0.130	3.063	1.827	5.154	2.280	1.260	1/4 BSPT	M42 X 2	**I6149-20R3-32FM***
-24	1.811	1.004	2.6024	15°	1.984	0.130	3.063	1.677	5.154	2.280	1.260	1/4 BSPT	M48 X 2	**I6149-24R3-32FM***
-32	2.283	1.102	2.9902	15°	2.457	0.130	4.063	2.228	5.906	2.280	1.260	1/4 BSPT	M60 X 2	**I6149-32R4-32FM***

***NOTICE:** Due to the cutting forces generated by this tool, a mechanical chuck is required. Please contact Application Engineering with any questions: **appeng@alliedmachine.com.**

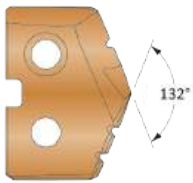
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Key on A92: 2
A92: 3 - 5
A92: 25 - 28

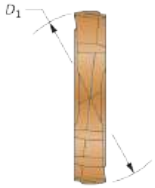
ⓜ = Metric (mm)
ⓘ = Imperial (in)

ISO 6149-1:2006 / SAE J-2244/1

Inserts







See section A30 in A00-DRL for complete T-A insert details.

T-A® / GEN2 T-A® Drill Inserts

Tube Dash No.	AccuPort Part No.	T-A® Insert Series	Part No. Super Cobalt AM200®	Part No. Carbide AM300®	Insert Screw	Insert Driver	Admissible Tightening Torque**
-4	I6149-04RY-16FM	Y	45YH-10.5	4C1YP-10.5	724-IP7-1	8IP-7	84 N-cm (7.4 in-lbs)
-5	I6149-05RZ-16FM	Z	45ZH-12.5	4C1ZP-12.5	7247-IP7-1	8IP-7	84 N-cm (7.4 in-lbs)
-6	I6149-06R0-20FM	0	450H-14.5	4C10P-14.5	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-8	I6149-08R0-20FM	0	450H-16.5	4C10P-16.5	72567-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-10	I6149-10R1-25FM	1	451H-20.5	4C11P-20.5	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-12	I6149-12R2-32FM	2	452H-25	4C12P-25	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-14	I6149-14R2-32FM	2	452H-28	4C12P-28	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-16	I6149-16R2-32FM	2	452H-31	4C12P-31	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-20	I6149-20R3-32FM*	3	453H-40	1C53A-40	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)
-24	I6149-24R3-32FM*	3	453H-46	1C53A-46	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)
-32	I6149-32R4-32FM*	4	454H-58	—	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)

Port Form Drill Inserts

Tube Dash No.	AccuPort Part No.	Part No. C3 Carbide (AM200®) ID Ridge	Part No. C3 Carbide (AM200®) No ID Ridge	Part No. C5 Carbide (TiAlN) ID Ridge	Part No. C5 Carbide (TiAlN) No ID Ridge	Insert Screw	Insert Driver	Admissible Tightening Torque**
-4	I6149-04RY-16FM	I6149-04R-C3H	I6149-04-C3H	I6149-04R-C5A	I6149-04-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-5	I6149-05RZ-16FM	I6149-04R-C3H	I6149-04-C3H	I6149-04R-C5A	I6149-04-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-6	I6149-06R0-20FM	I6149-06R-C3H	I6149-06-C3H	I6149-06R-C5A	I6149-06-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-8	I6149-08R0-20FM	I6149-06R-C3H	I6149-06-C3H	I6149-06R-C5A	I6149-06-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-10	I6149-10R1-25FM	I6149-04R-C3H	I6149-04-C3H	I6149-04R-C5A	I6149-04-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-12	I6149-12R2-32FM	I6149-12R-C3H	I6149-12-C3H	I6149-12R-C5A	I6149-12-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-14	I6149-14R2-32FM	I6149-14R-C3H	I6149-14-C3H	I6149-14R-C5A	I6149-14-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-16	I6149-16R2-32FM	I6149-16R-C3H	I6149-16-C3H	I6149-16R-C5A	I6149-16-C5A	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-20	I6149-20R3-32FM*	I6149-20R-C3H	I6149-20-C3H	I6149-20R-C5A	I6149-20-C5A	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-24	I6149-24R3-32FM*	I6149-24R-C3H	I6149-24-C3H	I6149-24R-C5A	I6149-24-C5A	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-32	I6149-32R4-32FM*	I6149-32R-C3H	I6149-32-C3H	I6149-32R-C5A	I6149-32-C5A	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)

***NOTICE:** Due to the cutting forces generated by this tool, a mechanical chuck is required. Please contact Application Engineering with any questions: **appeng@alliedmachine.com.**

**Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

A92: 34 - 44
Key on A92: 2
A92: 3 - 5
A92: 25 - 28

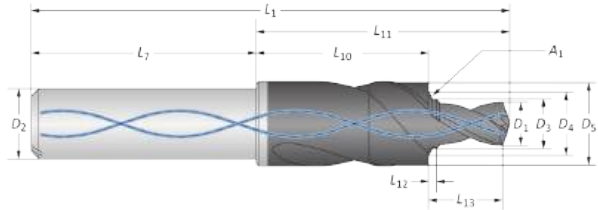
Y - 2 series T-A inserts sold in multiples of 2.
3 - 4 series T-A inserts sold in multiples of 1.
Port form inserts sold in multiples of 2.
Insert screws sold in multiples of 10.

SAE AS5202

Imperial Shank Holders

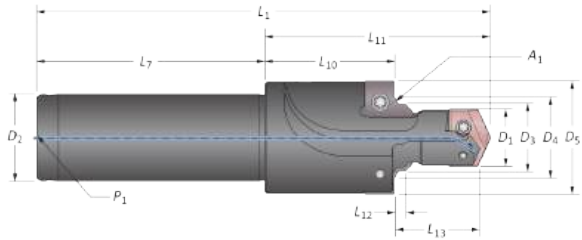
Solid Carbide





Replaceable Insert





Metric (mm)

Tube Dash No.	Cutting D_1	Cutting L_{13}	Cutting D_5	Seal Angle A_1	Seal Angle D_4	Seal Angle L_{12}	Holder D_3	Holder L_{11}	Holder L_{10}	Holder L_1	Shank L_7	Shank D_2	Shank P_1	Port Thread Size	Part No.
Solid Carbide															
-2	7.00	15.20	15.29	60°	11.10	1.60	8.30	50.00	33.40	89.90	40.01	10	—	5/16-20 UNJF-3B	**AS5202-02S-10CM**
-3	8.60	14.70	16.89	60°	12.70	1.60	9.90	50.80	34.50	96.00	45.01	14	—	3/8-24 UNJF-3B	**AS5202-03S-14CM**
-4	10.00	16.80	18.49	60°	14.30	1.60	11.50	46.50	27.90	94.50	48.01	16	—	7/16-20 UNJF-3B	**AS5202-04S-16CM**
Replaceable Insert															
-4	9.91	17.02	22.23	60°	14.35	2.11	11.58	41.83	22.76	87.17	47.63	15.88	1/16 NPT	7/16-20 UNJF-3B	**AS5202-04Y-063F**
-5	11.50	17.02	23.27	60°	15.95	2.11	13.18	41.83	22.40	87.17	47.63	15.88	1/16 NPT	1/2-20 UNJF-3B	**AS5202-05Z-063F**
-6	12.95	18.36	24.87	60°	17.55	2.31	14.78	49.53	28.42	97.26	50.01	19.05	1/8 NPT	9/16-18 UNJF-3B	**AS5202-06Z-075F**
-8	17.50	21.56	30.43	60°	22.30	2.59	19.58	53.77	28.58	101.07	50.01	19.05	1/8 NPT	3/4-16 UNJF-3B	**AS5202-080-075F**
-10	20.50	24.05	34.39	60°	25.48	2.92	22.81	58.50	30.20	112.88	57.94	25.40	1/8 NPT	7/8-14 UNJF-3B	**AS5202-101-100F**
-12	25.00	27.46	41.53	60°	31.52	3.38	27.64	70.59	37.95	124.97	57.94	31.75	1/4 NPT	1-1/16-12 UNJ-3B	**AS5202-122-125F**
-14	28.17	27.46	45.09	60°	34.67	3.38	30.78	70.56	37.21	124.94	57.94	31.75	1/4 NPT	1-3/16-12 UNJ-3B	**AS5202-142-125F**
-16	31.34	27.46	48.77	60°	37.85	3.38	33.96	70.56	36.50	124.94	57.94	31.75	1/4 NPT	1-5/16-12 UNJ-3B	**AS5202-162-125F**
-20	39.29	28.78	57.91	60°	45.80	3.38	41.91	81.33	44.32	144.86	68.28	38.10	1/4 NPT	1-5/8-12 UNJ-3B	**AS5202-203-150F**
-24	45.64	29.06	65.28	60°	52.15	3.38	48.26	81.28	42.57	144.81	68.28	38.10	1/4 NPT	1-7/8-12 UNJ-3B	**AS5202-243-150F**
-32	61.49	35.20	88.65	60°	68.05	3.38	64.16	94.01	45.77	157.53	68.28	38.10	1/4 NPT	2-1/2-12 UNJ-3B	**AS5202-324-150F**

Imperial (in)

Tube Dash No.	Cutting D_1	Cutting L_{13}	Cutting D_5	Seal Angle A_1	Seal Angle D_4	Seal Angle L_{12}	Holder D_3	Holder L_{11}	Holder L_{10}	Holder L_1	Shank L_7	Shank D_2	Shank P_1	Port Thread Size	Part No.
Solid Carbide															
-2	0.276	0.598	0.6020	60°	0.437	0.063	0.327	1.969	1.315	3.539	1.575	10 mm	—	5/16-20 UNJF-3B	**AS5202-02S-10CM**
-3	0.339	0.579	0.6650	60°	0.500	0.063	0.390	2.000	1.358	3.780	1.772	14 mm	—	3/8-24 UNJF-3B	**AS5202-03S-14CM**
-4	0.394	0.661	0.7280	60°	0.563	0.063	0.453	1.831	1.098	3.720	1.890	16 mm	—	7/16-20 UNJF-3B	**AS5202-04S-16CM**
Replaceable Insert															
-4	0.390	0.670	0.8750	60°	0.565	0.083	0.456	1.647	0.896	3.432	1.875	5/8	1/16 NPT	7/16-20 UNJF-3B	**AS5202-04Y-063F**
-5	0.453	0.670	0.9160	60°	0.628	0.083	0.519	1.647	0.882	3.432	1.875	5/8	1/16 NPT	1/2-20 UNJF-3B	**AS5202-05Z-063F**
-6	0.510	0.723	0.9790	60°	0.691	0.091	0.582	1.950	1.119	3.829	1.969	3/4	1/8 NPT	9/16-18 UNJF-3B	**AS5202-06Z-075F**
-8	0.689	0.849	1.1981	60°	0.878	0.102	0.771	2.117	1.125	3.979	1.969	3/4	1/8 NPT	3/4-16 UNJF-3B	**AS5202-080-075F**
-10	0.807	0.947	1.3540	60°	1.003	0.115	0.898	2.303	1.189	4.444	2.281	1	1/8 NPT	7/8-14 UNJF-3B	**AS5202-101-100F**
-12	0.984	1.081	1.6350	60°	1.241	0.133	1.088	2.779	1.494	4.920	2.281	1-1/4	1/4 NPT	1-1/16-12 UNJ-3B	**AS5202-122-125F**
-14	1.109	1.081	1.7750	60°	1.365	0.133	1.212	2.778	1.465	4.919	2.281	1-1/4	1/4 NPT	1-3/16-12 UNJ-3B	**AS5202-142-125F**
-16	1.234	1.081	1.9200	60°	1.490	0.133	1.337	2.778	1.437	4.919	2.281	1-1/4	1/4 NPT	1-5/16-12 UNJ-3B	**AS5202-162-125F**
-20	1.547	1.133	2.2800	60°	1.803	0.133	1.650	3.202	1.745	5.703	2.688	1-1/2	1/4 NPT	1-5/8-12 UNJ-3B	**AS5202-203-150F**
-24	1.797	1.144	2.5700	60°	2.053	0.133	1.900	3.200	1.676	5.701	2.688	1-1/2	1/4 NPT	1-7/8-12 UNJ-3B	**AS5202-243-150F**
-32	2.421	1.386	3.4901	60°	2.679	0.133	2.526	3.701	1.802	6.202	2.688	1-1/2	1/4 NPT	2-1/2-12 UNJ-3B	**AS5202-324-150F**

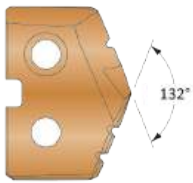
A92: 34 - 44
Key on A92: 2
A92: 3 - 5
A92: 29 - 30

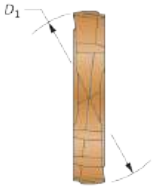
ⓜ = Metric (mm)
ⓘ = Imperial (in)

SAE AS5202

Inserts







See section A30 in A00-DRL for complete T-A insert details.

T-A® / GEN2 T-A® Drill Inserts

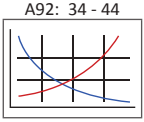
Tube Dash No.	AccuPort Part No.	T-A® Insert Series	Part No. Super Cobalt AM200®	Part No. Carbide AM300®	Insert Screw	Insert Driver	Admissible Tightening Torque**
-4	AS5202-04Y-063F	Y	45YH-.390	4C1YP-.390	724-IP7-1	8IP-7	84 N-cm (7.4 in-lbs)
-5	AS5202-05Z-063F	Z	45ZH-11.5	4C1ZP-11.5	7247-IP7-1	8IP-7	84 N-cm (7.4 in-lbs)
-6	AS5202-06Z-075F	Z	45ZH-.510	4C1ZP-.510	7247-IP7-1	8IP-7	84 N-cm (7.4 in-lbs)
-8	AS5202-080-075F	0	450H-17.5	4C10P-17.5	72567-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-10	AS5202-101-100F	1	451H-20.5	4C11P-20.5	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-12	AS5202-122-125F	2	452H-25	4C12P-25	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-14	AS5202-142-125F	2	452H-1.109	4C12P-1.109	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-16	AS5202-162-125F	2	452H-1.234	4C12P-1.234	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-20	AS5202-203-150F	3	453H-1.547	1C53A-1.547	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)
-24	AS5202-243-150F	3	453H-1.797	1C53A-1.797	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)
-32	AS5202-324-150F	4	454H-2.421	—	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)

Port Form Drill Inserts

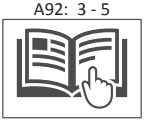
Tube Dash No.	AccuPort Part No.	Part No. C5 Carbide TiAlN	Insert Screw	Insert Driver	Admissible Tightening Torque**
-4	AS5202-04Y-063F	AS5202-04-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-5	AS5202-05Z-063F	AS5202-05-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-6	AS5202-06Z-075F	AS5202-06-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-8	AS5202-080-075F	AS5202-08-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-10	AS5202-101-100F	AS5202-10-C5A	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-12	AS5202-122-125F	AS5202-12-C5A	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-14	AS5202-142-125F	AS5202-14-C5A	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-16	AS5202-162-125F	AS5202-16-C5A	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-20	AS5202-203-150F	AS5202-20-C5A	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-24	AS5202-243-150F	AS5202-24-C5A	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-32	AS5202-324-150F	AS5202-32-C5A	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)

**Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

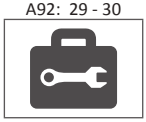
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Key on A92: 2



A92: 3 - 5



A92: 29 - 30

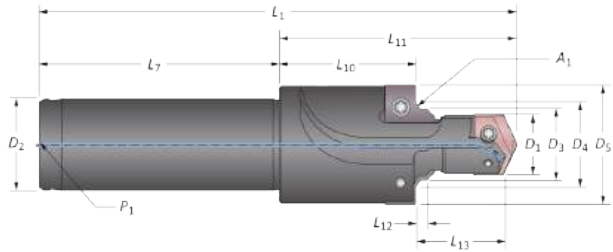


Y - 2 series T-A inserts sold in multiples of 2.
3 - 4 series T-A inserts sold in multiples of 1.
Port form inserts sold in multiples of 2.
Insert screws sold in multiples of 10.

AND10050

Imperial Shank Holders





Metric (mm)

Tube Dash No.	Cutting D_1	Cutting L_{13}	Cutting D_5	Seal Angle A_1	Seal Angle D_4	Seal Angle L_{12}	Holder D_3	Holder L_{11}	Holder L_{10}	Holder L_1	Shank L_7	Shank D_2	Shank P_1	Port Thread Size	Part No.
-4	9.80	17.02	22.23	60°	14.35	2.11	11.58	41.83	22.76	87.17	47.63	15.88	1/16 NPT	7/16-20 UNF-3B	**AS5202-04Y-063F**
-5	11.46	17.02	23.27	60°	15.95	2.11	13.18	41.83	22.40	87.17	47.63	15.88	1/16 NPT	1/2-20 UNF-3B	**AS5202-05Z-063F**
-6	12.85	18.36	24.87	60°	17.55	2.31	14.78	49.53	28.42	97.26	50.01	19.05	1/8 NPT	9/16-18 UNF-3B	**AS5202-06Z-075F**
-8	17.48	21.56	30.43	60°	22.30	2.59	19.58	53.77	28.58	101.07	50.01	19.05	1/8 NPT	3/4-16 UNF-3B	**AS5202-080-075F**
-10	20.35	24.05	34.39	60°	25.48	2.92	22.81	58.50	30.20	112.88	57.94	25.40	1/8 NPT	7/8-14 UNF-3B	**AS5202-101-100F**
-12	24.79	27.46	41.53	60°	31.52	3.38	27.64	70.59	37.95	124.97	57.94	31.75	1/4 NPT	1-1/16-12 UN-3B	**AS5202-122-125F**
-14	27.99	27.46	45.09	60°	34.67	3.38	30.78	70.56	37.21	124.94	57.94	31.75	1/4 NPT	1-3/16-12 UN-3B	**AS5202-142-125F**
-16	31.14	27.46	48.77	60°	37.85	3.38	33.96	70.56	36.50	124.94	57.94	31.75	1/4 NPT	1-5/16-12 UN-3B	**AS5202-162-125F**
-20	38.99	28.78	57.91	60°	45.80	3.38	41.91	81.33	44.32	144.86	68.28	38.10	1/4 NPT	1-5/8-12 UN-3B	**AS5202-203-150F**
-24	45.49	29.06	65.28	60°	52.15	3.38	48.26	81.28	42.57	144.81	68.28	38.10	1/4 NPT	1-7/8-12 UN-3B	**AS5202-243-150F**
-32	61.29	35.20	88.65	60°	68.05	3.38	64.16	94.01	45.77	157.53	68.28	38.10	1/4 NPT	2-1/2-12 UN-3B	**AS5202-324-150F**

Imperial (in)

Tube Dash No.	Cutting D_1	Cutting L_{13}	Cutting D_5	Seal Angle A_1	Seal Angle D_4	Seal Angle L_{12}	Holder D_3	Holder L_{11}	Holder L_{10}	Holder L_1	Shank L_7	Shank D_2	Shank P_1	Port Thread Size	Part No.
-4	0.386	0.670	0.8750	60°	0.565	0.083	0.456	1.647	0.896	3.432	1.875	5/8	1/16 NPT	7/16-20 UNF-3B	**AS5202-04Y-063F**
-5	0.451	0.670	0.9160	60°	0.628	0.083	0.519	1.647	0.882	3.432	1.875	5/8	1/16 NPT	1/2-20 UNF-3B	**AS5202-05Z-063F**
-6	0.506	0.723	0.9790	60°	0.691	0.091	0.582	1.950	1.119	3.829	1.969	3/4	1/8 NPT	9/16-18 UNF-3B	**AS5202-06Z-075F**
-8	0.688	0.849	1.1981	60°	0.878	0.102	0.771	2.117	1.125	3.979	1.969	3/4	1/8 NPT	3/4-16 UNF-3B	**AS5202-080-075F**
-10	0.801	0.947	1.3540	60°	1.003	0.115	0.898	2.303	1.189	4.444	2.281	1	1/8 NPT	7/8-14 UNF-3B	**AS5202-101-100F**
-12	0.976	1.081	1.6350	60°	1.241	0.133	1.088	2.779	1.494	4.920	2.281	1-1/4	1/4 NPT	1-1/16-12 UN-3B	**AS5202-122-125F**
-14	1.102	1.081	1.7750	60°	1.365	0.133	1.212	2.778	1.465	4.919	2.281	1-1/4	1/4 NPT	1-3/16-12 UN-3B	**AS5202-142-125F**
-16	1.226	1.081	1.9200	60°	1.490	0.133	1.337	2.778	1.437	4.919	2.281	1-1/4	1/4 NPT	1-5/16-12 UN-3B	**AS5202-162-125F**
-20	1.535	1.133	2.2800	60°	1.803	0.133	1.650	3.202	1.745	5.703	2.688	1-1/2	1/4 NPT	1-5/8-12 UN-3B	**AS5202-203-150F**
-24	1.791	1.144	2.5700	60°	2.053	0.133	1.900	3.200	1.676	5.701	2.688	1-1/2	1/4 NPT	1-7/8-12 UN-3B	**AS5202-243-150F**
-32	2.413	1.386	3.4901	60°	2.679	0.133	2.526	3.701	1.802	6.202	2.688	1-1/2	1/4 NPT	2-1/2-12 UN-3B	**AS5202-324-150F**

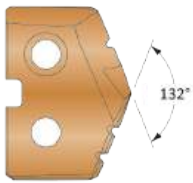
A92: 34 - 44
Key on A92: 2
A92: 3 - 5

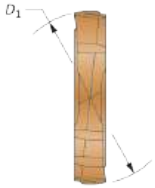
ⓜ = Metric (mm)
ⓘ = Imperial (in)

AND10050

Inserts







See section A30 in A00-DRL for complete T-A insert details.

T-A® / GEN2 T-A® Drill Inserts

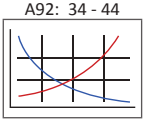
Tube Dash No.	AccuPort Part No.	T-A® Insert Series	Part No. Super Cobalt AM200®	Part No. Carbide AM300®	Insert Screw	Insert Driver	Admissible Tightening Torque**
-4	AS5202-04Y-063F	Y	45YH-.386	4C1YP-.386	724-IP7-1	8IP-7	84 N-cm (7.4 in-lbs)
-5	AS5202-05Z-063F	Z	45ZH-.451	4C1ZP-.451	7247-IP7-1	8IP-7	84 N-cm (7.4 in-lbs)
-6	AS5202-06Z-075F	Z	45ZH-.506	4C1ZP-.506	7247-IP7-1	8IP-7	84 N-cm (7.4 in-lbs)
-8	AS5202-080-075F	0	450H-0022	4C10P-0022	72567-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-10	AS5202-101-100F	1	451H-.801	4C11P-.801	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-12	AS5202-122-125F	2	452H-.976	4C12P-.976	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-14	AS5202-142-125F	2	452H-28	4C12P-28	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-16	AS5202-162-125F	2	452H-1.226	4C12P-1.226	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-20	AS5202-203-150F	3	453H-39	1C53A-39	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)
-24	AS5202-243-150F	3	453H-45.5	1C53A-45.5	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)
-32	AS5202-324-150F	4	454H-2.413	—	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)

Port Form Drill Inserts

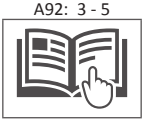
Tube Dash No.	AccuPort Part No.	Part No. C5 Carbide TiAlN	Insert Screw	Insert Driver	Admissible Tightening Torque**
-4	AS5202-04Y-063F	AS5202-04-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-5	AS5202-05Z-063F	AS5202-05-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-6	AS5202-06Z-075F	AS5202-06-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-8	AS5202-080-075F	AS5202-08-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-10	AS5202-101-100F	AS5202-10-C5A	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-12	AS5202-122-125F	AS5202-12-C5A	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-14	AS5202-142-125F	AS5202-14-C5A	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-16	AS5202-162-125F	AS5202-16-C5A	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-20	AS5202-203-150F	AS5202-20-C5A	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-24	AS5202-243-150F	AS5202-24-C5A	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-32	AS5202-324-150F	AS5202-32-C5A	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)

**Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A92: 34 - 44
Key on A92: 2



A92: 3 - 5

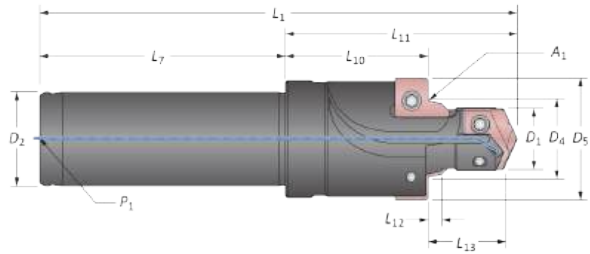


Y - 2 series T-A inserts sold in multiples of 2.
3 - 4 series T-A inserts sold in multiples of 1.
Port form inserts sold in multiples of 2.
Insert screws sold in multiples of 10.

JDS-G173.1

Metric Shank Holders





Metric (mm)

Tube Dash No.	Cutting D_1	Cutting L_{13}	Cutting D_5	Seal Angle A_1	Seal Angle D_4	Seal Angle L_{12}	Holder L_{11}	Holder L_{10}	Holder L_1	Shank L_7	Shank D_2	Shank P_1	Port Thread Size	Part No.
-4	10.50	18.0	24.00	15°	13.90	2.65	42.4	22.20	82.0	41.91	16	1/16 BSPT	M12 X 1.5	**G1731-04Y-16FM**
-5	12.50	18.0	26.01	15°	15.90	2.65	42.4	21.80	82.0	41.91	16	1/16 BSPT	M14 X 1.5	**G1731-05Z-16FM**
-6	14.50	19.0	29.00	15°	17.90	2.65	50.3	28.40	89.5	41.91	20	1/8 BSPT	M16 X 1.5	**G1731-060-20FM**
-8	16.50	21.0	30.98	15°	19.90	2.65	53.9	29.50	93.1	41.91	20	1/8 BSPT	M18 X 1.5	**G1731-080-20FM**
-10	20.50	22.0	34.96	15°	23.90	2.65	57.9	31.60	107.4	53.09	25	1/8 BSPT	M22 X 1.5	**G1731-101-25FM**
-12	25.00	27.0	41.00	15°	29.50	3.35	71.6	39.40	126.0	57.91	32	1/4 BSPT	M27 X 2	**G1731-122-32FM**
-14	28.00	27.0	44.01	15°	32.50	3.35	71.6	39.70	126.0	57.91	32	1/4 BSPT	M30 X 2	**G1731-142-32FM**
-16	31.00	27.0	50.00	15°	35.50	3.35	71.6	38.10	126.0	57.91	32	1/4 BSPT	M33 X 2	**G1731-162-32FM**
-18	36.00	27.0	54.96	15°	40.50	3.35	73.7	46.80	134.5	57.91	32	1/4 BSPT	M38 X 2	**G1731-183-32FM***
-20	40.00	27.0	61.00	15°	44.50	3.35	73.7	45.90	134.5	57.91	32	1/4 BSPT	M42 X 2	**G1731-203-32FM***
-24	46.00	29.0	67.02	15°	50.50	3.35	73.7	42.80	134.5	57.91	32	1/4 BSPT	M48 X 2	**G1731-243-32FM***
-32	58.00	32.0	77.00	15°	62.50	3.35	103.2	58.40	154.1	57.91	32	1/4 BSPT	M60 X 2	**G1731-324-32FM***
CV	18.50	20.0	32.95	15°	21.90	2.65	54.4	32.50	103.9	53.09	25	1/8 BSPT	M20 X 1.5	**G1731-CV1-25FM**

Imperial (in)

Tube Dash No.	Cutting D_1	Cutting L_{13}	Cutting D_5	Seal Angle A_1	Seal Angle D_4	Seal Angle L_{12}	Holder L_{11}	Holder L_{10}	Holder L_1	Shank L_7	Shank D_2	Shank P_1	Port Thread Size	Part No.
-4	0.413	0.709	0.9449	15°	0.547	0.104	1.669	0.874	3.228	1.650	0.630	1/16 BSPT	M12 X 1.5	**G1731-04Y-16FM**
-5	0.492	0.709	1.0240	15°	0.626	0.104	1.669	0.858	3.228	1.650	0.630	1/16 BSPT	M14 X 1.5	**G1731-05Z-16FM**
-6	0.571	0.748	1.1417	15°	0.705	0.104	1.980	1.118	3.524	1.650	0.787	1/8 BSPT	M16 X 1.5	**G1731-060-20FM**
-8	0.650	0.827	1.2197	15°	0.783	0.104	2.122	1.161	3.665	1.650	0.787	1/8 BSPT	M18 X 1.5	**G1731-080-20FM**
-10	0.807	0.866	1.3764	15°	0.941	0.104	2.280	1.244	4.228	2.090	0.984	1/8 BSPT	M22 X 1.5	**G1731-101-25FM**
-12	0.984	1.063	1.6142	15°	1.161	0.132	2.819	1.551	4.961	2.280	1.260	1/4 BSPT	M27 X 2	**G1731-122-32FM**
-14	1.102	1.063	1.7327	15°	1.280	0.132	2.819	1.563	4.961	2.280	1.260	1/4 BSPT	M30 X 2	**G1731-142-32FM**
-16	1.221	1.063	1.9685	15°	1.398	0.132	2.819	1.500	4.961	2.280	1.260	1/4 BSPT	M33 X 2	**G1731-162-32FM**
-18	1.417	1.063	2.1638	15°	1.594	0.132	2.902	1.843	5.295	2.280	1.260	1/4 BSPT	M38 X 2	**G1731-183-32FM***
-20	1.575	1.063	2.4016	15°	1.752	0.132	2.902	1.807	5.295	2.280	1.260	1/4 BSPT	M42 X 2	**G1731-203-32FM***
-24	1.811	1.142	2.6386	15°	1.988	0.132	2.902	1.685	5.295	2.280	1.260	1/4 BSPT	M48 X 2	**G1731-243-32FM***
-32	2.284	1.260	3.0315	15°	2.461	0.132	4.063	2.299	6.067	2.280	1.260	1/4 BSPT	M60 X 2	**G1731-324-32FM***
C**	0.728	0.787	1.2972	15°	0.862	0.104	2.142	1.280	4.091	2.090	0.984	1/8 BSPT	M20 X 1.5	**G1731-CV1-25FM**

***NOTICE:** Due to the cutting forces generated by this tool, a mechanical chuck is required. Please contact Application Engineering with any questions: **appeng@alliedmachine.com.**

**Cartridge cavity.

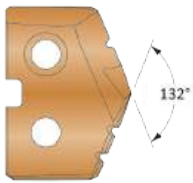
A92: 34 - 44
Key on A92: 2
A92: 3 - 5
A92: 31

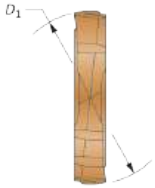
m = Metric (mm)
i = Imperial (in)

JDS-G173.1

Inserts







See section A30 in A00-DRL for complete T-A insert details.

T-A® / GEN2 T-A® Drill Inserts

Tube Dash No.	AccuPort Part No.	T-A® Insert Series	Part No. Super Cobalt AM200®	Part No. Carbide AM300®	Insert Screw	Insert Driver	Admissible Tightening Torque**
-4	G1731-04Y-16FM	Y	45YH-10.5	4C2YP-10.5	724-IP7-1	8IP-7	84 N-cm (7.4 in-lbs)
-5	G1731-05Z-16FM	Z	45ZH-12.5	4C2ZP-12.5	7247-IP7-1	8IP-7	84 N-cm (7.4 in-lbs)
-6	G1731-060-20FM	0	450H-14.5	4C20P-14.5	72567-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-8	G1731-080-20FM	0	450H-16.5	4C20P-16.5	72567-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-10	G1731-101-25FM	1	451H-20.5	4C21P-20.5	739-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-12	G1731-122-32FM	2	452H-25	4C22P-25	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-14	G1731-142-32FM	2	452H-28	4C22P-28	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-16	G1731-162-32FM	2	452H-31	4C22P-31	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-18	G1731-183-32FM*	3	453H-36	—	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)
-20	G1731-203-32FM*	3	453H-40	—	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)
-24	G1731-243-32FM*	3	453H-46	—	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)
-32	G1731-324-32FM*	4	454H-58	—	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)
C***	G1731-CV1-25FM	1	451H-18.5	4C21P-18.5	739-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)

Port Form Drill Inserts

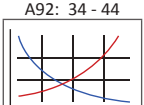
Tube Dash No.	AccuPort Part No.	Part No. C3 Carbide AM200®	Insert Screw	Insert Driver	Admissible Tightening Torque**
-4	G1731-04Y-16FM	G1731-01-C3H	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-5	G1731-05Z-16FM	G1731-01-C3H	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-6	G1731-060-20FM	G1731-02-C3H	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-8	G1731-080-20FM	G1731-02-C3H	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-10	G1731-101-25FM	G1731-02-C3H	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-12	G1731-122-32FM	G1731-03-C3H	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-14	G1731-142-32FM	G1731-03-C3H	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-16	G1731-162-32FM	G1731-04-C3H	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-18	G1731-183-32FM*	G1731-04-C3H	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-20	G1731-203-32FM*	G1731-05-C3H	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-24	G1731-243-32FM*	G1731-05-C3H	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-32	G1731-324-32FM*	G1731-06-C3H	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
C***	G1731-CV1-25FM	G1731-02-C3H	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)

***NOTICE:** Due to the cutting forces generated by this tool, a mechanical chuck is required. Please contact Application Engineering with any questions: **appeng@alliedmachine.com.**

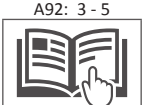
**Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

***Cartridge cavity.

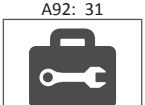
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Key on A92: 2



A92: 3 - 5



A92: 31

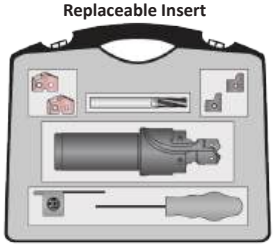


Y - 2 series T-A inserts sold in multiples of 2.
3 - 4 series T-A inserts sold in multiples of 1.
Port form inserts sold in multiples of 2.
Insert screws sold in multiples of 10.

Port and Thread Finishing Kits

J1926 | Metric | Ferrous Materials

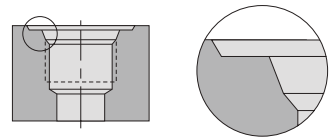
Replaceable Insert



Solid Carbide



SAE J-1926-1 / ISO 11926-1



Port and Thread Finishing Kits

Tube Dash No.	AccuPort 432 Part No.	AccuPort 432 Port Thread Size	AccuPort 432 Qty	GEN2 T-A® Insert Super Cobalt AM200®	GEN2 T-A® Insert Qty	Port Form Insert C5 Carbide TiAlN	Port Form Insert Qty	AccuThread® Thread Mill AM210®	AccuThread® Thread Mill Qty	Kit Part No.
Solid Carbide										
-2	**J1926-02S-10CM**	5/16-24 UNF-2B	1	—	—	—	—	**TMUK0313-24M**	1	**ATKK02S-1926M**
-3	**J1926-03S-14CM**	3/8-24 UNF-2B	1	—	—	—	—	**TMUK0313-24M**	1	**ATKK03S-1926M**
-4	**J1926-04S-16CM**	7/16-20 UNF-2B	1	—	—	—	—	**TMAK0438-20M**	1	**ATKK04S-1926M**
Replaceable Insert										
-4	**J1926-04Y-16FM**	7/16-20 UNF-2B	1	**45YH-.386**	2	**J1926-02-C5A**	2	**TMAK0438-20M**	1	**ATKK04-1926M**
-5	**J1926-05Z-16FM**	1/2-20 UNF-2B	1	**45ZH-11.5**	2	**J1926-03-C5A**	2	**TMAK0438-20M**	1	**ATKK05-1926M**
-6	**J1926-060-20FM**	9/16-18 UNF-2B	1	**450H-13**	2	**J1926-03-C5A**	2	**TMAK0563-18M**	1	**ATKK06-1926M**
-8	**J1926-080-20FM**	3/4-16 UNF-2B	1	**450H-0022**	2	**J1926-07-C5A**	2	**TMAK0750-16M**	1	**ATKK08-1926M**
-10	**J1926-101-25FM**	7/8-14 UNF-2B	1	**451H-20.5**	2	**J1926-04-C5A**	2	**TMAK0875-14M**	1	**ATKK10-1926M**
-12	**J1926-122-32FM**	1-1/16-12 UN-2B	1	**452H-25**	2	**J1926-08-C5A**	2	**TMAK1063-12M**	1	**ATKK12-1926M**
-14	**J1926-142-32FM**	1-3/16-12 UN-2B	1	**452H-28**	2	**J1926-08-C5A**	2	**TMAK1063-12M**	1	**ATKK14-1926M**
-16	**J1926-162-32FM**	1-5/16-12 UN-2B	1	**452H-1.231**	2	**J1926-09-C5A**	2	**TMAK1063-12M**	1	**ATKK16-1926M**
-20	**J1926-203-32FM**	1-5/8-12 UN-2B	1	**453H-39**	1	**J1926-10-C5A**	2	**TMAK1063-12M**	1	**ATKK20-1926M**
-24	**J1926-243-32FM**	1-7/8-12 UN-2B	1	**453H-45.5**	1	**J1926-11-C5A**	2	**TMAK1063-12M**	1	**ATKK24-1926M**
-32	**J1926-324-32FM**	2-1/2-12 UN-2B	1	**454H-61.5**	1	**J1926-12-C5A**	2	**TMAK1063-12M**	1	**ATKK32-1926M**





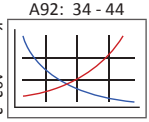
AccuThread® Port Specific Solid Carbide Thread Mills

Port Size	Pitch	Thread Mill (mm) D_1	L_6	D_2	L_1	Flutes	Part No.
-2 to -3	24	5.95	16.00	6.00	58.00	3	**TMUK0313-24M**
-4 to -5	20	8.51	15.24	10.00	73.00	4	**TMAK0438-20M**
-6	18	9.40	16.92	10.00	73.00	4	**TMAK0563-18M**
-8	16	11.94	19.05	12.00	84.00	4	**TMAK0750-16M**
-10	14	11.94	21.77	12.00	84.00	4	**TMAK0875-14M**
-12 to -32	12	11.94	23.29	12.00	84.00	4	**TMAK1063-12M**

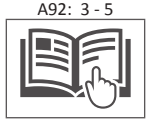
AccuPort 432 specific thread mills - International Unified Series (UN) manufactured specifically for use with AccuPort 432 hydraulic port forms.

The length of cut allows full thread with one pass. Conforms with J1926 and SAE AS5202 port form specifications.

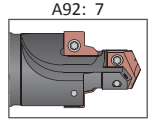
A92: 34 - 44
Key on A92: 2



A92: 3 - 5



A92: 7

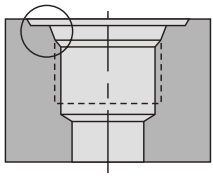


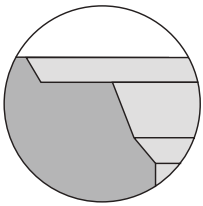
Ⓜ = Metric (mm)
ⓘ = Imperial (in)

Port and Thread Finishing Kits

J1926 | Metric | Nonferrous Materials





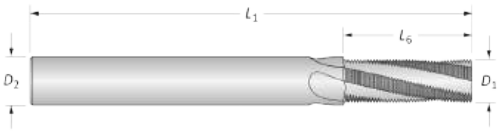


SAE J-1926-1 / ISO 11926-1

Port and Thread Finishing Kits

Tube Dash No.	AccuPort 432 Part No.	AccuPort 432 Port Thread Size	AccuPort 432 Qty	GEN2 T-A® Insert Super Cobalt TiN	GEN2 T-A® Insert Qty	Port Form Insert C5 Carbide TiAlN	Port Form Insert Qty	AccuThread® Thread Mill Uncoated	AccuThread® Thread Mill Qty	Kit Part No.
-4	J1926-04Y-16FM	7/16-20 UNF-2B	1	15YT-.386	2	J1926-02-C5A	2	TMAU0438-20M	1	ATKU04-1926M
-5	J1926-05Z-16FM	1/2-20 UNF-2B	1	15ZT-11.5	2	J1926-03-C5A	2	TMAU0438-20M	1	ATKU05-1926M
-6	J1926-060-20FM	9/16-18 UNF-2B	1	150T-13	2	J1926-03-C5A	2	TMAU0563-18M	1	ATKU06-1926M
-8	J1926-080-20FM	3/4-16 UNF-2B	1	150T-0022	2	J1926-07-C5A	2	TMAU0750-16M	1	ATKU08-1926M
-10	J1926-101-25FM	7/8-14 UNF-2B	1	151T-20.5	2	J1926-04-C5A	2	TMAU0875-14M	1	ATKU10-1926M
-12	J1926-122-32FM	1-1/16-12 UN-2B	1	152T-25	2	J1926-08-C5A	2	TMAU1063-12M	1	ATKU12-1926M
-14	J1926-142-32FM	1-3/16-12 UN-2B	1	152T-28	2	J1926-08-C5A	2	TMAU1063-12M	1	ATKU14-1926M
-16	J1926-162-32FM	1-5/16-12 UN-2B	1	152T-1.231	2	J1926-09-C5A	2	TMAU1063-12M	1	ATKU16-1926M
-20	J1926-203-32FM	1-5/8-12 UN-2B	1	453T-39	1	J1926-10-C5A	2	TMAU1063-12M	1	ATKU20-1926M
-24	J1926-243-32FM	1-7/8-12 UN-2B	1	453T-45.5	1	J1926-11-C5A	2	TMAU1063-12M	1	ATKU24-1926M
-32	J1926-324-32FM	2-1/2-12 UN-2B	1	454T-61.5	1	J1926-12-C5A	2	TMAU1063-12M	1	ATKU32-1926M





AccuThread® Port Specific Solid Carbide Thread Mills

Port Size	Pitch	Thread Mill (mm) D_1	L_6	D_2	L_1	Flutes	Part No.
-4 to -5	20	8.51	15.24	10.00	73.00	4	TMAU0438-20M
-6	18	9.40	16.92	10.00	73.00	4	TMAU0563-18M
-8	16	11.94	19.05	12.00	84.00	4	TMAU0750-16M
-10	14	11.94	21.77	12.00	84.00	4	TMAU0875-14M
-12 to -32	12	11.94	23.29	12.00	84.00	4	TMAU1063-12M

AccuPort 432 specific thread mills - International Unified Series (UN) manufactured specifically for use with AccuPort 432 hydraulic port forms.

The length of cut allows full thread with one pass. Conforms with J1926 and SAE AS5202 port form specifications.

Key on A92: 2

A92: 34 - 44

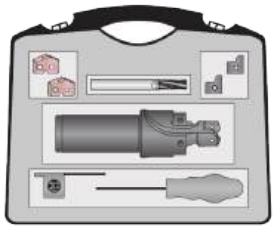
A92: 3 - 5

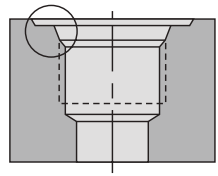
A92: 7

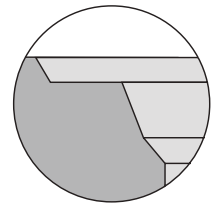
Y - 2 series T-A inserts sold in multiples of 2.
3 - 4 series T-A inserts sold in multiples of 1.
Port form inserts sold in multiples of 2.
Insert screws sold in multiples of 10.

Port and Thread Finishing Kits

J1926 | Imperial | Ferrous Materials





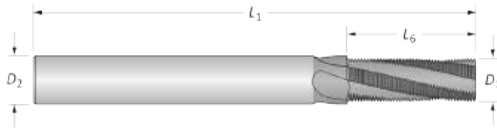


SAE J-1926-1 / ISO 11926-1

Port and Thread Finishing Kits

Tube Dash No.	AccuPort 432 Part No.	AccuPort 432 Port Thread Size	AccuPort 432 Qty	GEN2 T-A® Insert Super Cobalt AM200®	GEN2 T-A® Insert Qty	Port Form Insert C5 Carbide TiAlN	Port Form Insert Qty	AccuThread® Thread Mill AM210®	AccuThread® Thread Mill Qty	Kit Part No.
-4	J1926-04Y-063F	7/16-20 UNF-2B	1	45YH-.386	2	J1926-02-C5A	2	TMAK0438-20	1	ATKK04-1926
-5	J1926-05Z-063F	1/2-20 UNF-2B	1	45ZH-11.5	2	J1926-03-C5A	2	TMAK0438-20	1	ATKK05-1926
-6	J1926-060-075F	9/16-18 UNF-2B	1	450H-13	2	J1926-03-C5A	2	TMAK0563-18	1	ATKK06-1926
-8	J1926-080-075F	3/4-16 UNF-2B	1	450H-0022	2	J1926-07-C5A	2	TMAK0750-16	1	ATKK08-1926
-10	J1926-101-100F	7/8-14 UNF-2B	1	451H-20.5	2	J1926-04-C5A	2	TMAK0875-14	1	ATKK10-1926
-12	J1926-122-125F	1-1/16-12 UN-2B	1	452H-25	2	J1926-08-C5A	2	TMAK1063-12	1	ATKK12-1926
-14	J1926-142-125F	1-3/16-12 UN-2B	1	452H-28	2	J1926-08-C5A	2	TMAK1063-12	1	ATKK14-1926
-16	J1926-162-125F	1-5/16-12 UN-2B	1	452H-1.231	2	J1926-09-C5A	2	TMAK1063-12	1	ATKK16-1926
-20	J1926-203-150F	1-5/8-12 UN-2B	1	453H-39	1	J1926-10-C5A	2	TMAK1063-12	1	ATKK20-1926
-24	J1926-243-150F	1-7/8-12 UN-2B	1	453H-45.5	1	J1926-11-C5A	2	TMAK1063-12	1	ATKK24-1926
-32	J1926-324-150F	2-1/2-12 UN-2B	1	454H-61.5	1	J1926-12-C5A	2	TMAK1063-12	1	ATKK32-1926





AccuThread® Port Specific Solid Carbide Thread Mills

Port Size	Pitch	Thread Mill (in) D_1	L_6	D_2	L_1	Flutes	Part No.
-4 to -5	20	0.335	0.600	0.375	3.5	4	TMAK0438-20
-6	18	0.370	0.666	0.375	3.5	4	TMAK0563-18
-8	16	0.495	0.750	0.500	3.5	4	TMAK0750-16
-10	14	0.495	0.857	0.500	3.5	4	TMAK0875-14
-12 to -32	12	0.495	0.917	0.500	3.5	4	TMAK1063-12

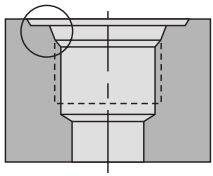
AccuPort 432 specific thread mills - International Unified Series (UN) manufactured specifically for use with AccuPort 432 hydraulic port forms.
The length of cut allows full thread with one pass. Conforms with J1926 and SAE AS5202 port form specifications.

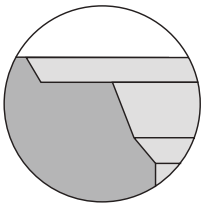
A92: 34 - 44
Key on A92: 2
A92: 3 - 5
A92: 9

Port and Thread Finishing Kits

J1926 | Imperial | Nonferrous Materials





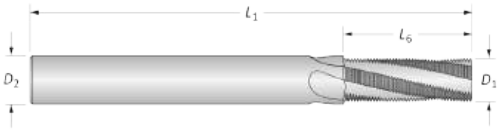


SAE J-1926-1 / ISO 11926-1

Port and Thread Finishing Kits

Tube Dash No.	AccuPort 432 Part No.	AccuPort 432 Port Thread Size	AccuPort 432 Qty	T-A® Insert Super Cobalt TiN	T-A® Insert Qty	Port Form Insert C5 Carbide TiAlN	Port Form Insert Qty	AccuThread® Thread Mill Uncoated	AccuThread® Thread Mill Qty	Kit Part No.
-4	J1926-04Y-063F	7/16-20 UNF-2B	1	15YT-.386	2	J1926-02-C5A	2	TMAU0438-20	1	ATKU04-1926
-5	J1926-05Z-063F	1/2-20 UNF-2B	1	15ZT-11.5	2	J1926-03-C5A	2	TMAU0438-20	1	ATKU05-1926
-6	J1926-060-075F	9/16-18 UNF-2B	1	150T-13	2	J1926-03-C5A	2	TMAU0563-18	1	ATKU06-1926
-8	J1926-080-075F	3/4-16 UNF-2B	1	150T-0022	2	J1926-07-C5A	2	TMAU0750-16	1	ATKU08-1926
-10	J1926-101-100F	7/8-14 UNF-2B	1	151T-20.5	2	J1926-04-C5A	2	TMAU0875-14	1	ATKU10-1926
-12	J1926-122-125F	1-1/16-12 UN-2B	1	152T-25	2	J1926-08-C5A	2	TMAU1063-12	1	ATKU12-1926
-14	J1926-142-125F	1-3/16-12 UN-2B	1	152T-28	2	J1926-08-C5A	2	TMAU1063-12	1	ATKU14-1926
-16	J1926-162-125F	1-5/16-12 UN-2B	1	152T-1.231	2	J1926-09-C5A	2	TMAU1063-12	1	ATKU16-1926
-20	J1926-203-150F	1-5/8-12 UN-2B	1	453T-39	1	J1926-10-C5A	2	TMAU1063-12	1	ATKU20-1926
-24	J1926-243-150F	1-7/8-12 UN-2B	1	453T-45.5	1	J1926-11-C5A	2	TMAU1063-12	1	ATKU24-1926
-32	J1926-324-150F	2-1/2-12 UN-2B	1	454T-61.5	1	J1926-12-C5A	2	TMAU1063-12	1	ATKU32-1926





AccuThread® Port Specific Solid Carbide Thread Mills

Port Size	Pitch	Thread Mill (in) D_1	L_6	D_2	L_1	Flutes	Part No.
-4 to -5	20	0.335	0.600	0.375	3.5	4	TMAU0438-20
-6	18	0.370	0.666	0.375	3.5	4	TMAU0563-18
-8	16	0.495	0.750	0.500	3.5	4	TMAU0750-16
-10	14	0.495	0.857	0.500	3.5	4	TMAU0875-14
-12 to -32	12	0.495	0.917	0.500	3.5	4	TMAU1063-12

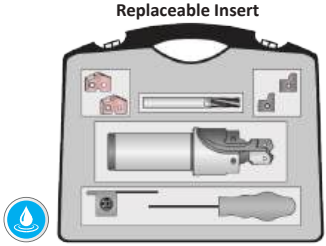
AccuPort 432 specific thread mills - International Unified Series (UN) manufactured specifically for use with AccuPort 432 hydraulic port forms.
The length of cut allows full thread with one pass. Conforms with J1926 and SAE AS5202 port form specifications.

A92: 34 - 44
Key on A92: 2
A92: 3 - 5
A92: 9

Port and Thread Finishing Kits

I6149 | No ID Ridge | Ferrous Materials

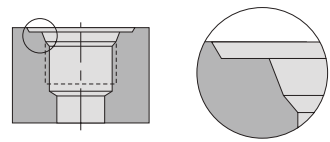
Replaceable Insert



Solid Carbide



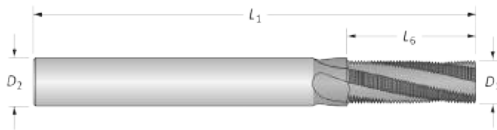
ISO 6149-1:2006 / SAE J-2244/1



Port and Thread Finishing Kits

Tube Dash No.	AccuPort 432 Part No.	AccuPort 432 Port Thread Size	AccuPort 432 Qty	GEN2 T-A® Insert Super Cobalt AM200®	GEN2 T-A® Insert Qty	Port Form Insert C5 Carbide TiAlN	Port Form Insert Qty	AccuThread® Thread Mill AM210®	AccuThread® Thread Mill Qty	Kit Part No.
Solid Carbide										
-2	**I6149-02S-10CM**	M8 X 1	1	—	—	—	—	**TMMK0600-100M**	1	**ATKK02S-6149M**
-3	**I6149-03S-14CM**	M10 X 1	1	—	—	—	—	**TMMK0600-100M**	1	**ATKK03S-6149M**
-4	**I6149-04S-16CM**	M12 X 1.5	1	—	—	—	—	**TMMK1000-150M**	1	**ATKK04S-6149M**
Replaceable Insert										
-4	**I6149-04RY-16FM**	M12 X 1.5	1	**45YH-10.5**	2	**I6149-04-C5A**	2	**TMMK1000-150M**	1	**ATKK04-6149**
-5	**I6149-05RZ-16FM**	M14 X 1.5	1	**45ZH-12.5**	2	**I6149-04-C5A**	2	**TMMK1400-150M**	1	**ATKK05-6149**
-6	**I6149-06R0-20FM**	M16 X 1.5	1	**450H-14.5**	2	**I6149-06-C5A**	2	**TMMK1400-150M**	1	**ATKK06-6149**
-8	**I6149-08R0-20FM**	M18 X 1.5	1	**450H-16.5**	2	**I6149-06-C5A**	2	**TMMK1800-150M**	1	**ATKK08-6149**
-10	**I6149-10R1-25FM**	M22 X 1.5	1	**451H-20.5**	2	**I6149-04-C5A**	2	**TMMK1800-150M**	1	**ATKK10-6149**
-12	**I6149-12R2-32FM**	M27 X 2	1	**452H-25**	2	**I6149-12-C5A**	2	**TMMK2000-200M**	1	**ATKK12-6149**
-14	**I6149-14R2-32FM**	M30 X 2	1	**452H-28**	2	**I6149-14-C5A**	2	**TMMK2000-200M**	1	**ATKK14-6149**
-16	**I6149-16R2-32FM**	M33 X 2	1	**452H-31**	2	**I6149-16-C5A**	2	**TMMK2000-200M**	1	**ATKK16-6149**
-20	**I6149-20R3-32FM**	M42 X 2	1	**453H-40**	1	**I6149-20-C5A**	2	**TMMK2000-200M**	1	**ATKK20-6149**
-24	**I6149-24R3-32FM**	M48 X 2	1	**453H-46**	1	**I6149-24-C5A**	2	**TMMK2000-200M**	1	**ATKK24-6149**
-32	**I6149-32R4-32FM**	M60 X 2	1	**454H-58**	1	**I6149-32-C5A**	2	**TMMK2000-200M**	1	**ATKK32-6149**





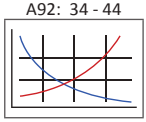
AccuThread® Port Specific Solid Carbide Thread Mills

Port Size	Pitch	Thread Mill (mm) D_1	L_6	D_2	L_1	Flutes	Part No.
-2 to -3	1.00	4.60	12.00	6.00	58.00	3	**TMMK0600-100M**
-4	1.50	7.40	19.50	8.00	64.00	4	**TMMK1000-150M**
-5 to -6	1.50	10.90	27.00	12.00	84.00	4	**TMMK1400-150M**
-8 to -10	1.50	11.90	31.50	12.00	84.00	4	**TMMK1800-150M**
-12 to -32	2.00	11.95	30.00	12.00	84.00	4	**TMMK2000-200M**

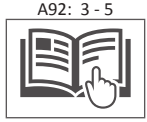
AccuPort 432 specific thread mills - International Unified Series (UN) manufactured specifically for use with AccuPort 432 hydraulic port forms.

The length of cut allows full thread with one pass. Conforms with J1926 and SAE AS5202 port form specifications.

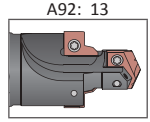
A92: 34 - 44
Key on A92: 2



A92: 3 - 5



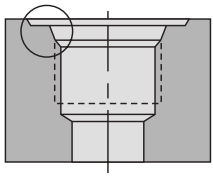
A92: 13

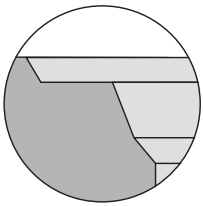


Port and Thread Finishing Kits

I6149 | No ID Ridge | Nonferrous Materials





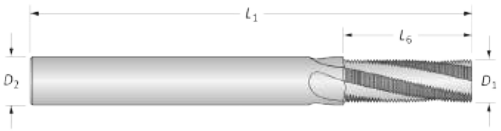


ISO 6149-1:2006 / SAE J-2244/1

Port and Thread Finishing Kits

Tube Dash No.	AccuPort 432 Part No.	AccuPort 432 Port Thread Size	AccuPort 432 Qty	T-A® Insert Super Cobalt TiN	T-A® Insert Qty	Port Form Insert C5 Carbide TiAlN	Port Form Insert Qty	AccuThread® Thread Mill Uncoated	AccuThread® Thread Mill Qty	Kit Part No.
-4	I6149-04RY-16FM	M12 X 1.5	1	15YT-10.5	2	I6149-04-C5A	2	TMMU1000-150M	1	ATKU04-6149
-5	I6149-05RZ-16FM	M14 X 1.5	1	15ZT-12.5	2	I6149-04-C5A	2	TMMU1400-150M	1	ATKU05-6149
-6	I6149-06R0-20FM	M16 X 1.5	1	150T-14.5	2	I6149-06-C5A	2	TMMU1400-150M	1	ATKU06-6149
-8	I6149-08R0-20FM	M18 X 1.5	1	150T-16.5	2	I6149-06-C5A	2	TMMU1800-150M	1	ATKU08-6149
-10	I6149-10R1-25FM	M22 X 1.5	1	151T-20.5	2	I6149-04-C5A	2	TMMU1800-150M	1	ATKU10-6149
-12	I6149-12R2-32FM	M27 X 2	1	152T-25	2	I6149-12-C5A	2	TMMU2000-200M	1	ATKU12-6149
-14	I6149-14R2-32FM	M30 X 2	1	152T-28	2	I6149-14-C5A	2	TMMU2000-200M	1	ATKU14-6149
-16	I6149-16R2-32FM	M33 X 2	1	152T-31	2	I6149-16-C5A	2	TMMU2000-200M	1	ATKU16-6149
-20	I6149-20R3-32FM	M42 X 2	1	453T-40	1	I6149-20-C5A	2	TMMU2000-200M	1	ATKU20-6149
-24	I6149-24R3-32FM	M48 X 2	1	453T-46	1	I6149-24-C5A	2	TMMU2000-200M	1	ATKU24-6149
-32	I6149-32R4-32FM	M60 X 2	1	454T-58	1	I6149-32-C5A	2	TMMU2000-200M	1	ATKU32-6149





AccuThread® Port Specific Solid Carbide Thread Mills

Port Size	Pitch	Thread Mill (mm) D_1	L_6	D_2	L_1	Flutes	Part No.
-4	1.50	7.40	19.50	8.00	64.00	4	TMMU1000-150M
-5 to -6	1.50	10.90	27.00	12.00	84.00	4	TMMU1400-150M
-8 to -10	1.50	11.90	31.50	12.00	84.00	4	TMMU1800-150M
-12 to -32	2.00	11.95	30.00	12.00	84.00	4	TMMU2000-200M

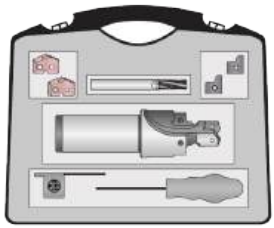
AccuPort 432 specific thread mills - International Unified Series (UN) manufactured specifically for use with AccuPort 432 hydraulic port forms.

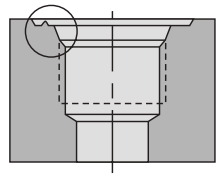
The length of cut allows full thread with one pass. Conforms with J1926 and SAE AS5202 port form specifications.

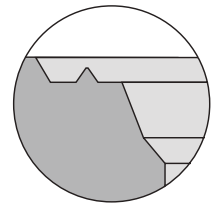
A92: 34 - 44
Key on A92: 2
A92: 3 - 5
A92: 13

Port and Thread Finishing Kits

I6149 | ID Ridge | Ferrous Materials





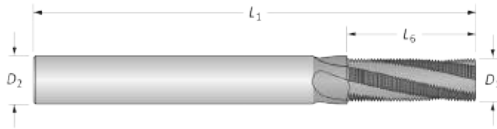


ISO 6149-1:2006 / SAE J-2244/1

Port and Thread Finishing Kits

Tube Dash No.	AccuPort 432 Part No.	AccuPort 432 Port Thread Size	AccuPort 432 Qty	GEN2 T-A® Insert Super Cobalt AM200®	GEN2 T-A® Insert Qty	Port Form Insert C5 Carbide TiAlN	Port Form Insert Qty	AccuThread® Thread Mill AM210®	AccuThread® Thread Mill Qty	Kit Part No.
-4	I6149-04RY-16FM	M12 X 1.5	1	45YH-10.5	2	I6149-04R-C5A	2	TMMK1000-150M	1	ATKK04R-6149
-5	I6149-05RZ-16FM	M14 X 1.5	1	45ZH-12.5	2	I6149-04R-C5A	2	TMMK1400-150M	1	ATKK05R-6149
-6	I6149-06R0-20FM	M16 X 1.5	1	450H-14.5	2	I6149-06R-C5A	2	TMMK1400-150M	1	ATKK06R-6149
-8	I6149-08R0-20FM	M18 X 1.5	1	450H-16.5	2	I6149-06R-C5A	2	TMMK1800-150M	1	ATKK08R-6149
-10	I6149-10R1-25FM	M22 X 1.5	1	451H-20.5	2	I6149-04R-C5A	2	TMMK1800-150M	1	ATKK10R-6149
-12	I6149-12R2-32FM	M27 X 2	1	452H-25	2	I6149-12R-C5A	2	TMMK2000-200M	1	ATKK12R-6149
-14	I6149-14R2-32FM	M30 X 2	1	452H-28	2	I6149-14R-C5A	2	TMMK2000-200M	1	ATKK14R-6149
-16	I6149-16R2-32FM	M33 X 2	1	452H-31	2	I6149-16R-C5A	2	TMMK2000-200M	1	ATKK16R-6149
-20	I6149-20R3-32FM	M42 X 2	1	453H-40	1	I6149-20R-C5A	2	TMMK2000-200M	1	ATKK20R-6149
-24	I6149-24R3-32FM	M48 X 2	1	453H-46	1	I6149-24R-C5A	2	TMMK2000-200M	1	ATKK24R-6149
-32	I6149-32R4-32FM	M60 X 2	1	454H-58	1	I6149-32R-C5A	2	TMMK2000-200M	1	ATKK32R-6149





AccuThread® Port Specific Solid Carbide Thread Mills

Port Size	Pitch	Thread Mill (mm) D_1	L_6	D_2	L_1	Flutes	Part No.
-4	1.50	7.40	19.50	8.00	64.00	4	TMMK1000-150M
-5 to -6	1.50	10.90	27.00	12.00	84.00	4	TMMK1400-150M
-8 to -10	1.50	11.90	31.50	12.00	84.00	4	TMMK1800-150M
-12 to -32	2.00	11.95	30.00	12.00	84.00	4	TMMK2000-200M

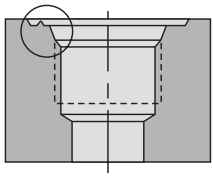
AccuPort 432 specific thread mills - International Unified Series (UN) manufactured specifically for use with AccuPort 432 hydraulic port forms.
The length of cut allows full thread with one pass. Conforms with J1926 and SAE AS5202 port form specifications.

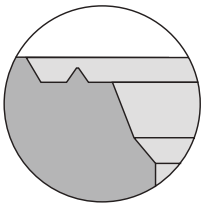
A92: 34 - 44
Key on A92: 2
A92: 3 - 5
A92: 13

Port and Thread Finishing Kits

I6149 | ID Ridge | Nonferrous Materials





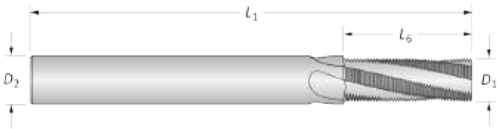


ISO 6149-1:2006 / SAE J-2244/1

Port and Thread Finishing Kits

Tube Dash No.	AccuPort 432 Part No.	AccuPort 432 Port Thread Size	AccuPort 432 Qty	T-A® Insert Super Cobalt TiN	T-A® Insert Qty	Port Form Insert C5 Carbide TiAlN	Port Form Insert Qty	AccuThread® Thread Mill Uncoated	AccuThread® Thread Mill Qty	Kit Part No.
-4	I6149-04RY-16FM	M12 X 1.5	1	15YT-10.5	2	I6149-04R-C5A	2	TMMU1000-150M	1	ATKU04R-6149
-5	I6149-05RZ-16FM	M14 X 1.5	1	15ZT-12.5	2	I6149-04R-C5A	2	TMMU1400-150M	1	ATKU05R-6149
-6	I6149-06R0-20FM	M16 X 1.5	1	150T-14.5	2	I6149-06R-C5A	2	TMMU1400-150M	1	ATKU06R-6149
-8	I6149-08R0-20FM	M18 X 1.5	1	150T-16.5	2	I6149-06R-C5A	2	TMMU1800-150M	1	ATKU08R-6149
-10	I6149-10R1-25FM	M22 X 1.5	1	151T-20.5	2	I6149-04R-C5A	2	TMMU1800-150M	1	ATKU10R-6149
-12	I6149-12R2-32FM	M27 X 2	1	152T-25	2	I6149-12R-C5A	2	TMMU2000-200M	1	ATKU12R-6149
-14	I6149-14R2-32FM	M30 X 2	1	152T-28	2	I6149-14R-C5A	2	TMMU2000-200M	1	ATKU14R-6149
-16	I6149-16R2-32FM	M33 X 2	1	152T-31	2	I6149-16R-C5A	2	TMMU2000-200M	1	ATKU16R-6149
-20	I6149-20R3-32FM	M42 X 2	1	453T-40	1	I6149-20R-C5A	2	TMMU2000-200M	1	ATKU20R-6149
-24	I6149-24R3-32FM	M48 X 2	1	453T-46	1	I6149-24R-C5A	2	TMMU2000-200M	1	ATKU24R-6149
-32	I6149-32R4-32FM	M60 X 2	1	454T-58	1	I6149-32R-C5A	2	TMMU2000-200M	1	ATKU32R-6149





AccuThread® Port Specific Solid Carbide Thread Mills

Port Size	Pitch	Thread Mill (mm) D_1	L_6	D_2	L_1	Flutes	Part No.
-4	1.50	7.40	19.50	8.00	64.00	4	TMMU1000-150M
-5 to -6	1.50	10.90	27.00	12.00	84.00	4	TMMU1400-150M
-8 to -10	1.50	11.90	31.50	12.00	84.00	4	TMMU1800-150M
-12 to -32	2.00	11.95	30.00	12.00	84.00	4	TMMU2000-200M

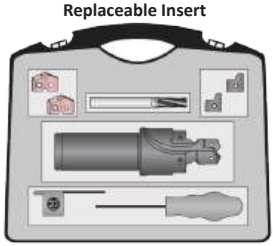
AccuPort 432 specific thread mills - International Unified Series (UN) manufactured specifically for use with AccuPort 432 hydraulic port forms.
The length of cut allows full thread with one pass. Conforms with J1926 and SAE AS5202 port form specifications.

A92: 34 - 44
Key on A92: 2
A92: 3 - 5
A92: 13

Port and Thread Finishing Kits

AS5202 | Ferrous Materials

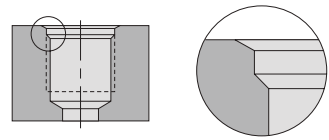
Replaceable Insert



Solid Carbide



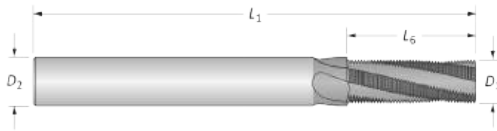
SAE AS5202



Port and Thread Finishing Kits

Tube Dash No.	AccuPort 432 Part No.	AccuPort 432 Port Thread Size	AccuPort 432 Qty	GEN2 T-A® Insert Super Cobalt AM200®	GEN2 T-A® Insert Qty	Port Form Insert C5 Carbide TiAlN	Port Form Insert Qty	AccuThread® Thread Mill AM210®	AccuThread® Thread Mill Qty	Kit Part No.
Solid Carbide										
-2	**AS5202-02S-10CM**	5/16-20 UNJF-3B	1	—	—	—	—	**TMUK0313-24M**	1	**ATKK02S-5202M**
-3	**AS5202-03S-14CM**	3/8-24 UNJF-3B	1	—	—	—	—	**TMUK0313-24M**	1	**ATKK03S-5202M**
-4	**AS5202-04S-16CM**	7/16-20 UNJF-3B	1	—	—	—	—	**TMAK0438-20M**	1	**ATKK04S-5202M**
Replaceable Insert										
-4	**AS5202-04Y-063F**	7/16-20 UNJF-3B	1	**45YH-.390**	2	**AS5202-04-C5A**	2	**TMAK0438-20**	1	**ATKK04-5202**
-5	**AS5202-05Z-063F**	1/2-20 UNJF-3B	1	**45ZH-11.5**	2	**AS5202-05-C5A**	2	**TMAK0438-20**	1	**ATKK05-5202**
-6	**AS5202-06Z-075F**	9/16-18 UNJF-3B	1	**45ZH-.510**	2	**AS5202-06-C5A**	2	**TMAK0563-18**	1	**ATKK06-5202**
-8	**AS5202-080-075F**	3/4-16 UNJF-3B	1	**450H-17.5**	2	**AS5202-08-C5A**	2	**TMAK0750-16**	1	**ATKK08-5202**
-10	**AS5202-101-100F**	7/8-14 UNJF-3B	1	**451H-20.5**	2	**AS5202-10-C5A**	2	**TMAK0875-14**	1	**ATKK10-5202**
-12	**AS5202-122-125F**	1-1/16-12 UNJ-3B	1	**452H-25**	2	**AS5202-12-C5A**	2	**TMAK1063-12**	1	**ATKK12-5202**
-14	**AS5202-142-125F**	1-3/16-12 UNJ-3B	1	**452H-1.109**	2	**AS5202-14-C5A**	2	**TMAK1063-12**	1	**ATKK14-5202**
-16	**AS5202-162-125F**	1-5/16-12 UNJ-3B	1	**452H-1.234**	2	**AS5202-16-C5A**	2	**TMAK1063-12**	1	**ATKK16-5202**
-20	**AS5202-203-150F**	1-5/8-12 UNJ-3B	1	**453H-1.547**	1	**AS5202-20-C5A**	2	**TMAK1063-12**	1	**ATKK20-5202**
-24	**AS5202-243-150F**	1-7/8-12 UNJ-3B	1	**453H-1.797**	1	**AS5202-24-C5A**	2	**TMAK1063-12**	1	**ATKK24-5202**
-32	**AS5202-324-150F**	2-1/2-12 UNJ-3B	1	**454H-61.5**	1	**AS5202-32-C5A**	2	**TMAK1063-12**	1	**ATKK32-5202**





AccuThread® Port Specific Solid Carbide Thread Mills

Port Size	Pitch	Thread Mill (in) D_1	L_6	D_2	L_1	Flutes	Part No.
-2 to -3	24	0.234	0.630	6.00 mm	2.283	3	**TMUK0313-24M**
-4*	20	0.335	0.600	10.00 mm	2.874	4	**TMAK0438-20M**
-4 to -5	20	0.335	0.600	0.375	3.5	4	**TMAK0438-20**
-6	18	0.370	0.666	0.375	3.5	4	**TMAK0563-18**
-8	16	0.495	0.750	0.500	3.5	4	**TMAK0750-16**
-10	14	0.495	0.857	0.500	3.5	4	**TMAK0875-14**
-12 to -32	12	0.495	0.917	0.500	3.5	4	**TMAK1063-12**

*-4 solid carbide AccuPort.

AccuPort 432 specific thread mills - International Unified Series (UN) manufactured specifically for use with AccuPort 432 hydraulic port forms.

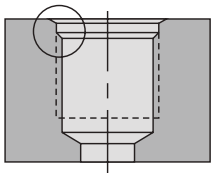
The length of cut allows full thread with one pass. Conforms with J1926 and SAE AS5202 port form specifications.

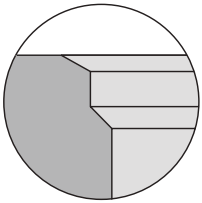
A92: 34 - 44
Key on A92: 2
A92: 3 - 5
A92: 15

Port and Thread Finishing Kits

AS5202 | Nonferrous Materials





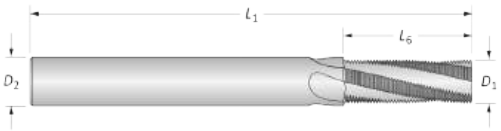


SAE AS5202

Port and Thread Finishing Kits

Tube Dash No.	AccuPort 432 Part No.	AccuPort 432 Port Thread Size	AccuPort 432 Qty	T-A® Insert Super Cobalt TiN	T-A® Insert Qty	Port Form Insert C5 Carbide TiAlN	Port Form Insert Qty	AccuThread® Thread Mill Uncoated	AccuThread® Thread Mill Qty	Kit Part No.
-4	**AS5202-04Y-063F**	7/16-20 UNJF-3B	1	**15YT-.390**	2	**AS5202-04-C5A**	2	**TMAU0438-20**	1	**ATKU04-5202**
-5	**AS5202-05Z-063F**	1/2-20 UNJF-3B	1	**15ZT-11.5**	2	**AS5202-05-C5A**	2	**TMAU0438-20**	1	**ATKU05-5202**
-6	**AS5202-06Z-075F**	9/16-18 UNJF-3B	1	**15ZT-.510**	2	**AS5202-06-C5A**	2	**TMAU0563-18**	1	**ATKU06-5202**
-8	**AS5202-080-075F**	3/4-16 UNJF-3B	1	**150T-17.5**	2	**AS5202-08-C5A**	2	**TMAU0750-16**	1	**ATKU08-5202**
-10	**AS5202-101-100F**	7/8-14 UNJF-3B	1	**151T-20.5**	2	**AS5202-10-C5A**	2	**TMAU0875-14**	1	**ATKU10-5202**
-12	**AS5202-122-125F**	1-1/16-12 UNJ-3B	1	**152T-25**	2	**AS5202-12-C5A**	2	**TMAU1063-12**	1	**ATKU12-5202**
-14	**AS5202-142-125F**	1-3/16-12 UNJ-3B	1	**152T-1.109**	2	**AS5202-14-C5A**	2	**TMAU1063-12**	1	**ATKU14-5202**
-16	**AS5202-162-125F**	1-5/16-12 UNJ-3B	1	**152T-1.234**	2	**AS5202-16-C5A**	2	**TMAU1063-12**	1	**ATKU16-5202**
-20	**AS5202-203-150F**	1-5/8-12 UNJ-3B	1	**453T-1.547**	1	**AS5202-20-C5A**	2	**TMAU1063-12**	1	**ATKU20-5202**
-24	**AS5202-243-150F**	1-7/8-12 UNJ-3B	1	**453T-1.797**	1	**AS5202-24-C5A**	2	**TMAU1063-12**	1	**ATKU24-5202**
-32	**AS5202-324-150F**	2-1/2-12 UNJ-3B	1	**454T-61.5**	1	**AS5202-32-C5A**	2	**TMAU1063-12**	1	**ATKU32-5202**





AccuThread® Port Specific Solid Carbide Thread Mills

Port Size	Pitch	Thread Mill (in) D_1	L_6	D_2	L_1	Flutes	Part No.
-4 to -5	20	0.335	0.600	0.375	3.5	4	**TMAU0438-20**
-6	18	0.370	0.666	0.375	3.5	4	**TMAU0563-18**
-8	16	0.495	0.750	0.500	3.5	4	**TMAU0750-16**
-10	14	0.495	0.857	0.500	3.5	4	**TMAU0875-14**
-12 to -32	12	0.495	0.917	0.500	3.5	4	**TMAU1063-12**

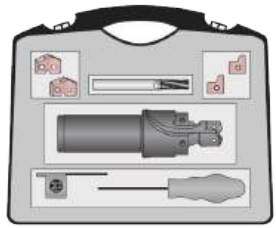
AccuPort 432 specific thread mills - International Unified Series (UN) manufactured specifically for use with AccuPort 432 hydraulic port forms.

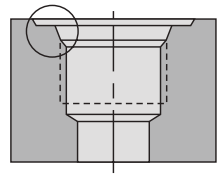
The length of cut allows full thread with one pass. Conforms with J1926 and SAE AS5202 port form specifications.

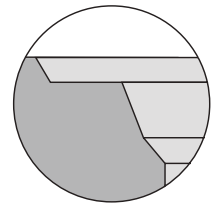
A92: 34 - 44
Key on A92: 2
A92: 3 - 5
A92: 15

Port and Thread Finishing Kits

G1731 | Ferrous Materials







JDS-G173.1

Port and Thread Finishing Kits

Tube Dash No.	AccuPort 432 Part No.	AccuPort 432 Port Thread Size	AccuPort 432 Qty	GEN2 T-A® Insert Super Cobalt AM200®	GEN2 T-A® Insert Qty	Port Form Insert C5 Carbide AM200	Port Form Insert Qty	AccuThread® Thread Mill AM210®	AccuThread® Thread Mill Qty	Kit Part No.
-4	G1731-04Y-16FM	M12 X 1.5	1	45YH-10.5	2	G1731-01-C3H	2	TMMK1000-150M	1	ATKK04-G1731
-5	G1731-05Z-16FM	M14 X 1.5	1	45ZH-12.5	2	G1731-01-C3H	2	TMMK1400-150M	1	ATKK05-G1731
-6	G1731-060-20FM	M16 X 1.5	1	450H-14.5	2	G1731-02-C3H	2	TMMK1400-150M	1	ATKK06-G1731
-8	G1731-080-20FM	M18 X 1.5	1	450H-16.5	2	G1731-02-C3H	2	TMMK1800-150M	1	ATKK08-G1731
-10	G1731-101-25FM	M22 X 1.5	1	451H-20.5	2	G1731-02-C3H	2	TMMK1800-150M	1	ATKK10-G1731
-12	G1731-122-32FM	M27 X 2	1	452H-25	2	G1731-03-C3H	2	TMMK2000-200M	1	ATKK12-G1731
-14	G1731-142-32FM	M30 X 2	1	452H-28	2	G1731-03-C3H	2	TMMK2000-200M	1	ATKK14-G1731
-16	G1731-162-32FM	M33 X 2	1	452H-31	2	G1731-04-C3H	2	TMMK2000-200M	1	ATKK16-G1731
-18	G1731-183-32FM	M38 X 2	1	453H-36	1	G1731-04-C3H	2	TMMK2000-200M	1	ATKK18-G1731
-20	G1731-203-32FM	M42 X 2	1	453H-40	1	G1731-05-C3H	2	TMMK2000-200M	1	ATKK20-G1731
-24	G1731-243-32FM	M48 X 2	1	453H-46	1	G1731-05-C3H	2	TMMK2000-200M	1	ATKK24-G1731
-32	G1731-324-32FM	M60 X 2	1	454H-58	1	G1731-06-C3H	2	TMMK2000-200M	1	ATKK32-G1731





AccuThread® Port Specific Solid Carbide Thread Mills

Port Size	Pitch	Thread Mill (mm) D_1	L_6	D_2	L_1	Flutes	Part No.
-4	1.50	7.40	19.50	8.00	64.00	4	TMMK1000-150M
-5 to -6	1.50	10.90	27.00	12.00	84.00	4	TMMK1400-150M
-8 to -10	1.50	11.90	31.50	12.00	84.00	4	TMMK1800-150M
-12 to -32	2.00	11.95	30.00	12.00	84.00	4	TMMK2000-200M

AccuPort 432 specific thread mills - International Unified Series (UN) manufactured specifically for use with AccuPort 432 hydraulic port forms.
The length of cut allows full thread with one pass. Conforms with J1926 and SAE AS5202 port form specifications.

A92: 34 - 44
Key on A92: 2
A92: 3 - 5
A92: 19

Notes

Notes

Recommended Drilling Data | Metric (mm)

SOLID CARBIDE

ISO	Material	Hardness (BHN)	Geometry	Speed (m/min)	Feed Rate (mm/rev) by Tube Size		
					Tube No.: 2	Tube No.: 3	Tube No.: 4
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100-150	HPS	150	0.23	0.30	0.33
		150-200	HPS	145	0.22	0.28	0.30
		200-250	HPS	135	0.20	0.25	0.28
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85-125	HPS	140	0.23	0.30	0.34
		125-175	HPS	135	0.22	0.29	0.33
		175-225	HPS	130	0.20	0.28	0.32
		225-275	HPS	125	0.20	0.25	0.30
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125-175	HPS	135	0.19	0.28	0.30
		175-225	HPS	130	0.18	0.27	0.29
		225-275	HPS	120	0.18	0.27	0.28
		275-325	HPS	115	0.17	0.25	0.28
	Alloy Steel 4140, 5140, 8640, etc.	125-175	HPS	125	0.19	0.27	0.29
		175-225	HPS	115	0.18	0.25	0.28
		225-275	HPS	110	0.17	0.24	0.27
		275-325	HPS	105	0.15	0.23	0.25
		325-375	HPS	100	0.14	0.23	0.25
	High-Strength Alloy 4340, 4330V, 300M, etc.	225-300	HPS	105	0.17	0.24	0.27
		300-350	HPS	100	0.15	0.23	0.25
		350-400	HPS	75	0.14	0.20	0.22
	Structural Steel A36, A285, A516, etc.	100-150	HPS	135	0.20	0.30	0.33
		150-250	HPS	130	0.18	0.28	0.30
		250-350	HPS	120	0.17	0.24	0.27
	Tool Steel H-13, H-21, A-4, S-3, etc.	150-200	HPS	80	0.15	0.24	0.25
		200-250	HPS	75	0.14	0.22	0.23
M	**Stainless Steel 400 Series** 416, 420, etc.	185-275	HPS	75	0.17	0.23	0.24
		275-350	HPS	60	0.14	0.20	0.22
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135-185	HPS	60	0.13	0.18	0.19
		185-275	HPS	55	0.10	0.15	0.17
	Super Duplex Stainless Steel	135-185	HPS	45	0.13	0.18	0.18
		185-275	HPS	40	0.10	0.14	0.14
K	**SG / Nodular Cast Iron**	120-150	HPS	150	0.28	0.36	0.39
		150-200	HPS	150	0.25	0.33	0.36
		200-220	HPS	145	0.23	0.30	0.33
		220-260	HPS	140	0.23	0.30	0.33
		260-320	HPS	125	0.22	0.29	0.32
	Gray/White Cast Iron	120-150	HPS	165	0.30	0.39	0.42
		150-200	HPS	160	0.28	0.37	0.39
		200-220	HPS	155	0.25	0.33	0.36
		220-260	HPS	145	0.25	0.33	0.36
		260-320	HPS	135	0.24	0.32	0.34
N	**Cast Aluminum**	30	HPS	290	0.25	0.37	0.41
		180	HPS	230	0.23	0.34	0.39
	Wrought Aluminum	30	HPS	335	0.28	0.37	0.43
		180	HPS	290	0.25	0.34	0.39
	Aluminum Bronze	100-200	HPS	115	0.18	0.23	0.25
		200-250	HPS	95	0.15	0.18	0.20
	Brass	100	HPS	230	0.23	0.29	0.32
	Copper	60	HPS	155	0.08	0.10	0.10
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140-220	HPS	35	0.10	0.14	0.15
		220-310	HPS	30	0.09	0.11	0.13
	Titanium Alloy	140-220	HPS	45	0.10	0.15	0.15
		220-310	HPS	35	0.09	0.13	0.14
	Aerospace Alloy S82	185-275	HPS	50	0.10	0.11	0.14
		275-350	HPS	40	0.09	0.10	0.11
H	**Wear Plate** Hardox®, AR400, T-1, etc.	400	HPS	50	0.08	0.10	0.13
		500	HPS	45	0.08	0.10	0.10
		600	HPS	30	0.08	0.10	0.10
	Hardened Steel	300-400	HPS	50	0.08	0.10	0.13
		400-500	HPS	45	0.08	0.10	0.10

Flood Coolant Applications

Recommend if diameter to depth is less than or equal to three times the diameter. Reduce speed by 20%, and if needed, drop feed by 10% to maintain optimal chip formation.

Parameter Recommendations for Solid Carbide Port Tool

- Speed and feed rates are based off the pilot diameter.

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department.

Recommended Drilling Data | Metric (mm)

REPLACEABLE INSERT | HIGH-SPEED STEEL

ISO	Material	Hardness (BHN)	Grade	Speed (m/min) TiN	TiAlN	TiCN	AM200®
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 150	HSS	61	85	79	92
		150 - 200	HSS	55	79	72	87
		200 - 250	HSS	49	73	64	81
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	HSS	52	76	67	84
		125 - 175	HSS	49	73	64	81
		175 - 225	HSS	46	69	59	76
		225 - 275	HSS	43	64	55	70
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	HSS	49	73	64	79
		175 - 225	HSS	46	69	59	75
		225 - 275	HSS	43	64	55	70
		275 - 325	SC	40	59	52	66
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	HSS	46	64	59	69
		175 - 225	HSS	43	59	55	66
		225 - 275	HSS	40	55	52	60
		275 - 325	SC	37	52	47	56
		325 - 375	SC	34	47	44	55
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	SC	24	34	30	37
		300 - 350	SC	18	26	24	27
		350 - 400	SC	15	21	20	23
	Structural Steel A36, A285, A516, etc.	100 - 150	HSS	43	61	55	67
		150 - 250	HSS	37	52	47	56
		250 - 350	SC	30	43	40	47
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	SC	24	34	32	37
		200 - 250	SC	18	27	26	31
M	**Stainless Steel 400 Series** 416, 420, etc.	185 - 275	SC	23	32	29	33
		275 - 350	SC	18	27	24	29
K	**Nodular, Grey, Ductile Cast Iron**	120 - 150	HSS	52	76	67	82
		150 - 200	HSS	46	69	59	75
		200 - 220	HSS	40	59	52	66
		220 - 260	SC	34	50	44	55
		260 - 320	SC	27	41	37	44
N	**Cast Aluminum**	30	HSS	183	259	229	—
		180	HSS	91	137	122	—
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 220	SC	30	40	35	45
		220 - 310	SC	25	35	30	40

Formulas

1. **RPM = (318.47 • m/min) / DIA**

where:

RPM	= revolutions per minute (rev/min)
m/min	= speed (m/min)
DIA	= diameter of drill (mm)

2. **mm/min = RPM • mm/rev**

where:

mm/min	= mm per minute (mm/min)
RPM	= revolutions per minute (rev/min)
mm/rev	= feed rate (mm/rev)

3. **m/min = RPM • 0.003 • DIA**

where:

m/min	= speed (m/min)
RPM	= revolutions per minute (rev/min)
DIA	= diameter of drill (mm)

The table and equations on this page are found in the "Machinery's Handbook." Permission to simplify and print the equations is granted by the Editor of the "Machinery's Handbook."

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department.

Recommended Drilling Data | Metric (mm)

REPLACEABLE INSERT | HIGH-SPEED STEEL

Feed Rate (mm/rev) by Tube Size & T-A® Insert Series					
Tube No.: 4 - 5 T-A Series: Y - Z	**Tube No.: 6 - 8** T-A Series: 0	**Tube No.: 10** T-A Series: 1	**Tube No.: 12 - 16** T-A Series: 2	**Tube No.: 20 - 24** T-A Series: 3	**Tube No.: 32** T-A Series: 4
0.18	0.25	0.33	0.41	0.51	0.58
0.18	0.25	0.33	0.41	0.51	0.58
0.15	0.25	0.33	0.41	0.51	0.58
0.15 ❖	0.23	0.30	0.38	0.48	0.58
0.15 ❖	0.23	0.30	0.38	0.48	0.58
0.13 ❖	0.20	0.25	0.36	0.46	0.53
0.13 ❖	0.20	0.25	0.36	0.46	0.53
0.15	0.23	0.30	0.38	0.48	0.58
0.13	0.20	0.25	0.36	0.46	0.53
0.13	0.20	0.25	0.36	0.46	0.53
0.10	0.18	0.23	0.30	0.41	0.48
0.15	0.20	0.25	0.36	0.43	0.48
0.13	0.20	0.25	0.36	0.43	0.48
0.13	0.18	0.25	0.36	0.43	0.48
0.10	0.15	0.23	0.30	0.38	0.43
0.08	0.15	0.23	0.30	0.38	0.43
0.13 ❖	0.18	0.23	0.25	0.36	0.43
0.10 ❖	0.18	0.23	0.25	0.36	0.43
0.08 ❖	0.15	0.20	0.23	0.30	0.38
0.15 ❖	0.25	0.30	0.36	0.46	0.53
0.13 ❖	0.23	0.25	0.30	0.41	0.48
0.10 ❖	0.20	0.23	0.25	0.36	0.43
0.10	0.15	0.20	0.25	0.30	0.38
0.10	0.15	0.20	0.25	0.30	0.38
0.15 ❖	0.20	0.23	0.28	0.36	0.41
0.13 ❖	0.18	0.20	0.25	0.30	0.36
0.18	0.30	0.41	0.51	0.61	0.69
0.15	0.28	0.36	0.46	0.56	0.64
0.15	0.23	0.30	0.41	0.46	0.53
0.13	0.18	0.23	0.30	0.36	0.43
0.10	0.15	0.18	0.23	0.30	0.36
0.20	0.33	0.41	0.51	0.56	0.64
0.20	0.33	0.41	0.46	0.56	0.64
0.08 ❖	0.18	0.20	0.25	0.30	0.38
0.08 ❖	0.15	0.18	0.20	0.25	0.30

❖ Contact our Application Engineering department for assistance when machining these materials.

Recommended Drilling Data | Metric (mm)

REPLACEABLE INSERT | CARBIDE

ISO	Material	Hardness (BHN)	Grade	Speed (m/min) TiN	TiAlN	AM200®
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 150	C1, C5	98	128	146
		150 - 200	C1, C5	85	110	126
		200 - 250	C1, C5	79	104	119
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	C1, C5	91	119	137
		125 - 175	C1, C5	79	104	119
		175 - 225	C1, C5	73	94	108
		225 - 275	C1, C5	64	82	94
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	C1, C5	79	104	119
		175 - 225	C1, C5	73	94	108
		225 - 275	C1, C5	64	82	94
		275 - 325	C1, C5	55	70	81
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	C1, C5	76	99	114
		175 - 225	C1, C5	70	91	105
		225 - 275	C1, C5	64	82	94
		275 - 325	C1, C5	61	76	87
		325 - 375	C1, C5	52	67	78
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	C1, C5	49	61	73
		300 - 350	C1, C5	43	55	62
		350 - 400	C1, C5	37	49	56
	Structural Steel A36, A285, A516, etc.	100 - 150	C1, C5	73	94	108
		150 - 250	C1, C5	61	76	87
		250 - 350	C1, C5	55	70	81
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	C1, C5	49	67	78
		200 - 250	C1, C5	37	52	59
M	**Stainless Steel 400 Series** 416, 420, etc.	185 - 275	C2	49	64	73
		275 - 350	C2	37	49	46
K	**Nodular, Grey, Ductile Cast Iron**	120 - 150	C2, C3	98	140	152
		150 - 200	C2, C3	82	122	146
		200 - 220	C2, C3	73	110	131
		220 - 260	C2, C3	64	94	113
		260 - 320	C2, C3	55	82	102
N	**Cast Aluminum**	30	C2	366	457	—
		180	C2	244	305	—
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 220	C2	24	32	36
		220 - 310	C2	18	26	29

Formulas

1. **RPM = (318.47 • m/min) / DIA**

where:

RPM	= revolutions per minute (rev/min)
m/min	= speed (m/min)
DIA	= diameter of drill (mm)

2. **mm/min = RPM • mm/rev**

where:

mm/min	= mm per minute (mm/min)
RPM	= revolutions per minute (rev/min)
mm/rev	= feed rate (mm/rev)

3. **m/min = RPM • 0.003 • DIA**

where:

m/min	= speed (m/min)
RPM	= revolutions per minute (rev/min)
DIA	= diameter of drill (mm)

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IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department.

Recommended Drilling Data | Metric (mm)

REPLACEABLE INSERT | CARBIDE

Feed Rate (mm/rev) by Tube Size & T-A® Insert Series				
Tube No.: 4 - 5 T-A Series: Y - Z	**Tube No.: 6 - 8** T-A Series: 0	**Tube No.: 10** T-A Series: 1	**Tube No.: 12 - 16** T-A Series: 2	**Tube No.: 20 - 24** T-A Series: 3
0.20	0.30	0.38	0.46	0.53
0.18	0.28	0.36	0.41	0.48
0.15	0.25	0.33	0.38	0.43
0.20 ❖	0.25	0.33	0.43	0.48
0.18 ❖	0.25	0.33	0.41	0.46
0.15 ❖	0.23	0.3	0.38	0.43
0.13 ❖	0.23	0.30	0.38	0.43
0.18	0.25	0.33	0.41	0.46
0.15	0.23	0.30	0.38	0.43
0.15	0.23	0.30	0.38	0.43
0.13	0.20	0.28	0.36	0.41
0.18	0.25	0.33	0.41	0.46
0.15	0.23	0.30	0.38	0.43
0.15	0.23	0.30	0.38	0.43
0.13	0.20	0.28	0.36	0.41
0.10	0.18	0.25	0.33	0.38
0.15 ❖	0.23	0.25	0.30	0.38
0.13 ❖	0.20	0.23	0.28	0.36
0.10 ❖	0.18	0.20	0.25	0.30
0.20 ❖	0.28	0.36	0.41	0.46
0.15 ❖	0.25	0.30	0.36	0.41
0.13 ❖	0.23	0.28	0.30	0.36
0.10	0.18	0.23	0.28	0.33
0.10	0.18	0.23	0.28	0.33
0.18 ❖	0.23	0.30	0.36	0.41
0.15 ❖	0.20	0.28	0.30	0.36
0.20	0.30	0.38	0.48	0.58
0.18	0.28	0.33	0.43	0.53
0.15	0.23	0.30	0.38	0.46
0.13	0.20	0.28	0.33	0.38
0.13	0.18	0.25	0.28	0.33
0.25	0.38	0.46	0.51	0.56
0.23	0.33	0.41	0.46	0.51
0.10 ❖	0.18	0.23	0.28	0.33
0.10 ❖	0.15	0.20	0.25	0.30

❖ Contact our Application Engineering department for assistance when machining these materials.

Notes

Recommended Drilling Data | Imperial (in)

SOLID CARBIDE

ISO	Material	Hardness (BHN)	Geometry	Speed (SFM)	Feed Rate (IPR) by Tube Size		
					Tube No.: 2	Tube No.: 3	Tube No.: 4
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100-150	HPS	500	0.0090	0.0120	0.0130
		150-200	HPS	475	0.0085	0.0110	0.0120
		200-250	HPS	450	0.0080	0.0100	0.0110
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85-125	HPS	455	0.0090	0.0120	0.0135
		125-175	HPS	440	0.0085	0.0115	0.0130
		175-225	HPS	425	0.0080	0.0110	0.0125
		225-275	HPS	410	0.0080	0.0100	0.0120
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125-175	HPS	440	0.0075	0.0110	0.0120
		175-225	HPS	430	0.0070	0.0105	0.0115
		225-275	HPS	400	0.0070	0.0105	0.0110
		275-325	HPS	375	0.0065	0.0100	0.0110
	Alloy Steel 4140, 5140, 8640, etc.	125-175	HPS	405	0.0075	0.0105	0.0115
		175-225	HPS	380	0.0070	0.0100	0.0110
		225-275	HPS	365	0.0065	0.0095	0.0105
		275-325	HPS	340	0.0060	0.0090	0.0100
		325-375	HPS	325	0.0055	0.0090	0.0100
	High-Strength Alloy 4340, 4330V, 300M, etc.	225-300	HPS	340	0.0065	0.0095	0.0105
		300-350	HPS	320	0.0060	0.0090	0.0100
		350-400	HPS	250	0.0055	0.0080	0.0085
	Structural Steel A36, A285, A516, etc.	100-150	HPS	450	0.0080	0.0120	0.0130
		150-250	HPS	425	0.0070	0.0110	0.0120
		250-350	HPS	390	0.0065	0.0095	0.0105
	Tool Steel H-13, H-21, A-4, S-3, etc.	150-200	HPS	270	0.0060	0.0095	0.0100
		200-250	HPS	250	0.0055	0.0085	0.0090
M	**Stainless Steel 400 Series** 416, 420, etc.	185-275	HPS	250	0.0065	0.0090	0.0095
		275-350	HPS	195	0.0055	0.0080	0.0085
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135-185	HPS	200	0.0050	0.0070	0.0075
		185-275	HPS	175	0.0040	0.0060	0.0065
	Super Duplex Stainless Steel	135-185	HPS	150	0.0050	0.0070	0.0070
		185-275	HPS	135	0.0040	0.0055	0.0055
K	**SG / Nodular Cast Iron**	120-150	HPS	500	0.0110	0.0140	0.0155
		150-200	HPS	485	0.0100	0.0130	0.0140
		200-220	HPS	470	0.0090	0.0120	0.0130
		220-260	HPS	455	0.0090	0.0120	0.0130
		260-320	HPS	415	0.0085	0.0115	0.0125
	Gray/White Cast Iron	120-150	HPS	545	0.0120	0.0155	0.0165
		150-200	HPS	530	0.0110	0.0145	0.0155
		200-220	HPS	515	0.0100	0.0130	0.0140
		220-260	HPS	475	0.0100	0.0130	0.0140
		260-320	HPS	450	0.0095	0.0125	0.0135
N	**Cast Aluminum**	30	HPS	950	0.0100	0.0145	0.0160
		180	HPS	755	0.0090	0.0135	0.0155
	Wrought Aluminum	30	HPS	1100	0.0110	0.0145	0.0170
		180	HPS	950	0.0100	0.0135	0.0155
	Aluminum Bronze	100-200	HPS	370	0.0070	0.0090	0.0100
		200-250	HPS	310	0.0060	0.0070	0.0080
	Brass	100	HPS	750	0.0090	0.0115	0.0125
	Copper	60	HPS	510	0.0030	0.0040	0.0040
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140-220	HPS	110	0.0040	0.0055	0.0060
		220-310	HPS	100	0.0035	0.0045	0.0050
	Titanium Alloy	140-220	HPS	150	0.0040	0.0060	0.0060
		220-310	HPS	120	0.0035	0.0050	0.0055
	Aerospace Alloy S82	185-275	HPS	160	0.0040	0.0045	0.0055
		275-350	HPS	130	0.0035	0.0040	0.0045
H	**Wear Plate** Hardox®, AR400, T-1, etc.	400	HPS	170	0.0030	0.0040	0.0050
		500	HPS	140	0.0030	0.0040	0.0040
		600	HPS	100	0.0030	0.0040	0.0040
	Hardened Steel	300-400	HPS	170	0.0030	0.0040	0.0050
		400-500	HPS	140	0.0030	0.0040	0.0040

Flood Coolant Applications

Recommend if diameter to depth is less than or equal to three times the diameter. Reduce speed by 20%, and if needed, drop feed by 10% to maintain optimal chip formation.

Parameter Recommendations for Solid Carbide Port Tool

- Speed and feed rates are based off the pilot diameter.

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department.

Recommended Drilling Data | Imperial (in)

REPLACEABLE INSERT | HIGH-SPEED STEEL

ISO	Material	Hardness (BHN)	Grade	Speed (SFM) TiN	TiAlN	TiCN	AM200®
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 150	HSS	200	280	260	325
		150 - 200	HSS	180	260	235	300
		200 - 250	HSS	160	240	210	280
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	HSS	170	250	220	290
		125 - 175	HSS	160	240	210	275
		175 - 225	HSS	150	225	195	260
		225 - 275	HSS	140	210	180	240
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	HSS	160	240	210	275
		175 - 225	HSS	150	225	195	260
		225 - 275	HSS	140	210	180	240
		275 - 325	SC	130	195	170	225
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	HSS	150	210	195	240
		175 - 225	HSS	140	195	180	225
		225 - 275	HSS	130	180	170	210
		275 - 325	SC	120	170	155	195
		325 - 375	SC	110	155	145	180
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	SC	80	110	100	125
		300 - 350	SC	60	85	80	100
		350 - 400	SC	50	70	65	80
	Structural Steel A36, A285, A516, etc.	100 - 150	HSS	140	200	180	235
		150 - 250	HSS	120	170	155	190
		250 - 350	SC	100	140	130	160
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	SC	80	110	105	125
		200 - 250	SC	60	90	85	105
M	**Stainless Steel 400 Series** 416, 420, etc.	185 - 275	SC	75	105	95	110
		275 - 350	SC	60	90	80	100
K	**Nodular, Grey, Ductile Cast Iron**	120 - 150	HSS	170	250	220	290
		150 - 200	HSS	150	225	195	260
		200 - 220	HSS	130	195	170	225
		220 - 260	SC	110	165	145	190
		260 - 320	SC	90	135	120	155
N	**Cast Aluminum**	30	HSS	600	850	750	—
		180	HSS	300	450	400	—
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 220	SC	9	12	10	14
		220 - 310	SC	7	10	9	12

Formulas

1. **RPM = (3.82 • SFM) / DIA**

where:

RPM = revolutions per minute (rev/min)
SFM = speed (ft/min)
DIA = diameter of drill (inch)

2. **IPM = RPM • IPR**

where:

IPM = inches per minute (in/min)
RPM = revolutions per minute (rev/min)
IPR = feed rate (in/rev)

3. **SFM = RPM • 0.262 • DIA**

where:

SFM = speed (ft/min)
RPM = revolutions per minute (rev/min)
DIA = diameter of drill (inch)

The table and equations on this page are found in the "Machinery's Handbook." Permission to simplify and print the equations is granted by the Editor of the "Machinery's Handbook."

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department.

Recommended Drilling Data | Imperial (in)

REPLACEABLE INSERT | HIGH-SPEED STEEL

Feed Rate (IPR) by Tube Size & T-A® Insert Series					
Tube No.: 4 - 5 T-A Series: Y - Z	**Tube No.: 6 - 8** T-A Series: 0	**Tube No.: 10** T-A Series: 1	**Tube No.: 12 - 16** T-A Series: 2	**Tube No.: 20 - 24** T-A Series: 3	**Tube No.: 32** T-A Series: 4
0.007	0.010	0.013	0.016	0.020	0.023
0.007	0.010	0.013	0.016	0.020	0.023
0.006	0.010	0.013	0.016	0.020	0.023
0.006 ❖	0.009	0.012	0.015	0.019	0.023
0.006 ❖	0.009	0.012	0.015	0.019	0.023
0.005 ❖	0.008	0.010	0.014	0.018	0.021
0.005 ❖	0.008	0.010	0.014	0.018	0.021
0.006	0.009	0.012	0.015	0.019	0.023
0.005	0.008	0.010	0.014	0.018	0.021
0.005	0.008	0.010	0.014	0.018	0.021
0.004	0.007	0.009	0.012	0.016	0.019
0.006	0.008	0.010	0.014	0.017	0.019
0.005	0.008	0.010	0.014	0.017	0.019
0.005	0.007	0.010	0.014	0.017	0.019
0.004	0.006	0.009	0.012	0.015	0.017
0.003	0.006	0.009	0.012	0.015	0.017
0.005 ❖	0.007	0.009	0.010	0.014	0.017
0.004 ❖	0.007	0.009	0.010	0.014	0.017
0.003 ❖	0.006	0.008	0.009	0.012	0.015
0.006 ❖	0.010	0.012	0.014	0.018	0.021
0.005 ❖	0.009	0.010	0.012	0.016	0.019
0.004 ❖	0.009	0.009	0.010	0.014	0.017
0.004	0.006	0.008	0.010	0.014	0.015
0.004	0.006	0.008	0.010	0.012	0.015
0.006 ❖	0.008	0.009	0.011	0.012	0.016
0.005 ❖	0.007	0.008	0.010	0.012	0.014
0.007	0.012	0.016	0.020	0.024	0.027
0.006	0.011	0.014	0.018	0.022	0.025
0.006	0.009	0.012	0.016	0.018	0.021
0.005	0.007	0.009	0.012	0.014	0.017
0.004	0.006	0.007	0.009	0.012	0.014
0.008	0.013	0.016	0.020	0.022	0.025
0.008	0.013	0.016	0.018	0.022	0.025
0.003 ❖	0.007	0.008	0.010	0.012	0.015
0.003 ❖	0.006	0.007	0.008	0.010	0.012

❖ Contact our Application Engineering department for assistance when machining these materials.

Recommended Drilling Data | Imperial (in)

REPLACEABLE INSERT | CARBIDE

ISO	Material	Hardness (BHN)	Grade	Speed (SFM) TiN	TiAlN	AM200®
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 150	C1, C5	320	420	480
		150 - 200	C1, C5	280	360	415
		200 - 250	C1, C5	260	340	390
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	C1, C5	300	390	450
		125 - 175	C1, C5	260	340	390
		175 - 225	C1, C5	240	310	355
		225 - 275	C1, C5	210	270	310
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	C1, C5	260	340	390
		175 - 225	C1, C5	240	310	355
		225 - 275	C1, C5	210	270	310
		275 - 325	C1, C5	180	230	265
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	C1, C5	250	325	375
		175 - 225	C1, C5	230	300	345
		225 - 275	C1, C5	210	270	310
		275 - 325	C1, C5	200	250	285
		325 - 375	C1, C5	170	220	255
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	C1, C5	160	200	230
		300 - 350	C1, C5	140	180	205
		350 - 400	C1, C5	120	160	185
	Structural Steel A36, A285, A516, etc.	100 - 150	C1, C5	240	310	355
		150 - 250	C1, C5	200	250	285
		250 - 350	C1, C5	180	230	265
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	C1, C5	160	220	255
		200 - 250	C1, C5	120	170	195
M	**Stainless Steel 400 Series** 416, 420, etc.	185 - 275	C2	160	210	240
		275 - 350	C2	120	160	185
K	**Nodular, Grey, Ductile Cast Iron**	120 - 150	C2, C3	320	460	500
		150 - 200	C2, C3	270	400	480
		200 - 220	C2, C3	240	360	430
		220 - 260	C2, C3	210	310	370
		260 - 320	C2, C3	180	270	335
N	**Cast Aluminum**	30	C2	1200	1500	—
		180	C2	800	1000	—
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 220	C2	80	105	120
		220 - 310	C2	60	85	95

Formulas

1. **RPM = (3.82 • SFM) / DIA**

where:

RPM = revolutions per minute (rev/min)
SFM = speed (ft/min)
DIA = diameter of drill (inch)

2. **IPM = RPM • IPR**

where:

IPM = inches per minute (in/min)
RPM = revolutions per minute (rev/min)
IPR = feed rate (in/rev)

3. **SFM = RPM • 0.262 • DIA**

where:

SFM = speed (ft/min)
RPM = revolutions per minute (rev/min)
DIA = diameter of drill (inch)

The table and equations on this page are found in the "Machinery's Handbook." Permission to simplify and print the equations is granted by the Editor of the "Machinery's Handbook."

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department.

Recommended Drilling Data | Imperial (in)

REPLACEABLE INSERT | CARBIDE

Feed Rate (IPR) by Tube Size & T-A® Insert Series				
Tube No.: 4 - 5 T-A Series: Y - Z	**Tube No.: 6 - 8** T-A Series: 0	**Tube No.: 10** T-A Series: 1	**Tube No.: 12 - 16** T-A Series: 2	**Tube No.: 20 - 24** T-A Series: 3
0.008	0.012	0.015	0.018	0.021
0.007	0.011	0.014	0.016	0.019
0.006	0.010	0.013	0.015	0.017
0.008 ❖	0.010	0.013	0.017	0.019
0.007 ❖	0.010	0.013	0.016	0.018
0.006 ❖	0.009	0.012	0.015	0.017
0.005 ❖	0.009	0.012	0.015	0.017
0.007	0.010	0.013	0.016	0.018
0.006	0.009	0.012	0.015	0.017
0.006	0.009	0.012	0.015	0.017
0.005	0.008	0.011	0.014	0.016
0.007	0.010	0.013	0.016	0.018
0.006	0.009	0.012	0.015	0.017
0.006	0.009	0.012	0.015	0.017
0.005	0.008	0.011	0.014	0.016
0.004	0.007	0.010	0.013	0.015
0.006 ❖	0.009	0.010	0.012	0.015
0.005 ❖	0.008	0.009	0.011	0.014
0.004 ❖	0.007	0.008	0.010	0.012
0.008 ❖	0.011	0.014	0.016	0.018
0.006 ❖	0.010	0.012	0.014	0.016
0.005 ❖	0.009	0.011	0.012	0.014
0.004	0.007	0.009	0.011	0.013
0.004	0.007	0.009	0.011	0.013
0.007 ❖	0.009	0.012	0.014	0.016
0.006 ❖	0.008	0.011	0.012	0.014
0.008	0.012	0.015	0.019	0.023
0.007	0.011	0.013	0.017	0.021
0.006	0.009	0.012	0.015	0.018
0.005	0.008	0.011	0.013	0.015
0.005	0.007	0.010	0.011	0.013
0.010	0.015	0.018	0.020	0.022
0.009	0.013	0.016	0.018	0.020
0.004 ❖	0.007	0.009	0.011	0.013
0.004 ❖	0.006	0.008	0.010	0.012

❖ Contact our Application Engineering department for assistance when machining these materials.

Coolant Recommendations | Metric (mm)

REPLACEABLE INSERT | HIGH-SPEED STEEL

ISO	Material	Pressure or Flow Rate	Tube No.: 4 - 5 T-A Series: Y - Z	Tube No.: 6 - 8 T-A Series: 0	Tube No.: 10 T-A Series: 1	Tube No.: 12 - 16 T-A Series: 2	Tube No.: 20 - 24 T-A Series: 3	Tube No.: 32 T-A Series: 4
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	BAR	12 - 13	7 - 8	7 - 10	6 - 8	6 - 7	3 - 4
		LPM	9.5 - 9.8	10.6 - 11.4	16.7 - 19.7	26.5 - 30.3	45.4 - 53.0	114 - 125
	Low-Carbon Steel 1010, 1020, 1025, 1522, etc.	BAR	11 - 12	5 - 6	5 - 7	4 - 6	4 - 5	2 - 3
		LPM	9.1 - 9.5	9.1 - 9.8	14.0 - 15.9	22.7 - 26.5	41.6 - 45.4	98 - 114
	Medium-Carbon Steel 1030, 1040, 1050, 1527, etc.	BAR	11	5 - 6	5 - 6	4 - 5	3 - 5	2 - 3
		LPM	8.7 - 9.1	8.7 - 9.8	13.6 - 15.5	18.9 - 22.7	37.9 - 45.4	98 - 114
	Alloy Steel 4140, 5140, 8640, etc.	BAR	11	5 - 6	5	3 - 5	3 - 4	2
		LPM	8.7 - 9.1	13.2 - 14.8	8.3 - 9.1	18.9 - 22.7	34.1 - 37.9	87 - 98
	High-Strength Alloy 4340, 4330V, 300M, etc.	BAR	10 - 11	4 - 5	3 - 4	2	2	2
		LPM	8.7 - 9.1	7.9 - 8.3	11.0 - 11.7	15.1 - 18.9	26.5 - 30.3	79 - 87
	Structural Steel A36, A285, A516, etc.	BAR	11	5 - 6	5 - 6	3 - 4	3	2
		LPM	8.7 - 9.1	9.1 - 9.8	13.2 - 14.8	18.9 - 22.7	34.1 - 37.9	87 - 98
	Tool Steel H-13, H-21, A-4, S-3, etc.	BAR	4	10 - 11	3	2	2	1 - 2
		LPM	7.9 - 8.3	8.7 - 9.1	11.0 - 11.7	15.1 - 18.9	26.5 - 30.3	79 - 87
M	**Stainless Steel 400 Series** 416, 420, etc.	BAR	11.4 - 11.7	4.8 - 5.8	4.5 - 5.2	2.7 - 3.8	2.7 - 3.4	1.7 - 2
		LPM	9.1 - 9.5	8.7 - 9.8	13.2 - 14	18.9 - 22.7	34.1 - 37.9	87 - 98
K	**Nodular, Grey, Ductile Cast Iron**	BAR	10.7 - 11.0	4.1 - 4.5	3.4 - 4.1	2 - 2.7	2 - 2.4	1.7 - 2
		LPM	8.7 - 9.1	8.3 - 8.7	11.7 - 12.5	15.1 - 18.9	30.3 - 34.1	87 - 98
N	**Aluminum**	BAR	13.1 - 14.5	9.6 - 12.4	10.3 - 15.8	7.9 - 11	6.2 - 8.6	2.7 - 3.4
		LPM	9.8 - 10.2	12.5 - 14	20.1 - 23.1	30.3 - 34.1	53 - 60.6	114 - 125
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	BAR	10 - 11	4 - 5	3 - 4	2	2	2
		LPM	8.7 - 9.1	8.3 - 8.7	11.7 - 12.1	15.1 - 18.9	26.5 - 30.3	87 - 98

SOLID CARBIDE

Pressure or Flow Rate	Tube No.: 2	Tube No.: 3	Tube No.: 4
BAR	50	47	46
LPM	12	16	20

IMPORTANT: The coolant pressure and flow rate recommendations above represent a good approximation to obtain optimum tool life and chip evacuation at Allied Machine recommended speeds and feeds. If lower coolant capabilities exist in a drilling application, the AccuPort 432 Port Contour Cutter will still function at reduced penetration rates. Contact our Application Engineering department for a more specific recommendation of coolant requirements and/or speeds and feeds.

Coolant Recommendations | Metric (mm)

REPLACEABLE INSERT | CARBIDE

ISO	Material	Pressure or Flow Rate	Tube No.: 4 - 5 T-A Series: Y - Z	Tube No.: 6 - 8 T-A Series: 0	Tube No.: 10 T-A Series: 1	Tube No.: 12 - 16 T-A Series: 2	Tube No.: 20 - 24 T-A Series: 3
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	BAR	20	16	17	15	12
		LPM	12.2	16.3	25.3	41.5	71.9
	Low-Carbon Steel 1010, 1020, 1025, 1522, etc.	BAR	11.4	13.3	20.6	36.5	62
		LPM	17	10	10	10	8
	Medium-Carbon Steel 1030, 1040, 1050, 1527, etc.	BAR	17	9	10	8	7
		LPM	11.1	12.3	19.3	30	55.8
	Alloy Steel 4140, 5140, 8640, etc.	BAR	10.4	9.1	12.6	18.8	33.6
		LPM	16	9	8	7	5
	High-Strength Alloy 4340, 4330V, 300M, etc.	BAR	15	5	5	3	3
		LPM	10.4	9.1	13.6	19.7	36.5
	Structural Steel A36, A285, A516, etc.	BAR	16	9	8	7	5
		LPM	10.8	12	17.5	27.8	47.1
	Tool Steel H-13, H-21, A-4, S-3, etc.	BAR	15	5	5	3	3
		LPM	10.4	9.1	13.6	19.7	36.5
M	**Stainless Steel 400 Series** 416, 420, etc.	BAR	22.7	16.5	17.9	17.2	13.1
		LPM	13	16.3	26.3	44.2	75
K	**Nodular, Grey, Ductile Cast Iron**	BAR	15.5	7.2	6.2	6.2	5.5
		LPM	10.7	10.8	15.4	26.5	48.7
N	**Aluminum**	BAR	24.1	22	21.7	19.6	13.8
		LPM	13.4	18.8	29	47.2	77
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	BAR	17	11.4	12.4	11	9
		LPM	11.1	13.5	21.9	35.4	62

IMPORTANT: The coolant pressure and flow rate recommendations above represent a good approximation to obtain optimum tool life and chip evacuation at Allied Machine recommended speeds and feeds. If lower coolant capabilities exist in a drilling application, the AccuPort 432 Port Contour Cutter will still function at reduced penetration rates. Contact our Application Engineering department for a more specific recommendation of coolant requirements and/or speeds and feeds.

Coolant Recommendations | Imperial (in)

REPLACEABLE INSERT | HIGH-SPEED STEEL

ISO	Material	Pressure or Flow Rate	Tube No.: 4 - 5 T-A Series: Y - Z	Tube No.: 6 - 8 T-A Series: 0	Tube No.: 10 T-A Series: 1	Tube No.: 12 - 16 T-A Series: 2	Tube No.: 20 - 24 T-A Series: 3	Tube No.: 32 T-A Series: 4
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	PSI	175 - 185	100 - 120	105 - 140	80 - 115	75 - 100	40 - 50
		GPM	2.5 - 2.6	2.8 - 3.0	4.4 - 5.2	7 - 8	12 - 14	30 - 33
	Low-Carbon Steel 1010, 1020, 1025, 1522, etc.	PSI	165 - 170	75 - 90	75 - 95	60 - 80	55 - 75	30 - 40
		GPM	2.4 - 2.5	2.4 - 2.6	3.7 - 4.2	6 - 7	11 - 12	26 - 30
	Medium-Carbon Steel 1030, 1040, 1050, 1527, etc.	PSI	160 - 165	70 - 85	70 - 90	55 - 75	50 - 70	30 - 40
		GPM	2.3 - 2.4	2.3 - 2.6	3.7 - 4.2	5 - 6	10 - 12	26 - 30
	Alloy Steel 4140, 5140, 8640, etc.	PSI	160 - 165	65 - 75	65 - 80	50 - 70	45 - 60	30 - 35
		GPM	2.3 - 2.4	2.2 - 2.4	3.5 - 3.9	5 - 6	10 - 11	26 - 28
	High-Strength Alloy 4340, 4330V, 300M, etc.	PSI	150 - 155	55 - 60	45 - 50	25 - 30	25 - 30	20 - 25
		GPM	2.3 - 2.4	2.1 - 2.2	2.9 - 3.1	4 - 5	7 - 8	21 - 23
	Structural Steel A36, A285, A516, etc.	PSI	160 - 165	75 - 85	65 - 80	40 - 55	40 - 50	25 - 30
		GPM	2.3 - 2.4	2.4 - 2.6	3.5 - 3.9	5 - 6	9 - 10	23 - 26
	Tool Steel H-13, H-21, A-4, S-3, etc.	PSI	150 - 155	55 - 60	45 - 50	25 - 30	25 - 30	20 - 25
		GPM	2.3 - 2.4	2.1 - 2.2	2.9 - 3.1	4 - 5	7 - 8	21 - 23
M	**Stainless Steel 400 Series** 416, 420, etc.	PSI	171	86	75	55	51	29
		GPM	3	3	4	6	10	26
K	**Nodular, Grey, Ductile Cast Iron**	PSI	160	65	61	41	35	29
		GPM	2	2	3	5	9	26
N	**Aluminum**	PSI	210	180	230	159	125	51
		GPM	3	4	6	9	16	33
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	PSI	150 - 155	60 - 65	50 - 55	30 - 35	25 - 30	25 - 30
		GPM	2.3 - 2.4	2.2 - 2.3	3.1 - 3.2	4 - 5	7 - 8	23 - 26

SOLID CARBIDE

Pressure or Flow Rate	Tube No.: 2	Tube No.: 3	Tube No.: 4
PSI	700	680	650
GPM	3	5	6

IMPORTANT: The coolant pressure and flow rate recommendations above represent a good approximation to obtain optimum tool life and chip evacuation at Allied Machine recommended speeds and feeds. If lower coolant capabilities exist in a drilling application, the AccuPort 432 Port Contour Cutter will still function at reduced penetration rates. Contact our Application Engineering department for a more specific recommendation of coolant requirements and/or speeds and feeds.

Coolant Recommendations | Imperial (in)

REPLACEABLE INSERT | CARBIDE

ISO	Material	Pressure or Flow Rate	Tube No.: 4 - 5 T-A Series: Y - Z	Tube No.: 6 - 8 T-A Series: 0	Tube No.: 10 T-A Series: 1	Tube No.: 12 - 16 T-A Series: 2	Tube No.: 20 - 24 T-A Series: 3
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	PSI	195	140	160	140	155
		GPM	2.6	3.3	5.5	9	18
	Low-Carbon Steel 1010, 1020, 1025, 1522, etc.	PSI	180	105	105	110	115
		GPM	2.5	2.9	4.4	8	15
	Medium-Carbon Steel 1030, 1040, 1050, 1527, etc.	PSI	175	100	90	100	75
		GPM	2.5	2.8	4.1	7	13
	Alloy Steel 4140, 5140, 8640, etc.	PSI	165	85	100	75	70
		GPM	2.4	2.6	4.3	6	12
	High-Strength Alloy 4340, 4330V, 300M, etc.	PSI	160	65	55	40	35
		GPM	2.4	2.3	3.2	5	8
	Structural Steel A36, A285, A516, etc.	PSI	175	115	105	75	70
		GPM	2.5	3	4.4	6	12
	Tool Steel H-13, H-21, A-4, S-3, etc.	PSI	155	60	55	40	35
		GPM	2.4	2.2	3.2	5	8
M	**Stainless Steel 400 Series** 416, 420, etc.	PSI	150 - 155	60 - 65	50 - 55	30 - 35	25 - 30
		GPM	2.3 - 2.4	2.2 - 2.3	3.1 - 3.2	4 - 5	7 - 8
K	**Nodular, Grey, Ductile Cast Iron**	PSI	329	239	260	250	190
		GPM	3	4	7	12	20
N	**Aluminum**	PSI	225	104	90	90	80
		GPM	3	3	4	7	13
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	PSI	350	319	315	284	200
		GPM	4	5	8	12	20

IMPORTANT: The coolant pressure and flow rate recommendations above represent a good approximation to obtain optimum tool life and chip evacuation at Allied Machine recommended speeds and feeds. If lower coolant capabilities exist in a drilling application, the AccuPort 432 Port Contour Cutter will still function at reduced penetration rates. Contact our Application Engineering department for a more specific recommendation of coolant requirements and/or speeds and feeds.

WOHLHAUPTER®
BORING
PRODUCT CATALOG









ALLIED MACHINE & ENGINEERING | WOHLHAUPTER®

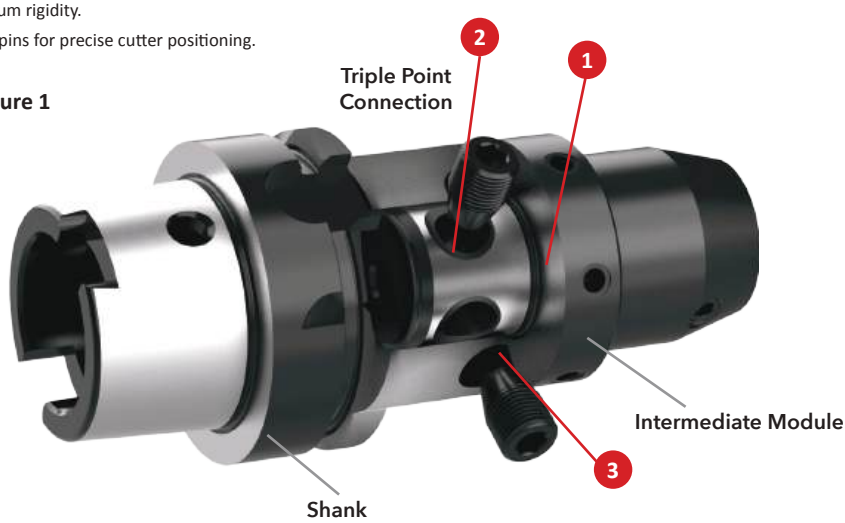
www.alliedmachine.com

The MVS Connection

Wohlhaupter® GmbH developed the world's first modular tooling system called MultiBore® in 1973. The modular tooling system was designed to be compatible with all machine spindles, and its connection features a triple point clamp (Figure 1). The triple point clamp (1, 2, & 3) maximizes rigidity and creates an accuracy less than 3µm when the tool is changed.

- Ensures high axial clamping forces on mating surfaces.
- Provides maximum rigidity.
- Threaded taper pins for precise cutter positioning.

Figure 1



MVS Connection Color Guide

Wohlhaupter® created a unique color-coding system to find the right connections for different tool components quickly and easily. Each Wohlhaupter / MVS connection size has its own color-coding. Simply match the colors to select the correct combination of tool components (Figure 2).

Figure 2



M 8	19.5 - 11	22 - 11	25 - 14	32 - 18	40 - 22	50 - 28	63 - 36	80 - 36	100 - 56	D 40	D 60

The MVS Connection

Example Machining Parameters

Hole Diameter: 75.00 mm (2.942")
Hole Depth: 200.00 mm (7.874")
Machine Spindle: HSK-A 100 DIN 69893

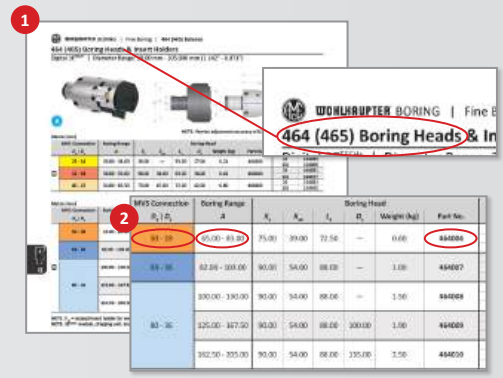
1 Select your boring tool.

- Example: 464 Balance Boring Head

2 Select the tool that meets the required boring range.

- MVS connection: 50 - 28
- A = 65.00 mm - 83.00 mm (2.559" - 3.268")
- Part No. : 464006



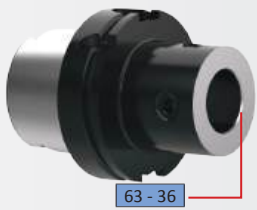


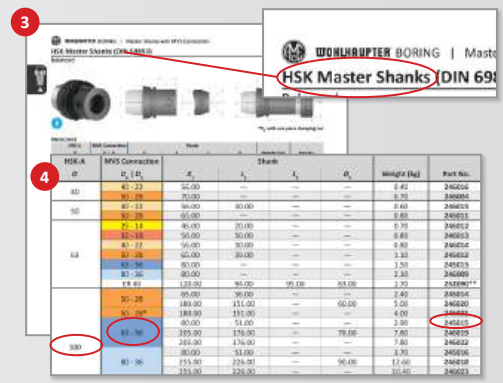
3 Select the master shank that fits your spindle.

- Machine spindle: DIN 69893 HSK

4 Choose the connection that fits your application.

- MVS connection: 63 - 36
- Part No. : 245015

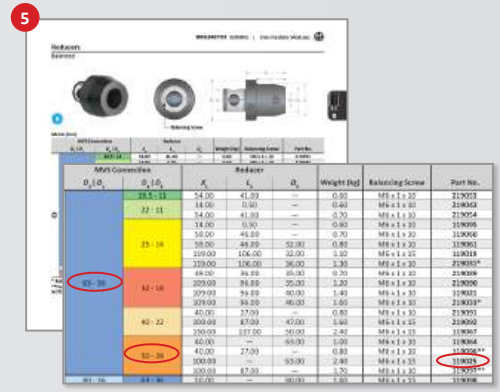




5 Select the correct intermediate module.

Must meet the hole depth requirements and MVS connections for both the boring head and shank
Hole depth: 200.00mm (7.874")
Boring tool 464006 length (X_1): 75.00 mm (2.953")
Master shank 245015 length (L_1): 51.00 mm (2.008")
Minimum required length of adapter: 74.00 mm (2.913")
Boring tool 464006 MVS connection: 50 - 28
Master shank 245015 MVS connection: 63 - 36
Adapter Part No.: 119025





SECTION

B10-A

Master Shanks with MVS Connection

Master Shanks



Master Shanks with MVS Connection

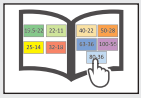
Wohlhaupter MVS connection shanks provide a high level of accuracy when building or replacing components. Our master shanks adapt to any machine tool spindle, making it easy to find the shank you need.

Applicable Industries

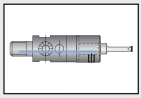
- Aerospace
- Agriculture
- Automotive
- Defense
- General Production
- Heavy Equipment
- Hydraulics
- Marine
- Medical
- Oil and Gas
- Renewable Energy/ Energy
- Tool, Mold, and Die

Reference Icons

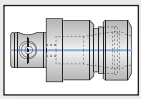
The following icons will appear throughout the catalog to help you navigate between products.



MVS Connection Color Guide
Detailed instructions and information regarding the MVS connection(s).



248 (249) Boring Head
248 (249) boring head that connects into the adapter shanks.



Clamping Elements
Collet chucks for carbide shanks.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

WARNING means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

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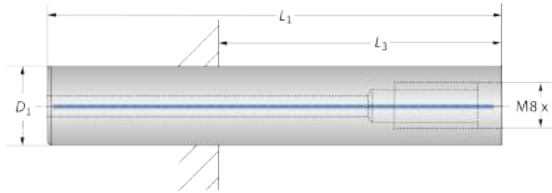
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Cylindrical Shanks

248 (249)

A





Metric (mm)

MVS Connection	Style	Shank D_1	Shank L_1	Shank L_3 max*	L_3 min* SK 40	L_3 min* SK 50	L_3 min* HSK-A 63	L_3 min* HSK-A 100	Weight (kg)	Part No.
M8 x 1	Steel	15.00	85.00	37.00	—	—	—	—	0.10	**248136**
		18.00	100.00	52.00	—	—	5.00	12.00	0.20	**248137**
		23.00	117.00	69.00	—	—	22.00	29.00	0.40	**248138**
	Carbide	15.00	130.00	82.00	20.00	20.00	35.00	42.00	0.30	**248142**
		18.00	155.00	107.00	39.00	21.00	60.00	67.00	0.60	**248143**
		23.00	180.00	132.00	64.00	46.00	85.00	92.00	1.10	**248144**
		23.00	242.00	194.00	126.00	108.00	147.00	154.00	1.40	**248145**

Imperial (in)

MVS Connection	Style	Shank D_1	Shank L_1	Shank L_3 max*	L_3 min* SK 40	L_3 min* SK 50	L_3 min* HSK-A 63	L_3 min* HSK-A 100	Weight (lbs)	Part No.
M8 x 1	Steel	0.591	3.346	1.456	—	—	—	—	0.220	**248136**
		0.709	3.937	2.047	—	—	0.196	0.472	0.440	**248137**
		0.906	4.606	2.716	—	—	0.866	1.141	0.881	**248138**
	Carbide	0.591	5.118	3.228	0.787	0.787	1.377	1.653	0.661	**248142**
		0.709	6.102	4.212	1.535	0.826	2.362	2.637	1.322	**248143**
		0.906	7.086	5.196	2.519	1.811	3.346	3.622	2.425	**248144**
		0.906	9.527	7.637	4.960	4.251	5.787	6.062	3.086	**248145**

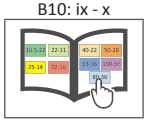
*L_3 dimensions apply to collet chucks.

To guarantee good function, use only holding shanks of carbide metal for the shrinkage chucks.

⚠ WARNING **Assembly of modular components may cause machine damage and/or serious injury. To prevent:**
-Do not exceed the **allowable weight** for your machine tool.
-Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12 or visit www.alliedmachine.com/WohlhaupterBoringGuidelines.**

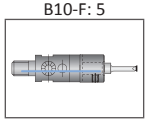
NOTE: Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

B10: ix - x



Key on B10-A: 2

B10-F: 5

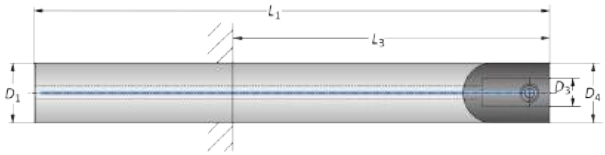


ⓜ = Metric (mm)
ⓘ = Imperial (in)

Cylindrical Shanks

Carbide Straight





Metric (mm)

MVS Connection D_4 | D_3	Shank D_1	L_1	L_3 max	L_3 min SK 40	SK 50	HSK-A 63	HSK-A 100	Weight (kg)	Part No.
18 - 11	18.00	155.00	107.00	39.00	26.00	60.00	67.00	0.50	**299009***
22 - 11	22.00	140.00	92.00	28.00	28.00	45.00	52.00	0.70	**299001***
		190.00	142.00	74.00	56.00	95.00	102.00	0.90	**299002***
		231.00	183.00	115.00	97.00	136.00	143.00	1.10	**299003***
25 - 14	25.00	165.00	117.00	49.00	36.00	70.00	77.00	1.00	**299004***
		215.00	167.00	99.00	81.00	120.00	127.00	1.30	**299005***
32 - 18	32.00	210.00	—	136.00	136.00	139.00	137.00	2.10	**299006****
		260.00	—	186.00	186.00	189.00	187.00	2.60	**299007****
40 - 22	40.00	415.00	—	—	333.00	—	333.00	5.20	**299008****

NOTE: Adapter shanks are used for extensions up to 10xD.
*Recommended clamping element: collet chuck ISO 15488 (DIN 6499-B) (pg. B10-J: 7).
**Recommended clamping element: collet chuck ISO 10897 (DIN 6388) (pg. B10-J: 6).

Imperial (in)

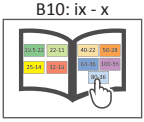
MVS Connection D_4 | D_3	Shank D_1	L_1	L_3 max	L_3 min SK 40	SK 50	HSK-A 63	HSK-A 100	Weight (lbs)	Part No.
18 - 11	0.709	6.102	4.213	1.535	1.024	2.362	2.638	1.102	**299009***
22 - 11	0.866	5.512	3.622	1.102	1.102	1.772	2.047	1.543	**299001***
		7.480	5.591	2.913	2.205	3.740	4.016	1.984	**299002***
		9.049	7.205	4.528	3.819	5.354	5.630	2.425	**299003***
25 - 14	0.984	6.496	4.606	1.929	1.417	2.756	3.031	2.205	**299004***
		8.465	6.575	3.898	3.189	4.724	5.000	2.866	**299005***
32 - 18	1.260	8.268	-	5.354	5.354	5.572	5.394	4.630	**299006****
		10.236	-	7.323	7.323	7.441	7.362	5.732	**299007****
40 - 22	1.575	16.399	-	-	13.110	-	13.110	11.460	**299008****

NOTE: Adapter shanks are used for extensions up to 10xD.
*Recommended clamping element: collet chuck ISO 15488 (DIN 6499-B) (pg. B10-J: 7).
**Recommended clamping element: collet chuck ISO 10897 (DIN 6388) (pg. B10-J: 6).

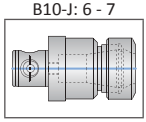
⚠ WARNING **Assembly of modular components may cause machine damage and/or serious injury. To prevent:**
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B10: ix - x
Key on B10-A: 2



B10-J: 6 - 7



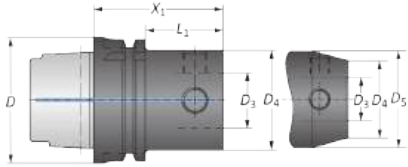
m = Metric (mm)
i = Imperial (in)

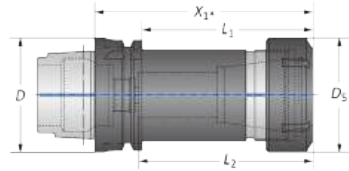
HSK Master Shanks (DIN 69893)

Balanced

A







***X_1**: with one-piece clamping nut

Metric (mm)

HSK-A *D*	MVS Connection D_4 | D_3	Shank X_1	Shank L_1	Shank L_2	Shank D_5	Weight (kg)	Part No.
40	40 - 22	56.00	—	—	—	0.40	**246016**
	50 - 28	70.00	—	—	—	0.70	**246004**
50	40 - 22	56.00	30.00	—	—	0.60	**246015**
	50 - 28	65.00	—	—	—	0.80	**245011**
63	25 - 14	46.00	20.00	—	—	0.70	**246012**
	32 - 18	56.00	30.00	—	—	0.80	**246013**
	40 - 22	56.00	30.00	—	—	0.80	**246014**
	50 - 28	65.00	39.00	—	—	1.10	**245012**
	63 - 36	80.00	—	—	—	1.50	**245013**
	80 - 36	80.00	—	—	—	2.10	**246009**
	ER 40	120.00	94.00	95.00	63.00	1.70	**252090****
100	50 - 28	65.00	36.00	—	—	2.40	**245014**
		180.00	151.00	—	60.00	5.00	**246020**
	50 - 28*	180.00	151.00	—	—	4.00	**246021**
	63 - 36	80.00	51.00	—	—	2.90	**245015**
		205.00	176.00	—	78.00	7.80	**246019**
		205.00	176.00	—	—	7.80	**246022**
	80 - 36	80.00	51.00	—	—	3.70	**245016**
		255.00	226.00	—	90.00	12.60	**246018**
		255.00	226.00	—	—	10.40	**246023**
	100 - 56	100.00	—	—	—	5.00	**246010**
		300.00	—	—	—	17.50	**246017**
	ER 40	120.00	91.00	88.00	63.00	3.50	**252091****

NOTE: Balanced refers to a specific residual imbalance of ≤4.00 gmm/kg.
***D_4** = 49.50 mm
****Balanced without clamping nut.

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B10: ix - x
Key on B10-A: 2

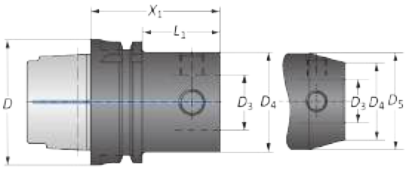


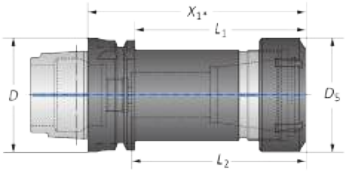
ⓜ = Metric (mm)
ⓘ = Imperial (in)

HSK Master Shanks (DIN 69893)

Balanced







***X_1**: with one-piece clamping nut

Imperial (in)

Taper Size	MVS Connection	Shank					
D	***D_4 | D_3***	***X_1***	***L_1***	***L_2***	***D_5***	**Weight (lbs)**	**Part No.**
40	40 - 22	2.205	—	—	—	0.881	**246016**
	50 - 28	2.756	—	—	—	1.543	**246004**
50	40 - 22	2.205	1.181	—	—	1.322	**246015**
	50 - 28	2.559	—	—	—	1.763	**245011**
63	25 - 14	1.811	0.787	—	—	1.543	**246012**
	32 - 18	2.205	1.181	—	—	1.763	**246013**
	40 - 22	2.205	1.181	—	—	1.764	**246014**
	50 - 28	2.559	1.535	—	—	2.425	**245012**
	63 - 36	3.150	—	—	—	3.306	**245013**
	80 - 36	3.150	—	—	—	4.629	**246009**
	ER 40	4.724	3.700	3.740	2.480	3.747	**252090****
100	50 - 28	2.559	1.417	—	—	5.291	**245014**
		7.087	5.944	—	2.362	11.020	**246020**
	50 - 28*	7.087	5.944	—	—	6.393	**246021**
	63 - 36	3.150	2.007	—	—	6.393	**245015**
		8.071	6.929	—	3.070	17.190	**246019**
		8.071	6.929	—	—	17.190	**246022**
	80 - 36	3.150	2.007	—	—	8.157	**245016**
		10.03	8.897	—	3.543	27.770	**246018**
		10.03	8.897	—	—	22.920	**246023**
	100 - 56	3.937	—	—	—	11.020	**246010**
		11.810	—	—	—	38.580	**246017**
	ER 40	4.724	3.582	3.464	2.480	7.716	**252091****

NOTE: Balanced refers to a specific residual imbalance of ≤4.00 gmm/kg.
***D_4** = 49.50 mm
****Balanced without clamping nut.

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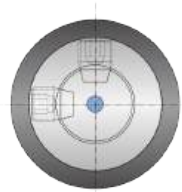
B10: ix - x
Key on B10-A: 2

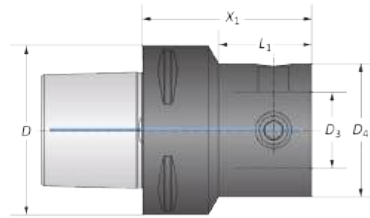
Ⓜ = Metric (mm)
ⓘ = Imperial (in)

Polygon Shaft Master Shanks (PSC) (ISO 26623-1)

Balanced







Metric (mm)

PSC D	MVS Connection D_4 | D_3	Shank X_1	Shank L_1	Weight (kg)	Part No.
50	40 - 22	54.00	31.10	0.70	**227014**
	50 - 28	65.00	—	1.00	**227001**
	63 - 36	80.00	—	1.50	**227002**
	80 - 36	80.00	—	2.50	**227012**
63	25 - 14	54.00	21.10	0.90	**227010**
	32 - 18	54.00	23.00	1.00	**227009**
	40 - 22	65.00	36.40	1.10	**227008**
	50 - 28	65.00	39.00	1.30	**227003**
	63 - 36	80.00	—	1.80	**227004**
	80 - 36	80.00	—	2.60	**227005**
80	50 - 28	65.00	25.00	2.20	**227011**
	63 - 36	80.00	45.10	2.60	**227006**
	80 - 36	80.00	—	3.30	**227007**
	100 - 56	100.00	—	4.74	**227013**

NOTE: Balanced refers to a specific residual imbalance of ≤4.00 gmm/kg.

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B10: ix - x
Key on B10-A: 2



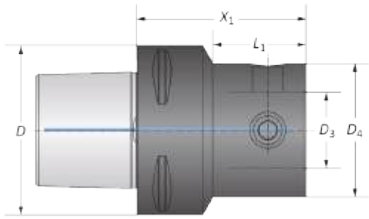
ⓜ = Metric (mm)
ⓘ = Imperial (in)

Polygon Shaft Master Shanks (PSC) (ISO 26623-1)

Balanced







Imperial (in)

PSC D	MVS Connection D_4 | D_3	Shank X_1	Shank L_1	Weight (lbs)	Part No.
50	40 - 22	2.126	1.224	1.543	**227014**
	50 - 28	2.559	—	2.205	**227001**
	63 - 36	3.150	—	3.307	**227002**
	80 - 36	3.150	—	5.512	**227012**
63	25 - 14	2.126	0.838	1.984	**227010**
	32 - 18	2.126	0.917	2.205	**227009**
	40 - 22	2.559	1.433	2.425	**227008**
	50 - 28	2.559	1.555	2.866	**227003**
	63 - 36	3.150	—	3.968	**227004**
	80 - 36	3.150	—	5.732	**227005**
80	50 - 28	2.559	1.047	4.850	**227011**
	63 - 36	3.150	1.783	5.732	**227006**
	80 - 36	3.150	—	7.275	**227007**
	100 - 56	3.937	—	10.450	**227013**

NOTE: Balanced refers to a specific residual imbalance of ≤4.00 gmm/kg.

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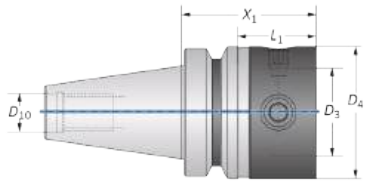
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B10: ix - x
Key on B10-A: 2

Ⓜ = Metric (mm)
ⓘ = Imperial (in)

Dual Contact BT Master Shanks (JIS B 6339)





Metric (mm)

Taper Size	D_{10}	MVS Connection D_4 | D_3	Shank X_1	Shank L_1	Weight (kg)	Part No.
40	M16 x 2	50 - 28	54.00	27.00	1.20	**353070**
		63 - 36	64.00	37.00	1.50	**353071**
50	M24 x 3	50 - 28	65.00	26.80	4.00	**353072**
		63 - 36	75.00	36.80	4.20	**353073**
		80 - 36	75.00	36.80	4.80	**353074**
		100 - 56	90.00	51.80	5.50	**353075**

Imperial (in)

Taper Size	D_{10}	MVS Connection D_4 | D_3	Shank X_1	Shank L_1	Weight (lbs)	Part No.
40	M16 x 2	50 - 28	2.126	1.063	2.646	**353070**
		63 - 36	2.520	1.457	3.308	**353071**
50	M24 x 3	50 - 28	2.559	1.055	8.820	**353072**
		63 - 36	2.953	1.449	9.261	**353073**
		80 - 36	2.953	1.449	10.584	**353074**
		100 - 56	3.543	2.039	12.128	**353075**

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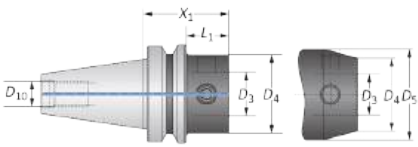
B10: ix - x
Key on B10-A: 2

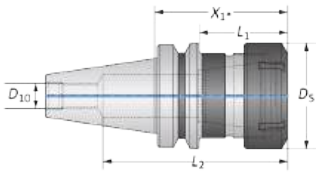
ⓜ = Metric (mm)
ⓘ = Imperial (in)

BT Master Shanks (JIS B 6339)

Balanced







***X_1**: with one-piece clamping nut

Metric (mm)

Taper Size	D_{10}	MVS Connection D_4 | D_3	Shank X_1	L_1	L_2	D_5	Weight (kg)	Part No.
30	M12 x 1.75	40 - 22	40.00	18.00	—	—	0.50	**327012**
		50 - 28	46.00	—	—	—	0.60	**327013**
40	M16 x 2	40 - 22	46.00	19.00	—	—	1.10	**327016**
		50 - 28	54.00	27.00	—	—	1.20	**327019**
		63 - 36	64.00	—	—	—	1.50	**327020**
		ER 40	70.00	43.00	104.00	63.00	1.20	**259081***
50	M24 x 3	50 - 28	65.00	26.80	—	—	3.90	**327021**
			205.00	166.80	—	60.00	7.00	**327029****
			205.00	166.80	—	49.50	5.90	**327036****
		63 - 36	75.00	36.80	—	—	4.20	**327022**
			225.00	186.80	—	78.00	9.90	**327030****
			225.00	186.80	—	—	7.80	**327037****
		80 - 36	75.00	36.80	—	—	4.70	**327023**
			275.00	236.80	—	90.00	14.80	**327031****
			275.00	236.80	—	—	14.80	**327038****
		100 - 56	90.00	—	—	—	5.50	**327024**
			290.00	251.80	—	—	17.30	**327032****
		ER 40	80.00	41.80	135.00	63.00	3.80	**259082***

NOTE: Balanced refers to a specific residual imbalance of ≤4.00 gmm/kg.
*Balanced without clamping nut.
**Available upon request.

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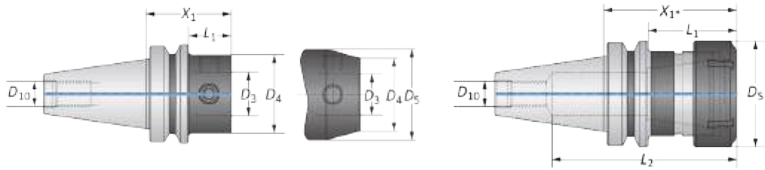
B10: ix - x
Key on B10-A: 2

Ⓜ = Metric (mm)
ⓘ = Imperial (in)

BT Master Shanks (JIS B 6339)

Balanced





***X_1**: with one-piece clamping nut

Imperial (in)

Taper Size	D_{10}	MVS Connection D_4 | D_3	Shank X_1	Shank L_1	Shank L_2	Shank D_5	Weight (lbs)	Part No.
30	M12 x 1.75	40 - 22	1.575	0.710	—	—	1.102	**327012**
		50 - 28	1.811	—	—	—	1.323	**327013**
40	M16 x 2	40 - 22	1.811	0.750	—	—	2.425	**327016**
		50 - 28	2.126	1.060	—	—	2.646	**327019**
		63 - 36	2.520	—	—	—	3.307	**327020**
		ER 40	2.755	1.692	4.094	2.480	2.645	**259081***
50	M24 x 3	50 - 28	2.559	1.060	—	—	8.599	**327021**
			8.071	6.567	—	2.362	15.435	**327029****
			8.071	6.567	—	1.949	13.010	**327036****
		63 - 36	2.953	1.449	—	—	9.261	**327022**
			8.858	7.354	—	3.071	21.830	**327030****
			8.858	7.354	—	—	17.199	**327037****
		80 - 36	2.953	1.449	—	—	10.363	**327023**
			10.827	9.323	—	3.543	32.634	**327031****
			10.827	9.323	—	—	32.634	**327038****
		100 - 56	3.543	—	—	—	12.127	**327024**
			11.417	9.913	—	—	38.147	**327032****
		ER 40	3.149	1.645	5.314	2.480	8.377	**259082***

NOTE: Balanced refers to a specific residual imbalance of ≤4.00 gmm/kg.
*Balanced without clamping nut.
**Available upon request.

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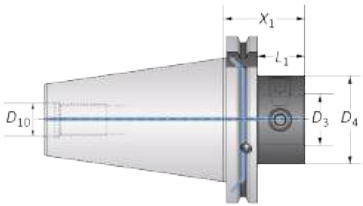
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B10: ix - x
Key on B10-A: 2

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Dual Contact SK Master Shanks (DIN 69871-AD / B -D)





Metric (mm)

Taper Size	D_{10}	MVS Connection D_4 | D_3	Shank X_1	Shank L_1	Weight (kg)	Part No.
40	M16 x 2	50 - 28	46.00	26.90	1.10	**353064**
		63 - 36	66.00	46.90	1.50	**353065**
50	M24 x 3	50 - 28	46.00	26.90	2.90	**353066**
		63 - 36	56.00	36.90	3.20	**353067**
		80 - 36	56.00	36.90	3.70	**353068**
		100 - 56	90.00	70.90	5.30	**353069**

Imperial (in)

Taper Size	D_{10}	MVS Connection D_4 | D_3	Shank X_1	Shank L_1	Weight (lbs)	Part No.
40	M16 x 2	50 - 28	1.811	1.059	2.426	**353064**
		63 - 36	2.598	1.846	6.395	**353065**
50	M24 x 3	50 - 28	1.811	1.059	6.395	**353066**
		63 - 36	2.205	1.453	7.056	**353067**
		80 - 36	2.205	1.453	8.159	**353068**
		100 - 56	3.543	2.791	11.687	**353069**

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B10: ix - x
Key on B10-A: 2

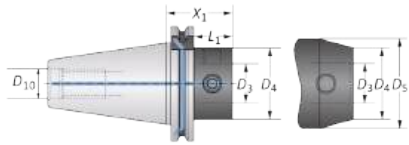
ⓜ = Metric (mm)
ⓘ = Imperial (in)

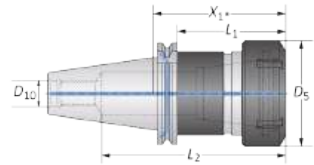
SK Master Shanks (DIN 69871-AD / B -D)

Balanced

A







***X_1**: with one-piece clamping nut

Metric (mm)

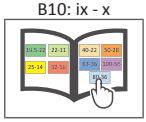
Taper Size	D_{10}	MVS Connection D_4 | D_3	Shank X_1	Shank L_1	Shank L_2	Shank D_5	Weight (kg)	Part No.
30	M12 x 1.75	40 - 22	46.00	26.90	—	—	0.50	**327001**
		50 - 28	58.00	—	—	—	0.80	**327002**
40	M16 x 2	32 - 18	55.00	35.90	—	40.00	1.10	**327003**
		40 - 22	46.00	26.90	—	—	1.00	**327004**
		50 - 28	46.00	26.90	—	—	1.10	**327005**
		63 - 36	66.00	46.90	—	—	1.40	**327006**
		80 - 36	66.00	—	—	—	1.90	**327007**
		ER 40	80.00	60.90	116.00	63.00	1.30	**259079****
50	M24 x 3	50 - 28	46.00	26.90	—	—	2.90	**327017**
			186.00	166.90	—	60.00	6.00	**327025**
		50 - 28*	186.00	166.90	—	—	4.90	**327033**
		63 - 36	56.00	36.90	—	—	3.20	**327018**
			206.00	186.90	—	78.00	8.90	**327026**
			206.00	186.90	—	—	6.90	**327034**
		80 - 36	56.00	36.90	—	—	3.70	**327010**
			256.00	236.90	—	90.00	13.60	**327027**
			256.00	236.90	—	—	11.50	**327035**
		100 - 56	90.00	—	—	—	5.30	**327011**
			290.00	270.90	—	—	17.10	**327028**
		ER 40	80.00	55.20	134.00	63.00	3.10	**259080****

NOTE: Balanced refers to a specific residual imbalance of ≤4.00 gmm/kg.
***D_4** = 49.50 mm
**Balanced without clamping nut.

⚠ WARNING **Assembly of modular components may cause machine damage and/or serious injury. To prevent:**
-Do not exceed the **allowable weight** for your machine tool.
-Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12 or visit www.alliedmachine.com/WohlhaupterBoringGuidelines.**

NOTE: Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

B10: ix - x
Key on B10-A: 2

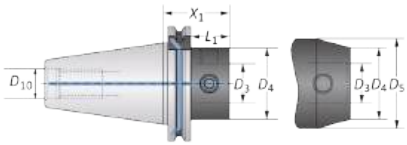


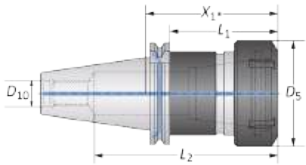
ⓜ = Metric (mm)
ⓘ = Imperial (in)

SK Master Shanks (DIN 69871-AD / B -D)

Balanced







***X_1**: with one-piece clamping nut

Imperial (in)

Taper Size	D_{10}	MVS Connection D_4 | D_3	Shank X_1	Shank L_1	Shank L_2	Shank D_5	Weight (lbs)	Part No.
30	M12 x 1.75	40 - 22	1.811	1.059	—	—	1.103	**327001**
		50 - 28	2.283	—	—	—	1.764	**327002**
40	M16 x 2	32 - 18	2.165	1.413	—	1.575	2.426	**327003**
		40 - 22	1.811	1.059	—	—	2.205	**327004**
		50 - 28	1.811	1.059	—	—	2.426	**327005**
		63 - 36	2.598	1.846	—	—	3.087	**327006**
		80 - 36	2.598	—	—	—	4.190	**327007**
		ER 40	3.149	2.397	4.566	2.480	2.860	**259079****
50	M24 x 3	50 - 28	1.811	1.059	—	—	6.395	**327017**
			7.323	6.571	—	2.362	13.230	**327025**
		50 - 28*	7.323	6.571	—	—	10.805	**327033**
		63 - 36	2.205	1.453	—	—	7.056	**327018**
			8.110	7.358	—	3.071	19.625	**327026**
			8.110	7.358	—	—	15.215	**327034**
		80 - 36	2.205	1.453	—	—	8.159	**327010**
			10.079	9.327	—	3.543	29.988	**327027**
			10.079	9.327	—	—	25.353	**327035**
		100 - 56	3.543	—	—	—	11.687	**327011**
			11.417	10.665	—	—	37.706	**327028**
		ER 40	3.149	2.173	5.275	2.480	6.834	**259080****

NOTE: Balanced refers to a specific residual imbalance of ≤4.00 gmm/kg.
***D_4** = 49.50 mm
**Balanced without clamping nut.

⚠ WARNING **Assembly of modular components may cause machine damage and/or serious injury. To prevent:**
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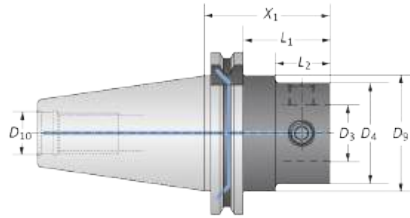
NOTE: Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

B10: ix - x
Key on B10-A: 2

Ⓜ = Metric (mm)
ⓘ = Imperial (in)

Dual Contact CAT Master Shanks with Imperial Threads





Metric (mm)

Taper Size	D_9	D_{10}	MVS Connection D_4 | D_3	Shank X_1	Shank L_1	Shank L_2	Weight (kg)	Part No.
40	44.45	5/8 - 11	50 - 28	62.00	42.95	—	1.30	**353062**
				137.00	117.95	—	2.40	**353076**
			63 - 36	82.00	62.95	—	1.80	**353063**
50	69.85	1 - 8	50 - 28	62.00	42.95	27.00	3.30	**353061**
			50 - 28*	202.00	182.95	167.00	5.30	**353077**
			63 - 36	72.00	52.95	37.00	3.60	**353078**
				222.00	202.95	187.00	7.10	**353079**
			80 - 36	72.00	52.95	—	4.10	**353060**
				272.00	252.95	—	11.90	**353080**
			100 - 56	105.00	85.95	—	6.00	**353081**
				305.00	285.95	—	17.90	**353082**

***D_4** = 49.50 mm

Imperial (in)

Taper Size	D_9	D_{10}	MVS Connection D_4 | D_3	Shank X_1	Shank L_1	Shank L_2	Weight (lbs)	Part No.
40	1.750	5/8 - 11	50 - 28	2.440	1.691	—	2.866	**353062**
				5.394	4.644	—	5.292	**353076**
			63 - 36	3.228	2.478	—	3.968	**353063**
50	2.750	1 - 8	50 - 28	2.440	1.691	1.062	7.275	**353061**
			50 - 28*	7.953	7.203	6.575	11.687	**353077**
			63 - 36	2.835	2.085	1.457	7.938	**353078**
				8.740	7.990	7.362	15.656	**353079**
			80 - 36	2.834	2.085	—	9.039	**353060**
				10.709	9.959	—	26.240	**353080**
			100 - 56	4.134	3.384	—	13.230	**353081**
				12.008	11.258	—	39.470	**353082**

***D_4** = 49.50 mm

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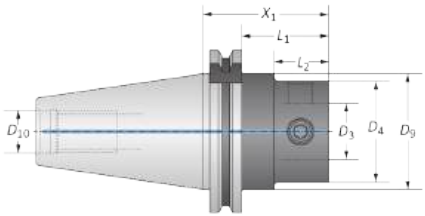
NOTE: Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

B10: ix - x
Key on B10-A: 2

Ⓜ = Metric (mm)
ⓘ = Imperial (in)

CAT Master Shanks with Metric Threads





Metric (mm)

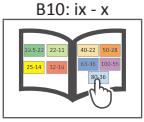
	Taper Size	D_9	D_{10}	MVS Connection D_4 | D_3	Shank X_1	Shank L_1	Shank L_2	Weight (kg)	Part No.
	40	44.45	M16 x 2	50 - 28	62.00	42.90	—	1.30	**132022T016960**
				63 - 36	82.00	62.90	—	1.80	**132066T016960**
m	50	69.85	M24 x 3	50 - 28	62.00	42.90	27.00	3.40	**132022T016962**
				63 - 36	72.00	52.90	37.00	3.70	**132066T016962**
				80 - 36	72.00	52.90	—	4.20	**132088T016962**
				100 - 56	105.00	85.90	—	5.20	**132076T016962**

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B10: ix - x

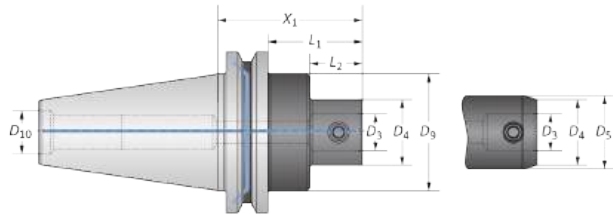
Key on B10-A: 2



m = Metric (mm)
i = Imperial (in)

CAT Master Shanks with Imperial Threads





Imperial (in)

Taper Size	D_9	D_{10}	MVS Connection D_4 | D_3	Shank X_1	Shank L_1	Shank L_2	Shank D_5	Weight (lbs)	Part No.
30	—	1/2 - 13	40 - 22	2.362	1.612	—	—	1.322	**353001**
			50 - 28	2.756	2.006	—	—	1.763	**353002**
40	1.750	5/8 - 11	25 - 14	2.165	1.415	0.787	—	2.204	**353011**
				5.551	4.800	4.173	1.102	3.306	**353012**
			32 - 18	2.559	1.809	1.181	—	2.425	**353013**
				6.732	5.982	5.354	1.378	4.188	**353014**
			40 - 22	2.165	1.415	0.787	—	2.491	**353003**
				6.378	5.628	—	1.850	5.511	**353015**
			50 - 28	2.441	1.691	—	—	2.821	**353004**
				5.394	4.644	—	—	5.291	**353016**
			63 - 36	3.228	2.478	—	—	4.034	**353005**
				6.181	5.431	—	—	7.936	**353017**
50	2.750	1 - 8	40 - 22	2.165	1.415	0.787	—	7.297	**353006**
				6.378	5.628	5.000	1.850	9.920	**353018**
			50 - 28	2.441	1.691	1.063	—	7.583	**353007**
				7.953	7.203	6.575	2.362	14.100	**353019**
			50 - 28*	7.953	7.203	6.575	—	11.680	**353025**
			63 - 36	2.835	2.085	1.457	—	8.223	**353008**
				8.740	7.990	7.362	—	15.650	**353023**
				8.740	7.990	—	3.071	20.500	**353020**
			80 - 36	2.835	2.085	—	—	9.413	**353009**
				10.709	9.959	—	—	26.230	**353024**
				10.709	9.959	—	3.543	31.300	**353021**
			100 - 56	4.134	3.384	—	—	13.600	**353010**
				12.008	11.258	—	—	39.460	**353022**

***D_4** = 49.50 mm

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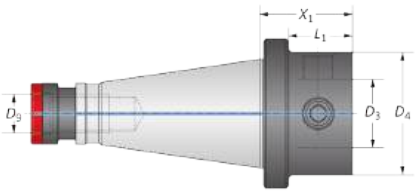
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B10: ix - x
Key on B10-A: 2

Ⓜ = Metric (mm)
ⓘ = Imperial (in)

NMTB Master Shanks





Metric (mm)

Taper Size	D_9	MVS Connection D_4 | D_3	Shank X_1	Shank L_1	Weight (kg)	Part No.
40	5/8 - 11	50 - 28	38.00	26.40	1.30	**132022T004498**
		63 - 36	48.00	36.40	1.50	**132066T004498**
50	1 - 8	50 - 28	42.00	26.80	3.00	**132022T004480**
		63 - 36	52.00	36.80	3.50	**132066T004480**
		80 - 36	52.00	36.80	4.00	**132088T004480**
		100 - 56	90.00	74.80	5.95	**132076T004480**

Imperial (in)

Taper Size	D_9	MVS Connection D_4 | D_3	Shank X_1	Shank L_1	Weight (lbs)	Part No.
40	5/8 - 11	50 - 28	1.496	1.039	2.900	**132022T004498**
		63 - 36	1.890	1.433	3.300	**132066T004498**
50	1 - 8	50 - 28	1.654	1.060	6.600	**132022T004480**
		63 - 36	2.047	1.450	7.700	**132066T004480**
		80 - 36	2.047	1.450	8.800	**132088T004480**
		100 - 56	3.543	2.945	13.118	**132076T004480**

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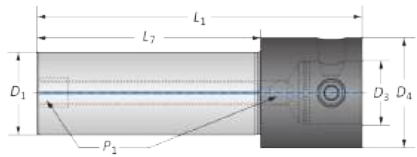
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B10: ix - x
Key on B10-A: 2

Ⓜ = Metric (mm)
ⓘ = Imperial (in)

Straight Master Shanks





Imperial (in)

MVS Connection D_4 | D_3	Shank L_7	D_1	P_1	L_1	Weight (lbs)	Part No.
40 - 22	3-1/2	1-1/4	1/8-27 NPTF	5.080	1.764	**K71547**
50 - 28	4	1-1/2	1/4-18 NPTF	5.810	3.086	**K71548**
63 - 36	4-1/2	2	1/4-18 NPTF	6.700	5.952	**K71549**
80 - 36	4-1/2	2	1/4-18 NPTF	6.700	7.716	**K71550**

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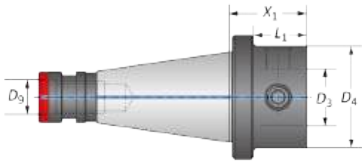
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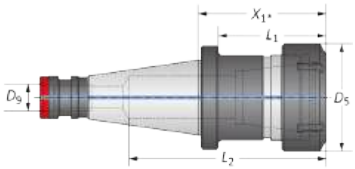
B10: ix - x
Key on B10-A: 2

Ⓜ = Metric (mm)
ⓘ = Imperial (in)

DIN 2080 Master Shanks







***X_1**: with one-piece clamping nut

Metric (mm)

	Taper Size	D_{10}	MVS Connection D_4 | D_3	Shank X_1	L_1	L_2	D_5	Weight (kg)	Part No.
	40	M16 x 2	50 - 28	38.00	26.20	—	—	1.30	**132022T010229**
			63 - 36	48.00	36.20	—	—	1.50	**132066T010229**
ⓜ	50	M24 x 3	50 - 28	42.00	26.80	—	—	3.00	**132022T003704**
			63 - 36	52.00	36.80	—	—	3.50	**132066T003704**
			80 - 36	52.00	36.80	—	—	4.00	**132088T003704**
			100 - 56	90.00	74.80	—	—	4.90	**132076T003704**
			ER 40	80.00	64.80	134.00	63.00	3.30	**259084**

Imperial (in)

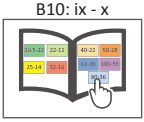
	Taper Size	D_{10}	MVS Connection D_4 | D_3	Shank X_1	L_1	L_2	D_5	Weight (lbs)	Part No.
	40	M16 x 2	50 - 28	1.496	1.031	—	—	2.866	**132022T010229**
			63 - 36	1.889	1.425	—	—	3.306	**132066T010229**
ⓘ	50	M24 x 3	50 - 28	1.653	1.055	—	—	6.613	**132022T003704**
			63 - 36	2.047	1.448	—	—	7.716	**132066T003704**
			80 - 36	2.047	1.448	—	—	8.818	**132088T003704**
			100 - 56	3.543	2.945	—	—	10.800	**132076T003704**
			ER 40	3.149	2.551	5.276	2.480	7.275	**259084**

⚠ WARNING **Assembly of modular components may cause machine damage and/or serious injury. To prevent:**
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B10: ix - x

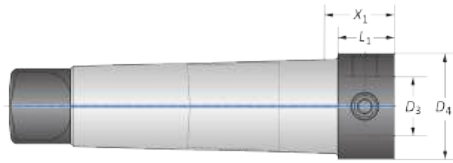
Key on B10-A: 2



ⓜ = Metric (mm)
ⓘ = Imperial (in)

Morse Taper Master Shanks (DIN 1806)





Metric (mm)

Morse Taper Size	MVS Connection D_4 | D_3	Shank X_1	Shank L_1	Weight (kg)	Part No.
4	50 - 28	43.00	36.50	1.10	**132022T003590**
5	50 - 28	33.00	26.70	1.80	**132022T003920**
	63 - 36	53.00	46.70	2.20	**132066T003920**

Imperial (in)

Morse Taper Size	MVS Connection D_4 | D_3	Shank X_1	Shank L_1	Weight (lbs)	Part No.
4	50 - 28	1.693	1.440	2.425	**132022T003590**
5	50 - 28	1.299	1.050	3.968	**132022T003920**
	63 - 36	2.087	1.840	4.850	**132066T003920**

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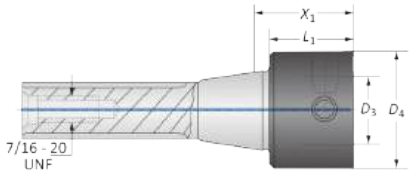
B10: ix - x
Key on B10-A: 2

(m) = Metric (mm)
(i) = Imperial (in)

R8 Master Shanks







Metric (mm)

MVS Connection D_4 | D_3	Shank X_1	Shank L_1	Weight (kg)	Part No.
50 - 28	45.00	36.00	1.00	**132022T007166**
63 - 36	60.00	51.00	1.30	**132066T007166**

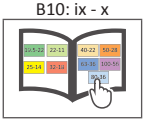
Imperial (in)

MVS Connection D_4 | D_3	Shank X_1	Shank L_1	Weight (lbs)	Part No.
50 - 28	1.770	1.417	2.204	**132022T007166**
63 - 36	2.362	2.008	2.866	**132066T007166**

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B10: ix - x
Key on B10-A: 2



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ⓘ = Imperial (in)

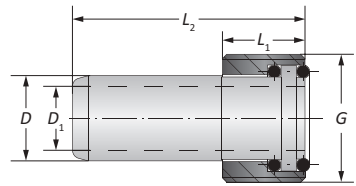
Accessories

Coolant Adapters | Service Keys | Clamping Nuts

A

Coolant Adapter Sets

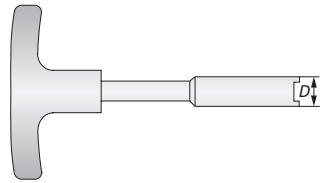
HSK	Thread *G*	*D*	D_1	L_1	L_2	Part No.
32	M10 x 1.5 x 1.0	6.00	3.50	5.50	25.70	**262002**
40	M12 x 1.75 x 1.0	8.00	5.00	7.50	29.20	**262003**
50	M16 x 2 x 1.0	10.00	6.40	9.50	32.70	**262004**
63	M18 x 2.5 x 1.0	12.00	8.00	11.50	36.20	**262005**
80	M20 x 2.5 x 1.5	14.00	10.00	13.50	40.00	**262006**
100	M24 x 3 x 1.5	16.00	12.00	15.50	43.60	**262007**



Service Keys

HSK Shank Size	*D*	Part No.
32	8.50	**315234**
40	10.50	**315235**
50	14.50	**215726**
63	16.50	**215727***
80	18.00	**415127**
100	22.00	**215728**

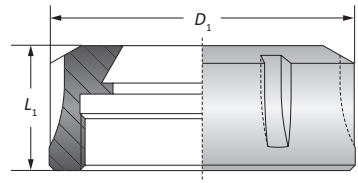
*Two piece



Type U (For use with coolant adapter set.)

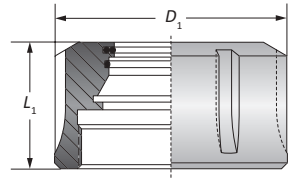
ISO 15488 (DIN 6499-B) One-piece Clamping Nut

	Nominal Size	Clamping Nut L_1	Clamping Nut D_1	Part No.
m	ER 40	25.50	63.00	**215926**
i	ER 40	1.004	2.480	**215926**



ISO 15488 (DIN 6499-B) Sealing Disk One-piece Clamping Nut

	Nominal Size	Sealing Disk Clamping Nut L_1	Sealing Disk Clamping Nut D_1	Part No.
m	ER 40	34.00	63.00	**278001**
i	ER 40	1.339	2.480	**278001**



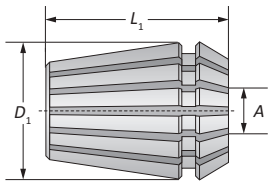
m = Metric (mm)
i = Imperial (in)

Accessories

ISO 15488 (DIN 6499-B) Collet Chuck Accessories

ISO 15488 (DIN6499-B) Collets

	Clamping Range *A*	Collet L_1	Collet D_1	Part No.
m	15.00 - 14.00	46.00	40.00	**071790**
m	18.00 - 17.00	46.00	40.00	**071793**
m	20.00 - 19.00	46.00	40.00	**071795**
m	23.00 - 22.00	46.00	40.00	**071798**
i	0.591 - 0.551	1.811	1.575	**071790**
i	0.709 - 0.669	1.811	1.575	**071793**
i	0.787 - 0.748	1.811	1.575	**071795**
i	0.906 - 0.866	1.811	1.575	**071798**



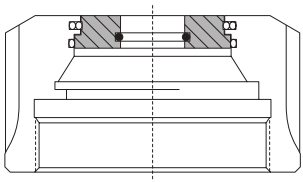
ISO 15488 (DIN 6499-B) Service Keys

	Nominal Size	Service Key *D*	Part No.
m	ER 40	63.00	**215931**

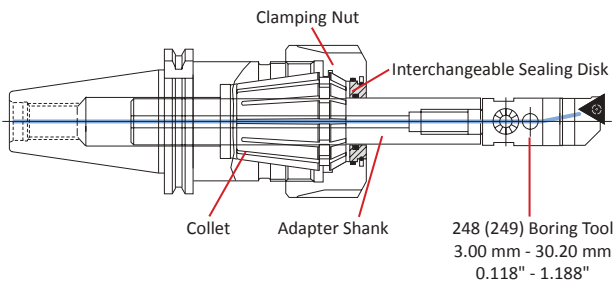


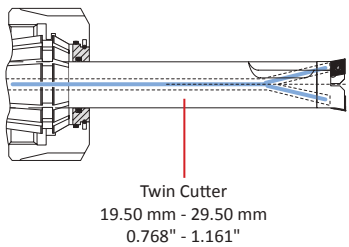
ISO 15488 (DIN6499-B) Collet Sealing Disk

	Clamping Range	Part No.
m	15.00 - 14.50	**278029**
m	18.00 - 17.50	**278035**
m	20.00 - 19.50	**278039**
m	23.00 - 22.50	**278045**
i	0.591 - 0.551	**278029**
i	0.709 - 0.669	**278035**
i	0.787 - 0.748	**278039**
i	0.906 - 0.866	**278045**



Application with clamping nuts and sealing disks when using central coolant feed:





m = Metric (mm)
i = Imperial (in)

Accessories

Mounting Fixtures



Mounting Fixture		
Code	**Type**	**Part No.**
Basic Body*	—	**098060**
Adapter	30 Taper	**098073**
Adapter	40 Taper	**098061**
Adapter	50 Taper	**098062**
Adapter	HSK-A 32	**098063**
Adapter	HSK-A 40	**098064**
Adapter	HSK-A 50	**098065**
Adapter	HSK-A 63	**098066**
Adapter	HSK-A 80	**098067**
Adapter	HSK-A 100	**098068**
Adapter	PSC 50	**098069**
Adapter	PSC 63	**098070**
Adapter	PSC 80	**098071**

*Basic body and adapters sold separately.

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ⓘ = Imperial (in)

Notes

SECTION

B10-B

Intermediate Modules

Intermediate Modules



Increase Tool Stability with Intermediate Modules

- Allow for expanded use of existing components.
- Add flexibility to setups.
- Reduce need for specials and their associated cost and lead time.
- Each component individually balanced.

Applicable Industries

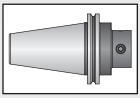
- Aerospace
- Agriculture
- Automotive
- Defense
- General Production
- Heavy Equipment
- Hydraulics
- Marine
- Medical
- Oil and Gas
- Renewable Energy/ Energy
- Tool, Mold, and Die

Reference Icons

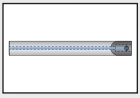
The following icons will appear throughout the catalog to help you navigate between products.



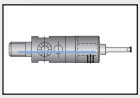
MVS Connection Color Guide
Detailed instructions and information regarding the MVS connection(s).



Shanks
A variety of shanks for different machines.



248 (249) Shanks
A variety of shanks for different machines.



248 (249) Boring Head
248 (249) boring head that connects into the adapter shanks.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

WARNING means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

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  - Metric (mm) . . . 7
  - Imperial (in) . . . 8
- Alu-Line® Balanced
  - Metric (mm) . . . 9
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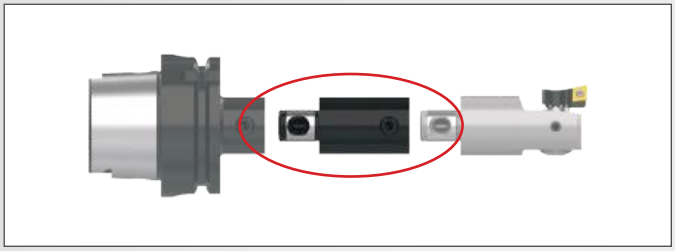
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- Vibration Damping Intermediate Modules . . . 18



Intermediate MODULES

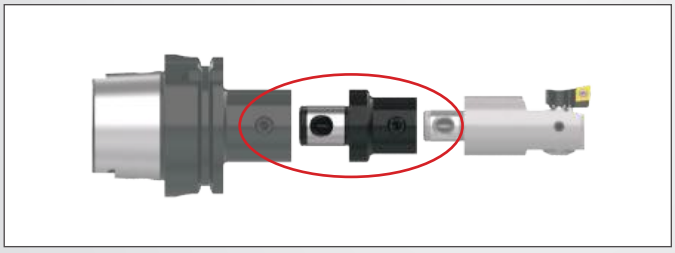
Extensions



Features:

- Used to increase bore depth.
- Connects quickly and easily with the MVS connection.
- Aluminum components available to reduce stress on the spindle.

Reducers



Features:

- Improves rigidity by stepping down to smaller MVS connection sizes.
- Connects quickly and easily with the MVS connection.
- Accommodates smaller diameter applications.

Case Study

WOHLHAUPTER® Fine Boring Head with NOVI[TECH]®

Are you looking for more from your tooling?



After facing problems with chatter and chipping inserts, our customer, who machines fueling machine head rotors from ASTM A276 - 304L in the nuclear power industry, sought a better solution to their machining process.

The customer turned to Allied for help finding a new solution. Once the causes of insert failure and chatter were identified, our experienced team was able to create the best assembly suitable for the application. Using **Wohlhaupter's analog balanced fine boring head** paired with the **NOVI[TECH] vibration damper module,** they were able to eliminate the issues our customers were facing.

With the previous tooling, the customer achieved only 12 minutes of tool life, but with Allied's Wohlhaupter assembly, they achieved more than four times the life for 65 minutes!

Allied's Wohlhaupter assembly improved the machining process by making it more consistent and saved the customer money by reducing cost per hole. If you are looking to save time and money, ***give us a call, and we will help you find the right solution.***

Product:	Wohlhaupter analog balanced fine boring head with NOVI[TECH]
Objectives:	(1) Decrease cycle time (2) Improve process
Industry:	Renewable energy/energy
Part:	Nuclear fueling machine head rotor
Material:	ASTM A276-304L
Hole Ø:	120 mm *(4.7244")*
Hole Depth:	1040 mm *(40.9449")*

Measure	Competitor Boring Head	Wohlhaupter Fine Boring Head with NOVI[TECH]
RPM	106	372
Speed Rate	40 m/min *(131.234 SFM)*	140 m/min *(459.318 SFM)*
Feed Rate	0.076 mm/rev *(0.003 IPR)*	0.16 mm/rev *(0.006 IPR)*
Penetration Rate	8 mm/min *(0.315 IPM)*	60 mm/min *(2.362 IPM)*
Cycle Time	2 hr 10 min	17 min
Tool Life	12 min	65 min
Wohlhaupter offered ***93.32%*** cost per hole savings over the competitor tooling.		

- Analog balanced fine boring head ***Item No. 464038****
  **replacement for 364047*
- Boring insert ***Item No. 297994WHC111***
- NOVI[TECH] vibration damping intermediate module ***Item No. 519004***

86.92% cycle time reduction



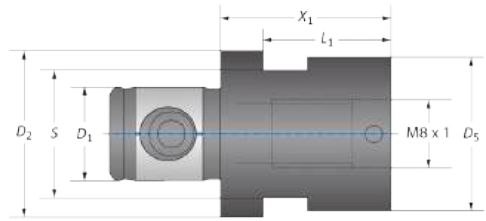
The Wohlhaupter boring head with the NOVI[TECH] vibration damper module provided:

- ✓ Increased penetration rate
- ✓ Decreased cycle time
- ✓ Increased tool life
- ✓ Decreased cost per hole

248 (249) Adapters

Standard and Balanced Adapters





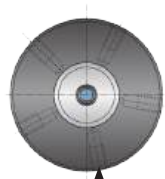
Metric (mm)

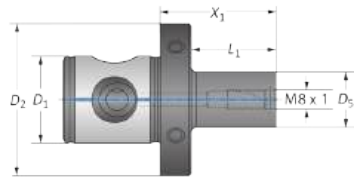
MVS Connection $D_2 \mid D_1$	Connection	Adapter X_1	L_1	S	D_5	Weight (kg)	Service Key	Part No.
19.5 - 11	M8 x 1	20.00	15.00	15/P	18.00	0.05	15 S / P	**219168**
23 - 11	M8 x 1	20.00	—	19/P	23.00	0.07	19 S / P	**219169**

Imperial (in)

MVS Connection $D_2 \mid D_1$	Connection	Adapter X_1	L_1	S	D_5	Weight (lbs)	Service Key	Part No.
19.5 - 11	M8 x 1	0.787	0.590	15/P	0.708	0.110	15 S / P	**219168**
23 - 11	M8 x 1	0.787	—	19/P	0.905	0.154	19 S / P	**219169**







Metric (mm)

MVS Connection $D_2 \mid D_1$	Connection	Adapter X_1	L_1	D_5	Weight (kg)	Balancing Screw	Part No.
50 - 28	M8 x 1	32.00	19.00	15.00	0.35	M6 x 1 x 10	**219185**
		48.00	35.00	18.00	0.40	M6 x 1 x 10	**219176**
		48.00	35.00	23.00	0.45	M6 x 1 x 10	**219177**

Imperial (in)

MVS Connection $D_2 \mid D_1$	Connection	Adapter X_1	L_1	D_5	Weight (lbs)	Balancing Screw	Part No.
50 - 28	M8 x 1	1.259	0.748	0.590	0.771	M6 x 1 x 10	**219185**
		1.890	1.377	0.708	0.881	M6 x 1 x 10	**219176**
		1.890	1.377	0.905	0.992	M6 x 1 x 10	**219177**

NOTE: Balance refers to a specific residual imbalance of ≤ 10 g mm/kg.

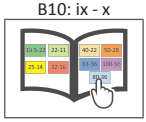
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

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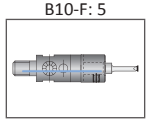
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B10: ix - x

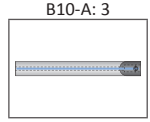


Key on B10-B: 2

B10-F: 5



B10-A: 3

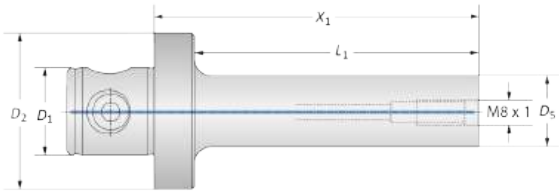


ⓜ = Metric (mm)
ⓘ = Imperial (in)

248 (249) Adapters

Vibration Reducing Heavy Metal Adapters





Metric (mm)

MVS Connection D_2 | D_1	Connection	Adapter X_1	Adapter L_1	Adapter D_5	Weight (kg)	Part No.
50 - 28	M8 x 1	68	55	15	0.80	**248147**
		84	71	19	1.00	**248148**
		104	91	23	1.30	**248149**

Imperial (in)

MVS Connection D_2 | D_1	Connection	Adapter X_1	Adapter L_1	Adapter D_5	Weight (lbs)	Part No.
50 - 28	M8 x 1	2.677	2.165	0.59	1.763	**248147**
		3.307	2.795	0.748	2.204	**248148**
		4.094	3.582	0.905	2.866	**248149**

NOTE: Balance refers to a specific residual imbalance of ≤ 10 g mm/kg.

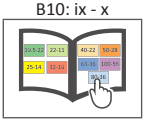
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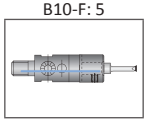
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B10: ix - x

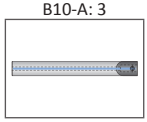


Key on B10-B: 2

B10-F: 5



B10-A: 3

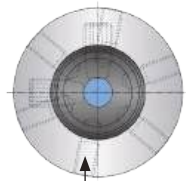


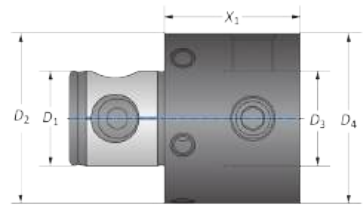
ⓜ = Metric (mm)
ⓘ = Imperial (in)

Extensions

Balanced







Metric (mm)

MVS Connection D_2 | D_1	MVS Connection D_4 | D_3	Extension X_1	Weight (kg)	Balancing Screw	Part No.
19.5 - 11	19.5 - 11	40.00	0.10	—	**219043**
22 - 11	22 - 11	40.00	0.10	—	**219044**
25 - 14	25 - 14	25.00	0.10	—	**219068**
		40.00	0.10	—	**119001**
32 - 18	32 - 18	40.00	0.20	—	**119002**
40 - 22	40 - 22	40.00	0.40	—	**119003**
50 - 28	50 - 28	40.00	0.60	M6 x 1 x 10	**119004**
		75.00	1.10	M6 x 1 x 10	**219097***
		75.00	1.10	M6 x 1 x 10	**219082**
		100.00	1.50	M6 x 1 x 10	**119058**
63 - 36	63 - 36	50.00	1.10	M6 x 1 x 10	**119005**
		75.00	1.70	M6 x 1 x 15	**219083**
		125.00	2.90	M6 x 1 x 15	**119065**
80 - 36	80 - 36	50.00	1.90	M6 x 1 x 15	**119006**
		75.00	2.80	M6 x 1 x 15	**219084**
		125.00	4.80	M6 x 1 x 15	**119066**
		200.00	7.40	M8 x 1.25 x 21	**219094**
		275.00	10.10	M8 x 1.25 x 21	**119069**
100 - 56	100 - 56	75.00	4.30	M8 x 1.25 x 20	**219095**
		100.00	5.60	M8 x 1.25 x 20	**219061**
		150.00	8.10	M8 x 1.25 x 20	**219096**
		200.00	10.20	M8 x 1.25 x 20	**219062**
		300.00	14.60	M8 x 1.25 x 20	**219063**

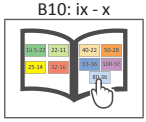
***D_2 / D_4** = 49.50 mm (1.949") for boring 50.00 mm (1.969") diameter applications.
NOTE: Balance refers to a specific residual imbalance of ≤ 10 g mm/kg.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

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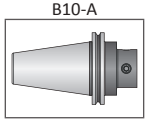
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B10: ix - x



Key on B10-B: 2

B10-A

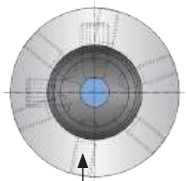


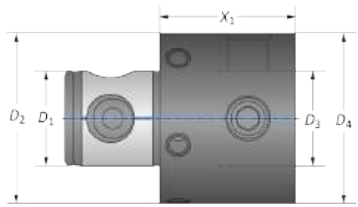
ⓜ = Metric (mm)
ⓘ = Imperial (in)

Extensions

Balanced







B

Imperial (in)

MVS Connection D_2 | D_1	MVS Connection D_4 | D_3	Extension X_1	Weight (lbs)	Balancing Screw	Part No.
19.5 - 11	19.5 - 11	1.575	0.220	—	**219043**
22 - 11	22 - 11	1.575	0.220	—	**219044**
25 - 14	25 - 14	0.984	0.220	—	**219068**
		1.575	0.220	—	**119001**
32 - 18	32 - 18	1.575	0.440	—	**119002**
40 - 22	40 - 22	1.575	0.881	—	**119003**
50 - 28	50 - 28	1.575	1.322	M6 x 1 x 10	**119004**
		2.953	2.425	M6 x 1 x 10	**219097***
		2.953	2.425	M6 x 1 x 10	**219082**
		3.937	3.306	M6 x 1 x 10	**119058**
63 - 36	63 - 36	1.969	2.425	M6 x 1 x 10	**119005**
		2.953	3.747	M6 x 1 x 15	**219083**
		4.921	6.393	M6 x 1 x 15	**119065**
80 - 36	80 - 36	1.969	4.188	M6 x 1 x 15	**119006**
		2.953	6.172	M6 x 1 x 15	**219084**
		4.921	10.580	M6 x 1 x 15	**119066**
		7.874	16.310	M8 x 1.25 x 21	**219094**
		10.827	22.260	M8 x 1.25 x 21	**119069**
100 - 56	100 - 56	2.953	9.479	M8 x 1.25 x 20	**219095**
		3.937	12.340	M8 x 1.25 x 20	**219061**
		5.906	17.850	M8 x 1.25 x 20	**219096**
		7.874	22.480	M8 x 1.25 x 20	**219062**
		11.811	32.180	M8 x 1.25 x 20	**219063**

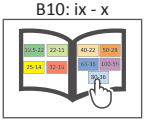
***D_2 / D_4** = 49.50 mm (1.949") for boring 50.00 mm (1.969") diameter applications.
NOTE: Balance refers to a specific residual imbalance of ≤ 10 g mm/kg.

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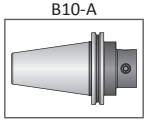
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B10: ix - x



Key on B10-B: 2

B10-A

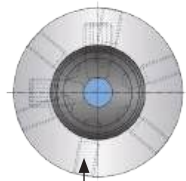


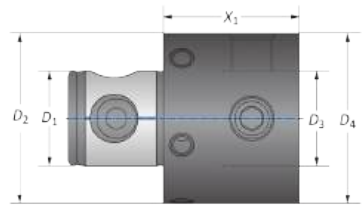
ⓜ = Metric (mm)
ⓘ = Imperial (in)

Extensions

Alu-Line® Balanced







Metric (mm)

MVS Connection $D_2 \mid D_1$	MVS Connection $D_4 \mid D_3$	Extension X_1	Weight (kg)	Balancing Screw	Part No.
50 - 28	50 - 28	40.00	0.20	M6 x 1 x 8	**319021**
		75.00	0.40	M6 x 1 x 10	**319022**
		100.00	0.60	M6 x 1 x 10	**319023**
63 - 36	63 - 36	50.00	0.40	M6 x 1 x 8	**319002**
		125.00	1.10	M6 x 1 x 10	**319003**
80 - 36	80 - 36	50.00	0.70	M6 x 1 x 10	**319004**
		75.00	1.00	M6 x 1 x 10	**319016**
		125.00	1.80	M6 x 1 x 10	**319005**
		200.00	2.70	M6 x 1 x 10	**319017**
		275.00	3.70	M6 x 1 x 10	**319006**
100 - 56	100 - 56	75.00	1.50	M8 x 1.25 x 20	**319019**
		100.00	2.20	M8 x 1.25 x 20	**319007**
		150.00	3.00	M8 x 1.25 x 20	**319018**
		200.00	3.80	M8 x 1.25 x 20	**319008**
		300.00	5.40	M8 x 1.25 x 20	**319009**

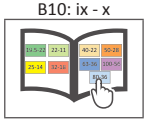
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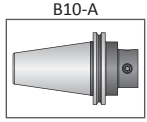
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B10: ix - x



Key on B10-B: 2

B10-A

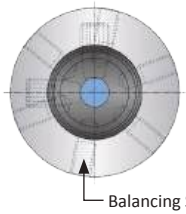


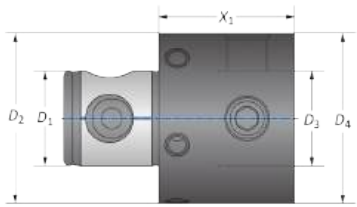
ⓜ = Metric (mm)
ⓘ = Imperial (in)

Extensions

Alu-Line® Balanced







Imperial (in)

MVS Connection $D_2 \mid D_1$	MVS Connection $D_4 \mid D_3$	Extension X_1	Weight (lbs)	Balancing Screw	Part No.
50 - 28	50 - 28	1.575	0.440	M6 x 1 x 8	**319021**
		2.953	0.881	M6 x 1 x 10	**319022**
		3.937	1.322	M6 x 1 x 10	**319023**
63 - 36	63 - 36	1.969	0.881	M6 x 1 x 8	**319002**
		4.921	2.425	M6 x 1 x 10	**319003**
80 - 36	80 - 36	1.969	1.543	M6 x 1 x 10	**319004**
		2.953	2.204	M6 x 1 x 10	**319016**
		4.921	3.968	M6 x 1 x 10	**319005**
		7.874	5.952	M6 x 1 x 10	**319017**
		10.827	8.157	M6 x 1 x 10	**319006**
100 - 56	100 - 56	2.953	3.306	M8 x 1.25 x 20	**319019**
		3.937	4.850	M8 x 1.25 x 20	**319007**
		5.906	6.613	M8 x 1.25 x 20	**319018**
		7.874	8.377	M8 x 1.25 x 20	**319008**
		11.811	11.900	M8 x 1.25 x 20	**319009**

NOTE: Balance refers to a specific residual imbalance of ≤ 10 g mm/kg.

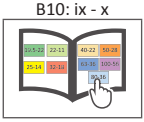
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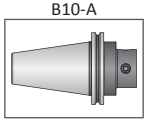
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B10: ix - x



Key on B10-B: 2

B10-A

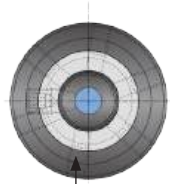


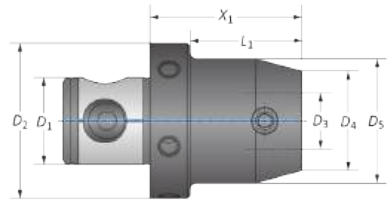
Ⓜ = Metric (mm)
ⓘ = Imperial (in)

Reducers

Balanced







Metric (mm)

MVS Connection $D_2 \mid D_1$	MVS Connection $D_4 \mid D_3$	Reducer X_1	Reducer L_1	Reducer D_5	Weight (kg)	Balancing Screw	Part No.
25 - 14	19.5 - 11	30.00	21.00	—	0.10	—	**219034**
	22 - 11	30.00	21.00	—	0.20	—	**219035**
32 - 18	22 - 11	12.00	0.50	—	0.10	—	**219036**
	25 - 14	30.00	21.00	—	0.10	—	**219037**
40 - 22	22 - 11	12.00	0.50	—	0.20	—	**219038**
	25 - 14	30.00	21.00	—	0.20	—	**219039**
	32 - 18	30.00	—	40.00	0.50	—	**219040**
50 - 28	19.5 - 11	54.00	41.00	—	0.40	M6 x 1 x 10	**219051**
	22 - 11	14.00	0.50	—	0.30	M6 x 1 x 10	**219041**
		54.00	41.00	—	0.40	M6 x 1 x 10	**219052**
	25 - 14	14.00	0.50	—	0.30	M6 x 1 x 7	**119094**
		59.00	46.00	—	0.40	M6 x 1 x 10	**119054**
		59.00	46.00	32.00	0.50	M6 x 1 x 10	**119055**
		119.00	106.00	32.00	0.90	M6 x 1 x 10	**119010**
		119.00	106.00	36.00	1.00	M6 x 1 x 10	**219030***
	32 - 18	49.00	36.00	35.00	0.90	M6 x 1 x 10	**219085**
		109.00	96.00	35.00	1.00	M6 x 1 x 10	**219086**
		109.00	96.00	40.00	1.10	M6 x 1 x 10	**119012**
		109.00	96.00	46.00	1.30	M6 x 1 x 10	**219032***
	40 - 22	40.00	27.00	—	0.50	M6 x 1 x 10	**219087**
		100.00	87.00	47.00	1.30	M6 x 1 x 10	**219088**
	63 - 36	50.00	—	—	1.00	M6 x 1 x 10	**119059**

*Reinforced reducer.

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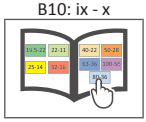
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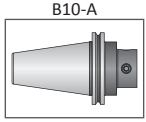
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B10: ix - x



Key on B10-B: 2

B10-A

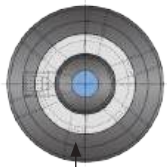


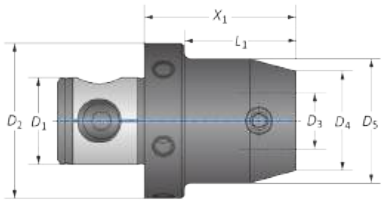
ⓜ = Metric (mm)
ⓘ = Imperial (in)

Reducers

Balanced







B

Metric (mm)

MVS Connection D_2 | D_1	MVS Connection D_4 | D_3	Reducer X_1	Reducer L_1	Reducer D_5	Weight (kg)	Balancing Screw	Part No.
63 - 36	19.5 - 11	54.00	41.00	—	0.60	M6 x 1 x 10	**219053**
	22 - 11	14.00	0.50	—	0.60	M6 x 1 x 10	**219042**
		54.00	41.00	—	0.70	M6 x 1 x 10	**219054**
	25 - 14	14.00	0.50	—	0.60	M6 x 1 x 10	**119095**
		59.00	46.00	—	0.70	M6 x 1 x 10	**119060**
		59.00	46.00	32.00	0.80	M6 x 1 x 10	**119061**
		119.00	106.00	32.00	1.10	M6 x 1 x 15	**119019**
		119.00	106.00	36.00	1.30	M6 x 1 x 10	**219031***
	32 - 18	49.00	36.00	35.00	0.70	M6 x 1 x 10	**219089**
		109.00	96.00	35.00	1.20	M6 x 1 x 10	**219090**
		109.00	96.00	40.00	1.40	M6 x 1 x 10	**119021**
		109.00	96.00	46.00	1.60	M6 x 1 x 10	**219033***
	40 - 22	40.00	27.00	—	0.80	M6 x 1 x 10	**219091**
		100.00	87.00	47.00	1.60	M6 x 1 x 15	**219092**
		150.00	137.00	50.00	2.40	M6 x 1 x 15	**119067**
	50 - 28	40.00	—	63.00	1.00	M6 x 1 x 10	**119064**
		40.00	27.00	—	0.80	M6 x 1 x 10	**119096****
		100.00	—	63.00	2.40	M6 x 1 x 15	**119025**
		100.00	87.00	—	1.70	M6 x 1 x 10	**119097****
80 - 36	63 - 36	50.00	—	80.00	1.60	M6 x 1 x 15	**119098**
100 - 56	80 - 36	70.00	52.00	—	3.60	M8 x 1.25 x 20	**219066**

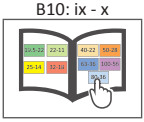
* Reinforced reducer.
**For milling applications.
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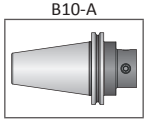
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B10: ix - x



Key on B10-B: 2

B10-A

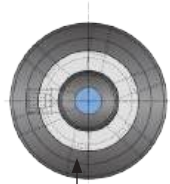


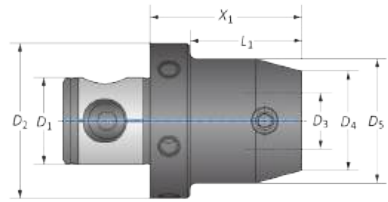
ⓜ = Metric (mm)
ⓘ = Imperial (in)

Reducers

Balanced







Imperial (in)

MVS Connection			Reducer					
	$D_2 \mid D_1$	$D_4 \mid D_3$	X_1	L_1	D_5	Weight (lbs)	Balancing Screw	Part No.
	25 - 14	19.5 - 11	1.181	0.827	—	0.220	—	**219034**
		22 - 11	1.181	0.827	—	0.440	—	**219035**
	32 - 18	22 - 11	0.472	0.020	—	0.220	—	**219036**
		25 - 14	1.181	0.827	—	0.220	—	**219037**
	40 - 22	22 - 11	0.472	0.020	—	0.440	—	**219038**
		25 - 14	1.181	0.827	—	0.440	—	**219039**
		32 - 18	1.181	—	1.575	1.102	—	**219040**
	50 - 28	19.5 - 11	2.126	1.614	—	0.881	M6 x 1 x 10	**219051**
		22 - 11	0.551	0.020	—	0.661	M6 x 1 x 10	**219041**
			2.126	1.614	—	0.881	M6 x 1 x 10	**219052**
		25 - 14	0.551	0.020	—	0.661	M6 x 1 x 7	**119094**
			2.323	1.811	—	0.881	M6 x 1 x 10	**119054**
			2.323	1.811	1.260	1.102	M6 x 1 x 10	**119055**
			4.685	4.173	1.260	1.984	M6 x 1 x 10	**119010**
			4.685	4.173	1.417	2.204	M6 x 1 x 10	**219030***
		32 - 18	1.929	1.417	1.378	1.984	M6 x 1 x 10	**219085**
			4.291	3.780	1.378	2.204	M6 x 1 x 10	**219086**
			4.291	3.780	1.575	2.425	M6 x 1 x 10	**119012**
			4.291	3.780	1.811	2.866	M6 x 1 x 10	**219032***
		40 - 22	1.575	1.063	—	1.102	M6 x 1 x 10	**219087**
			3.937	3.425	1.850	2.866	M6 x 1 x 10	**219088**
		63 - 36	1.969	—	—	2.204	M6 x 1 x 10	**119059**

*Reinforced reducer.

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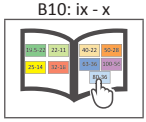
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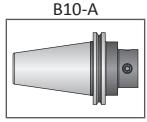
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B10: ix - x



Key on B10-B: 2

B10-A

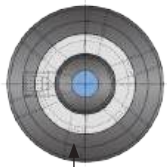


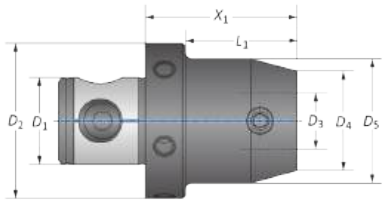
ⓜ = Metric (mm)
ⓘ = Imperial (in)

Reducers

Balanced







B

Imperial (in)

MVS Connection D_2 | D_1	MVS Connection D_4 | D_3	Reducer X_1	Reducer L_1	Reducer D_5	Weight (lbs)	Balancing Screw	Part No.
63 - 36	19.5 - 11	2.126	1.614	—	1.322	M6 x 1 x 10	**219053**
	22 - 11	0.551	0.020	—	1.322	M6 x 1 x 10	**219042**
		2.126	1.614	—	1.543	M6 x 1 x 10	**219054**
	25 - 14	0.551	0.020	—	1.322	M6 x 1 x 10	**119095**
		2.323	1.811	—	1.543	M6 x 1 x 10	**119060**
		2.323	1.811	1.260	1.763	M6 x 1 x 10	**119061**
		4.685	4.173	1.260	2.425	M6 x 1 x 15	**119019**
		4.685	4.173	1.417	2.866	M6 x 1 x 10	**219031***
	32 - 18	1.929	1.417	1.378	1.543	M6 x 1 x 10	**219089**
		4.291	3.780	1.378	2.645	M6 x 1 x 10	**219090**
		4.291	3.780	1.575	3.086	M6 x 1 x 10	**119021**
		4.291	3.780	1.811	3.527	M6 x 1 x 10	**219033***
	40 - 22	1.575	1.063	—	1.763	M6 x 1 x 10	**219091**
		3.937	3.425	1.850	3.527	M6 x 1 x 15	**219092**
		5.906	5.394	1.969	5.291	M6 x 1 x 15	**119067**
	50 - 28	1.575	—	2.480	2.204	M6 x 1 x 10	**119064**
		1.575	1.063	—	1.763	M6 x 1 x 10	**119096****
		3.937	—	2.480	5.291	M6 x 1 x 15	**119025**
		3.937	3.425	—	3.747	M6 x 1 x 10	**119097****
80 - 36	63 - 36	1.969	—	3.150	3.527	M6 x 1 x 15	**119098**
100 - 56	80 - 36	2.756	2.047	—	7.936	M8 x 1.25 x 20	**219066**

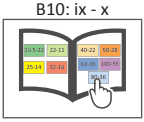
* Reinforced reducer.
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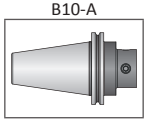
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B10: ix - x



Key on B10-B: 2

B10-A

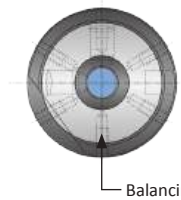


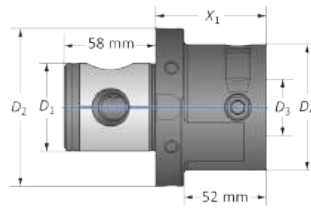
Ⓜ = Metric (mm)
ⓘ = Imperial (in)

Reducers

Alu-Line® Balanced







Metric (mm)

MVS Connection		Reducer				
D_2 | D_1	D_4 | D_3	X_1	L_1	Weight (kg)	Balancing Screw	Part No.
100 - 56	80 - 36	70.00	52.00	1.30	M8 x 1.25 x 20	**319013**

Imperial (in)

MVS Connection		Reducer				
D_2 | D_1	D_4 | D_3	X_1	L_1	Weight (lbs)	Balancing Screw	Part No.
100 - 56	80 - 36	2.756	2.047	2.866	M8 x 1.25 x 20	**319013**

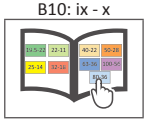
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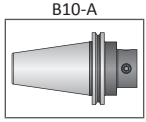
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B10: ix - x



Key on B10-B: 2

B10-A

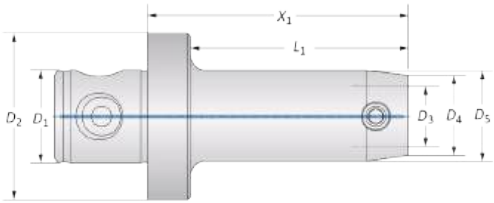


ⓜ = Metric (mm)
ⓘ = Imperial (in)

Reducers

Vibration Reducing Heavy Metal Reducers





Metric (mm)

MVS Connection			Reducer				
	$D_2 \mid D_1$	$D_4 \mid D_3$	X_1	L_1	D_5	Weight (kg)	Part No.
	50 - 28	19.5 - 11	90.00	77.00	—	1.00	**219055**
		22 - 11	110.00	97.00	23.00	1.30	**219056**
m		25 - 14	124.00	111.00	28.00	1.70	**219057**
			144.00	131.00	32.00	2.30	**219058**
			164.00	151.00	35.00	2.90	**219059**
		32 - 18	154.00	141.00	37.00	2.90	**219093**
			154.00	141.00	42.00	3.70	**219060**

Imperial (in)

MVS Connection			Reducer				
	$D_2 \mid D_1$	$D_4 \mid D_3$	X_1	L_1	D_5	Weight (lbs)	Part No.
	50 - 28	19.5 - 11	3.543	3.031	—	2.204	**219055**
		22 - 11	4.331	3.819	0.906	2.866	**219056**
i		25 - 14	4.882	4.370	1.102	3.747	**219057**
			5.669	5.157	1.260	5.070	**219058**
			6.457	5.945	1.378	6.393	**219059**
		32 - 18	6.063	5.551	1.457	6.393	**219093**
			6.063	5.551	1.654	8.157	**219060**

NOTE: Heavy metal reducers are used to reduce vibration when machining deep boring applications. When using heavy metal reducers, the maximum cutting speed (V_c) is 200 m/min. If steel extensions are also used, reduce the cutting speed by 50% and use replaceable inserts where r = 0.10 mm.

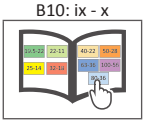
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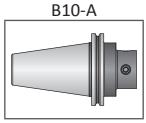
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B10: ix - x



Key on B10-B: 2

B10-A

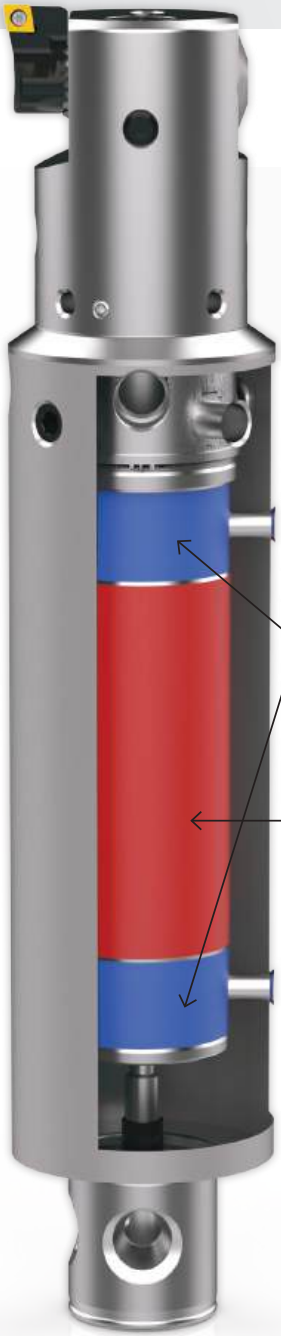


m = Metric (mm)
i = Imperial (in)

NOVI[TECH®] Vibration Damping Intermediate Modules Overview

NOVITECH®
Vibration Damping Intermediate Module

THE **DEEP** HOLE
10xD BORING ***SOLUTION***
YOU'VE BEEN LOOKING FOR



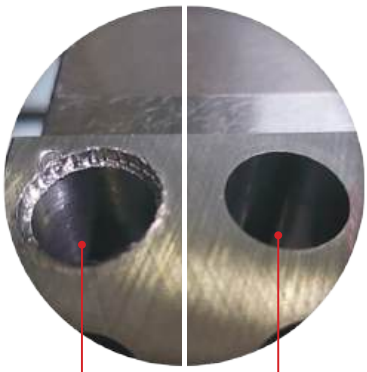
OUR ***SOLUTION***

- Machine up to **10xD**.
- Connect quickly and easily with the **MVS connection**.
- Utilize existing **Wohlhaupter® components**.
- **Increase** your productivity, surface quality, and process reliability.
- **Increase** your tool and spindle life.

YOUR ***ADVANTAGE***

THE SURFACE QUALITY TELLS IT ALL

When our customer was machining alloy steel to 9xD, the NOVI[TECH] provided reliable machining, which achieved high surface quality (Ra = 32).



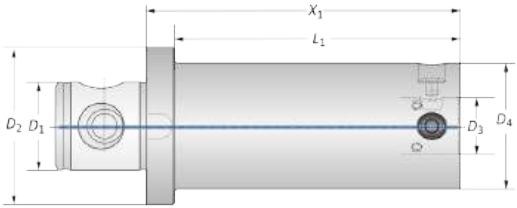
Standard tool construction with steel extension

Wohlhaupter NOVI[TECH] with VarioBore precision boring head

NOVI$^{TECH®}$: 50.00 mm - 205.00 mm (1.969" - 8.071")

Vibration Damping Intermediate Modules





Metric

MVS Connection			NOVI^{TECH}			
	D_2 | D_1	D_4 | D_3	X_1	L_1	Weight (kg)	Part No.
m	50 - 28	40 - 22	200.00	—	2.80	**519002***
	63 - 36	50 - 28	200.00	—	5.70	**519003**
	80 - 36	63 - 36	200.00	—	7.50	**519004**
		80 - 36	200.00	—	7.50	**519005**
	100 - 56	80 - 36	200.00	182.00	9.90	**519006**

Imperial

MVS Connection			NOVI^{TECH}			
	D_2 | D_1	D_4 | D_3	X_1	L_1	Weight (lbs)	Part No.
i	50 - 28	40 - 22	7.874	—	6.172	**519002***
	63 - 36	50 - 28	7.874	—	12.560	**519003**
	80 - 36	63 - 36	7.874	—	16.530	**519004**
		80 - 36	7.874	—	16.530	**519005**
	100 - 56	80 - 36	7.874	7.165	21.825	**519006**

*D_2 = 49.50 mm

NOTE: The NOVI^{TECH} intermediate module should always be assembled as close as possible to the cutting edge (i.e. the next component behind the boring head).

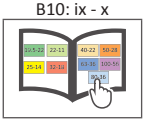
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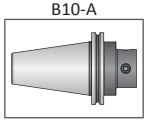
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B10: ix - x



Key on B10-B: 2

B10-A



m = Metric (mm)
i = Imperial (in)

SECTION

B10-C

Rough Machining

Rough Machining



Variety of tooling | Versatile operations

A versatile range of tools for rough machining includes rough boring, chamfering, and reverse machining. The insert holders with various insert pockets as well as height displaced insert holders are able to be easily adjusted for a quick setup process.

- Twin Cutters
  - 19.50 mm - 205.00 mm (0.768" - 8.071")
- Chamfering Tools
  - 19.00 mm - 216.00 mm (0.748" - 8.504")
- Reverse Machining
  - 29.00 mm - 245.00 mm (1.142" - 9.646")

Applicable Industries

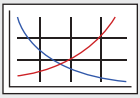
- Aerospace
- Agriculture
- Automotive
- Defense
- General Production
- Heavy Equipment
- Hydraulics
- Marine
- Medical
- Oil and Gas
- Renewable Energy/ Energy
- Tool, Mold, and Die

Reference Icons

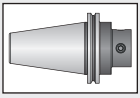
The following icons will appear throughout the catalog to help you navigate between products.



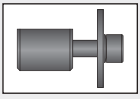
MVS Connection Color Guide
Detailed instructions and information regarding the MVS connection(s).



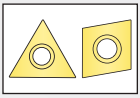
Recommended Cutting Data
Speed and feed recommendations for optimum and safe boring.



Shanks
A variety of shanks for different machines.



Clamping Elements
For use with insert holders and boring heads.



Inserts
For use with insert holder boring heads and boring bars using indexable inserts.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

WARNING means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

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Roughing Tools
ROUGH MACHINING

Versatile tools for a variety of applications.

- Diameter range: 19.50 mm - 245.00 mm (0.768" - 9.646").
- Tangential inserts and insert holders also available.
- Serrated tool bodies can be used for multiple applications including rough boring, chamfering, back boring, and axial grooving.
- Insert holders can be used on large diameter Alu-Line® serrated tool bodies and slides: 100.00 mm - 3255.00 mm (3.937" - 128.15").

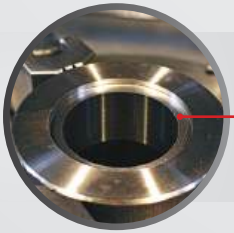
Roughing Applications



- Twin Cutter Assembly:
  (1) Reducer: 219087
  (2) Serrated tool body: 148004
  (3) Insert holders: 151004
  (4) Inserts: 297241WHC79



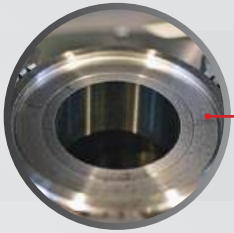
- Tangential Cutter Assembly:
  (1) Shank: 353007
  (2) Serrated tool body: 148005
  (3) Insert holders: 151043
  (4) Inserts: 397594WHC198



First Tangential Cut



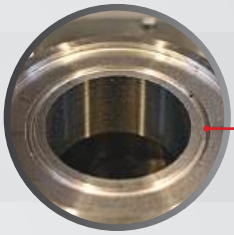
- Tangential Cutter Assembly:
  (1) Shank: 353008
  (2) Serrated tool body: 148006
  (3) Insert holders: 151035
  (4) Inserts: 397594WHC198



Second Tangential Cut



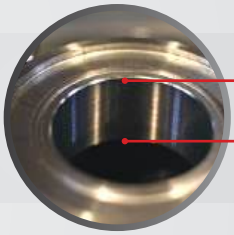
- Axial Grooving Assembly:
  (1) Shank: 353009
  (2) Serrated tool body: 148007
  (3) Support block: 226011
  (4) Insert holder: 226010
  (5) Insert: 297978WCH136



Axial Groove Cut

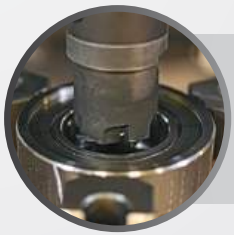


- Chamfer Assembly:
  (1) Shank: 353003
  (2) Serrated tool body: 148004
  (3) Insert holder: 201009
  (4) Inserts: 297497WHC79

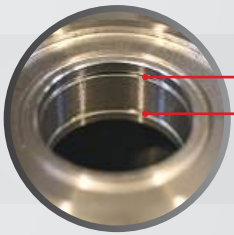


Top Chamfer

Bottom Chamfer



- Radial Grooving Assembly:
  (1) Shank: 353007
  (2) Grooving tool: 143055
  (3) Inserts: 097254WCH136



Grooves

Finished Application

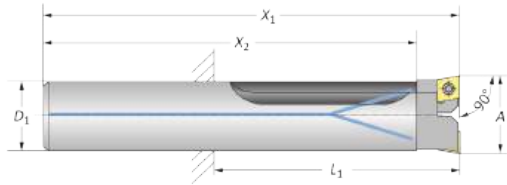


Twin Cutters Same Level

90° | Diameter Range: 19.50 mm - 30.00 mm (0.768" - 1.181")

Cylindrical Shank





Metric (mm)

	Connection D_1	Boring Range A	Twin Cutter X_1	Twin Cutter X_2	Twin Cutter L_1	Weight (kg)	Serrated Body	Insert Holder Form	Insert Holder Part No.
	18	19.50 - 23.00	150.00	138.00	80.00	0.25	**235021**	101	**235031**
m	20	22.50 - 26.00	150.00	138.00	90.00	0.31	**235022**	101	**235032**
	23	25.50 - 30.00	160.00	148.00	100.00	0.44	**235023**	101	**235033**

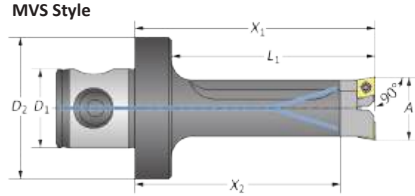
Imperial (in)

	Connection D_1	Boring Range A	Twin Cutter X_1	Twin Cutter X_2	Twin Cutter L_1	Weight (lbs)	Serrated Body	Insert Holder Form	Insert Holder Part No.
	18	0.768 - 0.906	5.910	5.433	3.149	0.551	**235021**	101	**235031**
i	20	0.886 - 1.024	5.910	5.433	3.543	0.683	**235022**	101	**235032**
	23	1.004 - 1.181	6.299	5.826	3.937	0.970	**235023**	101	**235033**

NOTE: Insert holders sold in quantities of 1, and inserts sold separately.

MVS Style





Metric (mm)

	MVS Connection $D_2 \mid D_1$	Boring Range A	Twin Cutter X_1	Twin Cutter X_2	Twin Cutter L_1	Weight (kg)	Serrated Body	Insert Holder Form	Insert Holder Part No.
	50 - 28	19.50 - 23.00	85.00	73.00	72.00	0.40	**235001**	101	**235031**
		22.50 - 26.00	90.00	78.00	77.00	0.45	**235002**	101	**235032**
m		25.50 - 30.00	95.00	83.00	82.00	0.50	**235003**	101	**235033**
	63 - 36	19.50 - 23.00	85.00	73.00	72.00	0.70	**235011**	101	**235031**
		22.50 - 26.00	90.00	78.00	77.00	0.72	**235012**	101	**235032**
		25.50 - 30.00	95.00	83.00	82.00	0.83	**235013**	101	**235033**

Imperial (in)

	MVS Connection $D_2 \mid D_1$	Boring Range A	Twin Cutter X_1	Twin Cutter X_2	Twin Cutter L_1	Weight (lbs)	Serrated Body	Insert Holder Form	Insert Holder Part No.
	50 - 28	0.768 - 0.906	3.346	2.874	2.834	0.881	**235001**	101	**235031**
		0.886 - 1.024	3.543	3.070	3.031	0.992	**235002**	101	**235032**
i		1.004 - 1.181	3.740	3.268	3.228	1.102	**235003**	101	**235033**
	63 - 36	0.768 - 0.906	3.346	2.874	2.834	1.543	**235011**	101	**235031**
		0.886 - 1.024	3.543	3.070	3.031	1.587	**235012**	101	**235032**
		1.004 - 1.181	3.740	3.268	3.228	1.843	**235013**	101	**235033**

NOTE: Insert holders sold in quantities of 1, and inserts sold separately.

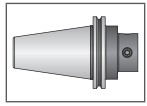
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

B10: ix - x

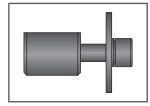


Key on B10-C: 2

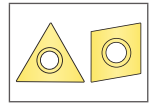
B10-A



B10-C: 24



B10-I

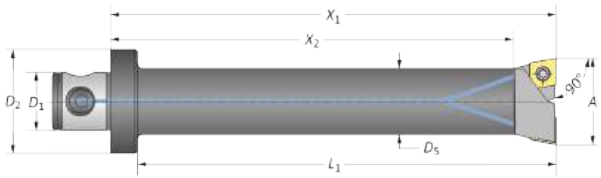


m = Metric (mm)
i = Imperial (in)
Inserts sold separately.

Twin Cutters Same Level

90° | 5xD | Diameter Range: 29.00 mm - 66.00 mm (1.142" - 2.598")





Metric (mm)

Connection		Boring Range	Twin Cutter						Insert Holder	
	$D_2 \mid D_1$	A	X_1	X_2	L_1	D_5	Weight (kg)	Serrated Body	Form	Part No.
ⓜ	50 - 28	29.00 - 37.00	155.00	141.00	142.00	26.00	0.90	**148021**	103	**151001**
		36.00 - 44.00	175.00	161.00	162.00	32.00	1.30	**148022**	103	**151002**
		43.00 - 54.00	215.00	195.00	202.00	37.00	1.90	**148023**	103	**151023**
									104	**151003**
		53.00 - 66.00	215.00	195.00	202.00	44.00	2.50	**148024**	103	**151024**
									104	**151004**

Imperial (in)

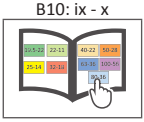
Connection		Boring Range	Twin Cutter						Insert Holder	
	$D_2 \mid D_1$	A	X_1	X_2	L_1	D_5	Weight (lbs)	Serrated Body	Form	Part No.
ⓘ	50 - 28	1.142 - 1.457	6.102	5.551	5.59	1.023	1.984	**148021**	103	**151001**
		1.417 - 1.732	6.889	6.338	6.377	1.259	2.866	**148022**	103	**151002**
		1.693 - 2.126	8.465	7.677	7.952	1.456	4.188	**148023**	103	**151023**
									104	**151003**
		2.087 - 2.598	8.465	7.677	7.952	1.732	5.511	**148024**	103	**151024**
									104	**151004**

NOTE: Different lengths available upon request.
NOTE: Insert holders sold in quantities of 1, and inserts sold separately.

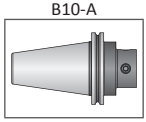
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B10: ix - x

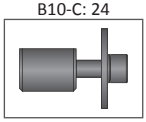
Key on B10-C: 2



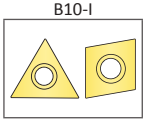
B10-A



B10-C: 24



B10-I

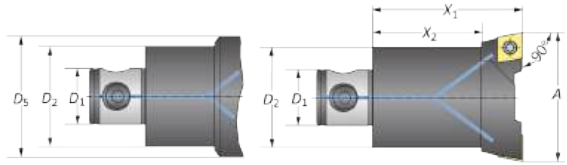


ⓜ = Metric (mm)
ⓘ = Imperial (in)
Inserts sold separately.

Twin Cutters Same Level

90° | Diameter Range: 29.00 mm - 205.00 mm (1.142" - 8.071")





C

Metric (mm)

Connection $D_2 \mid D_1$	Boring Range A	Twin Cutter X_1	Twin Cutter X_2	Twin Cutter D_5	Weight (kg)	Serrated Body	Insert Holder Form	Insert Holder Part No.
25 - 14	29.00 - 37.00	56.00	42.00	—	0.20	**148001**	103	**151001**
	36.00 - 44.00	56.00	42.00	30.00	0.20	**148002**	103	**151002**
32 - 18	36.00 - 44.00	56.00	42.00	30.00	0.40	**148017**	103	**151002**
	43.00 - 54.00	66.00	46.00	36.00	0.40	**148003**	103	**151023**
							104	**151003**
40 - 22	43.00 - 54.00	66.00	46.00	36.00	0.70	**148018**	103	**151023**
							104	**151003**
	53.00 - 66.00	75.00	55.00	—	0.70	**148004**	103	**151024**
							104	**151004**
50 - 28	65.00 - 83.00	75.00	55.00	—	1.10	**148005**	103	**151025**
							104	**151005**
63 - 36	82.00 - 103.00	90.00	60.00	—	1.90	**148006**	103	**151026**
							104	**151086**
							105	**151006**
80 - 36	100.00 - 130.00	90.00	60.00	—	3.00	**148007**	103	**151027**
							104	**151087**
							105	**151007**
	125.00 - 155.00	90.00	60.00	—	3.20	**148007**	103	**151028**
							104	**151088**
							105	**151008**
	150.00 - 205.00	90.00	60.00	125.00	4.00	**148009**	103	**151028**
							104	**151088**
							105	**151008**

NOTE: Insert holders sold in quantities of 1, and inserts sold separately.

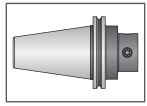
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B10: ix - x

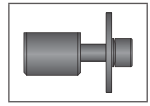


Key on B10-C: 2

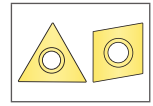
B10-A



B10-C: 24



B10-I

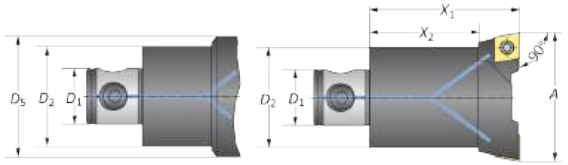


Ⓜ = Metric (mm)
ⓘ = Imperial (in)
Inserts sold separately.

Twin Cutters Same Level

90° | Diameter Range: 29.00 mm - 205.00 mm (1.142" - 8.071")





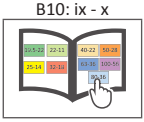
Imperial (in)

Connection $D_2 \mid D_1$	Boring Range A	Twin Cutter X_1	Twin Cutter X_2	Twin Cutter D_5	Weight (lbs)	Serrated Body	Insert Holder Form	Insert Holder Part No.
25 - 14	1.142 - 1.457	2.205	1.653	—	0.441	**148001**	103	**151001**
	1.417 - 1.732	2.205	1.653	1.181	0.441	**148002**	103	**151002**
32 - 18	1.417 - 1.732	2.205	1.653	1.181	0.881	**148017**	103	**151002**
	1.693 - 2.126	2.598	1.811	1.417	0.881	**148003**	103	**151023**
							104	**151003**
40 - 22	1.693 - 2.126	2.598	1.811	1.417	1.543	**148018**	103	**151023**
							104	**151003**
	2.087 - 2.598	2.953	2.165	—	1.543	**148004**	103	**151024**
							104	**151004**
50 - 28	2.559 - 3.268	2.953	2.165	—	2.425	**148005**	103	**151025**
							104	**151005**
63 - 36	3.228 - 4.055	3.543	2.362	—	4.188	**148006**	103	**151026**
							104	**151086**
							105	**151006**
80 - 36	3.937 - 5.118	3.543	2.362	—	6.613	**148007**	103	**151027**
							104	**151087**
							105	**151007**
	4.921 - 6.102	3.543	2.362	—	7.054	**148007**	103	**151028**
							104	**151088**
							105	**151008**
	5.906 - 8.071	3.543	2.362	4.921	8.818	**148009**	103	**151028**
							104	**151088**
							105	**151008**

NOTE: Insert holders sold in quantities of 1, and inserts sold separately.

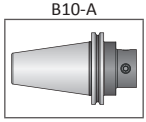
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

B10: ix - x

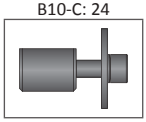


Key on B10-C: 2

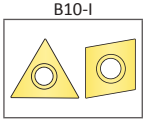
B10-A



B10-C: 24



B10-I

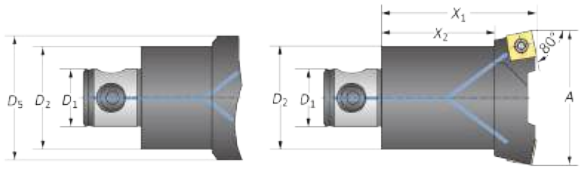


Ⓜ = Metric (mm)
ⓘ = Imperial (in)
Inserts sold separately.

Twin Cutters Same Level

80° | Diameter Range: 29.00 mm - 205.00 mm (1.142" - 8.071")





Metric (mm)

Connection $D_2 \mid D_1$	Boring Range A	Twin Cutter X_1	X_2	D_5	Weight (kg)	Serrated Body	Insert Holder Form	Part No.
25 - 14	29.00 - 37.00	56.00	42.00	—	0.20	**148001**	112	**151011**
	36.00 - 44.00	56.00	42.00	30.00	0.20	**148002**	112	**151012**
32 - 18	36.00 - 44.00	62.00	42.00	30.00	0.40	**148017**	112	**151012**
	43.00 - 54.00	66.00	46.00	36.00	0.40	**148003**	113	**151013**
40 - 22	43.00 - 54.00	66.00	46.00	36.00	0.70	**148018**	113	**151013**
	53.00 - 66.00	75.00	55.00	—	0.70	**148004**	113	**151014**
50 - 28	65.00 - 83.00	75.00	55.00	—	1.10	**148005**	113	**151015**
63 - 36	82.00 - 103.00	90.00	60.00	—	2.30	**148006**	113	**151036**
80 - 36	100.00 - 130.00	90.00	60.00	—	3.00	**148007**	113	**151037**
	125.00 - 155.00	90.00	60.00	—	3.20	**148007**	113	**151038**
	150.00 - 205.00	90.00	60.00	125.00	4.00	**148009**	113	**151038**

Imperial (in)

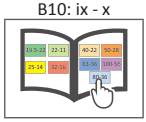
Connection $D_2 \mid D_1$	Boring Range A	Twin Cutter X_1	X_2	D_5	Weight (lbs)	Serrated Body	Insert Holder Form	Part No.
25 - 14	1.142 - 1.457	2.205	1.653	—	0.440	**148001**	112	**151011**
	1.417 - 1.732	2.205	1.653	1.181	0.440	**148002**	112	**151012**
32 - 18	1.417 - 1.732	2.441	1.653	1.181	0.881	**148017**	112	**151012**
	1.693 - 2.126	2.598	1.811	1.417	0.440	**148003**	113	**151013**
40 - 22	1.693 - 2.126	2.598	1.811	1.417	1.543	**148018**	113	**151013**
	2.087 - 2.598	2.952	2.165	—	1.543	**148004**	113	**151014**
50 - 28	2.559 - 3.268	2.952	2.165	—	2.425	**148005**	113	**151015**
63 - 36	3.228 - 4.055	3.543	2.362	—	5.070	**148006**	113	**151036**
80 - 36	3.937 - 5.118	3.543	2.362	—	6.613	**148007**	113	**151037**
	4.921 - 6.102	3.543	2.362	—	7.054	**148007**	113	**151038**
	5.906 - 8.071	3.543	2.362	4.921	8.818	**148009**	113	**151038**

NOTE: Insert holders sold in quantities of 1, and inserts sold separately.

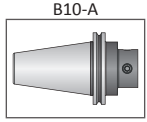
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B10: ix - x

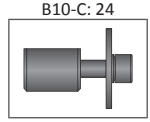
Key on B10-C: 2



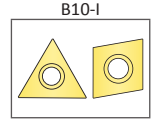
B10-A



B10-C: 24



B10-I

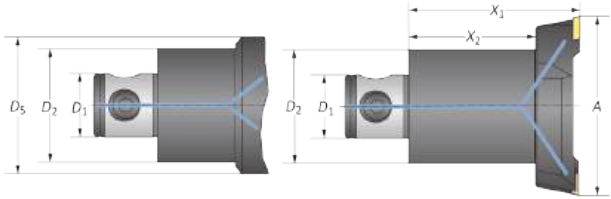


ⓜ = Metric (mm)
ⓘ = Imperial (in)
Inserts sold separately.

Twin Cutters Same Level

90° Tangential Inserts | Diameter Range: 53.00 mm - 205.00 mm (2.087" - 8.071")





Metric (mm)

Connection $D_2 \mid D_1$	Boring Range A	Twin Cutter X_1	X_2	D_5	Weight (kg)	Serrated Body	Insert Holder Form	Part No.
40 - 22	53.00 - 66.00	75.00	55.00	—	0.70	**148004**	04	**151022**
50 - 28	65.00 - 83.00	75.00	55.00	—	1.00	**148005**	04	**151032**
							05	**151043**
63 - 36	82.00 - 103.00	90.00	60.00	—	2.20	**148006**	05	**151035**
80 - 36	100.00 - 130.00	90.00	60.00	—	3.00	**148007**	05	**151009**
	125.00 - 155.00	90.00	60.00	—	3.10	**148007**	05	**151010**
	150.00 - 205.00	90.00	60.00	125.00	4.00	**148009**	05	**151010**

Imperial (in)

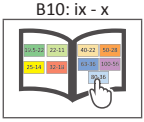
Connection $D_2 \mid D_1$	Boring Range A	Twin Cutter X_1	X_2	D_5	Weight (lbs)	Serrated Body	Insert Holder Form	Part No.
40 - 22	2.087 - 2.598	2.953	2.165	—	1.543	**148004**	04	**151022**
50 - 28	2.559 - 3.268	2.953	2.165	—	2.204	**148005**	04	**151032**
							05	**151043**
63 - 36	3.228 - 4.055	3.543	2.362	—	4.850	**148006**	05	**151035**
80 - 36	3.937 - 5.118	3.543	2.362	—	6.613	**148007**	05	**151009**
	4.921 - 6.102	3.543	2.362	—	6.843	**148007**	05	**151010**
	5.906 - 8.071	3.543	2.362	4.921	8.818	**148009**	05	**151010**

NOTE: Insert holders sold in quantities of 1, and inserts sold separately.

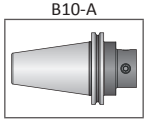
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Key on B10-C: 2

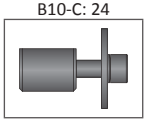
B10: ix - x



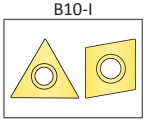
B10-A



B10-C: 24



B10-I

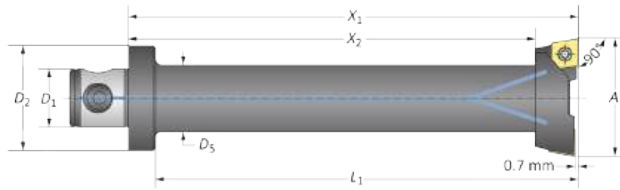


= Metric (mm)
= Imperial (in)
Inserts sold separately.

Twin Cutters Height Displaced

90° | 5xD | Diameter Range: 29.00 mm - 66.00 mm (1.142" - 2.598")





Metric (mm)

Connection $D_2 \mid D_1$	Boring Range A	Twin Cutter X_1	X_2	L_1	D_5	Weight (kg)	Serrated Body	Insert Holders Form	1	2 (-0.7 mm)
50 - 28	29.00 - 37.00	155.00	141.00	142.00	26.00	0.90	**148021**	103	**151001**	**151061**
	36.00 - 44.00	175.00	161.00	162.00	32.00	1.30	**148022**	103	**151002**	**151062**
	43.00 - 54.00	215.00	195.00	202.00	37.00	1.90	**148023**	104	**151003**	**151093**
	53.00 - 66.00	215.00	195.00	202.00	44.00	2.50	**148024**	104	**151004**	**151094**

Imperial (in)

Connection $D_2 \mid D_1$	Boring Range A	Twin Cutter X_1	X_2	L_1	D_5	Weight (lbs)	Serrated Body	Insert Holders Form	1	2 (-0.0276")
50 - 28	1.142 - 1.457	6.102	5.551	5.590	1.023	1.984	**148021**	103	**151001**	**151061**
	1.417 - 1.732	6.889	6.338	6.377	1.259	2.866	**148022**	103	**151002**	**151062**
	1.693 - 2.126	8.465	7.677	7.952	1.456	4.188	**148023**	104	**151003**	**151093**
	2.087 - 2.598	8.465	7.677	7.951	1.732	5.511	**148024**	104	**151004**	**151094**

NOTE: Different lengths available upon request.
NOTE: Insert holders sold in quantities of 1, and inserts sold separately.

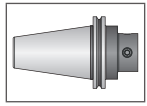
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B10: ix - x

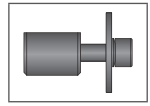


Key on B10-C: 2

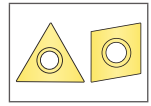
B10-A



B10-C: 24



B10-I

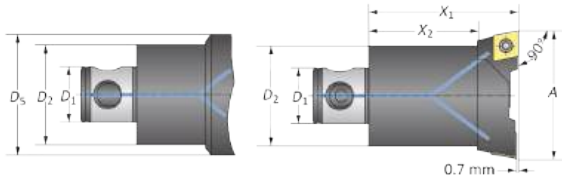


m = Metric (mm)
i = Imperial (in)
Inserts sold separately.

Twin Cutters Height Displaced

90° | Diameter Range: 29.00 mm - 205.00 mm (1.142" - 8.071")





Metric (mm)

Connection $D_2 \mid D_1$	Boring Range A	Twin Cutter X_1	Twin Cutter X_2	Twin Cutter D_5	Weight (kg)	Serrated Body	Insert Holders Form	Insert Holders 1	Insert Holders 2 (-0.7 mm)
25 - 14	29.00 - 37.00	56.00	42.00	—	0.20	**148001**	103	**151001**	**151061**
	36.00 - 44.00	56.00	42.00	30.00	0.20	**148002**	103	**151002**	**151062**
32 - 18	36.00 - 44.00	56.00	42.00	30.00	0.40	**148017**	103	**151002**	**151062**
	43.00 - 54.00	66.00	46.00	36.00	0.40	**148003**	104	**151003**	**151093**
40 - 22	43.00 - 54.00	66.00	46.00	36.00	0.70	**148018**	104	**151003**	**151093**
	53.00 - 66.00	75.00	55.00	—	0.70	**148004**	104	**151004**	**151094**
50 - 28	65.00 - 83.00	75.00	55.00	—	1.10	**148005**	104	**151005**	**151095**
63 - 36	82.00 - 103.00	90.00	60.00	—	2.40	**148006**	104	**151086**	**151090**
							105	**151006**	**151096**
80 - 36	100.00 - 130.00	90.00	60.00	—	3.00	**148007**	104	**151087**	**151091**
							105	**151007**	**151097**
	125.00 - 155.00	90.00	60.00	—	3.20	**148007**	104	**151088**	**151092**
							105	**151008**	**151098**
	150.00 - 205.00	90.00	60.00	125.00	4.00	**148009**	104	**151088**	**151092**
							105	**151008**	**151098**

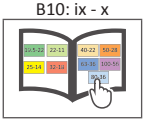
Imperial (in)

Connection $D_2 \mid D_1$	Boring Range A	Twin Cutter X_1	Twin Cutter X_2	Twin Cutter D_5	Weight (lbs)	Serrated Body	Insert Holders Form	Insert Holders 1	Insert Holders 2 (-0.0276")
25 - 14	1.142 - 1.457	2.205	1.653	—	0.440	**148001**	103	**151001**	**151061**
	1.417 - 1.732	2.205	1.653	1.181	0.440	**148002**	103	**151002**	**151062**
32 - 18	1.417 - 1.732	2.205	1.653	1.181	0.881	**148017**	103	**151002**	**151062**
	1.693 - 2.126	2.598	1.811	1.417	0.881	**148003**	104	**151003**	**151093**
40 - 22	1.693 - 2.126	2.598	1.811	1.417	1.543	**148018**	104	**151003**	**151093**
	2.087 - 2.598	2.953	2.165	—	1.543	**148004**	104	**151004**	**151094**
50 - 28	2.559 - 3.268	2.953	2.165	—	2.425	**148005**	104	**151005**	**151095**
63 - 36	3.228 - 4.055	3.543	2.362	—	5.291	**148006**	104	**151086**	**151090**
							105	**151006**	**151096**
80 - 36	3.937 - 5.118	3.543	2.362	—	6.613	**148007**	104	**151087**	**151091**
							105	**151007**	**151097**
	4.921 - 6.102	3.543	2.362	—	7.054	**148007**	104	**151088**	**151092**
							105	**151008**	**151098**
	5.906 - 8.071	3.543	2.362	4.921	8.818	**148009**	104	**151088**	**151092**
							105	**151008**	**151098**

NOTE: Insert holders sold in quantities of 1, and inserts sold separately.

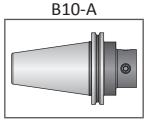
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B10: ix - x

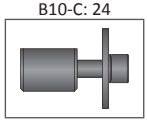


Key on B10-C: 2

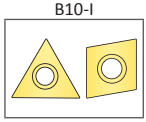
B10-A



B10-C: 24



B10-I

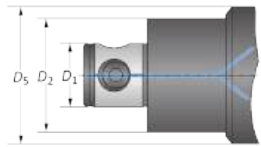


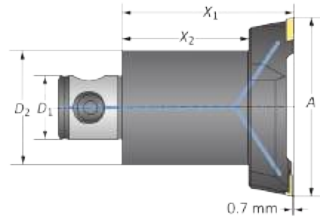
m = Metric (mm)
i = Imperial (in)
Inserts sold separately.

Twin Cutters Height Displaced

Tangential Inserts | Diameter Range: 53.00 mm - 205.00 mm (2.087" - 8.071")







C

Metric (mm)

Connection $D_2 \mid D_1$	Boring Range A	Twin Cutter X_1	X_2	D_5	Weight (kg)	Serrated Body	Insert Holders Form	1	2 (-0.7 mm)
40 - 22	53.00 - 66.00	75.00	55.00	—	0.70	**148004**	04	**151022**	**268009**
50 - 28	65.00 - 83.00	75.00	55.00	—	1.00	**148005**	04	**151032**	**268010**
							05	**151043**	**268019**
63 - 36	82.00 - 103.00	90.00	60.00	—	2.20	**148006**	04	**151034**	**268020**
							05	**151035**	**268021**
80 - 36	100.00 - 130.00	90.00	60.00	—	3.00	**148007**	05	**151009**	**268022**
	125.00 - 155.00	90.00	60.00	—	3.10	**148007**	05	**151010**	**268023**
	150.00 - 205.00	90.00	60.00	125.00	4.00	**148009**	05	**151010**	**268023**

Imperial (in)

Connection $D_2 \mid D_1$	Boring Range A	Twin Cutter X_1	X_2	D_5	Weight (lbs)	Serrated Body	Insert Holders Form	1	2 (-0.0276")
40 - 22	2.087 - 2.598	2.953	2.165	—	1.543	**148004**	04	**151022**	**268009**
50 - 28	2.559 - 3.268	2.953	2.165	—	2.204	**148005**	04	**151032**	**268010**
							05	**151043**	**268019**
63 - 36	3.229 - 4.055	3.543	2.362	—	5.291	**148006**	04	**151034**	**268020**
							05	**151035**	**268021**
80 - 36	3.937 - 5.118	3.543	2.362	—	6.613	**148007**	05	**151009**	**268022**
	4.921 - 6.102	3.543	2.362	—	6.834	**148007**	05	**151010**	**268023**
	5.906 - 8.071	3.543	2.362	4.921	8.818	**148009**	05	**151010**	**268023**

NOTE: Insert holders sold in quantities of 1, and inserts sold separately.

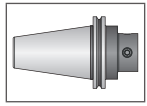
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

B10: ix - x

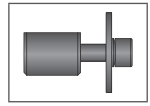


Key on B10-C: 2

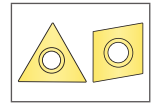
B10-A



B10-C: 24



B10-I



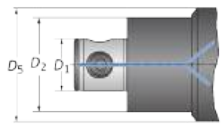
Ⓜ = Metric (mm)
ⓘ = Imperial (in)
Inserts sold separately.

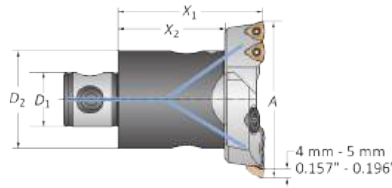
Notes

VolCut Insert Holders

Diameter Range: 65.00 mm - 3255.00 mm (2.559" - 128.150")







Metric (mm)

Connection D_2 | D_1	Boring Range A	Boring Range A_{min}**	Serrated Body X_1	Serrated Body X_2	Serrated Body D_5	Weight (kg)	Number of Inserts	Serrated Body	Insert Holder Form	Insert Holder Part No.
50 - 28	65.00 - 83.00	65.00 - 70.00	74.00	55.00	—	1.10	2	**148005**	464	**151019**
63 - 36	82.00 - 103.00	82.00 - 87.00	89.00	60.00	—	2.20	3	**148006**	464	**151039**
80 - 36	100.00 - 130.00	100.00 - 105.00	89.00	60.00	—	3.00	3	**148007**	464	**151059**
	125.00 - 155.00	125.00 - 130.00	89.00	60.00	—	3.20	3	**148007**	464	**151069**
	150.00 - 205.00	150.00 - 155.00	89.00	60.00	125.00	5.10	3	**148009**	464	**151069**
⚠ D60	200.00 - 3255.00	—	—	—	—	—	3	*	464	**149030**

Imperial (in)

Connection D_2 | D_1	Boring Range A	Boring Range A_{min}**	Serrated Body X_1	Serrated Body X_2	Serrated Body D_5	Weight (lbs)	Number of Inserts	Serrated Body	Insert Holder Form	Insert Holder Part No.
50 - 28	2.559 - 3.268	2.559 - 2.756	2.913	2.165	—	2.425	2	**148005**	464	**151019**
63 - 36	3.228 - 4.055	3.228 - 3.425	3.504	2.362	—	4.850	3	**148006**	464	**151039**
80 - 36	3.937 - 5.118	3.937 - 4.134	3.504	2.362	—	6.613	3	**148007**	464	**151059**
	4.921 - 6.102	4.921 - 5.118	3.504	2.362	—	7.054	3	**148007**	464	**151069**
	5.906 - 8.071	5.906 - 6.102	3.504	2.362	4.921	11.243	3	**148009**	464	**151069**
⚠ D60	7.874 - 128.150	—	—	—	—	—	3	*	464	**149030**

NOTE: Inserts, insert holders, and serrated body are sold separately.
*For large diameter serrated slides, please contact Application Engineering (330.343.4283) and see section B10-H.
**For smaller diameters, both cartridges must be set to the same diameter. Only the outside insert on each cartridge can be engaged in the material.

IC Inserts

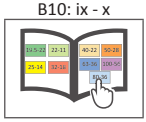
Carbide Grade	Geometry	Part No. AM300®	Insert Screws*	Driver
P35 (C5)	Standard	**OP-05T308-P**	**IS-10-1**	**8T-9**
K35 (C1)		**OP-05T308-1P**		
K25 (C2)		**OP-05T308-2P**		
P35 (C5)	High Rake	**OP-05T308-PHR**	**IS-10-1**	**8T-9**

NOTE: See section A70 in the Allied Drilling Catalog for recommended cutting data, cutting materials, and geometries.

⚠ **WARNING** **For large diameter boring with VolCut insert holders, please:**
- Contact our Application Engineering department before purchasing: **appeng@alliedmachine.com.**
- Refer to section **B10-H**.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

B10: ix - x
Key on B10-C: 2



Ⓜ = Metric (mm)
ⓘ = Imperial (in)
Inserts sold separately.

VolCut Technical Information

Setup Instructions | Minimum Pilot Calculation



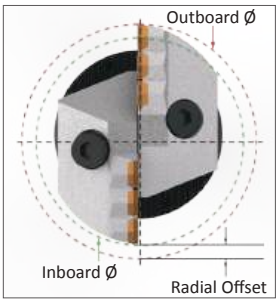
Step 1:
Loosen the mounting screws on both cartridges.



Step 2:
Set one cartridge to the finish diameter by tightening the adjustment screw against the adjustment pin.



Step 3:
Tighten the mounting screws on the cartridge to 15-19 N·m (11-14 ft-lbf).



Step 4:
Set the opposing cartridge with 4.00 mm - 5.00 mm (0.157" - 0.196") radial offset inward by tightening the adjustment screw against the adjustment pin (optimum situation for each insert to remove equal material).



Step 5:
Tighten the mounting screws on the cartridge to 15-19 N·m (11-14 ft-lbf).

Note: Drilling systems with OP inserts are used as single cutters. The replaceable inserts are mounted offset in diameter. Please review the assembly instructions.

Minimum Pilot Calculation

Calculation: Finish Diameter - Opening Range = Minimum Pilot Hole Diameter

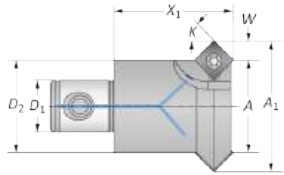
Insert Holder	Diameter Range	Opening Range
151019	65.00 mm - 70.00 mm (2.559" - 2.756")	15.24 mm (0.600")
	70.00 mm - 83.00 mm (2.756" - 3.268")	47.75 mm (1.880")
151039	82.00 mm - 87.00 mm (3.228" - 3.425")	15.24 mm (0.600")
	87.00 mm - 103.00 mm (3.425" - 4.055")	68.07 mm (2.680")
151059	100.00 mm - 105.00 mm (3.937" - 4.134")	15.24 mm (0.600")
	105.00 mm - 130.00 mm (4.134" - 5.118")	68.07 mm (2.680")
151069	125.00 mm - 130.00 mm (4.921" - 5.118")	15.24 mm (0.600")
	130.00 mm - 205.00 mm (5.118" - 8.071")	68.07 mm (2.680")
149030	200.00 mm - 3255.00 mm (7.874" - 128.150")	68.07 mm (2.680")

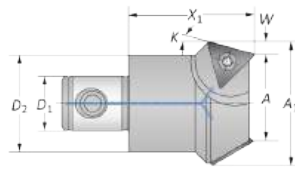
Example: To open an existing hole to 114.30 mm (4.500") diameter, a 151059 insert holder would be used with a 148007 serrated tool body, and the minimum pilot diameter would be 114.30 mm - 68.07 mm = 46.23 mm (4.500" - 2.680" = 1.820").

Chamfering Tools

Solid Body | Diameter Range: 20.00 mm - 32.00 mm (0.787" - 1.260")







C

Metric (mm)

Connection D_2 | D_1	Approach Angle K	Boring Range A	Cutter Diameter A_1	Chamfering Tool X_1	Chamfering Tool W	Weight (kg)	Insert Form	Number of Inserts	Part No.
25 - 14	15°	25.00	33.00	31.00	4.00	0.15	163	2	**201087**
	45°	20.00	33.00	31.00	6.50	0.15	112	2	**201082**
32 - 18	15°	32.00	40.00	41.00	4.00	0.20	163	2	**201088**
	30°	25.00	41.00	41.00	8.00	0.20	163	2	**201089**
	45°	32.00	45.00	41.00	6.50	0.20	112	3	**201083**

Imperial (in)

Connection D_2 | D_1	Approach Angle K	Boring Range A	Cutter Diameter A_1	Chamfering Tool X_1	Chamfering Tool W	Weight (lbs)	Insert Form	Number of Inserts	Part No.
25 - 14	15°	0.984	1.299	1.220	0.157	0.330	163	2	**201087**
	45°	0.787	1.299	1.220	0.255	0.330	112	2	**201082**
32 - 18	15°	1.260	1.574	1.614	0.157	0.440	163	2	**201088**
	30°	0.984	1.614	1.614	0.314	0.440	163	2	**201089**
	45°	1.260	1.771	1.614	0.255	0.440	112	3	**201083**

NOTE: *K*45° for front and reverse chamfering.
NOTE: Inserts sold separately.

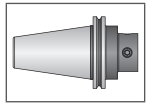
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B10: ix - x

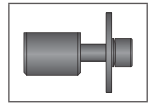


Key on B10-C: 2

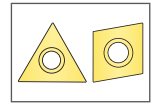
B10-A



B10-C: 24



B10-I



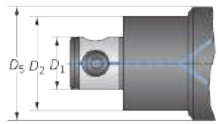
ⓜ = Metric (mm)
ⓘ = Imperial (in)
Inserts sold separately.

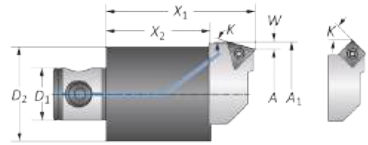
Notes

Chamfering Tools

Insert Holders | Diameter Range: 19.00 mm - 216.00 mm (0.748" - 8.504")







Metric (mm)

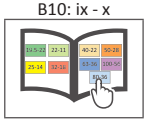
Connection $D_2 \mid D_1$	Approach Angle (*K*)	Boring Range (*A*)	Chamfering Range (A_1)	Chamfering Tool X_1	Chamfering Tool X_2	Chamfering Tool D_5	Chamfering Tool *W*	Weight (kg)	Serrated Body	Insert Holder Form	Insert Holder Part No.
25 - 14	15°	24.00 - 32.00	29.00 - 37.00	60.00	42.00	-	2.50	0.20	**148001**	161	**201057**
		31.00 - 39.00	36.00 - 44.00	60.00	42.00	30.00	2.50	0.20	**148002**	161	**201058**
	20°	22.00 - 30.00	29.00 - 37.00	60.00	42.00	-	3.50	0.20	**148001**	161	**201017**
		29.00 - 37.00	36.00 - 44.00	60.00	42.00	30.00	3.50	0.20	**148002**	161	**201018**
	30°	20.00 - 28.00	29.00 - 37.00	60.00	42.00	-	4.50	0.20	**148001**	161	**201067**
		27.00 - 35.00	36.00 - 44.00	60.00	42.00	30.00	4.50	0.20	**148002**	161	**201068**
	45°	19.00 - 27.00	33.00 - 41.00	58.00	42.00	-	5.00	0.20	**148001**	161	**201003***
		26.00 - 34.00	38.00 - 46.00	58.00	42.00	-	5.00	0.20	**148001**	112	**201004**
		31.00 - 39.00	43.00 - 51.00	60.00	42.00	30.00	6.00	0.20	**148002**	112	**201007**
32 - 18	15°	31.00 - 39.00	36.00 - 44.00	60.00	42.00	30.00	2.50	0.20	**148017**	161	**201058**
		35.00 - 46.00	43.00 - 54.00	71.00	46.00	36.00	4.00	0.40	**148003**	163	**201059**
	20°	29.00 - 37.00	36.00 - 44.00	60.00	42.00	30.00	3.50	0.20	**148017**	161	**201018**
		33.00 - 44.00	43.00 - 54.00	71.00	46.00	36.00	5.00	0.40	**148003**	163	**201019**
	30°	27.00 - 35.00	36.00 - 44.00	60.00	42.00	30.00	4.50	0.20	**148017**	161	**201068**
		28.00 - 39.00	43.00 - 54.00	71.00	46.00	36.00	7.50	0.40	**148003**	163	**201069**
	45°	31.00 - 39.00	43.00 - 51.00	60.00	42.00	30.00	6.00	0.20	**148017**	112	**201007**
		35.00 - 46.00	50.00 - 61.00	66.00	46.00	36.00	7.50	0.40	**148003**	113	**201008**
40 - 22	15°	35.00 - 46.00	43.00 - 54.00	71.00	46.00	36.00	4.00	0.40	**148018**	163	**201059**
		37.00 - 50.00	45.00 - 58.00	80.00	55.00	-	4.00	0.70	**148004**	163	**201060**
	20°	33.00 - 44.00	43.00 - 54.00	71.00	46.00	36.00	5.00	0.40	**148018**	163	**201019**
		37.00 - 50.00	47.00 - 60.00	80.00	55.00	-	5.00	0.70	**148004**	163	**201020**
	30°	28.00 - 39.00	43.00 - 54.00	71.00	46.00	36.00	7.50	0.40	**148018**	163	**201069**
		37.00 - 50.00	52.00 - 65.00	80.00	55.00	-	7.50	0.70	**148004**	163	**201070**
	45°	35.00 - 46.00	50.00 - 61.00	66.00	46.00	36.00	7.50	0.40	**148018**	113	**201008**
		43.00 - 56.00	58.00 - 71.00	80.00	55.00	-	7.50	0.70	**148004**	113	**201009**

*Insert holder cannot be used for reverse machining.

NOTE: *K*45° insert holders for reverse chamfering above Ø 31.00 mm (1.2205").
NOTE: Insert holders and inserts sold separately.

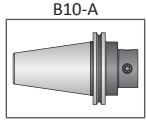
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

B10: ix - x

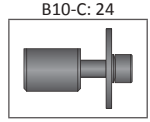


Key on B10-C: 2

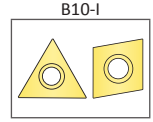
B10-A



B10-C: 24



B10-I

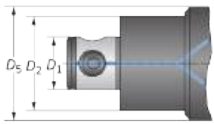


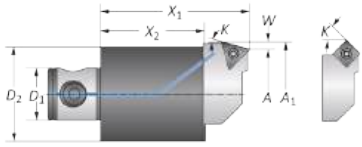
ⓜ = Metric (mm)
ⓘ = Imperial (in)
Inserts sold separately.

Chamfering Tools

Insert Holders | Diameter Range: 19.00 mm - 216.00 mm (0.748" - 8.504")







Metric (mm)

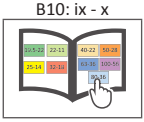
Connection $D_2 \mid D_1$	Approach Angle (*K*)	Boring Range (*A*)	Chamfering Range (A_1)	Chamfering Tool X_1	X_2	D_5	*W*	Weight (kg)	Serrated Body	Insert Holder Form	Part No.
50 - 28	15°	50.00 - 68.00	58.00 - 76.00	80.00	55.00	-	4.00	1.00	**148005**	163	**201061**
	20°	50.00 - 68.00	60.00 - 78.00	80.00	55.00	-	5.00	1.00	**148005**	163	**201021**
	30°	50.00 - 68.00	65.00 - 83.00	80.00	55.00	-	7.50	1.00	**148005**	163	**201071**
	45°	55.00 - 73.00	70.00 - 88.00	80.00	55.00	-	7.50	1.00	**148005**	113	**201010**
63 - 36	15°	68.00 - 89.00	76.00 - 97.00	90.00	60.00	-	4.00	1.90	**148006**	163	**201062**
	20°	68.00 - 89.00	78.00 - 99.00	90.00	60.00	-	5.00	1.90	**148006**	163	**201022**
	30°	68.00 - 89.00	83.00 - 104.00	90.00	60.00	-	7.50	1.90	**148006**	163	**201072**
	45°	72.00 - 93.00	87.00 - 108.00	90.00	60.00	-	7.50	1.90	**148006**	113	**201011**
80 - 36	15°	89.00 - 119.00	97.00 - 127.00	90.00	60.00	-	4.00	2.60	**148007**	163	**201063**
		119.00 - 149.00	127.00 - 159.00	90.00	60.00	-	4.00	2.70	**148007**	163	**201064**
		144.00 - 199.00	152.00 - 207.00	90.00	60.00	125.00	4.00	3.60	**148009**	163	**201064**
	20°	89.00 - 119.00	99.00 - 129.00	90.00	60.00	-	5.00	2.60	**148007**	163	**201023**
		119.00 - 149.00	129.00 - 159.00	90.00	60.00	-	5.00	2.70	**148007**	163	**201024**
		144.00 - 199.00	154.00 - 209.00	90.00	60.00	125.00	5.00	3.60	**148009**	163	**201024**
	30°	89.00 - 119.00	104.00 - 134.00	90.00	60.00	-	7.50	2.60	**148007**	163	**201073**
		119.00 - 149.00	134.00 - 164.00	90.00	60.00	-	7.50	2.70	**148007**	163	**201074**
		144.00 - 199.00	159.00 - 214.00	90.00	60.00	125.00	7.50	3.60	**148009**	163	**201074**
	45°	92.00 - 122.00	107.00 - 137.00	90.00	60.00	-	7.50	2.60	**148007**	113	**201012**
		121.00 - 151.00	136.00 - 166.00	90.00	60.00	-	7.50	2.70	**148007**	113	**201013**
		146.00 - 201.00	161.00 - 216.00	90.00	60.00	125.00	7.50	3.60	**148009**	113	**201013**

NOTE: *K*45° for front and reverse chamfering above Ø 31.00 mm.
NOTE: Insert holders and inserts sold separately.

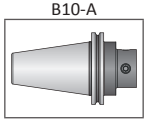
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

B10: ix - x

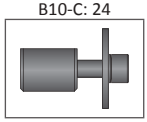
Key on B10-C: 2



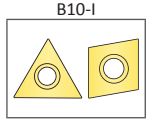
B10-A



B10-C: 24



B10-I

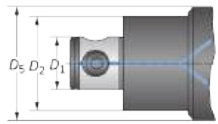


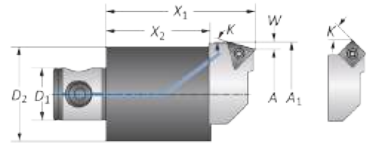
ⓜ = Metric (mm)
ⓘ = Imperial (in)
Inserts sold separately.

Chamfering Tools

Insert Holders | Diameter Range: 19.00 mm - 216.00 mm (0.748" - 8.504")







C

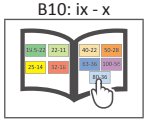
Imperial (in)

Connection $D_2 \mid D_1$	Approach Angle (*K*)	Boring Range (*A*)	Chamfering Range (A_1)	Chamfering Tool X_1	X_2	D_5	*W*	Weight (lbs)	Serrated Body	Insert Holder Form	Part No.
25 - 14	15°	0.945 - 1.260	1.141 - 1.457	2.362	1.653	-	0.098	0.440	**148001**	161	**201057**
		1.220 - 1.535	1.417 - 1.732	2.362	1.653	1.181	0.098	0.440	**148002**	161	**201058**
	20°	0.866 - 1.181	1.141 - 1.456	2.362	1.653	-	0.138	0.440	**148001**	161	**201017**
		1.142 - 1.457	1.417 - 1.732	2.362	1.653	1.181	0.138	0.440	**148002**	161	**201018**
	30°	0.787 - 1.102	1.141 - 1.456	2.362	1.653	-	0.177	0.440	**148001**	161	**201067**
		1.063 - 1.378	1.417 - 1.732	2.362	1.653	1.181	0.177	0.440	**148002**	161	**201068**
	45°	0.748 - 1.063	1.299 - 1.614	2.283	1.653	-	0.197	0.440	**148001**	161	**201003***
		1.024 - 1.339	1.496 - 1.811	2.283	1.653	-	0.197	0.440	**148001**	112	**201004**
		1.220 - 1.535	1.692 - 2.007	2.362	1.653	1.181	0.236	0.440	**148002**	112	**201007**
32 - 18	15°	1.220 - 1.535	1.417 - 1.732	2.362	1.653	1.181	0.098	0.440	**148017**	161	**201058**
		1.378 - 1.811	1.692 - 2.125	2.795	1.811	1.417	0.157	0.881	**148003**	163	**201059**
	20°	1.142 - 1.457	1.417 - 1.732	2.362	1.653	1.181	0.138	0.440	**148017**	161	**201018**
		1.299 - 1.732	1.692 - 2.125	2.795	1.811	1.417	0.197	0.881	**148003**	163	**201019**
	30°	1.063 - 1.378	1.417 - 1.732	2.362	1.653	1.181	0.177	0.440	**148017**	161	**201068**
		1.102 - 1.535	1.692 - 2.125	2.795	1.811	1.417	0.297	0.881	**148003**	163	**201069**
	45°	1.220 - 1.535	1.692 - 2.007	2.362	1.653	1.181	0.236	0.440	**148017**	112	**201007**
		1.378 - 1.811	1.968 - 2.401	2.598	1.811	1.417	0.295	0.881	**148003**	113	**201008**
40 - 22	15°	1.378 - 1.811	1.692 - 2.125	2.795	1.811	1.417	0.157	0.881	**148018**	163	**201059**
		1.457 - 1.969	1.771 - 2.283	3.150	2.165	-	0.157	1.543	**148004**	163	**201060**
	20°	1.299 - 1.732	1.692 - 2.125	2.795	1.811	1.417	0.197	0.881	**148018**	163	**201019**
		1.457 - 1.969	1.850 - 2.362	3.150	2.165	-	0.197	1.543	**148004**	163	**201020**
	30°	1.102 - 1.535	1.692 - 2.125	2.795	1.811	1.417	0.295	0.881	**148018**	163	**201069**
		1.457 - 1.969	2.047 - 2.559	3.150	2.165	-	0.295	1.543	**148004**	163	**201070**
	45°	1.378 - 1.811	1.968 - 2.401	2.598	1.811	1.417	0.295	0.881	**148018**	113	**201008**
		1.963 - 2.205	2.283 - 2.795	3.150	2.165	-	0.295	1.543	**148004**	113	**201009**

*Insert holder cannot be used for reverse machining.
NOTE: *K*45° for front and reverse chamfering above Ø 31.00 mm.
NOTE: Insert holders and inserts sold separately.

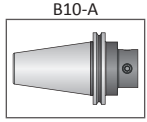
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B10: ix - x

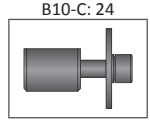


Key on B10-C: 2

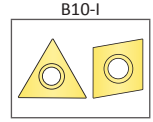
B10-A



B10-C: 24



B10-I

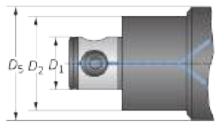


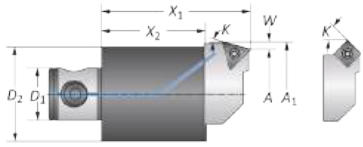
m = Metric (mm)
i = Imperial (in)
Inserts sold separately.

Chamfering Tools

Insert Holders | Diameter Range: 19.00 mm - 216.00 mm (0.748" - 8.504")







Imperial (in)

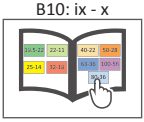
Connection $D_2 \mid D_1$	Approach Angle (K)	Boring Range (A)	Chamfering Range (A_1)	Chamfering Tool X_1	Chamfering Tool X_2	Chamfering Tool D_5	Chamfering Tool W	Weight (lbs)	Serrated Body	Insert Holder Form	Insert Holder Part No.
50 - 28	15°	1.969 - 2.677	2.283 - 2.992	3.150	2.165	-	0.157	2.204	**148005**	163	**201061**
	20°	1.969 - 2.677	2.362 - 3.070	3.150	2.165	-	0.197	2.204	**148005**	163	**201021**
	30°	1.969 - 2.677	2.559 - 3.267	3.150	2.165	-	0.197	2.204	**148005**	163	**201071**
	45°	2.165 - 2.874	2.755 - 3.464	3.150	2.165	-	0.295	2.204	**148005**	113	**201010**
63 - 36	15°	2.677 - 3.504	2.992 - 3.818	3.543	2.362	-	0.157	4.188	**148006**	163	**201062**
	20°	2.677 - 3.504	3.070 - 3.897	3.543	2.362	-	0.197	4.188	**148006**	163	**201022**
	30°	2.677 - 3.504	3.268 - 4.094	3.543	2.362	-	0.295	4.188	**148006**	163	**201072**
	45°	2.835 - 3.661	3.425 - 4.251	3.543	2.362	-	0.295	4.188	**148006**	113	**201011**
80 - 36	15°	3.504 - 4.685	3.818 - 5.000	3.543	2.362	-	0.157	5.732	**148007**	163	**201063**
		4.685 - 5.866	5.000 - 6.259	3.543	2.362	-	0.157	5.952	**148007**	163	**201064**
		5.669 - 7.835	5.984 - 8.149	3.543	2.362	4.921	0.157	7.936	**148009**	163	**201064**
	20°	3.504 - 4.685	3.989 - 5.078	3.543	2.362	-	0.197	5.732	**148007**	163	**201023**
		4.685 - 5.866	5.078 - 6.259	3.543	2.362	-	0.197	5.952	**148007**	163	**201024**
		5.669 - 7.835	6.062 - 8.228	3.543	2.362	4.921	0.197	7.936	**148009**	163	**201024**
	30°	3.504 - 4.685	4.094 - 5.275	3.543	2.362	-	0.295	5.732	**148007**	163	**201073**
		4.685 - 5.866	5.275 - 6.456	3.543	2.362	-	0.295	5.952	**148007**	163	**201074**
		5.669 - 7.835	6.259 - 8.425	3.543	2.362	4.921	0.295	7.936	**148009**	163	**201074**
	45°	3.622 - 4.803	4.212 - 5.393	3.543	2.362	-	0.295	5.732	**148007**	113	**201012**
		4.764 - 5.945	5.354 - 6.535	3.543	2.362	-	0.295	5.952	**148007**	113	**201013**
		5.748 - 7.913	6.338 - 8.504	3.543	2.362	4.921	0.295	7.936	**148009**	113	**201013**

NOTE: K45° for front and reverse chamfering above Ø 31.00 mm.
NOTE: Insert holders and inserts sold separately.

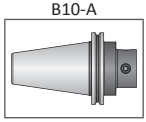
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Key on B10-C: 2

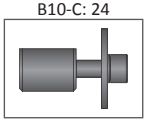
B10: ix - x



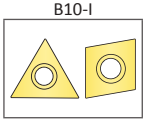
B10-A



B10-C: 24



B10-I

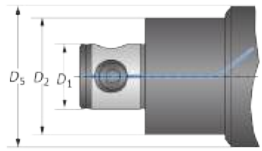


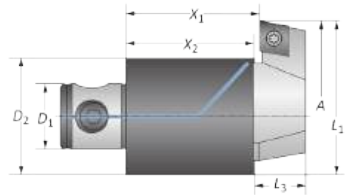
m = Metric (mm)
i = Imperial (in)
Inserts sold separately.

Reverse Machining Tools

Diameter Range: 29.00 mm - 245.00 mm (1.142" - 9.646")







$$L_1 = \frac{D_2}{2} + \frac{A}{2} + 0.5 \text{ mm}$$

C

Metric (mm)

Connection $D_2 \mid D_1$	Boring Range A	Reverse Machining X_1	X_2	L_3	D_5	Weight (kg)	Serrated Tool Body	Insert Holder Form	Part No.
25 - 14	29.00 - 37.00	40.00	39.00	14.00	—	0.20	**148011**	103	**251001**
	34.00 - 42.00	40.00	39.00	14.00	—	0.20	**148011**	103	**251002**
	36.00 - 44.00	40.00	39.00	14.00	—	0.20	**148012**	103	**251002**
	44.00 - 52.00	40.00	39.00	18.00	—	0.20	**148012**	104	**251003**
32 - 18	43.00 - 54.00	40.00	39.00	18.00	—	0.30	**148013**	104	**251003**
	55.00 - 66.00	40.00	39.00	18.00	—	0.40	**148013**	104	**251004**
40 - 22	53.00 - 72.00	40.00	39.00	18.00	—	0.50	**148014**	104	**251004**
	66.00 - 85.00	40.00	39.00	18.00	—	0.50	**148014**	104	**251005**
50 - 28	70.00 - 95.00	56.00	55.00	22.00	—	1.10	**148015**	104	**251006**
	92.00 - 117.00	56.00	55.00	22.00	—	1.30	**148015**	104	**251007**
63 - 36	92.00 - 122.00	56.00	55.00	22.00	—	1.70	**148016**	104	**251007**
80 - 36	120.00 - 150.00	62.00	60.00	26.00	—	2.70	**148007**	104	**251008**
	166.00 - 196.00	62.00	60.00	26.00	—	2.90	**148007**	104	**251009**
	145.00 - 200.00	62.00	60.00	26.00	125.00	3.60	**148009**	104	**251008**
	190.00 - 245.00	62.00	60.00	26.00	125.00	3.70	**148009**	104	**251009**

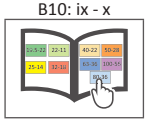
Imperial (in)

Connection $D_2 \mid D_1$	Boring Range A	Reverse Machining X_1	X_2	L_3	D_5	Weight (lbs)	Serrated Tool Body	Insert Holder Form	Part No.
25 - 14	1.142 - 1.457	1.575	1.535	0.551	—	0.440	**148011**	103	**251001**
	1.339 - 1.654	1.575	1.535	0.551	—	0.440	**148011**	103	**251002**
	1.417 - 1.732	1.575	1.535	0.551	—	0.440	**148012**	103	**251002**
	1.732 - 2.047	1.575	1.535	0.708	—	0.440	**148012**	104	**251003**
32 - 18	1.693 - 2.126	1.575	1.535	0.708	—	0.661	**148013**	104	**251003**
	2.165 - 2.598	1.575	1.535	0.708	—	0.881	**148013**	104	**251004**
40 - 22	2.087 - 2.835	1.575	1.535	0.708	—	1.102	**148014**	104	**251004**
	2.598 - 3.346	1.575	1.535	0.708	—	1.102	**148014**	104	**251005**
50 - 28	2.756 - 3.740	2.205	2.165	0.866	—	2.425	**148015**	104	**251006**
	3.622 - 4.606	2.205	2.165	0.866	—	2.866	**148015**	104	**251007**
63 - 36	3.622 - 4.803	2.205	2.165	0.866	—	3.747	**148016**	104	**251007**
80 - 36	4.724 - 5.906	2.441	2.362	1.023	—	5.952	**148007**	104	**251008**
	6.535 - 7.717	2.441	2.362	1.023	—	6.393	**148007**	104	**251009**
	5.709 - 7.874	2.441	2.362	1.023	4.921	7.936	**148009**	104	**251008**
	7.480 - 9.646	2.441	2.362	1.023	4.921	8.157	**148009**	104	**251009**

NOTE: Only use inserts with chip grooves all around.
NOTE: Insert holders and inserts sold separately.

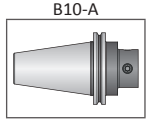
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B10: ix - x

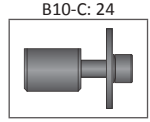


Key on B10-C: 2

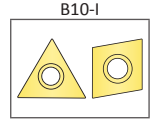
B10-A



B10-C: 24

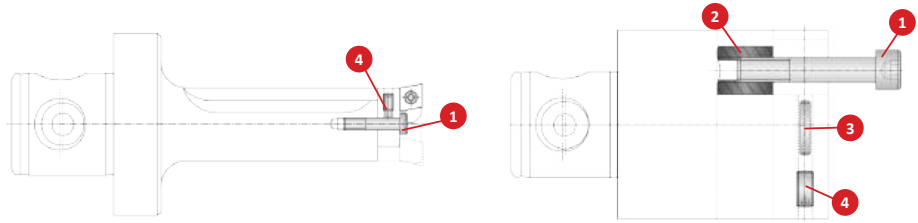


B10-I



Ⓜ = Metric (mm)
ⓘ = Imperial (in)
Inserts sold separately.

Clamping Elements



Clamping Elements

Connection	Serrated Tool Body	Part No. 1. Cap Screw	Service Key	2. Clamping Nut	3. Adjustment Pin	4. Thread Pin	Service Key
Ø 18	235021	**415111**	**T25 / B**	**–**	**–**	**215346**	**s1.5 / A**
Ø 20	235022	**415112**	**T25 / B**	**–**	**–**	**215346**	**s1.5 / A**
Ø 23	235023	**415113**	**T25 / B**	**–**	**–**	**215346**	**s1.5 / A**
25 - 14	148001	**140108**	**s4 / B**	**140114**	**–**	**115280**	**s2.5 / A**
	148002	**148110**	**s5 / B**	**115667**	**–**	**126157**	**s2.5 / A**
	148011	**148110**	**s5 / B**	**148113**	**–**	**117148**	**s2.5 / A**
	148012	**148110**	**s5 / B**	**115666**	**–**	**117148**	**s2.5 / A**
32 - 18	148003	**140110**	**s5 / B**	**115667**	**–**	**126157**	**s2.5 / A**
	148013	**148110**	**s5 / B**	**148114**	**–**	**115192**	**s2.5 / A**
	148017	**148110**	**s5 / B**	**115667**	**–**	**126157**	**s2.5 / A**
40 - 22	148004	**140110**	**s5 / B**	**140116**	**–**	**115407**	**s2.5 / A**
	148014	**148110**	**s5 / B**	**148114**	**–**	**126157**	**s2.5 / A**
	148018	**140110**	**s5 / B**	**115667**	**–**	**126157**	**s2.5 / A**
50 - 28	148005	**140111**	**s6 / B**	**140117**	**–**	**140121**	**s2.5 / A**
	148010	**140111**	**s6 / B**	**140117**	**–**	**140121**	**s2.5 / A**
	148015	**140112**	**s6 / B**	**140117**	**–**	**215111**	**s2.5 / A**
	235001	**415111**	**T25 / B**	**–**	**–**	**215346**	**s1.5 / A**
	235002	**415112**	**T25 / B**	**–**	**–**	**215346**	**s1.5 / A**
	235003	**415113**	**T25 / B**	**–**	**–**	**215346**	**s1.5 / A**
	148021	**140108**	**s4 / B**	**140114**	**–**	**115280**	**s2.5 / A**
	148022	**140110**	**s5 / B**	**115667**	**–**	**126157**	**s2.5 / A**
	148023	**140110**	**s5 / B**	**115667**	**–**	**126157**	**s2.5 / A**
	148024	**140110**	**s5 / B**	**140116**	**–**	**115407**	**s2.5 / A**
63 - 36	148006	**140112**	**s6 / B**	**140118**	**–**	**140121**	**s2.5 / A**
	148016	**140112**	**s6 / B**	**140117**	**–**	**116550**	**s2.5 / A**
	235011	**415111**	**T25 / B**	**–**	**–**	**215346**	**s1.5 / A**
	235012	**415112**	**T25 / B**	**–**	**–**	**215346**	**s1.5 / A**
	235013	**415113**	**T25 / B**	**–**	**–**	**215346**	**s1.5 / A**
80 - 36	148007	**115730**	**s6 / B**	**140119**	**–**	**116550**	**s2.5 / A**
	148009	**115730**	**s6 / B**	**140119**	**140120**	**115519**	**s2.5 / A**

B10: ix - x
Key on B10-C: 2

Ⓜ = Metric (mm)
ⓘ = Imperial (in)
Inserts sold separately.

SECTION

B10-D

Grooving Tools

Grooving Tools



Get Your Groove On

Create radial and axial grooves on any machine with Wohlhaupter® grooving tools. Wohlhaupter grooving tools feature replaceable inserts to reduce costs and an MVS connection to adapt to any machine.

- Radial Groovers
  - 20.00 mm - 79.00 mm (0.787" - 3.110")
- Axial Groovers
  - 20.00 mm - 210.00 mm (0.787" - 8.268")

Applicable Industries

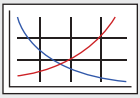
- Aerospace
- Agriculture
- Automotive
- Defense
- General Production
- Heavy Equipment
- Hydraulics
- Marine
- Medical
- Oil and Gas
- Renewable Energy/ Energy
- Tool, Mold, and Die

Reference Icons

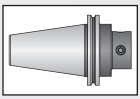
The following icons will appear throughout the catalog to help you navigate between products.



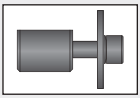
MVS Connection Color Guide
Detailed instructions and information regarding the MVS connection(s).



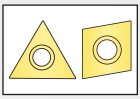
Recommended Cutting Data
Speed and feed recommendations for optimum and safe boring.



Shanks
A variety of shanks for different machines.



Clamping Elements
For use with insert holders and boring heads.



Inserts
For use with insert holder boring heads and boring bars using indexable inserts.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

WARNING means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

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Axial Grooving Tools 4

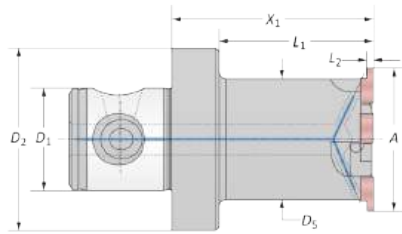
Accessories

Cap and Adjustment Screws 5

Grooving Tools for Circular Milling

Diameter Range: Ø > 20.00 mm (0.787")





Metric (mm)

MVS D_2 | D_1	Cutter Diameter A	Grooving Tool X_1	L_1	D_5	Groove L_2 (min)	Depth (max)	Number of Inserts	Weight (kg)	Insert Form	Part No.
32 - 18	39.00	40.00	40.00	33.00	3.37	2.50	4	0.30	90	**143054**
40 - 22	49.00	40.00	40.00	43.00	3.37	2.50	5	0.50	90	**143056**
50 - 28	20.00	55.00	40.00	17.00	2.37	1.50	2	0.40	89	**143051**
	20.00	95.00	82.00	17.00	2.37	1.50	2	0.40	89	**143052**
	39.00	55.00	42.00	33.00	3.37	2.50	4	0.60	90	**143053**
	49.00	55.00	40.00	43.00	3.37	2.50	5	0.70	90	**143055**
	63.00	40.00	40.00	53.00	5.87	4.70	6	0.70	91	**143057**
63 - 36	79.00	40.00	40.00	69.00	5.87	4.70	8	1.20	91	**143058**

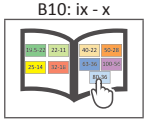
Imperial (in)

MVS D_2 | D_1	Cutter Diameter A	Grooving Tool X_1	L_1	D_5	Groove L_2 (min)	Depth (max)	Number of Inserts	Weight (lbs)	Insert Form	Part No.
32 - 18	1.535	1.575	1.575	1.299	0.133	0.098	4	0.661	90	**143054**
40 - 22	1.929	1.575	1.575	1.692	0.133	0.098	5	1.102	90	**143056**
50 - 28	0.787	2.165	1.575	0.669	0.093	0.059	2	0.881	89	**143051**
	0.787	3.740	3.228	0.669	0.093	0.059	2	0.881	89	**143052**
	1.535	2.165	1.654	1.299	0.133	0.098	4	1.322	90	**143053**
	1.929	2.165	1.575	1.692	0.133	0.098	5	1.543	90	**143055**
	2.480	1.575	1.575	2.086	0.231	0.185	6	1.543	91	**143057**
63 - 36	3.110	1.575	1.575	2.716	0.231	0.185	8	2.645	91	**143058**

NOTE: Different lengths available upon request.

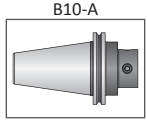
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

B10: ix - x

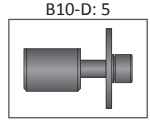


Key on B10-D: 2

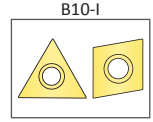
B10-A



B10-D: 5



B10-I

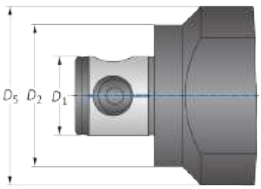


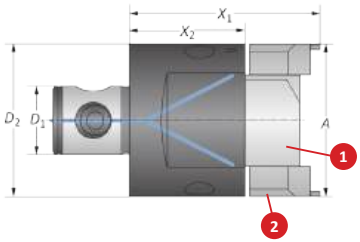
m = Metric (mm)
i = Imperial (in)
Inserts sold separately.

Axial Grooving Tools

Diameter Range: 20.00 mm - 210.00 mm (0.787" - 8.268")







Metric (mm)

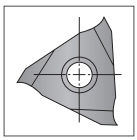
MVS $D_2 \mid D_1$	Cutter Diameter A	Grooving Tool X_1	X_2	D_5	Weight (kg)	Insert Form	Part No. Serrated Tool Body	1. Support Block	2. Insert Holder
50 - 28	20.00 - 65.00	83.00	55.00	63.00	1.30	304	**148010**	—	**226030**
80 - 36	57.00 - 95.00	100.00	60.00	—	2.60	304	**148007**	**226011**	**226031**
	82.00 - 155.00	100.00	60.00	125.00	3.70	304	**148009**	**226012**	**226031**
	156.00 - 210.00	100.00	60.00	125.00	3.70	304	**148009**	**226013**	**226031**

Imperial (in)

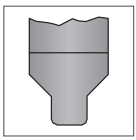
MVS $D_2 \mid D_1$	Cutter Diameter A	Grooving Tool X_1	X_2	D_5	Weight (lbs)	Insert Form	Part No. Serrated Tool Body	1. Support Block	2. Insert Holder
50 - 28	0.787 - 2.559	3.268	2.165	2.48	2.866	304	**148010**	—	**226030**
80 - 36	2.244 - 3.740	3.937	2.362	—	5.732	304	**148007**	**226011**	**226031**
	3.228 - 6.102	3.937	2.362	4.921	8.157	304	**148009**	**226012**	**226031**
	6.142 - 8.268	3.937	2.362	4.921	8.157	304	**148009**	**226013**	**226031**

NOTE: Groove width is 1.00 mm - 7.00 mm (0.039" - 0.276"). (With Twin Cutter and diameter offset, up to 12.00 mm is possible.)
Groove depth is 1.00 mm - 6.00 mm (0.039" - 0.236").
NOTE: Support block with machining diameters smaller than 123.00 mm (4.842") can only be secured with one screw.
NOTE: Insert holders, support blocks, and inserts sold separately.

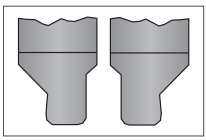
Examples of recessing replaceable inserts include:



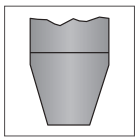
Other insert types available upon request.



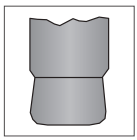
Two-sided cutting form.



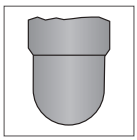
Single-sided cutting form (right / left).



Two-sided angle cutting.



With corner radius.

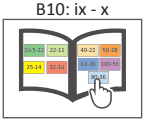


Full radius.

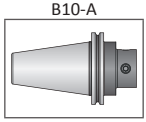
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Key on B10-D: 2

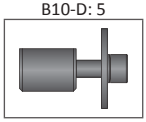
B10: ix - x



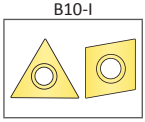
B10-A



B10-D: 5



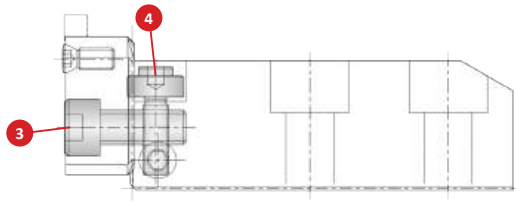
B10-I



ⓜ = Metric (mm)
ⓘ = Imperial (in)
Inserts sold separately.

Accessories

Cap and Adjustment Screws



Axial Grooving Accessories

Support Base	3. Cap Screw		4. Axial Adjustment Screw	
	Part No.	Service Key	Part No.	Service Key
226011	**023182**	s6 / B	**215374**	s4 / B
226012	**023182**	s6 / B	**215374**	s4 / B
226013	**023182**	s6 / B	**215374**	s4 / B

B10: ix - x
Key on B10-D: 2

Ⓜ = Metric (mm)
ⓘ = Imperial (in)
Inserts sold separately.

Notes



SECTION

B10-E

Combi-Line: Rough and Finish Boring

Combi-Line



One tool | Two operations

The Wohlhaupter Combi-Line combines both rough and finish boring into one operation. The front insert holder is the roughing cutting edge while the shorter holder finishes the hole, saving you time and money.

- 24.50 mm - 201.00 mm (0.965" - 7.913")

Applicable Industries

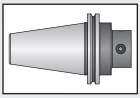
- Aerospace
- Agriculture
- Automotive
- Defense
- General Production
- Heavy Equipment
- Hydraulics
- Marine
- Medical
- Oil and Gas
- Renewable Energy/ Energy
- Tool, Mold, and Die

Reference Icons

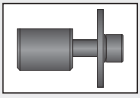
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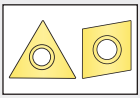
MVS Connection Color Guide
Detailed instructions and information regarding the MVS connection(s).



Shanks
A variety of shanks for different machines.



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For use with insert holders and boring heads.



Inserts
For use with insert holder boring heads and boring bars using indexable inserts.



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Indicates that the product is coolant through.

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Visit www.alliedmachine.com for the most up-to-date information and procedures.

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Technical Information
Material Removal Percentages 7
Tool Usage 7



Combi-Line
ROUGH & FINISH BORING

Two operations. One Tool.

Decrease cycle time and tool changes with the Wohlhaupter Combi-Line. The Combi-Line combines rough and finish boring into one tool with height displaced insert holders.

Reduce your cycle time with the Combi-Line.

- Diameter range: 24.50 mm - 201.00 mm (0.965" - 7.913").
- Reduce cycle and tool changing time.
- Available in semi-standard same level or height displaced insert holders.
- Coolant through.
- 0.002 mm (0.0001") vernier adjustment on finishing insert holder.
- Max spindle speed: 1524 m/min (5,000 SFM).

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter.

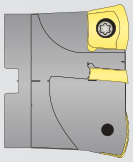
Case Study

Cycle time is crucial. Why not choose the best process?

Application: Ductile Cast Iron
Finish Diameter: 50 mm (1.968") (+/- 0.013 mm [0.0005"])
Pre-Hole Diameter: 45 mm (1.771")
Boring Depth: 209 mm (8.228")
Hole Finish: 0.8 Ra µm (32 Ra)



Measure	1st Process Option	
	Step 1 Rough 49 mm	Step 2 Finish 50 mm
	Competitor 1.5" High Feed Milling Tool	Wohlhaupter 310 (320) Boring Head
Speed	2500 RPM (1000 SFM)	1165 RPM (600 SFM)
Feed Rate	153 IPM (0.020 IPT)	4.66 IPM (0.004 IPR)
Total Passes	77	1
Cycle Time (per hole)	1.93 min	1.77 min
Tool Change Time	15 sec	
Cycle Time (per part)	**3 min 54 sec**	



1.5" High Feed Milling Tool



Wohlhaupter 320 Boring Head

Measure	2nd Process Option	
	Step 1 Rough 49 mm	Step 2 Finish 50 mm
	Wohlhaupter Twin Cutter	Wohlhaupter 310 (320) Boring Head
Speed	990 RPM (500 SFM)	1165 RPM (600 SFM)
Feed Rate	11.88 IPM (0.012 IPR)	4.66 IPM (0.004 IPR)
Total Passes	1	1
Cycle Time (per hole)	0.69 min	1.77 min
Tool Change Time	15 sec	
Cycle Time (per part)	**2 min 46 sec**	



Wohlhaupter Twin Cutter



Wohlhaupter 310 (320) Boring Head

OUR *SOLUTION*

Combi-Line Rough and Finish Boring

Measure	3rd Process Option Finish 50 mm
	Wohlhaupter Combi-Line
Speed	1165 RPM (600 SFM)
Feed Rate	4.66 IPM (0.004 IPR)
Total Passes	1
Cycle Time (per hole)	1.77 min
Tool Change Time	0
Cycle Time (per part)	**1 min 46 sec**

60 seconds of total cycle time saved



- Combi-Line assembly:
  (1) ***Insert holders (x2): 402021***
  (2) ***Serrated tool body: 404006***
  (3) ***Shank: 353014***

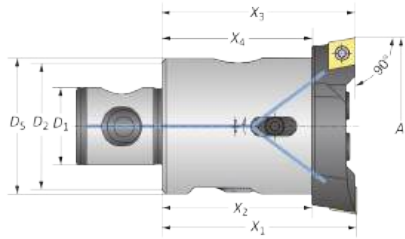
Boring inserts
- ***Item No. 297653WHC19***

1 tool vs. 2 tools saves you time and money

Boring Heads and Insert Holders

Diameter Range: 24.50 mm - 201.00 mm (0.965" - 7.913")





Metric (mm)

	MVS	Boring Range	Boring Head							Insert Holder (x2)*	
	$D_2 \mid D_1$	A	X_1	X_3	X_2	X_4	D_5	Weight (kg)	Part No.	Insert Form	Part No.
	22 - 11	24.50 - 29.50	46.00	45.75	34.00	33.75	—	0.10	**401003**	101	**402029**
	25 - 14	29.00 - 37.00	56.00	55.75	41.00	40.75	26.00	0.20	**401004**	101	**402009**
										103	**402011**
		36.00 - 44.00	56.00	55.75	41.00	40.75	30.00	0.30	**401005**	101	**402017**
										103	**402019**
	32 - 18	43.00 - 54.00	66.00	65.70	48.00	47.70	34.00	0.40	**401006**	103	**402021**
m	40 - 22	53.00 - 66.00	75.00	74.70	55.00	54.70	—	0.70	**401007**	103	**402005**
	50 - 28	65.00 - 83.00	75.00	74.70	55.00	54.70	—	1.10	**401008**	103	**402013**
	63 - 36	82.00 - 103.00	90.00	89.70	70.00	69.70	—	2.20	**401009**	103	**402001**
	80 - 36	102.00 - 127.00	90.00	89.70	66.00	65.70	85.00	3.00	**401010**	103	**402025**
		127.00 - 152.00	90.00	89.70	66.00	65.70	85.00	3.10	**401010**	103	**402026**
		151.00 - 176.00	90.00	89.70	66.00	65.70	134.00	3.80	**401011**	103	**402025**
		176.00 - 201.00	90.00	89.70	66.00	65.70	134.00	3.90	**401011**	103	**402026**

Imperial (in)

	MVS	Boring Range	Boring Head							Insert Holder (x2)*	
	$D_2 \mid D_1$	A	X_1	X_3	X_2	X_4	D_5	Weight (lbs)	Part No.	Insert Form	Part No.
	22 - 11	0.965 - 1.161	1.811	1.801	1.339	1.329	—	0.220	**404003**	101	**402029**
	25 - 14	1.142 - 1.457	2.205	2.195	1.614	1.604	1.024	0.440	**404004**	101	**402009**
										103	**402011**
		1.417 - 1.732	2.205	2.195	1.614	1.604	1.181	0.661	**404005**	101	**402017**
										103	**402019**
	32 - 18	1.693 - 2.126	2.598	2.587	1.890	1.878	1.339	0.881	**404006**	103	**402021**
i	40 - 22	2.087 - 2.598	2.953	2.941	2.165	2.154	—	1.543	**404007**	103	**402005**
	50 - 28	2.559 - 3.268	2.953	2.941	2.165	2.154	—	2.425	**404008**	103	**402013**
	63 - 36	3.228 - 4.055	3.543	3.531	2.756	2.744	—	4.850	**404009**	103	**402001**
	80 - 36	4.016 - 5.000	3.543	3.531	2.598	2.587	3.346	6.613	**404010**	103	**402025**
		5.000 - 5.984	3.543	3.531	2.598	2.587	3.346	6.834	**404010**	103	**402026**
		5.945 - 6.929	3.543	3.531	2.598	2.587	5.276	8.377	**404011**	103	**402025**
		6.929 - 7.913	3.543	3.531	2.598	2.587	5.276	8.598	**404011**	103	**402026**

*(2) insert holders are required and are sold individually.

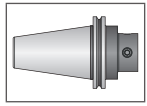
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

B10: ix - x

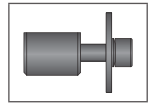


Key on B10-E: 2

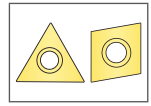
B10-A



B10-E: 6



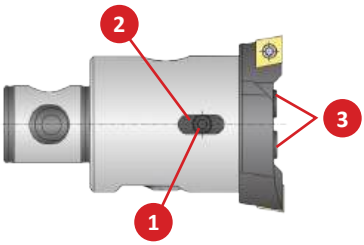
B10-I



m = Metric (mm)
i = Imperial (in)
Inserts sold separately.

Accessories

Screws | Clamping Elements



Boring Head Part No.		1. Clamp Screw		2. Clamping Piece	3. Cap Screw	
Metric	Imperial	Part No.	Service Key	Part No.	Part No.	Service Key
401003	404003	**401223**	s2.5 / A	—	**401323**	s3 / B
401004	404004	**401224**	s2.5 / B	**401204**	**401324**	s4 / B
401005	404005	**401225**	s2.5 / B	**401205**	**401324**	s4 / B
401006	404006	**401226**	s3 / B	**401206**	**401324**	s4 / B
401007	404007	**401227**	s3 / B	**401207**	**401327**	s5 / B
401008	404008	**115288**	s4 / B	**401208**	**401329**	s6 / B
401009	404009	**215501**	s4 / B	**401209**	**401329**	s6 / B
401010	404010	**401230**	s4 / B	**401210**	**019183**	s8 / C
401011	404011	**401230**	s4 / B	**401210**	**019183**	s8 / C

NOTE: Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

B10: ix - x
Key on B10-E: 2

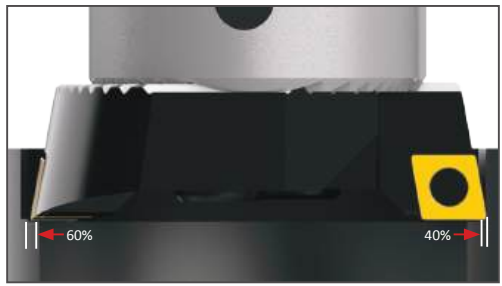
m = Metric (mm)
i = Imperial (in)

Technical Information

Material Removal Percentages



Material removal up to 4.00 mm (0.157") on diameter: **50% roughing and 50% finishing**



Material removal up to 4.00 mm - 7.00 mm (0.157" - 0.276") on diameter: **60% roughing 40% finishing**



Material removal up to 7.00 mm - 10.00 mm (0.276" - 0.394") on diameter: **70% roughing 30% finishing**

E

- For tools with a length-to-diameter ratio greater than 4:1, the existing hole diameter should be no more than 4.00 mm (0.157") smaller than the finish diameter. The 50% roughing and 50% finishing rule should be applied.
- When boring with severe interruptions, the existing hole diameter should be no more than 4.00 mm (0.157") smaller than the finish diameter. The 50% roughing and 50% finishing rule should be applied.

IMPORTANT:	Consult application engineering for technical support when using Combi-Line tools in holes with interruptions: **appeng@alliedmachine.com.**

Tool Usage

- For most applications, the same inserts should be used in both the roughing and finishing insert holders.
- To insure proper chip breaking, the finishing insert holder DOC must be at least 0.50 mm (0.020").
- Up to a 4:1 length-to-diameter ratio, standard insert holders with a height displacement of up to 0.30 mm (0.012") can be used.
- Inserts with wiper geometry are recommended only for special Combi-Line applications.

Notes



SECTION

B10-F

Versatile Fine Boring

Versatile Fine Boring



Precision boring at its finest

From high precision to high production, Wohlhaupter has the right solution for your hole finishing applications. With the most reliable digital readout displays, the Wohlhaupter versatile boring product line offers the most precise and flexible modular system on the market.

- 248 (249)
  - 3.00 mm - 30.20 mm (0.118" - 1.189")
- PrimeBore
  - 3.00 mm - 208.00 mm (0.118" - 8.189")
- VarioBore
  - 0.40 mm - 152.00 mm (0.016" - 5.984")
- Digital 510 (511)
  - 0.40 mm - 12.00 mm (0.016" - 1.339")
- DigiBore
  - 3.00 mm - 208.00 mm (0.118" - 8.189")

Applicable Industries

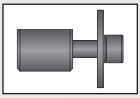
- Aerospace
- Agriculture
- Automotive
- Defense
- General Production
- Heavy Equipment
- Hydraulics
- Marine
- Medical
- Oil and Gas
- Renewable Energy/ Energy
- Tool, Mold, and Die

Reference Icons

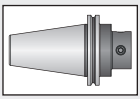
The following icons will appear throughout the catalog to help you navigate between products.



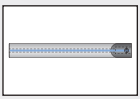
MVS Connection Color Guide
Detailed instructions and information regarding the MVS connection(s).



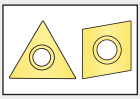
Clamping Elements
For use with insert holders and boring heads.



Shanks
A variety of shanks for different machines.



248 (249) Shanks
A variety of shanks for different machines.



Inserts
For use with insert holder boring heads and boring bars using indexable inserts.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

WARNING means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

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248 (249)
VERSATILE FINE BORING

Compact design. Precision boring.

The Wohlhaupter® 248 (249) compact boring head allows for higher spindle speeds and achieves long-reach boring jobs. Its cylindrical shank provides variable length adjustments up to 10xD.

Test this ***compact design*** for finish machining today.

- Diameter range: 3.00 mm - 30.20 mm (0.118" - 1.189").
- Length adjustment up to 10xD.
- Coolant-through boring tool.
- 0.01 mm (0.0005") adjust on diameter.
- Max spindle speed: 20,000 RPM.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

248 (249) Product Overview



248 (249) Head



Insert Holder
Ø 15.90 mm - 30.20 mm
(Ø 0.626" - 1.189")



Adapter



Adapter



Boring Bar
Ø 3.70 mm – 16.00 mm
(Ø 0.146" – 0.630")



Mini Boring Bar
Ø 3.00 mm – 6.00 mm
(Ø 0.118" – 0.236")

F

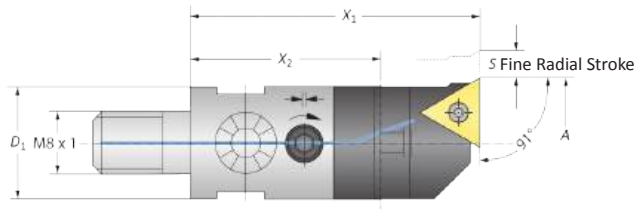
OPERATION **VERSATILITY**

from **3.00 mm** to **30.20 mm** (**0.118"** to **1.189"**)

Boring Heads

Diameter Range: 15.90 mm - 30.20 mm (0.626" - 1.189")





Metric (mm)

Boring Connection	Boring Range A	Boring Head X_1	X_2	D_1	S	Weight (kg)	Part No.	Insert Holder Insert Form	Part No.
M8 x 1	15.90 - 20.10	42.00	26.00	15.00	1.40	0.06	**248001**	20*	**248051**
								101	**248054**
	19.90 - 24.80	46.00	30.00	18.00	1.80	0.09	**248002**	20*	**248052**
								101	**248055**
	24.50 - 30.20	46.00	30.00	23.00	2.30	0.13	**248003**	20*	**248053**
								101	**248056**

Imperial (in)

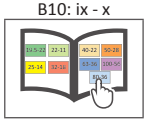
Boring Connection	Boring Range A	Boring Head X_1	X_2	D_1	S	Weight (lbs)	Part No.	Insert Holder Insert Form	Part No.
M8 x 1	0.626 - 0.791	1.654	1.024	0.591	0.025	0.132	**249001**	20*	**248051**
								101	**248054**
	0.783 - 0.976	1.811	1.181	0.709	0.071	0.198	**249002**	20*	**248052**
								101	**248055**
	0.965 - 1.189	1.811	1.181	0.906	0.091	0.287	**249003**	20*	**248053**
								101	**248056**

*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

F

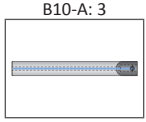
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

B10: ix - x

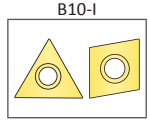


Key on B10-F: 2

B10-A: 3



B10-I



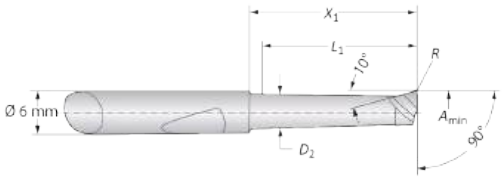
Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

Mini Boring Bars

Diameter Range: 3.00 mm - 6.00 mm (0.118" - 0.236")





Metric (mm)

	Boring Range	Boring Bar					Part No.		
	A_{min}	D_1	D_2	X_1	L_1	R	Coated Carbide	Uncoated Carbide	CBN
	3.00	6.00	2.60	11.50	10.00	0.10	**081306WHC05**	—	**081322WBN150**
				16.50	15.00	0.10	**081307WHC05**	**081307WHW04**	—
	4.00	6.00	3.60	12.00	10.00	0.20	**081308WHC05**	—	**081317WBN150**
				17.00	15.00	0.20	**081309WHC05**	—	**081341WBN150**
				22.00	20.00	0.20	**081310WHC05**	**081310WHW04**	—
Ⓜ	5.00	6.00	4.60	12.00	10.00	0.20	**081311WHC05**	—	—
				22.00	20.00	0.20	**081312WHC05**	—	**081319WBN150**
				32.00	30.00	0.20	**081313WHC05**	**081313WHW04**	—
	6.00	6.00	5.60	22.00	20.00	0.20	**081314WHC05**	—	**081320WBN150**
				32.00	30.00	0.20	**081315WHC05**	—	**081321WBN150**
				42.00	40.00	0.20	**081316WHC05**	**081316WHW04**	—

Imperial (in)

	Boring Range	Boring Bar					Part No.		
	A_{min}	D_1	D_2	X_1	L_1	R	Coated Carbide	Uncoated Carbide	CBN
	0.118	0.236	0.102	0.452	0.393	0.003	**081306WHC05**	—	**081322WBN150**
				0.649	0.590	0.003	**081307WHC05**	**081307WHW04**	—
	0.157	0.236	0.141	0.472	0.393	0.007	**081308WHC05**	—	**081317WBN150**
				0.669	0.590	0.007	**081309WHC05**	—	**081341WBN150**
				0.866	0.787	0.007	**081310WHC05**	**081310WHW04**	—
ⓘ	0.196	0.236	0.181	0.472	0.393	0.007	**081311WHC05**	—	—
				0.866	0.787	0.007	**081312WHC05**	—	**081319WBN150**
				1.259	1.181	0.007	**081313WHC05**	**081313WHW04**	—
	0.236	0.236	0.220	0.866	0.787	0.007	**081314WHC05**	—	**081320WBN150**
				1.259	1.181	0.007	**081315WHC05**	—	**081321WBN150**
				1.653	1.574	0.007	**081316WHC05**	**081316WHW04**	—

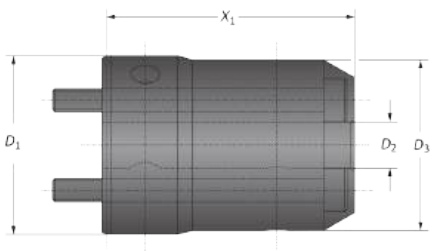
Adapter for Mini Boring Bars

Metric (mm)

		Adapter				
	Boring Head	X_1	D_1	D_2	D_3	Part No.
Ⓜ	248003	32.00	23.00	6.00	22.00	**248071**

Imperial (in)

		Adapter				
	Boring Head	X_1	D_1	D_2	D_3	Part No.
ⓘ	249003	1.260	0.906	6.00 mm	0.866	**248071**

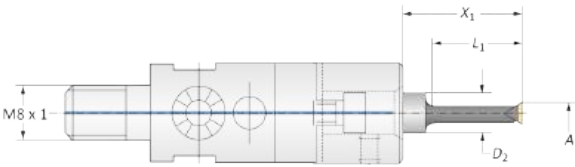


Ⓜ = Metric (mm)
ⓘ = Imperial (in)

Boring Bars

Diameter Range: 3.70 mm - 16.00 mm (0.146" - 0.630")





Metric (mm)

	Boring Range A	Boring Bar D_2	Boring Bar X_1	Boring Bar L_1	Insert Form	Part No.
	3.70 - 5.00	8.00	20.80	18.00	325*	**218074**
	4.90 - 6.00	8.00	26.00	23.00	47*	**218075**
	5.90 - 8.00	8.00	27.00	25.00	211*	**218076**
	7.90 - 10.00	8.00	30.50	30.00	211*	**218077**
m	9.90 - 12.00	8.00	35.00	35.00	20*	**218079**
					101	**218082**
	11.90 - 14.00	10.00	45.00	45.00	20*	**218080**
					101	**218083**
	13.90 - 16.00	10.00	50.00	50.00	20*	**218081**
					101	**218084**

Imperial (in)

	Boring Range A	Boring Bar D_2	Boring Bar X_1	Boring Bar L_1	Insert Form	Part No.
	0.146 - 0.197	0.315	0.819	0.709	325*	**218074**
	0.193 - 0.236	0.315	1.024	0.906	47*	**218075**
	0.232 - 0.315	0.315	1.063	0.984	211*	**218076**
	0.311 - 0.394	0.315	1.201	1.181	211*	**218077**
i	0.390 - 0.472	0.315	1.378	1.378	20*	**218079**
					101	**218082**
	0.469 - 0.551	0.394	1.772	1.772	20*	**218080**
					101	**218083**
	0.547 - 0.630	0.394	1.969	1.968	20*	**218081**
					101	**218084**

*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

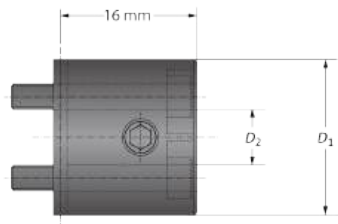
Adapter for Boring Bars

Metric (mm)

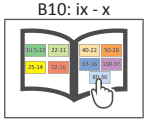
	Boring Head	Adapter D_1	Adapter D_2	Part No.
	248002	18.00	8.00	**248063**
m	248003	23.00	8.00	**248064**
	248003	23.00	10.00	**248065**

Imperial (in)

	Boring Head	Adapter D_1	Adapter D_2	Part No.
	249002	0.709	8.00 mm	**248063**
i	249003	0.906	8.00 mm	**248064**
	249003	0.906	10.00 mm	**248065**

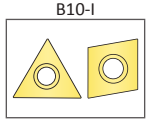


B10: ix - x



Key on B10-F: 2

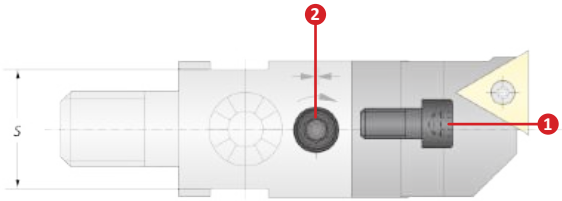
B10-I



Inserts sold separately.

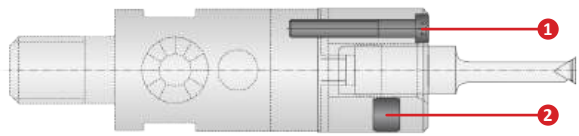
m = Metric (mm)
i = Imperial (in)

Accessories



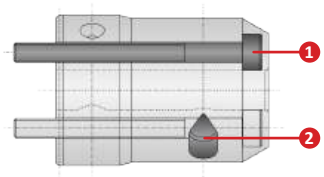
Clamping Elements for Boring Heads

Boring Head		Service Key	1. Cap Screw		2. Set Screw	
Metric	Imperial	S / Type	Part No.	Service Key	Part No.	Service Key
248001	249001	13 S / P	**315631**	s3 / A	**315629**	s2 / A
248002	249002	15 S / P	**315631**	s3 / A	**315684**	s2 / A
248003	249003	19 S / P	**315631**	s3 / A	**315687**	s2 / A



Clamping Elements for Adapters

	1. Cap Screw		2. Set Screw	
Adapters	Part No.	Service Key	Part No.	Service Key
248063	**315801**	S 2.5 / A	**115136**	S 2.5 / A
248064	**315801**	S 2.5 / A	**031141**	S 2.5 / A
248065	**315801**	S 2.5 / A	**031141**	S 2.5 / A



Screws for Adapter

	1. Cap Screw		2. Set Screw	
Adapters	Part No.	Service Key	Part No.	Service Key
248071	**515166**	S 2.5 / A	**415244**	S 3 / A



PrimeBore
VERSATILE FINE BORING

Advancing versatile technology.

With over 30 years of development, the Wohlhaupter® PrimeBore boring head offers versatility and precision. The PrimeBore head can bore multiple hole sizes ranging from 3.00 mm - 208.00 mm (0.118" - 8.189") with our broad range of compatible boring bars.

Complete your boring job with ***technology that continues to advance.***

- Diameter range: 3.00 mm - 208.00 mm (0.118" - 8.189").
- Ease the stress of working on different day-to-day projects with boring kits.
- 0.002 mm (0.0001") adjust on diameter.
- Economical precision and versatility.
- Max spindle speed: 12,000 RPM.
- Coolant through.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

PrimeBore Product Overview

PRIME BORE

OPERATION **VERSATILITY**

from
3.00 mm to **208.00 mm**
(**0.118"** to **8.189"**)
plus outside turning.



PrimeBore Head

NOTE: Vernier adjustment accuracy of 0.002 mm (0.0001") on diameter.



Adapter



Mini Boring Bar
Ø 3.00 mm - 10.00 mm (Ø 0.118" - 0.394")



Heavy Metal Boring Bar
Ø 6.00 mm – 10.00 mm (Ø 0.236" – 0.394")



Steel Boring Bar
Ø 6.00 mm – 24.00 mm (Ø 0.236" – 0.945")



Carbide Boring Bar
Ø 10.00 mm – 20.00 mm (Ø 0.394" – 0.787")



Serrated Tool Body



Insert Holder
Ø 24.00 mm – 128.00 mm
(Ø 0.945" - 5.039")



Coolant Delivery System



Serrated Slide



Insert Holder
Ø 68.00 mm – 208.00 mm
(Ø 2.677" – 8.189")



Outside Turning
Ø 4.00 mm – 66.00 mm
(Ø 0.157" – 2.598")



Outside Turning
Ø 4.00 mm – 66.00 mm
(Ø 0.157" – 2.598")



Serrated Slides



Counterweight



Coolant Delivery System

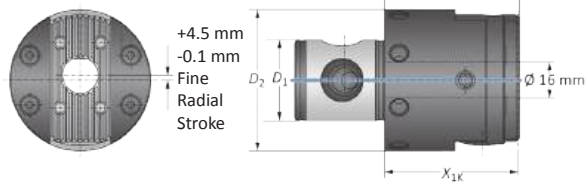


F

Boring Heads

Diameter Range: 15.90 mm - 30.20 mm (0.626" - 1.189")





Metric (mm)

MVS Connection D_2 | D_1	Boring Range	Boring Head X_1	Boring Head X_{1K}	Weight (kg)	Part No.
63 - 36	3.00 - 208.00	60.00	59.50	1.30	**450001**

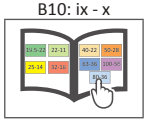
Imperial (in)

MVS Connection D_2 | D_1	Boring Range	Boring Head X_1	Boring Head X_{1K}	Weight (lbs)	Part No.
63 - 36	0.118 - 8.189	2.362	2.343	2.866	**451001**

F

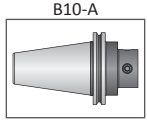
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

B10: ix - x



Key on B10-F: 2

B10-A

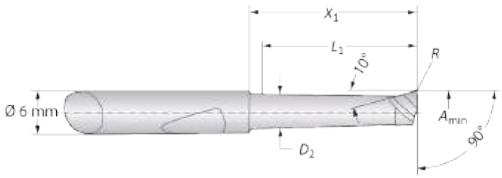


m = Metric (mm)
i = Imperial (in)

Mini Boring Bars

Diameter Range: 3.00 mm - 6.00 mm (0.118" - 0.236")





Metric (mm)

	Boring Range	Boring Bar					Part No.		
	A_{min}	D_1	D_2	X_1	L_1	R	Coated Carbide	Uncoated Carbide	CBN
	3.00	6.00	2.60	11.50	10.00	0.10	**081306WHC05**	—	**081322WBN150**
				16.50	15.00	0.10	**081307WHC05**	**081307WHW04**	—
	4.00	6.00	3.60	12.00	10.00	0.20	**081308WHC05**	—	**081317WBN150**
				17.00	15.00	0.20	**081309WHC05**	—	**081341WBN150**
				22.00	20.00	0.20	**081310WHC05**	**081310WHW04**	—
ⓜ	5.00	6.00	4.60	12.00	10.00	0.20	**081311WHC05**	—	—
				22.00	20.00	0.20	**081312WHC05**	—	**081319WBN150**
				32.00	30.00	0.20	**081313WHC05**	**081313WHW04**	—
	6.00	6.00	5.60	22.00	20.00	0.20	**081314WHC05**	—	**081320WBN150**
				32.00	30.00	0.20	**081315WHC05**	—	**081321WBN150**
				42.00	40.00	0.20	**081316WHC05**	**081316WHW04**	—
	8.00	8.00	7.60	25.00	23.00	0.20	**081323WHC05**	—	—
				50.00	48.00	0.20	**081324WHC05**	—	—

Imperial (in)

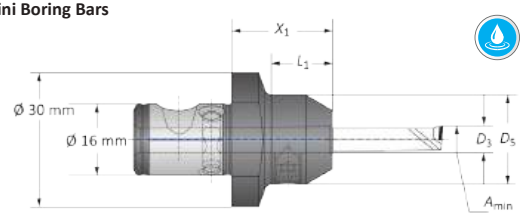
	Boring Range	Boring Bar					Part No.		
	A_{min}	D_1	D_2	X_1	L_1	R	Coated Carbide	Uncoated Carbide	CBN
	0.118	0.236	0.102	0.452	0.393	0.003	**081306WHC05**	—	**081322WBN150**
				0.649	0.590	0.003	**081307WHC05**	**081307WHW04**	—
	0.157	0.236	0.141	0.472	0.393	0.007	**081308WHC05**	—	**081317WBN150**
				0.669	0.590	0.007	**081309WHC05**	—	**081341WBN150**
				0.866	0.787	0.007	**081310WHC05**	**081310WHW04**	—
ⓘ	0.196	0.236	0.181	0.472	0.393	0.007	**081311WHC05**	—	—
				0.866	0.787	0.007	**081312WHC05**	—	**081319WBN150**
				1.259	1.181	0.007	**081313WHC05**	**081313WHW04**	—
	0.236	0.236	0.220	0.866	0.787	0.007	**081314WHC05**	—	**081320WBN150**
				1.259	1.181	0.007	**081315WHC05**	—	**081321WBN150**
				1.653	1.574	0.007	**081316WHC05**	**081316WHW04**	—
	0.315	0.315	0.229	0.984	0.905	0.007	**081323WHC05**	—	—
				1.968	1.889	0.007	**081324WHC05**	—	—

F

Adapter for Mini Boring Bars

Metric (mm)

	Adapter				
	D_3	D_5	X_1	L_1	Part No.
ⓜ	6.00	20.00	22.50	14.00	**319010**
	8.00	22.00	22.50	14.00	**236071**

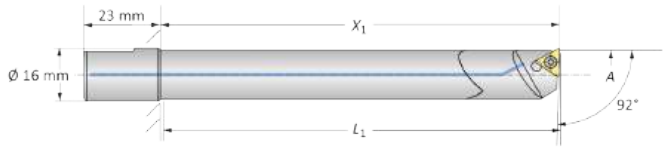


ⓜ = Metric (mm)
ⓘ = Imperial (in)

Boring Bars

Diameter Range: 6.00 mm - 24.00 mm (0.236" - 0.945")





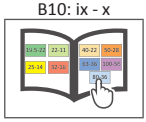
Metric (mm)

Substrate	Boring Range *A*	Boring Bar X_1	Boring Bar L_1	Weight (kg)	Insert Form	Part No.
Steel	6.00 - 10.00	22.00 - 32.00	20.00	0.04	211*	**450026**
	10.00 - 16.00	35.00 - 45.00	33.00	0.06	20*	**450038**
					101	**450027**
	16.00 - 24.00	60.00 - 70.00	58.00	0.10	20*	**450039**
					101	**450028**
Heavy Metal	6.00 - 8.00	32.00	29.00	0.08	211*	**081055**
	8.00 - 10.00	45.00	42.00	0.09	211*	**218072**
Carbide	10.00 - 12.00	55.00	52.00	0.07	20*	**218037**
					101	**218042**
		75.00	72.00	0.09	20*	**218029**
					101	**218032**
	12.00 - 14.00	70.00	67.00	0.10	20*	**218038**
					101	**218043**
		90.00	87.00	0.15	20*	**218030**
					101	**218033**
	14.00 - 16.00	75.00	72.00	0.16	20*	**218039**
					101	**218044**
		100.00	97.00	0.20	20*	**218040**
					101	**218045**
	16.00 - 20.00	90.00	87.00	0.26	20*	**218041**
					101	**218046**
		120.00	117.00	0.33	20*	**218031**
					101	**218034**

*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

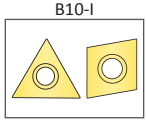
F

B10: ix - x



Key on B10-F: 2

B10-I



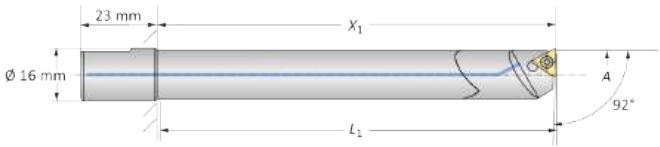
Inserts sold separately.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Boring Bars

Diameter Range: 6.00 mm - 24.00 mm (0.236" - 0.945")





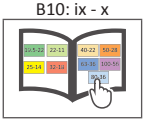
Imperial (in)

Substrate	Boring Range *A*	Boring Bar X_1	Boring Bar L_1	Weight (lbs)	Insert Form	Part No.
Steel	0.236 - 0.394	0.866 - 1.260	0.787	0.090	211*	**450026**
	0.394 - 0.630	1.378 - 1.772	1.299	0.130	20*	**450038**
					101	**450027**
	0.630 - 0.945	2.362 - 2.756	2.283	0.220	20*	**450039**
					101	**450028**
Heavy Metal	0.236 - 0.315	1.260	1.142	0.176	211*	**081055**
	0.315 - 0.394	1.772	1.654	0.198	211*	**218072**
Carbide	0.394 - 0.472	2.165	2.047	0.154	20*	**218037**
					101	**218042**
		2.953	2.835	0.198	20*	**218029**
					101	**218032**
	0.472 - 0.551	2.756	2.638	0.220	20*	**218038**
					101	**218043**
		3.543	3.425	0.331	20*	**218030**
					101	**218033**
	0.551 - 0.630	2.953	2.835	0.353	20*	**218039**
					101	**218044**
		3.937	3.819	0.441	20*	**218040**
					101	**218045**
	0.630 - 0.787	3.543	3.425	0.573	20*	**218041**
					101	**218046**
		4.724	4.606	0.728	20*	**218031**
					101	**218034**

*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

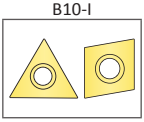
F

B10: ix - x



Key on B10-F: 2

B10-I



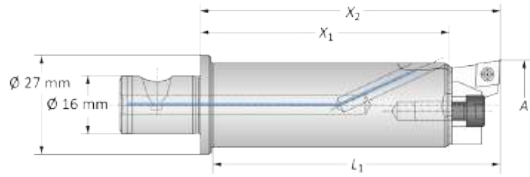
Inserts sold separately.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Serrated Tool Bodies

Diameter Range: 24.00 mm - 65.00 mm (0.945" - 2.559")





Metric (mm)

	Boring Range *A*	Serrated Tool Body *X_1*	*X_2*	*L_1*	Weight (kg)	Part No.
m	24.00 - 65.00	68.00	82.00	79.00	0.20	**450021**

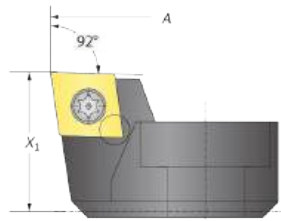
Imperial (in)

	Boring Range *A*	Serrated Tool Body *X_1*	*X_2*	*L_1*	Weight (lbs)	Part No.
i	0.945 - 2.559	2.667	3.228	3.110	0.441	**450021**

F

Insert Holders





Metric (mm)

	Boring Range *A*	Insert Holder *X_1*	Weight (kg)	Insert Form	Part No.
m	24.00 - 40.00	14.00	0.02	20*	**450040**
				101	**450022**
	40.00 - 65.00	14.00	0.03	20*	**450041**
				101	**450023**

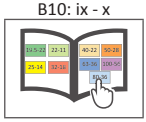
Imperial (in)

	Boring Range *A*	Insert Holder *X_1*	Weight (lbs)	Insert Form	Part No.
i	0.945 - 1.575	0.551	0.044	20*	**450040**
				101	**450022**
	1.575 - 2.559	0.551	0.066	20*	**450041**
				101	**450023**

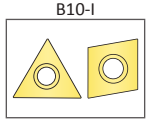
*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

B10: ix - x

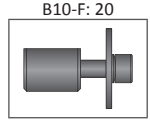
Key on B10-F: 2



B10-I



B10-F: 20



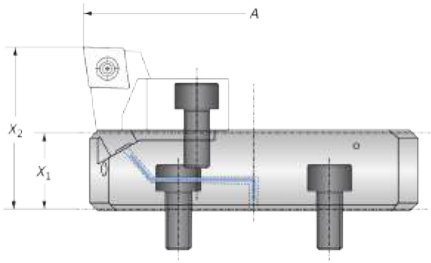
Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

Serrated Slides

Diameter Range: 65.00 mm - 128.00 mm (2.559" - 5.039")





Metric (mm)

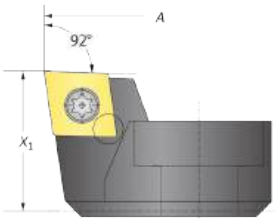
	Boring Range A	Serrated Slide X_1	Serrated Slide X_2	Weight (kg)	Part No.
m	65.00 - 128.00	14.50	29.50	0.08	**450024**

Imperial (in)

	Boring Range A	Serrated Slide X_1	Serrated Slide X_2	Weight (lbs)	Part No.
i	2.559 - 5.039	0.571	1.161	0.176	**450024**

Insert Holders





Metric (mm)

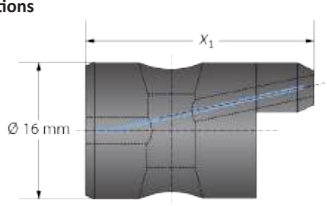
	Boring Range A	Insert Holder X_1	Weight (kg)	Insert Form	Part No.
m	65.00 - 128.00	14.00	0.03	20*	**450041**
				101	**450023**

Imperial (in)

	Boring Range A	Insert Holder X_1	Weight (lbs)	Insert Form	Part No.
i	2.559 - 5.039	0.551	0.066	20*	**450041**
				101	**450023**

*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

Alu-Line Coolant Delivery Sections

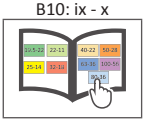


Metric (mm)

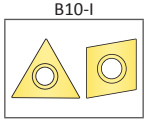
	X_1	Weight (kg)	Part No.
m	26.75	0.01	**450125**

Key on B10-F: 2

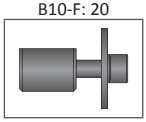
B10: ix - x



B10-I



B10-F: 20



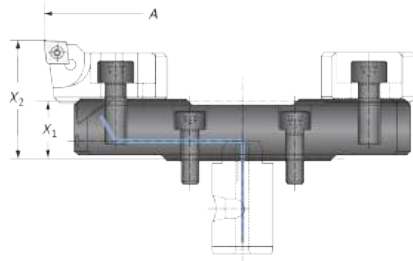
Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

Alu-Line® Serrated Slides

Diameter Range: 68.00 mm - 208.00 mm (2.667" - 8.189")





Metric (mm)

	Boring Range A	Serrated Slide X_1	Serrated Slide X_2	Weight (kg)	Part No.
	68.00 - 96.00	16.00	32.50	0.10	**501054**
	96.00 - 124.00	16.00	32.50	0.10	**501055**
m	124.00 - 152.00	16.00	32.50	0.20	**501056**
	152.00 - 180.00	22.00	38.50	0.25	**501058**
	180.00 - 208.00	22.00	38.50	0.30	**501059**

Imperial (in)

	Boring Range A	Serrated Slide X_1	Serrated Slide X_2	Weight (lbs)	Part No.
	2.667 - 3.780	0.630	1.280	0.220	**501054**
	3.780 - 4.882	0.630	1.280	0.220	**501055**
i	4.882 - 5.984	0.630	1.280	0.441	**501056**
	5.984 - 7.087	0.866	1.516	0.551	**501058**
	7.087 - 8.189	0.866	1.516	0.661	**501059**

F

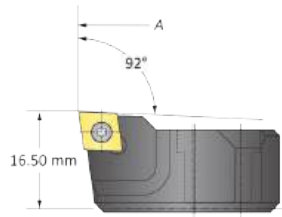
Insert Holders

Metric (mm)

	Boring Range A	Weight (kg)	Insert Form	Part No.
m	68.00 - 208.00	0.05	20	**502069**
			101	**502064**

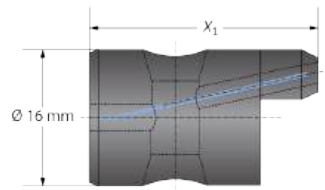
Imperial (in)

	Boring Range A	Weight (lbs)	Insert Form	Part No.
i	2.677 - 8.189	0.110	20	**502069**
			101	**502064**



NOTE: Other insert holders available upon request.





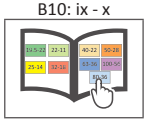
Counterweights

X_1 mm	X_1 in	Weight kg	Weight lbs	Part No.
13.40	0.528	0.05	0.110	**502165**

Alu-Line® Coolant Delivery Sections

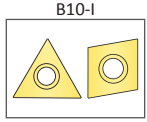
X_1 mm	X_1 in	Weight kg	Weight lbs	Part No.
25.50	1.004	0.01	0.022	**450137**

B10: ix - x

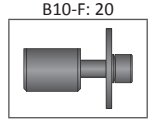


Key on B10-F: 2

B10-I



B10-F: 20



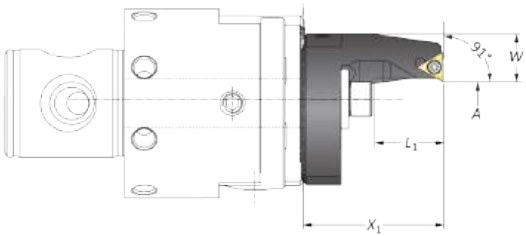
Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

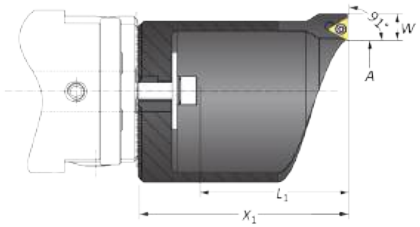
Outside Turning Insert Holders for Boring Heads

Diameter Range: 4.00 mm - 66.00 mm (0.157" - 2.598")









Metric (mm)

Type		Boring Range *A*	Insert Holder X_1	Insert Holder L_1	Insert Holder *W*	Weight (kg)	Insert Form	Part No.
m	A	4.00 - 17.50	40.50	20.00	16.60	0.10	20*	**236081**
		16.50 - 30.00	50.50	30.00	11.10	0.10	20*	**236082**
	B	29.00 - 44.00	75.50	54.00	9.60	0.30	20*	**236083**
		43.00 - 66.00	100.50	79.00	9.60	0.40	20*	**236084**

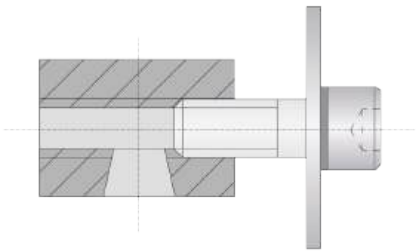
Imperial (in)

Type		Boring Range *A*	Insert Holder X_1	Insert Holder L_1	Insert Holder *W*	Weight (lbs)	Insert Form	Part No.
i	A	0.157 - 0.689	1.594	0.787	0.653	0.220	20*	**236081**
		0.650 - 1.181	1.988	1.181	0.437	0.220	20*	**236082**
	B	1.142 - 1.732	2.952	2.126	0.377	0.661	20*	**236083**
		1.693 - 2.598	3.956	3.110	0.377	0.882	20*	**236084**

NOTE: Clockwise and neutral execution.
*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

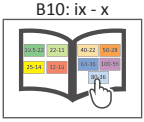
Clamping Pieces for Outside Turning Insert Holders

Insert Holder Type	Boring Range *A* (mm)	Service Key	Part No.
A	4.00 - 30.00	s5	**236088**
B	29.00 - 66.00	s5	**236089**

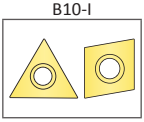


B10: ix - x

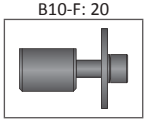
Key on B10-F: 2



B10-I



B10-F: 20



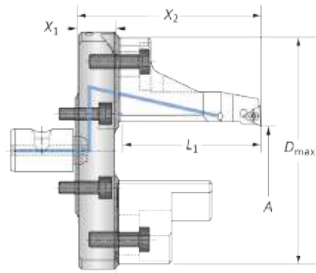
Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

Outside Turning Serrated Slides

Diameter Range: 2.00 mm - 114.00 mm (0.078" - 4.488")





Metric (mm)

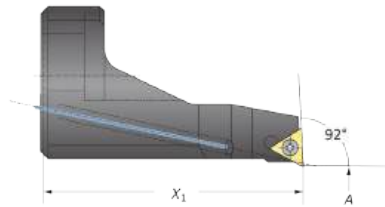
Boring Range A	X_1	X_2	L_1	D_{max}	Weight (kg)	Part No.
2.00 - 30.00	16.00	73.00	55.00	101.00	0.35	**501064**
30.00 - 58.00	16.00	73.00	55.00	129.00	0.44	**501065**
58.00 - 86.00	22.00	79.00	55.00	157.00	0.60	**501066**
86.00 - 114.00	22.00	79.00	55.00	185.00	0.73	**501067**

Imperial (in)

Boring Range A	X_1	X_2	L_1	D_{max}	Weight (lbs)	Part No.
0.078 - 1.181	0.630	2.874	2.165	3.396	0.771	**501064**
1.181 - 2.283	0.630	2.874	2.165	5.078	0.970	**501065**
2.283 - 3.386	0.866	3.110	2.165	6.181	1.322	**501066**
3.386 - 4.488	0.866	3.110	2.165	7.283	1.609	**501067**

F

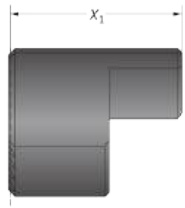


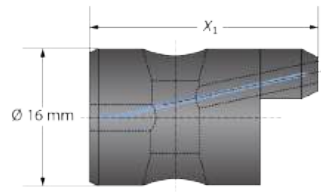


Insert Holders

Outside Turning Range A mm	A in	Insert Holder X_1 mm	X_1 in	Weight (kg) kg	lbs	Insert Form	Part No.
2.00 - 114.00	0.079 - 4.488	57.00	2.244	0.15	0.331	20	**502082**

NOTE: Clockwise and neutral execution.





Counterweights

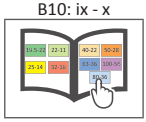
X_1 mm	X_1 in	Weight kg	Weight lbs	Part No.
37.75	1.486	0.16	0.350	**502183**

Alu-Line® Coolant Delivery Sections

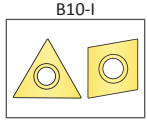
X_1 mm	X_1 in	Weight kg	Weight lbs	Part No.
25.50	1.004	0.01	0.022	**450137**

B10: ix - x

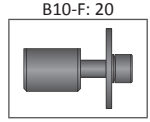
Key on B10-F: 2



B10-I



B10-F: 20



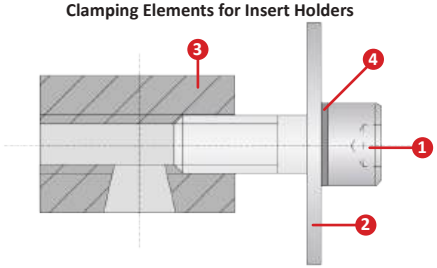
Inserts sold separately.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Accessories

Clamping Elements

Clamping Elements for Insert Holders

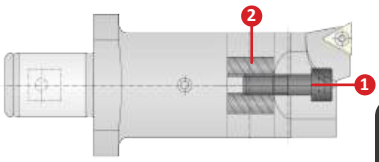


Metric (mm)

	Boring Range	1. Cap Screw	Hex Size	2. Washer	3. Clamping Nut	4. Locking Washer	Part No.
m	4.00 - 30.00	**070153**	s5	**315155**	**236120**	**215254**	**236088**
	29.00 - 66.00	**070153**	s5	**315156**	**236120**	**215254**	**236089**

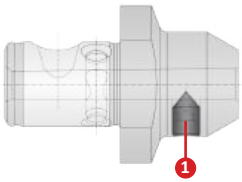
Clamping Elements for Serrated Tool Body

1. Cap Screw	Hex Size	2. Clamping Piece
027154	**s4**	**145184**



Thread Pin

Service Key	1. Part No.
S3 / A	**415244**

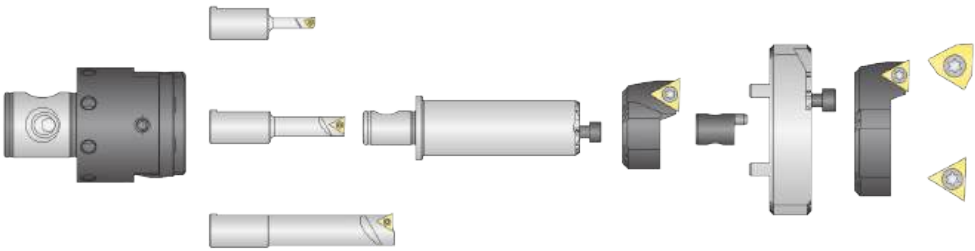


F

m = Metric (mm)
i = Imperial (in)

PrimeBore Kit

Form 20 | Diameter Range: 6.00 mm - 128.00 mm (0.236" - 5.039")



Metric (mm)

Kit Part No.
103089

Kit Components	Part No.
(1) Boring Head	450001
(3) Boring Bars	450026 (Form 211)
	450038
	450039
(2) Insert Holders	450040
	450041
(1) Serrated Tool Body	450021
(1) Serrated Slide	450024
(1) Coolant Delivery	450125
(3) Service Keys	003195 (s4)
	515451 (T6)
	515453 (T7)

Imperial (in)

Kit Part No.
104089

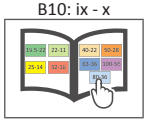
Kit Components	Part No.
(1) Boring Head	451001
(3) Boring Bars	450026 (Form 211)
	450038
	450039
(2) Insert Holders	450040
	450041
(1) Serrated Tool Body	450021
(1) Serrated Slide	450024
(1) Coolant Delivery	450125
(3) Service Keys	003195 (s4)
	515451 (T6)
	515453 (T7)

NOTE: Inserts sold separately.

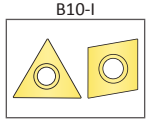
Component Assemblies

Boring Range							
Metric (mm)	Imperial (in)	Boring Bar	Serrated Tool Body	Coolant Delivery	Serrated Slide	Insert Holder	Insert
6.00 - 10.00	0.236 - 0.394	**450026**	—	—	—	—	Form 211
10.00 - 16.00	0.394 - 0.630	**450038**	—	—	—	—	Form 20
16.00 - 24.00	0.630 - 0.945	**450039**	—	—	—	—	Form 20
24.00 - 40.00	0.945 - 1.575	—	**450021**	—	—	**450040**	Form 20
40.00 - 65.00	1.575 - 2.559	—	**450021**	—	—	**450041**	Form 20
65.00 - 128.00	2.559 - 5.039	—	—	**450125**	**450024**	**450041**	Form 20

B10: ix - x



B10-I



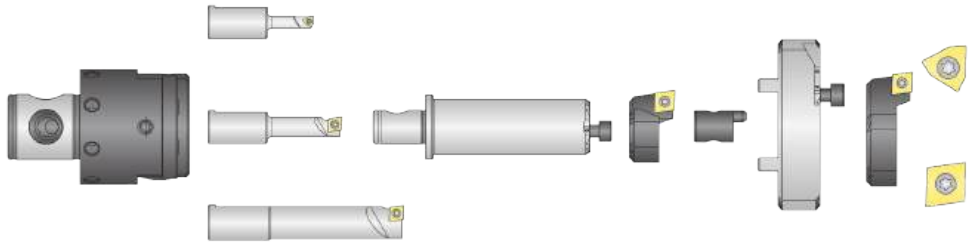
Key on B10-F: 2

Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

PrimeBore Kit

Form 101 | Diameter Range: 6.00 mm - 128.00 mm (0.236" - 5.039")



Metric (mm)

	Kit Part No.
ⓜ	**103088**

	Kit Components	Part No.
ⓜ	**(1) Boring Head**	450001
	(3) Boring Bars	450026 (Form 211)
		450027
		450028
	(2) Insert Holders	450022
		450023
	(1) Serrated Tool Body	450021
	(1) Serrated Slide	450024
	(1) Coolant Delivery	450125
	(3) Service Keys	003195 (s4)
		515451 (T6)
		515452 (T8)

Imperial (in)

	Kit Part No.
ⓘ	**104088**

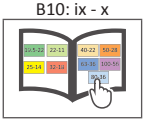
	Kit Components	Part No.
ⓘ	**(1) Boring Head**	451001
	(3) Boring Bars	450026 (Form 211)
		450027
		450028
	(2) Insert Holders	450022
		450023
	(1) Serrated Tool Body	450021
	(1) Serrated Slide	450024
	(1) Coolant Delivery	450125
	(3) Service Keys	003195 (s4)
		515451 (T6)
		515452 (T8)

NOTE: Inserts sold separately.

Component Assemblies

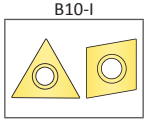
Boring Range							
Metric (mm)	Imperial (in)	Boring Bar	Serrated Tool Body	Coolant Delivery	Serrated Slide	Insert Holder	Insert
6.00 - 10.00	0.236 - 0.394	**450026**	—	—	—	—	Form 211
10.00 - 16.00	0.394 - 0.630	**450027**	—	—	—	—	Form 101
16.00 - 24.00	0.630 - 0.945	**450028**	—	—	—	—	Form 101
24.00 - 40.00	0.945 - 1.575	—	**450021**	—	—	**450022**	Form 101
40.00 - 65.00	1.575 - 2.559	—	**450021**	—	—	**450023**	Form 101
65.00 - 128.00	2.559 - 5.039	—	—	**450125**	**450024**	**450023**	Form 101

B10: ix - x



Key on B10-F: 2

B10-I



Inserts sold separately.

ⓜ = Metric (mm)
ⓘ = Imperial (in)



VarioBore
VERSATILE FINE BORING

Need more versatility?

The Wohlhaupter® VarioBore head offers precision and versatility, and the 3E^{TECH+} docking port provides convenient and simple diameter adjustments.

Experience ***precision boring*** for yourself.

- Diameter range: 0.40 mm - 152.00 mm (0.016" - 5.984").
- Offers outside turning capabilities: 2.00 mm - 66.00 mm (0.079" - 2.598").
- Ease the stress of working on different day-to-day projects with boring kits.
- 3E^{TECH+} module provides a simple digital readout.
- Max spindle speed: 27,500 RPM.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

VarioBore Product Overview

VARIO BORE

OPERATION
VERSATILITY

from
0.40 mm to **152.00 mm**
(**0.016"** to **5.984"**)
plus outside turning.



VarioBore Head



3ETECH+
Digital Readout
Module

NOTE: 3E^{TECH+} adjustment accuracy of 0.001 mm (0.00005") and vernier adjustment accuracy of 0.002 mm (0.0001") on diameter.



Reducing Sleeve

Coated Carbide Mini Boring Bar
Ø 0.40 mm - 3.00 mm (Ø 0.016" - 0.118")



Adapter



Mini Boring Bar
Ø 3.00 mm - 10.00 mm (Ø 0.118" - 0.394")



Heavy Metal Boring Bar
Ø 6.00 mm – 10.00 mm (Ø 0.236" – 0.394")



Steel Boring Bar
Ø 6.00 mm – 27.00 mm (Ø 0.236" – 1.063")



Carbide Boring Bar
Ø 10.00 mm – 20.00 mm (Ø 0.394" – 0.787")



Serrated Tool Body



Insert Holder
Ø 20.00 mm – 32.00 mm
(Ø 0.787" - 1.260")



Serrated Tool Body



Insert Holder
Ø 29.00 mm – 53.00 mm
(Ø 1.142" - 2.087")



Outside Turning
Ø 4.00 mm – 66.00 mm
(Ø 0.157" – 2.598")



Insert Holder
Ø 68.00 mm – 152.00 mm
(Ø 2.677" – 5.984")



Insert Holder
Ø 52.00 mm – 102.00 mm
(Ø 2.047" – 4.016")



Outside Turning
Ø 2.00 mm – 58.00 mm
(Ø 0.079" – 2.283")



Serrated Slides



Counterweight



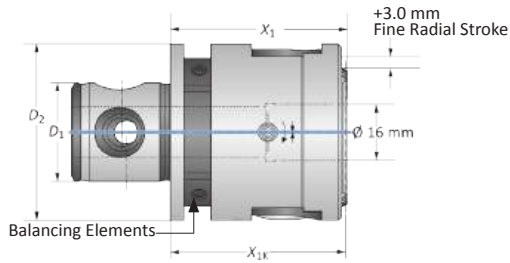
Coolant Delivery System

F

Analog Boring Heads

Diameter Range: 0.40 mm - 152.00 mm (0.016" - 5.984")





Metric (mm)

MVS Connection D_2 | D_1	Boring Range	X_1	X_{1K}	Weight (kg)	Part No.*
50 - 28	0.40 - 152.00	50.00	49.50	0.70	**536001**

Imperial (in)

MVS Connection D_2 | D_1	Boring Range	X_1	X_{1K}	Weight (lbs)	Part No.*
50 - 28	0.016 - 5.984	1.969	1.949	1.543	**563001**

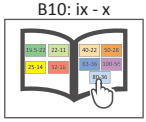
*Not equipped with digital capabilities.
NOTE: Balancing elements must be ordered separately.
NOTE: VarioBore heads are compatible with Kaiser® connection.

Adjustment Accuracy		
Vernier	0.002 mm	0.0001"

F

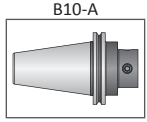
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

B10: ix - x



Key on B10-F: 2

B10-A

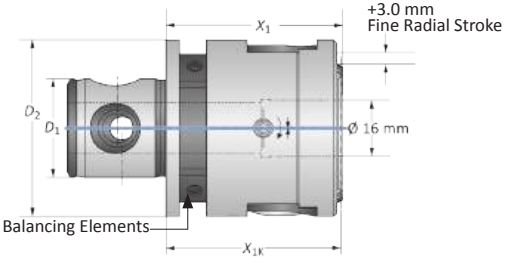


(m) = Metric (mm)
(i) = Imperial (in)

Digital 3E^{TECH+} Boring Heads

Diameter Range: 0.40 mm - 152.00 mm (0.016" - 5.984")





Metric (mm)

MVS Connection D_2 | D_1	Boring Range	X_1	X_{1K}	Weight (kg)	Part No.
50 - 28	0.40 - 152.00	50.00	49.50	0.70	**536002**

Imperial (in)

MVS Connection D_2 | D_1	Boring Range	X_1	X_{1K}	Weight (lbs)	Part No.
50 - 28	0.016 - 5.984	1.969	1.949	1.543	**563002**

NOTE: Balancing elements must be ordered separately.
NOTE: VarioBore heads are compatible with Kaiser® connection.

Adjustment Accuracy		
3E^{TECH+}	0.001 mm	0.00005"
Vernier	0.002 mm	0.0001"

3E^{TECH+} Digital Readout Module

Part No.	Charging Unit*
536015	**536016**

NOTE: WEEE-Reg.-Nr. DE 15820388
*Charging unit sold separately.

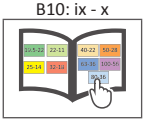


NOTE: 3E^{TECH+} digital adjustment accuracy of 0.001 mm (0.00005") on diameter.

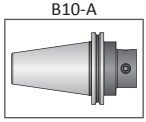
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

B10: ix - x

Key on B10-F: 2



B10-A

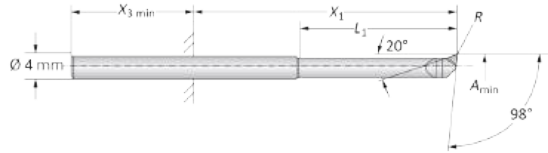


Ⓜ = Metric (mm)
ⓘ = Imperial (in)

Mini Boring Bars

Diameter Range: 0.40 mm - 3.00 mm (0.016" - 0.118")





Metric (mm)

	Boring Range	Boring Bar				
	A_{min}	X_1	$X_{3\,min}$	L_1	R	Part No.
ⓜ	0.40	3.00 - 17.00	25.00	2.00	0.03	**081401WHC126**
	0.60	4.00 - 18.00	25.00	3.00	0.04	**081402WHC126**
	0.80	5.00 - 19.00	25.00	4.00	0.04	**081403WHC126**
	1.00	6.00 - 20.00	25.00	5.00	0.05	**081404WHC126**
	1.50	8.50 - 22.50	25.00	7.50	0.05	**081405WHC126**
	2.00	11.00 - 25.00	25.00	10.00	0.05	**081406WHC126**
	2.50	13.50 - 27.50	25.00	12.50	0.05	**081407WHC126**
	2.80	15.00 - 28.00	25.00	14.00	0.07	**081408WHC126**

Imperial (in)

	Boring Range	Boring Bar				
	A_{min}	X_1	$X_{3\,min}$	L_1	R	Part No.
ⓘ	0.016	0.118 - 0.669	0.980	0.079	0.0010	**081401WHC126**
	0.024	0.157 - 0.709	0.980	0.118	0.0020	**081402WHC126**
	0.031	0.197 - 0.748	0.980	0.157	0.0020	**081403WHC126**
	0.039	0.236 - 0.787	0.980	0.197	0.0025	**081404WHC126**
	0.059	0.335 - 0.886	0.980	0.295	0.0025	**081405WHC126**
	0.079	0.433 - 0.984	0.980	0.394	0.0025	**081406WHC126**
	0.098	0.531 - 1.083	0.980	0.492	0.0025	**081407WHC126**
	0.110	0.591 - 1.142	0.980	0.551	0.0030	**081408WHC126**

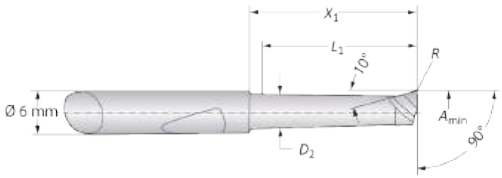
NOTE: Fixture-through reducing sleeve required (B10-F: 39).

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Mini Boring Bars

Diameter Range: 3.00 mm - 10.00 mm (0.118" - 0.394")





Metric (mm)

	Boring Range	Boring Bar					Part No.		
	A_{min}	D_1	D_2	X_1	L_1	R	Coated Carbide	Uncoated Carbide	CBN
	3.00	6.00	2.60	11.50	10.00	0.10	**081306WHC05**	—	**081322WBN150**
				16.50	15.00	0.10	**081307WHC05**	**081307WHW04**	—
	4.00	6.00	3.60	12.00	10.00	0.20	**081308WHC05**	—	**081317WBN150**
				17.00	15.00	0.20	**081309WHC05**	—	**081341WBN150**
				22.00	20.00	0.20	**081310WHC05**	**081310WHW04**	—
m	5.00	6.00	4.60	12.00	10.00	0.20	**081311WHC05**	—	—
				22.00	20.00	0.20	**081312WHC05**	—	**081319WBN150**
				32.00	30.00	0.20	**081313WHC05**	**081313WHW04**	—
	6.00	6.00	5.60	22.00	20.00	0.20	**081314WHC05**	—	**081320WBN150**
				32.00	30.00	0.20	**081315WHC05**	—	**081321WBN150**
				42.00	40.00	0.20	**081316WHC05**	**081316WHW04**	—
	8.00	8.00	7.60	25.00	23.00	0.20	**081323WHC05**	—	—
				50.00	48.00	0.20	**081324WHC05**	—	—

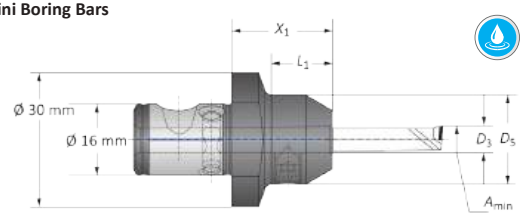
Imperial (in)

	Boring Range	Boring Bar					Part No.		
	A_{min}	D_1	D_2	X_1	L_1	R	Coated Carbide	Uncoated Carbide	CBN
	0.118	0.236	0.102	0.452	0.393	0.003	**081306WHC05**	—	**081322WBN150**
				0.649	0.590	0.003	**081307WHC05**	**081307WHW04**	—
	0.157	0.236	0.141	0.472	0.393	0.007	**081308WHC05**	—	**081317WBN150**
				0.669	0.590	0.007	**081309WHC05**	—	**081341WBN150**
				0.866	0.787	0.007	**081310WHC05**	**081310WHW04**	—
i	0.196	0.236	0.181	0.472	0.393	0.007	**081311WHC05**	—	—
				0.866	0.787	0.007	**081312WHC05**	—	**081319WBN150**
				1.259	1.181	0.007	**081313WHC05**	**081313WHW04**	—
	0.236	0.236	0.220	0.866	0.787	0.007	**081314WHC05**	—	**081320WBN150**
				1.259	1.181	0.007	**081315WHC05**	—	**081321WBN150**
				1.653	1.574	0.007	**081316WHC05**	**081316WHW04**	—
	0.315	0.315	0.229	0.984	0.905	0.007	**081323WHC05**	—	—
				1.968	1.889	0.007	**081324WHC05**	—	—

Adapter for Mini Boring Bars

Metric (mm)

	Boring Range	Adapter				
	A_{min}	D_3	D_5	X_1	L_1	Part No.
m	3.00	6.00	20.00	22.50	14.00	**319010**
	8.00	8.00	22.00	22.50	14.00	**236071**

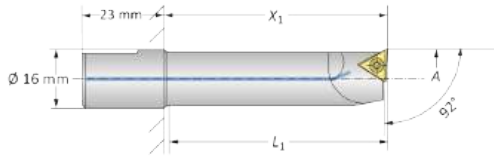


m = Metric (mm)
i = Imperial (in)

Boring Bars

Diameter Range: 6.00 mm - 27.00 mm (0.236" - 1.063")



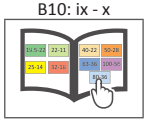


Metric (mm)

Substrate	Boring Range *A*	Boring Bar X_1	Boring Bar L_1	Weight (kg)	Insert Form	Part No.
Steel	6.00 - 8.00	22.00	19.00	0.03	211*	**081053**
	8.00 - 10.00	30.00	27.00	0.04	211*	**218071**
	10.00 - 12.00	25.00	22.00	0.04	20*	**218058**
					101	**218047**
		35.00	32.00	0.05	20*	**218059**
					101	**218048**
		45.00	42.00	0.05	20*	**081044**
	12.00 - 14.00	30.00	27.00	0.05	20*	**218014**
					101	**218012**
		45.00	42.00	0.06	20*	**218060**
					101	**218049**
	14.00 - 16.00	35.00	32.00	0.06	20*	**218061**
					101	**218050**
		50.00	47.00	0.08	20*	**218062**
					101	**218051**
	15.00 - 17.00	37.00	34.00	0.06	20*	**081048**
		60.00	57.00	0.08	20*	**081045**
					101	**081041**
	16.00 - 20.00	40.00	37.00	0.08	20*	**218063**
					101	**218052**
		60.00	57.00	0.09	20*	**218064**
					101	**218053**
	20.00 - 25.00	37.00	34.00	0.07	20*	**081049**
		70.00	67.00	0.11	20*	**081046**
					101	**081042**
	25.00 - 27.00	37.00	34.00	0.07	20*	**081050**
		70.00	67.00	0.11	20*	**081047**
					101	**081043**
Heavy Metal	6.00 - 8.00	32.00	29.00	0.08	211*	**081055**
	8.00 - 10.00	45.00	42.00	0.09	211*	**218072**
Carbide	10.00 - 12.00	55.00	52.00	0.07	20*	**218037**
					101	**218042**
		75.00	72.00	0.09	20*	**218029**
					101	**218032**
	12.00 - 14.00	70.00	67.00	0.10	20*	**218038**
					101	**218043**
		90.00	87.00	0.15	20*	**218030**
					101	**218033**
	14.00 - 16.00	75.00	72.00	0.16	20*	**218039**
					101	**218044**
		100.00	97.00	0.20	20*	**218040**
					101	**218045**
	16.00 - 20.00	90.00	87.00	0.26	20*	**218041**
					101	**218046**
		120.00	117.00	0.33	20*	**218031**
					101	**218034**

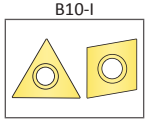
*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

B10: ix - x



Key on B10-F: 2

B10-I



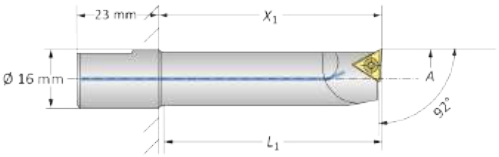
Inserts sold separately.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Boring Bars

Diameter Range: 6.00 mm - 27.00 mm (0.236" - 1.063")



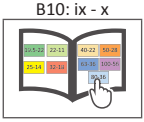


Imperial (in)

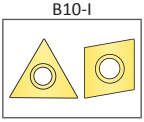
Substrate	Boring Range A	Boring Bar X_1	Boring Bar L_1	Weight (lbs)	Insert Form	Part No.
Steel	0.236 - 0.315	0.866	0.748	0.070	211*	**081053**
	0.315 - 0.394	1.181	1.063	0.090	211*	**218071**
	0.394 - 0.472	0.984	0.866	0.090	101	**218047**
					20*	**218058**
		1.378	1.260	0.110	101	**218048**
					20*	**218059**
		1.772	1.654	0.110	20*	**081044**
	0.472 - 0.551	1.181	1.063	0.110	101	**218012**
					20*	**218014**
		1.772	1.654	0.130	101	**218049**
					20*	**218060**
	0.551 - 0.630	1.378	1.260	0.130	101	**218050**
					20*	**218061**
		1.969	1.850	0.180	101	**218051**
					20*	**218062**
	0.591 - 0.669	1.457	1.339	0.130	20*	**081048**
		2.362	2.244	0.180	101	**081041**
					20*	**081045**
	0.630 - 0.786	1.575	1.457	0.180	101	**218052**
					20*	**218063**
		2.362	2.244	0.200	101	**218053**
					20*	**218064**
	0.787 - 0.984	1.457	1.339	0.150	20*	**081049**
		2.756	2.638	0.240	101	**081042**
					20*	**081046**
	0.984 - 1.063	1.457	1.339	0.150	20*	**081050**
		2.756	2.638	0.240	101	**081043**
					20*	**081047**
Heavy Metal	0.236 - 0.315	1.260	1.142	0.176	211*	**081055**
	0.315 - 0.394	1.772	1.654	0.198	211*	**218072**
Carbide	0.394 - 0.472	2.165	2.047	0.154	101	**218042**
					20*	**218037**
		2.953	2.835	0.198	101	**218032**
					20*	**218029**
	0.472 - 0.551	2.756	2.638	0.220	101	**218043**
					20*	**218038**
		3.543	3.425	0.331	101	**218033**
					20*	**218030**
	0.551 - 0.630	2.953	2.835	0.353	101	**218044**
					20*	**218039**
		3.937	3.819	0.441	101	**218045**
					20*	**218040**
	0.630 - 0.787	3.543	3.425	0.573	101	**218046**
					20*	**218041**
		4.724	4.606	0.728	101	**218034**
					20*	**218031**

*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

B10: ix - x



B10-I



Key on B10-F: 2

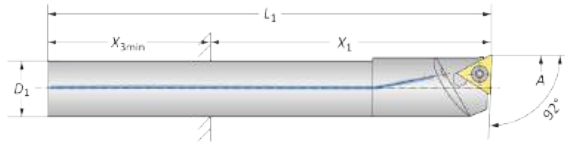
Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

Boring Bars

Diameter Range: 6.00 mm - 20.00 mm (0.236" - 0.787")





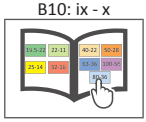
Metric (mm)

Substrate	Boring Range A	D_1	X_1	$X_{3\,min}$	L_1	Weight (kg)	Insert Form	Part No.
Steel	6.00 - 8.00	5.00	12.50 - 25.00	25.00	70.00	0.01	211*	**514032**
	8.00 - 10.00	7.00	17.50 - 35.00	25.00	81.00	0.02	211*	**514033**
	10.00 - 12.00	8.00	20.00 - 40.00	25.00	85.00	0.03	20*	**514004**
							101	**514003**
	12.00 - 14.00	10.00	25.00 - 50.00	25.00	100.00	0.05	20*	**514006**
							101	**514005**
	14.00 - 16.00	12.00	30.00 - 60.00	30.00	114.00	0.09	20*	**514008**
							101	**514007**
	16.00 -18.00	14.00	56.00 - 70.00	30.00	121.00	0.13	20*	**514010**
							101	**514009**
	18.00 - 20.00	14.00	56.00 - 70.00	30.00	121.00	0.13	101	**514011**
							20*	**514012**
Carbide	6.00 - 8.00	5.00	12.50 - 40.00	25.00	90.00	0.02	211*	**514034**
	8.00 - 10.00	7.00	21.00 - 56.00	25.00	109.00	0.05	211*	**514035**
	10.00 - 12.00	8.00	22.00 - 64.00	25.00	117.00	0.07	20*	**514016**
							101	**514015**
	12.00 - 14.00	10.00	51.00 - 80.00	25.00	140.00	0.13	20*	**514018**
							101	**514017**
	14.00 - 16.00	12.00	68.00 - 96.00	30.00	162.00	0.22	20*	**514020**
							101	**514019**
	16.00 - 18.00	14.00	112.00 - 147.00	30.00	177.00	0.33	20*	**514022**
							101	**514021**
			77.00 - 112.00	30.00	142.00	0.26	20*	**514024**
							101	**514023**
	18.00 - 20.00	14.00	112.00 - 147.00	30.00	177.00	0.33	20*	**514026**
							101	**514025**
			77.00 - 112.00	30.00	142.00	0.26	20*	**514028**
							101	**514027**

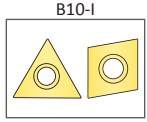
NOTE: Fixture-through reducing sleeve required (B10-F: 39).
*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

F

B10: ix - x



B10-I



Key on B10-F: 2

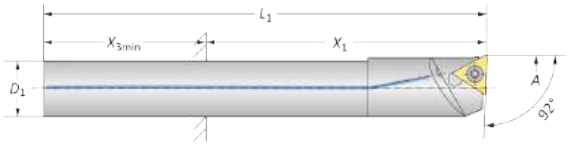
Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

Boring Bars

Diameter Range: 6.00 mm - 20.00 mm (0.236" - 0.787")





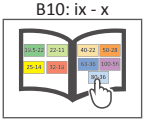
Imperial (in)

Substrate	Boring Range A	D_1 (mm)	Boring Bar X_1	Boring Bar $X_{3\ min}$	Boring Bar L_1	Weight (lbs)	Insert Form	Part No.
Steel	0.236 - 0.315	5.00	0.492 - 0.984	0.984	2.756	0.022	211*	**514032**
	0.315 - 0.394	7.00	0.689 - 1.378	0.984	3.189	0.044	211*	**514033**
	0.394 - 0.472	8.00	0.787 - 1.575	0.984	3.346	0.066	20*	**514004**
							101	**514003**
	0.472 - 0.551	10.00	0.984 - 1.969	0.984	3.937	0.110	20*	**514006**
							101	**514005**
	0.551 - 0.630	12.00	1.181 - 2.362	1.181	4.488	0.198	20*	**514008**
							101	**514007**
	0.630 - 0.709	14.00	2.205 - 2.756	1.181	4.764	0.287	20*	**514010**
							101	**514009**
	0.709 - 0.787	14.00	2.205 - 2.756	1.181	4.764	0.287	101	**514011**
							20*	**514012**
Carbide	0.236 - 0.315	5.00	0.492 - 1.575	0.984	3.543	0.044	211*	**514034**
	0.315 - 0.394	7.00	0.827 - 2.205	0.984	4.291	0.110	211*	**514035**
	0.394 - 0.472	8.00	0.866 - 2.520	0.984	4.606	0.154	20*	**514016**
							101	**514015**
	0.472 - 0.551	10.00	2.008 - 3.150	0.984	5.512	0.287	20*	**514018**
							101	**514017**
	0.551 - 0.630	12.00	2.677 - 3.780	1.181	6.378	0.485	20*	**514020**
							101	**514019**
	0.630 - 0.709	14.00	3.031 - 4.409	1.181	5.591	0.573	20*	**514022**
							101	**514021**
			4.409 - 5.787	1.181	6.969	0.728	20*	**514024**
							101	**514023**
	0.709 - 0.787	14.00	3.031 - 4.409	1.181	5.591	0.573	20*	**514026**
							101	**514025**
			4.409 - 5.787	1.181	6.969	0.728	20*	**514028**
							101	**514027**

NOTE: Fixture-through reducing sleeve required (B10-F: 39).
*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

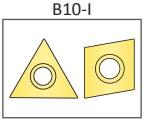
F

B10: ix - x



Key on B10-F: 2

B10-I



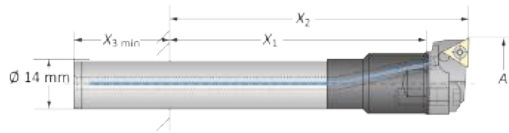
Inserts sold separately.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Serrated Tool Bodies

Diameter Range: 20.00 mm - 32.00 mm (0.787" - 1.260")





Metric (mm)

Substrate		Boring Range *A*	Serrated Tool Body X_1	X_2	$X_{3\ min}$	Weight (kg)	Part No.
Steel		20.00 - 32.00	37.00 - 72.00	49.00 - 84.00	30.00	0.13	**514029**
Carbide		20.00 - 32.00	65.00 - 100.00	77.00 - 112.00	30.00	0.25	**514030**
			100.00 - 135.00	112.00 - 147.00	30.00	0.33	**514031**

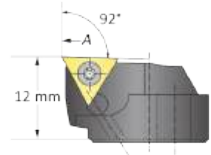
Imperial (in)

Substrate		Boring Range *A*	Serrated Tool Body X_1	X_2	$X_{3\ min}$	Weight (lbs)	Part No.
Steel		0.787 - 1.260	1.457 - 2.835	1.929 - 3.307	1.181	0.287	**514029**
Carbide		0.787 - 1.260	2.550 - 3.937	3.031 - 4.409	1.181	0.551	**514030**
			3.937 - 5.315	4.409 - 5.787	1.181	0.728	**514031**

NOTE: Fixture-through reducing sleeve required (B10-F: 39).

F





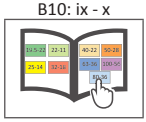
Insert Holders

Boring Range (*A*) mm	Boring Range (*A*) in	Weight kg	Weight lbs	Insert Holder Form	Insert Holder Part No.
20.00 - 22.00	0.787 - 0.866	0.01	0.022	20*	**502046**
				101	**502052**
22.00 - 24.00	0.866 - 0.945	0.01	0.022	20*	**502047**
				101	**502053**
24.00 - 26.00	0.945 - 1.024	0.01	0.022	20*	**502048**
				101	**502054**
26.00 - 28.00	1.024 - 1.102	0.01	0.022	20*	**502049**
				101	**502055**
28.00 - 30.00	1.102 - 1.181	0.01	0.022	20*	**502050**
				101	**502056**
30.00 - 32.00	1.181 - 1.260	0.01	0.022	20*	**502051**
				101	**502057**

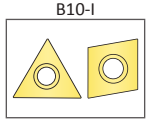
*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

B10: ix - x

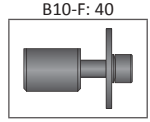
Key on B10-F: 2



B10-I



B10-F: 40



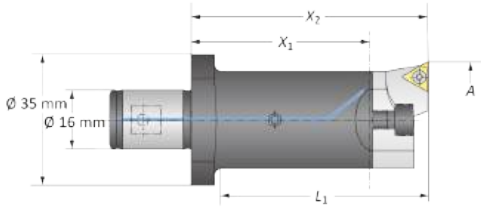
Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

Serrated Tool Bodies

Diameter Range: 29.00 mm - 53.00 mm (1.142" - 2.087")





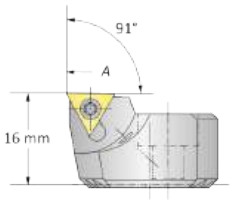
Metric (mm)

	Boring Range A	Serrated Tool Body X_1	X_2	L_1	Weight (kg)	Part No.
m	29.00 - 53.00	48.00	64.00	56.00	0.20	**236021**
		84.00	100.00	92.00	0.30	**236031**

Imperial (in)

	Boring Range A	Serrated Tool Body X_1	X_2	L_1	Weight (lbs)	Part No.
i	1.142 - 2.087	1.890	2.520	2.205	0.441	**236021**
		3.307	3.937	3.622	0.661	**236031**





Insert Holders

Boring Range (A) mm	Boring Range (A) in	Weight kg	Weight lbs	Insert Holder Form	Insert Holder Part No.
29.00 - 41.00	1.142 - 1.614	0.04	0.088	20*	**236022**
				101	**236023**
40.00 - 53.00	1.575 - 2.087	0.06	0.132	20*	**236024**
				101	**236025**

*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

F

B10: ix - x
Key on B10-F: 2
B10-I
B10-F: 40

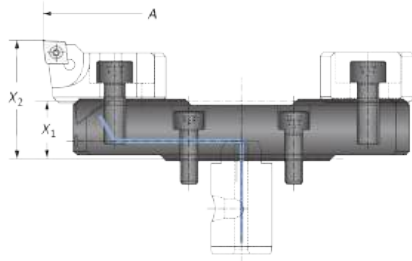
Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

Alu-Line® Serrated Slides

Diameter Range: 68.00 mm - 152.00 mm (2.667" - 5.984")





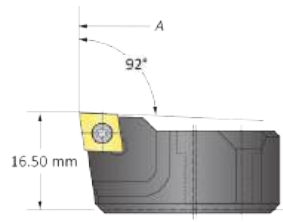
Metric (mm)

	Boring Range *A*	Serrated Slide X_1	Serrated Slide X_2	Weight (kg)	Part No.
	68.00 - 96.00	16.00	32.50	0.10	**501054**
m	96.00 - 124.00	16.00	32.50	0.10	**501055**
	124.00 - 152.00	16.00	32.50	0.20	**501056**

Imperial (in)

	Boring Range *A*	Serrated Slide X_1	Serrated Slide X_2	Weight (lbs)	Part No.
	2.677 - 3.780	0.630	1.279	0.220	**501054**
i	3.780 - 4.882	0.630	1.279	0.220	**501055**
	4.882 - 5.984	0.630	1.279	0.440	**501056**





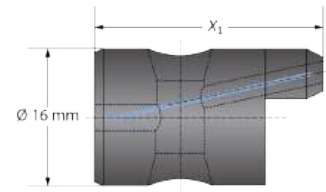
Insert Holders

Boring Range (*A*) mm	Boring Range (*A*) in	Weight kg	Weight lbs	Insert Holder Form	Insert Holder Part No.
68.00 - 152.00	2.677 - 5.984	0.05	0.110	20	**502069**
				101	**502064**



Counterweights

X_1 mm	X_1 in	Weight kg	Weight lbs	Part No.
13.40	0.528	0.05	0.110	**502165**

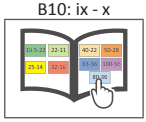


Alu-Line® Coolant Delivery Sections

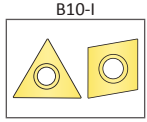
X_1 mm	X_1 in	Weight kg	Weight lbs	Part No.
25.50	1.004	0.01	0.022	**450137**

B10: ix - x

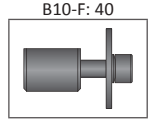
Key on B10-F: 2



B10-I



B10-F: 40



Inserts sold separately.

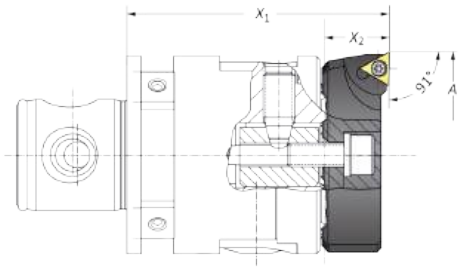
m = Metric (mm)

i = Imperial (in)

Insert Holders for Boring Heads

Diameter Range: 52.00 mm - 102.00 mm (2.047" - 4.016")





Metric (mm)

	Boring Range A	Serrated Slide X_1	Serrated Slide X_2	Weight (kg)	Insert Form	Part No.
m	52.00 - 77.00	66.00	16.50	0.06	20	**236026**
					101	**236027**
	76.00 - 102.00	66.00	16.50	0.10	20	**236028**
					101	**236029**

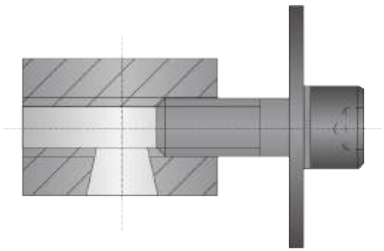
Imperial (in)

	Boring Range A	Serrated Slide X_1	Serrated Slide X_2	Weight (kg)	Insert Form	Part No.
i	2.047 - 3.031	2.598	0.650	0.132	20	**236026**
					101	**236027**
	2.992 - 4.016	2.598	0.650	0.220	20	**236028**
					101	**236029**

F

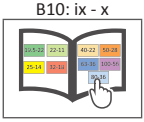
Clamping Piece for Insert Holder

Boring Range A (mm)	Service Key	Part No.
52.00 - 102.00	s5	**236020**

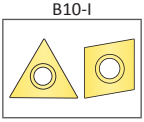


B10: ix - x

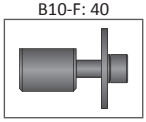
Key on B10-F: 2



B10-I



B10-F: 40



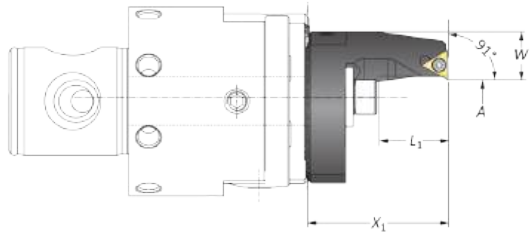
Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

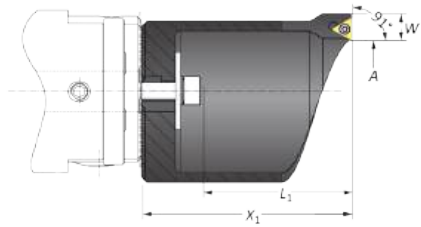
Outside Turning Insert Holders for Boring Heads

Diameter Range: 4.00 mm - 66.00 mm (0.157" - 2.598")









Metric (mm)

Type		Boring Range *A*	Insert Holder X_1	Insert Holder L_1	Insert Holder *W*	Weight (kg)	Insert Form	Part No.
m	A	4.00 - 17.50	40.50	20.00	16.60	0.10	20*	**236081**
		16.50 - 30.00	50.50	30.00	11.10	0.10	20*	**236082**
	B	29.00 - 44.00	75.50	54.00	9.60	0.30	20*	**236083**
		43.00 - 66.00	100.50	79.00	9.60	0.40	20*	**236084**

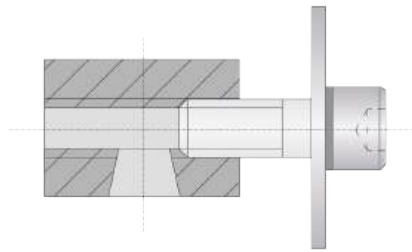
Imperial (in)

Type		Boring Range *A*	Insert Holder X_1	Insert Holder L_1	Insert Holder *W*	Weight (lbs)	Insert Form	Part No.
i	A	0.157 - 0.689	1.594	0.787	0.653	0.220	20*	**236081**
		0.650 - 1.181	1.988	1.181	0.437	0.220	20*	**236082**
	B	1.142 - 1.732	2.952	2.126	0.377	0.661	20*	**236083**
		1.693 - 2.598	3.956	3.110	0.377	0.882	20*	**236084**

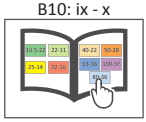
NOTE: Clockwise and neutral execution.
*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

Clamping Pieces for Outside Turning Insert Holders

Insert Holder Type	Boring Range *A* (mm)	Service Key	Part No.
A	4.00 - 30.00	s5	**236088**
B	29.00 - 66.00	s5	**236089**

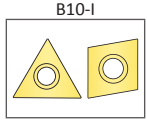


B10: ix - x

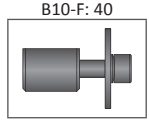


Key on B10-F: 2

B10-I



B10-F: 40



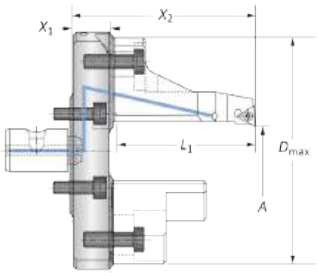
Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

Outside Turning Serrated Slides

Diameter Range: 2.00 mm - 58.00 mm (0.078" - 2.283")





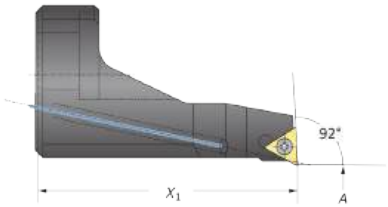
Metric (mm)

Boring Range A	X_1	X_2	L_1	D_{max}	Weight (kg)	Part No.
2.00 - 30.00	16.00	73.00	55.00	101.00	0.35	**501064**
30.00 - 58.00	16.00	73.00	55.00	129.00	0.44	**501065**

Imperial (in)

Boring Range A	X_1	X_2	L_1	D_{max}	Weight (lbs)	Part No.
0.078 - 1.181	0.630	2.874	2.165	3.396	0.771	**501064**
1.181 - 2.283	0.630	2.874	2.165	5.078	0.970	**501065**

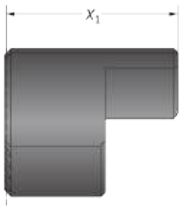




Insert Holders

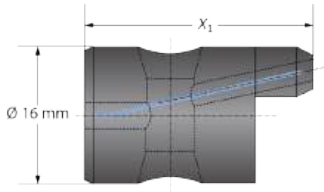
Outside Turning Range A mm	A in	Insert Holder X_1 mm	X_1 in	Weight (kg) kg	lbs	Insert Form	Part No.
2.00 - 114.00	0.079 - 4.488	57.00	2.244	0.15	0.331	20	**502082**

NOTE: Clockwise and neutral execution.



Counterweights

X_1 mm	in	Weight kg	lbs	Part No.
37.75	1.486	0.16	0.350	**502183**

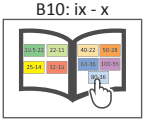


Alu-Line® Coolant Delivery Sections

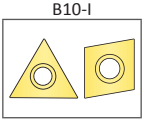
X_1 mm	in	Weight kg	lbs	Part No.
25.50	1.004	0.01	0.022	**450137**

Key on B10-F: 2

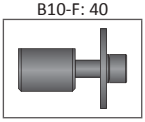
B10: ix - x



B10-I



B10-F: 40



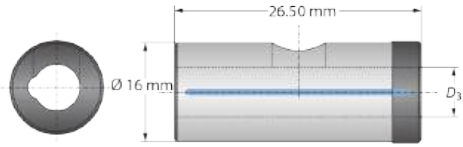
Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

Accessories

Reducing Sleeves





Metric (mm)

	Reducing Sleeve D_3	Weight (kg)	Part No.
	4.00	0.05	**450129**
	5.00	0.04	**450130**
	7.00	0.04	**450132**
m	8.00	0.04	**450133**
	10.00	0.03	**450134**
	12.00	0.02	**450135**
	14.00	0.01	**450136**

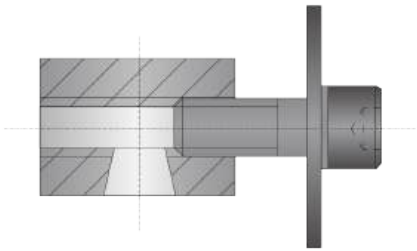
Imperial (in)

	Reducing Sleeve D_3	Weight (lbs)	Part No.
	0.125	0.110	**450142**
	0.250	0.088	**450143**
i	0.312	0.088	**450144**
	0.375	0.088	**450145**
	0.500	0.088	**450146**

F

m = Metric (mm)
i = Imperial (in)

Accessories

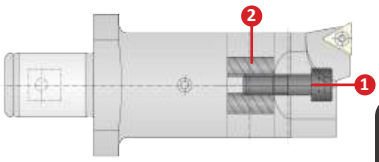


Clamping Elements for Insert Holders

	Boring Range	1. Cap Screw	Hex Size	2. Washer	3. Clamping Nut	4. Locking Washer	Complete Part No.
	4.00 - 30.00	**070153**	**s5**	**315155**	**236120**	**215254**	**236088**
m	29.00 - 66.00	**070153**	**s5**	**315156**	**236120**	**215254**	**236089**
	52.00 - 102.00	**115147**	**s5**	**115725**	**236120**	—	**236020**

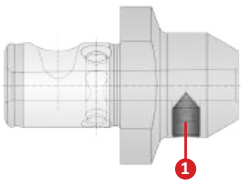
Clamping Elements for Serrated Tool Body

1. Cap Screw	Hex Size	2. Clamping Piece
027154	**s4**	**145184**



Thread Pin

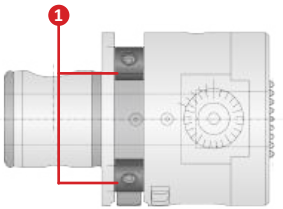
Service Key	1. Part No.
S3 / A	**415244**



Balancing Element with Screw

Nominal Size	Key Size / Type	1. Part No.
M8 x 1.25 x 8	s2 / A	**536005**

NOTE: Balancing elements sold separately.



3E^{TECH+} Digital Readout Module

1. Module	2. Charging Unit*
536015	**536016**

NOTE: WEEE-Reg.-Nr. DE 15820388
*Charging unit sold separately.
NOTE: 3E^{TECH+} digital adjustment accuracy of 0.001 mm (0.00005") on diameter.

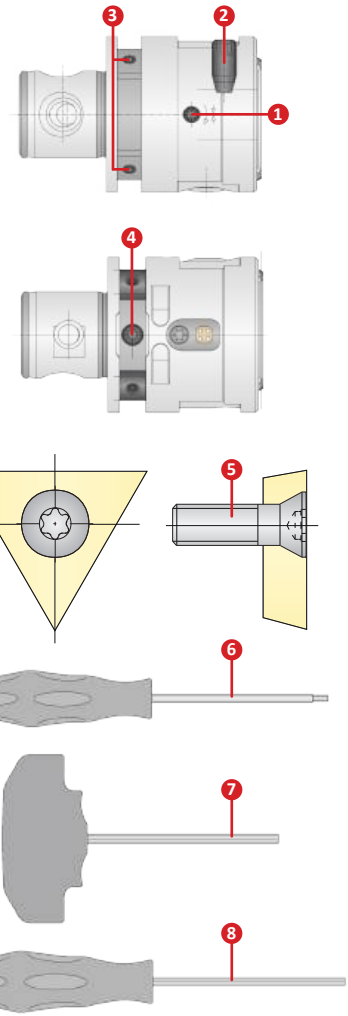


F

m = Metric (mm)
i = Imperial (in)

Accessories

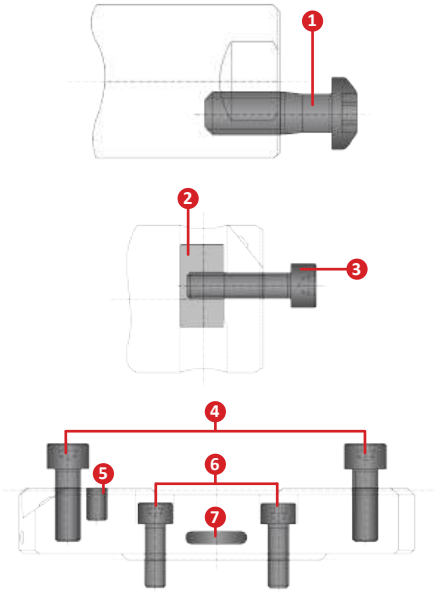
No.	Part	Insert Form	Size	Part No.
1	Clamping screw	—	—	**070333**
2	Thread pin for tool clamping	—	—	**215674**
3	Clamping screw for balance weight	—	—	**115470**
4	Balancing screw plug	—	—	**115119**
5	Insert screws	Form 20 Form 101 Form 211	T7 T8 T6	**115535** **115676** **215377**
6	Hex wrench	—	s2.5 s2	**115575** **215473**
7	Hex wrench	—	s4	**115576**
8	TORX® driver	— — — (0.6 N·m) Form 211 (0.9 N·m) Form 20 (1.2 N·m) Form 101	T6 T7 T8 T6 T7 T8	**115537** **115591** **115590** **415507** **415508** **415514**



F

Accessories

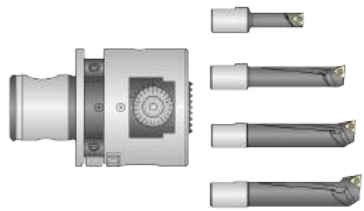
No.	Part	Size	Part No.
1	Screw for securing insert holder	T25	**415112**
2	Clamping piece	—	**145184**
3	Cap screw for securing insert holders	s4	**027154**
4	Cap screw for securing insert holder/ counterweight	s4	**315248**
5	Set screw - coolant	s1.5	**114224**
6	Cap screw for securing serrated slide	s3	**116289**
7	Sealing ring for coolant delivery	—	**415386**



F

VarioBore Kit | Analog

Form 20 | Diameter Range: 10.00 mm - 30.00 mm (0.393" - 1.181")



Metric (mm)

	Kit Part No.
m	**103049**

	Kit Components	Part No.
m	**(1) Boring Head**	536002
	(4) Boring Bars	218059
		081045
		081046
		081047
	(3) Service Keys	115575 (s2.5)
		215403 (s4)
		115591 (T7)

Imperial (in)

	Kit Part No.
i	**104049**

	Kit Components	Part No.
i	**(1) Boring Head**	563002
	(4) Boring Bars	218059
		081045
		081046
		081047
	(3) Service Keys	115575 (s2.5)
		215403 (s4)
		115591 (T7)

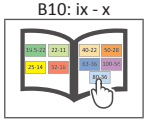
F

Component Assemblies

Boring Range			
Metric (mm)	**Imperial (in)**	**Boring Bar**	**Insert**
10.00 - 15.00	0.393 - 0.590	**218059**	Form 20
15.00 - 20.00	0.590 - 0.787	**081045**	Form 20
20.00 - 25.00	0.787 - 0.984	**081046**	Form 20
25.00 - 30.00	0.984 - 1.181	**081047**	Form 20

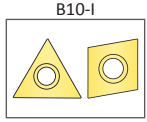
NOTE: Balancing elements and inserts sold separately.

B10: ix - x

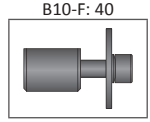


Key on B10-F: 2

B10-I



B10-F: 40

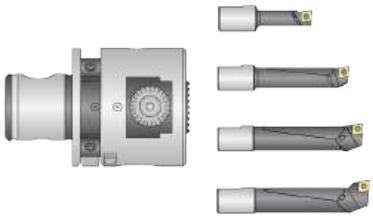


Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

VarioBore Kit | Analog

Form 101 | Diameter Range: 10.00 mm - 30.00 mm (0.393" - 1.181")



Metric (mm)

Kit Part No.
103050

Kit Components	Part No.
(1) Boring Head	536001
(4) Boring Bars	218048
	081041
	081042
	081043
(3) Service Keys	115575 (s2.5)
	215403 (s4)
	115590 (T8)

Imperial (in)

Kit Part No.
104050

Kit Components	Part No.
(1) Boring Head	563001
(4) Boring Bars	218048
	081041
	081042
	081043
(3) Service Keys	115575 (s2.5)
	215403 (s4)
	115590 (T8)

Component Assemblies

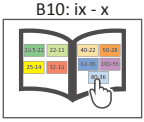
Boring Range			
Metric (mm)	Imperial (in)	Boring Bar	Insert
10.00 - 15.00	0.393 - 0.590	**218048**	Form 101
15.00 - 20.00	0.590 - 0.787	**081041**	Form 101
20.00 - 25.00	0.787 - 0.984	**081042**	Form 101
25.00 - 30.00	0.984 - 1.181	**081043**	Form 101

NOTE: Balancing elements and inserts sold separately.

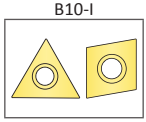
F

B10: ix - x

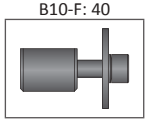
Key on B10-F: 2



B10-I



B10-F: 40



Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

VarioBore Kit | Analog

Form 20 | Diameter Range: 10.00 mm - 102.00 mm (0.393" - 4.016")



Metric (mm)

Kit Part No.
103051

Kit Components	Part No.
(1) Boring Head	536001
(4) Boring Bars	218059
	081045
	081046
	081047
(1) Serrated Tool Body	236021
(4) Insert Holders	236022
	236024
	236026
	236028
(1) Clamping Piece	236020
(4) Service Keys	115575 (s2.5)
	215403 (s4)
	215521 (s5)
	115591 (T7)

Imperial (in)

Kit Part No.
104051

Kit Components	Part No.
(1) Boring Head	563001
(4) Boring Bars	218059
	081045
	081046
	081047
(1) Serrated Tool Body	236021
(4) Insert Holders	236022
	236024
	236026
	236028
(1) Clamping Piece	236020
(4) Service Keys	115575 (s2.5)
	215403 (s4)
	215521 (s5)
	115591 (T7)

Component Assemblies

Boring Range						
Metric (mm)	Imperial (in)	Boring Bar	Serrated Tool Body	Insert Holder	Clamping Piece	Insert
10.00 - 15.00	0.393 - 0.590	**218059**	—	—	—	Form 20
15.00 - 20.00	0.590 - 0.787	**081045**	—	—	—	Form 20
20.00 - 25.00	0.787 - 0.984	**081046**	—	—	—	Form 20
25.00 - 30.00	0.984 - 1.181	**081047**	—	—	—	Form 20
29.00 - 41.00	1.142 - 1.614	—	**236021**	**236022**	—	Form 20
40.00 - 53.00	1.575 - 2.087	—	**236021**	**236024**	—	Form 20
52.00 - 77.00	2.047 - 3.031	—	—	**236026**	**236020**	Form 20
76.00 - 102.00	2.992 - 4.016	—	—	**236028**	**236020**	Form 20

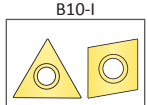
NOTE: Balancing elements and inserts sold separately.

B10: ix - x

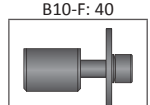


Key on B10-F: 2

B10-I



B10-F: 40



Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

VarioBore Kit | Analog

Form 101 | Diameter Range: 10.00 mm - 102.00 mm (0.393" - 4.016")



Metric (mm)

Kit Part No.
103052

Kit Components	Part No.
(1) Boring Head	536001
(4) Boring Bars	218048
	081041
	081042
	081043
(1) Serrated Tool Body	236021
(4) Insert Holders	236023
	236025
	236027
	236029
(1) Clamping Piece	236020
(4) Service Keys	115575 (s2.5)
	215403 (s4)
	215521 (s5)
	115590 (T8)

Imperial (in)

Kit Part No.
104052

Kit Components	Part No.
(1) Boring Head	563001
(4) Boring Bars	218048
	081041
	081042
	081043
(1) Serrated Tool Body	236021
(4) Insert Holders	236023
	236025
	236027
	236029
(1) Clamping Piece	236020
(4) Service Keys	115575 (s2.5)
	215403 (s4)
	215521 (s5)
	115590 (T8)

F

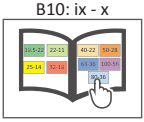
Component Assemblies

Boring Range		Boring Bar	Serrated Tool Body	Insert Holder	Clamping Piece	Insert
Metric (mm)	Imperial (in)					
10.00 - 15.00	0.393 - 0.590	**218048**	—	—	—	Form 101
15.00 - 20.00	0.590 - 0.787	**081041**	—	—	—	Form 101
20.00 - 25.00	0.787 - 0.984	**081042**	—	—	—	Form 101
25.00 - 30.00	0.984 - 1.181	**081043**	—	—	—	Form 101
29.00 - 41.00	1.142 - 1.614	—	**236021**	**236023**	—	Form 101
40.00 - 53.00	1.575 - 2.087	—	**236021**	**236025**	—	Form 101
52.00 - 77.00	2.047 - 3.031	—	—	**236027**	**236020**	Form 101
76.00 - 102.00	2.992 - 4.016	—	—	**236029**	**236020**	Form 101

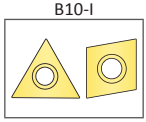
NOTE: Balancing elements and inserts sold separately.

B10: ix - x

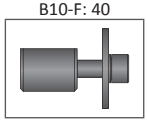
Key on B10-F: 2



B10-I



B10-F: 40

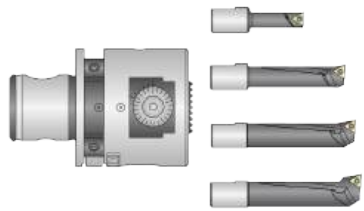


Inserts sold separately.

(m) = Metric (mm)
(i) = Imperial (in)

VarioBore Kit | Digital 3E^{TECH+}

Form 20 | Diameter Range: 10.00 mm - 30.00 mm (0.393" - 1.181")



Metric (mm)

	Kit Part No.
(m)	**103045**

Imperial (in)

	Kit Part No.
(i)	**104045**

	Kit Components	Part No.
(m)	**(1) Boring Head**	536002
	(4) Boring Bars	218059
		081045
		081046
		081047
	(3) Service Keys	115575 (s2.5)
		215403 (s4)
		115591 (T7)

	Kit Components	Part No.
(i)	**(1) Boring Head**	563002
	(4) Boring Bars	218059
		081045
		081046
		081047
	(3) Service Keys	115575 (s2.5)
		215403 (s4)
		115591 (T7)

F

Component Assemblies

Boring Range			
Metric (mm)	Imperial (in)	Boring Bar	Insert
10.00 - 15.00	0.393 - 0.590	**218059**	Form 20
15.00 - 20.00	0.590 - 0.787	**081045**	Form 20
20.00 - 25.00	0.787 - 0.984	**081046**	Form 20
25.00 - 30.00	0.984 - 1.181	**081047**	Form 20

NOTE: Balancing elements and inserts sold separately.
NOTE: 3E^{TECH+} digital readout module and charging station sold separately.

3E^{TECH+} Digital Readout Module

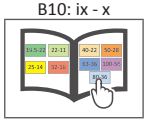
Part No.	Charging Unit*
536015	**536016**

NOTE: WEEE-Reg.-Nr. DE 15820388
*Charging unit sold separately.

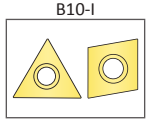


NOTE: 3E^{TECH+} digital adjustment accuracy of 0.001 mm (0.00005") on diameter.

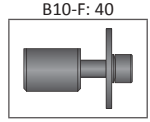
B10: ix - x



B10-I



B10-F: 40



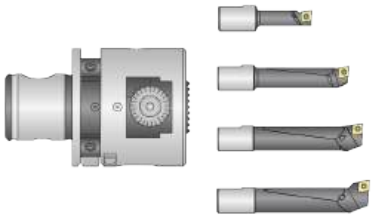
Key on B10-F: 2

Inserts sold separately.

(m) = Metric (mm)
(i) = Imperial (in)

VarioBore Kit | Digital 3E^{TECH+}

Form 101 | Diameter Range: 10.00 mm - 30.00 mm (0.393" - 1.181")



Metric (mm)

	Kit Part No.
ⓜ	103046

	Kit Components	Part No.
ⓜ	(1) Boring Head	536002
	(4) Boring Bars	218048
		081041
		081042
		081043
	(3) Service Keys	115575 (s2.5)
		215403 (s4)
		115590 (T8)

Imperial (in)

	Kit Part No.
ⓘ	104046

	Kit Components	Part No.
ⓘ	(1) Boring Head	563002
	(4) Boring Bars	218048
		081041
		081042
		081043
	(3) Service Keys	115575 (s2.5)
		215403 (s4)
		115590 (T8)

Component Assemblies

Boring Range			
Metric (mm)	Imperial (in)	Boring Bar	Insert
10.00 - 15.00	0.393 - 0.590	**218048**	Form 101
15.00 - 20.00	0.590 - 0.787	**081041**	Form 101
20.00 - 25.00	0.787 - 0.984	**081042**	Form 101
25.00 - 30.00	0.984 - 1.181	**081043**	Form 101

NOTE: Balancing elements and inserts sold separately.
NOTE: 3E^{TECH+} digital readout module and charging station sold separately.

3E^{TECH+} Digital Readout Module

Part No.	Charging Unit*
536015	**536016**

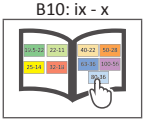
NOTE: WEEE-Reg.-Nr. DE 15820388
*Charging unit sold separately.



NOTE: 3E^{TECH+} digital adjustment accuracy of 0.001 mm (0.00005") on diameter.

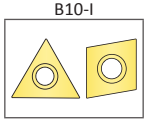
F

B10: ix - x

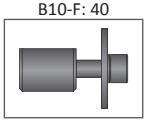


Key on B10-F: 2

B10-I



B10-F: 40



Inserts sold separately.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

VarioBore Kit | Digital 3E^{TECH+}

Form 20 | Diameter Range: 10.00 mm - 102.00 mm (0.393" - 4.016")



Metric (mm)

	Kit Part No.
m	103047

	Kit Components	Part No.
m	(1) Boring Head	536002
	(4) Boring Bars	218059
		081045
		081046
		081047
	(1) Serrated Tool Body	236021
	(4) Insert Holders	236022
		236024
		236026
		236028
	(1) Clamping Piece	236020
	(4) Service Keys	115575 (s2.5)
		215403 (s4)
		215521 (s5)
		115591 (T7)

Imperial (in)

	Kit Part No.
i	104047

	Kit Components	Part No.
i	(1) Boring Head	563002
	(4) Boring Bars	218059
		081045
		081046
		081047
	(1) Serrated Tool Body	236021
	(4) Insert Holders	236022
		236024
		236026
		236028
	(1) Clamping Piece	236020
	(4) Service Keys	115575 (s2.5)
		215403 (s4)
		215521 (s5)
		115591 (T7)

Component Assemblies

Boring Range						
Metric (mm)	Imperial (in)	Boring Bar	Serrated Tool Body	Insert Holder	Clamping Piece	Insert
10.00 - 15.00	0.393 - 0.590	**218059**	—	—	—	Form 20
15.00 - 20.00	0.590 - 0.787	**081045**	—	—	—	Form 20
20.00 - 25.00	0.787 - 0.984	**081046**	—	—	—	Form 20
25.00 - 30.00	0.984 - 1.181	**081047**	—	—	—	Form 20
29.00 - 41.00	1.142 - 1.614	—	**236021**	**236022**	—	Form 20
40.00 - 53.00	1.575 - 2.087	—	**236021**	**236024**	—	Form 20
52.00 - 77.00	2.047 - 3.031	—	—	**236026**	**236020**	Form 20
76.00 - 102.00	2.992 - 4.016	—	—	**236028**	**236020**	Form 20

NOTE: Balancing elements and inserts sold separately.
NOTE: 3E^{TECH+} digital readout module and charging station sold separately.

3E^{TECH+} Digital Readout Module

Part No.	Charging Unit*
536015	**536016**

NOTE: WEEE-Reg.-Nr. DE 15820388
*Charging unit sold separately.



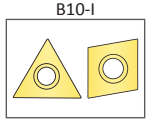
NOTE: 3E^{TECH+} digital adjustment accuracy of 0.001 mm (0.00005") on diameter.

B10: ix - x

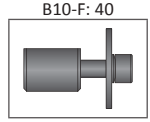


Key on B10-F: 2

B10-I



B10-F: 40



Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

VarioBore Kit | Digital 3E[TECH+]

Form 101 | Diameter Range: 10.00 mm - 102.00 mm (0.393" - 4.016")



Metric (mm)

	Kit Part No.
(m)	103048

	Kit Components	Part No.
(m)	(1) Boring Head	536002
	(4) Boring Bars	218048
		081041
		081042
		081043
	(1) Serrated Tool Body	236021
	(4) Insert Holders	236023
		236025
		236027
		236029
	(1) Clamping Piece	236020
	(4) Service Keys	115575 (s2.5)
		215403 (s4)
		215521 (s5)
		115590 (T8)

Imperial (in)

	Kit Part No.
(i)	104048

	Kit Components	Part No.
(i)	(1) Boring Head	563002
	(4) Boring Bars	218048
		081041
		081042
		081043
	(1) Serrated Tool Body	236021
	(4) Insert Holders	236023
		236025
		236027
		236029
	(1) Clamping Piece	236020
	(4) Service Keys	115575 (s2.5)
		215403 (s4)
		215521 (s5)
		115590 (T8)

Component Assemblies

Boring Range						
Metric (mm)	Imperial (in)	Boring Bar	Serrated Tool Body	Insert Holder	Clamping Piece	Insert
10.00 - 15.00	0.393 - 0.590	**218048**	—	—	—	Form 101
15.00 - 20.00	0.590 - 0.787	**081041**	—	—	—	Form 101
20.00 - 25.00	0.787 - 0.984	**081042**	—	—	—	Form 101
25.00 - 30.00	0.984 - 1.181	**081043**	—	—	—	Form 101
29.00 - 41.00	1.142 - 1.614	—	**236021**	**236023**	—	Form 101
40.00 - 53.00	1.575 - 2.087	—	**236021**	**236025**	—	Form 101
52.00 - 77.00	2.047 - 3.031	—	—	**236027**	**236020**	Form 101
76.00 - 102.00	2.992 - 4.016	—	—	**236029**	**236020**	Form 101

NOTE: Balancing elements and inserts sold separately.
NOTE: 3E[TECH+] digital readout module and charging station sold separately.

3E[TECH+] Digital Readout Module

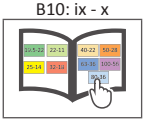
Part No.	Charging Unit*
536015	**536016**

NOTE: WEEE-Reg.-Nr. DE 15820388
*Charging unit sold separately.



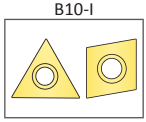
NOTE: 3E[TECH+] digital adjustment accuracy of 0.001 mm (0.00005") on diameter.

B10: ix - x

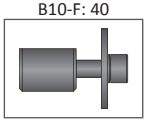


Key on B10-F: 2

B10-I



B10-F: 40



Inserts sold separately.

(m) = Metric (mm)
(i) = Imperial (in)



Digital 510 (511)
VERSATILE FINE BORING

Improve your boring job with the digital 510 (511) boring head.

The Wohlhaupter® digital 510 (511) boring head offers precision, quality, and efficiency. Our integrated digital display makes the 510 (511) the smallest precision boring tool available and allows for easy optoelectronic adjusting.

Experience ***precision boring*** for yourself.

- Diameter range: 0.40 mm - 12.00 mm (0.016" - 1.339").
- Easy-to-read digital display.
- Coolant through.
- External counterweight for balancing.
- Protected against coolant and dust according to IP65.
- Fine adjustments of 0.002 mm (0.0001").
- Ideal for CAT40, BT30, HSK40.
- Max spindle speed:
  - 510001 and 511001: 35,000 RPM.
  - 511021: 30,000 RPM
- Max coolant pressure: 40 bar (580 PSI).

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

Digital 510 (511) Product Overview



DIGITAL

Digital 511021 Boring Head
Ø 0.016" - 1.339"

Digital 511001 (510001) Boring Head
Ø 0.40 mm - 12.00 mm (0.016" - 0.472")

NOTE: Metric item pictured.
NOTE: Adjustment accuracy of 0.002 mm (0.0001") on diameter.



Serrated Tool Body*



Insert Holder
Ø 0.787" – 1.339"

*Serrated tool body for use with 511021 boring head only.



Carbide Boring Bar
Ø 10.00 mm – 12.00 mm (Ø 0.393" – 0.472")



Steel Boring Bar
Ø 10.00 mm – 12.00 mm (Ø 0.393" – 0.472")



Reducing Sleeve



Carbide Boring Bar
Ø 6.00 mm – 10.00 mm (Ø 0.236" – 0.393")



Steel Boring Bar
Ø 6.00 mm – 10.00 mm (Ø 0.236" – 0.393")



Mini Boring Bar
Ø 0.40 mm – 10.00 mm (Ø 0.016" – 0.394")



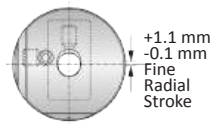
F

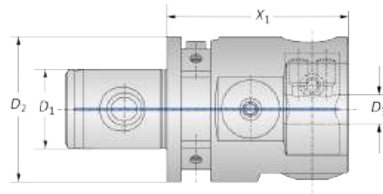
OPERATION **VERSATILITY**
from **0.40 mm** to **12.00 mm** (**0.016"** to **1.339"**)

Digital Boring Heads

Diameter Range: 0.40 mm - 12.00 mm (0.016" - 1.339")







NOTE: Metric item pictured.
NOTE: Adjustment accuracy of 0.002 mm (0.0001") on diameter.

Metric (mm)

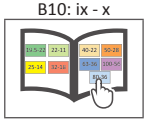
MVS Connection D_2 | D_1	Boring Range	Boring Head D_3	Boring Head X_1	Weight (kg)	Part No.
40 - 22	0.40 - 12.00	8.00	50.00	0.42	**510001**

Imperial (in)

MVS Connection D_2 | D_1	Boring Range	Boring Head D_3	Boring Head X_1	Weight (lbs)	Part No.
40 - 22	0.016 - 0.472	0.315	1.969	0.926	**511001**
50 - 28	0.016 - 1.339	0.551	2.165	1.565	**511021**

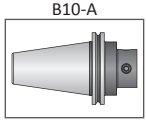
F

B10: ix - x



Key on B10-F: 2

B10-A

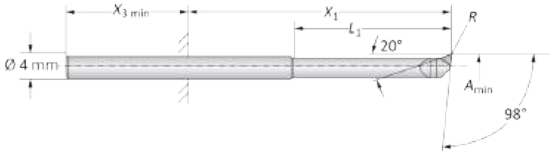


= Metric (mm)
= Imperial (in)

Mini Boring Bars

Diameter Range: 0.40 mm - 3.00 mm (0.016" - 0.118")





Metric (mm)

	Boring Head	Boring Range A_{min}	Boring Bar X_1	$X_{3\,min}$	L_1	R	Part No.
ⓜ	510001	0.40	3.00 - 26.00	16.00	2.00	0.03	**081401WHC126**
		0.60	4.00 - 27.00	16.00	3.00	0.04	**081402WHC126**
		0.80	5.00 - 28.00	16.00	4.00	0.04	**081403WHC126**
		1.00	6.00 - 29.00	16.00	5.00	0.05	**081404WHC126**
		1.50	8.50 - 31.50	16.00	7.50	0.05	**081405WHC126**
		2.00	11.00 - 34.00	16.00	10.00	0.05	**081406WHC126**
		2.50	13.50 - 36.50	16.00	12.50	0.05	**081407WHC126**
		2.80	15.00 - 38.00	16.00	14.00	0.07	**081408WHC126**

Imperial (in)

	Boring Head	Boring Range A_{min}	Boring Bar X_1	$X_{3\,min}$	L_1	R	Part No.
ⓘ	511001	0.016	0.118 - 1.042	0.630	0.079	0.001	**081401WHC126**
		0.024	0.157 - 1.063	0.630	0.118	0.002	**081402WHC126**
		0.031	0.197 - 1.102	0.630	0.157	0.002	**081403WHC126**
		0.039	0.236 - 1.142	0.630	0.197	0.002	**081404WHC126**
		0.059	0.335 - 1.220	0.630	0.295	0.002	**081405WHC126**
		0.079	0.433 - 1.339	0.630	0.394	0.002	**081406WHC126**
		0.098	0.531 - 1.437	0.630	0.492	0.002	**081407WHC126**
		0.110	0.591 - 1.496	0.630	0.551	0.003	**081408WHC126**
	511021	0.016	0.118 - 0.669	0.980	0.079	0.001	**081401WHC126**
		0.024	0.157 - 0.709	0.980	0.118	0.002	**081402WHC126**
		0.031	0.197 - 0.748	0.980	0.157	0.002	**081403WHC126**
		0.039	0.236 - 0.787	0.980	0.197	0.002	**081404WHC126**
		0.059	0.335 - 0.886	0.980	0.295	0.002	**081405WHC126**
		0.079	0.433 - 0.984	0.980	0.394	0.002	**081406WHC126**
		0.098	0.531 - 1.083	0.980	0.492	0.002	**081407WHC126**
		0.110	0.591 - 1.142	0.980	0.551	0.003	**081408WHC126**

NOTE: Fixture-through reducing sleeve required (B10-F: 58).

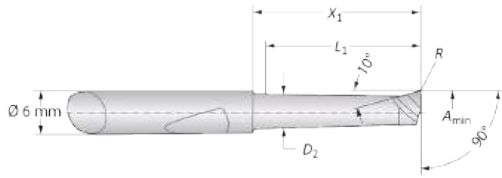
F

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Mini Boring Bars

Diameter Range: 3.00 mm - 10.00 mm (0.118" - 0.394")





Metric (mm)

Boring Range A_{min}	Boring Bar D_1	D_2	X_1	L_1	R	Part No. Coated Carbide	Uncoated Carbide	CBN
3.00	6.00	2.60	11.50	10.00	0.10	**081306WHC05**	—	**081322WBN150**
			16.50	15.00	0.10	**081307WHC05**	**081307WHW04**	—
4.00	6.00	3.60	12.00	10.00	0.20	**081308WHC05**	—	**081317WBN150**
			17.00	15.00	0.20	**081309WHC05**	—	**081341WBN150**
			22.00	20.00	0.20	**081310WHC05**	**081310WHW04**	—
5.00	6.00	4.60	12.00	10.00	0.20	**081311WHC05**	—	—
			22.00	20.00	0.20	**081312WHC05**	—	**081319WBN150**
			32.00	30.00	0.20	**081313WHC05**	**081313WHW04**	—
6.00	6.00	5.60	22.00	20.00	0.20	**081314WHC05**	—	**081320WBN150**
			32.00	30.00	0.20	**081315WHC05**	—	**081321WBN150**
			42.00	40.00	0.20	**081316WHC05**	**081316WHW04**	—
8.00	8.00	7.60	25.00	23.00	0.20	**081323WHC05**	—	—
			50.00	48.00	0.20	**081324WHC05**	—	—

Imperial (in)

Boring Range A_{min}	Boring Bar D_1 (mm)	D_2	X_1	L_1	R	Part No. Coated Carbide	Uncoated Carbide	CBN
0.118	6.00	0.102	0.452	0.393	0.003	**081306WHC05**	—	**081322WBN150**
			0.649	0.590	0.003	**081307WHC05**	**081307WHW04**	—
0.157	6.00	0.141	0.472	0.393	0.007	**081308WHC05**	—	**081317WBN150**
			0.669	0.590	0.007	**081309WHC05**	—	**081341WBN150**
			0.866	0.787	0.007	**081310WHC05**	**081310WHW04**	—
0.196	6.00	0.181	0.472	0.393	0.007	**081311WHC05**	—	—
			0.866	0.787	0.007	**081312WHC05**	—	**081319WBN150**
			1.259	1.181	0.007	**081313WHC05**	**081313WHW04**	—
0.236	6.00	0.220	0.866	0.787	0.007	**081314WHC05**	—	**081320WBN150**
			1.259	1.181	0.007	**081315WHC05**	—	**081321WBN150**
			1.653	1.574	0.007	**081316WHC05**	**081316WHW04**	—
0.315	8.00	0.229	0.984	0.905	0.007	**081323WHC05**	—	—
			1.968	1.889	0.007	**081324WHC05**	—	—

NOTE: Fixture-through reducing sleeve required (B10-F: 58).

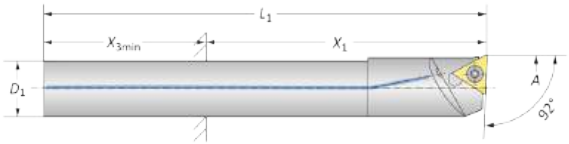
Inserts sold separately.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Boring Bars

Diameter Range: 6.00 mm - 12.00 mm (0.236" - 0.787")





Metric (mm)

Substrate	Boring Head	Boring Range A	D_1	X_1	$X_{3\,min}$	L_1	Weight (kg)	Insert Form	Part No.
Steel	510001	6.00 - 8.00	5.00	12.50 - 25.00	16.00	70.00	0.01	211**	**514032***
		8.00 - 10.00	7.00	17.50 - 35.00	16.00	81.00	0.02	211**	**514033***
		10.00 - 12.00	8.00	20.00 - 40.00	19.00	85.00	0.03	20**	**514004**
								101	**514003**
Carbide	510001	6.00 - 8.00	5.00	12.50 - 40.00	16.00	90.00	0.02	211**	**514034***
		8.00 - 10.00	7.00	21.00 - 56.00	16.00	109.00	0.05	211**	**514035***
		10.00 - 12.00	8.00	22.00 - 64.00	19.00	117.00	0.07	20**	**514016**
								101	**514015**

Imperial (in)

Substrate	Boring Head	Boring Range A	D_1 (mm)	X_1	$X_{3\,min}$	L_1	Weight (lbs)	Insert Form	Part No.
Steel	511001	0.236 - 0.315	5.00	0.492 - 0.984	0.630	2.756	0.022	211**	**514032***
		0.315 - 0.394	7.00	0.689 - 1.378	0.630	3.189	0.044	211**	**514033***
		0.394 - 0.472	8.00	0.787 - 1.575	0.748	3.346	0.066	20**	**514004**
								101	**514003**
	511021	0.236 - 0.315	5.00	0.492 - 0.984	0.984	2.756	0.022	211**	**514032***
		0.315 - 0.394	7.00	0.689 - 1.378	0.984	3.189	0.044	211**	**514033***
		0.394 - 0.472	8.00	0.787 - 1.575	0.984	3.346	0.066	20**	**514004***
								101	**514003***
		0.472 - 0.551	10.00	0.984 - 1.969	0.984	3.937	0.110	20**	**514006***
								101	**514005***
		0.551 - 0.630	12.00	1.181 - 2.362	1.181	4.488	0.198	20**	**514008***
								101	**514007***
		0.630 - 0.709	14.00	2.205 - 2.756	1.181	4.764	0.287	20**	**514010**
								101	**514009**
		0.709 - 0.787	14.00	2.205 - 2.756	1.181	4.764	0.287	20**	**514012**
								101	**514011**
Carbide	511001	0.236 - 0.315	5.00	0.492 - 1.575	0.63	3.543	0.044	211**	**514034***
		0.315 - 0.394	7.00	0.827 - 2.205	0.63	4.291	0.110	211**	**514035***
		0.394 - 0.472	8.00	0.866 - 2.520	0.748	4.606	0.154	20**	**514016**
								101	**514015**
	511021	0.236 - 0.315	5.00	0.492 - 1.575	0.984	3.543	0.044	211**	**514034***
		0.315 - 0.394	7.00	0.827 - 2.205	0.984	4.291	0.110	211**	**514035***
		0.394 - 0.472	8.00	0.866 - 2.520	0.984	4.606	0.154	20**	**514016***
								101	**514015***
		0.472 - 0.551	10.00	2.008 - 3.150	1.181	5.512	0.287	20**	**514018***
								101	**514017***
		0.551 - 0.630	12.00	2.677 - 3.780	1.181	6.378	0.485	20**	**514020***
								101	**514019***
		0.630 - 0.709	14.00	3.031 - 4.409	1.181	5.591	0.573	20**	**514022**
								101	**514021**
				4.409 - 5.787	1.181	6.969	0.728	20**	**514024**
								101	**514023**
		0.709 - 0.787	14.00	3.031 - 4.409	1.181	5.591	0.573	20**	**514026**
								101	**514025**
				4.409 - 5.787	1.181	6.969	0.728	20**	**514028**
								101	**514027**

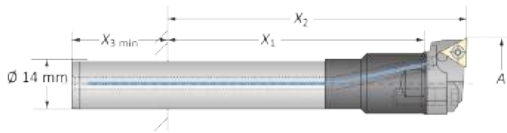
*Fixture-through reducing sleeve required (B10-F: 58).
**Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

Inserts sold separately.

Serrated Tool Bodies

Diameter Range: 0.787" - 1.260"

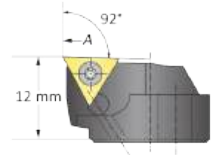




Imperial (in)

Substrate		Boring Range *A*	Serrated Tool Body X_1	X_2	$X_{3\ min}$	Weight (lbs)	Part No.
	Steel	0.787 - 1.260	1.457 - 2.835	1.929 - 3.307	1.181	0.287	**514029**
	Carbide	0.787 - 1.260	2.550 - 3.937	3.031 - 4.409	1.181	0.551	**514030**
			3.937 - 5.315	4.409 - 5.787	1.181	0.728	**514031**



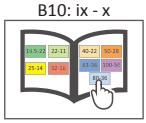


Insert Holders

Boring Range (*A*) mm	Boring Range (*A*) in	Weight kg	Weight lbs	Insert Holder Form	Insert Holder Part No.
20.00 - 22.00	0.787 - 0.866	0.01	0.022	20*	**502046**
				101	**502052**
22.00 - 24.00	0.866 - 0.945	0.01	0.022	20*	**502047**
				101	**502053**
24.00 - 26.00	0.945 - 1.024	0.01	0.022	20*	**502048**
				101	**502054**
26.00 - 28.00	1.024 - 1.102	0.01	0.022	20*	**502049**
				101	**502055**
28.00 - 30.00	1.102 - 1.181	0.01	0.022	20*	**502050**
				101	**502056**
30.00 - 32.00	1.181 - 1.260	0.01	0.022	20*	**502051**
				101	**502057**

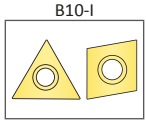
*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

B10: ix - x

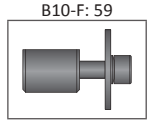


Key on B10-F: 2

B10-I



B10-F: 59



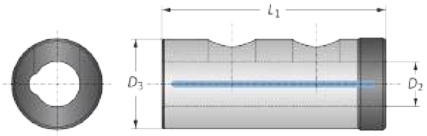
Inserts sold separately.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Accessories

Reducing Sleeves





Metric (mm)

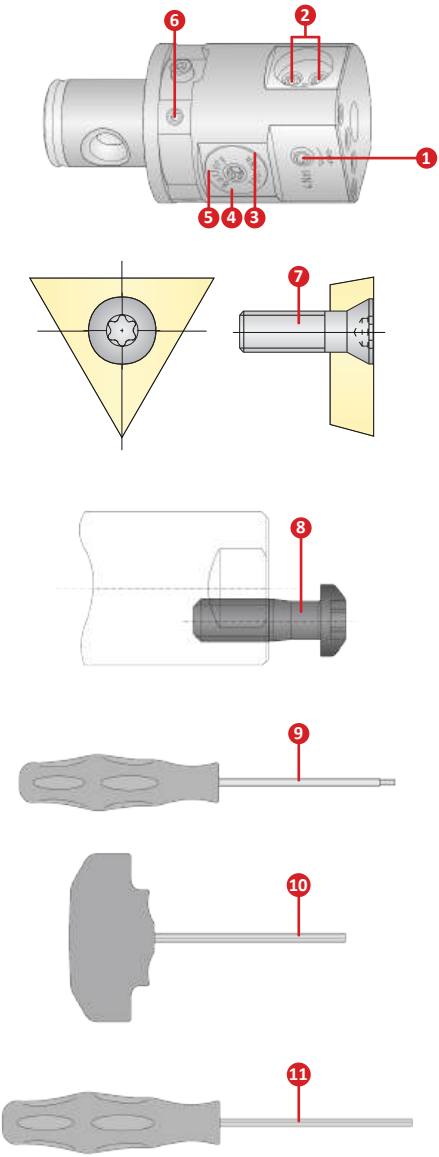
Reducing Sleeve				
	L_1	D_3	D_2	Part No.
ⓜ	8.00	8.00	4.00	**514201**
			5.00	**514202**
			6.00	**514210**
			7.00	**514203**
	32.00	14.00	4.00	**514204**
			5.00	**514205**
			6.00	**514211**
			7.00	**514206**
			8.00	**514207**
			10.00	**514208**
			12.00	**514209**

F

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Accessories

No.	Part	Insert Form	Size	Part No. 510001/ 511001	Part No. 511021
1	Clamping screw	—	—	**115985**	**315943**
2	Thread pin for tool clamping	—	—	**070333**	**115181**
3	Sealing ring for battery cover	—	—	**415895**	**415895**
4	Battery*	—	—	**415896**	**415896**
5	Battery cover with sealing ring	—	—	**501016**	**501016**
6	Thread pin	—	—	**510114**	**510114**
7	Insert screws	Form 20 Form 101 Form 211	T7 T8 T6	**115535** **115676** **515286**	**115535** **115676** **515286**
8	Clamping screw	—	T25	—	**415112**
9	Hex wrench	—	s2	**215473**	**215473**
10	Service Key	—	s2.5 s3.0 s4.0	**415577** **415578** **115576**	**415577** **415578** **115576**
11	TORX® driver	— — — — (0.6 N·m) Form 211 (0.9 N·m) Form 20 (1.2 N·m) Form 101	T6 T7 T8 T20 T6 T7 T8	**115537** **115591** **115590** **215150** **415507** **415508** **415514**	**115537** **115591** **115590** **215150** **415507** **415508** **415514**

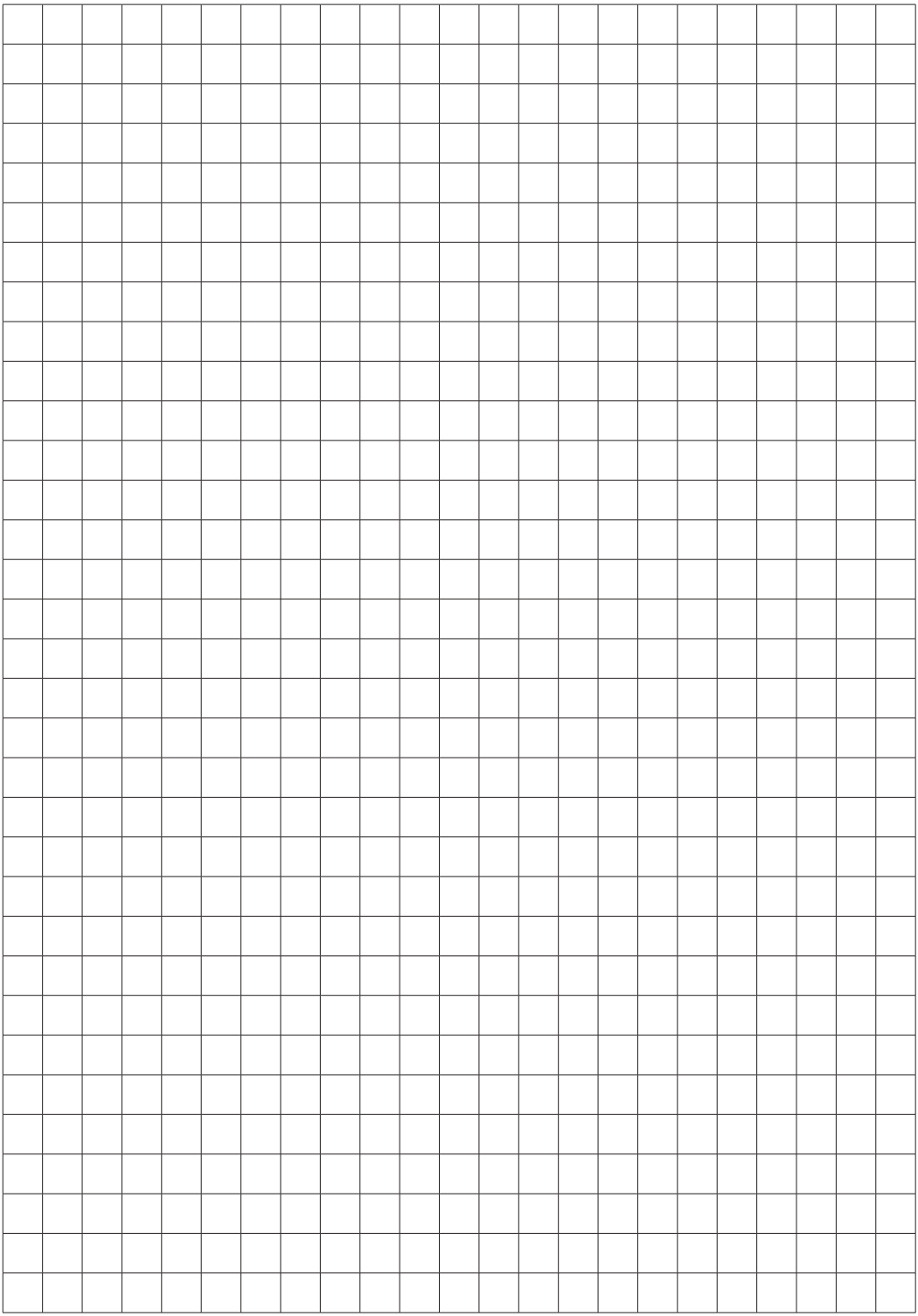


*Always change two batteries.
NOTE: Please use VARTA batteries.

F

Ⓜ = Metric (mm)
Ⓘ = Imperial (in)

Notes





DigiBore
VERSATILE FINE BORING

Advanced versatile technology.

The Wohlhaupter® DigiBore boring head provides internal balancing, which makes this tool the stress-free choice to meet your required surface finish. Its digital display allows for quick and accurate diameter corrections at the machine.

Engineered with the ***future in mind***.

- Diameter range: 3.00 mm - 208.00 mm (0.118" - 8.189").
- Offers outside turning capabilities: 4.00 mm - 114.00 mm (0.157" - 4.488").
- Digital readout for simple 0.002 mm (0.0001") diameter adjustments.
- Ease the stress of working on different day-to-day projects with boring kits.
- Automatic internal balancing improves surface finish, tool life, and accuracy.
- Max spindle speed: 16,000 RPM.
- Max coolant pressure: 40 bar (580 PSI).

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

DigiBore Product Overview

DIGIBORE

OPERATION **VERSATILITY**

from
3.00 mm to **208.00 mm**
(**0.118"** to **8.189"**)
plus outside turning.



DigiBore Head

NOTE: Digital adjustment accuracy of 0.002 mm (0.0001") on diameter.



Adapter



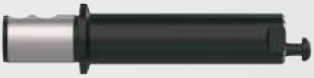
Mini Boring Bar
Ø 3.00 mm - 10.00 mm (Ø 0.118" - 0.394")



Steel Boring Bar
Ø 6.00 mm – 20.00 mm (Ø 0.236" – 0.787")



Carbide Boring Bar
Ø 10.00 mm – 20.00 mm (Ø 0.394" – 0.787")



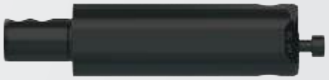
Serrated Tool Body



Insert Holder
Ø 20.00 mm – 32.00 mm
(Ø 0.787" - 1.260")



Carbide Serrated Tool Body



Serrated Tool Body



Insert Holder
Ø 32.00 mm – 68.00 mm
(Ø 1.260" - 2.677")



Outside Turning
Ø 4.00 mm – 66.00 mm
(Ø 0.157" – 2.598")



Insert Holder
Ø 68.00 mm – 208.00 mm
(Ø 2.677" – 8.189")



Outside Turning
Ø 2.00 mm – 114.00 mm
(Ø 0.079" – 4.488")



Serrated Slides



Counterweight



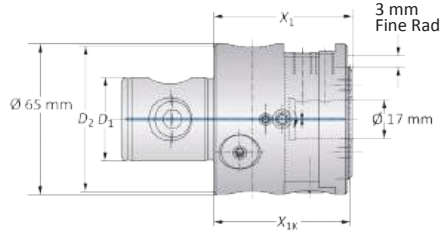
Coolant Delivery System

F

Digital Boring Heads

Diameter Range: 3.00 mm - 208.00 mm (0.118" - 8.189")





NOTE: Metric item pictured.
NOTE: Adjustment accuracy of 0.002 mm (0.0001") on diameter.

Metric (mm)

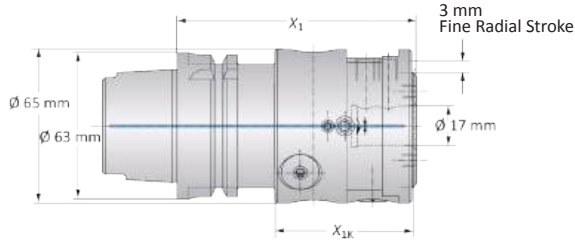
MVS Connection D_2 | D_1	Boring Range	Boring Head X_1	Boring Head X_{1K}	Weight (kg)	Part No.
50 - 28	3.00 - 208.00	60.00	59.50	1.30	**501005**
63 - 36	3.00 - 208.00	60.00	59.50	1.50	**501001**

Imperial (in)

MVS Connection D_2 | D_1	Boring Range	Boring Head X_1	Boring Head X_{1K}	Weight (lbs)	Part No.
50 - 28	0.118 - 8.189	2.362	2.342	2.866	**504003**
63 - 36	0.118 - 8.189	2.362	2.342	3.307	**504001**

F





NOTE: Metric item pictured.
NOTE: Adjustment accuracy of 0.002 mm (0.0001") on diameter.

Metric (mm)

Connection	Boring Range	Boring Head X_1	Boring Head X_{1K}	Weight (kg)	Part No.
HSK-A 63	3.00 - 208.00	102.00	59.50	2.10	**501004**
PSC 63 (Polygon Shank)	3.00 - 208.00	102.00	59.50	2.10	**501019**

Imperial (in)

Connection	Boring Range	Boring Head X_1	Boring Head X_{1K}	Weight (lbs)	Part No.
HSK-A 63	0.118 - 8.189	4.015	2.342	4.630	**501004**
PSC 63 (Polygon Shank)	0.118 - 8.189	4.015	2.342	4.630	**501019**

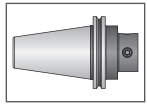
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

B10: ix - x



Key on B10-F: 2

B10-A

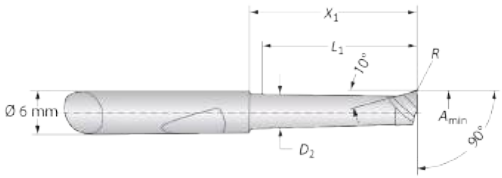


Ⓜ = Metric (mm)
ⓘ = Imperial (in)

Mini Boring Bars

Diameter Range: 3.00 mm - 10.00 mm (0.118" - 0.394")





Metric (mm)

	Boring Range	Boring Bar					Part No.		
	A_{min}	D_1	D_2	X_1	L_1	R	Coated Carbide	Uncoated Carbide	CBN
	3.00	6.00	2.60	11.50	10.00	0.10	**081306WHC05**	—	**081322WBN150**
				16.50	15.00	0.10	**081307WHC05**	**081307WHW04**	—
	4.00	6.00	3.60	12.00	10.00	0.20	**081308WHC05**	—	**081317WBN150**
				17.00	15.00	0.20	**081309WHC05**	—	**081341WBN150**
				22.00	20.00	0.20	**081310WHC05**	**081310WHW04**	—
ⓜ	5.00	6.00	4.60	12.00	10.00	0.20	**081311WHC05**	—	—
				22.00	20.00	0.20	**081312WHC05**	—	**081319WBN150**
				32.00	30.00	0.20	**081313WHC05**	**081313WHW04**	—
	6.00	6.00	5.60	22.00	20.00	0.20	**081314WHC05**	—	**081320WBN150**
				32.00	30.00	0.20	**081315WHC05**	—	**081321WBN150**
				42.00	40.00	0.20	**081316WHC05**	**081316WHW04**	—
	8.00	8.00	7.60	25.00	23.00	0.20	**081323WHC05**	—	—
				50.00	48.00	0.20	**081324WHC05**	—	—

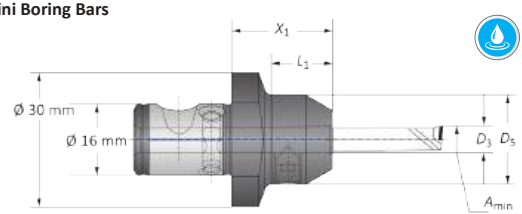
Imperial (in)

	Boring Range	Boring Bar					Part No.		
	A_{min}	D_1	D_2	X_1	L_1	R	Coated Carbide	Uncoated Carbide	CBN
	0.118	0.236	0.102	0.452	0.393	0.003	**081306WHC05**	—	**081322WBN150**
				0.649	0.590	0.003	**081307WHC05**	**081307WHW04**	—
	0.157	0.236	0.141	0.472	0.393	0.007	**081308WHC05**	—	**081317WBN150**
				0.669	0.590	0.007	**081309WHC05**	—	**081341WBN150**
				0.866	0.787	0.007	**081310WHC05**	**081310WHW04**	—
ⓘ	0.196	0.236	0.181	0.472	0.393	0.007	**081311WHC05**	—	—
				0.866	0.787	0.007	**081312WHC05**	—	**081319WBN150**
				1.259	1.181	0.007	**081313WHC05**	**081313WHW04**	—
	0.236	0.236	0.220	0.866	0.787	0.007	**081314WHC05**	—	**081320WBN150**
				1.259	1.181	0.007	**081315WHC05**	—	**081321WBN150**
				1.653	1.574	0.007	**081316WHC05**	**081316WHW04**	—
	0.315	0.315	0.229	0.984	0.905	0.007	**081323WHC05**	—	—
				1.968	1.889	0.007	**081324WHC05**	—	—

Adapter for Mini Boring Bars

Metric (mm)

	Adapter				
	D_3	D_5	X_1	L_1	Part No.
ⓜ	6.00	20.00	22.50	14.00	**319010**
	8.00	22.00	22.50	14.00	**236071**



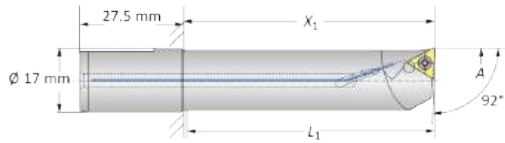
ⓜ = Metric (mm)
ⓘ = Imperial (in)

F

Boring Bars

Diameter Range: 6.00 mm - 20.00 mm (0.236" - 0.787")



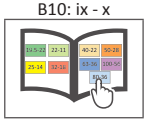


Metric (mm)

Substrate	Boring Range *A*	Boring Bar X_1	Boring Bar L_1	Weight (kg)	Insert Form	Part No.
Steel	6.00 - 8.00	22.00	19.00	0.05	211*	**502068**
	8.00 - 10.00	30.00	27.00	0.05	211*	**502066**
	10.00 - 11.00	30.00	27.00	0.06	20*	**502001**
					101	**502012**
	11.00 - 12.00	30.00	27.00	0.06	20*	**502070**
					101	**502075**
	12.00 - 13.00	45.00	42.00	0.07	20*	**502002**
					101	**502013**
	13.00 - 14.00	45.00	42.00	0.08	20*	**502071**
					101	**502076**
	14.00 - 15.00	50.00	47.00	0.08	20*	**502003**
					101	**502014**
	15.00 - 16.00	50.00	47.00	0.09	20*	**502072**
					101	**502077**
	16.00 - 17.00	60.00	57.00	0.10	20*	**502004**
					101	**502015**
	17.00 - 18.00	60.00	57.00	0.12	20*	**502073**
					101	**502078**
	18.00 - 19.00	68.00	65.00	0.13	20*	**502005**
					101	**502016**
	19.00 - 20.00	68.00	65.00	0.14	20*	**502074**
					101	**502079**
Carbide	10.00 - 12.00	55.00	52.00	0.12	20*	**502088**
					101	**502093**
		70.00	67.00	0.14	20*	**502023**
					101	**502034**
	12.00 - 14.00	65.00	62.00	0.13	20*	**502089**
					101	**502094**
		85.00	82.00	0.18	20*	**502024**
					101	**502035**
	14.00 - 16.00	75.00	72.00	0.17	20*	**502090**
					101	**502095**
		90.00	87.00	0.22	20*	**502025**
					101	**502036**
	16.00 - 18.00	85.00	82.00	0.26	20*	**502091**
					101	**502096**
		110.00	107.00	0.32	20*	**502026**
					101	**502037**
	18.00 - 20.00	95.00	92.00	0.28	20*	**502092**
					101	**502097**
		120.00	117.00	0.40	20*	**502027**
					101	**502038**

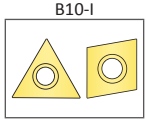
*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

B10: ix - x



Key on B10-F: 2

B10-I



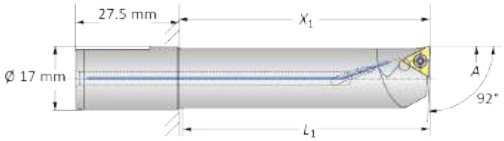
Inserts sold separately.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Boring Bars

Diameter Range: 6.00 mm - 20.00 mm (0.236" - 0.787")



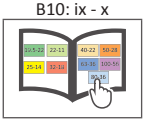


Imperial (in)

Substrate	Boring Range A	Boring Bar X_1	Boring Bar L_1	Weight (lbs)	Insert Form	Part No.
Steel	0.236 - 0.315	0.866	0.748	0.110	211*	502068
	0.315 - 0.394	1.181	1.063	0.110	211*	502066
	0.394 - 0.433	1.181	1.063	0.132	20*	502001
					101	502012
	0.433 - 0.472	1.181	1.063	0.132	20*	502070
					101	502075
	0.472 - 0.512	1.772	1.654	0.154	20*	502002
					101	502013
	0.512 - 0.551	1.772	1.654	0.176	20*	502071
					101	502076
	0.551 - 0.591	1.968	1.850	0.176	20*	502003
					101	502014
	0.591 - 0.630	1.968	1.850	0.198	20*	502072
					101	502077
	0.630 - 0.669	2.362	2.244	0.220	20*	502004
					101	502015
	0.669 - 0.709	2.362	2.244	0.265	20*	502073
					101	502078
	0.709 - 0.748	2.677	2.559	0.287	20*	502005
					101	502016
	0.748 - 0.787	2.677	2.559	0.309	20*	502074
					101	502079
Carbide	0.394 - 0.472	2.165	2.047	0.265	20*	502088
					101	502093
		2.756	2.638	0.309	20*	502023
					101	502034
	0.472 - 0.551	2.559	2.441	0.287	20*	502089
					101	502094
		3.346	3.228	3.975	20*	502024
					101	502035
	0.551 - 0.630	2.953	2.835	0.375	20*	502090
					101	502095
		3.543	3.425	0.485	20*	502025
					101	502036
	0.630 - 0.709	3.346	3.228	0.573	20*	502091
					101	502096
		4.331	4.213	0.706	20*	502026
					101	502037
	0.709 - 0.787	3.740	3.622	0.617	20*	502092
					101	502097
		4.724	4.606	0.882	20*	502027
					101	502038

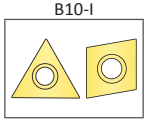
*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

B10: ix - x



Key on B10-F: 2

B10-I



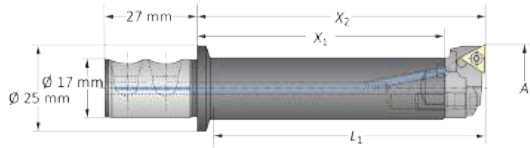
Inserts sold separately.

(m) = Metric (mm)
(i) = Imperial (in)

Serrated Tool Bodies

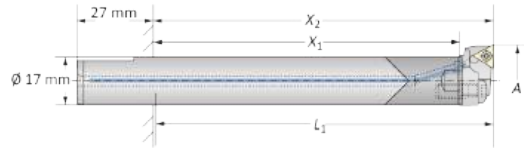
Diameter Range: 20.00 mm - 32.00 mm (0.787" - 1.260")





Steel





Carbide

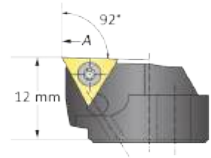
Metric (mm)

Substrate	Boring Range *A*	Serrated Tool Body X_1	X_2	L_1	Weight (kg)	Part No.
Steel	20.00 - 32.00	72.00	84.00	77.00	0.20	**502045**
Carbide	20.00 - 32.00	108.00	120.00	117.00	0.40	**502062**

Imperial (in)

Substrate	Boring Range *A*	Serrated Tool Body X_1	X_2	L_1	Weight (lbs)	Part No.
Steel	0.787 - 1.260	2.835	3.307	3.031	0.441	**502045**
Carbide	0.787 - 1.260	4.252	4.724	4.606	0.882	**502062**





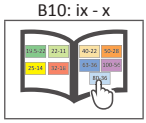
Insert Holders

Boring Range (*A*) mm	Boring Range (*A*) in	Weight kg	Weight lbs	Insert Holder Form	Insert Holder Part No.
20.00 - 22.00	0.787 - 0.866	0.01	0.022	20*	**502046**
				101	**502052**
22.00 - 24.00	0.866 - 0.945	0.01	0.022	20*	**502047**
				101	**502053**
24.00 - 26.00	0.945 - 1.024	0.01	0.022	20*	**502048**
				101	**502054**
26.00 - 28.00	1.024 - 1.102	0.01	0.022	20*	**502049**
				101	**502055**
28.00 - 30.00	1.102 - 1.181	0.01	0.022	20*	**502050**
				101	**502056**
30.00 - 32.00	1.181 - 1.260	0.01	0.022	20*	**502051**
				101	**502057**

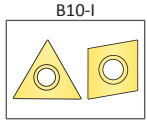
*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

B10: ix - x

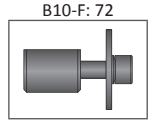
Key on B10-F: 2



B10-I



B10-F: 72



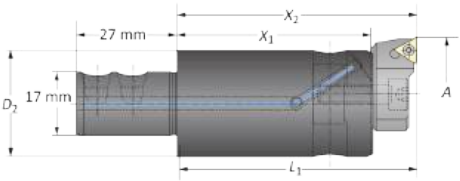
Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

Serrated Tool Bodies

Alu-Line® | Diameter Range: 32.00 mm - 68.00 mm (1.260" - 2.677")





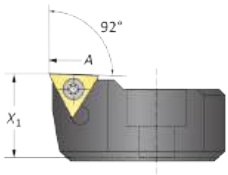
Metric (mm)

Boring Range A	D_2	X_1	X_2	L_1	Weight (kg)	Part No.
32.00 - 50.00	28.50	52.00	66.00	63.00	0.10	**501052**
		88.00	102.00	99.00	0.20	**501060**
50.00 - 68.00	46.00	61.00	75.00	72.00	0.20	**501053**
		106.00	120.00	117.00	0.30	**501061**

Imperial (in)

Boring Range A	D_2	X_1	X_2	L_1	Weight (lbs)	Part No.
1.260 - 1.968	1.122	2.047	2.598	2.480	0.220	**501052**
		3.465	4.016	3.898	0.441	**501060**
1.968 - 2.677	1.811	2.402	2.953	2.835	0.441	**501053**
		4.173	4.724	4.606	0.661	**501061**





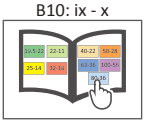
Insert Holders

Serrated Tool Body	Boring Range (A) mm	Boring Range (A) in	X_1 mm	X_1 in	Weight kg	Weight lbs	Insert Form	Part No.
501052 / 501060	32.00 - 41.00	1.260 - 1.614	14.00	0.551	0.03	0.066	20*	**502060**
							101	**502058**
	41.00 - 50.00	1.614 - 1.968	14.00	0.551	0.04	0.088	20*	**502061**
							101	**502059**
501053 / 501061	50.00 - 59.00	1.968 - 2.323	14.00	0.551	0.03	0.066	20*	**502060**
							101	**502058**
	59.00 - 68.00	2.323 - 2.677	14.00	0.551	0.04	0.088	20*	**502061**
							101	**502059**

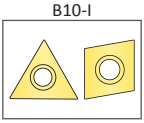
*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

Key on B10-F: 2

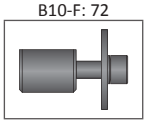
B10: ix - x



B10-I



B10-F: 72



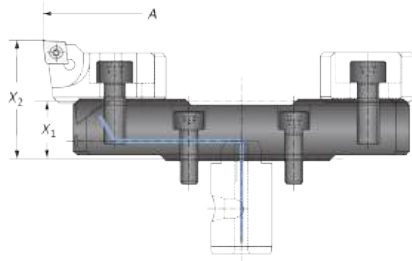
Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

Alu-Line® Serrated Slides

Diameter Range: 68.00 mm - 208.00 mm (2.667" - 8.189")





Metric (mm)

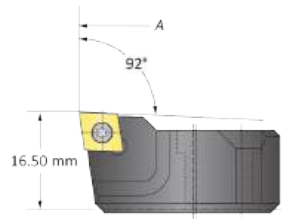
	Boring Range *A*	Serrated Slide X_1	Serrated Slide X_2	Weight (kg)	Part No.
	68.00 - 96.00	16.00	32.50	0.10	**501054**
	96.00 - 124.00	16.00	32.50	0.10	**501055**
m	124.00 - 152.00	16.00	32.50	0.20	**501056**
	152.00 - 180.00	22.00	38.50	0.25	**501058**
	180.00 - 208.00	22.00	38.50	0.30	**501059**

Imperial (in)

	Boring Range *A*	Serrated Slide X_1	Serrated Slide X_2	Weight (lbs)	Part No.
	2.667 - 3.780	0.630	1.280	0.220	**501054**
	3.780 - 4.881	0.630	1.280	0.220	**501055**
i	4.881 - 5.984	0.630	1.280	0.441	**501056**
	5.984 - 7.088	0.866	1.516	0.551	**501058**
	7.088 - 8.189	0.866	1.516	0.661	**501059**

F

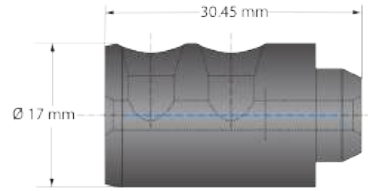




Insert Holders

Boring Range (*A*) mm	Boring Range (*A*) in	Weight kg	Weight lbs	Insert Holder Form	Insert Holder Part No.
68.00 - 152.00	2.677 - 5.984	0.05	0.110	20	**502069**
				101	**502064**





Counterweights

X_1 mm	X_1 in	Weight kg	Weight lbs	Part No.
13.40	0.528	0.05	0.110	**502165**

Alu-Line® Coolant Delivery Sections

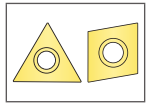
Weight kg	Weight lbs	Part No.
0.02	0.044	**501157**

B10: ix - x

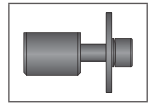
Key on B10-F: 2



B10-I



B10-F: 72



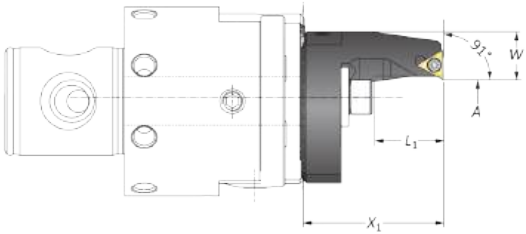
Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

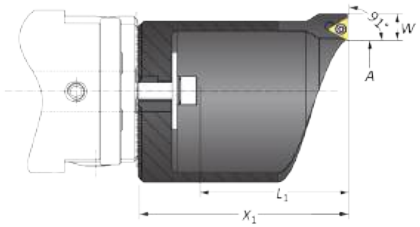
Outside Turning Insert Holders for Boring Heads

Diameter Range: 4.00 mm - 66.00 mm (0.157" - 2.598")









Metric (mm)

Type		Boring Range *A*	Insert Holder X_1	Insert Holder L_1	Insert Holder *W*	Weight (kg)	Insert Form	Part No.
m	A	4.00 - 17.50	40.50	20.00	16.60	0.10	20*	**236081**
		16.50 - 30.00	50.50	30.00	11.10	0.10	20*	**236082**
	B	29.00 - 44.00	75.50	54.00	9.60	0.30	20*	**236083**
		43.00 - 66.00	100.50	79.00	9.60	0.40	20*	**236084**

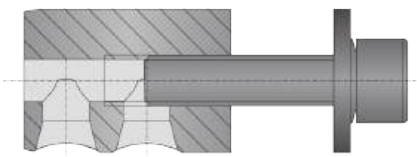
Imperial (in)

Type		Boring Range *A*	Insert Holder X_1	Insert Holder L_1	Insert Holder *W*	Weight (lbs)	Insert Form	Part No.
i	A	0.157 - 0.689	1.594	0.787	0.653	0.220	20*	**236081**
		0.650 - 1.181	1.988	1.181	0.437	0.220	20*	**236082**
	B	1.142 - 1.732	2.952	2.126	0.377	0.661	20*	**236083**
		1.693 - 2.598	3.956	3.110	0.377	0.882	20*	**236084**

NOTE: Clockwise and neutral execution.
*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

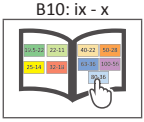
Clamping Pieces for Outside Turning Insert Holders

Insert Holder Type	Boring Range (*A*) *mm*	Boring Range (*A*) in	Service Key	Part No.
A	4.00 - 30.00	0.157 - 1.181	s5	**502080**
B	29.00 - 66.00	1.142 - 2.598	s5	**502081**

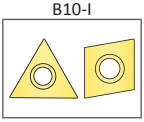


B10: ix - x

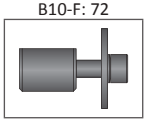
Key on B10-F: 2



B10-I



B10-F: 72



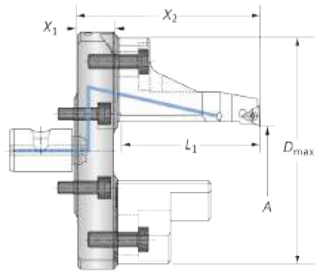
Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

Outside Turning Serrated Slides

Diameter Range: 2.00 mm - 114.00 mm (0.078" - 4.488")





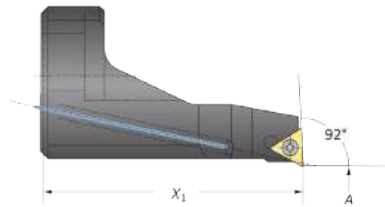
Metric (mm)

Boring Range A		Serrated Slide X_1	X_2	L_1	D_{max}	Weight (kg)	Part No.
m	2.00 - 30.00	16.00	73.00	55.00	101.00	0.35	**501064**
	30.00 - 58.00	16.00	73.00	55.00	129.00	0.44	**501065**
	58.00 - 86.00	22.00	79.00	55.00	157.00	0.60	**501066**
	86.00 - 114.00	22.00	79.00	55.00	185.00	0.73	**501067**

Imperial (in)

Boring Range A		Serrated Slide X_1	X_2	L_1	D_{max}	Weight (lbs)	Part No.
i	0.078 - 1.181	0.630	2.874	2.165	3.396	0.771	**501064**
	1.181 - 2.283	0.630	2.874	2.165	5.078	0.970	**501065**
	2.283 - 3.386	0.866	3.110	2.165	6.181	1.322	**501066**
	3.386 - 4.488	0.866	3.110	2.165	7.283	1.609	**501067**

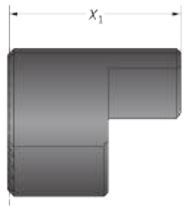


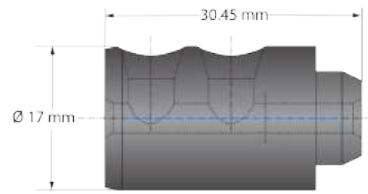


Insert Holders

Outside Turning Range A		Insert Holder X_1		Weight (kg)			
mm	in	mm	in	kg	lbs	Insert Form	Part No.
2.00 - 114.00	0.079 - 4.488	57.00	2.244	0.15	0.331	20	**502082**

NOTE: Clockwise and neutral execution.





Counterweights

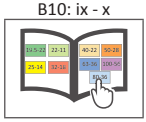
X_1		Weight		
mm	in	kg	lbs	Part No.
37.75	1.486	0.16	0.350	**502183**

Alu-Line® Coolant Delivery Sections

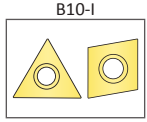
X_1		Weight		
mm	in	kg	lbs	Part No.
25.50	1.004	0.01	0.022	**501157**

B10: ix - x

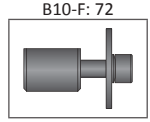
Key on B10-F: 2



B10-I



B10-F: 72

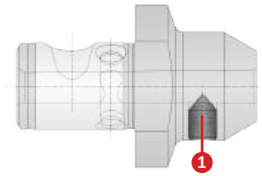


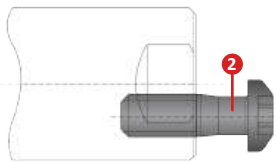
Inserts sold separately.

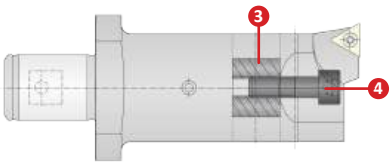
m = Metric (mm)
i = Imperial (in)

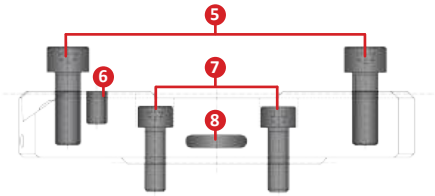
Accessories

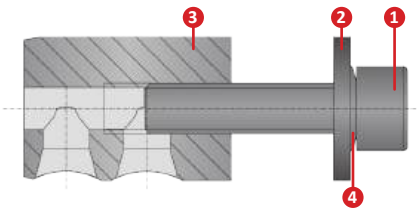
No.	Part		Size	Part No.
1	Set screw		s3	**415244**
2	Screw for securing insert holder		T25	**415112**
3	Clamping piece		-	**145184**
4	Cap screw for securing insert holders		s4	**027154**
5	Cap screw for securing insert holder/counterweight		s4	**315248**
6	Set screw - coolant	501054, 501055, 501056	s1.5	**114224**
		501058, 501059	s1.5	**115303**
7	Cap screw for securing serrated slide		s4	**115166**
8	Sealing ring for coolant delivery		-	**415386**











Metric (mm)

	Boring Range	Type	Hex Size	Clamping Screw Parts 1. Cap Screw	2. Washer	3. Clamping Piece	4. Locking Washer	Complete Part No.
ⓜ	4.00 - 30.00	A	s5	070153	315155	502180	215254	**502080**
	29.00 - 66.00	B	s5	070153	315156	502180	215254	**502081**

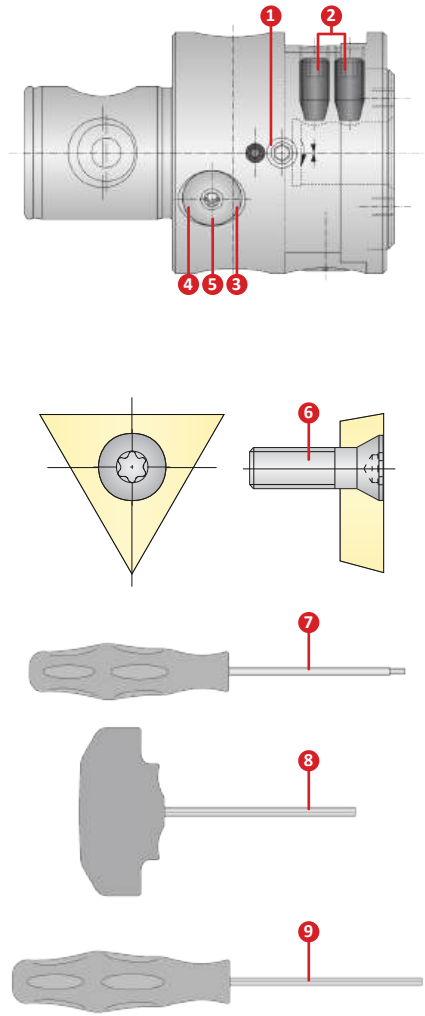
Imperial (in)

	Boring Range	Type	Hex Size	Clamping Screw Parts 1. Cap Screw	2. Washer	3. Clamping Piece	4. Locking Washer	Complete Part No.
ⓘ	0.157 - 1.181	A	s5	070153	315155	502180	215254	**502080**
	1.142 - 2.598	B	s5	070153	315156	502180	215254	**502081**

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Accessories

No.	Part	Insert Form	Size	Part No.
1	Clamping screw	—	—	**415353**
2	Set screw for clamping tool	—	—	**215674**
3	Battery cover	—	—	**415895**
4	Battery*	—	—	**415896**
5	Battery access cover with sealing ring	—	—	**501016**
6	Insert screws	Form 211 Form 20 Form 101	T6 T7 T8	**215377** **115535** **115676**
7	Hex driver	—	s1.5 s3	**215472** **115630**
8	Service key	—	s4	**115576**
9	TORX® driver	— — — — (0.6 N·m) Form 211 (0.9 N·m) Form 20 (1.2 N·m) Form 101	T6 T7 T8 T20 T6 T7 T8	**115537** **115591** **115590** **215150** **415507** **415508** **415514**



*Always change two batteries.
NOTE: Please use VARTA batteries (V392 SR41).

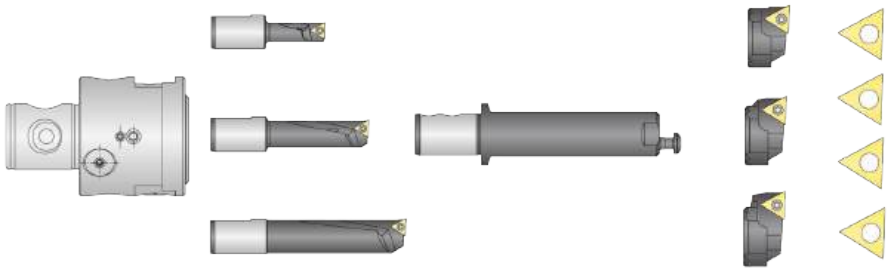
F

Notes



DigiBore Kit

Form 20 | Diameter Range: 10.00 mm - 30.00 mm (0.394" - 1.181")



Metric (mm)

Kit Part No.
103062

Imperial (in)

Kit Part No.
104062

Kit Components	Part No.
(1) Boring Head	501001
(3) Boring Bars	502001
	502003
	502005
(1) Serrated Tool Body	502045
(3) Insert Holders	502046
	502048
	502050
(3) Service Keys	115576 (s4)
	415121 (T25)
	115591 (T8)

Kit Components	Part No.
(1) Boring Head	504001
(3) Boring Bars	502001
	502003
	502005
(1) Serrated Tool Body	502045
(3) Insert Holders	502046
	502048
	502050
(3) Service Keys	115576 (s4)
	415121 (T25)
	115591 (T8)

Component Assemblies

Boring Range					
Metric (mm)	Imperial (in)	Boring Bar	Serrated Tool Body	Insert Holder	Insert
10.00 - 11.00	0.394 - 0.433	**502001**	—	—	Form 20
14.00 - 15.00	0.551 - 0.591	**502003**	—	—	Form 20
18.00 - 19.00	0.709 - 0.748	**502005**	—	—	Form 20
20.00 - 22.00	0.787 - 0.866	—	**502045**	**502046**	Form 20
24.00 - 26.00	0.945 - 1.024	—	**502045**	**502048**	Form 20
28.00 - 30.00	1.102 - 1.181	—	**502045**	**502050**	Form 20

NOTE: Balancing elements and inserts sold separately.

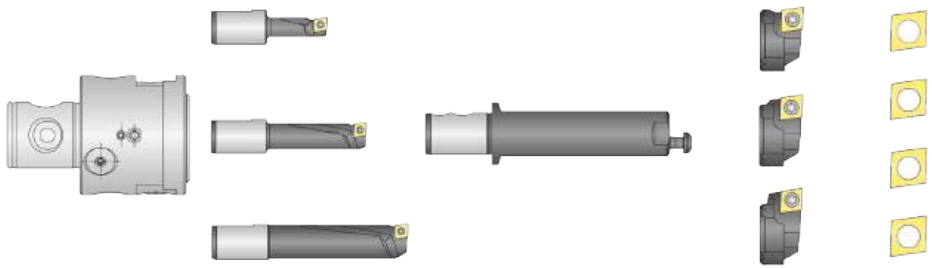
B10: ix - x
Key on B10-F: 2
B10-I
B10-F: 72

Inserts sold separately.

(m) = Metric (mm)
(i) = Imperial (in)

DigiBore Kit

Form 101 | Diameter Range: 10.00 mm - 30.00 mm (0.394" - 1.181")



Metric (mm)

	Kit Part No.
m	103061

	Kit Components	Part No.
m	(1) Boring Head	501001
	(3) Boring Bars	502012
		502014
		502016
	(1) Serrated Tool Body	502045
	(3) Insert Holders	502052
		502054
		502056
	(3) Service Keys	115576 (s4)
		415121 (T25)
		115590 (T8)

Imperial (in)

	Kit Part No.
i	104061

	Kit Components	Part No.
i	(1) Boring Head	504001
	(3) Boring Bars	502012
		502014
		502016
	(1) Serrated Tool Body	502045
	(3) Insert Holders	502052
		502054
		502056
	(3) Service Keys	115576 (s4)
		415121 (T25)
		115590 (T8)

Component Assemblies

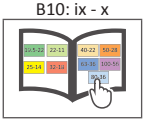
Boring Range					
Metric (mm)	Imperial (in)	Boring Bar	Serrated Tool Body	Insert Holder	Insert
10.00 - 11.00	0.394 - 0.433	**502012**	—	—	Form 101
14.00 - 15.00	0.551 - 0.591	**502014**	—	—	Form 101
18.00 - 19.00	0.709 - 0.748	**502016**	—	—	Form 101
20.00 - 22.00	0.787 - 0.866	—	**502045**	**502052**	Form 101
24.00 - 26.00	0.945 - 1.024	—	**502045**	**502054**	Form 101
28.00 - 30.00	1.102 - 1.181	—	**502045**	**502056**	Form 101

NOTE: Balancing elements and inserts sold separately.

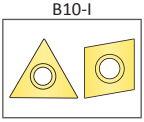
F

B10: ix - x

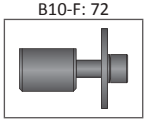
Key on B10-F: 2



B10-I



B10-F: 72

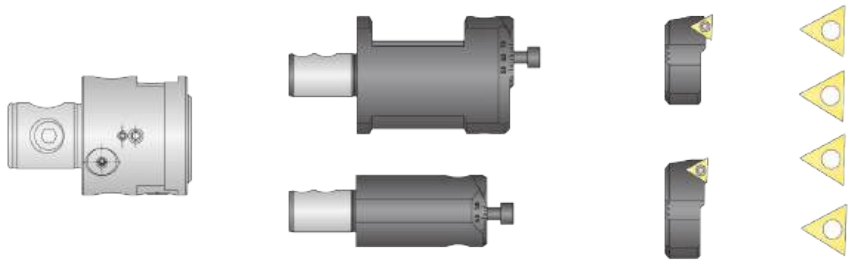


Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

DigiBore Kit

Form 20 | Diameter Range: 32.00 mm - 68.00 mm (1.260" - 2.667")



Metric (mm)

Kit Part No.
103064

Imperial (in)

Kit Part No.
104064

Kit Components	Part No.
(1) Boring Head	501001
(2) Serrated Tool Bodies	501052
	501053
(2) Insert Holders	502060
	502061
(2) Service Keys	115576 (s4)
	115590 (T8)

Kit Components	Part No.
(1) Boring Head	504001
(2) Serrated Tool Bodies	501052
	501053
(2) Insert Holders	502060
	502061
(2) Service Keys	115576 (s4)
	115590 (T8)

Component Assemblies

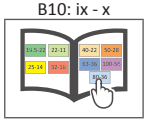
Boring Range				
Metric (mm)	Imperial (in)	Serrated Tool Body	Insert Holder	Insert
32.00 - 50.00	1.260 - 1.968	**501052**	**502060**	Form 20
50.00 - 68.00	1.968 - 2.677	**501053**	**502061**	Form 20

NOTE: Balancing elements and inserts sold separately.

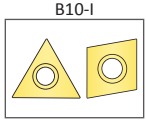
F

B10: ix - x

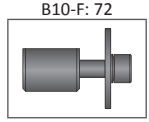
Key on B10-F: 2



B10-I



B10-F: 72

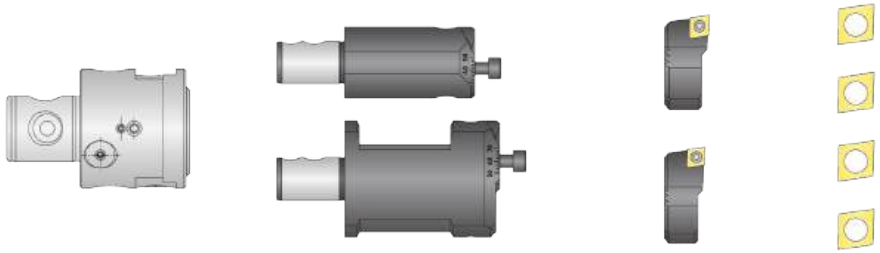


Inserts sold separately.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

DigiBore Kit

Form 101 | Diameter Range: 32.00 mm - 68.00 mm (1.260" - 2.667")



Metric (mm)

	Kit Part No.
ⓜ	103063

	Kit Components	Part No.
ⓜ	(1) Boring Head	501001
	(2) Serrated Tool Bodies	501052
		501053
	(2) Insert Holders	502058
		502059
	(2) Service Keys	115576 (s4)
		115590 (T8)

Imperial (in)

	Kit Part No.
ⓘ	104063

	Kit Components	Part No.
ⓘ	(1) Boring Head	504001
	(2) Serrated Tool Bodies	501052
		501053
	(2) Insert Holders	502058
		502059
	(2) Service Keys	115576 (s4)
		115590 (T8)

Component Assemblies

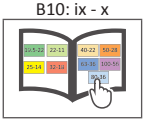
Boring Range				
Metric (mm)	Imperial (in)	Serrated Tool Body	Insert Holder	Insert
32.00 - 50.00	1.260 - 1.968	**501052**	**502058**	Form 101
50.00 - 68.00	1.968 - 2.677	**501053**	**502059**	Form 101

NOTE: Balancing elements and inserts sold separately.

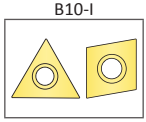
F

B10: ix - x

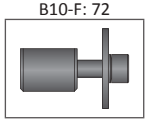
Key on B10-F: 2



B10-I



B10-F: 72

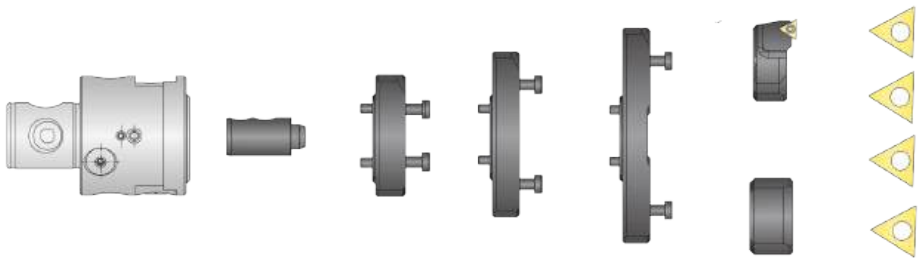


Inserts sold separately.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

DigiBore Kit

Form 20 | Diameter Range: 68.00 mm - 152.00 mm (2.667" - 5.984")



Metric (mm)

	Kit Part No.
ⓜ	**103066**

	Kit Components	Part No.
	(1) Boring Head	501001
	(3) Serrated Slides	501054
		501055
		501056
ⓜ	**(1) Insert Holder**	502069
	(1) Counterweight	502165
	(1) Coolant Delivery	501157
	(2) Service Keys	115576 (s4)
		115591 (T7)

Imperial (in)

	Kit Part No.
ⓘ	**104066**

	Kit Components	Part No.
	(1) Boring Head	504001
	(3) Serrated Slides	501054
		501055
		501056
ⓘ	**(1) Insert Holder**	502069
	(1) Counterweight	502165
	(1) Coolant Delivery	501157
	(2) Service Keys	115576 (s4)
		115591 (T7)

F

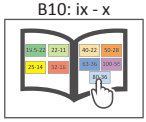
Component Assemblies

Boring Range						
Metric (mm)	**Imperial (in)**	**Coolant Delivery**	**Serrated Slide**	**Insert Holder**	**Counterweight**	**Insert**
68.00 - 96.00	2.667 - 3.780	**501157**	**501054**	**502064**	**502165**	Form 20
96.00 - 124.00	3.780 - 4.881	**501157**	**501055**	**502064**	**502165**	Form 20
124.00 - 152.00	4.881 - 5.984	**501157**	**501056**	**502064**	**502165**	Form 20

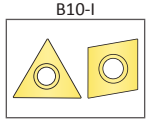
NOTE: Balancing elements and inserts sold separately.

B10: ix - x

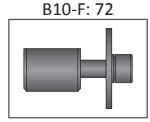
Key on B10-F: 2



B10-I



B10-F: 72

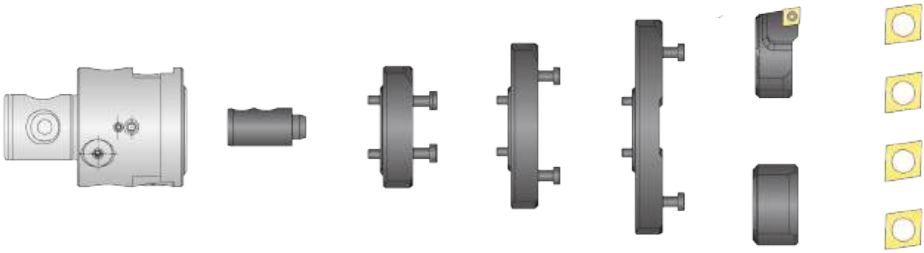


Inserts sold separately.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

DigiBore Kit

Form 101 | Diameter Range: 68.00 mm - 152.00 mm (2.667" - 5.984")



Metric (mm)

	Kit Part No.
ⓜ	103065

	Kit Components	Part No.
	(1) Boring Head	501001
	(3) Serrated Slides	501054
		501055
		501056
ⓜ	(1) Insert Holder	502064
	(1) Counterweight	502165
	(1) Coolant Delivery	501157
	(2) Service Keys	115576 (s4)
		115590 (T8)

Imperial (in)

	Kit Part No.
ⓘ	104065

	Kit Components	Part No.
	(1) Boring Head	504001
	(3) Serrated Slides	501054
		501055
		501056
ⓘ	(1) Insert Holder	502064
	(1) Counterweight	502165
	(1) Coolant Delivery	501157
	(2) Service Keys	115576 (s4)
		115590 (T8)

Component Assemblies

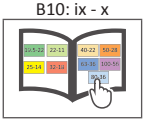
Boring Range						
Metric (mm)	Imperial (in)	Coolant Delivery	Serrated Slide	Insert Holder	Counterweight	Insert
68.00 - 96.00	2.667 - 3.780	**501157**	**501054**	**502064**	**502165**	Form 101
96.00 - 124.00	3.780 - 4.881	**501157**	**501055**	**502064**	**502165**	Form 101
124.00 - 152.00	4.881 - 5.984	**501157**	**501056**	**502064**	**502165**	Form 101

NOTE: Balancing elements and inserts sold separately.

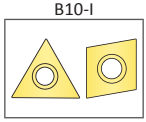
F

B10: ix - x

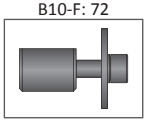
Key on B10-F: 2



B10-I



B10-F: 72

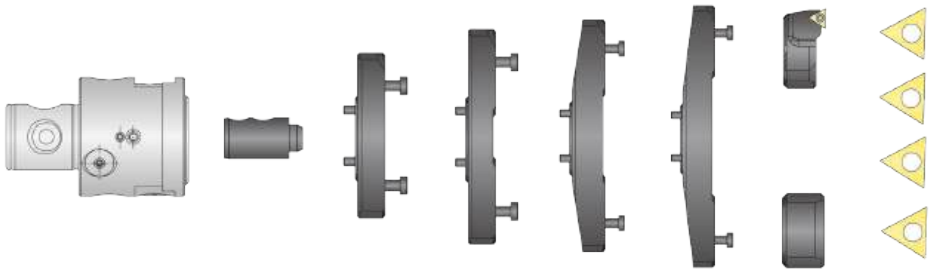


Inserts sold separately.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

DigiBore Kit

Form 20 | Diameter Range: 96.00 mm - 208.00 mm (3.780" - 8.189")



Metric (mm)

	Kit Part No.
m	103080

	Kit Components	Part No.
m	(1) Boring Head	501001
	(4) Serrated Slides	501055
		501056
		501058
		501059
	(1) Insert Holder	502060
	(1) Counterweight	502165
	(1) Coolant Delivery	501157
	(2) Service Keys	115576 (s4)
		115591 (T7)

Imperial (in)

	Kit Part No.
i	104080

	Kit Components	Part No.
i	(1) Boring Head	504001
	(4) Serrated Slides	501055
		501056
		501058
		501059
	(1) Insert Holder	502060
	(1) Counterweight	502165
	(1) Coolant Delivery	501157
	(2) Service Keys	115576 (s4)
		115591 (T7)

F

Component Assemblies

Boring Range						
Metric (mm)	Imperial (in)	Coolant Delivery	Serrated Slide	Insert Holder	Counterweight	Insert
96.00 - 124.00	3.780 - 4.881	**501157**	**501055**	**502060**	**502165**	Form 20
124.00 - 152.00	4.881 - 5.984	**501157**	**501056**	**502060**	**502165**	Form 20
152.00 - 180.00	5.984 - 7.088	**501157**	**501058**	**502060**	**502165**	Form 20
180.00 - 208.00	7.088 - 8.189	**501157**	**501059**	**502060**	**502165**	Form 20

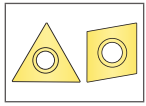
NOTE: Balancing elements and inserts sold separately.

B10: ix - x

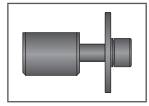


Key on B10-F: 2

B10-I



B10-F: 72

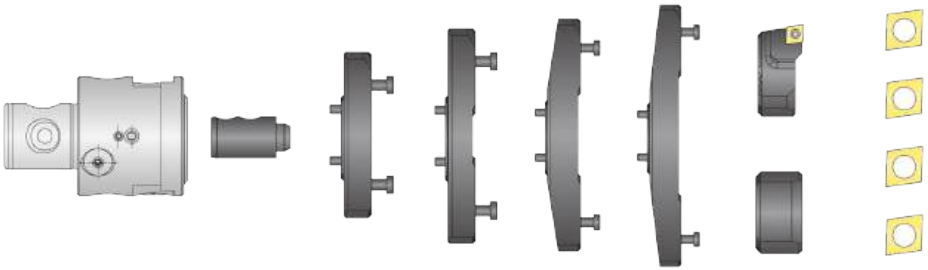


Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

DigiBore Kit

Form 101 | Diameter Range: 96.00 mm - 208.00 mm (3.780" - 8.189")



Metric (mm)

	Kit Part No.
ⓜ	103081

	Kit Components	Part No.
ⓜ	(1) Boring Head	501001
	(4) Serrated Slides	501055
		501056
		501058
		501059
	(1) Insert Holder	502064
	(1) Counterweight	502165
	(1) Coolant Delivery	501157
	(2) Service Keys	115576 (s4)
		115590 (T8)

Imperial (in)

	Kit Part No.
ⓘ	104081

	Kit Components	Part No.
ⓘ	(1) Boring Head	504001
	(4) Serrated Slides	501055
		501056
		501058
		501059
	(1) Insert Holder	502064
	(1) Counterweight	502165
	(1) Coolant Delivery	501157
	(2) Service Keys	115576 (s4)
		115590 (T8)

Component Assemblies

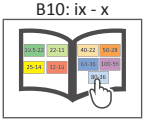
Boring Range						
Metric (mm)	Imperial (in)	Coolant Delivery	Serrated Slide	Insert Holder	Counterweight	Insert
96.00 - 124.00	3.780 - 4.881	**501157**	**501055**	**502064**	**502165**	Form 101
124.00 - 152.00	4.881 - 5.984	**501157**	**501056**	**502064**	**502165**	Form 101
152.00 - 180.00	5.984 - 7.088	**501157**	**501058**	**502064**	**502165**	Form 101
180.00 - 208.00	7.088 - 8.189	**501157**	**501059**	**502064**	**502165**	Form 101

NOTE: Balancing elements and inserts sold separately.

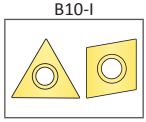
F

B10: ix - x

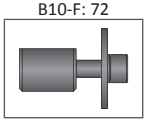
Key on B10-F: 2



B10-I



B10-F: 72



Inserts sold separately.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

SECTION

B10-G

Fine Boring

Fine Boring



Boring at its finest

Wohlhaupter's fine boring systems are offered in both vernier and easy-to-read digital readout boring heads and cassettes. The lightweight Alu-Line serrated tool bodies reduce weight on the machine spindle.

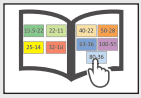
- 310 (320)
  - *Analog:* 20.00 mm - 205.00 mm (0.787" - 8.071")
- 410 (420)
  - *3E[TECH+]:* 20.00 mm – 29.00 mm (0.787" – 1.142")
- 364 (365) Balance
  - *Analog:* 20.00 mm - 29.50 mm (0.787" - 1.161")
- 464 (465) Balance
  - *Analog & 3E[TECH+]:* 29.00 mm - 205.00 mm (1.142" - 8.070")
- 564 (565) Balance
  - *Digital:* 50.00 mm - 205.00 mm (1.969" - 8.071")
- 537 (538) Cassette
  - *Analog & 3E[TECH+]:* 100.00 mm - 205.00 mm (3.937" - 8.071")

Applicable Industries

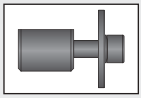
- Aerospace
- Agriculture
- Automotive
- Defense
- General Production
- Heavy Equipment
- Hydraulics
- Marine
- Medical
- Oil and Gas
- Renewable Energy/ Energy
- Tool, Mold, and Die

Reference Icons

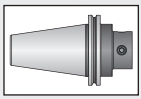
The following icons will appear throughout the catalog to help you navigate between products.



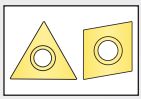
MVS Connection Color Guide
Detailed instructions and information regarding the MVS connection(s).



Clamping Elements
For use with insert holders and boring heads.



Shanks
A variety of shanks for different machines.



Inserts
For use with insert holder boring heads and boring bars using indexable inserts.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

WARNING means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

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410 (420)
3E^{TECH+}: 20.00 mm – 29.00 mm (0.787" – 1.142")

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364 (365) Balance
Analog: 20.00 mm – 29.50 mm (0.787" – 1.161")

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464 (465) Balance
Analog/3E^{TECH+}: 29.00 mm – 205.00 mm (1.142" – 8.070")

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564 (565) Balance
Digital: 50.00 mm – 205.00 mm (1.969" – 8.070")

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537 (538) Cassettes
Analog/3E^{TECH+}: 100.00 mm – 205.00 mm (3.937" – 8.071")

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310 (320)
FINE BORING

Engineered with wear and tear in mind.

310 (320) Wohlhaupter boring heads are made from steel for Ø 20.00 mm - 103.00 mm (0.787" - 4.055") and coated Alu-Line material for Ø 100.00 mm - 205.00 mm (3.937" - 8.071") to protect against corrosion and wear. The insert holder can be rotated quickly for reverse machining.

- Diameter range: 20.00 mm - 205.00 mm (0.787" - 8.071").
- Alu-Line diameter range: 100.00 mm - 205.00 mm (3.937" - 8.071").
  - Special coating on Alu-Line provides hard, durable surface.
  - Alu-Line body reduces tool weight by 50%, reducing stress on the spindle.
- Coolant through.
- Vernier diameter adjustment of 0.002 mm (0.0001").
- Max cutting speed: 1,000 m/min (3,281 SFM).

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

Wohlhaupter® 310 (320) Boring Head with NOVITECH®

Time is money, so make it count.



If you want to improve your machining processes, cycle time is a key factor to examine. After all, the longer it takes you to produce a part, the fewer parts you can produce in a given time. Our customer was experiencing lengthy cycle times while machining pumps from grey cast iron. The parts required three bored holes, each with a 304.8 mm (12") depth and a 558.8 mm (22") reach.

In order to free up machine time, the customer questioned if their process could be more efficient. The main objectives were to decrease the current cycle time and to maintain the required surface finish to perform the burnishing process that followed.

The previous tooling ran at a slow 11.938 mm/min (0.47 IPM) and a paint-drying 84-minute cycle time to bore the three holes on each part. With our Wohlhaupter 310 (320) boring head utilizing the NOVITECH vibration dampening module, the customer increased to a more efficient 95.25 mm/min (3.75 IPM) and slashed the cycle time to 10.5 minutes (an 87% decrease). Along with the increased speed, the Wohlhaupter tooling also achieved a 3.94 µm Ra (155 µin Ra) finish, accomplishing everything the customer needed.

The Wohlhaupter solution reduced the process cycle time by 74 minutes. Improvements in speed and cycle time can free up machine hours, which means more throughput and higher profit for your company.
Are you losing money on applications with substantially long cycle times?

Product:	Wohlhaupter 310 (320) boring head with NOVITECH
Objectives:	(1) Decrease cycle time (2) Maintain 4.06 µm Ra (160 µin Ra) hole finish
Industry:	Oil and gas/petrochemical
Part:	Pump
Material:	Grey cast iron
Hole Ø:	139.7 mm (5.500")
Hole Depth:	304.8 mm (12.000")

Measure	Competitor Boring Head	320 Boring Head w/ NOVITECH
RPM	39	469
Speed Rate	17.069 m/min (56 SFM)	205.74 m/min (675 SFM)
Feed Rate	0.305 mm/rev (0.012 IPR)	0.203 mm/rev (0.008 IPR)
Penetration Rate	11.938 mm/min (0.47 IPM)	92.25 mm/min (3.75 IPM)
Cycle Time (per hole)	27 min 54 sec	3 min 32 sec

- Boring head 310 (320) series ***Item No. 320008***
- NOVITECH vibration dampening intermediate module ***Item No. 519005***



The Wohlhaupter 310 (320) boring head with the NOVITECH vibration dampening module provided:

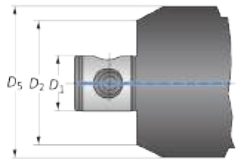
- ✓ Increased penetration rate
- ✓ Decreased cycle time
- ✓ Excellent finish in deep hole application

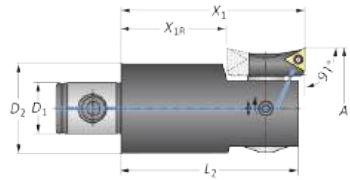
© Allied Machine & Engineering CS4001

310 (320) Boring Heads and Insert Holders

Analog | Diameter Range: 20.00 mm - 205.00 mm (0.787" - 8.071")







NOTE: Vernier adjustment accuracy of 0.002 mm (0.0001") on diameter.

Metric (mm)

MVS Connection $D_2 \mid D_1$	Boring Range A	Boring Head X_1	X_{1R}	L_2	D_5	Weight (kg)	Part No.	Insert Holder Form	Part No.
19 - 11	20.00 - 24.50	46.00	—	43.00	—	0.10	**310010**	20*	**364077**
22 - 11	24.50 - 29.50	46.00	—	43.50	23.00	0.15	**310020**	20	**210059**
								101	**210069**
25 - 14	29.00 - 37.00	56.00	—	53.50	26.00	0.20	**310001**	20	**210059**
								101	**210069**
	36.00 - 44.00	56.00	28.00	53.50	26.00	0.20	**310001**	20	**210052**
								101	**210062**
32 - 18	43.00 - 54.00	66.00	38.00	63.50	—	0.40	**310003**	20	**210052**
								101	**210062**
40 - 22	53.00 - 66.00	75.00	39.00	72.50	—	0.70	**310004**	20	**210020**
								101	**210063**
								103	**210064**
50 - 28	65.00 - 83.00	75.00	39.00	72.50	—	1.20	**310005**	20	**210020**
								101	**210063**
								103	**210064**
63 - 36	82.00 - 103.00	90.00	54.00	87.50	—	2.20	**310006**	20	**210020**
								101	**210063**
								103	**210064**

Alu-Line Boring Heads

Metric (mm)

MVS Connection $D_2 \mid D_1$	Boring Range A	Boring Head X_1	X_{1R}	L_2	D_5	Weight (kg)	Part No.	Insert Holder Form	Part No.
80 - 36	100.00 - 130.00	90.00	54.00	87.50	—	1.40	**310007**	20	**210020**
								101	**210063**
								103	**210064**
	125.00 - 167.50	90.00	54.00	87.50	100.00	1.80	**310008**	20	**210020**
								101	**210063**
								103	**210064**
	162.50 - 205.00	90.00	54.00	87.50	135.00	2.40	**310009**	20	**210020**
								101	**210063**
								103	**210064**

*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").
NOTE: X_{1R} = rotated insert holder for reverse machining.
NOTE: Insert holders and inserts sold separately.

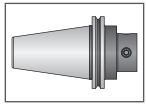
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

B10: ix - x

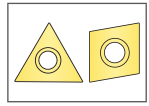


Key on B10-G: 2

B10-A



B10-I



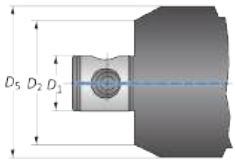
Inserts sold separately.

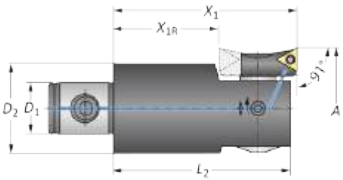
ⓜ = Metric (mm)
ⓘ = Imperial (in)

310 (320) Boring Heads and Insert Holders

Analog | Diameter Range: 20.00 mm - 205.00 mm (0.787" - 8.071")







NOTE: Vernier adjustment accuracy of 0.002 mm (0.0001") on diameter.

Imperial (in)

MVS Connection $D_2 \mid D_1$	Boring Range A	Boring Head X_1	X_{1R}	L_2	D_5	Weight (lbs)	Part No.	Insert Holder Form	Part No.
19 - 11	0.787 - 0.965	1.810	—	1.693	—	0.221	**320010**	20*	**364077**
22 - 11	0.965 - 1.161	1.810	—	1.713	0.906	0.331	**320020**	20	**210059**
								101	**210069**
25 - 14	1.142 - 1.457	2.200	—	2.106	1.024	0.441	**320001**	20	**210059**
								101	**210069**
	1.417 - 1.732	2.200	1.100	2.106	1.024	0.441	**320001**	20	**210052**
								101	**210062**
32 - 18	1.693 - 2.126	2.590	1.490	2.500	—	0.882	**320003**	20	**210052**
								101	**210062**
40 - 22	2.087 - 2.598	2.950	1.530	2.854	—	1.543	**320004**	20	**210020**
								101	**210063**
								103	**210064**
50 - 28	2.559 - 3.268	2.950	1.530	2.854	—	2.646	**320005**	20	**210020**
								101	**210063**
								103	**210064**
63 - 36	3.228 - 4.055	3.540	2.120	3.445	—	4.850	**320006**	20	**210020**
								101	**210063**
								103	**210064**

Alu-Line Boring Heads

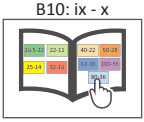
Imperial (in)

MVS Connection $D_2 \mid D_1$	Boring Range A	Boring Head X_1	X_{1R}	L_2	D_5	Weight (lbs)	Part No.	Insert Holder Form	Part No.
80 - 36	3.937 - 5.118	3.543	2.126	3.445	—	3.086	**320007**	20	**210020**
								101	**210063**
								103	**210064**
	4.921 - 6.594	3.543	2.126	3.445	3.937	3.968	**320008**	20	**210020**
								101	**210063**
								103	**210064**
	6.397 - 8.071	3.543	2.126	3.445	5.315	5.291	**320009**	20	**210020**
								101	**210063**
								103	**210064**

*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").
NOTE: X_{1R} = rotated insert holder for reverse machining.
NOTE: Insert holders and inserts sold separately.

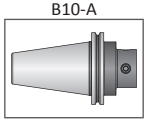
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B10: ix - x

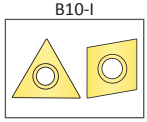


Key on B10-G: 2

B10-A



B10-I



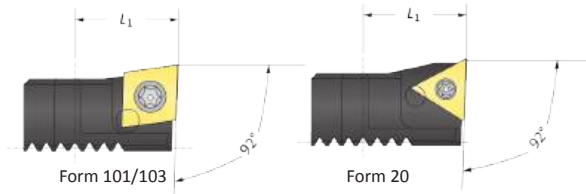
Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

Insert Holders for Abrasive Materials

Diameter Range: 53.00 mm - 205.00 mm (2.087" - 8.071")





Metric (mm)

	Boring Range	Insert Holder L_1	Weight (kg)	Insert Form	Part No.
m	53.00 - 205.00	18.00	0.03	20	**211061**
				101	**211063**
				103	**211065**

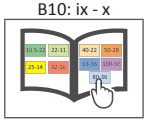
Imperial (in)

	Boring Range	Insert Holder L_1	Weight (lbs)	Insert Form	Part No.
i	2.087 - 8.071	0.709	0.066	20	**211061**
				101	**211063**
				103	**211065**

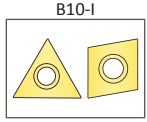
NOTE: Insert holders used for abrasive materials to protect boring head against chip wash.
NOTE: When machining grey cast iron, we recommend using insert holders for abrasive materials with CBN inserts for optimized chip removal.

G

B10: ix - x



B10-I



Key on B10-G: 2

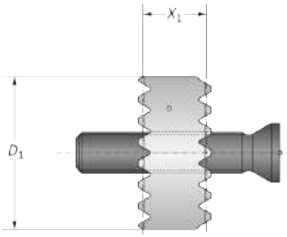
Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

Accessories

Serrated Shims | Screws

Serrated Shims

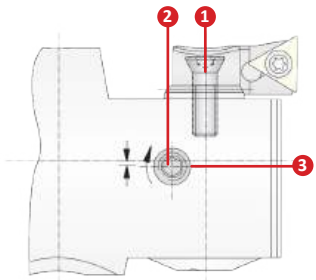


Metric (mm)

Boring Range	Additional Boring Range	Serrated Shim X_1	Serrated Shim D_1	Serrated Shim Weight (kg)	Part No. Serrated Shim and Screw	Part No. Replacement Screw
29.00 - 54.00	8.00	4.00	12.00	0.01	**310070**	**415360**
	12.00	6.00	12.00	0.01	**310071**	**415342**
53.00 - 205.00	10.00	5.00	18.00	0.01	**310074**	**515595**
	15.00	7.50	18.00	0.01	**310075**	**515596**

Imperial (in)

Boring Range	Additional Boring Range	Serrated Shim X_1	Serrated Shim D_1	Serrated Shim Weight (lbs)	Part No. Serrated Shim and Screw	Part No. Replacement Screw
1.141 - 2.126	0.315	0.157	0.472	0.022	**310070**	**415360**
	0.472	0.236	0.472	0.022	**310071**	**415342**
2.087 - 8.071	0.394	0.196	0.708	0.022	**310074**	**515595**
	0.590	0.295	0.708	0.022	**310075**	**515596**

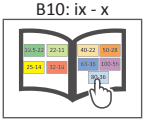


Screws

Boring Head Metric	Boring Head Imperial	1 Countersunk Screw Part No.	1 Countersunk Screw Service Key	2 Clamping Screw Part No.	2 Clamping Screw Service Key	3 Ball Part No.
310010	320010	**215323**	T15 / H	**364260**	s2.0 / A	**364270**
310020	320020	**215338**	T15 / H	**364138**	s2.5 / A	**364139**
310001	320001	**215338**	T15 / H	**115136**	s2.5 / A	—
310003	320003	**215338**	T15 / H	**115180**	s2.5 / A	—
310004	320004	**215462**	T20 / H	**115249**	s4 / B	—
310005	320005	**215462**	T20 / H	**115185**	s4 / B	—
310006	320006	**215462**	T20 / H	**315279**	s4 / B	—
310007	320007	**215462**	T20 / H	**115186**	s4 / B	—
310008	320008	**215462**	T20 / H	**115186**	s4 / B	—
310009	320009	**215462**	T20 / H	**115186**	s4 / B	—

G

B10: ix - x
Key on B10-G: 2



ⓜ = Metric (mm)
ⓘ = Imperial (in)



410 (420)
FINE BORING

Boring has never been more exciting.

Equipped with a 3E^{TECH+} docking port, the Wohlhaupter 410 (420) boring heads offer precision boring and easy digital diameter adjustments. As the world's smallest digital boring head with a peripheral cutting edge, it's capable of boring as small as 20.00 mm (0.787").

- Diameter range: 20.00 mm – 29.00 mm (0.787" – 1.142").
- Equipped with a 3E^{TECH+} digital readout module docking port.
  - Digital diameter adjustment of 0.002 mm (0.0001").
- Coolant through.
- Max cutting speed: 1,700 m/min (5,577 SFM).

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

410 (420) Product Overview



WOHLHAUPTER®

Get the DIGITAL Advantage

- Eliminate guesswork
- Increase accuracy
- Increase productivity
- Reduce scrap & rework
- Reduce costly setup time

3E TECH+

DIGITAL READOUT MODULE

Improve productivity and quality with the 3E^{TECH+} external digital readout module that docks onto boring heads and cassettes to make easy diameter adjustments at the machine.



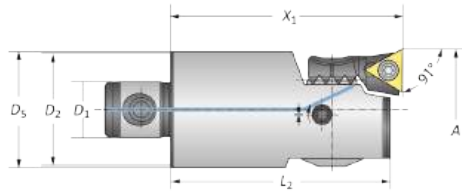
NOTE: 3E^{TECH+} digital adjustment accuracy of 0.001 mm (0.00005") on diameter.

G

410 (420) Boring Heads and Insert Holders

Digital 3E[TECH+] | Diameter Range: 20.00 mm - 29.00 mm (0.787" - 1.142")





NOTE: Vernier adjustment accuracy of 0.002 mm (0.0001") on diameter.

Metric (mm)

MVS Connection $D_2 \mid D_1$	Boring Range A	Boring Head X_1	L_2	D_5	Weight (kg)	Part No.	Insert Holder Form	Insert Holder Part No.
19 - 11	20.00 - 24.50	46.00	43.00	—	0.09	**410001**	20*	**364077**
22 - 11	24.50 - 29.00	46.00	43.50	23.00	0.13	**410002**	20	**210059**
							101	**210069**

Imperial (in)

MVS Connection $D_2 \mid D_1$	Boring Range A	Boring Head X_1	L_2	D_5	Weight (lbs)	Part No.	Insert Holder Form	Insert Holder Part No.
19 - 11	0.787 - 0.965	1.811	1.693	—	0.198	**420001**	20*	**364077**
22 - 11	0.965 - 1.142	1.811	1.713	0.906	0.286	**420002**	20	**210059**
							101	**210069**

*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").
NOTE: 3E[TECH+] module, charging unit, insert holders, and inserts sold separately.

G

3E[TECH+] Digital Readout Module

Part No.	Charging Unit*
536015	**536016**

NOTE: WEEE-Reg.-Nr. DE 15820388
*Charging unit sold separately.



NOTE: 3E[TECH+] digital adjustment accuracy of 0.001 mm (0.00005") on diameter.

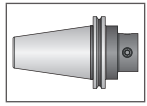
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B10: ix - x

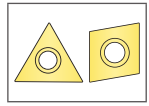


Key on B10-G: 2

B10-A



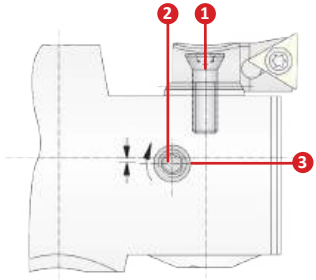
B10-I



Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

Accessories



Screws

Boring Head		1 Countersunk Screw		2 Clamping Screw		3 Ball
Metric	Imperial	Part No.	Service Key	Part No.	Service Key	Part No.
410001	420001	**215323**	T15 / H	**410151**	s2.0 / A	**364270**
410002	420002	**215338**	T15 / H	**410152**	s2.0 / A	**364270**

3E^{TECH+} Digital Readout Module

1. Module	2. Charging Unit*
536015	**536016**

NOTE: WEEE-Reg.-Nr. DE 15820388
*Charging unit sold separately.
NOTE: 3E^{TECH+} digital adjustment accuracy of 0.001 mm (0.00005") on diameter.



G

B10: ix - x
Key on B10-G: 2



364 (365) Balance
FINE BORING

Analog fine boring for high-production jobs.

The Wohlhaupter 364 (365) balance boring head combines precision boring with automatic balancing for stable, accurate results. It's advanced design minimizes residual imbalance caused by insert holder displacement and features a rotatable insert holder for reverse machining applications.

- Diameter range: 20.00 mm - 29.50 mm (0.787" - 1.161").
- Coolant through.
- Vernier diameter adjustment of 0.002 mm (0.0001").
- Internal balancing improves tool life and surface finish.
- Max cutting speed: 1,000 m/min (3,281 SFM).

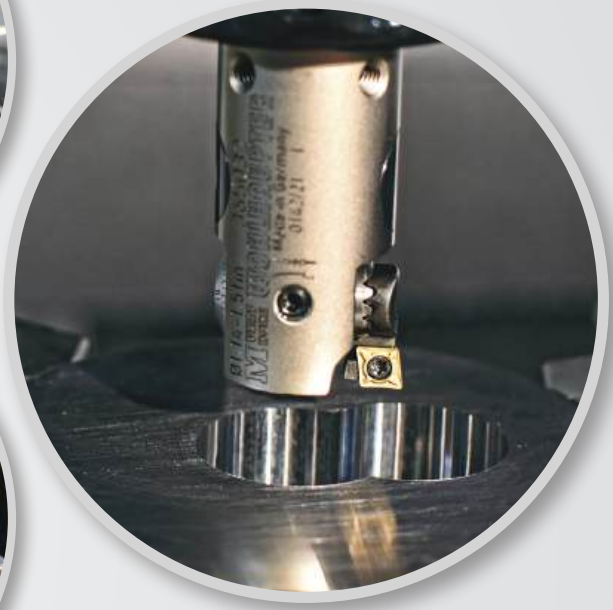
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

364 (365) Balance Product Overview

Finished "Figure 8" Boring Application



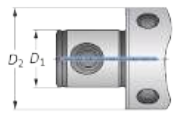


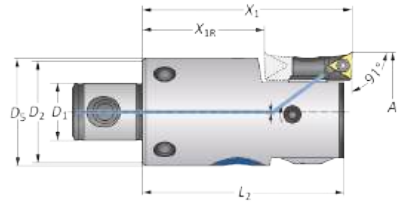


364 (365) Boring Heads and Insert Holders

Analog | Diameter Range: 20.00 mm - 29.50 mm (0.787" - 1.161")







NOTE: Vernier adjustment accuracy of 0.002 mm (0.0001") on diameter.

Metric (mm)

MVS Connection $D_2 \mid D_1$	Boring Range A	Boring Head X_1	L_2	D_5	Weight (kg)	Part No.	Insert Holder Form	Part No.
19 - 11	20.00 - 24.50	46.00	43.00	—	0.09	**364030**	20*	**364077**
22 - 11	24.50 - 29.50	46.00	43.50	23.00	0.15	**364031**	20	**210059**
							101	**210069**

Imperial (in)

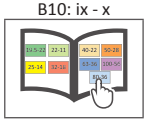
MVS Connection $D_2 \mid D_1$	Boring Range A	Boring Head X_1	L_2	D_5	Weight (lbs)	Part No.	Insert Holder Form	Part No.
19 - 11	0.787 - 0.965	1.811	1.693	—	0.198	**365030**	20*	**364077**
22 - 11	0.965 - 1.161	1.811	1.713	0.906	0.331	**365031**	20	**210059**
							101	**210069**

*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").
NOTE: Insert holders and inserts sold separately.

G

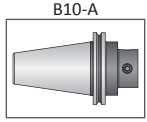
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B10: ix - x

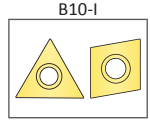


Key on B10-G: 2

B10-A



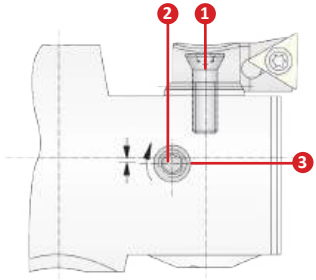
B10-I



Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

Accessories



Screws

Boring Head		1 Countersunk Screw		2 Clamping Screw		3 Ball
Metric	Imperial	Part No.	Service Key	Part No.	Service Key	Part No.
364030	365030	**215323**	T15 / H	**364260**	s2.0 / A	**364270**
364031	365031	**215338**	T15 / H	**364138**	s2.5 / A	**364139**

G

B10: ix - x

Key on B10-G: 2



464 (465) Balance
FINE BORING

Engineered for easy precision.

Designed for precision and flexibility, the 464 (465) boring head combines automatic balancing with easy adjustment options for efficient fine boring. It is available in an analog version or with a docking port for the 3E^{TECH+} digital readout module, enabling simple digital adjustments. An enhanced clamping mechanism improves performance while its advanced design minimizes residual imbalance caused by insert holder displacement. The insert holder can also be rotated for reverse machining applications.

- Diameter range: 29.00 mm - 205.00 mm (1.142" - 8.071").
- Alu-Line diameter range: 65.00 mm - 205.00 mm (2.559" - 8.071").
  - Special coating on Alu-Line provides hard, durable surface.
  - Alu-Line body reduces tool weight by 50%, reducing stress on the spindle.
- Unique internal balancing improves tool life and surface finish.
- Boring heads are available in analog or with a 3E^{TECH+} digital readout module docking port.
- Max cutting speed: 1,700 m/min (5,577 SFM).

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

464 (465) Balance Product Overview

464 (465) BORING HEADS

Features an ***enhanced*** clamping mechanism from our trusted line of 564 (565) balance digital fine boring heads.



NOTE: 3E^{TECH+} adjustment accuracy of 0.001 mm (0.00005") and vernier adjustment accuracy of 0.002 mm (0.0001") on diameter.

G

EXPERIENCE PRECISION BORING TODAY

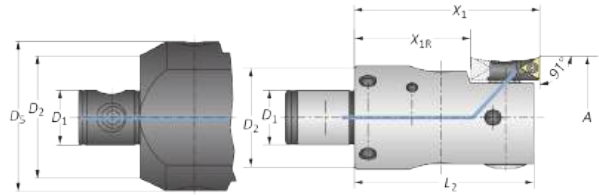


- 3E^{TECH+} digital readout compatibility
- High-production fine boring
- Easy digital diameter adjustment

464 (465) Boring Heads and Insert Holders

Analog | Diameter Range: 29.00 mm - 205.000 mm (1.142" - 8.071")





NOTE: Vernier adjustment accuracy of 0.002 mm (0.0001") on diameter.

Metric (mm)

MVS Connection $D_2 \mid D_1$	Boring Range A	Boring Head X_1	X_{1R}	L_2	D_5	Weight (kg)	Part No.	Insert Holder Form	Insert Holder Part No.
25 - 14	29.00 - 38.00	56.00	—	53.50	27.00	0.20	**464033**	20	**210059**
								101	**210069**
32 - 18	38.00 - 50.00	66.00	38.00	63.50	34.00	0.40	**464034**	20	**264051**
								101	**264077**
40 - 22	50.00 - 65.50	75.00	47.00	72.50	42.00	0.80	**464035**	20	**210052**
								101	**210062**

Alu-Line Boring Heads

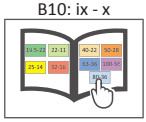
Metric (mm)

MVS Connection $D_2 \mid D_1$	Boring Range A	Boring Head X_1	X_{1R}	L_2	D_5	Weight (kg)	Part No.	Insert Holder Form	Insert Holder Part No.
50 - 28	65.00 - 83.00	75.00	39.00	72.50	—	0.60	**464036**	20	**210020**
								101	**210063**
								103	**210064**
63 - 36	82.00 - 103.00	90.00	54.00	87.50	—	1.00	**464037**	20	**210020**
								101	**210063**
								103	**210064**
80 - 36	100.00 - 130.00	90.00	54.00	87.50	—	1.50	**464038**	20	**210020**
								101	**210063**
								103	**210064**
	125.00 - 167.50	90.00	54.00	87.50	100.00	1.90	**464039**	20	**210020**
								101	**210063**
								103	**210064**
	162.50 - 205.00	90.00	54.00	87.50	135.00	2.50	**464040**	20	**210020**
								101	**210063**
								103	**210064**

NOTE: X_{1R} = rotated insert holder for reverse machining.
NOTE: Insert holders and inserts sold separately.

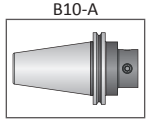
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

B10: ix - x

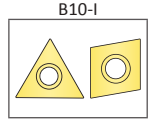


Key on B10-G: 2

B10-A



B10-I



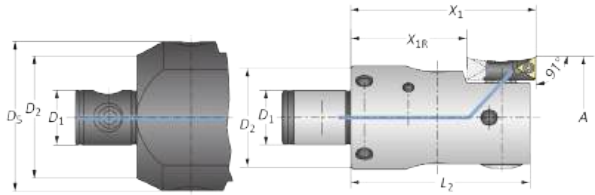
Inserts sold separately.

Ⓜ = Metric (mm)
ⓘ = Imperial (in)

464 (465) Boring Heads and Insert Holders

Analog | Diameter Range: 29.00 mm - 205.000 mm (1.142" - 8.071")





NOTE: Vernier adjustment accuracy of 0.002 mm (0.0001") on diameter.

Imperial (in)

MVS Connection $D_2 \mid D_1$	Boring Range A	Boring Head X_1	X_{1R}	L_2	D_5	Weight (lbs)	Part No.	Insert Holder Form	Part No.
25 - 14	1.142 - 1.516	2.205	—	2.106	1.063	0.441	**465033**	20	**210059**
								101	**210069**
32 - 18	1.496 - 1.988	2.598	1.496	2.450	1.339	0.882	**465034**	20	**264051**
								101	**264077**
40 - 22	1.969 - 2.579	2.953	1.850	2.854	1.654	1.764	**465035**	20	**210052**
								101	**210062**

Alu-Line Boring Heads

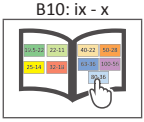
Imperial (in)

MVS Connection $D_2 \mid D_1$	Boring Range A	Boring Head X_1	X_{1R}	L_2	D_5	Weight (lbs)	Part No.	Insert Holder Form	Part No.
50 - 28	2.559 - 3.268	2.953	1.535	2.854	—	1.323	**465036**	20	**210020**
								101	**210063**
								103	**210064**
63 - 36	3.228 - 4.055	3.543	2.126	3.445	—	2.205	**465037**	20	**210020**
								101	**210063**
								103	**210064**
80 - 36	3.937 - 5.118	3.543	2.126	3.445	—	3.307	**465038**	20	**210020**
								101	**210063**
								103	**210064**
	4.921 - 6.594	3.543	2.126	3.445	3.937	4.189	**465039**	20	**210020**
								101	**210063**
								103	**210064**
	6.398 - 8.071	3.543	2.126	3.445	5.315	5.512	**465040**	20	**210020**
								101	**210063**
								103	**210064**

NOTE: X_{1R} = rotated insert holder for reverse machining.
NOTE: Insert holders and inserts sold separately.

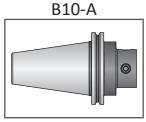
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

B10: ix - x

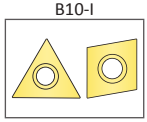


Key on B10-G: 2

B10-A



B10-I



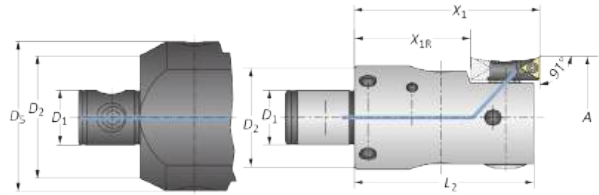
Inserts sold separately.

Ⓜ = Metric (mm)
ⓘ = Imperial (in)

464 (465) Boring Heads and Insert Holders

Digital 3E[TECH+] | Diameter Range: 29.00 mm - 205.000 mm (1.142" - 8.071")





NOTE: Vernier adjustment accuracy of 0.002 mm (0.0001") on diameter.

Metric (mm)

MVS Connection $D_2 \mid D_1$	Boring Range A	Boring Head X_1	X_{1R}	L_2	D_5	Weight (kg)	Part No.	Insert Holder Form	Part No.
25 - 14	29.00 - 38.00	56.00	—	53.50	27.00	0.21	**464003**	20	**210059**
								101	**210069**
32 - 18	38.00 - 50.00	66.00	38.00	63.50	34.00	0.41	**464004**	20	**264051**
								101	**264077**
40 - 22	50.00 - 65.50	75.00	47.00	72.50	42.00	0.80	**464005**	20	**210052**
								101	**210062**

Alu-Line Boring Heads

Metric (mm)

MVS Connection $D_2 \mid D_1$	Boring Range A	Boring Head X_1	X_{1R}	L_2	D_5	Weight (kg)	Part No.	Insert Holder Form	Part No.
50 - 28	65.00 - 83.00	75.00	39.00	72.50	—	0.60	**464006**	20	**210020**
								101	**210063**
								103	**210064**
63 - 36	82.00 - 103.00	90.00	54.00	88.00	—	1.00	**464007**	20	**210020**
								101	**210063**
								103	**210064**
80 - 36	100.00 - 130.00	90.00	54.00	88.00	—	1.50	**464008**	20	**210020**
								101	**210063**
								103	**210064**
	125.00 - 167.50	90.00	54.00	88.00	100.00	1.90	**464009**	20	**210020**
								101	**210063**
								103	**210064**
	162.50 - 205.00	90.00	54.00	88.00	135.00	2.50	**464010**	20	**210020**
								101	**210063**
								103	**210064**

NOTE: X_{1R} = rotated insert holder for reverse machining.
NOTE: 3E[TECH+] module, charging unit, insert holders, and inserts sold separately.

3E[TECH+] Digital Readout Module

Part No.	Charging Unit*
536015	**536016**

NOTE: WEEE-Reg.-Nr. DE 15820388
*Charging unit sold separately.



NOTE: 3E[TECH+] digital adjustment accuracy of 0.001 mm (0.00005") on diameter.

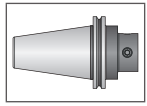
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

B10: ix - x

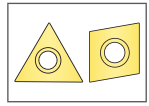


Key on B10-G: 2

B10-A



B10-I



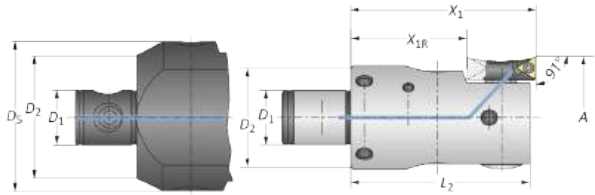
Inserts sold separately.

Ⓜ = Metric (mm)
ⓘ = Imperial (in)

464 (465) Boring Heads and Insert Holders

Digital 3E[TECH+] | Diameter Range: 29.00 mm - 205.000 mm (1.142" - 8.071")





NOTE: Vernier adjustment accuracy of 0.002 mm (0.0001") on diameter.

Imperial (in)

MVS Connection $D_2 \mid D_1$	Boring Range A	Boring Head X_1	X_{1R}	L_2	D_5	Weight (lbs)	Part No.	Insert Holder Form	Part No.
25 - 14	1.142 - 1.496	2.205	—	2.106	1.063	0.463	**465003**	20	**210059**
								101	**210069**
32 - 18	1.496 - 1.969	2.598	1.496	2.500	1.339	0.904	**465004**	20	**264051**
								101	**264077**
40 - 22	1.969 - 2.579	2.953	1.850	2.854	1.654	1.764	**465005**	20	**210052**
								101	**210062**

Alu-Line Boring Heads

Imperial (in)

MVS Connection $D_2 \mid D_1$	Boring Range A	Boring Head X_1	X_{1R}	L_2	D_5	Weight (lbs)	Part No.	Insert Holder Form	Part No.
50 - 28	2.559 - 3.268	2.953	1.535	2.874	—	1.323	**465006**	20	**210020**
								101	**210063**
								103	**210064**
63 - 36	3.228 - 4.055	3.543	2.126	3.464	—	2.205	**465007**	20	**210020**
								101	**210063**
								103	**210064**
80 - 36	3.937 - 5.118	3.543	2.126	3.464	—	3.307	**465008**	20	**210020**
								101	**210063**
								103	**210064**
	4.921 - 6.594	3.543	2.126	3.464	3.937	4.189	**465009**	20	**210020**
								101	**210063**
								103	**210064**
	6.398 - 8.071	3.543	2.126	3.464	5.315	5.512	**465010**	20	**210020**
								101	**210063**
								103	**210064**

NOTE: X_{1R} = rotated insert holder for reverse machining.
NOTE: Insert holders and inserts sold separately.

3E[TECH+] Digital Readout Module

Part No.	Charging Unit*
536015	**536016**

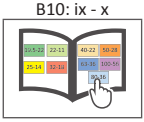
NOTE: WEEE-Reg.-Nr. DE 15820388
*Charging unit sold separately.



NOTE: 3E[TECH+] digital adjustment accuracy of 0.001 mm (0.00005") on diameter.

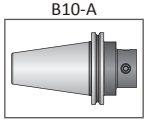
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B10: ix - x

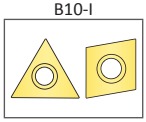


Key on B10-G: 2

B10-A



B10-I



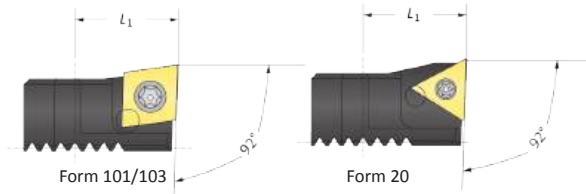
Inserts sold separately.

Ⓜ = Metric (mm)
ⓘ = Imperial (in)

Insert Holders for Abrasive Materials

Diameter Range: 65.00 mm - 205.00 mm (2.559" - 8.071")





Metric (mm)

	Boring Range	Insert Holder L_1	Weight (kg)	Insert Form	Part No.
ⓜ	65.00 - 205.00	18.00	0.03	20	**211061**
				101	**211063**
				103	**211065**

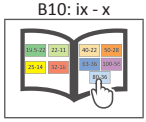
Imperial (in)

	Boring Range	Insert Holder L_1	Weight (lbs)	Insert Form	Part No.
ⓘ	2.559 - 8.071	0.709	0.066	20	**211061**
				101	**211063**
				103	**211065**

NOTE: Insert holders used for abrasive materials to protect boring head against chip wash.
NOTE: When machining grey cast iron, we recommend using insert holders for abrasive materials with CBN inserts for optimized chip removal.

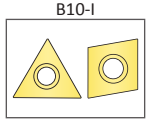
G

B10: ix - x



Key on B10-G: 2

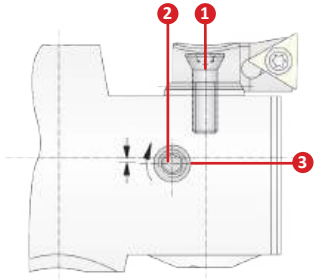
B10-I



Inserts sold separately.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Accessories



Screws

Boring Head		1 Countersunk Screw		2 Clamping Screw		3 Ball
Metric	Imperial	Part No.	Service Key	Part No.	Service Key	Part No.
464003	465003	**215338**	T15 / H	**364138**	s2.5 / A	**364139**
464004	465004	**215338**	T15 / H	**115180**	s2.5 / A	—
464005	465005	**215338**	T15 / H	**115505**	s3 / B	—
464006	465006	**215462**	T20 / H	**315943**	s4 / B	—
464007	465007	**215462**	T20 / H	**515178**	s4 / B	—
464008	465008	**215462**	T20 / H	**515178**	s4 / B	—
464009	465009	**215462**	T20 / H	**515178**	s4 / B	—
464010	465010	**215462**	T20 / H	**515178**	s4 / B	—
464033	465033	**215338**	T15 / H	**364138**	s2.5 / A	**364139**
464034	465034	**215338**	T15 / H	**115180**	s2.5 / A	—
464035	465035	**215338**	T15 / H	**115505**	s3 / B	—
464036	465036	**215462**	T20 / H	**315943**	s4 / B	—
464037	465037	**215462**	T20 / H	**515178**	s4 / B	—
464038	465038	**215462**	T20 / H	**515178**	s4 / B	—
464039	465039	**215462**	T20 / H	**515178**	s4 / B	—
464040	465040	**215462**	T20 / H	**515178**	s4 / B	—

G

3E^{TECH+} Digital Readout Module

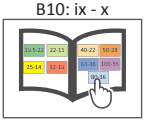
1. Module	2. Charging Unit*
536015	**536016**

NOTE: WEEE-Reg.-Nr. DE 15820388
*Charging unit sold separately.
NOTE: 3E^{TECH+} digital adjustment accuracy of 0.001 mm (0.00005") on diameter.



B10: ix - x

Key on B10-G: 2





564 (565) Balance
FINE BORING

Adjustable diameter for precise machining.

Wohlhaupter® digital 564 (565) balance boring heads feature automatic balancing with an easy-to-read digital display. For diameter ranges above 65.00 mm (2.559"), 564 (565) boring heads are made of lightweight aluminum. 564 (565) boring heads are specifically engineered to minimize the residual imbalance produced by insert holder displacement. For added versatility, the insert holders can be rotated for reverse boring applications.

- Diameter range: 50.00 mm - 205.00 mm (1.969" - 8.071").
- Alu-Line diameter range: 65.00 mm - 205.00 mm (2.559" - 8.071").
  - Special coating on Alu-Line for wear-resistant surface.
  - Alu-Line body reduces tool weight by 50%, reducing stress on the spindle.
- Digital diameter adjustment of 0.002 mm (0.0001").
- Coolant through.
- Internal balancing improves tool life and surface finish.
- Max cutting speed: 2,000 m/min (6,562 SFM).
- Max coolant pressure: 40 bar (580 PSI).

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

564 (565) Balance Digital Boring Head with NOVI[TECH]®

Product:	Wohlhaupter 564 (565) balance digital boring head with NOVI[TECH]
Objectives:	0.005 mm (0.0002") concentricity over the length of two bores spaced 355.60 mm (14") apart.
Material:	Cast iron
Hole Ø:	79.38 mm (3.125")
Hole Depth:	469.9 mm (18.5")
Stock Removal:	0.80 mm (0.030") on diameter

Measure	564 (565) Balance Digital Boring Head with NOVI[TECH]
RPM	430
Speed	107.28 m/min (352 SFM)
Feed Rate	0.08 mm/rev (0.003 IPR)
Penetration Rate	33 mm/min (1.29 IPM)

- Boring head 564 (565) series ***Item No. 565045***
- NOVI[TECH] vibration dampening intermediate module ***Item No. 519005***
- Wohlhaupter boring insert: ***Item No. 397239WHC79 (F103 04MN158 WHC79)***

The balanced 564 (565) digital boring head with the NOVI[TECH] vibration damper module provided:

✓ **Precision concentricity over 7xD**

✓ **Eliminated vibration and chatter**



NOTE: Metric item pictured.

NOTE: Digital adjustment accuracy of 0.002 mm (0.0001") on diameter.



Aluminum Boring Head
65.00 mm - 205.00 mm
(2.559" - 8.071")



Steel Boring Head
50.00 mm - 65.50 mm
(1.969" - 2.579")

NOTE: Imperial items pictured.

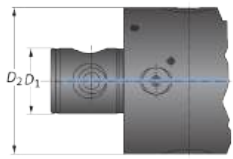
NOTE: Digital adjustment accuracy of 0.002 mm (0.0001") on diameter.

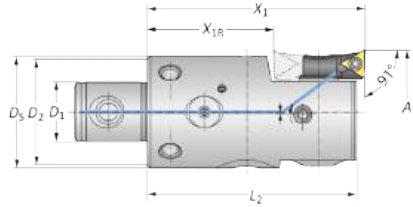
G

564 (565) Boring Heads and Insert Holders

Digital | Diameter Range: 50.00 mm - 205.000 mm (1.969" - 8.071")







NOTE: Metric item pictured.

NOTE: Digital adjustment accuracy of 0.002 mm (0.0001") on diameter.

Metric (mm)

MVS Connection $D_2 \mid D_1$	Boring Range A	Boring Head X_1	X_{1R}	L_2	D_5	Weight (kg)	Part No.	Insert Holder Form	Part No.
Ⓜ 40 - 22	50.00 - 65.50	75.00	47.00	72.50	42.00	0.80	**564034**	20	**210052**
								101	**210062**

Alu-Line Boring Heads

Metric (mm)

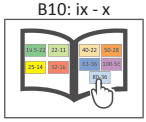
MVS Connection $D_2 \mid D_1$	Boring Range A	Boring Head X_1	X_{1R}	L_2	D_5	Weight (kg)	Part No.	Insert Holder Form	Part No.
50 - 28	65.00 - 83.00	75.00	39.00	73.00	—	0.60	**564045**	20	**210020**
								101	**210063**
								103	**210064**
63 - 36	82.00 - 103.00	90.00	54.00	88.00	—	1.00	**564046**	20	**210020**
								101	**210063**
								103	**210064**
Ⓜ 80 - 36	100.00 - 130.00	90.00	54.00	88.00	—	1.50	**564047**	20	**210020**
								101	**210063**
								103	**210064**
	125.00 - 167.50	90.00	54.00	88.00	100.00	1.90	**564048**	20	**210020**
								101	**210063**
								103	**210064**
	162.50 - 205.00	90.00	54.00	88.00	135.00	2.50	**564049**	20	**210020**
								101	**210063**
								103	**210064**

NOTE: X_{1R} = rotated insert holder for reverse machining.

NOTE: Insert holders and inserts sold separately.

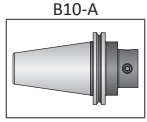
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

B10: ix - x

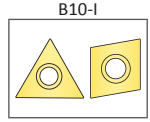


Key on B10-G: 2

B10-A



B10-I



Inserts sold separately.

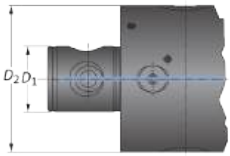
Ⓜ = Metric (mm)

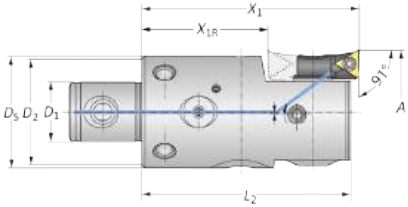
ⓘ = Imperial (in)

564 (565) Boring Heads and Insert Holders

Digital | Diameter Range: 50.00 mm - 205.000 mm (1.969" - 8.071")







NOTE: Metric item pictured.

NOTE: Digital adjustment accuracy of 0.002 mm (0.0001") on diameter.

Imperial (in)

MVS Connection $D_2 \mid D_1$	Boring Range A	Boring Head X_1	X_{1R}	L_2	D_5	Weight (lbs)	Part No.	Insert Holder Form	Part No.
40 - 22	1.969 - 2.579	2.953	1.850	2.854	1.654	1.764	**565034**	20	**210052**
								101	**210062**

Alu-Line Boring Heads

Imperial (in)

MVS Connection $D_2 \mid D_1$	Boring Range A	Boring Head X_1	X_{1R}	L_2	D_5	Weight (lbs)	Part No.	Insert Holder Form	Part No.
50 - 28	2.559 - 3.268	2.953	1.535	2.874	—	1.323	**565045**	20	**210020**
								101	**210063**
								103	**210064**
63 - 36	3.228 - 4.055	3.543	2.126	3.464	—	2.205	**565046**	20	**210020**
								101	**210063**
								103	**210064**
80 - 36	3.937 - 5.118	3.543	2.126	3.464	—	3.307	**565047**	20	**210020**
								101	**210063**
								103	**210064**
	4.921 - 6.594	3.543	2.126	3.464	3.397	4.189	**565048**	20	**210020**
								101	**210063**
								103	**210064**
	6.398 - 8.071	3.543	2.126	3.464	5.315	5.512	**565049**	20	**210020**
								101	**210063**
								103	**210064**

NOTE: X_{1R} = rotated insert holder for reverse machining.

NOTE: Insert holders and inserts sold separately.

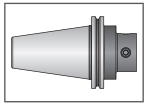
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

B10: ix - x

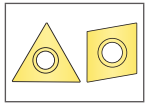


Key on B10-G: 2

B10-A



B10-I



Inserts sold separately.

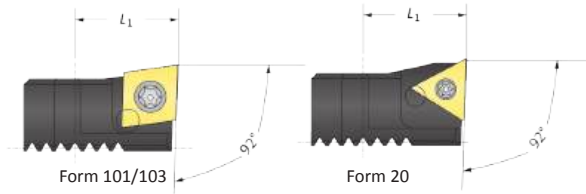
Ⓜ = Metric (mm)

ⓘ = Imperial (in)

Insert Holders for Abrasive Materials

Diameter Range: 65.00 mm - 205.00 mm (2.559" - 8.071")





Metric (mm)

	Boring Range	Insert Holder L_1	Weight (kg)	Insert Form	Part No.
ⓜ	65.00 - 205.00	18.00	0.03	20	**211061**
				101	**211063**
				103	**211065**

Imperial (in)

	Boring Range	Insert Holder L_1	Weight (lbs)	Insert Form	Part No.
ⓘ	2.559 - 8.071	0.709	0.066	20	**211061**
				101	**211063**
				103	**211065**

NOTE: Insert holders used for abrasive materials to protect boring head against chip wash.
NOTE: When machining grey cast iron, we recommend using insert holders for abrasive materials with CBN inserts for optimized chip removal.

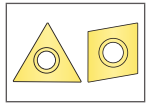
G

B10: ix - x



Key on B10-G: 2

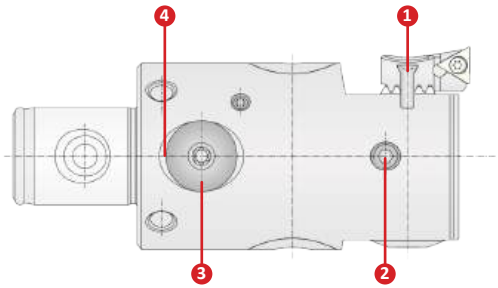
B10-I



Inserts sold separately.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Accessories



Boring Head		1 Countersunk Screw		2 Clamping Screw		3 Battery Cover		4 Sealing Ring	
Metric	Imperial	Part No.	Service Key	Part No.	Service Key	Part No.	Service Key	Part No.	Battery*
564034	565034	**215338**	T15 / H	**115505**	s3 / B	**501016**	T20 / H	**415895**	**415896**
564045	565045	**215462**	T20 / H	**315943**	s4 / B	**501016**	T20 / H	**415895**	**415896**
564046	565046	**215462**	T20 / H	**515178**	s4 / B	**501016**	T20 / H	**415895**	**415896**
564047	565047	**215462**	T20 / H	**515178**	s4 / B	**501016**	T20 / H	**415895**	**415896**
564048	565048	**215462**	T20 / H	**515178**	s4 / B	**501016**	T20 / H	**415895**	**415896**
564049	565049	**215462**	T20 / H	**515178**	s4 / B	**501016**	T20 / H	**415895**	**415896**

*Replace both batteries.

G

B10: ix - x
Key on B10-G: 2



537 (538) Cassettes
FINE BORING

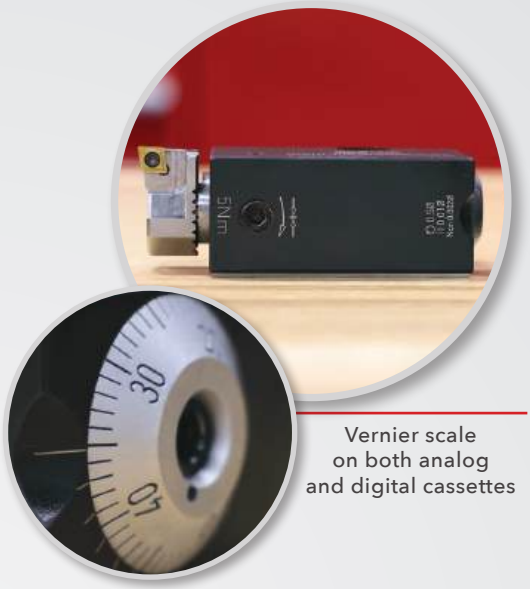
Experience digital precision boring for yourself.

537 (538) fine boring cassettes deliver high-accuracy performance and are available in an easy-to-use digital or analog version. The digital version features a docking port for the 3E^{TECH+} digital readout module, enabling µ-accurate diameter adjustments, while the analog cassettes provide highly accurate adjustments through the vernier scale. Made from hardened steel, these cassettes can be used on serrated tool bodies and slides from 100.00 mm to 3255.00 mm (3.937" to 128.150"). The insert holder can also be rotated easily for reverse machining applications.

- Diameter range: 100.00 mm - 205.00 mm (3.937" - 8.071").
- Cassette can be used on large diameter serrated slides.
  - 200.00 mm - 3255.00 mm (7.874" - 128.150").
- Coolant through.
- 3E^{TECH+} module provides a simple digital readout.
- Analog version with a vernier scale.
- Max cutting speed: 900 m/min (2,953 SFM).

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

537 (538) Cassettes Product Overview



Vernier scale
on both analog
and digital cassettes



Digital 537 (538)
cassettes with
3E[TECH+] docking port

- Convenient tool handling
- Large range of applications
- Hardened steel bodies

G

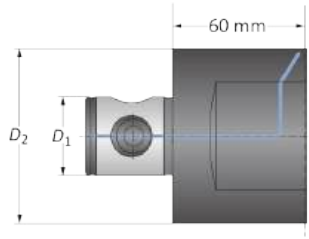


NOTE: Adjustment accuracy of 3E[TECH+] is 0.001 mm (0.00005")
and vernier is 0.002 mm (0.0001") on diameter.

537 (538) Cassettes, Insert Holders and Serrated Tool Body

Analog | Diameter Range: 100.00 mm - 205.000 mm (3.937" - 8.071")

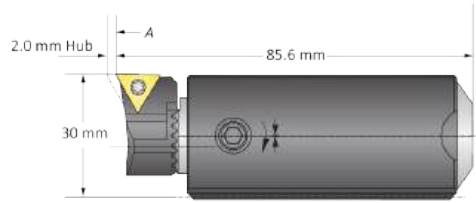




Serrated Tool Body

MVS Connection D_2 | D_1	Boring Range Metric (mm)	Boring Range Imperial (in)	Part No.
80 - 36	100.00 - 155.00	3.937 - 6.102	**148007**
	150.00 - 205.00	5.906 - 8.071	**148009**





NOTE: Vernier adjustment accuracy of 0.002 mm (0.0001") on diameter.

Metric (mm)

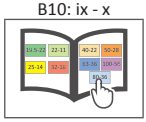
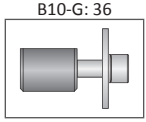
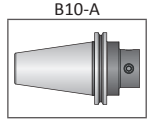
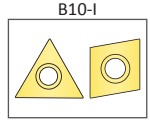
	Cassette* Boring Range (*A*)	Cassette* Weight (kg)	Cassette* Part No.	Clamping Piece	Insert Holder Insert Form	Insert Holder Part No.
ⓜ	100.00 - 205.00	0.60	**537051**	**137026**	20	**210020**
					101	**210063**
					103	**210064**

Imperial (in)

	Cassette* Boring Range (*A*)	Cassette* Weight (lbs)	Cassette* Part No.	Clamping Piece	Insert Holder Insert Form	Insert Holder Part No.
ⓘ	3.937 - 8.071	1.323	**538051**	**137026**	20	**210020**
					101	**210063**
					103	**210064**

*Required serrated tool body sold separately.
NOTE: Cassette and insert holder can be used on large diameter serrated slides.
NOTE: Insert holders, inserts, and clamping pieces sold separately.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

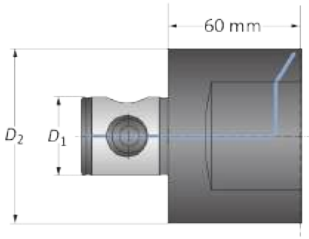
B10: ix - x

Key on B10-G: 2
B10-G: 36

B10-A

B10-I


Inserts sold separately.
ⓜ = Metric (mm)
ⓘ = Imperial (in)

537 (538) Cassettes, Insert Holders and Serrated Tool Body

Digital 3E[TECH+] | Diameter Range: 100.00 mm - 205.000 mm (3.937" - 8.071")

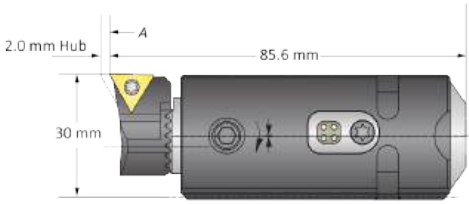




Serrated Tool Body

MVS Connection D_2 | D_1	Boring Range Metric (mm)	Boring Range Imperial (in)	Part No.
80 - 36	100.00 - 155.00	3.937 - 6.102	**148007**
	150.00 - 205.00	5.906 - 8.071	**148009**





NOTE: Vernier adjustment accuracy of 0.002 mm (0.0001") on diameter.

Metric (mm)

	Cassette* Boring Range (*A*)	Cassette* Weight (kg)	Cassette* Part No.	Clamping Piece	Insert Holder Insert Form	Insert Holder Part No.
m	100.00 - 205.00	0.60	**537052**	**137026**	20	**210020**
					101	**210063**
					103	**210064**

Imperial (in)

	Cassette* Boring Range (*A*)	Cassette* Weight (lbs)	Cassette* Part No.	Clamping Piece	Insert Holder Insert Form	Insert Holder Part No.
i	3.937 - 8.071	1.323	**538052**	**137026**	20	**210020**
					101	**210063**
					103	**210064**

*Required serrated tool body sold separately.
NOTE: Cassette and insert holder can be used on large diameter serrated slides.
NOTE: 3E[TECH+] digital readout module, charging unit, insert holders, inserts, and clamping pieces sold separately.

3E[TECH+] Digital Readout Module

Part No.	Charging Unit*
536015	**536016**

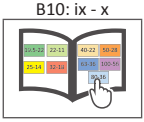
NOTE: WEEE-Reg.-Nr. DE 15820388
*Charging unit sold separately.



NOTE: 3E[TECH+] digital adjustment accuracy of 0.001 mm (0.00005") on diameter.

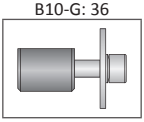
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

B10: ix - x

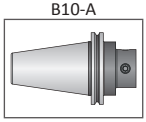


Key on B10-G: 2

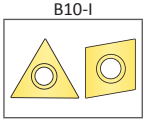
B10-G: 36



B10-A



B10-I

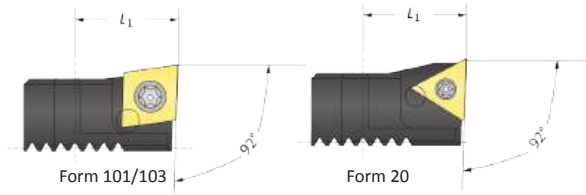


Inserts sold separately.
m = Metric (mm)
i = Imperial (in)

Insert Holders for Abrasive Materials

Diameter Range: 100.00 mm - 205.000 mm (3.937" - 8.071")





Form 101/103 Form 20

Metric (mm)

	Boring Range	Insert Holder L_1	Weight (kg)	Insert Form	Part No.
m	100.00 - 205.00	18.00	0.03	20	**211061**
				101	**211063**
				103	**211065**

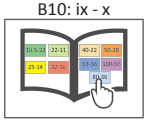
Imperial (in)

	Boring Range	Insert Holder L_1	Weight (lbs)	Insert Form	Part No.
i	3.937 - 8.071	0.709	0.066	20	**211061**
				101	**211063**
				103	**211065**

NOTE: Insert holders used for abrasive materials to protect boring head against chip wash.
NOTE: When machining grey cast iron, we recommend using insert holders for abrasive materials with CBN inserts for optimized chip removal.

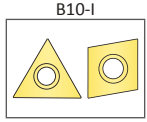
G

B10: ix - x



Key on B10-G: 2

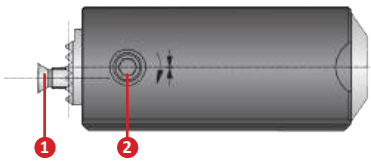
B10-I



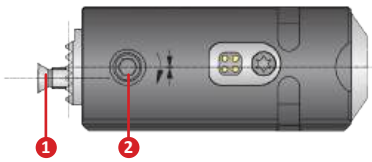
Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

Accessories



537 (538) Analog Cassette



537 (538) 3E[TECH+] Cassette

Screws

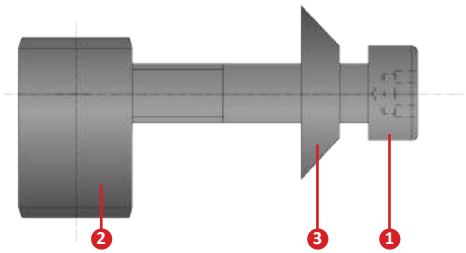
Cassette Part No.		1 Countersunk Screw		2 Clamping Screw	
Metric	Imperial	Part No.	Service Key	Part No.	Service Key
537051	538051	215462	T20 / H	115249	s4 / F
537052	538052	215462	T20 / H	315789	s4 / F

3E[TECH+] Digital Readout Module

1. Module	2. Charging Unit*
536015	536016



NOTE: WEEE-Reg.-Nr. DE 15820388
*Charging unit sold separately.
NOTE: 3E[TECH+] digital adjustment accuracy of 0.001 mm (0.00005") on diameter.



537 (538) Clamping Pieces

Slide Type	Complete Part No.	Service Key		Replacement Components		
				1 Cap Screw	2 Clamping Nut	3 Disk Spring
Serrated Tool Bodies	137026	115578	s6 / B	215101	140118	337105
Basic and Eco Slides	137027			215102	215105	337105
Flex Slides	137019			415900	215105	337105

NOTE: Clamping pieces sold separately.

B10: ix - x
Key on B10-G: 2

m = Metric (mm)
i = Imperial (in)

SECTION

B10-H

Large Diameter Boring

Large Diameter Boring



Boring Big

Wohlhaupter has continued to expand our large diameter boring capabilities with Alu-Line. Our Alu-Line serrated slides and tool bodies are made of lightweight aluminum alloy to minimize the weight while still getting the heavy boring job done. The versatile serrated slides and serrated tool bodies allow for boring 200.00 mm (7.874") up to 3255.00 mm (128.150"), offering the most powerful and versatile tool ranges to our customers.

- Basic D 40 Slides
  - 200.00 mm - 520.00 mm (7.874" - 20.472")
- Basic D 60 Slides
  - 200.00 mm - 505.00 mm (7.874" - 19.882")
- Eco D 60 Slides
  - 465.00 mm - 1020.00 mm (18.307" - 40.157")
- Flex D 60 Slides
  - 500.00 mm - 3255.00 mm (19.685" - 128.150")

Applicable Industries

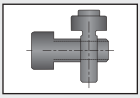
- Aerospace
- Agriculture
- Automotive
- Defense
- General Production
- Heavy Equipment
- Hydraulics
- Marine
- Medical
- Oil and Gas
- Renewable Energy/ Energy
- Tool, Mold, and Die

Reference Icons

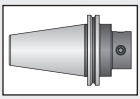
The following icons will appear throughout the catalog to help you navigate between products.



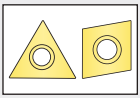
MVS Connection Color Guide
Detailed instructions and information regarding the MVS connection(s).



Clamping Elements
For use with insert holders and boring heads.



Shanks
A variety of shanks for different machines.



Inserts
For use with insert holder boring heads and boring bars using indexable inserts.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

WARNING means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

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Large Diameter BORING

Boring big? We've got you covered.

Our versatile tooling system can provide the power and precision your large diameter boring jobs demand. The large diameter boring system offers four different Alu-Line serrated slides, a wide range of rough and finish boring insert holders, vernier and digital cassettes, and combined rough and finish insert holders.

- Diameter range: 200.00 mm - 3255.00 mm (7.874" - 128.150").
- Basic, Eco, and Flex serrated slides.
- Roughing, finishing, or combined roughing and finishing can be achieved in one pass.
- Digital readout cassettes available for quick and easy adjustments.
- Alu-Line serrated slides and tool bodies are made of lightweight aluminum.

Large Diameter Boring Product Overview

Basic D 40 Serrated Slides for Finish Boring



349021 (350021)
Ø 200.00 mm - 280.00 mm
(Ø 7.874" - 11.023")



349022 (350022)
Ø 280.00 mm - 360.00 mm
(Ø 11.023" - 14.173")

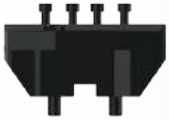


349023 (350023)
Ø 360.00 mm - 440.00 mm
(Ø 14.173" - 17.322")



349024 (350024)
Ø 440.00 mm - 520.00 mm
(Ø 17.322" - 20.472")

Basic D 60 Serrated Slides for Rough and Finish Boring



349051 (350051)
Ø 200.00 mm - 280.00 mm
(Ø 7.874" - 11.023")



349052 (350052)
Ø 275.00 mm - 355.00 mm
(Ø 10.826" - 13.976")



349053 (350053)
Ø 350.00 mm - 430.00 mm
(Ø 13.779" - 16.929")



349054 (350054)
Ø 425.00 mm - 505.00 mm
(Ø 16.732" - 19.881")

Eco D 60 Serrated Slides for Rough and Finish Boring



349005 (350005)
Ø 465.00 mm - 745.00 mm
(Ø 18.307" - 29.330")



349006 (350006)
Ø 740.00 mm - 1020.00 mm
(Ø 29.133" - 40.157")



349014 (350014) | 349014 (350014)
Serrated slide for base slides
349005 (350005) / 349006 (350006)

H

Flex D 60 Serrated Slides for Rough and Finish Boring

BASE SLIDES



349031 (350031)
Ø 500.00 mm - 1055.00 mm
(Ø 19.685" - 41.535")



349032 (350032)
Ø 755.00 mm - 1605.00 mm
(Ø 29.724" - 63.188")



349033 (350033)
Ø 1325.00 mm - 2430.00 mm
(Ø 52.165" - 95.669")



349034 (350034)
Ø 2150.00 mm - 3255.00 mm
(Ø 84.645" - 128.149")

SERRATED SLIDES



349035 (350035)
For base slides: 349031, 349032, 349033, 349034, 350031, 350032, 350033, 350034



349036 (350036)
For base slides: 349031, 349032, 349033, 349034, 350031, 350032, 350033, 350034



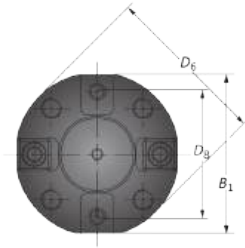
349037 (350037)
For base slides: 349032, 349033, 349034, 350032, 350033, 350034

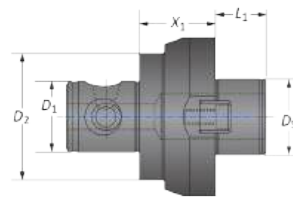


349038 (350038)
For base slides: 349033, 349034, 350033, 350034

MVS Holding Arbors







Metric (mm)

MVS Connection D_2 | D_1		Holding Arbor Connection	Holding Arbor X_1	L_1	D_5	D_6	D_8	B_1	Weight (kg)	Part No.
80 - 36		D 40 Alu-Line	19.00	30.00	40.00	89.00	66.70	80.00	0.50	**309001**(1)(2)
		D 60	60.00	40.00	60.00	129.10	101.60	125.00	4.10	**209060**(1)
100 - 56		D 40 Alu-Line	30.00	30.00	40.00	89.00	66.70	80.00	1.00	**309041**(2)
		D 60	60.00	40.00	60.00	129.10	101.60	125.00	6.30	**209043**
		D 60 Alu-Line	60.00	40.00	60.00	129.10	101.60	125.00	2.20	**309043**(2)

Imperial (in)

MVS Connection D_2 | D_1		Holding Arbor Connection	Holding Arbor X_1	L_1	D_5	D_6	D_8	B_1	Weight (lbs)	Part No.
80 - 36		D 40 Alu-Line	0.748	1.181	1.575	3.503	2.625	3.150	1.102	**309001**(1)(2)
		D 60	2.362	1.574	2.362	5.082	4.000	4.921	9.038	**209060**(1)
100 - 56		D 40 Alu-Line	1.181	1.181	1.575	3.503	2.625	3.149	2.204	**309041**(2)
		D 60	2.362	1.575	2.362	5.082	4.000	4.921	13.880	**209043**
		D 60 Alu-Line	2.362	1.575	2.362	5.082	4.000	4.921	4.850	**309043**(2)

(1) For light machining only.
(2) Lightweight aluminum construction only in connection with our serrated slides:
Basic D 40 Serrated Slides: Ø 200.00 mm - 520.00 mm (7.874" - 20.472").
Basic D 60 Serrated Slides: 200.00 mm - 505.00 mm (Ø 7.874" - 19.882").

H

⚠ WARNING **Assembly of modular components may cause machine damage and/or serious injury. To prevent:**
-Do not exceed the **allowable weight** for your machine tool.
-Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12 or visit www.alliedmachine.com/WohlhaupterBoringGuidelines.**

NOTE: Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

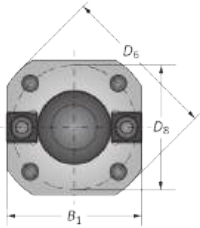
B10: ix - x
Key on B10-H: 2

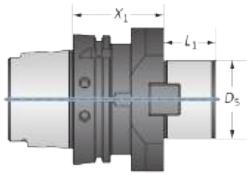
ⓜ = Metric (mm)
ⓘ = Imperial (in)

Master Shanks

HSK-A (DIN 69 893) Shanks







Metric (mm)

	Taper Size	Connection	Shank X_1	L_1	D_5	D_6	D_8	B_1	Weight (kg)	Part No.
	63	D 40	60.00	30.00	40.00	89.00	66.70	80.00	1.90	**358015**
m	100	D 40	60.00	30.00	40.00	89.00	66.70	80.00	3.60	**258021**
		D 60	70.00	40.00	60.00	129.10	101.60	125.00	5.20	**258061**
			70.00	40.00	60.00	129.10	101.60	110.00	5.00	**258098**

Imperial (in)

	Taper Size	Connection	Shank X_1	L_1	D_5	D_6	D_8	B_1	Weight (lbs)	Part No.
	63	D 40	2.362	1.181	1.575	3.504	2.626	3.150	4.200	**358015**
i	100	D 40	2.362	1.181	1.575	3.504	2.626	3.150	7.900	**258021**
		D 60	2.756	1.575	2.362	5.083	4.000	4.921	11.500	**258061**
			2.756	1.575	2.362	5.083	4.000	4.331	11.000	**258098**

H

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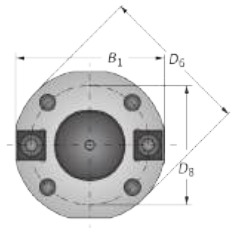
B10: ix - x
Key on B10-H: 2

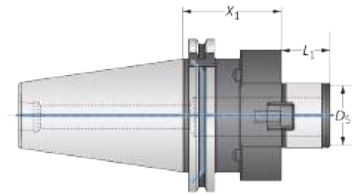
m = Metric (mm)
i = Imperial (in)

Master Shanks

CAT 40 / 50 Shanks







Metric Threads (mm)

	Taper Size	Connection	Shank X_1	L_1	D_5	D_6	D_8	B_1	Weight (kg)	Part No.
m	50	D 40	60.00	30.00	40.00	89.00	66.70	80.00	4.60	**326083**

Imperial Threads (in)

	Taper Size	Connection	Shank X_1	L_1	D_5	D_6	D_8	B_1	Weight (lbs)	Part No.
	40	D 40	1.970	1.181	1.575	3.504	2.626	3.150	4.000	**357004**
i	50	D 40	1.970	1.181	1.575	3.504	2.626	3.150	8.400	**357001**
		D 60	2.756	1.575	2.362	5.083	4.000	4.331	11.700	**357002**
		D 60	2.756	1.575	2.362	5.083	4.000	4.921	12.100	**357003**

H

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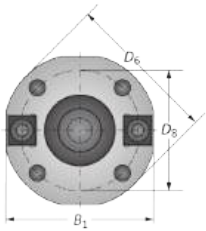
B10: ix - x
Key on B10-H: 2

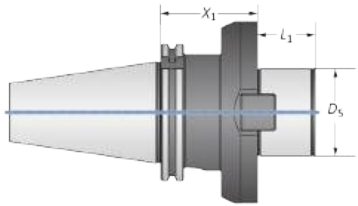
m = Metric (mm)
i = Imperial (in)

Master Shanks

SK (DIN 69 871-AD/B) Shanks







Metric (mm)

Taper Size	Connection	Shank X_1	L_1	D_5	D_6	D_8	B_1	Weight (kg)	Part No.
40	D 40	50.00	30.00	40.00	89.00	66.70	80.00	1.90	**326080***
50	D 40	50.00	30.00	40.00	89.00	66.70	80.00	4.10	**326024**
	D 60	70.00	40.00	60.00	129.10	101.60	125.00	5.80	**326087**
		70.00	40.00	60.00	129.10	101.60	110.00	5.50	**326088**

Imperial (in)

Taper Size	Connection	Shank X_1	L_1	D_5	D_6	D_8	B_1	Weight (lbs)	Part No.
40	D 40	1.969	1.181	1.575	3.504	2.626	3.150	4.190	**326080***
50	D 40	1.969	1.181	1.575	3.504	2.626	3.150	9.040	**326024**
	D 60	2.756	1.575	2.362	5.083	4.000	4.921	12.790	**326087**
		2.756	1.575	2.362	5.083	4.000	4.331	12.130	**326088**

*For light machining only.

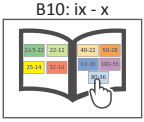
H

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B10: ix - x

Key on B10-H: 2

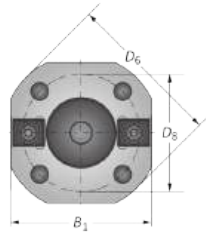


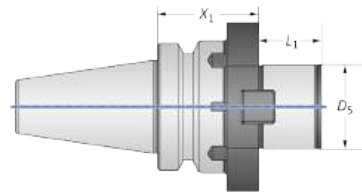
ⓜ = Metric (mm)
ⓘ = Imperial (in)

Master Shanks

BT / JIS B 6339 Shanks







Metric (mm)

	Taper Size	Connection	Shank X_1	L_1	D_5	D_6	D_8	B_1	Weight (kg)	Part No.
m	40	D 40	50.00	30.00	40.00	89.00	66.70	80.00	1.80	**326084**
	50	D 40	55.00	30.00	40.00	89.00	66.70	80.00	4.50	**326082**
		D 60	80.00	40.00	60.00	128.00	101.60	—	7.80	**326062**

Imperial (in)

	Taper Size	Connection	Shank X_1	L_1	D_5	D_6	D_8	B_1	Weight (lbs)	Part No.
i	40	D 40	1.969	1.181	1.575	3.504	2.626	3.150	4.000	**326084**
	50	D 40	2.165	1.181	1.575	3.504	2.626	3.150	9.900	**326082**
		D 60	3.150	1.575	2.362	5.039	4.000	—	17.196	**326062**

H

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B10: ix - x
Key on B10-H: 2

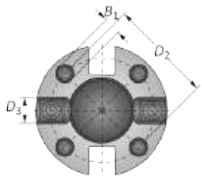
m = Metric (mm)
i = Imperial (in)

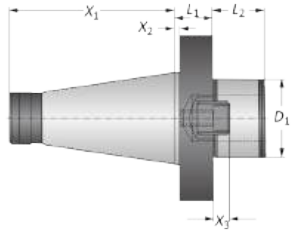
Master Shanks

NMTB Shanks | DIN 2080 Shanks

NMTB Shanks







Metric (mm)

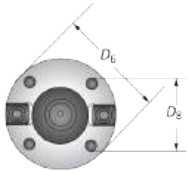
	Taper Size	Connection	Shank X_1	X_2	L_1	L_2	D_1	X_3	D_2	D_3	B_1	Weight (kg)	Part No.
ⓜ	50	D 60	126.80	3.20	29.00	40.00	60.00	12.50	101.60	25.40	M16	8.00	**198051T004480**

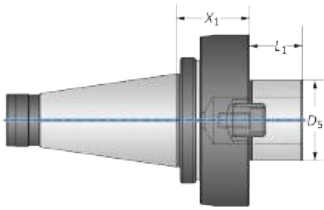
Imperial (in)

	Taper Size	Connection	Shank X_1	X_2	L_1	L_2	D_1	X_3	D_2	D_3	B_1	Weight (lbs)	Part No.
ⓘ	50	D 60	4.992	0.126	1.142	1.575	2.362	0.492	4.000	1.000	M16	17.637	**198051T004480**

DIN 2080 Shanks







Metric (mm)

	Taper Size	Connection	Shank X_1	L_1	D_5	D_6	D_8	B_1	Weight (kg)	Part No.
ⓜ	50	D 60	55.00	40.00	60.00	128.00	101.60	—	6.80	**326035**

Imperial (in)

	Taper Size	Connection	Shank X_1	L_1	D_5	D_6	D_8	B_1	Weight (lbs)	Part No.
ⓘ	50	D 60	2.165	1.575	2.362	5.039	4.000	—	14.991	**326035**

H

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-Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
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NOTE: Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

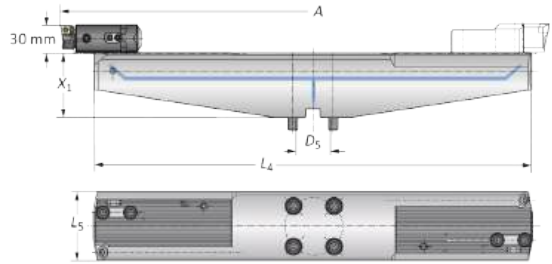
B10: ix - x
Key on B10-H: 2

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Alu-Line Basic D 40 Serrated Slides

Diameter Range: 200.00 mm - 520.00 mm (7.874" - 20.472")





Metric (mm)

Connection D_5	Boring Range A	Serrated Slide X_1	L_4	L_5	Weight (kg)	Part No.
D 40	200.00 - 280.00	75.00	190.00	80.00	2.80	**349021**
	280.00 - 360.00	75.00	270.00	80.00	3.80	**349022**
	360.00 - 440.00	75.00	350.00	80.00	5.00	**349023**
	440.00 - 520.00	75.00	430.00	80.00	6.00	**349024**

Imperial (in)

Connection D_5	Boring Range A	Serrated Slide X_1	L_4	L_5	Weight (lbs)	Part No.
D 40	7.874 - 11.024	2.953	7.480	3.149	6.173	**350021**
	11.024 - 14.173	2.953	10.620	3.149	8.377	**350022**
	14.173 - 17.323	2.953	13.770	3.149	11.023	**350023**
	17.323 - 20.472	2.953	16.320	3.149	13.228	**350024**

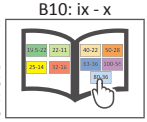
H

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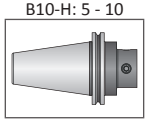
NOTE: Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

B10: ix - x

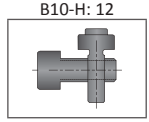
Key on B10-H: 2



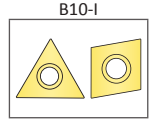
B10-H: 5 - 10



B10-H: 12



B10-I

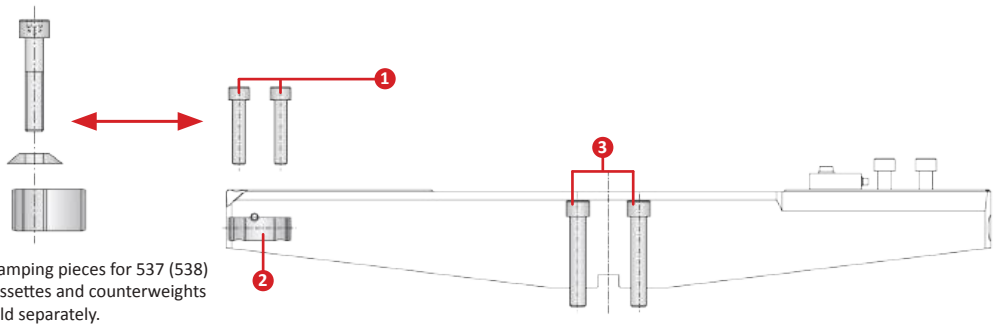


Inserts sold separately.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Alu-Line Basic D 40 Serrated Slides

Clamping Pieces



Clamping pieces for 537 (538) cassettes and counterweights sold separately.
(See page B10-H: 30.)

Clamping Pieces

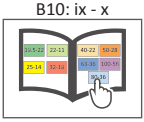
Connection	Serrated Slide Part No.	1 Cap Screw Part No.	1 Cap Screw Service Key	2 Clamping Nut Part No.	3 Thread Pin Part No.	3 Thread Pin Service Key	Cap Screw Part No.	Cap Screw Service Key
D 40	**349021/350021**	**115118**	s8 / B	**115669**	**349010**	s4 / F	**315186**	s10 / C
	349022/350022	**115118**	s8 / B	**115669**	**349011**	s4 / F	**315186**	s10 / C
	349023/350023	**115118**	s8 / B	**115669**	**349012**	s4 / F	**315186**	s10 / C
	349024/350024	**115118**	s8 / B	**115669**	**349013**	s4 / F	**315186**	s10 / C

H

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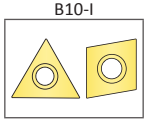
NOTE: Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

B10: ix - x



Key on B10-H: 2

B10-I

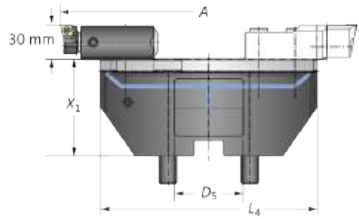


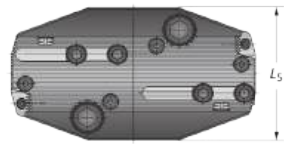
Inserts sold separately.

Alu-Line Basic D 60 Serrated Slides

Diameter Range: 200.00 mm - 505.00 mm (7.874" - 19.882")







Metric (mm)

Connection D_5	Boring Range A	Serrated Slide X_1	L_4	L_5	Weight (kg)	Part No.
D 60	200.00 - 280.00	85.00	191.00	110.00	4.10	**349051**
	275.00 - 355.00	85.00	264.00	110.00	5.20	**349052**
	350.00 - 430.00	85.00	339.00	125.00	6.90	**349053**
	425.00 - 505.00	85.00	414.00	125.00	8.00	**349054**

Imperial (in)

Connection D_5	Boring Range A	Serrated Slide X_1	L_4	L_5	Weight (lbs)	Part No.
D 60	7.874 - 11.024	3.346	7.520	4.330	9.038	**350051**
	10.827 - 13.976	3.346	10.394	4.330	11.464	**350052**
	13.780 - 16.929	3.346	13.346	4.921	15.211	**350053**
	16.732 - 19.882	3.346	16.299	4.921	17.637	**350054**

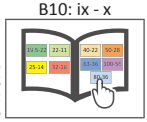
H

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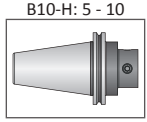
NOTE: Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

B10: ix - x

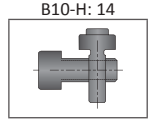
Key on B10-H: 2



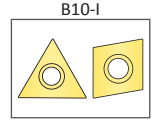
B10-H: 5 - 10



B10-H: 14



B10-I

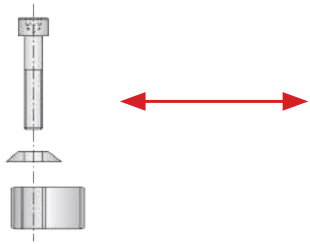


Inserts sold separately.

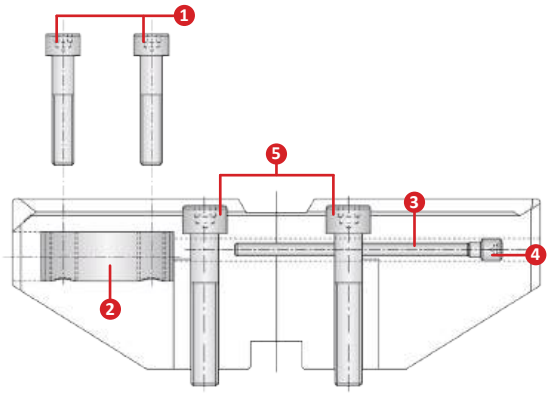
ⓜ = Metric (mm)
ⓘ = Imperial (in)

Alu-Line Basic D 60 Serrated Slides

Clamping Pieces



Clamping pieces for 537 (538) cassettes and counterweights sold separately.
(See page B10-H: 30.)



Clamping Pieces

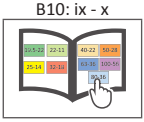
Connection	Serrated Slide Part No.	1 Cap Screw Part No.	1 Cap Screw Service Key	2 Clamping Nut	3 Adjustment Pin	4 Thread Pin Part No.	4 Thread Pin Service Key	5 Cap Screw Part No.	5 Cap Screw Service Key
D 60	**349051/350051**	**115118**	s8 / B	**115669**	**141112**	**115196**	s4 / F	**115170**	s14 / C
	349052/350052	**115118**	s8 / B	**115669**	**141113**	**115196**	s4 / F	**115170**	s14 / C
	349053/350053	**115118**	s8 / B	**115669**	**141114**	**115196**	s4 / F	**115170**	s14 / C
	349054/350054	**115118**	s8 / B	**115669**	**141115**	**115196**	s4 / F	**115170**	s14 / C

H

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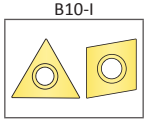
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B10: ix - x



Key on B10-H: 2

B10-I

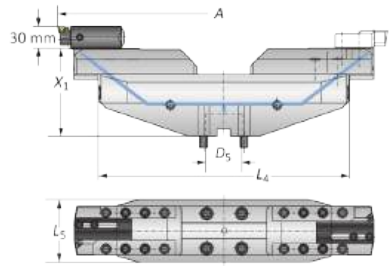


Inserts sold separately.

Alu-Line Eco D 60 Serrated Slides

Diameter Range: 465.00 mm - 1020.00 mm (18.307" - 40.157")





Metric (mm)

Connection D_5	Boring Range A	Serrated Slide X_1	Serrated Slide L_4	Serrated Slide L_5	1 Base Slide Weight (kg)	1 Base Slide Part No.	2 Serrated Slide Weight (kg)	2 Serrated Slide Style*	2 Serrated Slide Part No.
D60	465.00 - 745.00	155.00	447.00	129.00	11.80	**349005**	2.20	Alu-Line	**349015**
							5.70	Steel	**349014**
	740.00 - 1020.00	155.00	722.00	129.00	18.00	**349006**	2.20	Alu-Line	**349015**
							5.70	Steel	**349014**

Imperial (in)

Connection D_5	Boring Range A	Serrated Slide X_1	Serrated Slide L_4	Serrated Slide L_5	1 Base Slide Weight (lbs)	1 Base Slide Part No.	2 Serrated Slide Weight (lbs)	2 Serrated Slide Style*	2 Serrated Slide Part No.
D60	18.307 - 29.331	6.102	17.590	5.078	26.010	**350005**	4.850	Alu-Line	**350015**
							12.560	Steel	**350014**
	29.134 - 40.157	6.102	28.420	5.078	39.680	**350006**	4.850	Alu-Line	**350015**
							12.560	Steel	**350014**

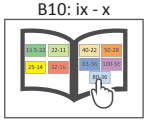
***Alu-Line serrated slides are for finish boring applications and steel serrated slides are for rough boring applications.

H

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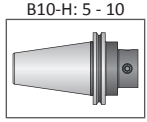
NOTE: Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

B10: ix - x

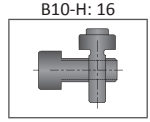


Key on B10-H: 2

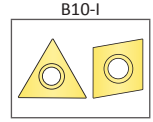
B10-H: 5 - 10



B10-H: 16



B10-I

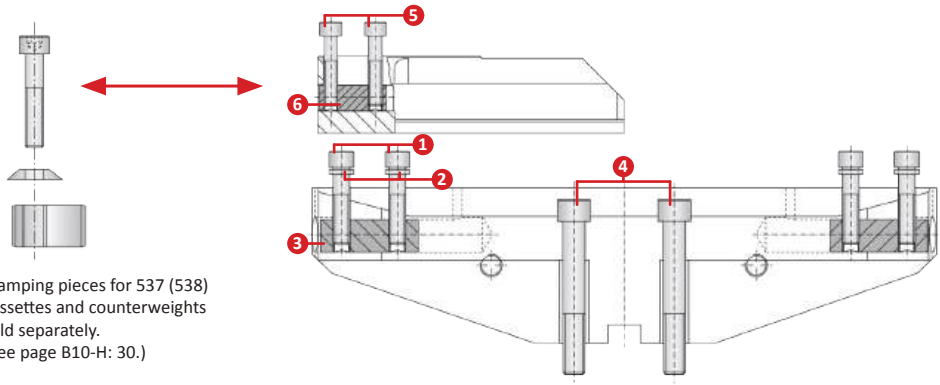


Inserts sold separately.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Alu-Line Eco D 60 Serrated Slides

Clamping Pieces



Clamping pieces for 537 (538) cassettes and counterweights sold separately.
(See page B10-H: 30.)

Base Slide Clamping Pieces

Connection	Base Slide Part No.	1 Cap Screw Part No.	1 Cap Screw Service Key	2 Disc Part No.	3 Clamping Nut Part No.	4 Cap Screw Part No.	4 Cap Screw Service Key
D 60	**349005/350005** **349006/350006**	**115771**	s10 / C	**115737**	**415181**	**077128**	s14 / C

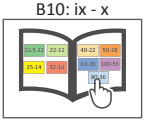
Serrated Slide Clamping Pieces

Serrated Slide Part No.	5 Cap Screw Part No.	5 Cap Screw Service Key	6 Clamping Nut Part No.
349014/350014 **349015/350015**	**115118**	s8 / B	**115669**

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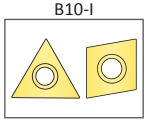
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B10: ix - x



Key on B10-H: 2

B10-I

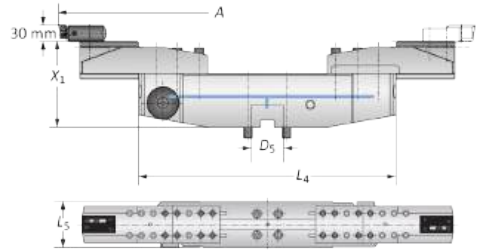


Inserts sold separately.

Alu-Line Flex D 60 Serrated Slides

Diameter Range: 500.00 mm - 3255.00 mm (19.685" - 128.150")





Metric (mm)

Connection D_5	Boring Range A	Serrated Slide X_1	Serrated Slide L_4	Serrated Slide L_5	Weight (1 + 2) (kg)	Part No. 1 Base Slide	Part No. 2 Serrated Slide
D 60	500.00 - 780.00	160.00	480.00	130.00	24.20	**349031**	**349035**
	950.00 - 1055.00	185.00	480.00	130.00	41.30	**349031**	**349036**
	775.00 - 1055.00	185.00	755.00	155.00	42.50	**349032**	**349035**
	1050.00 - 1330.00	210.00	755.00	155.00	59.60	**349032**	**349036**
	1442.00 - 1605.00	225.00	755.00	155.00	86.30	**349032**	**349037**
	1325.00 - 1605.00	210.00	1305.00	185.00	88.20	**349033**	**349035**
	1325.00 - 1880.00	235.00	1305.00	185.00	105.30	**349033**	**349036**
	1600.00 - 2155.00	250.00	1305.00	185.00	132.00	**349033**	**349037**
	1990.00 - 2430.00	255.00	1305.00	185.00	169.80	**349033**	**349038**
	2150.00 - 2430.00	235.00	2130.00	225.00	192.50	**349034**	**349035**
	2150.00 - 2705.00	260.00	2130.00	225.00	209.60	**349034**	**349036**
	2150.00 - 2980.00	275.00	2130.00	225.00	236.00	**349034**	**349037**
	2150.00 - 3255.00	280.00	2130.00	225.00	274.00	**349034**	**349038**

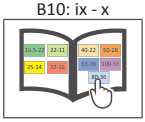
Imperial (in)

Connection D_5	Boring Range A	Serrated Slide X_1	Serrated Slide L_4	Serrated Slide L_5	Weight (1 + 2) (lbs)	Part No. 1 Base Slide	Part No. 2 Serrated Slide
D 60	19.685 - 30.709	6.299	18.898	5.118	53.360	**350031**	**350035**
	37.402 - 41.535	7.283	18.898	5.118	91.060	**350031**	**350036**
	30.512 - 41.535	7.283	29.724	6.102	93.710	**350032**	**350035**
	41.339 - 52.362	8.268	29.724	6.102	131.400	**350032**	**350036**
	56.772 - 63.189	8.858	29.724	6.102	190.200	**350032**	**350037**
	52.165 - 63.189	8.268	51.378	7.283	194.400	**350033**	**350035**
	52.165 - 74.016	9.252	51.378	7.283	232.100	**350033**	**350036**
	62.992 - 84.843	9.843	51.378	7.283	291.000	**350033**	**350037**
	78.346 - 95.669	10.039	51.378	7.283	374.400	**350033**	**350038**
	84.646 - 95.669	9.252	83.858	8.858	424.400	**350034**	**350035**
	84.646 - 106.496	10.236	83.858	8.858	462.100	**350034**	**350036**
	84.646 - 117.323	10.827	83.858	8.858	520.300	**350034**	**350037**
	84.646 - 128.150	11.024	83.858	8.858	604.100	**350034**	**350038**

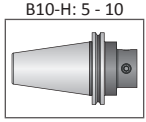
⚠ WARNING **Assembly of modular components may cause machine damage and/or serious injury. To prevent:**
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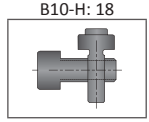
B10: ix - x
Key on B10-H: 2



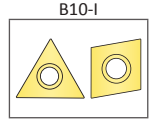
B10-H: 5 - 10



B10-H: 18



B10-I

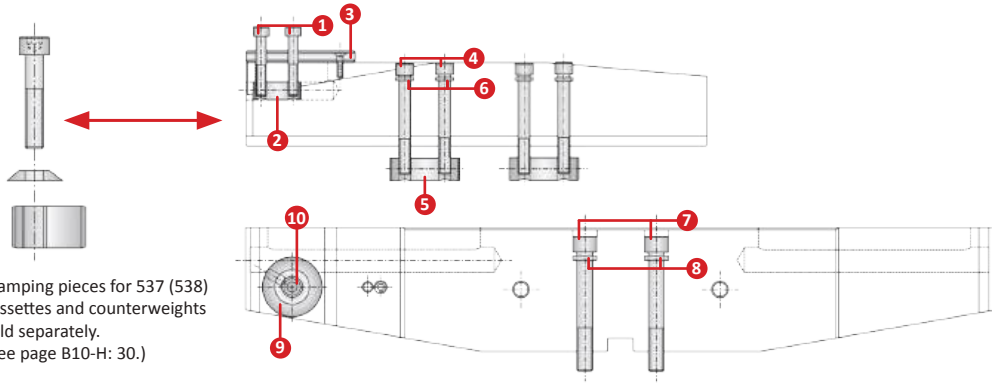


Inserts sold separately.

Ⓜ = Metric (mm)
ⓘ = Imperial (in)

Alu-Line Flex D 60 Serrated Slides

Clamping Pieces



Clamping pieces for 537 (538) cassettes and counterweights sold separately.
(See page B10-H: 30.)

Serrated Slide Clamping Pieces

Serrated Slide	1 Cap Screw		2 Clamping Nut	3 Adapter		4 Cap Screw		5 Clamping Nut	6 Disk
Part No.	Part No.	Service Key	Part No.	Part No.	Service Key	Part No.	Service Key	Part No.	Part No.
349035/350035	**115307**	s8 / B	**115669**	**349043**	s4 / B	**315186**	s10 / C	**349202**	**115737**
349036/350036	**115307**	s8 / B	**115669**	**349043**	s4 / B	**077110**	s10 / C	**415181**	**115737**
349037/350037	**115307**	s8 / B	**115669**	**349043**	s4 / B	**315403**	s10 / C	**415181**	**115737**
349038/350038	**115307**	s8 / B	**115669**	**349043**	s4 / B	**315415**	s10 / C	**415181**	**115737**

Base Slide Clamping Pieces

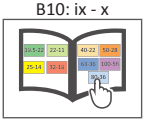
Connection	Base Slide	7 Cap Screw		8 Disk	9 Injector	10 Countersunk Screw	
	Part No.	Part No.	Service Key	Part No.	Part No.	Part No.	Service Key
D 60	**349031/350031**	**115736**	s14 / C	**068168**	**349201**	**415898**	s6 / B
	349032/350032	**415913**	s14 / C	**068168**	**349201**	**415898**	s6 / B
	349033/350033	**215509**	s14 / C	**068168**	**349201**	**415898**	s6 / B
	349034/350034	**415636**	s14 / C	**068168**	**349201**	**415898**	s6 / B

H

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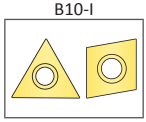
NOTE: Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

B10: ix - x



Key on B10-H: 2

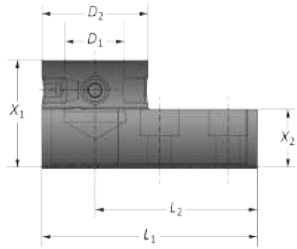
B10-I



Inserts sold separately.

Serrated Adapter with MVS Connection





Metric (mm)

MVS Connection $D_2 \mid D_1$	Mounting Adapters X_1	X_2	L_1	L_2	Weight (kg)	Part No.
50 - 28	50.00	27.00	101.00	76.00	1.30	**349046**

Imperial (in)

MVS Connection $D_2 \mid D_1$	Mounting Adapters X_1	X_2	L_1	L_2	Weight (lbs)	Part No.
50 - 28	1.969	1.063	3.976	2.992	2.866	**349046**

H

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B10: ix - x
Key on B10-H: 2

Ⓜ = Metric (mm)
ⓘ = Imperial (in)

Serrated Adapter with MVS Connection

Applications

Style		Boring Heads	Slide	Bore Range mm	Bore Range inch
Inside Boring		320005 465006 565045	349051/350051	215.00 - 313.00	8.465 - 12.323
			349052/350052	290.00 - 388.00	11.417 - 15.276
			349053/350053	365.00 - 463.00	14.370 - 18.228
			349054/350054	440.00 - 538.00	17.323 - 21.181
			349005 with 349015/ 350005 with 350015	480.00 - 778.00	18.898 - 30.630
		320005 465006 565045	349051/350051	65.00 -128.00	2.559 - 5.039
			349052/350052	105.00 - 203.00	4.134 - 7.992
			349053/350053	180.00 - 278.00	7.087 - 10.945
			349054/350054	255.00 - 353.00	10.039 - 13.898
			349005 with 349015/ 350005 with 350015	295.00 - 593.00	11.614 - 23.346
Outside Boring		320005 465006 565045	349051/350051	67.00 - 165.00	2.638 - 6.496
			349052/350052	142.00 - 240.00	5.591 - 9.449
			349053/350053	217.00 - 315.00	8.543 - 12.402
			349054/350054	292.00 - 390.00	11.496 - 15.354
			349/350005 with 349/350015	332.00 - 630.00	13.071 - 24.803
		320005 465006 565045	349051/350051	—	—
			349052/350052	0.00 - 55.00	0.000 - 2.165
			349053/350053	32.00 - 130.00	1.260 - 5.118
			349054/350054	107.00 - 205.00	4.213 - 8.071
			349005 with 349015/ 350005 with 350015	147.00 - 445.00	5.787 - 17.520

NOTE: Left-hand only spindle rotation for outside boring operations.

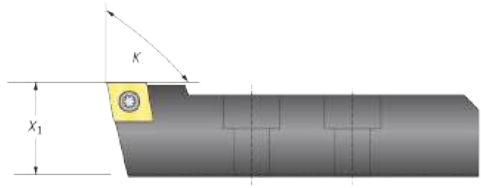
H

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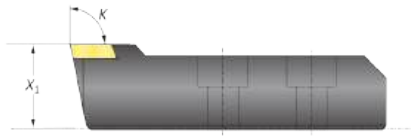
B10: ix - x
Key on B10-H: 2

Insert Holders for Rough Machining



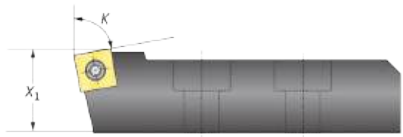
90°

Insert Holder					Weight		
			X_1				
K	Form	ISO Code	mm	in	kg	lbs	Part No.
90°	103	CC..09T3..	30.00	1.180	0.60	1.322	**149090**
	104	CC..1204..	30.00	1.180	0.60	1.322	**149099**
			29.30	1.150	0.60	1.322	**149083**
	105	CC..1605..	30.00	1.180	0.60	1.322	**149093**



90° Tangential

Insert Holder					Weight		
			X_1				
K	Form	ISO Code	mm	in	kg	lbs	Part No.
90°	05	Tangential	30.00	1.180	0.60	1.322	**149010**
			29.30	1.150	0.60	1.322	**149020**



80°

Insert Holder					Weight		
			X_1				
K	Form	ISO Code	mm	in	kg	lbs	Part No.
80°	113	SC..1204..	30.00	1.180	0.60	1.322	**149089**
	114	SC..150512	30.00	1.180	0.60	1.322	**149094**
	134	SN..1506..	30.00	1.180	0.60	1.322	**149096**

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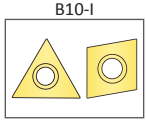
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B10: ix - x



Key on B10-H: 2

B10-I

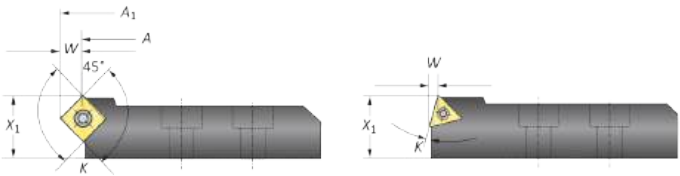


Inserts sold separately.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Insert Holders for Rough Machining

Chamfering



Metric (mm)

	Insert Holder							
	K	Form	ISO Code	X_1	A / A_1	*W*	Weight (kg)	Part No.
ⓜ	15°	163	TC..16T3..	30.00	+7.00	4.00	0.60	**201065**
	20°	163	TC..16T3..	30.00	+9.00	5.30	0.60	**201025**
	30°	163	TC..16T3..	30.00	+14.00	7.70	0.60	**201075**
	45°	114	SC..1505..	30.00	+20.00	9.90	0.60	**201015**

Imperial (in)

	Insert Holder							
	K	Form	ISO Code	X_1	A / A_1	*W*	Weight (lbs)	Part No.
ⓘ	15°	163	TC..16T3..	1.180	+0.275	0.157	1.322	**201065**
	20°	163	TC..16T3..	1.180	+0.354	0.208	1.322	**201025**
	30°	163	TC..16T3..	1.180	+0.551	0.303	1.322	**201075**
	45°	114	SC..1505..	1.180	+0.787	0.389	1.322	**201015**

Boring Range Example

Metric (mm)

	Serrated Slide		Insert Holder		
	Part No.	Bore Range	Part No.	Modified Bore Range	Total Bore Range
ⓜ	349051	200.00 - 280.00	**201065**	+7.00	207.00 - 287.00

Imperial (in)

	Serrated Slide		Insert Holder		
	Part No.	Bore Range	Part No.	Modified Bore Range	Total Bore Range
ⓘ	350051	7.874 - 11.023	**201065**	+0.280	8.150 - 11.300

NOTE: Boring range for serrated slides or base slides is found on pg. B10-H: 1.
NOTE: Additional insert holders available upon request.

H

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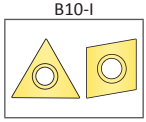
NOTE: Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

B10: ix - x



Key on B10-H: 2

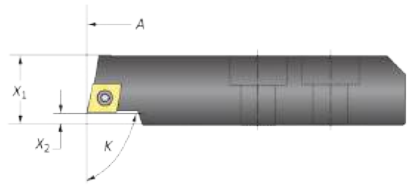
B10-I



Inserts sold separately.
ⓜ = Metric (mm)
ⓘ = Imperial (in)

Insert Holders for Rough Machining

Back-Boring



Metric (mm)

	Insert Holder							
	K	Form	ISO Code	X_1	X_2	*A*	Weight (kg)	Part No.
m	90°	104	CC..1204..	30.00	5.00	+40.00	0.80	**251010**
						+75.00	0.90	**251011**

Imperial (in)

	Insert Holder							
	K	Form	ISO Code	X_1	X_2	*A*	Weight (lbs)	Part No.
i	90°	104	CC..1204..	1.181	0.196	+1.574	1.763	**251010**
						+2.952	1.984	**251011**

Boring Range Example

Metric (mm)

	Serrated Slide		Insert Holder		
	Part No.	Bore Range	Part No.	Modified Bore Range	Total Bore Range
m	349051	200.00 - 280.00	**251010**	+40.00	240.00 - 320.00

Imperial (in)

	Serrated Slide		Insert Holder		
	Part No.	Bore Range	Part No.	Modified Bore Range	Total Bore Range
i	350051	7.874 - 11.023	**251010**	+1.600	9.450 - 12.600

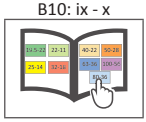
NOTE: Boring range for serrated slides or base slides is found on pg. B10-H: 1.
NOTE: Additional insert holders available upon request.

H

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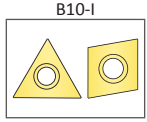
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B10: ix - x



Key on B10-H: 2

B10-I

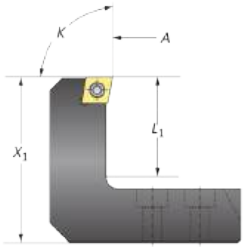


Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

Insert Holders for Rough Machining

OD Turning



Metric (mm)

	Insert Holder							
	K	Form	ISO Code	X_1	L_1	*A*	Weight (kg)	Part No.
m	90°	104	CC..1204..	90.00	62.00	-50.00	1.00	**149040**

Imperial (in)

	Insert Holder							
	K	Form	ISO Code	X_1	L_1	*A*	Weight (lbs)	Part No.
i	90°	104	CC..1204..	3.543	2.440	-1.968	2.204	**149040**

Boring Range Example

Metric (mm)

	Serrated Slide		Insert Holder		
	Part No.	Bore Range	Part No.	Modified Bore Range	Total Bore Range
m	349051	200.00 - 280.00	**149040**	-50.00	150.00 - 230.00

Imperial (in)

	Serrated Slide		Insert Holder		
	Part No.	Bore Range	Part No.	Modified Bore Range	Total Bore Range
i	350051	7.874 - 11.023	**149040**	-2.000	5.900 - 9.055

NOTE: Boring range for serrated slides or base slides is found on pg. B10-H: 1.
NOTE: Additional insert holders available upon request.

H

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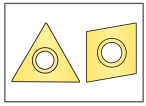
NOTE: Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

B10: ix - x



Key on B10-H: 2

B10-I

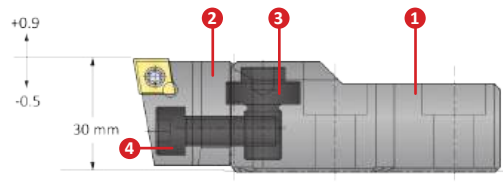


Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

Insert Holders for Rough Machining

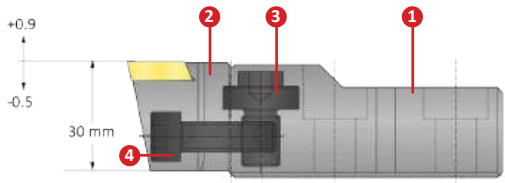
Height Adjustments



80° Rhomboid Insert Holder

Boring Range		1 Support	2 Insert Holder		3 Adjusting Screw		4 Fixing Screw	
mm	in	Part No.	Insert Form	Part No.	Part No.	Service Key	Part No.	Service Key
200.00 - 3255.00	7.874 - 128.150	**149055**	103	**149058**	**315355**	s6 / B	**070369**	s6 / B
			104	**149056**	**315355**	s6 / B	**070369**	s6 / B

NOTE: Adjusting and fixing screws will be received with support block.



Tangential Insert Holder

Boring Range		1 Support	2 Insert Holder		3 Adjusting Screw		4 Fixing Screw	
mm	in	Part No.	Insert Form	Part No.	Part No.	Service Key	Part No.	Service Key
200.00 - 3255.00	7.874 - 128.150	**149055**	05	**149085**	**315355**	s6 / B	**070369**	s6 / B

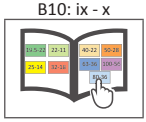
NOTE: Adjusting and fixing screws will be received with support block.

H

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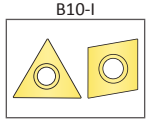
NOTE: Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

B10: ix - x



Key on B10-H: 2

B10-I

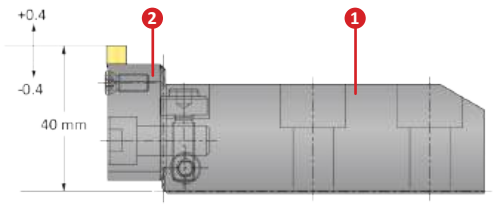


Inserts sold separately.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Insert Holders for Rough Machining

Axial Grooving



Insert Form 304

Insert Holder		1 Support	2 Insert Holder	Weight	
mm	in	Part No.	Part No.	kg	lbs
40.00	1.574	**226014**	**226031**	**0.30**	**0.661**

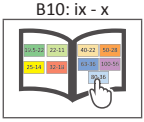
H

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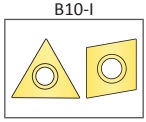
NOTE: Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

B10: ix - x

Key on B10-H: 2



B10-I



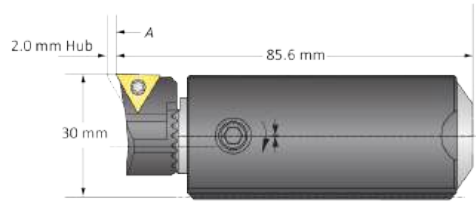
Inserts sold separately.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

537 (538) Analog Fine Boring Cassettes

Diameter Range: 100.00 mm - 3255.00 mm (3.937" - 128.150")





NOTE: Vernier adjustment accuracy of 0.002 mm (0.0001") on diameter.

Metric (mm)

	Cassette Part No.	Slide Type	Slide Boring Range *(A)*	Weight (kg)	Insert Holder Form	Insert Holder Part No.	Clamping Piece
ⓜ	537051	Serrated Tool Bodies	100.00 - 205.00	0.60	20	**210020**	**137026**
			100.00 - 205.00	0.60	101	**210063**	**137026**
			100.00 - 205.00	0.60	103	**210064**	**137026**
		Basic / Eco Slides	200.00 - 1020.00	0.60	20	**210020**	**137027**
			200.00 - 1020.00	0.60	101	**210063**	**137027**
			200.00 - 1020.00	0.60	103	**210064**	**137027**
		Flex Slides	500.00 - 3255.00	0.60	20	**210020**	**137019**
			500.00 - 3255.00	0.60	101	**210063**	**137019**
			500.00 - 3255.00	0.60	103	**210064**	**137019**

Imperial (in)

	Cassette Part No.	Slide Type	Slide Boring Range *(A)*	Weight (lbs)	Insert Holder Form	Insert Holder Part No.	Clamping Piece
ⓘ	538051	Serrated Tool Bodies	3.937 - 8.071	1.323	20	**210020**	**137026**
			3.937 - 8.071	1.323	101	**210063**	**137026**
			3.937 - 8.071	1.323	103	**210064**	**137026**
		Basic / Eco Slides	7.874 - 40.157	1.323	20	**210020**	**137027**
			7.874 - 40.157	1.323	101	**210063**	**137027**
			7.874 - 40.157	1.323	103	**210064**	**137027**
		Flex Slides	19.685 - 128.150	1.323	20	**210020**	**137019**
			19.685 - 128.150	1.323	101	**210063**	**137019**
			19.685 - 128.150	1.323	103	**210064**	**137019**

*Required serrated tool body sold separately.
NOTE: Cassette and insert holder can be used on large diameter serrated slides.
NOTE: Insert holders, inserts, and clamping pieces sold separately.

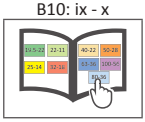
H

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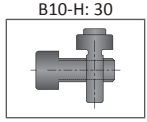
NOTE: Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

B10: ix - x

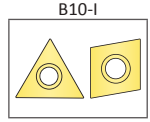
Key on B10-H: 2



B10-H: 30



B10-I



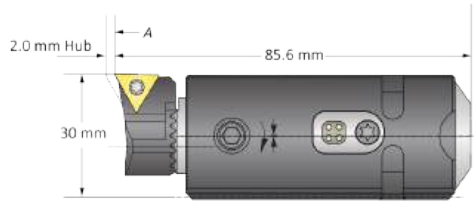
Inserts sold separately.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

537 (538) Digital Fine Boring Cassettes with 3E[TECH+]

Diameter Range: 100.00 mm - 3255.00 mm (3.937" - 128.150")





NOTE: Vernier adjustment accuracy of 0.002 mm (0.0001") on diameter.

Metric (mm)

	Cassette Part No.	Slide Type	Boring Range *(A)*	Weight (kg)	Insert Holder Form	Insert Holder Part No.	Clamping Piece
ⓜ	537052	Serrated Tool Bodies	100.00 - 205.00	0.60	20	**210020**	**137026**
			100.00 - 205.00	0.60	101	**210063**	**137026**
			100.00 - 205.00	0.60	103	**210064**	**137026**
		Basic / Eco Slides	200.00 - 1020.00	0.60	20	**210020**	**137027**
			200.00 - 1020.00	0.60	101	**210063**	**137027**
			200.00 - 1020.00	0.60	103	**210064**	**137027**
		Flex Slides	500.00 - 3255.00	0.60	20	**210020**	**137019**
			500.00 - 3255.00	0.60	101	**210063**	**137019**
			500.00 - 3255.00	0.60	103	**210064**	**137019**

Imperial (in)

	Cassette Part No.	Slide Type	Boring Range *(A)*	Weight (lbs)	Insert Holder Form	Insert Holder Part No.	Clamping Piece
ⓘ	538052	Serrated Tool Bodies	3.937 - 8.071	1.323	20	**210020**	**137026**
			3.937 - 8.071	1.323	101	**210063**	**137026**
			3.937 - 8.071	1.323	103	**210064**	**137026**
		Basic / Eco Slides	7.874 - 40.157	1.323	20	**210020**	**137027**
			7.874 - 40.157	1.323	101	**210063**	**137027**
			7.874 - 40.157	1.323	103	**210064**	**137027**
		Flex Slides	19.685 - 128.150	1.323	20	**210020**	**137019**
			19.685 - 128.150	1.323	101	**210063**	**137019**
			19.685 - 128.150	1.323	103	**210064**	**137019**

*Required serrated tool body sold separately.
NOTE: Cassette and insert holder can be used on large diameter serrated slides.
NOTE: 3E[TECH+] digital readout module, charging unit, insert holders, inserts, and clamping pieces sold separately.

3E[TECH+] Digital Readout Module

Part No.	Charging Unit*
536015	**536016**

NOTE: WEEE-Reg.-Nr. DE 15820388
*Charging unit sold separately.

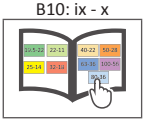


NOTE: 3E[TECH+] digital adjustment accuracy of 0.001 mm (0.00005") on diameter.

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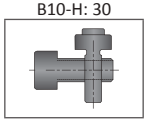
NOTE: Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

B10: ix - x

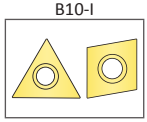


Key on B10-H: 2

B10-H: 30



B10-I

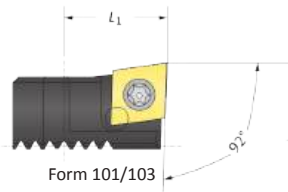


Inserts sold separately.
ⓜ = Metric (mm)
ⓘ = Imperial (in)

537 (538) Cassettes

Accessories





Metric (mm)

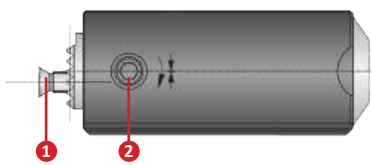
Boring Range		Insert Holder L_1	Weight (kg)	Insert Form	Part No.
m	100.00 - 3255.00	18.00	0.03	20	**211061**
				101	**211063**
				103	**211065**

Imperial (in)

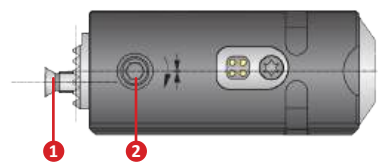
Boring Range		Insert Holder L_1	Weight (lbs)	Insert Form	Part No.
i	3.937 - 128.150	0.709	0.066	20	**211061**
				101	**211063**
				103	**211065**

NOTE: Insert holders used for abrasive materials to protect boring head against chip wash.
NOTE: When machining grey cast iron, we recommend using insert holders for abrasive materials with CBN inserts for optimized chip removal.

H



537 (538) Analog Cassette



537 (538) 3E^{TECH+} Cassette

Screws

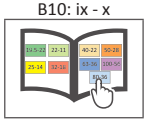
Cassette Part No.		1 Countersunk Screw		2 Clamping Screw	
Metric	Imperial	Part No.	Service Key	Part No.	Service Key
537051	**538051**	**215462**	**T20 / H**	**115249**	**s4 / F**
537052	**538052**	**215462**	**T20 / H**	**315789**	**s4 / F**

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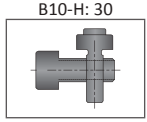
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B10: ix - x

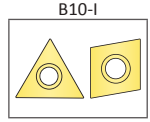
Key on B10-H: 2



B10-H: 30



B10-I

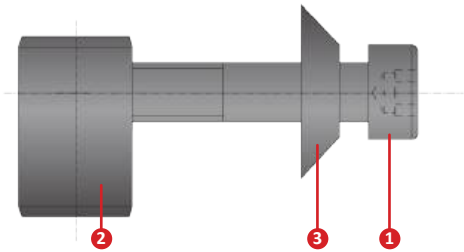


Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

537 (538) Cassettes

Accessories



537 (538) Clamping Pieces

Slide Type	Complete Part No.	Service Key		Replacement Components		
				1 Cap Screw	2 Clamping Nut	3 Disk Spring
Serrated Tool Bodies	**137026**	**115578**	**s6 / B**	**215101**	**140118**	**337105**
Basic and Eco Slides	**137027**			**215102**	**215105**	**337105**
Flex Slides	**137019**			**415900**	**215105**	**337105**

NOTE: Clamping pieces sold separately.

537 (538) Counterweights

Metric (mm)

	Boring Range	Part No.
m	100.00 - 3255.00	**537055**

Imperial (in)

	Boring Range	Part No.
i	3.937 - 128.15	**538055**

NOTE: Clamping pieces sold separately.



H

3E^{TECH+} Digital Readout Module

1. Module	2. Charging Unit*
536015	**536016**

NOTE: WEEE-Reg.-Nr. DE 15820388
*Charging unit sold separately.
NOTE: 3E^{TECH+} digital adjustment accuracy of 0.001 mm (0.00005") on diameter.



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B10: ix - x
Key on B10-H: 2

Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

SECTION

B10-I

Inserts

Replaceable Boring Inserts



Cutting-Edge Technology

Wohlhaupter has the cutting-edge technology to achieve all of your boring applications. With precision in mind, our inserts are available in multiple insert geometries, coatings, and nose radii. Wohlhaupter inserts are offered in uncoated and coated carbide, cermet, and CBN and PCD materials.

Try our easy-to-use boring insert selector available online or to download from the app store to find the perfect inserts for your boring applications.

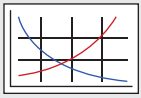
www.alliedmachine.com/bis

Applicable Industries

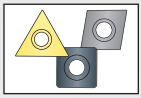
- Aerospace
- Agriculture
- Automotive
- Defense
- General Production
- Heavy Equipment
- Hydraulics
- Marine
- Medical
- Oil and Gas
- Renewable Energy/ Energy
- Tool, Mold, and Die

Reference Icons

The following icons will appear throughout the catalog to help you navigate between products.



Recommended Cutting Data
Speed and feed recommendations for optimum and safe boring.



Boring Insert Geometries
Individual insert geometry overviews for easier selection based on application.



Boring Insert Grades
Insert grade overviews combined with ISO application recommendations for simplified selection.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

WARNING means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

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Recommended Insert Application . . . 10
Form 20 . . . 11
80° Rhomboid
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Wohlhaupter Insert Product Nomenclature

Wohlhaupter Inserts

F211		01	G	L	650	W	T	WHC05
Insert Form		Corner Radius	Tolerance	Machining Direction	Geometry	Extra Options		Grade
F211 = 211	Trigon	**005**	**G**	**N** = Neutral	See the full list of geometries on **pg. 39 - 42**	**W** = Wiper Geo.		See the full list of insert grades on **pg. 43 - 46**
F020 = 20		**01**	**M**	**L** = Left		**D** = Double Tipped		
F161 = 161	Triangle	**02**	**F**	**R** = Right		**T** = Triple Tipped		
F163 = 163		**03**	**C**	**X** = Nonstandard				
F101 = 101		**04**						
F103 = 103	80° Rhomboid	**06**						
F104 = 104		**08**						
F105 = 105		**12**						
F004 = 04	Tangential	**16**						
F005 = 05		**20**						
F112 = 112		**24**						
F113 = 113	Square							
F114 = 114								
F037 = 37	55° Rhomboid							
F039 = 39								
F089 = 89								
F090 = 90	Radial Grooving							
F091 = 91								
F304 = 304	Axial Grooving							
F325 = 325	248 (249) Bars							

DIN ISO 1832

C	C	M	T	09	T3	02
Insert Form	Clearance Angle	Tolerance	Mounting Style	Insert Size	Insert Thickness	Corner Radius
C = Rhomboid 80°	**B** = 5°	**G**	**T**	See table on next page for code.	**01**	**005**
D = Rhomboid 55°	**C** = 7°	**M**	**H**		**02**	**01**
L = Rectangular	**N** = 0°	**F**	**W**		**T2**	**02**
R = Round	**P** = 11°	**C**	**X**		**03**	**03**
S = Square	**O** = 10°		**A**		**T3**	**04**
T = Triangular					**04**	**06**
V = Rhomboid 35°					**05**	**08**
W = Trigon					**06**	**12**
					07	**16**
						20
						24

ISO Insert Nomenclature

Reference Keys

Mounting Style

Code	Description	Options
T	One-sided countersunk	Cylindrical fixing hole
		Countersunk 40° - 60°
H	One-sided chipbreaker	Cylindrical fixing hole
		Countersunk 70° - 90°
W	Without chipbreaker	Cylindrical fixing hole
		Countersunk 40° - 60°
X	Special design	Special insert design
A	Without chipbreaker	Cylindrical fixing hole
		Without countersunk

Insert Thickness

Code	Metric (mm)	Imperial (in)
01	1.59	0.063
02	2.38	0.094
T2	2.78	0.109
03	3.18	0.125
T3	3.97	0.156
04	4.76	0.187
05	5.56	0.219
06	6.35	0.250
07	7.94	0.313

Corner Radius

Radius Code	Metric (mm)	Imperial (in)
005	0.05	0.002
01	0.10	0.004
02	0.20	0.008
03	0.30	0.012
04	0.40	0.016
06	0.60	0.024
08	0.80	0.031
12	1.20	0.047
16	1.60	0.063
20	2.00	0.079
24	2.40	0.094

Insert Size / Cutting Edge

Metric (mm)	Imperial (in)	C	D	R	S	T	V	W
3.97	0.156							02
5.00	0.197					F20		
6.00	0.236					F21		
6.35	0.250	06				11	11	
7.94	0.313				07			
9.52	0.375	09	11		09	16	16	
10.00	0.394		10					
12.00	0.472	12	12					
12.70	0.500	16	15		12			
15.87	0.625			15	15			
16.00	0.630			16				
19.05	0.750		19		19			
20.00	0.787			20				
25.00	0.984			25				
25.40	1.000				25			

Tolerance Group

Code	Attribute	Metric (mm)	Imperial (in)
G	Length of edge	± 0.025	± 0.001
	IC	± 0.025	± 0.001
	Thickness	± 0.13	± 0.005
M	Length of edge	± 0.08 - 0.15*	± 0.003 - 0.006*
	IC	± 0.05 - 0.10*	± 0.002 - 0.004*
	Thickness	± 0.13	± 0.005
F	Length of edge	± 0.013	± 0.001
	IC	± 0.005	± 0.0002
	Thickness	± 0.025	± 0.001
C	Length of edge	± 0.13	± 0.005
	IC	± 0.025	± 0.001
	Thickness	± 0.025	± 0.001

*Varies upon insert size.

Wohlhaupter Insert Grades

Code	Wohlhaupter Insert Grades
WHW	Uncoated carbide (HW)
WHC	Coated carbide (HC)
WHT	Uncoated cermet (HT)
WTC	Coated cermet (HC)
WCN	Ceramic cutting material (CN)
WBN	Cubic boron nitride CBN (BN)
WBC	Coated CBN (BC)
PCD	Polycrystalline diamond PCD (DP)

Application Types

Symbol	Insert Type
▼	Roughing - Main Application
▽	Roughing - Extended Application
▼▼	Universal - Main Application
▽▽	Universal - Extended Application
▼▼▼	Finishing - Main Application
▽▽▽	Finishing - Extended Application

Machining Conditions

Symbol	Machining Conditions
●	Good - Main Application
○	Good - Extended Application
◕	Average - Main Application
◔	Average - Extended Application
✱	Difficult - Main Application
✲	Difficult - Extended Application

Notes

Trigon Replaceable Inserts

Recommended Insert Application

FINISH MACHINING | FORM 211

ISO	Material	Machining Conditions	Insert Substrate	Insert Geometry	Insert Grade	Cutting Speed* m/min	Cutting Speed* SFM
P	**Low-Carbon Steel** 1010, 1020, 1025, 1522, etc.		Carbide	121	WHC111	70 - 220	230 - 722
			Carbide	121	WHC19		
			Cermet	650	WHT12		
	Alloy Steel 4140, 5140, 8640, etc.		Carbide	121	WHC111	70 - 200	230 - 656
			Carbide	650	WHC136		
			Carbide	121	WHC19		
	High-Strength Alloy 4340, 4330V, 300M, etc.		Carbide	121	WHC111	70 - 180	230 - 591
			Carbide	650	WHC136		
			Carbide	121	WHC19		
M	**Stainless Steel**		Carbide	121	WHC111	60 - 140	197 - 459
			Carbide	121	WHC19		
K	**SG / Nodular Cast Iron**		Carbide	121	WHC111	100 - 250	328 - 820
			Carbide	650	WHC05		
	Grey / White Iron		Carbide	121	WHC111	100 - 250	328 - 820
			Carbide	650	WHC05		
			CBN	748	WBN450	400 - 1000	1312 - 3281
N	**Aluminum Alloys**		Carbide	650	WHW01	300 - 600	984 - 1969
			PCD	735	PKDD30	500 - 2000	1640 - 6562
	Nonferrous Metals		Carbide	650	WHW01	300 - 600	984 - 1969
			PCD	730	PKDD30	500 - 2000	1640 - 6562
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.		Carbide	121	WHC111	30 - 70	98 - 230
			Carbide	121	WHC19		
	Titanium Alloy		Carbide	121	WHC111	40 - 90	131 - 295
			Carbide	650	WHC05		
			Carbide	121	WHC19		
H	**Hardened Steel**		Carbide	121	WHC111	30 - 60	98 - 197
			CBN	748	WBN200	50 - 100	164 - 328

*Not to exceed max recommended RPM for boring head found in corresponding Wohlhaupter Operation Manual.

Metric Feed Rate		Imperial Feed Rate	
Nose Radius (mm)	mm/rev	Nose Radius (in)	IPR
0.1	0.02 - 0.05	0.004	0.001 - 0.002
0.2	0.04 - 0.08	0.008	0.002 - 0.003

I

Deep Hole Boring Speed Adjustment

⚠ For Dynamic Boring Tool NOVI[TECH®] Length			
Boring Type	8xD	9xD	10xD
Roughing	0.80	0.60	0.40
Finishing	0.90	0.70	0.50

*Not to exceed recommended RPM printed on NOVI[TECH®] module.

Recommended Speed Example

If the recommended speed for a ***finish*** boring assembly under 5xD is 120 m/min, then the speed for a ***10xD finish boring*** assembly in the same application would be 60 m/min (120 m/min x 0.50 = 60 m/min).

5xD = 120 m/min	10xD = 60 m/min

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter.

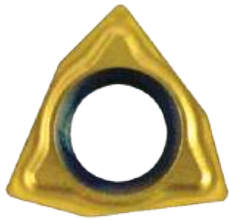
⚠ WARNING **Assembly of modular components may cause machine damage and/or serious injury. To prevent:**

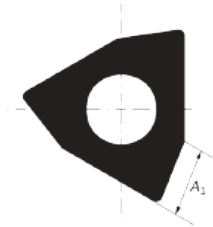
-Do not exceed the **allowable weight** for your machine tool.
-Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12 or visit www.alliedmachine.com/WohlhaupterBoringGuidelines.**

NOTE: Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com.**

Trigon Replaceable Inserts

Form 211





Insert Form	A_1
211	2.2 mm

Carbide

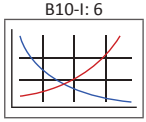
Insert Geometry	Insert Grade	Insert Form	ISO Description	Radius mm	Radius in	Description	Part No.	Application	P	M	K	N	S	H
 121	WHC111	211	WBGX0201	0.10	0.004	F211 01GN121 WHC111	**397675WHC111**	●	▼▼▼	▼▼▼	▼▼▼		▼▼▼	▼▼▼
				0.20	0.008	F211 02GN121 WHC111	**397676WHC111**							
	WHC19	211	WBGX0201	0.10	0.004	F211 01GN121 WHC19	**397675WHC19**	✱	▼▼▼	▼▼▼	▽▽▽		▼▼▼	
				0.20	0.008	F211 02GN121 WHC19	**397676WHC19**							
 650	WHC05	211	WBGX0201	0.10	0.004	F211 01GL650 WHC05	**097755WHC05**	●	▼▼▼	▽▽▽	▼▼▼		▽▽▽	
				0.20	0.008	F211 02GL650 WHC05	**097454WHC05**							
	WHC136	211	WBGX0201	0.10	0.004	F211 01GL650 WHC136	**097755WHC136**	●	▼▼▼	▼▼▼	▽▽▽		▼▼▼	
				0.20	0.008	F211 02GL650 WHC136	**097454WHC136**							
	WHC18	211	WBGX0201	0.10	0.004	F211 01GL650 WHC18	**097755WHC18**	●				▼▼▼		
	WHW01	211	WBGX0201	0.10	0.004	F211 01GL650 WHW01	**097755WHW01**	●			▽▽▽	▼▼▼	▽▽▽	
				0.20	0.008	F211 02GL650 WHW01	**097454WHW01**							

Cermet

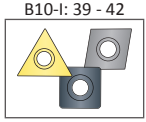
Insert Geometry	Insert Grade	Insert Form	ISO Description	Radius mm	Radius in	Description	Part No.	Application	P	M	K	N	S	H
 650	WHT12	211	WBGX0201	0.10	0.004	F211 01GL650 WHT12	**097755WHT12**	●	▼▼▼		▽▽▽	▽▽▽		
				0.20	0.008	F211 02GL650 WHT12	**097454WHT12**							

Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
211	**215377**	M2 x 0.4 x 4	**415507**	**115537**	0.6 N·m	T6

B10-I: 6



B10-I: 39 - 42



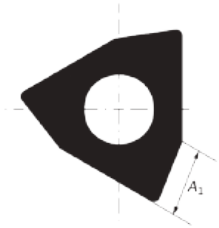
B10-I: 43 - 47



Trigon Replaceable Inserts

Form 211





Insert Form	A_1
211	6.9 mm

CBN - Cubic Boron Nitride

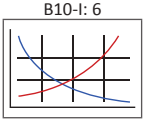
Insert Geometry	Insert Grade	Insert Form	ISO Description	Radius mm	Radius in	Description	Part No.	Application P	M	K	N	S	H
 748	WBN200	211	WBGX0201	0.10	0.004	F211 01GN748 WBN200	**097486WBN200**	●						▼▼▼
				0.20	0.008	F211 02GN748 WBN200	**097552WBN200**							
	WBN450	211	WBGX0201	0.10	0.004	F211 01GN748 WBN450	**097486WBN450**	●			▼▼▼			
				0.20	0.008	F211 02GN748 WBN450	**097552WBN450**							

PCD - Polycrystalline Diamond

Insert Geometry	Insert Grade	Insert Form	ISO Description	Radius mm	Radius in	Description	Part No.	Application P	M	K	N	S	H
 730	PKDD30	211	WBGX0201	0.10	0.004	F211 01GN730 PKDD30	**397763PKDD30**	●				▼▼▼		
				0.20	0.008	F211 02GN730 PKDD30	**097557PKDD30**							
	PKDD50	211	WBGX0201	0.20	0.008	F211 02GN730 PKDD50	**097557PKDD50**	●				▼▼▼		
 735	PKDD30	211	WBGX0201	0.20	0.008	F211 02GN735 PKDD30	**397237PKDD30**	●				▼▼▼		

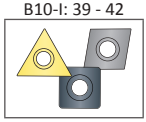
Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
211	**215377**	M2 x 0.4 x 4	**415507**	**115537**	0.6 N·m	T6

B10-I: 6



Key on B10-I: 2

B10-I: 39 - 42



B10-I: 43 - 47



Notes

Triangle Replaceable Inserts

Recommended Insert Application

FINISH MACHINING | FORM 20

ISO	Material	Machining Conditions	Insert Substrate	Insert Geometry	Insert Grade	Cutting Speed m/min	Cutting Speed SFM
P	**Low-Carbon Steel** 1010, 1020, 1025, 1522, etc.		Carbide	121	WHC19	160 - 300	525 - 984
			Cermet	650	WHT12		
			Cermet	155	WTC15		
	Alloy Steel 4140, 5140, 8640, etc.		Carbide	650	WHC136	150 - 220	492 - 722
			Carbide	121	WHC19		
			Cermet	155	WTC15		
	High-Strength Alloy 4340, 4330V, 300M, etc.		Carbide	121	WHC111	100 - 180	328 - 591
			Carbide	121	WHC19		
			Cermet	155	WTC15		
M	**Stainless Steel**		Carbide	121	WHC111	90 - 160	295 - 525
			Carbide	121	WHC19		
K	**SG / Nodular Cast Iron**		Carbide	121	WHC111	150 - 250	492 - 820
			Carbide	650	WHC05		
	Grey / White Iron		Carbide	121	WHC111	180 - 320	591 - 1050
			Carbide	650	WHC05		
			CBN	748	WBN450	400 - 1000	1312 - 3281
N	**Aluminum Alloys**		Carbide	128	WHW16	250 - 800	820 - 2625
			PCD	735	PKDD30	500 - 2000	1640 - 6562
	Nonferrous Metals		Carbide	128	WHW16	200 - 600	656 - 1969
			PCD	730	PKDD30	500 - 2000	1640 - 6562
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.		Carbide	121	WHC111	30 - 70	98 - 230
			Carbide	121	WHC19		
	Titanium Alloy		Carbide	121	WHC111	40 - 90	131 - 295
			Carbide	650	WHC05		
			Carbide	121	WHC19		
H	**Hardened Steel**		Carbide	121	WHC111	40 - 80	131 - 262
			CBN	741	WBN200	70 - 180	230 - 591
			CBN	742T	WBC300		

*Not to exceed max recommended RPM for boring head found in corresponding Wohlhaupter Operation Manual.

Metric Feed Rate		Imperial Feed Rate	
Nose Radius (mm)	mm/rev	Nose Radius (in)	IPR
0.1	0.02 - 0.05	0.004	0.001 - 0.002
0.2	0.04 - 0.08	0.008	0.002 - 0.003
0.3	0.07 - 0.12	0.012	0.003 - 0.005
0.4	0.10 - 0.16	0.016	0.004 - 0.006

Deep Hole Boring Speed Adjustment

⚠ For Dynamic Boring Tool NOVI[TECH®] Length			
Boring Type	**8xD**	**9xD**	**10xD**
Roughing	0.80	0.60	0.40
Finishing	0.90	0.70	0.50

*Not to exceed recommended RPM printed on NOVI[TECH®] module.

Recommended Speed Example

If the recommended speed for a ***finish*** boring assembly under 5xD is 120 m/min, then the speed for a ***10xD finish boring*** assembly in the same application would be 60 m/min (120 m/min x 0.50 = 60 m/min).

5xD = 120 m/min	10xD = 60 m/min

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter.

⚠ WARNING **Assembly of modular components may cause machine damage and/or serious injury. To prevent:**

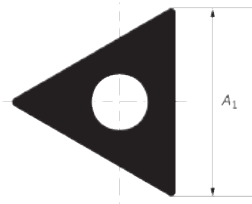
-Do not exceed the **allowable weight** for your machine tool.
-Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12 or visit www.alliedmachine.com/WohlhaupterBoringGuidelines.**

NOTE: Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com.**

Triangle Replaceable Inserts

Form 20





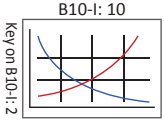
Insert Form	A_1
20	8.5 mm

Carbide

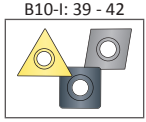
Insert			ISO	Radius				Application						
Geometry	Grade	Form	Description	mm	in	Description	Part No.		P	M	K	N	S	H
121	WHC111	20	TOGX0802	0.10	0.004	F020 01GN121 WHC111	**397672WHC111**	●	▼▼▼	▼▼▼	▼▼▼		▼▼▼	▼▼▼
				0.20	0.008	F020 02GN121 WHC111	**397673WHC111**							
				0.40	0.016	F020 04GN121 WHC111	**397674WHC111**							
	WHC19	20	TOGX0802	0.10	0.004	F020 01GN121 WHC19	**397672WHC19**	✱	▼▼▼	▼▼▼	▽▽▽		▼▼▼	
				0.20	0.008	F020 02GN121 WHC19	**397673WHC19**							
				0.40	0.016	F020 04GN121 WHC19	**397674WHC19**							
128	WHC05	20	TOGX0802	0.10	0.004	F020 01GN128 WHC05	**297473WHC05**	●	▼▼▼	▽▽▽	▼▼▼		▽▽▽	
				0.20	0.008	F020 02GN128 WHC05	**297541WHC05**							
				0.40	0.016	F020 04GN128 WHC05	**297542WHC05**							
	WHC18	20	TOGX0802	0.20	0.008	F020 02GN128 WHC18	**297541WHC18**	●				▼▼▼		
				0.40	0.016	F020 04GN128 WHC18	**297542WHC18**							
	WHW16	20	TOGX0802	0.10	0.004	F020 01GN128 WHW16	**297473WHW16**	●			▽▽▽	▼▼▼	▽▽▽	
				0.20	0.008	F020 02GN128 WHW16	**297541WHW16**							
				0.40	0.016	F020 04GN128 WHW16	**297542WHW16**							
650	WHC05	20	TOGX0802	0.10	0.004	F020 01GL650 WHC05	**097153WHC05**	●	▼▼▼	▽▽▽	▼▼▼		▽▽▽	
				0.20	0.008	F020 02GL650 WHC05	**097546WHC05**							
				0.30	0.012	F020 03GL650 WHC05	**097154WHC05**							
				0.40	0.016	F020 04GL650 WHC05	**097599WHC05**							
	WHC136	20	TOGX0802	0.10	0.004	F020 01GL650 WHC136	**097153WHC136**	●	▼▼▼	▼▼▼	▽▽▽		▼▼▼	
				0.20	0.008	F020 02GL650 WHC136	**097546WHC136**							
				0.30	0.012	F020 03GL650 WHC136	**097154WHC136**							
				0.40	0.016	F020 04GL650 WHC136	**097599WHC136**							
				0.80	0.031	F020 08GL650 WHC136	**397764WHC136**							
	WHW01	20	TOGX0802	0.10	0.004	F020 01GL650 WHW01	**097153WHW01**	●			▽▽▽	▼▼▼	▽▽▽	
				0.20	0.008	F020 02GL650 WHW01	**097546WHW01**							
				0.30	0.012	F020 03GL650 WHW01	**097154WHW01**							
				0.40	0.016	F020 04GL650 WHW01	**097599WHW01**							
				0.80	0.031	F020 08GL650 WHW01	**397764WHW01**							
840	WHC05	20	TOGX0802	0.20	0.008	F020 02GR840 WHC05	**097701WHC05**	●	▼▼▼	▽▽▽	▼▼▼		▽▽▽	
121W	WHC111	20	TOGX0802	0.20	0.008	F020 02GX121W WHC111	**397916WHC111**	●	▼▼▼	▼▼▼	▼▼▼		▼▼▼	▼▼▼
				0.40	0.016	F020 04GX121W WHC111	**397917WHC111**							

Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
20	**115535**	M2 x 0.4 x 5	**415508**	**115591**	0.9 N·m	T7

B10-I: 10



B10-I: 39 - 42



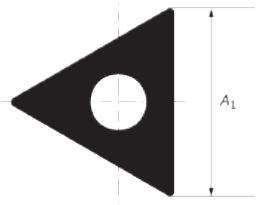
B10-I: 43 - 47



Triangle Replaceable Inserts

Form 20





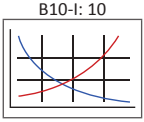
Insert Form	A_1
20	8.5 mm

Cermet

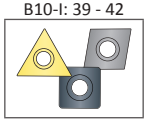
Insert			ISO	Radius				Application						
Geometry	Grade	Form	Description	mm	in	Description	Part No.		P	M	K	N	S	H
 155	WTC15	20	TOMX0802	0.20	0.008	F020 02MN155 WTC15	**397688WTC15**	●	▼▼▼	▽▽▽	▽▽▽			
				0.40	0.016	F020 04MN155 WTC15	**397689WTC15**							
 650	WHT12	20	TOGX0802	0.10	0.004	F020 01GL650 WHT12	**097153WHT12**	●	▼▼▼		▽▽▽	▽▽▽		
				0.20	0.008	F020 02GL650 WHT12	**097546WHT12**							
				0.40	0.016	F020 04GL650 WHT12	**097599WHT12**							
	WTC121	20	TOGX0802	0.10	0.004	F020 01GL650 WTC121	**097153WTC121**	●	▼▼▼	▽▽▽				
				0.20	0.008	F020 02GL650 WTC121	**097546WTC121**							
				0.40	0.016	F020 04GL650 WTC121	**097599WTC121**							
 840	WHT12	20	TOGX0802	0.20	0.008	F020 02GR840 WHT12	**097701WHT12**	●	▼▼▼		▽▽▽	▽▽▽		

Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
20	**115535**	M2 x 0.4 x 5	**415508**	**115591**	0.9 N·m	T7

B10-I: 10



B10-I: 39 - 42



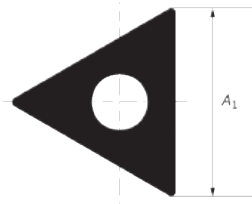
B10-I: 43 - 47



Triangle Replaceable Inserts

Form 20





Insert Form	A_1
20	8.5 mm

CBN - Cubic Boron Nitride

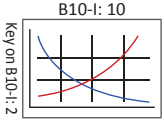
Insert Geometry	Insert Grade	Insert Form	ISO Description	Radius mm	Radius in	Description	Part No.	Application P	M	K	N	S	H
 741	WBN200	20	TOGX0802	0.20	0.008	F020 02GN741 WBN200	**297260WBN200**	●					▼▼▼
				0.40	0.016	F020 04GN741 WBN200	**297262WBN200**	●					▼▼▼
 745	WBN200	20	TOGX0802	0.10	0.004	F020 01GN745 WBN200	**297259WBN200**	●					▼▼▼
 748	WBN450	20	TOGX0802	0.20	0.008	F020 02GN748 WBN450	**297780WBN450**	●		▼▼▼			
				0.40	0.016	F020 04GN748 WBN450	**297782WBN450**	●		▼▼▼			
 768	WBN450	20	TOGX0802	0.20	0.008	F020 02GN768 WBN450	**397146WBN450**	●		▼▼▼			
				0.40	0.016	F020 04GN768 WBN450	**397192WBN450**	●		▼▼▼			
 742T	WBC300	20	TOGX0802	0.20	0.008	F020 02GN742T WBC300	**397961WBC300**	●		▼▼▼			▼▼▼
				0.40	0.016	F020 04GN742T WBC300	**397551WBC300**	●		▼▼▼			▼▼▼
	WBN448	20	TOGX0802	0.20	0.008	F020 02GN742T WBN448	**397961WBN448**	●		▼▼▼			
				0.40	0.016	F020 04GN742T WBN448	**397551WBN448**	●		▼▼▼			

PCD - Polycrystalline Diamond

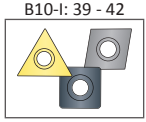
Insert Geometry	Insert Grade	Insert Form	ISO Description	Radius mm	Radius in	Description	Part No.	Application P	M	K	N	S	H
 720	PKDD30	20	TOGX0802	0.20	0.008	F020 02GN720 PKDD30	**297692PKDD30**	●			▼▼▼		
				0.40	0.016	F020 04GN720 PKDD30	**297845PKDD30**	●			▼▼▼		
 730	PKDD30	20	TOGX0802	0.20	0.008	F020 02GN730 PKDD30	**097487PKDD30**						
				0.40	0.016	F020 04GN730 PKDD30	**097686PKDD30**	●			▼▼▼		
				0.80	0.031	F020 08GN730 PKDD30	**097877PKDD30**						
	PKDD50	20	TOGX0802	0.20	0.008	F020 02GN730 PKDD50	**097487PKDD50**						
				0.40	0.016	F020 04GN730 PKDD50	**097686PKDD50**	●			▼▼▼		
 735	PKDD30	20	TOGX0802	0.20	0.008	F020 02GN735 PKDD30	**397133PKDD30**	●			▼▼▼		
				0.40	0.016	F020 04GN735 PKDD30	**397301PKDD30**	●			▼▼▼		

Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
20	**115535**	M2 x 0.4 x 5	**415508**	**115591**	0.9 N·m	T7

B10-I: 10



B10-I: 39 - 42



B10-I: 43 - 47



Notes

80° Rhomboid Replaceable Inserts

Recommended Insert Application

ROUGH MACHINING | FORMS 101, 103, 104 AND 105

ISO	Material	Machining Conditions	Insert: Substrate	Insert: Geometry	Insert: Grade	Cutting Speed*: m/min	Cutting Speed*: SFM
P	**Low-Carbon Steel** 1010, 1020, 1025, 1522, etc.	● ◔	Carbide	109	WHC136	150 - 250	492 - 820
		● ◔	Carbide	192	WHC164		
		● ◔	Carbide	199	WHC114		
	Alloy Steel 4140, 5140, 8640, etc.	● ◔	Carbide	109	WHC136	150 - 200	492 - 656
		● ◔	Carbide	192	WHC164		
		● ◔	Carbide	199	WHC114		
	High-Strength Alloy 4340, 4330V, 300M, etc.	● ◔	Carbide	199	WHC114	100 - 160	328 - 525
		●	Carbide	158	WHC111		
		✱	Carbide	192	WHC19		
M	**Stainless Steel**	● ◔	Carbide	199	WHC114	80 - 140	262 - 459
		●	Carbide	146	WHC88		
		✱	Carbide	192	WHC19		
K	**SG / Nodular Cast Iron**	◔	Carbide	146	WHC81	150 - 230	492 - 755
		◔	Carbide	192	WHC164		
		◔	Ceramic	711	WCN40	200 - 400	656 - 1312
	Grey / White Iron	● ◔	Carbide	192	WHC164	160 - 280	525 - 919
		◔	Carbide	146	WHC81		
		◔	Ceramic	711	WCN40	400 - 1000	1312 - 3281
N	**Aluminum Alloys**	◔	Carbide	129	WHW16	250 - 800	820 - 2625
		◔	Carbide	860	WHW01		
	Nonferrous Metals	◔	Carbide	129	WHW16	200 - 600	656 - 1969
		◔	Carbide	127	WHW16		
		◔	Carbide	860	WHW01		
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	◔	Carbide	199	WHC114	30 - 60	98 - 197
		✱	Carbide	192	WHC19		
	Titanium Alloy	●	Carbide	200	WHC111	40 - 70	131 - 230
		●	Carbide	860	WHC05		
		◔	Carbide	199	WHC114		
H	**Hardened Steel**	●	Carbide	158	WHC111	40 - 60	131 - 197

*Not to exceed max recommended RPM for boring head found in corresponding Wohlhaupter Operation Manual.

Metric Feed Rate: Nose Radius (mm)	Metric Feed Rate: mm/rev	Imperial Feed Rate: Nose Radius (in)	Imperial Feed Rate: IPR
0.1	0.10 - 0.35	0.004	0.004 - 0.014
0.2		0.008	
0.4		0.016	

Deep Hole Boring Speed Adjustment

⚠ For Dynamic Boring Tool NOVI[TECH®] Length			
Boring Type	**8xD**	**9xD**	**10xD**
Roughing	0.80	0.60	0.40
Finishing	0.90	0.70	0.50

*Not to exceed recommended RPM printed on NOVI[TECH®] module.

Recommended Speed Example

If the recommended speed for a ***finish*** boring assembly under 5xD is 120 m/min, then the speed for a ***10xD finish boring*** assembly in the same application would be 60 m/min (120 m/min x 0.50 = 60 m/min).

5xD = 120 m/min	10xD = 60 m/min

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter.

⚠ WARNING **Assembly of modular components may cause machine damage and/or serious injury. To prevent:**

-Do not exceed the **allowable weight** for your machine tool.
-Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12 or visit www.alliedmachine.com/WohlhaupterBoringGuidelines.**

NOTE: Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com.**

80° Rhomboid Replaceable Inserts

Recommended Insert Application

FINISH MACHINING | FORMS 101, AND 103

ISO	Material	Machining Conditions	Insert: Substrate	Insert: Geometry	Insert: Grade	Cutting Speed*: m/min	Cutting Speed*: SFM
P	**Low-Carbon Steel** 1010, 1020, 1025, 1522, etc.		Carbide	109	WHC136	160 - 300	525 - 984
			Cermet	112	WHT32		
			Cermet	155	WTC15		
	Alloy Steel 4140, 5140, 8640, etc.		Carbide	109	WHC136	150 - 220	492 - 722
			Cermet	112	WHT32		
	High-Strength Alloy 4340, 4330V, 300M, etc.		Carbide	199	WHC114	100 - 180	328 - 591
			Carbide	145	WHC111		
			Carbide	192	WHC19		
M	**Stainless Steel**		Carbide	199	WHC114	80 - 160	262 - 525
			Carbide	145	WHC111		
			Carbide	192	WHC19		
K	**SG / Nodular Cast Iron**		Carbide	146	WHC81	150 - 250	492 - 820
			Carbide	192	WHC164		
	Grey / White Iron		Carbide	146	WHC81	180 - 320	591 - 1050
			Carbide	192	WHC164		
			CBN	748	WBN450	400 - 1000	1312 - 3281
N	**Aluminum Alloys**		Carbide	129	WHW16	250 - 800	820 - 2625
			PCD	735	PKDD30	500 - 2000	1640 - 6562
	Nonferrous Metals		Carbide	127	WHW16	250 - 600	820 - 1969
			PCD	730	PKDD30	500 - 2000	1640 - 6562
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.		Carbide	145	WHC111	30 - 70	98 - 230
			Carbide	199	WHC114		
	Titanium Alloy		Carbide	200	WHC111	40 - 90	131 - 295
			Carbide	199	WHC114		
H	**Hardened Steel**		Carbide	158	WHC111	40 - 80	131 - 262
			CBN	742	WBN300	60 - 180	197 - 591
			CBN	742D	WBN300		
			CBN	741	WBN200		

*Not to exceed max recommended RPM for boring head found in corresponding Wohlhaupter Operation Manual.

Metric Feed Rate		Imperial Feed Rate	
Nose Radius (mm)	mm/rev	Nose Radius (in)	IPR
0.1	0.02 - 0.05	0.004	0.001 - 0.002
0.2	0.04 - 0.08	0.008	0.002 - 0.003
0.4	0.10 - 0.16	0.016	0.004 - 0.006

Deep Hole Boring Speed Adjustment

⚠ For Dynamic Boring Tool NOVI$^{TECH®}$ Length			
Boring Type	8xD	9xD	10xD
Roughing	0.80	0.60	0.40
Finishing	0.90	0.70	0.50

*Not to exceed recommended RPM printed on NOVI$^{TECH®}$ module.

Recommended Speed Example

If the recommended speed for a ***finish*** boring assembly under 5xD is 120 m/min, then the speed for a ***10xD finish boring*** assembly in the same application would be 60 m/min (120 m/min x 0.50 = 60 m/min).

5xD = 120 m/min	10xD = 60 m/min

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter.

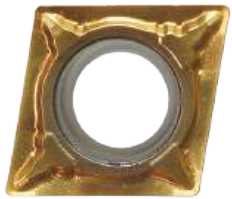
⚠ WARNING **Assembly of modular components may cause machine damage and/or serious injury. To prevent:**

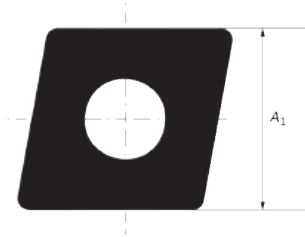
-Do not exceed the **allowable weight** for your machine tool.
-Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12 or visit www.alliedmachine.com/WohlhaupterBoringGuidelines.**

NOTE: Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com.**

80° Rhomboid Replaceable Inserts

Forms 101, 103, 104 and 105





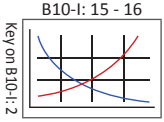
Insert Form	A_1
101	6.3 mm
103	9.5 mm
104	12.7 mm
105	15.8 mm

Carbide

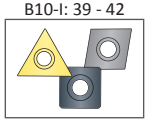
Insert			ISO	Radius				Application						
Geometry	Grade	Form	Description	mm	in	Description	Part No.		P	M	K	N	S	H
 108	WHC98	101	CCMT0602	0.20	0.008	F101 02MN108 WHC98	**297833WHC98**	●	▼▼▼	▼▼▼	▽▽▽			
				0.40	0.016	F101 04MN108 WHC98	**297537WHC98**							
		103	CCMT09T3	0.40	0.016	F103 04MN108 WHC98	**297891WHC98**							
				0.80	0.031	F103 08MN108 WHC98	**397118WHC98**							
		104	CCMT1204	0.40	0.016	F104 04MN108 WHC98	**297725WHC98**							
				0.80	0.031	F104 08MN108 WHC98	**297724WHC98**							
 109	WHC136	101	CCMT0602	0.20	0.008	F101 02MN109 WHC136	**397352WHC136**	●	▼▼▼	▼▼▼	▽▽▽		▼▼▼	
				0.40	0.016	F101 04MN109 WHC136	**397765WHC136**							
		103	CCMT09T3	0.40	0.016	F103 04MN109 WHC136	**397354WHC136**							
				0.80	0.031	F103 08MN109 WHC136	**397355WHC136**							
		104	CCMT1204	0.40	0.016	F104 04MN109 WHC136	**397356WHC136**							
				0.80	0.031	F104 08MN109 WHC136	**397357WHC136**							
 126	WHC136	105	CCMT1605	0.80	0.031	F105 08MN126 WHC136	**297557WHC136**	●	▼▼▼	▼▼▼	▽▽▽		▼▼▼	
				1.20	0.047	F105 12MN126 WHC136	**297558WHC136**							
 127	WHC18	101	CCGT0602	0.20	0.008	F101 02GN127 WHC18	**097529WHC18**	●				▼▼▼		
				0.40	0.016	F101 04GN127 WHC18	**097445WHC18**							
		103	CCGT09T3	0.20	0.008	F103 02GN127 WHC18	**297550WHC18**							
				0.40	0.016	F103 04GN127 WHC18	**097497WHC18**							
		104	CCGT1204	0.40	0.016	F104 04GN127 WHC18	**097496WHC18**							
	WHW16	101	CCGT0602	0.20	0.008	F101 02GN127 WHW16	**097529WHW16**	●			▽▽▽	▼▼▼	▽▽▽	
				0.40	0.016	F101 04GN127 WHW16	**097445WHW16**							
		103	CCGT09T3	0.20	0.008	F103 02GN127 WHW16	**297550WHW16**							
				0.40	0.016	F103 04GN127 WHW16	**097497WHW16**							
		104	CCGT1204	0.40	0.016	F104 04GN127 WHW16	**097496WHW16**							

Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
101	**115676**	M2.5 x 0.45 x 5	**415514**	**115590**	1.2 N·m	T8
103	**115672** (<Ø37 mm)	M3.5 x 0.6 x 7.5	**415510**	**115664**	3.0 N·m	T15
	115673 (>Ø36 mm)	M3.5 x 0.6 x 9				
104	**215149**	M4.5 x 0.75 x 11.5	**415543**	**215150**	5.0 N·m	T20
105	**215149**	M4.5 x 0.75 x 11.5	**415543**	**215150**	5.0 N·m	T20

B10-I: 15 - 16



B10-I: 39 - 42

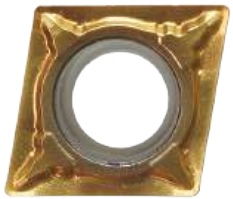


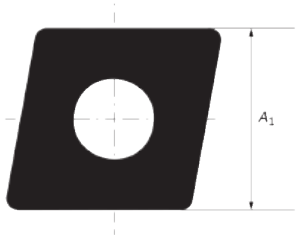
B10-I: 43 - 47



80° Rhomboid Replaceable Inserts

Forms 101, 103, 104 and 105





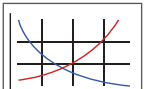
Insert Form	A_1
101	6.3 mm
103	9.5 mm
104	12.7 mm
105	15.8 mm

Carbide

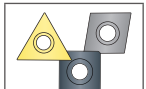
Insert Geometry	Insert Grade	Insert Form	ISO Description	Radius mm	Radius in	Description	Part No.	Application
	WHC05	101	CCGT0602	0.05	0.002	F101 005GN129 WHC05	**397738WHC05**	● P M K S
				0.10	0.004	F101 01GN129 WHC05	**397737WHC05**	
				0.20	0.008	F101 02GN129 WHC05	**297545WHC05**	
				0.40	0.016	F101 04GN129 WHC05	**297546WHC05**	
		103	CCGT09T3	0.20	0.008	F103 02GN129 WHC05	**297547WHC05**	
				0.40	0.016	F103 04GN129 WHC05	**297548WHC05**	
129	WHC18	101	CCGT0602	0.20	0.008	F101 02GN129 WHC18	**297545WHC18**	● N
				0.40	0.016	F101 04GN129 WHC18	**297546WHC18**	
		103	CCGT09T3	0.20	0.008	F103 02GN129 WHC18	**297547WHC18**	
				0.40	0.016	F103 04GN129 WHC18	**297548WHC18**	
	WHW16	101	CCGT0602	0.05	0.002	F101 005GN129 WHW16	**397738WHW16**	● K N S
				0.10	0.004	F101 01GN129 WHW16	**397737WHW16**	
				0.20	0.008	F101 02GN129 WHW16	**297545WHW16**	
				0.40	0.016	F101 04GN129 WHW16	**297546WHW16**	
		103	CCGT09T3	0.20	0.008	F103 02GN129 WHW16	**297547WHW16**	
				0.40	0.016	F103 04GN129 WHW16	**297548WHW16**	
145	WHC111	101	CCGT0602	0.40	0.016	F101 04GN145 WHC111	**297980WHC111**	● P M K S H
				0.80	0.031	F101 08GN145 WHC111	**397742WHC111**	
		103	CCGT09T3	0.40	0.016	F103 04GN145 WHC111	**297994WHC111**	
				0.80	0.031	F103 08GN145 WHC111	**297995WHC111**	
	WHC81	101	CCMT0602	0.40	0.016	F101 04MN146 WHC81	**397953WHC81**	● P K H
		103	CCMT09T3	0.40	0.016	F103 04MN146 WHC81	**397142WHC81**	
				0.80	0.031	F103 08MN146 WHC81	**397946WHC81**	
		104	CCMT1204	0.80	0.031	F104 08MN146 WHC81	**397143WHC81**	
146	WHC88	101	CCMT0602	0.40	0.016	F101 04MN146 WHC88	**397953WHC88**	⇄ P M K S
		103	CCMT09T3	0.40	0.016	F103 04MN146 WHC88	**397142WHC88**	
				0.80	0.031	F103 08MN146 WHC88	**397946WHC88**	
		104	CCMT1204	0.40	0.016	F104 04MN146 WHC88	**397469WHC88**	
				0.80	0.031	F104 08MN146 WHC88	**397143WHC88**	
				1.20	0.047	F104 12MN146 WHC88	**397939WHC88**	

Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
101	**115676**	M2.5 x 0.45 x 5	**415514**	**115590**	1.2 N·m	T8
103	**115672** (<Ø37 mm)	M3.5 x 0.6 x 7.5	**415510**	**115664**	3.0 N·m	T15
	115673 (>Ø36 mm)	M3.5 x 0.6 x 9				
104	**215149**	M4.5 x 0.75 x 11.5	**415543**	**215150**	5.0 N·m	T20
105	**215149**	M4.5 x 0.75 x 11.5	**415543**	**215150**	5.0 N·m	T20

B10-I: 15 - 16



B10-I: 39 - 42

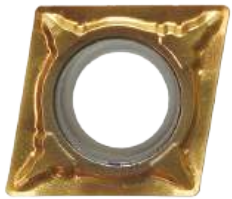


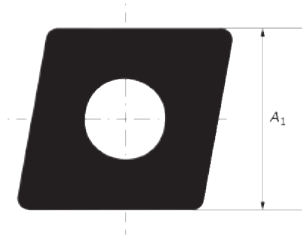
B10-I: 43 - 47



80° Rhomboid Replaceable Inserts

Forms 101, 103, 104 and 105





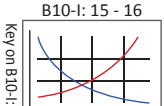
Insert Form	A_1
101	6.3 mm
103	9.5 mm
104	12.7 mm
105	15.8 mm

Carbide

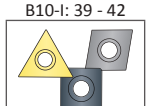
Insert			ISO	Radius				Application						
Geometry	Grade	Form	Description	mm	in	Description	Part No.		P	M	K	N	S	H
158	WHC05	105	CCMT1605	0.80	0.031	F105 08MN158 WHC05	**297559WHC05**	●	▼▽	▽▽▽	▼▼		▽▽▽	
	WHC111	101	CCMT0602	0.20	0.008	F101 02MN158 WHC111	**297248WHC111**							
				0.40	0.016	F101 04MN158 WHC111	**297377WHC111**							
		103	CCMT09T3	0.40	0.016	F103 04MN158 WHC111	**297239WHC111**	●	▼▼	▼▼	▼▼		▼▼	▼▼
				0.80	0.031	F103 08MN158 WHC111	**297240WHC111**							
		104	CCMT1204	0.40	0.016	F104 04MN158 WHC111	**297242WHC111**							
				0.80	0.031	F104 08MN158 WHC111	**297241WHC111**							
	WHC79	101	CCMT0602	0.20	0.008	F101 02MN158 WHC79	**297248WHC79**							
				0.40	0.016	F101 04MN158 WHC79	**297377WHC79**							
		103	CCMT09T3	0.40	0.016	F103 04MN158 WHC79	**297239WHC79**							
				0.80	0.031	F103 08MN158 WHC79	**297240WHC79**	◕	▼▼	▽▽	▼▼			
		104	CCMT1204	0.40	0.016	F104 04MN158 WHC79	**297242WHC79**							
				0.80	0.031	F104 08MN158 WHC79	**297241WHC79**							
		105	CCMT1605	0.80	0.031	F105 08MN158 WHC79	**297559WHC79**							
				1.20	0.047	F105 12MN158 WHC79	**297560WHC79**							
174W	WHC19	101	CCMT0602	0.40	0.016	F101 04MN174W WHC19	**397766WHC19**	✱	▼▼	▼▼	▽▽		▼▼	
		103	CCMT09T3	0.40	0.016	F103 04MN174W WHC19	**397767WHC19**							
	WHC164	101	CCMT0602	0.40	0.016	F101 04MN174W WHC164	**397766WHC164**							
		103	CCMT09T3	0.40	0.016	F103 04MN174W WHC164	**397767WHC164**	◕	▼▼		▼▼			
				0.80	0.031	F103 08MN174W WHC164	**397768WHC164**							
192	WHC19	101	CCMT0602	0.20	0.008	F101 02MN192 WHC19	**297531WHC19**							
				0.40	0.016	F101 04MN192 WHC19	**297658WHC19**							
				0.80	0.031	F101 08MN192 WHC19	**297588WHC19**							
		103	CCMT09T3	0.20	0.008	F103 02MN192 WHC19	**297958WHC19**							
				0.40	0.016	F103 04MN192 WHC19	**297653WHC19**	✱	▼▼	▼▼	▽▽		▼▼	
				0.80	0.031	F103 08MN192 WHC19	**397614WHC19**							
		104	CCMT1204	0.40	0.016	F104 04MN192 WHC19	**397666WHC19**							
				0.80	0.031	F104 08MN192 WHC19	**297878WHC19**							
	WHC164	101	CCMT0602	0.20	0.008	F101 02MN192 WHC164	**297531WHC164**							
				0.40	0.016	F101 04MN192 WHC164	**297658WHC164**							
				0.80	0.031	F101 08MN192 WHC164	**297588WHC164**							
		103	CCMT09T3	0.40	0.016	F103 04MN192 WHC164	**297653WHC164**	◕	▼▼		▼▼			▽▽▽
				0.80	0.031	F103 08MN192 WHC164	**397614WHC164**							
		104	CCMT1204	0.40	0.016	F104 04MN192 WHC164	**397666WHC164**							
				0.80	0.031	F104 08MN192 WHC164	**297878WHC164**							
				1.20	0.047	F104 12MN192 WHC164	**397632WHC164**							

Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
101	**115676**	M2.5 x 0.45 x 5	**415514**	**115590**	1.2 N·m	T8
103	**115672** (<Ø37 mm)	M3.5 x 0.6 x 7.5	**415510**	**115664**	3.0 N·m	T15
	115673 (>Ø36 mm)	M3.5 x 0.6 x 9				
104	**215149**	M4.5 x 0.75 x 11.5	**415543**	**215150**	5.0 N·m	T20
105	**215149**	M4.5 x 0.75 x 11.5	**415543**	**215150**	5.0 N·m	T20

B10-I: 15 - 16



B10-I: 39 - 42

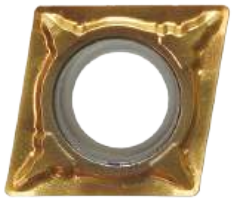


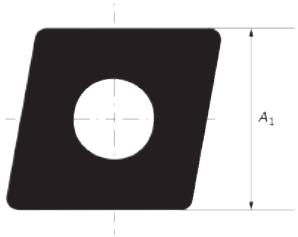
B10-I: 43 - 47



80° Rhomboid Replaceable Inserts

Forms 101, 103, 104 and 105





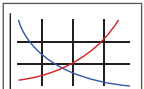
Insert Form	A_1
101	6.3 mm
103	9.5 mm
104	12.7 mm
105	15.8 mm

Carbide

Insert Geometry	Insert Grade	Insert Form	ISO Description	Radius mm	Radius in	Description	Part No.	Application P	M	K	N	S	H
 199	WHC114	101	CCMT0602	0.20	0.008	F101 02MN199 WHC114	**397164WHC114**	●	▼▼▼	▼▼▼	▽▽▽		▼▼▼	
				0.40	0.016	F101 04MN199 WHC114	**397165WHC114**							
		103	CCMT09T3	0.20	0.008	F103 02MN199 WHC114	**397702WHC114**							
				0.40	0.016	F103 04MN199 WHC114	**397166WHC114**							
				0.80	0.031	F103 08MN199 WHC114	**397167WHC114**							
		104	CCMT1204	0.40	0.016	F104 04MN199 WHC114	**397191WHC114**							
				0.80	0.031	F104 08MN199 WHC114	**397168WHC114**							
 200	WHC111	101	CCGT0602	0.20	0.008	F101 02GN200 WHC111	**397585WHC111**	●	▼▼▼	▼▼▼	▼▼▼		▼▼▼	▼▼▼
				0.40	0.016	F101 04GN200 WHC111	**397586WHC111**							
		103	CCGT09T3	0.20	0.008	F103 02GN200 WHC111	**397587WHC111**							
				0.40	0.016	F103 04GN200 WHC111	**397588WHC111**							
		104	CCGT1204	0.40	0.016	F104 04GN200 WHC111	**397589WHC111**							
 711	WHC77	101	CCMW0602	0.40	0.016	F101 04MN711 WHC77	**097637WHC77**	●	▼▼▼		▼▼▼			▽▽▽
		103	CCMW09T3	0.80	0.031	F103 08MN711 WHC77	**297910WHC77**							
		104	CCMW1204	0.40	0.016	F104 04MN711 WHC77	**097692WHC77**							
				0.80	0.031	F104 08MN711 WHC77	**297911WHC77**							
 860	WHC05	101	CCGT0602	0.10	0.004	F101 01GL860 WHC05	**097324WHC05**	●	▼▼▼	▽▽▽	▼▼▼		▽▽▽	
				0.20	0.008	F101 02GL860 WHC05	**097241WHC05**							
				0.40	0.016	F101 04GL860 WHC05	**097242WHC05**							
		103	CCGT09T3	0.20	0.008	F103 02GL860 WHC05	**097245WHC05**							
				0.40	0.016	F103 04GL860 WHC05	**097244WHC05**							
		104	CCGT1204	0.80	0.031	F104 08GL860 WHC05	**097247WHC05**							
		105	CCMT1605	0.80	0.031	F105 08ML860 WHC05	**097249WHC05**							
	WHC136	101	CCGT0602	0.10	0.004	F101 01GL860 WHC136	**097324WHC136**	●	▼▼▼	▼▼▼	▽▽▽		▼▼▼	
				0.20	0.008	F101 02GL860 WHC136	**097241WHC136**							
				0.40	0.016	F101 04GL860 WHC136	**097242WHC136**							
		103	CCGT09T3	0.20	0.008	F103 02GL860 WHC136	**097245WHC136**							
				0.40	0.016	F103 04GL860 WHC136	**097244WHC136**							
		104	CCGT1204	0.40	0.016	F104 04GL860 WHC136	**097738WHC136**							
				0.80	0.031	F104 08GL860 WHC136	**097247WHC136**							
		105	CCMT1605	0.80	0.031	F105 08ML860 WHC136	**097249WHC136**							
	WHW01	101	CCGT0602	0.10	0.004	F101 01GL860 WHW01	**097324WHW01**	●			▽▽▽	▼▼▼		
				0.20	0.008	F101 02GL860 WHW01	**097241WHW01**							
				0.40	0.016	F101 04GL860 WHW01	**097242WHW01**							
		103	CCGT09T3	0.20	0.008	F103 02GL860 WHW01	**097245WHW01**							
				0.40	0.016	F103 04GL860 WHW01	**097244WHW01**							
		104	CCGT1204	0.40	0.016	F104 04GL860 WHW01	**097738WHW01**							
				0.80	0.031	F104 08GL860 WHW01	**097247WHW01**							
		105	CCMT1605	0.80	0.031	F105 08ML860 WHW01	**097249WHW01**							

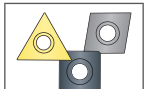
Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
101	**115676**	M2.5 x 0.45 x 5	**415514**	**115590**	1.2 N·m	T8
103	**115672** (<Ø37 mm)	M3.5 x 0.6 x 7.5	**415510**	**115664**	3.0 N·m	T15
	115673 (>Ø36 mm)	M3.5 x 0.6 x 9				
104	**215149**	M4.5 x 0.75 x 11.5	**415543**	**215150**	5.0 N·m	T20
105	**215149**	M4.5 x 0.75 x 11.5	**415543**	**215150**	5.0 N·m	T20

B10-I: 15 - 16



Key on B10-I: 2

B10-I: 39 - 42



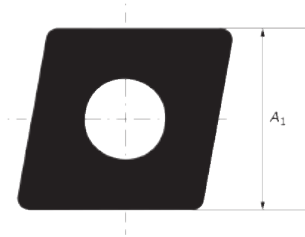
B10-I: 43 - 47



80° Rhomboid Replaceable Inserts

Forms 101, 103, 104 and 105





Insert Form	A_1
101	6.3 mm
103	9.5 mm
104	12.7 mm
105	15.8 mm

Cermet

Insert Geometry	Insert Grade	Insert Form	ISO Description	Radius mm	Radius in	Description	Part No.	Application P	M	K	N	S	H
 112	WHT32	101	CCGT0602	0.20	0.008	F101 02GN112 WHT32	**297485WHT32**	●	▼▼▼		▽▽▽	▽▽▽		
			CCMT0602	0.40	0.016	F101 04MN112 WHT32	**297434WHT32**							
		103	CCGT09T3	0.20	0.008	F103 02GN112 WHT32	**297534WHT32**							
			CCMT09T3	0.40	0.016	F103 04MN112 WHT32	**297387WHT32**							
 122	WHT10	101	CCMT0602	0.20	0.008	F101 02MN122 WHT10	**097899WHT10**	●	▼▼▼		▽▽▽	▽▽▽		
				0.40	0.016	F101 04MN122 WHT10	**097926WHT10**							
		103	CCMT09T3	0.20	0.008	F103 02MN122 WHT10	**097862WHT10**							
				0.40	0.016	F103 04MN122 WHT10	**097957WHT10**							
 155	WTC15	101	CCMT0602	0.20	0.008	F101 02MN155 WTC15	**397662WTC15**	●	▼▼▼	▽▽▽	▽▽▽			
				0.40	0.016	F101 04MN155 WTC15	**397739WTC15**							
		103	CCMT09T3	0.40	0.016	F103 04MN155 WTC15	**397740WTC15**							
 860	WTC121	101	CCGT0602	0.10	0.004	F101 01GL860 WTC121	**097324WTC121**	●	▼▼▼	▽▽▽				
				0.20	0.008	F101 02GL860 WTC121	**097241WTC121**							

Ceramic

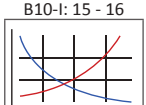
Insert Geometry	Insert Grade	Insert Form	ISO Description	Radius mm	Radius in	Description	Part No.	Application P	M	K	N	S	H
 711	WCN40	103	CCGW09T3	0.40	0.016	F103 04GN711 WCN40	**297561WCN40**	✱			▼			
				0.80	0.031	F103 08GN711 WCN40	**297192WCN40**							
		104	CCGW1204	0.80	0.031	F104 08GN711 WCN40	**297249WCN40**							
				1.20	0.047	F104 12GN711 WCN40	**297234WCN40**							



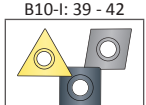
I

Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
101	**115676**	M2.5 x 0.45 x 5	**415514**	**115590**	1.2 N·m	T8
103	**115672** (<Ø37 mm)	M3.5 x 0.6 x 7.5	**415510**	**115664**	3.0 N·m	T15
	115673 (>Ø36 mm)	M3.5 x 0.6 x 9				
104	**215149**	M4.5 x 0.75 x 11.5	**415543**	**215150**	5.0 N·m	T20
105	**215149**	M4.5 x 0.75 x 11.5	**415543**	**215150**	5.0 N·m	T20

B10-I: 15 - 16
Key on B10-I: 2



B10-I: 39 - 42



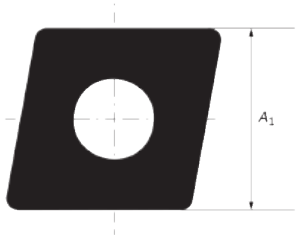
B10-I: 43 - 47



80° Rhomboid Replaceable Inserts

Forms 101, 103, 104 and 105





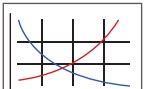
Insert Form	A_1
101	6.3 mm
103	9.5 mm
104	12.7 mm
105	15.8 mm

CBN - Cubic Boron Nitride

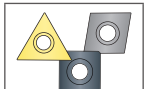
Insert			ISO	Radius				Application						
Geometry	Grade	Form	Description	mm	in	Description	Part No.		P	M	K	N	S	H
 741	WBN200	101	CCGW0602	0.20	0.008	F101 02GN741 WBN200	**297290WBN200**	●						▼▼▽
				0.40	0.016	F101 04GN741 WBN200	**297291WBN200**							
		103	CCGW09T3	0.40	0.016	F103 04GN741 WBN200	**297303WBN200**							
 742	WBN300	101	CCGW0602	0.20	0.008	F101 02GN742 WBN300	**297293WBN300**	●			▼▼▽			▼▼▽
				0.40	0.016	F101 04GN742 WBN300	**297294WBN300**							
		103	CCGW09T3	0.40	0.016	F103 04GN742 WBN300	**297306WBN300**							
 747	WBN150	104	CCGW1204	0.40	0.016	F104 04GN747 WBN150	**397260WBN150**	●			▽▽▽ ▽			▼▼▽
	WBN450	104	CCGW1204	0.40	0.016	F104 04GN747 WBN450	**397260WBN450**	●			▼▼▽			
 748	WBN450	101	CCGW0602	0.20	0.008	F101 02GN748 WBN450	**297787WBN450**	●			▼▼▽			
				0.40	0.016	F101 04GN748 WBN450	**297788WBN450**							
		103	CCGW09T3	0.20	0.008	F103 02GN748 WBN450	**297790WBN450**							
				0.40	0.016	F103 04GN748 WBN450	**297419WBN450**							
 749	WBN150	104	CCGW1204	0.80	0.031	F104 08GN749 WBN150	**397261WBN150**	●			▽▽▽ ▽			▼▼▽
	WBN450	104	CCGW1204	0.80	0.031	F104 08GN749 WBN450	**397261WBN450**	●			▼▼▽			
 768	WBN450	101	CCGT0602	0.20	0.008	F101 02GN768 WBN450	**297486WBN450**	●			▼▼▽			
				0.40	0.016	F101 04GN768 WBN450	**297659WBN450**							
		103	CCGT09T3	0.20	0.008	F103 02GN768 WBN450	**397439WBN450**							
				0.40	0.016	F103 04GN768 WBN450	**297660WBN450**							
 742D	WBC300	101	CCGW0602	0.20	0.008	F101 02GN742D WBC300	**397949WBC300**	●						
				0.40	0.016	F101 04GN742D WBC300	**397999WBC300**				▼▼▽			▼▼▽
		103	CCGW0902	0.40	0.016	F103 04GN742D WBC300	**397931WBC300**							
				0.80	0.031	F103 08GN742D WBC300	**397958WBC300**							
	WBN448	101	CCGW0602	0.20	0.008	F101 02GN742D WBN448	**397949WBN448**	●			▼▼▽			
				0.40	0.016	F101 04GN742D WBN448	**397999WBN448**							
		103	CCGW0902	0.40	0.016	F103 04GN742D WBN448	**397931WBN448**							
				0.80	0.031	F103 08GN742D WBN448	**397958WBN448**							

Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
101	**115676**	M2.5 x 0.45 x 5	**415514**	**115590**	1.2 N·m	T8
103	**115672** (<Ø37 mm)	M3.5 x 0.6 x 7.5	**415510**	**115664**	3.0 N·m	T15
	115673 (>Ø36 mm)	M3.5 x 0.6 x 9				
104	**215149**	M4.5 x 0.75 x 11.5	**415543**	**215150**	5.0 N·m	T20
105	**215149**	M4.5 x 0.75 x 11.5	**415543**	**215150**	5.0 N·m	T20

B10-I: 15 - 16



B10-I: 39 - 42

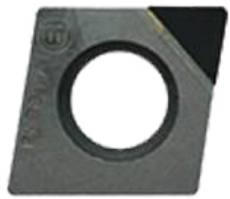


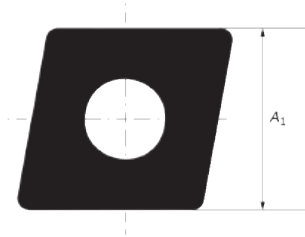
B10-I: 43 - 47



80° Rhomboid Replaceable Inserts

Forms 101, 103, 104 and 105





Insert Form	A_1
101	6.3 mm
103	9.5 mm
104	12.7 mm
105	15.8 mm

PCD - Polycrystalline Diamond

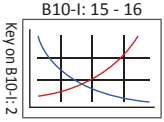
Insert			ISO	Radius				Application						
Geometry	Grade	Form	Description	mm	in	Description	Part No.		P	M	K	N	S	H
 720	PKDD30	101	CCGT0602	0.20	0.008	F101 02GN720 PKDD30	**297501PKDD30**	●				▼▼▼		
				0.40	0.016	F101 04GN720 PKDD30	**297502PKDD30**							
		103	CCGT09T3	0.20	0.008	F103 02GN720 PKDD30	**297578PKDD30**							
				0.40	0.016	F103 04GN720 PKDD30	**297483PKDD30**							
 730	PKDD30	101	CCGW0602	0.20	0.008	F101 02GN730 PKDD30	**097462PKDD30**	●				▼▼▼		
				0.40	0.016	F101 04GN730 PKDD30	**297164PKDD30**							
				0.80	0.031	F101 08GN730 PKDD30	**297165PKDD30**							
		103	CCGW09T3	0.20	0.008	F103 02GN730 PKDD30	**397251PKDD30**							
				0.40	0.016	F103 04GN730 PKDD30	**297533PKDD30**							
		104	CCGW1204	0.40	0.016	F104 04GN730 PKDD30	**397257PKDD30**							
				0.80	0.031	F104 08GN730 PKDD30	**297871PKDD30**							
	PKDD50	101	CCGW0602	0.20	0.008	F101 02GN730 PKDD50	**097462PKDD50**	●				▼▼▼		
				0.40	0.016	F101 04GN730 PKDD50	**297164PKDD50**							
		103	CCGW09T3	0.20	0.008	F103 02GN730 PKDD50	**397251PKDD50**							
				0.40	0.016	F103 04GN730 PKDD50	**297533PKDD50**							
		104	CCGW1204	0.40	0.016	F104 04GN730 PKDD50	**397257PKDD50**							
				0.80	0.031	F104 08GN730 PKDD50	**297871PKDD50**							
 735	PKDD30	101	CCGT0602	0.20	0.008	F101 02GN735 PKDD30	**297872PKDD30**	●				▼▼▼		
				0.40	0.016	F101 04GN735 PKDD30	**397244PKDD30**							
		103	CCGT09T3	0.20	0.008	F103 02GN735 PKDD30	**397252PKDD30**							
				0.40	0.016	F103 04GN735 PKDD30	**297870PKDD30**							



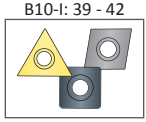
I

Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
101	**115676**	M2.5 x 0.45 x 5	**415514**	**115590**	1.2 N·m	T8
103	**115672** (<Ø37 mm)	M3.5 x 0.6 x 7.5	**415510**	**115664**	3.0 N·m	T15
	115673 (>Ø36 mm)	M3.5 x 0.6 x 9				
104	**215149**	M4.5 x 0.75 x 11.5	**415543**	**215150**	5.0 N·m	T20
105	**215149**	M4.5 x 0.75 x 11.5	**415543**	**215150**	5.0 N·m	T20

B10-I: 15 - 16



B10-I: 39 - 42



B10-I: 43 - 47



Notes

Tangential Replaceable Inserts

Recommended Insert Application

ROUGH MACHINING | FORMS 04 AND 05

ISO	Material	Metric Cutting Recommendations m/min F04, F05	Metric Cutting Recommendations mm/rev F04	Metric Cutting Recommendations mm/rev F05	Imperial Cutting Recommendations SFM F04, F05	Imperial Cutting Recommendations IPR F04	Imperial Cutting Recommendations IPR F05
P	**Low-Carbon Steel** 1010, 1020, 1025, 1522, etc.	120 - 250	0.10 - 0.25	0.10 - 0.35	394 - 820	0.004 - 0.010	0.004 - 0.014
P	**Alloy Steel** 4140, 5140, 8640, etc.	120 - 250	0.10 - 0.25	0.10 - 0.35	394 - 820	0.004 - 0.010	0.004 - 0.014
P	**High-Strength Alloy** 4340, 4330V, 300M, etc.	120 - 250	0.10 - 0.25	0.10 - 0.35	394 - 820	0.004 - 0.010	0.004 - 0.014
M	**Stainless Steel**	80 - 160	0.10 - 0.20	0.10 - 0.30	262 - 525	0.004 - 0.008	0.004 - 0.012
K	**SG / Nodular Cast Iron**	140 - 250	0.10 - 0.25	0.10 - 0.35	459 - 820	0.004 - 0.010	0.004 - 0.014
K	**Grey / White Iron**	140 - 250	0.10 - 0.25	0.10 - 0.35	459 - 820	0.004 - 0.010	0.004 - 0.014
N	**Aluminum Alloys**	300 - 600	0.10 - 0.25	0.10 - 0.40	984 - 1969	0.004 - 0.010	0.004 - 0.016
N	**Nonferrous Metals**	300 - 600	0.10 - 0.25	0.10 - 0.40	984 - 1969	0.004 - 0.010	0.004 - 0.016



I

Deep Hole Boring Speed Adjustment

⚠ For Dynamic Boring Tool NOVI[TECH®] Length			
Boring Type	**8xD**	**9xD**	**10xD**
Roughing	0.80	0.60	0.40
Finishing	0.90	0.70	0.50

*Not to exceed recommended RPM printed on NOVI[TECH®] module.

Recommended Speed Example

If the recommended speed for a ***finish*** boring assembly under 5xD is 120 m/min, then the speed for a ***10xD finish boring*** assembly in the same application would be 60 m/min (120 m/min x 0.50 = 60 m/min).

5xD = 120 m/min	10xD = 60 m/min

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter.

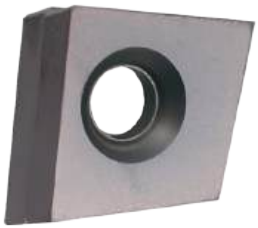
⚠ WARNING **Assembly of modular components may cause machine damage and/or serious injury. To prevent:**

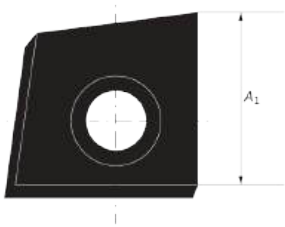
-Do not exceed the **allowable weight** for your machine tool.
-Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12 or visit www.alliedmachine.com/WohlhaupterBoringGuidelines.**

NOTE: Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com.**

Tangential Replaceable Inserts

Forms 04 and 05





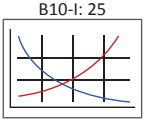
Insert Form	A_1
04	10.5 mm
05	14.5 mm

Carbide

Insert			ISO	Radius				Application						
Geometry	Grade	Form	Description	mm	in	Description	Part No.		P	M	K	N	S	H
 811	WHC168	05	—	0.80	0.031	F005 08ML811 WHC168	**397844WHC168**	✱	▼	▽	▼			
 880	WHC168	05	—	0.40	0.016	F005 04ML880 WHC168	**397593WHC168**	✱	▼	▽	▼			
				0.80	0.031	F005 08ML880 WHC168	**397594WHC168**							
	WHC170	05	—	0.80	0.031	F005 08ML880 WHC170	**397594WHC170**	✱	▽		▼			
	WHC198	04	—	0.40	0.016	F004 04ML880 WHC198	**397595WHC198**	●	▼	▼	▼	▽	▽	
		05	—	0.40	0.016	F005 04ML880 WHC198	**397593WHC198**							
				0.80	0.031	F005 08ML880 WHC198	**397594WHC198**							

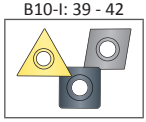
Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
04	**415977**	M4 x 0.7 x 7.9	**415510**	**115664**	3.0 N·m	T15
05	**415949**	M4 x 0.7 x 11	**415543**	**215150**	5.0 N·m	T20

B10-I: 25



Key on B10-I: 2

B10-I: 39 - 42

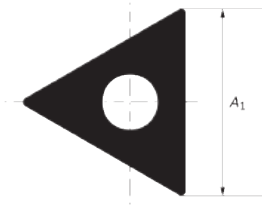


B10-I: 43 - 47



Forms 161 and 163





Insert Form	A_1
161	11.0 mm
163	16.5 mm

Carbide

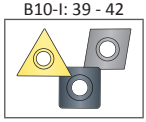
Insert Geometry	Insert Grade	Insert Form	ISO Description	Radius mm	Radius in	Description	Part No.		Application P	Application M	Application K	Application N	Application S	Application H
 129	WHC05	161	TCGT1102	0.20	0.008	F161 02GN129 WHC05	**397769WHC05**	●	▼▼▼	▽▽▽	▼▼▼		▽▽▽	
				0.40	0.016	F161 04GN129 WHC05	**397770WHC05**							
		163	TCGT16T3	0.40	0.016	F163 04GN129 WHC05	**397771WHC05**							
	WHW16	161	TCGT1102	0.20	0.008	F161 02GN129 WHW16	**397769WHW16**	●			▽▽▽	▼▼▼	▽▽▽	
				0.40	0.016	F161 04GN129 WHW16	**397770WHW16**							
		163	TCGT16T3	0.40	0.016	F163 04GN129 WHW16	**397771WHW16**							
 145	WHC111	161	TCGT1102	0.40	0.016	F161 04GN145 WHC111	**297993WHC111**	●	▼▼▼	▼▼▼	▼▼▼		▼▼▼	▼▼▼
 146	WHC88	161	TCMT1102	0.40	0.016	F161 04MN146 WHC88	**397977WHC88**	✱	▼▼▼	▼▼▼			▼▼▼	
				0.80	0.031	F161 08MN146 WHC88	**397026WHC88**							
		163	TCMT16T3	0.40	0.016	F163 04MN146 WHC88	**397990WHC88**							
				0.80	0.031	F163 08MN146 WHC88	**397974WHC88**							
 158	WHC79	163	TCMT16T3	0.40	0.016	F163 04MN158 WHC79	**297604WHC79**	◕	▼▼▼	▽▽▽	▼▼▼			
 192	WHC164	161	TCMT1102	0.40	0.016	F161 04MN192 WHC164	**397663WHC164**	◕	▼▼▼		▼▼▼			▽▽▽
		163	TCMT16T3	0.40	0.016	F163 04MN192 WHC164	**397654WHC164**							
	WHC19	161	TCMT1102	0.40	0.016	F161 04MN192 WHC19	**397663WHC19**	✱	▼▼▼	▼▼▼	▽▽▽		▼▼▼	
		163	TCMT16T3	0.40	0.016	F163 04MN192 WHC19	**397654WHC19**							
				0.80	0.031	F163 08MN192 WHC19	**397772WHC19**							

Cermet

Insert Geometry	Insert Grade	Insert Form	ISO Description	Radius mm	Radius in	Description	Part No.		Application P	Application M	Application K	Application N	Application S	Application H
 122	WHT10	161	TCMT1102	0.40	0.016	F161 04MN122 WHT10	**097953WHT10**	●	▼▼▼		▽▽▽	▽▽▽		
 850	WHT12	161	TCGT11202	0.20	0.008	F161 02GL850 WHT12	**097512WHT12**	●	▼▼▼		▽▽▽	▽▽▽		

Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
161	**115676**	M2.5 x 0.45 x 5	**415514**	**115590**	1.2 N·m	T8
163	**115673**	M3.5 x 0.6 x 9	**415510**	**115664**	3.0 N·m	T15

B10-I: 39 - 42



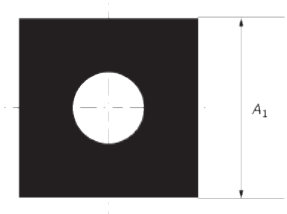
Key on B10-I: 2

B10-I: 43 - 47



Forms 112, 113 and 114





Insert Form	A_1
112	9.5 mm
113	12.7 mm
114	15.8 mm

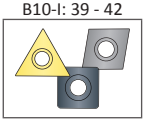
Carbide

Insert Geometry	Insert Grade	Form	ISO Description	Radius mm	Radius in	Description	Part No.	Application P	M	K	N	S	H
 108	WHC98	112	SCMT09T3	0.40	0.016	F112 04MN108 WHC98	**297535WHC98**	●	▼▼▼ ▽	▼▼▼ ▽	▽▽▽ ▽			
		113	SCMT1204	0.80	0.031	F113 08MN108 WHC98	**397110WHC98**							
 127	WHW16	112	SCGT09T3	0.40	0.016	F112 04GN127 WHW16	**097539WHW16**	●			▽▽▽ ▽	▼▼▼ ▽	▽▽▽ ▽	
		113	SCGT1204	0.40	0.016	F113 04GN127 WHW16	**397590WHW16**							
				0.80	0.031	F113 08GN127 WHW16	**097566WHW16**							
 145	WHC111	112	SCGT09T3	0.80	0.031	F112 08GN145 WHC111	**297996WHC111**	●	▼▼▼ ▽	▼▼▼ ▽	▼▼▼ ▽		▼▼▼ ▽	▽▽▽ ▽
		113	SCGT1204	0.80	0.031	F113 08GN145 WHC111	**297997WHC111**							
 146	WHC81	112	SCMT09T3	0.40	0.016	F112 04MN146 WHC81	**397940WHC81**	●	▼▼▼ ▽		▼▼▼ ▽			▽▽▽ ▽
				0.80	0.031	F112 08MN146 WHC81	**397992WHC81**							
		113	SCMT1204	0.80	0.031	F113 08MN146 WHC81	**397969WHC81**							
	WHC88	112	SCMT09T3	0.40	0.016	F112 04MN146 WHC88	**397940WHC88**	✱	▼▼▼ ▽	▼▼▼ ▽			▼▼▼ ▽	
				0.80	0.031	F112 08MN146 WHC88	**397992WHC88**							
		113	SCMT1204	0.40	0.016	F113 04MN146 WHC88	**397049WHC88**							
				0.80	0.031	F113 08MN146 WHC88	**397969WHC88**							
 158	WHC30	114	SCMT1505	1.20	0.047	F114 12MN158 WHC30	**097252WHC30**	✱	▼▼▼ ▽	▼▼▼ ▽	▽▽▽ ▽		▼▼▼ ▽	
	WHC79	113	SCMT1204	0.80	0.031	F113 08MN158 WHC79	**297497WHC79**	●	▼▼▼ ▽	▽▽▽ ▽	▼▼▼ ▽			
 192	WHC164	112	SCMT09T3	0.40	0.016	F112 04MN192 WHC164	**397741WHC164**	●	▼▼▼ ▽		▼▼▼ ▽			▽▽▽ ▽
				0.80	0.031	F112 08MN192 WHC164	**397640WHC164**							
		113	SCMT1204	0.80	0.031	F113 08MN192 WHC164	**397709WHC164**							
	WHC19	112	SCMT09T3	0.40	0.016	F112 04MN192 WHC19	**397741WHC19**	✱	▼▼▼ ▽	▼▼▼ ▽	▽▽▽ ▽		▼▼▼ ▽	
				0.80	0.031	F112 08MN192 WHC19	**397640WHC19**							
		113	SCMT1204	0.80	0.031	F113 08MN192 WHC19	**397709WHC19**							
				1.20	0.047	F113 12MN192 WHC19	**397710WHC19**							
 199	WHC114	112	SCMT09T3	0.40	0.016	F112 04MN199 WHC114	**397703WHC114**	●	▼▼▼ ▽	▼▼▼ ▽	▽▽▽ ▽		▼▼▼ ▽	
				0.80	0.031	F112 08MN199 WHC114	**397704WHC114**							
		113	SCMT1204	0.80	0.031	F113 08MN199 WHC114	**397705WHC114**							
 711	WHC77	113	SCMT1204	0.80	0.031	F113 08MN711 WHC77	**297212WHC77**	●	▼▼▼ ▽		▼▼▼ ▽			▽▽▽ ▽

Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
112	**115672** (<Ø37 mm)	M3.5 x 0.6 x 7.5	**415510**	**115664**	3.0 N·m	T15
	115673 (>Ø36 mm)	M3.5 x 0.6 x 9				
113	**215149**	M4.5 x 0.75 x 11.5	**415543**	**215150**	5.0 N·m	T20
114	**215149**	M4.5 x 0.75 x 11.5	**415543**	**215150**	5.0 N·m	T20

NOTE: For insert recomendations and technical assistance reference the geometry and insert guides **(B10-I: 39 - 47)** or contact our Application Engineering department: **appeng@alliedmachine.com.**

B10-I: 39 - 42

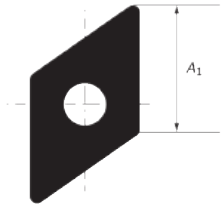


B10-I: 43 - 47



Forms 37 and 39





Insert Form	A_1
37	7.7 mm
39	11.6 mm

Carbide

Insert Geometry	Insert Grade	Insert Form	ISO Description	Radius mm	Radius in	Description	Part No.	Application P	M	K	N	S	H
 121	WHC19	39	DCMT11T3	0.20	0.008	F039 02MN121 WHC19	**397787WHC19**	▼▼▼	▼▼▼	▽▽▽ ▽		▼▼▼	
				0.40	0.016	F039 04MN121 WHC19	**397788WHC19**						
 127	WHW16	37	DCGT0702	0.20	0.008	F037 02GN127 WHW16	**397234WHW16**	●		▽▽▽ ▽	▼▼▼	▽▽▽	
				0.40	0.016	F037 04GN127 WHW16	**097787WHW16**						
		39	DCGT11T3	0.20	0.008	F039 02GN127 WHW16	**397235WHW16**						
				0.40	0.016	F039 04GN127 WHW16	**097559WHW16**						
 129	WHC05	39	DCGT11T3	0.20	0.008	F039 02GN129 WHC05	**397816WHC05**	●	▼▼▼	▽▽▽	▼▼▼		▽▽▽	
				0.40	0.016	F039 04GN129 WHC05	**397817WHC05**						
	WHW16	37	DCGT0702	0.20	0.008	F037 02GN129 WHW16	**397708WHW16**	●			▽▽▽ ▽	▼▼▼	▽▽▽	
		39	DCGT11T3	0.20	0.008	F039 02GN129 WHW16	**397816WHW16**						
				0.40	0.016	F039 04GN129 WHW16	**397817WHW16**						
 146	WHC81	37	DCMT0702	0.40	0.016	F037 04MN146 WHC81	**397968WHC81**	●	▼▼▼		▼▼▼			▽▽▽
		39	DCMT11T3	0.40	0.016	F039 04MN146 WHC81	**397591WHC81**						
				0.80	0.031	F039 08MN146 WHC81	**397598WHC81**						
	WHC88	37	DCMT0702	0.40	0.016	F037 04MN146 WHC88	**397968WHC88**						
				0.80	0.031	F037 08MN146 WHC88	**397047WHC88**						
		39	DCMT11T3	0.40	0.016	F039 04MN146 WHC88	**397591WHC88**						
				0.80	0.031	F039 08MN146 WHC88	**397598WHC88**						
 192	WHC164	39	DCMT11T3	0.20	0.008	F039 02MN192 WHC164	**397783WHC164**	◕	▼▼▼		▼▼▼			▽▽▽
				0.40	0.016	F039 04MN192 WHC164	**297721WHC164**						
				0.80	0.031	F039 08MN192 WHC164	**397784WHC164**						
	WHC19	39	DCMT11T3	0.20	0.008	F039 02MN192 WHC19	**397783WHC19**						
				0.40	0.016	F039 04MN192 WHC19	**297721WHC19**						
				0.80	0.031	F039 08MN192 WHC19	**397784WHC19**						
 200	WHC111	39	DCGT11T3	0.20	0.008	F039 02GN200 WHC111	**397785WHC111**	●	▼▼▼	▼▼▼	▼▼▼		▼▼▼	▼▼▼
				0.40	0.016	F039 04GN200 WHC111	**397786WHC111**						

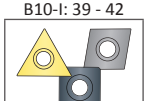
Cermet

Insert Geometry	Insert Grade	Insert Form	ISO Description	Radius mm	Radius in	Description	Part No.	Application P	M	K	N	S	H
 155	WTC15	39	DCMT11T3	0.20	0.008	F039 02MN155 WTC15	**397809WTC15**	◕	▼▼▼	▽▽▽	▽▽▽			
				0.40	0.016	F039 04MN155 WTC15	**397810WTC15**						

Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
39	**115673**	M3.5 x 0.6 x 9	**414510**	**115664**	3.0 N·m	T15
37	**115676**	M2.5 x 0.45 x 5	**415514**	**115590**	1.2 N·m	T8

NOTE: For insert recomendations and technical assistance reference the geometry and insert guides **(B10-I: 39 - 47)** or contact our Application Engineering department: **appeng@alliedmachine.com.**

B10-I: 39 - 42



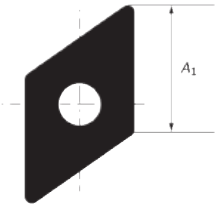
Key on B10-I: 2

B10-I: 43 - 47



Forms 37 and 39





Insert Form	A_1
37	7.7 mm
39	11.6 mm

CBN - Cubic Boron Nitride

Insert Geometry	Insert Grade	Insert Form	ISO Description	Radius mm	Radius in	Description	Part No.	Application P	M	K	N	S	H
 747	WBN150	39	DCGW11T3	0.20	0.008	F039 02GN747 WBN150	**397273WBN150**	●			▽▽▽			▼▼▼
				0.40	0.016	F039 04GN747 WBN150	**397274WBN150**				▽			▽
	WBN450	39	DCGW11T3	0.20	0.008	F039 02GN747 WBN450	**397273WBN450**	●				▼▼▼		
				0.40	0.016	F039 04GN747 WBN450	**397274WBN450**					▼		

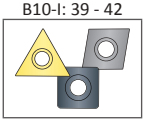
PCD - Polycrystalline Diamond

Insert Geometry	Insert Grade	Insert Form	ISO Description	Radius mm	Radius in	Description	Part No.	Application P	M	K	N	S	H
 730	PKDD30	39	DCGW11T3	0.20	0.008	F039 02GN730 PKDD30	**397269PKDD30**	●				▼▼▼		
				0.40	0.016	F039 04GN730 PKDD30	**397270PKDD30**							
 735	PKDD30	39	DCGT11T3	0.20	0.008	F039 02GN735 PKDD30	**397271PKDD30**	●				▼▼▼		
				0.40	0.016	F039 04GN735 PKDD30	**397272PKDD30**							

Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
39	**115673**	M3.5 x 0.6 x 9	**414510**	**115664**	3.0 N·m	T15
37	**115676**	M2.5 x 0.45 x 5	**415514**	**115590**	1.2 N·m	T8

NOTE: For insert recomendations and technical assistance reference the geometry and insert guides **(B10-I: 39 - 47)** or contact our Application Engineering department: **appeng@alliedmachine.com.**

B10-I: 39 - 42



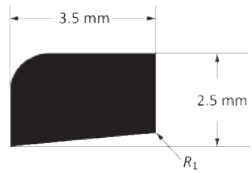
Key on B10-I: 2

B10-I: 43 - 47



Forms 47 & 325: 248 (249) Boring Bar Inserts

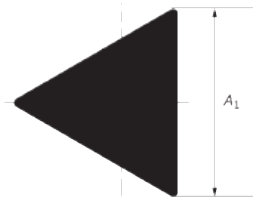




Carbide

Insert			Radius (R_1)				Application						
Geometry	Grade	Form	mm	in	Description	Part No.		P	M	K	N	S	H
 860	WHW20	325	0.10	0.004	F325 01CN860 WHW20	**097831WHW20**	●			▼▼▼	▽▽▽		
	WHC136	325	0.10	0.004	F325 01CN860 WHC136	**097831WHC136**	●	▼▼▼	▼▼▼	▽▽▽		▼▼▼	





Insert Form	A_1
47	4.2 mm

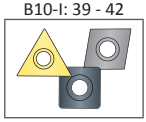
Carbide

Insert			Radius				Application						
Geometry	Grade	Form	mm	in	Description	Part No.		P	M	K	N	S	H
 650	WHW01	47	0.10	0.004	F047 01FL650 WHW01	**097832WHW01**	●			▽▽▽	▼▼▼	▽▽▽	
			0.20	0.008	F047 02FL650 WHW01	**097833WHW01**							
	WHC20	47	0.10	0.004	F047 01FL650 WHC20	**097832WHC20**	●	▼▼▼	▽▽▽	▽▽▽			
			0.20	0.008	F047 02FL650 WHC20	**097833WHC20**							

Insert Form	Countersunk Screw		Clamping Jaw	Service Key	Torque	Key Size
325	**315321**	M1.6 x 0.35 x 3	**315320**	**315322**	0.3 N·m	0.5x3
47	**315324**	M1.8 x 0.35 x 4	**315323**	**115537**	0.5 N·m	T6

B10-I: 39 - 42

Key on B10-I: 2

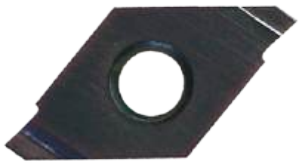


B10-I: 43 - 47



Notes

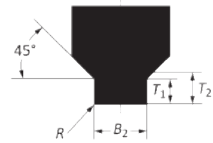
Radial Grooving: Forms 89, 90 and 91



Circular Grooving



Snap Ring Grooving



Circular Grooving | Metric (mm)

Insert Grade	Form	B_2	T_1	Ring Width	Part No.	Application P	M	K	N	S	H
WHC136	89	1.24	1.30	1.00	**097257WHC136**	●	▼▼	▽▽	▼▼		▼▼	
		1.44	1.30	1.20	**097258WHC136**							
		1.74	1.50	1.50	**097259WHC136**							
	90	1.99	2.40	1.75	**097256WHC136**							
		2.29	2.40	2.00	**097253WHC136**							
		2.79	2.40	2.50	**097254WHC136**							
		3.29	2.40	3.00	**097255WHC136**							
	91	2.79	2.40	2.50	**097260WHC136**							
		3.29	2.40	3.00	**097261WHC136**							
		4.29	3.30	4.00	**097262WHC136**							
		5.29	4.50	5.00	**097294WHC136**							
WHW20	89	1.24	1.30	1.00	**097257WHW20**	●		▽▽	▼▼		▽▽	
		1.44	1.30	1.20	**097258WHW20**							
		1.74	1.50	1.50	**097259WHW20**							
	90	1.99	2.40	1.75	**097256WHW20**							
		2.29	2.40	2.00	**097253WHW20**							
		2.79	2.40	2.50	**097254WHW20**							
		3.29	2.40	3.00	**097255WHW20**							
	91	2.79	2.40	2.50	**097260WHW20**							
		3.29	2.40	3.00	**097261WHW20**							
		4.29	3.30	4.00	**097262WHW20**							
		5.29	4.50	5.00	**097294WHW20**							

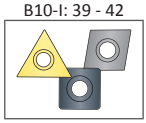
Snap Ring Grooving | Metric (mm)

Insert Grade	Form	R	Boring Ø	B_2	T_2	T_1	Ring Width	Part No.	Application P	M	K	N	S	H
WHC136	89	0.10	24.00 - 26.00	1.44	0.65	0.54	1.20	**297937WHC136**	●	▼▼	▽▽	▼▼		▼▼	
			28.00 - 30.00	1.44	0.75	0.64	1.20	**297938WHC136**							
			31.00 - 32.00	1.44	0.91	0.78	1.20	**297939WHC136**							
			34.00	1.74	0.91	0.78	1.50	**297940WHC136**							
			35.00 - 38.00	1.74	1.06	0.93	1.50	**297941WHC136**							
	90	0.15	40.00 - 48.00	1.99	1.31	1.18	1.75	**297942WHC136**							
			50.00 - 63.00	2.29	1.58	1.43	2.00	**297943WHC136**							
	91	0.20	65.00 - 78.00	2.79	1.58	1.43	2.50	**297944WHC136**							
			80.00 - 82.00	2.79	1.84	1.68	2.50	**297945WHC136**							
			85.00 - 100.00	3.29	1.84	1.68	3.00	**297946WHC136**							
			102.00 - 145.00	4.29	2.14	1.94	4.00	**297947WHC136**							

Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
89	**115676**	M2.5 x 0.45 x 5	**415514**	**115590**	1.2 N·m	T8
90	**115531**	M3 x 0.5 x 7.5	**415514**	**115590**	1.2 N·m	T8
91	**115802**	M3 x 0.5 x 12	**415514**	**115590**	1.2 N·m	T8

B10-I: 39 - 42

Key on B10-I: 2



B10-I: 43 - 47



ⓜ = Metric (mm)
ⓘ = Imperial (in)

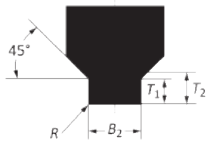
Radial Grooving: Forms 89, 90 and 91



Circular Grooving



Snap Ring Grooving



Circular Grooving | Imperial (in)

Insert Grade	Form	B_2	T_1	Ring Width	Part No.	Application P	M	K	N	S	H
WHC136	89	0.048	0.051	0.039	**097257WHC136**						
		0.056	0.051	0.047	**097258WHC136**						
		0.068	0.059	0.059	**097259WHC136**						
	90	0.078	0.094	0.068	**097256WHC136**						
		0.090	0.094	0.078	**097253WHC136**						
		0.109	0.094	0.098	**097254WHC136**	▼▼	▽▽	▼▼		▼▼	
		0.129	0.094	0.118	**097255WHC136**						
	91	0.109	0.094	0.098	**097260WHC136**						
		0.129	0.094	0.118	**097261WHC136**						
		0.168	0.129	0.157	**097262WHC136**						
		0.208	0.177	0.196	**097294WHC136**						
WHW20	89	0.048	0.051	0.039	**097257WHW20**						
		0.056	0.051	0.047	**097258WHW20**						
		0.068	0.059	0.059	**097259WHW20**						
	90	0.078	0.094	0.068	**097256WHW20**						
		0.090	0.094	0.078	**097253WHW20**						
		0.109	0.094	0.098	**097254WHW20**			▽▽	▼▼	▽▽	
		0.129	0.094	0.118	**097255WHW20**						
	91	0.109	0.094	0.098	**097260WHW20**						
		0.129	0.094	0.118	**097261WHW20**						
		0.168	0.129	0.157	**097262WHW20**						
		0.208	0.177	0.196	**097294WHW20**						

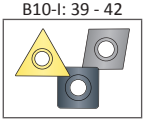
Snap Ring Grooving

Insert Grade	Form	R	Boring Ø	B_2	T_2	T_1	Ring Width	Part No.	Application P	M	K	N	S	H
WHC136	89	0.004	0.944 - 1.023	0.056	0.025	0.021	0.047	**297937WHC136**						
			1.102 - 1.181	0.056	0.029	0.025	0.047	**297938WHC136**						
			1.220 - 1.259	0.056	0.035	0.03	0.047	**297939WHC136**						
			1.338	0.068	0.035	0.03	0.059	**297940WHC136**						
			1.377 - 1.496	0.068	0.041	0.036	0.059	**297941WHC136**						
	90	0.006	1.574 - 1.889	0.078	0.051	0.046	0.068	**297942WHC136**	▼▼	▽▽	▼▼		▼▼	
			1.968 - 2.480	0.09	0.062	0.056	0.078	**297943WHC136**						
	91	0.008	2.559 - 3.070	0.109	0.062	0.056	0.098	**297944WHC136**						
			3.149 - 3.228	0.109	0.072	0.066	0.098	**297945WHC136**						
			3.346 - 3.937	0.129	0.072	0.066	0.118	**297946WHC136**						
			4.015 - 5.708	0.168	0.084	0.076	0.157	**297947WHC136**						

Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
89	**115676**	M2.5 x 0.45 x 5	**415514**	**115590**	1.2 N·m	T8
90	**115531**	M3 x 0.5 x 7.5	**415514**	**115590**	1.2 N·m	T8
91	**115802**	M3 x 0.5 x 12	**415514**	**115590**	1.2 N·m	T8

B10-I: 39 - 42

Key on B10-I: 2

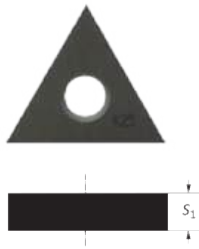


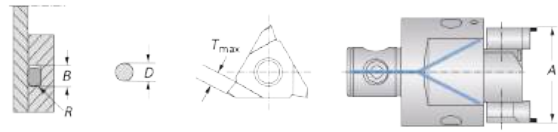
B10-I: 43 - 47



ⓜ = Metric (mm)
ⓘ = Imperial (in)

Axial Grooving: Form 304





Inserts for Single Cutter Tools | Metric (mm)

	Geometry	Grade	*A* Boring Range	O-Ring Cross Section	*B* + 0.05	B_{max}	T_{max}	*R* ± 0.05	Part No.		Application P	M	K	N	S	H
ⓜ		WHC136	20.00 - 54.00	1.00	1.50	1.50	1.65	0.20	**297969WHC136**							
				1.50	2.20	2.20	2.35	0.30	**297970WHC136**							
				2.00	2.90	2.90	3.15	0.40	**297971WHC136**							
				2.50	3.50	3.50	3.85	0.50	**297972WHC136**	●	▼▼	▽▽	▼▼		▼▼	
				3.00	4.10	4.10	4.45	0.60	**297973WHC136**							
				4.00	5.40	5.40	4.95	0.80	**297974WHC136**							
				5.00	6.80	6.80	4.95	0.80	**297975WHC136**							

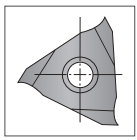
Inserts for Twin Cutter Tools | Metric (mm)

	Geometry	Grade	*A* Boring Range	O-Ring Cross Section	*B* + 0.05	B_{max}	T_{max}	*R* ± 0.05	Part No.		Application P	M	K	N	S	H
ⓜ		WHC136	53.00 - 1000.00	1.00 - 1.50	1.50	2.50	1.65	0.20	**297976WHC136**							
				1.50 - 2.40	2.20	3.70	2.35	0.30	**297977WHC136**							
				2.40 - 4.00	3.40	5.70	3.65	0.50	**297978WHC136**	●	▼▼	▽▽	▼▼		▼▼	
				4.00 - 5.50	5.40	9.10	4.95	0.80	**297979WHC136**							

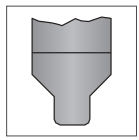
Form 304 Blanks | Metric (mm)

	Geometry	Grade	S_1	Part No.		Application P	M	K	N	S	H
ⓜ		WHW20	3.50	**297150WHW20**							
			4.30	**297151WHW20**							
			5.30	**297152WHW20**	●			▽▽	▼▼	▽▽	
			6.50	**297154WHW20**							
			7.50	**297493WHW20**							
		WHW20	3.50	**397850WHW20**							
			4.30	**397851WHW20**							
			5.30	**397852WHW20**	●			▽▽	▼▼	▽▽	
			6.50	**397853WHW20**							
			7.50	**397854WHW20**							

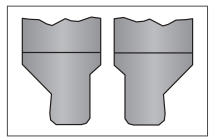
Examples of recessing replaceable inserts include:



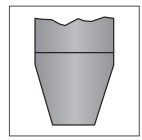
Other insert types available upon request.



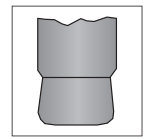
Two-sided cutting form.



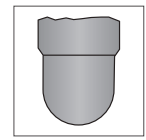
Single-sided cutting form (right / left).



Two-sided angle cutting.



With corner radius.

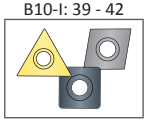


Full radius.

Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
304	**215392**	M5 x 0.8 x 12.9	**415543**	**215150**	5.0 N·m	T20

B10-I: 39 - 42

Key on B10-I: 2

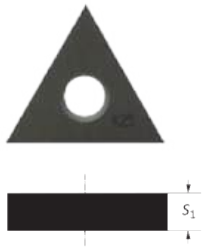


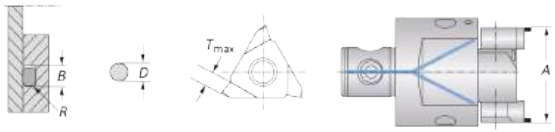
B10-I: 43 - 47



ⓜ = Metric (mm)
ⓘ = Imperial (in)

Axial Grooving: Form 304





Inserts for Single Cutter Tools | Imperial (in)

Geometry	Grade	A Boring Range	O-Ring Cross Section	B + 0.05	B_{max}	T_{max}	R ± 0.05	Part No.	Application P	M	K	N	S	H
	WHC136	0.787 - 2.125	0.039	0.059	0.059	0.064	0.008	**297969WHC136**						
			0.059	0.086	0.086	0.092	0.012	**297970WHC136**						
			0.078	0.114	0.114	0.124	0.016	**297971WHC136**						
			0.098	0.137	0.137	0.151	0.020	**297972WHC136**	▼▼	▽▽	▼▼		▼▼	
			0.118	0.161	0.161	0.175	0.024	**297973WHC136**						
			0.157	0.212	0.212	0.194	0.031	**297974WHC136**						
			0.196	0.267	0.267	0.194	0.031	**297975WHC136**						

Inserts for Twin Cutter Tools | Imperial (in)

Geometry	Grade	A Boring Range	O-Ring Cross Section	B + 0.05	B_{max}	T_{max}	R ± 0.05	Part No.	Application P	M	K	N	S	H
	WHC136	2.086 - 39.37	0.039 - 0.059	0.059	0.098	0.064	0.008	**297976WHC136**						
			0.059 - 0.094	0.086	0.145	0.092	0.012	**297977WHC136**						
			0.094 - 0.157	0.133	0.224	0.143	0.020	**297978WHC136**	▼▼	▽▽	▼▼		▼▼	
			0.157 - 0.217	0.212	0.358	0.194	0.031	**297979WHC136**						

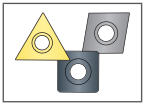
Form 304 Blanks | Imperial (in)

Geometry	Grade	S_1	Part No.	Application P	M	K	N	S	H
	WHW20	0.137	**297150WHW20**						
		0.169	**297151WHW20**						
		0.208	**297152WHW20**			▽▽	▼▼	▽▽	
		0.255	**297154WHW20**						
		0.295	**297493WHW20**						
	WHW20	0.137	**397850WHW20**						
		0.169	**397851WHW20**						
		0.208	**397852WHW20**			▽▽	▼▼	▽▽	
		0.255	**397853WHW20**						
		0.295	**397854WHW20**						

Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
304	**215392**	M5 x 0.8 x 12.9	**415543**	**215150**	5.0 N·m	T20

B10-I: 39 - 42

Key on B10-I: 2

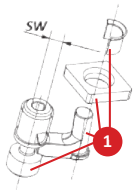


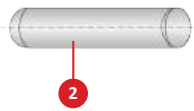
B10-I: 43 - 47

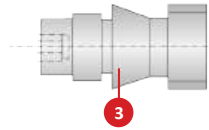


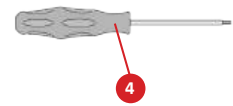
m = Metric (mm)
i = Imperial (in)

Insert Accessories





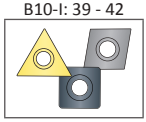




Insert Form	1. Clamping Set		2. Mounting Arbor for Sleeve	3. Clamping Bolt		4. Service Key	
	Part No.	Key Size	Part No.	Part No.	Key Size	Part No.	Key Size
75	**315004**	s3	**415642**	—	—	**415578**	s3
123	**315003**	s3	**415642**	**115775**	s2.5	**415578**	s3
						115575	s2.5
124	**315054**	s3	**415644**	**115776**	s3	**415578**	s3
						115630	s3

Type	Form	Countersunk Screw		Clamping Jaw	Torque Driver	Service Key	Torque	Key Size
Trigon	211	**215377**	M2 x 0.4 x 4	—	**415507**	**115537**	0.6 N·m	T6
Triangle	20	**115535**	M2 x 0.4 x 5	—	**415508**	**115591**	0.9 N·m	T7
	161	**115676**	M2.5 x 0.45 x 5	—	**415514**	**115590**	1.2 N·m	T8
	163	**115673**	M3.5 x 0.6 x 9	—	**415510**	**115664**	3.0 N·m	T15
80° Rhomboid	101	**115676**	M2.5 x 0.45 x 5	—	**415514**	**115590**	1.2 N·m	T8
	103	**115672** (<Ø37 mm)	M3.5 x 0.6 x 7.5	—	**415510**	**115664**	3.0 N·m	T15
	103	**115673** (>Ø36 mm)	M3.5 x 0.6 x 9	—	**415510**	**115664**	3.0 N·m	T15
	104	**215149**	M4.5 x 0.75 x 11.5	—	**415543**	**215150**	5.0 N·m	T20
	105	**215149**	M4.5 x 0.75 x 11.5	—	**415543**	**215150**	5.0 N·m	T20
Tangential	04	**415977**	M4 x 0.7 x 7.9	—	**415510**	**115664**	3.0 N·m	T15
	05	**415949**	M4 x 0.7 x 11	—	**415543**	**215150**	5.0 N·m	T20
Square	112	**115672** (<Ø37 mm)	M3.5 x 0.6 x 7.5	—	**415510**	**115664**	3.0 N·m	T15
	112	**115673** (>Ø36 mm)	M3.5 x 0.6 x 9	—	**415510**	**115664**	3.0 N·m	T15
	113	**215149**	M4.5 x 0.75 x 11.5	—	**415543**	**215150**	5.0 N·m	T20
	114	**215149**	M4.5 x 0.75 x 11.5	—	**415543**	**215150**	5.0 N·m	T20
55° Rhomboid	37	**115676**	M2.5 x 0.45 x 5	—	**415514**	**115590**	1.2 N·m	T8
	39	**115673**	M3.5 x 0.6 x 9	—	**414510**	**115664**	3.0 N·m	T15
Grooving	89	**115676**	M2.5 x 0.45 x 5	—	**415514**	**115590**	1.2 N·m	T8
	90	**115531**	M3 x 0.5 x 7.5	—	**415514**	**115590**	1.2 N·m	T8
	91	**115802**	M3 x 0.5 x 12	—	**415514**	**115590**	1.2 N·m	T8
	304	**215392**	M5 x 0.8 x 12.9	—	**415543**	**215150**	5.0 N·m	T20
248 (249) Bars	325	**315321**	M1.6 x 0.35 x 3	**315320**	—	**315322**	0.3 N·m	0.5x3

B10-I: 39 - 42



Key on B10-I: 2

B10-I: 43 - 47



Notes

Wohlhaupter Insert Geometries

Carbide

Carbide

Geometry	Application	Forms	Description
 **108**	▼▼▼	101 | 103 | 104 112 | 113	• Sintered chipbreaker for higher feeds. • Suitable for highly discontinuous cuts.
 **109**	▼▼▼	101 | 103 | 104	• Sintered geometry with V-shaped chipbreaker for roughing and finishing. • Good chip control even for shallow depth of cut.
 **121**	▼▼▼	211 | 20 | 39	• Positive geometry with stable cutting edge . • Finishing in different material groups. • Good chip control.
 **126**	▼	105	• Sintered version with a wide range of applications.
 **127**	▼▼▼	101 | 103 | 104 37 | 39 | 112 113	• Highly positive sintered geometry. • For nonferrous metals and cast iron.
 **128**	▼▼▼	20	• Highly positive sintered geometry. • Polished for finishing nonferrous metals, cast iron, and steel.
 **129**	▼▼▼	161 | 163| 101 103 | 37 | 39	• Highly positive chip breaking geometry. • Polished for nonferrous metals, cast iron, and steel. • Ideal for structural steel applications.
 **145**	▼▼▼	161 | 101 | 103 112 | 113	• Geometry for finishing in smooth and discontinuous cut. • Good chip control - even with long-chipping materials.
 **146**	▼▼▼	161 | 163 | 101 103 | 104 | 37 39 | 112 | 113	• Positive geometry with stable cutting edge. • Universal usage for roughing, finishing and chamfering.
 **158**	▼▼▼	101 | 103 | 104 105 | 113 | 114	• Sintered chipbreaker for higher feeds. • Suitable for highly discontinuous cuts.
 **192**	▼▼▼	161 | 163 | 101 103 | 104 | 39 112 | 113	• Sintered geometry with V-shaped chipbreaker for roughing and finishing. • Good chip control even for shallow depth of cut.
 **199**	▼▼▼	101 | 103 | 104 112 | 113	• Positive geometry with stable cutting edge. • Finishing in different material groups. • Good chip control.

Wohlhaupter Insert Geometries

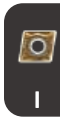
Carbide

Carbide

Geometry	Application	Forms	Description
 **200**	▼	101 | 103 | 104 39	• Sintered version with a wide range of applications.
 **650**	▼▼▼	211 | 20	• Highly positive sintered geometry. • For nonferrous metals and cast iron.
 **711**	▼▼▼	101 | 103 | 104 113	• Highly positive sintered geometry. • Polished for finishing nonferrous metals, cast iron, and steel.
 **840**	▼▼▼	20	• Highly positive chip breaking geometry. • Polished for nonferrous metals, cast iron, and steel. • Ideal for structural steel applications.
 **860**	▼▼▼	101 | 103 | 104 105	• Geometry for finishing in smooth and discontinuous cut. • Good chip control - even with long-chipping materials.

Carbide - Tangential

Geometry	Application	Forms	Description
 **880**	▼	04 | 05	• Large parallel ground chipbreaker with 10° rake angle for reduced cutting force.
 **811**	▼	05	• Smooth geometry without additional ground chipbreaker. • Reinforced cutting edges provide stability. • Excellent for cast materials.



I

Wohlhaupter Insert Geometries

Cermet

Cermet

Geometry	Application	Forms	Description
 **112**	▼▼▼	101 | 103	• Sintered chipbreaker. • Finishing and light roughing.
 **122**	▼▼▼	161 | 101 | 103	• Sintered chipbreaker. • Good chip control - even with long-chipping materials.
 **155**	▼▼▼	20 | 101 | 103 39	• Positive sintered geometry. • Special cutting edge design in combination with the chipbreaker design enables exceptional chip control even at shallow cutting depths and light feeds.
 **650**	▼▼▼	211 | 20	• Obliquely ground chipbreaker reduces cutting forces. • Finishing and smooth interrupted cuts.
 **840**	▼▼▼	20	• Parallel ground chipbreaker. • For finish operations with stable cutting edge.
 **850**	▼▼▼	101	• Parallel ground chipbreaker. • Good chip control with short to medium feeds.
 **860**	▼▼▼	101	• Parallel ground chipbreaker reduces cutting forces. • Stable for a wide range of applications.

Wohlhaupter Insert Geometries

CBN | PCD | Ceramic

CBN

Geometry	Application	Forms	Description
 741	▼▼▼	20 | 101 | 103	• Smooth geometry with 0° rake angle for CBN. • Rounded cutting edge with 30° chamfer.
 742	▼▼▼	20 | 101 | 103	• Smooth geometry with 0° rake angle for CBN. • Rounded cutting edge with 15° chamfer.
 745	▼▼▼	20	• Smooth geometry with 0° rake angle for CBN. • Rounded cutting edge with 30° chamfer.
 747	▼▼▼	104 | 39	• Smooth geometry with 0° rake angle for CBN. • Rounded cutting edge with a small 20° chamfer.
 748	▼▼▼	211 | 20 | 101 103	• Smooth geometry with 0° rake angle for CBN. • Rounded cutting edge. • No chamfer.
 749	▼▼▼	104	• Smooth geometry with 0° rake angle for CBN. • Rounded cutting edge with a large 20° chamfer.
 768	▼▼▼	20 | 101 | 103	• Smooth geometry with 7° rake angle for CBN. • Rounded cutting edge.

PCD

Geometry	Application	Forms	Description
 720	▼▼▼	20 | 101 | 103	• Smooth geometry in positive version with 7° rake angle for PCD. • Sharp cutting edge.
 730	▼▼▼	211 | 20 | 101 103 | 104 | 39	• Smooth geometry with 0° rake angle for PCD. • Sharp cutting edge.
 735	▼▼▼	211 | 20 | 101 103 | 39	• Smooth geometry. • Laser-cut chipbreaker for PCD. • Suitable for long-chipping aluminum wrought alloys.

Ceramic

Geometry	Application	Forms	Description
 711	▼	103 | 104	• Smooth geometry with 0° rake angle. • High cutting edge stability particularly in discontinuous cuts.

Wohlhaupter Insert Grades

Carbide

Uncoated Carbide

Cutting Material	Description	Material	ISO Application 05	10	15	20	25	30	35	40
WHW01 (HW)	• Fine-grain carbide. • Finishing and light roughing. • Nonferrous metals, cast materials, and difficult-to-machine alloys.	P								
		M								
		K	■	■	■					
		N	■	■	■					
		S	■	■						
		H								
WHW16 (HW)	• Fine-grain carbide. • Finishing and light roughing. • Nonferrous metals, cast materials, and difficult-to-machine alloys.	P								
		M								
		K		■	■					
		N		■	■					
		S		■	■					
		H								
WHW20 (HW)	• Tough fine-grain carbide. • Finishing, roughing and grooving. • Steel and cast materials, cast steel. • Nonferrous materials and difficult-to-machine alloys.	P			■	■				
		M								
		K			■	■				
		N			■	■				
		S			■	■				
		H								

Coated Carbide

Cutting Material	Description	Material	ISO Application 05	10	15	20	25	30	35	40
WHC05 (HC)	• PVD coating with nano-composite structure. • Finishing and roughing. • Steels, stainless steels, cast materials, and difficult-to-machine alloys.	P		■	■					
		M		■	■					
		K		■	■					
		N								
		S		■	■					
		H								
WHC18 (HC)	• PVD-TiB2 coating. • Finishing and light roughing. • Nonferrous metals.	P								
		M								
		K								
		N		■	■	■				
		S								
		H								
WHC19 (HC)	• Newest generation multilayer PVD coating. • Finishing and roughing. • Extremely universal and the first choice for poor machining conditions. • Excellent in cast steels, stainless steels, and super alloys.	P				■	■	■	■	
		M				■	■	■		
		K					■	■	■	
		N								
		S				■	■	■		
		H								
WHC20 (HC)	• Multilayer CVD coating. • Finishing. • Steels and stainless steels.	P		■	■	■				
		M		■	■					
		K								
		N								
		S								
		H								
WHC30 (HC)	• CVD coating. • Roughing. • Steel and cast steel.	P					■	■		
		M				■	■			
		K					■	■		
		N								
		S								
		H								

Wohlhaupter Insert Grades

Carbide

Coated Carbide

Cutting Material	Description	Material	ISO Application 05	10	15	20	25	30	35	40
WHC77 (HC)	• Fine-grained substrate with modified cobalt to increase strength. • MT-CVD coating combines advantages of TiCN and Al_2O_3. • Versatile material designed for turning grey and ductile iron. • Rough and finish machining. • Medium to high cutting speeds. • Continuous and light to medium interrupted cuts.	P		■	■	■				
		M								
		K		■	■	■				
		N								
		S								
		H		■	■					
WHC79 (HC)	• Multilayer MT CVD coating. • Roughing and finishing. • Steels, stainless steels, and cast materials.	P				■	■	■		
		M			■	■	■			
		K			■	■	■			
		N								
		S								
		H								
WHC81 (HC)	• Thick MT CVD coating with adominal AL203. • High cutting speeds possible. • Excellent choice for cast materials.	P				■	■			
		M								
		K				■	■	■		
		N								
		S								
		H								
WHC88 (HC)	• Multilayer PVD coating. • Finishing and roughing. • Universal usage.	P					■	■	■	
		M					■	■		
		K								
		N								
		S				■	■	■		
		H								
WHC98 (HC)	• PVD TiAlN coating. • Roughing and finishing. • Steels, stainless steels, and difficult-to-machine materials.	P				■	■	■		
		M				■	■	■		
		K				■	■	■		
		N								
		S				■	■			
		H								
WHC111 (HC)	• PVD TiAlN coating. • Finishing. • Machining of steels after heat treating with high Cr content up to 60 HRC. • Hard - soft transitions, difficult-to-machine alloys, and stainless steels.	P	■	■						
		M	■	■						
		K	■	■	■					
		N								
		S	■	■						
		H	■	■						
WHC114 (HC)	• Multilayer PVD coating. • Finishing and roughing. • Steels, stainless steels, and difficult-to-machine materials.	P			■	■	■			
		M			■	■	■			
		K			■	■	■			
		N								
		S			■	■	■			
		H								
WHC136 (HC)	• Stronger PVD coating with improved coating adhesion. • High oxidation resistance allows a wide range of applications.	P			■	■	■			
		M			■	■	■			
		K				■	■			
		N								
		S			■	■	■			
		H								

Carbide continued ⟶

Wohlhaupter Insert Grades

Carbide | Cermet

Coated Carbide

Cutting Material	Description	Material	ISO Application 05	10	15	20	25	30	35	40
WHC164 (HC)	• Thick MT-CVD coating with a dominant Al_2O_3 layer. • Primarily developed for the material groups P, K, and H. • Full and discontinuous cut. • High cutting speeds and feeds possible.	P				■	■	■		
		M								
		K				■	■	■		
		N								
		S								
		H		■	■					
WHC168 (HC)	• Multilayer MT CVD coating. • Excellent combination of toughness and reliability. • Steels, cast materials, and alternatively for stainless steel. • Roughing.	P				■	■	■		
		M				■	■			
		K				■	■	■		
		N								
		S								
		H								
WHC170 (HC)	• Multilayer MT CVD coating. • Excellent toughness. • First choice for strong interruptions. • Cast materials and steel.	P						■	■	■
		M					■	■	■	
		K						■	■	■
		N								
		S								
		H								
WHC198 (HC)	• Upgraded PVD grade with hard AlTiN coating. • Optimized cutting edge stability. • General machining of steel, stainless steel, high-temperature resistant alloys, titanium, iron, cast iron, and nonferrous materials.	P				■	■	■		
		M				■	■			
		K				■	■	■		
		N				■	■	■	■	
		S				■	■			
		H								

Uncoated Cermet

Cutting Material	Description	Material	ISO Application 05	10	15	20	25	30	35	40
WHT10 (HT)	• Uncoated cermet. • Finishing. • Steels, stainless steels, and cast materials.	P	■	■						
		M								
		K	■	■						
		N								
		S								
		H								
WHT12 (HT)	• Uncoated cermet. • Finishing. • Steels, cast materials, sintered metals, and nonferrous metals.	P		■	■					
		M								
		K		■	■					
		N		■	■					
		S								
		H								
WHT32 (HT)	• Uncoated cermet. • Finishing. • Steels and cast materials.	P				■	■	■		
		M								
		K			■	■	■			
		N								
		S								
		H								

Wohlhaupter Insert Grades

Cermet | CBN

Coated Cermet

Cutting Material	Description	Material	ISO Application 05	10	15	20	25	30	35	40
WTC15 (TC)	• PVD brilliant coating. • Reduce friction coefficient in boring applications. • Coated cermet general purpose grade for material group P. • Achieves excellent surface finish with excellent wear resistance. • Usable in stainless steels.	P			■	■	■			
		M			■	■				
		K								
		N								
		S								
		H								
WTC121 (TC)	• PVD coated cermet. • Finishing of steels and stainless steels.	P			■	■				
		M			■	■				
		K								
		N								
		S								
		H								

Uncoated CBN

Cutting Material	Description	Material	ISO Application 05	10	15	20	25	30	35	40
WBN150 (BN)	• Uncoated CBN grade. • Roughing and finishing smooth and slightly discontinuous cuts. • Hardened steels 52 - 64 HRC. • Grain size 2 µm. • CBN content: 50%.	P								
		M								
		K								
		N								
		S								
		H		■	■					
WBN200 (BN)	• Uncoated CBN grade. • Roughing and finishing highly discontinuous cuts. • Hardened steels 52 - 64 HRC. • Grain size 3 µm. • CBN content: 65%.	P								
		M								
		K								
		N								
		S								
		H			■	■				
WBN300 (BN)	• Uncoated CBN grade. • Roughing and finishing smooth cuts. • Hardened steels 52 - 64 HRC. • Grain size 0.5 - 1.0 µm. • CBN content: approximately 50%.	P								
		M								
		K	■	■						
		N								
		S								
		H	■	■						
WBN450 (BN)	• Uncoated CBN grade. • Roughing and finishing smooth and discontinuous cuts. • Pearlite grey cast iron and sintered metals. • Grain size 2 µm. • CBN content: 90%.	P								
		M								
		K			■	■	■			
		N								
		S								
		H								
WBN448 (BN)	• Uncoated CBN grade. • Roughing and finishing smooth and discontinuous cuts. • Pearlite grey cast iron and sintered metals and ductile iron. • CBN content: 90%.	P								
		M								
		K			■	■	■			
		N								
		S								
		H								

Wohlhaupter Insert Grades

CBN | PCD | Ceramic

Coated CBN

Cutting Material	Description	Material	ISO Application 05	10	15	20	25	30	35	40
WBC300 (BC)	• Coated CBN. • Roughing and finishing smooth cuts. • Hardened steels 52 - 64 HRC. • Grain size 1 µm. • CBN content: 50%.	P								
		M								
		K								
		N								
		S								
		H								

PCD

Cutting Material	Description	Material	ISO Application 05	10	15	20	25	30	35	40
PKDD30 (DP)	• PCD medium grain grade. • Finishing. • Al alloys and Mg alloys up to 12% Si. • Grain size 10 µm.	P								
		M								
		K								
		N								
		S								
		H								
PKDD50 (DP)	• PCD mixed-grain grade. • Finishing. • CFRP, GRP, MMC, Al alloys over 12% Si. • Grain size 2 - 30 µm.	P								
		M								
		K								
		N								
		S								
		H								

Ceramic

Cutting Material	Description	Material	ISO Application 05	10	15	20	25	30	35	40
WCN40 (CN)	• Uncoated silicon-nitride ceramic. • Roughing. • Pearlite grey cast iron.	P								
		M								
		K								
		N								
		S								
		H								

Boring Insert Wear Patterns

Built-up Edge



Potential Problem
- Machined material adheres to the cutting edge of insert. When it breaks, the edge becomes brittle and cracks. This can negatively affect machined surface.



Possible Solution
- Increase temperature by increasing speed or feed.
- Use an insert with higher lubricity coating.
- Choose a freer cutting insert geometry.

Flank Wear

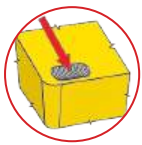


Potential Problem
- Caused by friction between the insert and machined material. It cannot be fully eliminated, but it can be reduced.

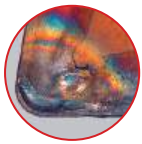


Possible Solution
- Use a more wear-resistant grade.
- Reduce cutting speed.
- Use coolant or increase coolant flow to the cutting edge.

Cratering

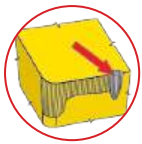


Potential Problem
- Appears when the geometry is too neutral or material is too hard for the substrate.

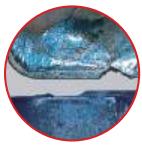


Possible Solution
- Use a more wear-resistant grade.
- Reduce cutting speed or feed.
- Use coolant or increase coolant flow to the cutting edge.

Notch Wear



Potential Problem
- Occurs when cutting edge of insert comes in contact with surface of machined material.
- Caused by hardening of surface layer of material and burrs.
- Often appears on stainless austenitic steels and other high-temperature alloy steels.

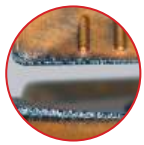


Possible Solution
- Use a more wear-resistant grade (Al_2O_3).
- Select a tool with a smaller approach angle.
- Vary the radial depth of cut.
- Use coolant or increase coolant flow to the cutting edge.

Comb Cracks



Potential Problem
- Caused by high stress on the cutting edge during interrupted cuts.

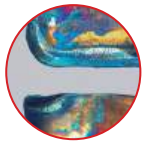


Possible Solution
- Switch off coolant or increase coolant flow to obtain an even temperature level.
- Reduce cutting speed.
- Use tougher insert grade.

Plastic Deformation

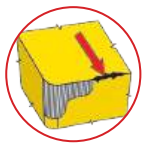


Potential Problem
- Caused by high thermal stress on the cutting edge from excessive feed rate and cutting speed.



Possible Solution
- Use a more wear-resistant grade.
- Reduce cutting speed.
- Reduce feed rate.
- Use coolant or increase coolant flow to the cutting edge.

Chipping of Cutting Edge (Out of Cut)

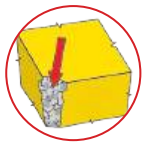


Potential Problem
- Caused by poor chip control.
- Can damage the portion of the cutting edge that might not be engaged in the cut.



Possible Solution
- Change feed rate to gain chip control.
- Select a tool with a different approach angle.
- Use an insert with a different geometry.
- Use a tougher grade of carbide.

Insert Fracture



Potential Problem
- Caused by workpiece material, grade, condition, the rigidity of the machine-tool workpiece, extent of wear, and cutting conditions.



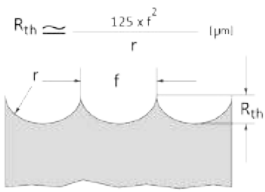
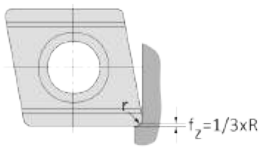
Possible Solution
- Use a tougher grade of carbide.
- Reduce the feed and depth of cut.
- Use an insert with a stronger chip-breaker.
- Use an insert with a bigger corner radius.

Corner Radius

Surface Finish

The corner radius of replaceable inserts is very important in finish machining. Large corner radii (0.8 mm (0.031")) or higher allow for high feed rates with good surface quality.

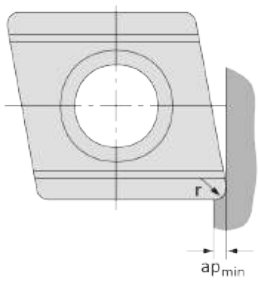
The expected surface quality can be estimated by using the function of corner radius and feed rate formula.

	**1.** The larger the corner radius and the lighter the feed rate is, the better the surface quality.
	**2.** If the feed is approximately 1/3 of the corner radius, the better the machining time and surface finish will be in finish machining applications.
	**3.** A larger corner radius increases radial forces, which can negatively affect dimensional accuracy. Large corner radii also require increased depth of cut.

Depth of Cut (a_p)



Minimum depth of cut (a_p) should at least match the corner radius. This minimizes the radial forces.



Formulas

General Formulas	
Cutting Speed (m/min)	$V_c = \frac{D \times \pi \times n}{1000}$
RPM (min^{-1})	$n = \frac{V_c \times 1000}{D \times \pi}$
Feed Speed (mm/min)	$V_f = f \times n$

Key	
Machining Ø (mm)	**D**
Feed (mm/rev)	**f**
Cutting Speed (m/min)	V_c
RPM (min^{-1})	**n**

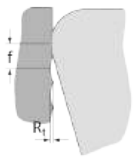
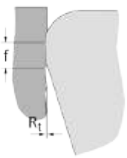
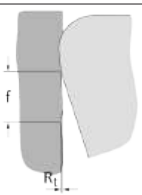
Wiper Geometry

Replaceable Inserts with Wiper Geometry

Replaceable inserts with wiper geometry achieve significantly better surface finish than those produced by normal replaceable inserts with standard corner radii. Feed lines created by standard inserts are minimized. They also permit considerably higher feed rates without any significant trade-offs with regard to the workpiece surfaces produced.

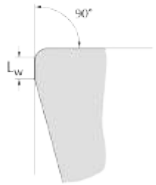
Other advantages include:

- Higher stability, resulting in high process reliability even for highly interrupted cuts.
- Vibrations are reduced.

Insert with conventional corner radius with feed (f)	
Insert with wiper geometry radius with same feed (f)	
Insert with wiper geometry with increased feed (f)	

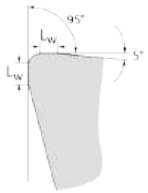
Wiper Geometry for 90° Approach Angle

Replaceable inserts produce a right-angled step at the bottom of the hole. When used in a Wohlhaupter standard insert holder that has a 90° approach angle, the secondary wiper cutting edge is nearly parallel with the wall of the hole.

Wiper geometry for 90° approach angle L_w = length of the wiper secondary cutting edge	

Wiper Geometry for 95° Approach Angle

Wiper inserts can also be used with 95° insert holders, which are included in the Wohlhaupter standard insert range.

Wiper geometry for 95° approach angle (left and right cutting) L_w = length of the secondary wiper cutting edge	

SECTION

B10-J

Modular Tool Holders

Modular Tool Holders



Clamping Tools with MVS Connection

Wohlhaupter offers a complete range of tool holders that incorporates the MVS connection. Our clamping tools allow for smaller MVS tools to connect and provide a quick and inexpensive alternative to special tooling. The clamping tools also feature coolant-through capabilities.

Applicable Industries

- Aerospace
- Agriculture
- Automotive
- Defense
- General Production
- Heavy Equipment
- Hydraulics
- Marine
- Medical
- Oil and Gas
- Renewable Energy/ Energy
- Tool, Mold, and Die

Reference Icons

The following icons will appear throughout the catalog to help you navigate between products.



MVS Connection Color Guide
Detailed instructions and information regarding the MVS connection(s).



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

WARNING means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

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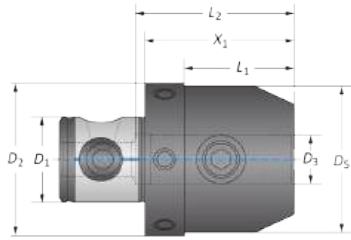
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Adapter Sleeves for Cylindrical Shanks

DIN 1835B





Metric (mm)

MVS Connection $D_2 \mid D_1$	Clamping Range D_3	Adapter Sleeve X_1	L_1	L_2	D_5	Weight (kg)	Balancing Screw	Part No.
32 - 18	6.00	36.00	23.00	40.00	25.00	0.20	M5 x 0.8 x 6	**228022**
	8.00	36.00	23.00	40.00	28.00	0.20	M5 x 0.8 x 6	**228023**
	10.00	48.00	—	44.00	35.00	0.30	M5 x 0.8 x 6	**228024**
40 - 22	12.00	52.00	—	49.00	42.00	0.50	M5 x 0.8 x 8	**228025**
	14.00	54.00	—	49.00	44.00	0.60	M5 x 0.8 x 8	**228026**
50 - 28	6.00	36.00	23.00	40.00	25.00	0.40	M6 x 1 x 10	**162015**
	8.00	36.00	23.00	40.00	28.00	0.40	M6 x 1 x 10	**162016**
	10.00	44.00	31.00	44.00	35.00	0.50	M6 x 1 x 10	**162017**
	12.00	44.00	31.00	49.00	42.00	0.50	M6 x 1 x 10	**162018**
	16.00	49.00	36.00	52.00	48.00	1.00	M6 x 1 x 10	**162019**
	18.00	49.00	36.00	52.00	48.00	1.00	M6 x 1 x 10	**228014**
	20.00	60.00	—	54.00	52.00	1.20	M6 x 1 x 10	**162020**
63 - 36	20.00	49.00	36.00	54.00	52.00	1.10	M6 x 1 x 10	**161024**
	25.00	75.00	—	59.00	63.00	1.90	M6 x 1 x 15	**161026**
	32.00	75.00	—	63.00	72.00	2.20	M6 x 1 x 15	**161027**
80 - 36	40.00	85.00	—	73.00	80.00	2.50	M6 x 1 x 15	**161028**

Imperial (in)

MVS Connection $D_2 \mid D_1$	Clamping Range D_3	Adapter Sleeve X_1	L_1	L_2	D_5	Weight (lbs)	Balancing Screw	Part No.
32 - 18	0.236	1.417	0.906	1.575	0.984	0.441	M5 x 0.8 x 6	**228022**
	0.315	1.417	0.906	1.575	1.102	0.441	M5 x 0.8 x 6	**228023**
	0.394	1.890	—	1.732	1.378	0.661	M5 x 0.8 x 6	**228024**
40 - 22	0.472	2.047	—	1.929	1.654	1.102	M5 x 0.8 x 8	**228025**
	0.551	2.126	—	1.929	1.732	1.323	M5 x 0.8 x 8	**228026**
50 - 28	0.236	1.417	0.906	1.575	0.984	0.882	M6 x 1 x 10	**162015**
	0.315	1.417	0.906	1.575	1.102	0.882	M6 x 1 x 10	**162016**
	0.394	1.732	1.220	1.732	1.378	1.102	M6 x 1 x 10	**162017**
	0.472	1.732	1.220	1.929	1.654	1.102	M6 x 1 x 10	**162018**
	0.630	1.929	1.417	2.047	1.890	2.205	M6 x 1 x 10	**162019**
	0.709	1.929	1.417	2.047	1.890	2.205	M6 x 1 x 10	**228014**
	0.787	2.362	—	2.126	2.047	2.646	M6 x 1 x 10	**162020**
63 - 36	0.787	1.929	1.417	2.126	2.047	2.425	M6 x 1 x 10	**161024**
	0.984	2.953	—	2.323	2.480	4.189	M6 x 1 x 15	**161026**
	1.260	2.953	—	2.480	2.835	4.851	M6 x 1 x 15	**161027**
80 - 36	1.575	3.346	—	2.874	3.150	5.512	M6 x 1 x 15	**161028**

NOTE: Balanced 10 gmm/kg.

NOTE: When using a ball pressure screw instead of a thread pin, it's similar to DIN 1835E, without axial adjustment.
See ball pressure screws on page B10-J: 12.

J

B10: ix - x

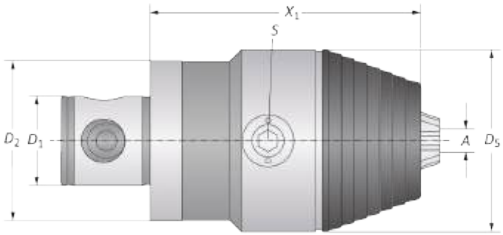
Key on B10-J: 2

m = Metric (mm)
i = Imperial (in)

Drill Chucks

Clamping Diameter Range: 0.50 mm - 16.00 mm (0.019" - 0.629")





Metric (mm)

MVS Connection $D_2 \mid D_1$	Clamping Range A	Drill Chuck X_1	Drill Chuck D_5	Drill Chuck S	Weight (kg)	Part No.
50 - 28	0.50 - 13.00	80.00	50.00	s6 / B	1.10	**209088**
	2.50 - 16.00	85.00	57.00	s6 / B	1.30	**209089**
63 - 36	0.50 - 13.00	80.00	50.00	s6 / B	1.30	**209090**
	2.50 - 16.00	85.00	57.00	s6 / B	1.50	**209091**

Imperial (in)

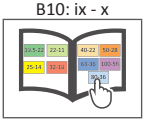
MVS Connection $D_2 \mid D_1$	Clamping Range A	Drill Chuck X_1	Drill Chuck D_5	Drill Chuck S	Weight (lbs)	Part No.
50 - 28	0.019 - 0.511	3.150	1.969	s6 / B	2.425	**209088**
	0.098 - 0.629	3.346	2.244	s6 / B	2.866	**209089**
63 - 36	0.019 - 0.511	3.150	1.969	s6 / B	2.866	**209090**
	0.098 - 0.629	3.346	2.244	s6 / B	3.307	**209091**

NOTE: Balanced 6.3 gmm/kg.

J

B10: ix - x

Key on B10-J: 2



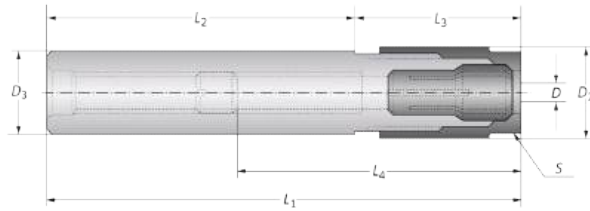
m = Metric (mm)
i = Imperial (in)

Collet Chucks

Erickson System | Cylindrical (ISO 15488 (DIN 6499))

Collet Chucks for Erickson System





Metric (mm)

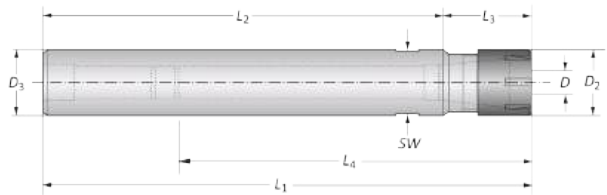
	Nominal Size	Clamping Range *D*	Collet Chuck D_2	D_3	L_1	L_2	L_3	$L_{4\,Min}$	$L_{4\,Max}$	Service Key *S*	Weight (kg)	Part No.
ⓜ	6	0.50 - 6.00	14.00	12.50	112.00	76.00	36.00	42.00	101.00	13	0.08	**162080**
			14.00	12.50	176.00	140.00	36.00	42.00	102.00	13	0.10	**162081**
	10	0.50 - 10.00	21.00	20.00	120.00	76.00	44.00	39.00	107.00	19	0.20	**162082**
			21.00	20.00	184.00	140.00	44.00	39.00	119.00	19	0.30	**162083**

Imperial (in)

	Nominal Size	Clamping Range *D*	Collet Chuck D_2	D_3	L_1	L_2	L_3	$L_{4\,Min}$	$L_{4\,Max}$	Service Key *S*	Weight (lbs)	Part No.
ⓘ	6	0.020 - 0.236	0.551	0.492	4.410	2.992	1.417	1.654	3.976	13	0.176	**162080**
			0.551	0.492	6.929	5.512	1.417	1.654	1.016	13	0.220	**162081**
	10	0.020 - 0.394	0.827	0.787	4.724	2.992	1.732	1.535	4.213	19	0.441	**162082**
			0.827	0.787	7.244	5.512	1.732	1.535	4.686	19	0.661	**162083**

Cylindrical Collet Chucks for ISO 15488 (DIN 6499) Collets





Metric (mm)

	Nominal Size	*D*	Collet Chuck D_2	D_3	L_1	L_2	L_3	$L_{4\,Min}$	$L_{4\,Max}$	Weight (kg)	Hex Size *SW*	Part No.
ⓜ	ER 8	1.00 - 5.00	12.00	8.00	126.00	100.00	26.00	36.00	36.00	0.05	09	**209054**
			12.00	12.00	166.00	140.00	26.00	36.00	36.00	0.14	09	**209055**
	ER 11	1.00 - 7.00	16.00	16.00	106.50	80.00	26.50	24.00	65.00	0.12	11	**209056**
			16.00	16.00	166.50	140.00	26.50	24.00	65.00	0.20	11	**209057**
	ER 16	1.00 - 10.00	22.00	20.00	118.50	80.00	38.50	34.00	103.00	0.20	17	**209058**
			22.00	20.00	178.50	140.00	38.50	34.00	123.00	0.32	17	**209059**

Imperial (in)

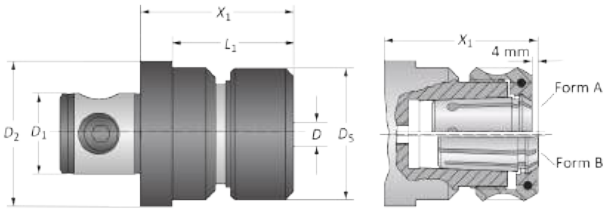
	Nominal Size	*D*	Collet Chuck D_2	D_3	L_1	L_2	L_3	$L_{4\,Min}$	$L_{4\,Max}$	Weight (lbs)	Hex Size *SW*	Part No.
ⓘ	ER 8	0.039 - 0.196	0.472	0.315	4.961	3.937	1.024	1.417	1.417	0.110	09	**209054**
			0.472	0.472	6.535	5.512	1.024	1.417	1.417	0.309	09	**209055**
	ER 11	0.039 - 0.275	0.630	0.630	4.193	3.150	1.043	0.945	2.559	0.265	11	**209056**
			0.630	0.630	6.555	5.512	1.043	0.945	2.559	0.441	11	**209057**
	ER 16	0.039 - 0.393	0.866	0.787	4.665	3.150	1.516	1.339	4.055	0.441	17	**209058**
			0.866	0.787	7.028	5.512	1.516	1.339	4.843	0.705	17	**209059**

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Collet Chucks

ISO 10897 (DIN 6388)





Metric (mm)

MVS Connection $D_2 \mid D_1$	Clamping Range D	Nominal Size	Collet Chuck X_1*	Collet Chuck L_1	Collet Chuck D_5	Weight (kg)	Part No.
40 - 22	2.00 - 16.00	16	64.00	—	43.00	0.50	**209082**
50 - 28	2.00 - 16.00	16	63.00	50.00	43.00	0.90	**162011**
	2.00 - 25.00	25	74.00	—	60.00	1.00	**209083**
63 - 36	2.00 - 25.00	25	74.00	—	60.00	1.40	**161016**
	4.00 - 32.00	32	89.00	—	72.00	1.80	**161098**

Imperial (in)

MVS Connection $D_2 \mid D_1$	Clamping Range D	Nominal Size	Collet Chuck X_1*	Collet Chuck L_1	Collet Chuck D_5	Weight (lbs)	Part No.
40 - 22	0.078 - 0.629	16	2.520	—	1.693	1.102	**209082**
50 - 28	0.078 - 0.629	16	2.480	1.968	1.693	1.984	**162011**
	0.078 - 0.984	25	2.913	—	2.362	2.205	**209083**
63 - 36	0.078 - 0.984	25	2.913	—	2.362	3.087	**161016**
	0.157 - 1.259	32	3.504	—	2.835	3.969	**161098**

***X_1** Clamping nut with ball-bearing.

J

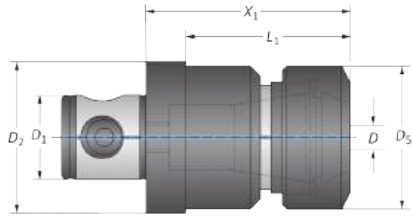
B10: ix - x
Key on B10-J: 2

(m) = Metric (mm)
(i) = Imperial (in)

Collet Chucks

ISO 15488 (DIN 6499)





Metric (mm)

MVS Connection $D_2 \mid D_1$	Clamping Range D	Nominal Size	Collet Chuck X_1*	Collet Chuck L_1	Collet Chuck D_5	Weight (kg)	Part No.
32 - 18	1.00 - 10.00	ER 16	54.00	41.00	28.00	0.20	**228020**
40 - 22	2.00 - 16.00	ER 25	75.00	—	42.00	0.60	**228021**
50 - 28	2.00 - 16.00	ER 25	75.00	62.00	42.00	0.80	**228003**
	2.00 - 20.00	ER 32	76.00	—	50.00	0.80	**228004**
63 - 36	2.00 - 20.00	ER 32	76.00	63.00	50.00	1.20	**228007**
	4.00 - 26.00	ER 40	88.00	—	63.00	1.60	**228006**

Imperial (in)

MVS Connection $D_2 \mid D_1$	Clamping Range D	Nominal Size	Collet Chuck X_1*	Collet Chuck L_1	Collet Chuck D_5	Weight (lbs)	Part No.
32 - 18	0.039 - 0.393	ER 16	2.125	1.614	1.102	0.441	**228020**
40 - 22	0.078 - 0.629	ER 25	2.953	—	1.654	1.323	**228021**
50 - 28	0.078 - 0.629	ER 25	2.953	2.441	1.654	1.764	**228003**
	0.078 - 0.787	ER 32	2.992	—	1.969	1.764	**228004**
63 - 36	0.078 - 0.787	ER 32	2.992	2.480	1.969	2.646	**228007**
	0.157 - 1.023	ER 40	3.465	—	2.480	3.527	**228006**

***X_1** Clamping nut with sliding ring.

J

B10: ix - x

Key on B10-J: 2

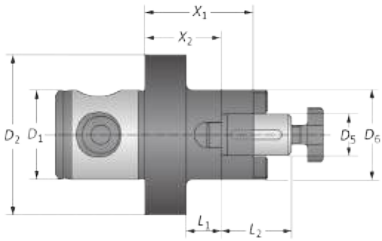
ⓜ = Metric (mm)
ⓘ = Imperial (in)

Milling Machine Arbors

Adapter Range: 13.00 mm - 40.00 mm (0.512" - 1.575")

For Milling Cutters with Longitudinal or Transverse Drive





Metric (mm)

MVS Connection $D_2 \mid D_1$	Adapter Range D_5	Milling Arbor X_1	X_2	L_1	L_2	D_6	Weight (kg)	Part No.
50 - 28	13.00	34.00	24.00	11.00	22.00	28.00	0.40	**162002**
	16.00	40.00	30.00	17.00	27.00	32.00	0.50	**162003**
	22.00	40.00	28.00	15.00	31.00	40.00	0.60	**162004**
63 - 36	16.00	40.00	30.00	17.00	27.00	32.00	0.80	**161002**
	22.00	40.00	28.00	15.00	31.00	40.00	0.90	**161003**
	27.00	40.00	28.00	15.00	33.00	48.00	1.10	**161004**
	32.00	40.00	26.00	13.00	38.00	58.00	1.30	**161005**
80 - 36	40.00	53.00	39.00	—	41.00	70.00*	2.60	**161006**

Imperial (in)

MVS Connection $D_2 \mid D_1$	Adapter Range D_5	Milling Arbor X_1	X_2	L_1	L_2	D_6	Weight (lbs)	Part No.
50 - 28	0.512	1.339	0.945	0.433	0.866	1.102	0.882	**162002**
	0.630	1.575	1.181	0.669	1.063	1.260	1.102	**162003**
	0.866	1.575	1.102	0.591	1.220	1.575	1.323	**162004**
63 - 36	0.630	1.575	1.181	0.669	1.063	1.260	1.764	**161002**
	0.866	1.575	1.102	0.591	1.220	1.575	1.984	**161003**
	1.063	1.575	1.102	0.591	1.299	1.890	2.425	**161004**
	1.260	1.575	1.024	0.512	1.496	2.283	2.866	**161005**
80 - 36	1.575	2.087	1.535	—	1.614	2.756*	5.733	**161006**

*Ø 70.00 mm (2.756") with clutch drive ring.

J

B10: ix - x

Key on B10-J: 2



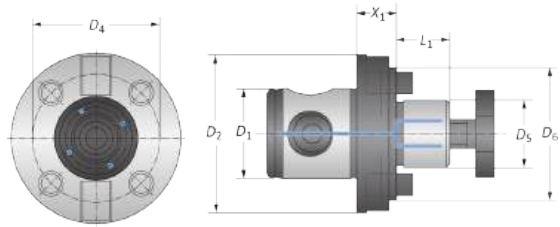
m = Metric (mm)
i = Imperial (in)

Holding Arbors for Milling Cutters

Adapter Range: 16.00 mm - 40.00 mm (0.630" - 1.575")

Central Coolant Feed





Metric (mm)

MVS Connection $D_2 \mid D_1$	Adapter Range D_5	Holding Arbor X_1	L_1	D_4	D_6	Weight (kg)	Part No.
50 - 28	16.00	16.00	17.00	—	40.00	0.40	**162032**
	22.00	16.00	19.00	—	50.00	0.50	**162033**
63 - 36	27.00	16.00	21.00	—	60.00	0.80	**161082**
80 - 36	32.00	16.00	24.00	—	78.00	1.10	**209080**
	40.00	19.00	27.00	66.70	89.00	1.50	**209081**

Imperial (in)

MVS Connection $D_2 \mid D_1$	Adapter Range D_5	Holding Arbor X_1	L_1	D_4	D_6	Weight (lbs)	Part No.
50 - 28	0.630	0.630	0.669	—	1.575	0.882	**162032**
	0.866	0.630	0.748	—	1.969	1.102	**162033**
63 - 36	1.063	0.630	0.827	—	2.362	1.764	**161082**
80 - 36	1.260	0.630	0.945	—	3.071	2.425	**209080**
	1.575	0.748	1.063	2.626	3.504	3.307	**209081**

NOTE: See page B10-H: 5 for holding arbor with MVS 100 - 56 connection.

J

B10: ix - x

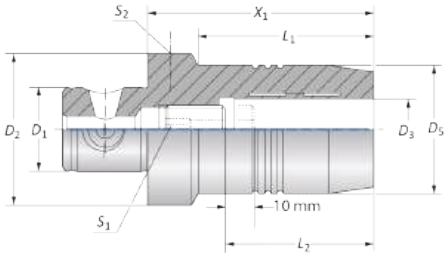
Key on B10-J: 2

m = Metric (mm)
i = Imperial (in)

Clamping Chucks | Tapping Chucks

Coolant-Through Hydraulic Clamping Chucks





Metric (mm)

MVS Connection $D_2 \mid D_1$	Clamping Range D_3	Clamping Chuck X_1	D_5	L_1	L_2	S_1	S_2	Weight (kg)	Part No.
50 - 28	20.00	75.00	42.00	58.00	51.00	s6	s5	0.80	**209044**
63 - 36	20.00	75.00	42.00	53.00	51.00	s5	s5	1.10	**209045**

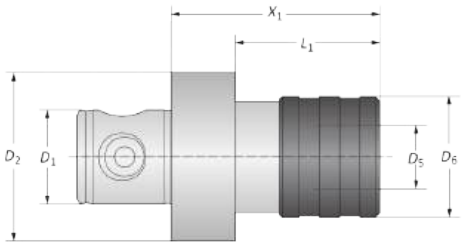
Imperial (in)

MVS Connection $D_2 \mid D_1$	Clamping Range D_3	Clamping Chuck X_1	D_5	L_1	L_2	S_1	S_2	Weight (lbs)	Part No.
50 - 28	0.787	2.953	1.654	2.283	2.008	s6	s5	1.764	**209044**
63 - 36	0.787	2.953	1.654	2.087	2.008	s5	s5	2.425	**209045**

NOTE: Balanced 10 gmm/kg.

Tapping Chucks (Noncoolant)





Metric (mm)

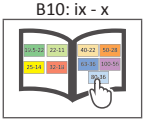
MVS Connection $D_2 \mid D_1$	Quick-Change Adapters For Taps	Nominal Size	Tapping Chucks X_1	L_1	D_5	D_6	Length Compensation Pressure	Tension	Weight (kg)	Part No.
50 - 28	M 3 - M 12	1	62.00	49.00	19.00	41.50	7.50	7.50	0.70	**209098**
	M 6 - M 20	2	94.00	–	31.00	60.30	10.00	10.00	1.10	**209099**
63 - 36	M 3 - M 12	1	56.00	43.00	19.00	41.50	7.50	7.50	0.80	**231005**
	M 6 - M 20	2	80.00	67.00	31.00	60.30	10.00	10.00	1.30	**231006**
	M 14 - M 33	3	152.00	–	48.00	86.00	17.50	17.50	4.10	**231007**

Imperial (in)

MVS Connection $D_2 \mid D_1$	Quick-Change Adapters For Taps	Nominal Size	Tapping Chucks X_1	L_1	D_5	D_6	Length Compensation Pressure	Tension	Weight (lbs)	Part No.
50 - 28	M 3 - M 12	1	2.441	1.929	0.748	1.634	0.295	0.295	1.543	**209098**
	M 6 - M 20	2	3.701	–	1.220	2.374	0.394	0.394	2.425	**209099**
63 - 36	M 3 - M 12	1	2.205	1.693	0.748	1.634	0.295	0.295	1.764	**231005**
	M 6 - M 20	2	3.150	2.638	1.220	2.374	0.394	0.394	2.866	**231006**
	M 14 - M 33	3	5.984	–	1.890	3.386	0.689	0.689	9.040	**231007**

B10: ix - x

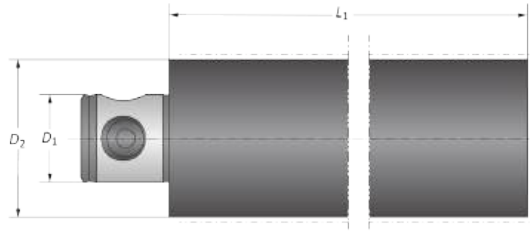
Key on B10-J: 2



(m) = Metric (mm)
(i) = Imperial (in)

Boring Bar Blanks





Metric (mm)

	MVS Connection D_2 | D_1	Boring Bar Blanks L_1	Weight (kg)	Part No.
m	50 - 28	160.00	2.60	**166103**
	63 - 36	160.00	4.20	**166104**
	80 - 36	160.00	6.60	**166105**

Imperial (in)

	MVS Connection D_2 | D_1	Boring Bar Blanks L_1	Weight (lbs)	Part No.
i	50 - 28	6.299	5.733	**166103**
	63 - 36	6.299	9.261	**166104**
	80 - 36	6.299	14.550	**166105**

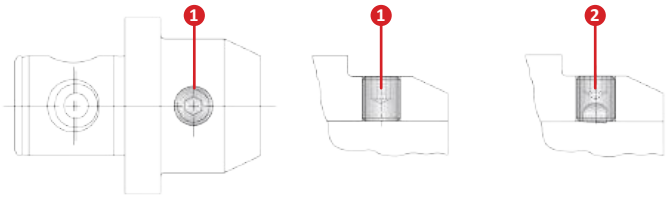
NOTE: The blanks are unhardened and unground in areas marked.

J

B10: ix - x
Key on B10-J: 2

m = Metric (mm)
i = Imperial (in)

Accessories for Adapter Sleeves



Metric (mm)

Clamping Diameter	1. Thread Pin Part No.	1. Thread Pin Service Key	2. Ball Pressure Screw Part No.	2. Ball Pressure Screw Service Key	2. Ball Pressure Screw Thread
6.00	**115680**	s3 / B	**315788**	s3 / B	M6 x 1
8.00	**115681**	s4 / B	**315789**	s4 / B	M8 x 1.25
10.00	**115682**	s5 / B	**515535**	s5 / B	M10 x 1.5
12.00	**115683**	s6 / B	**315790**	s6 / B	M12 x 1.75
14.00	**115683**	s6 / B	**315790**	s6 / B	M12 x 1.75
16.00	**115684**	s6 / B	**515675**	s6 / B	M14 x 2
18.00	**115684**	s6 / B	**515675**	s6 / B	M14 x 2
20.00	**115685**	s8 / B	**515676**	s8 / B	M16 x 2
25.00	**115686**	s10 / B	**515677**	s10 / B	M18 x 2 (2x)
32.00	**115687**	s10 / B	**515678**	s10 / B	M20 x 2 (2x)
40.00	**115687**	s10 / B	**515678**	s10 / B	M20 x 2 (2x)

Imperial (in)

Clamping Diameter	1. Thread Pin Part No.	1. Thread Pin Service Key	2. Ball Pressure Screw Part No.	2. Ball Pressure Screw Service Key	2. Ball Pressure Screw Thread
0.236	**115680**	s3 / B	**315788**	s3 / B	M6 x 1
0.315	**115681**	s4 / B	**315789**	s4 / B	M8 x 1.25
0.394	**115682**	s5 / B	**515535**	s5 / B	M10 x 1.5
0.472	**115683**	s6 / B	**315790**	s6 / B	M12 x 1.75
0.551	**115683**	s6 / B	**315790**	s6 / B	M12 x 1.75
0.630	**115684**	s6 / B	**515675**	s6 / B	M14 x 2
0.709	**115684**	s6 / B	**515675**	s6 / B	M14 x 2
0.787	**115685**	s8 / B	**515676**	s8 / B	M16 x 2
0.984	**115686**	s10 / B	**515677**	s10 / B	M18 x 2 (2x)
1.260	**115687**	s10 / B	**515678**	s10 / B	M20 x 2 (2x)
1.575	**115687**	s10 / B	**515678**	s10 / B	M20 x 2 (2x)

*Without axial adjustment.

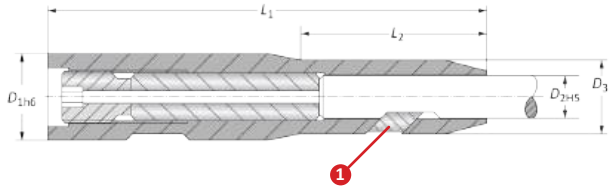
J

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Accessories for Adapter Sleeves

Micro Clamping Chucks Suitable for Reduction Sleeves with Shanks to DIN 1835-B





Metric (mm)

	Micro Clamping Chuck					1. Clamping Wedge	
	D_{1h6}	D_{2H5}	D_3	L_1	L_2	Part No.	Part No.
m	16.00	6.00	12.00	100.00	40.00	**219170**	**219070**
		8.00	14.00	100.00	45.00	**219171**	**219071**
	20.00	10.00	17.00	100.00	43.00	**219172**	**219072**
	25.00	12.00	20.00	110.00	39.00	**219173**	**219073**
		14.00	22.00	110.00	46.00	**219174**	**219074**
	32.00	16.00	25.00	125.00	45.00	**219174**	**219075**
		18.00	27.00	130.00	54.00	**219174**	**219076**
		20.00	30.00	130.00	62.00	**219175**	**219077**

Imperial (in)

	Micro Clamping Chuck					1. Clamping Wedge	
	D_{1h6}	D_{2H5}	D_3	L_1	L_2	Part No.	Part No.
i	0.630	0.236	0.472	3.937	1.575	**219170**	**219070**
		0.315	0.551	3.937	1.772	**219171**	**219071**
	0.787	0.394	0.669	3.937	1.693	**219172**	**219072**
	0.984	0.472	0.787	4.331	1.535	**219173**	**219073**
		0.551	0.866	4.331	1.811	**219174**	**219074**
	1.260	0.630	0.984	4.921	1.772	**219174**	**219075**
		0.709	1.063	5.118	2.126	**219174**	**219076**
		0.787	1.181	5.118	2.441	**219175**	**219077**

NOTE: Clamping chucks are used in reduction sleeves for clamping tools with cylindrical shanks to DIN 1835-B (Fig. 1). The chucks' design allows the use of standard tools versus ordering special tools (Fig. 2).

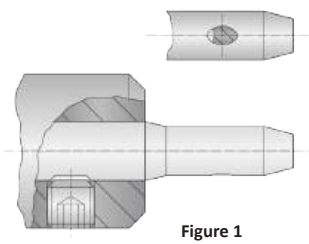


Figure 1

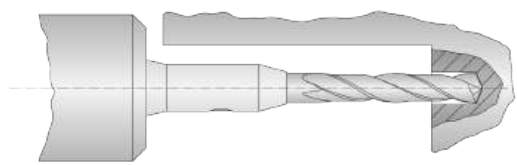


Figure 2

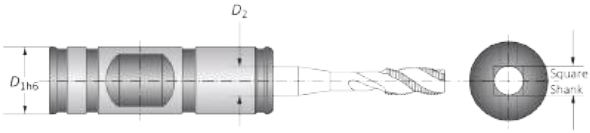
J

m = Metric (mm)
i = Imperial (in)

Accessories for Adapter Sleeves

Adapter Sleeve for Tap Shanks Suitable for Reduction Sleeves with Shanks to DIN 1835-B





Metric (mm)

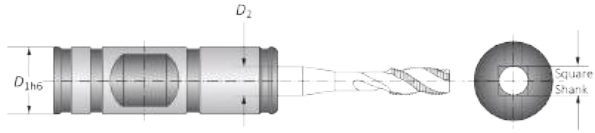
	Adapter Sleeves		
	D_{1h6}	D_2 x Square Shank	Part No.
ⓜ	8.00	2.50 x 2.10	**271190**
		2.80 x 2.10	**271191**
	10.00	3.50 x 2.70	**271192**
		4.00 x 3.00	**271193**
		4.50 x 3.40	**271194**
	12.00	6.00 x 4.90	**271195**
	14.00	7.00 x 5.50	**271196**
		8.00 x 6.20	**271197**
	16.00	9.00 x 7.00	**271198**
		10.00 x 8.00	**271199**
	18.00	11.00 x 9.00	**271200**
	20.00	12.00 x 9.00	**271201**
	25.00	14.00 x 11.00	**271202**
		16.00 x 12.00	**271203**
	32.00	18.00 x 14.50	**271204**
		20.00 x 16.00	**271205**
		22.00 x 18.00	**271206**
	40.00	25.00 x 20.00	**271207**
		28.00 x 22.00	**271208**
	50.00	32.00 x 24.00	**271209**
		36.00 x 29.00	**271210**
		40.00 x 32.00	**271211**

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Accessories for Adapter Sleeves

Adapter Sleeve for Tap Shanks Suitable for Reduction Sleeves with Shanks to DIN 1835-B





Imperial (in)

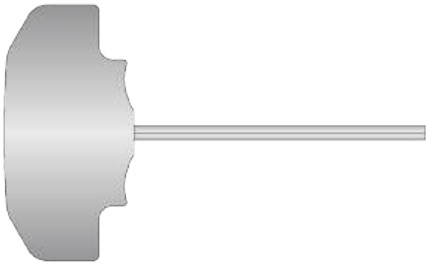
	Adapter Sleeves		
	D_{1h6}	D_2 x Square Shank	Part No.
	0.315	0.098 x 0.082	**271190**
		0.110 x 0.082	**271191**
	0.394	0.137 x 0.106	**271192**
		0.157 x 0.118	**271193**
		0.177 x 0.133	**271194**
	0.472	0.236 x 0.192	**271195**
	0.551	0.275 x 0.216	**271196**
		0.314 x 0.244	**271197**
	0.630	0.354 x 0.275	**271198**
		0.393 x 0.314	**271199**
ⓘ	0.709	0.433 x 0.354	**271200**
	0.787	0.472 x 0.354	**271201**
	0.984	0.551 x 0.433	**271202**
		0.629 x 0.472	**271203**
	1.260	0.708 x 0.570	**271204**
		0.787 x 0.629	**271205**
		0.866 x 0.708	**271206**
	1.575	0.984 x 0.866	**271207**
		1.102 x 0.866	**271208**
	1.969	1.259 x 0.944	**271209**
		1.417 x 1.141	**271210**
		1.574 x 1.259	**271211**



J

Ⓜ = Metric (mm)
ⓘ = Imperial (in)

Accessories for Drill Chucks



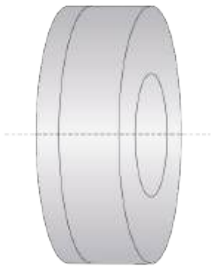
Service Keys for Drill Chucks

Service Key		Tightening Torque	
Service Key	Type	N·m	Part No.
2.50	B	15	**415577**
6.00	B	15	**115578**

Gaskets for Drill Chucks

Metric (mm)

	Gasket		
	Gasket Diameter	Clamping Diameter	Part No.
ⓜ	3.00 - 6.00	0.50 - 13.00	**387113**
	6.00 - 13.00	0.50 - 13.00	**387114**
	3.00 - 6.00	2.50 - 16.00	**387115**
	6.00 - 16.00	2.50 - 16.00	**387116**



Imperial (in)

	Gasket		
	Gasket Diameter	Clamping Diameter	Part No.
ⓘ	0.118 - 0.236	0.019 - 0.511	**387113**
	0.236 - 0.511	0.019 - 0.511	**387114**
	0.118 - 0.236	0.098 - 0.629	**387115**
	0.236 - 0.629	0.098 - 0.629	**387116**

Assembly Tool for Gasket

Part No.
387112



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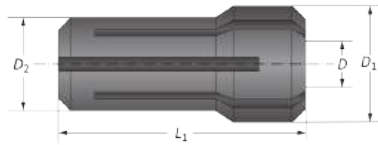
ⓜ = Metric (mm)
ⓘ = Imperial (in)

Accessories for Collet Chucks

Erickson System

Collet Sets for Erickson System





Metric (mm)

	Nominal Size	Standard-No.	Set D_1	Set D_2	Set L_1	Set D	Part No.
ⓜ	6	416 E	9.50	7.62	25.50	0.50 - 6.00	**071016**
	10	417 E	13.50	11.43	30.40	0.50 - 10.00	**071017**

Imperial (in)

	Nominal Size	Standard-No.	Set D_1	Set D_2	Set L_1	Set D	Part No.
ⓘ	6	416 E	0.374	0.300	1.004	0.020 - 0.236	**071016**
	10	417 E	0.531	0.450	1.197	0.020 - 0.394	**071017**

Collets for Erickson System

Metric (mm)

	Collet Nominal Size	Diameter Range *D*	Part No.
ⓜ	6	0.50 - 1.00	**071355**
		1.00 - 1.50	**071356**
		1.50 - 2.00	**071357**
		2.00 - 2.50	**071358**
		2.50 - 3.00	**071359**
		3.00 - 3.50	**071360**
		3.50 - 4.00	**071361**
		4.00 - 4.50	**071362**
		4.50 - 5.00	**071363**
		5.00 - 5.50	**071364**
		5.50 - 6.00	**071365**
	10	0.50 - 1.00	**071368**
		1.00 - 1.50	**071369**
		1.50 - 2.00	**071370**
		2.00 - 2.50	**071371**
		2.50 - 3.00	**071372**
		3.00 - 3.50	**071373**
		3.50 - 4.00	**071374**
		4.00 - 4.50	**071375**
		4.50 - 5.00	**071376**
		5.00 - 5.50	**071377**
		5.50 - 6.00	**071378**
		6.00 - 6.50	**071379**
		6.50 - 7.00	**071380**
		7.00 - 7.50	**071381**
		7.50 - 8.00	**071382**
		8.00 - 8.50	**071383**
		8.50 - 9.00	**071384**
		9.00 - 9.50	**071385**
		9.50 - 10.00	**071681**

Imperial (in)

	Collet Nominal Size	Diameter Range *D*	Part No.
ⓘ	6	0.020 - 0.039	**071355**
		0.039 - 0.059	**071356**
		0.059 - 0.079	**071357**
		0.079 - 0.098	**071358**
		0.098 - 0.118	**071359**
		0.118 - 0.138	**071360**
		0.138 - 0.157	**071361**
		0.157 - 0.177	**071362**
		0.177 - 0.197	**071363**
		0.197 - 0.217	**071364**
		0.217 - 0.236	**071365**
	10	0.020 - 0.039	**071368**
		0.039 - 0.059	**071369**
		0.059 - 0.079	**071370**
		0.079 - 0.098	**071371**
		0.098 - 0.118	**071372**
		0.118 - 0.138	**071373**
		0.139 - 0.157	**071374**
		0.157 - 0.177	**071375**
		0.177 - 0.197	**071376**
		0.197 - 0.217	**071377**
		0.217 - 0.236	**071378**
		0.236 - 0.256	**071379**
		0.256 - 0.276	**071380**
		0.276 - 0.295	**071381**
		0.295 - 0.315	**071382**
		0.315 - 0.335	**071383**
		0.335 - 0.354	**071384**
		0.354 - 0.374	**071385**
		0.374 - 0.394	**071681**

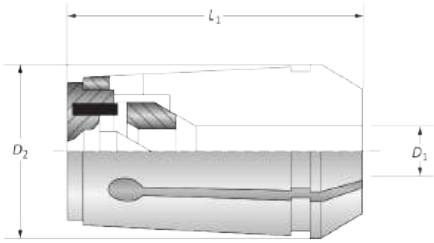
ⓜ = Metric (mm)
ⓘ = Imperial (in)

Accessories for Collet Chucks

ISO 10897-A (DIN 6388-A)

Collet Sets for Clarkson System





Metric (mm)

	Nominal Size	Standard-No.	Set D_2	Set L_1	Set D_1	Part No.
ⓜ	A 16	421 E	22.65	42.00	6.00 - 12.00	**071013**
	A 25	459 E	32.90	52.00	6.00 - 25.00	**071014**
	A 32	460 E	41.30	63.00	6.00 - 32.00	**071020**

Imperial (in)

	Nominal Size	Standard-No.	Set D_2	Set L_1	Set D_1	Part No.
ⓘ	A 16	421 E	0.892	1.654	0.236 - 0.472	**071013**
	A 25	459 E	1.295	2.047	0.236 - 0.984	**071014**
	A 32	460 E	1.626	2.480	0.236 - 1.260	**071020**

NOTE: Recommended to use clamping nuts with ball bearings to lock collets.

Collets for Clarkson System

Metric (mm)

	Collet Nominal Size	Diameter Range D	Part No.
ⓜ	A 16	6.00	**071304**
		8.00	**071305**
		10.00	**071306**
		12.00	**071307**
	A 25	6.00	**071308**
		8.00	**071309**
		10.00	**071310**
		12.00	**071311**
		16.00	**071312**
		20.00	**071313**
		25.00	**071684**
	A 32	6.00	**071427**
		8.00	**071428**
		10.00	**071429**
		12.00	**071430**
		16.00	**071431**
		20.00	**071432**
		25.00	**071433**
		32.00	**071685**

Imperial (in)

	Collet Nominal Size	Diameter Range D	Part No.
ⓘ	A 16	0.236	**071304**
		0.315	**071305**
		0.394	**071306**
		0.472	**071307**
	A 25	0.236	**071308**
		0.315	**071309**
		0.394	**071310**
		0.472	**071311**
		0.630	**071312**
		0.787	**071313**
		0.984	**071684**
	A 32	0.236	**071427**
		0.315	**071428**
		0.394	**071429**
		0.472	**071430**
		0.630	**071431**
		0.787	**071432**
		0.984	**071433**
		1.260	**071685**



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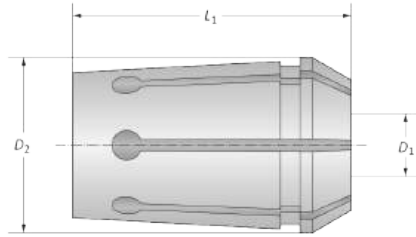
ⓜ = Metric (mm)
ⓘ = Imperial (in)

Accessories for Collet Chucks

ISO 10897-A (DIN 6388-A)

Collet Sets





Metric (mm)

	Nominal Size	Standard-No.	Set D_2	Set L_1	Set D_1	Part No.
m	A 16	410 E	22.65	40.00	2.00 - 16.00	**071003**
	A 25	444 E	32.90	52.00	2.00 - 25.00	**071004**
	A 32	450 E	41.30	60.00	4.00 - 32.00	**071019**

Imperial (in)

	Nominal Size	Standard-No.	Set D_2	Set L_1	Set D_1	Part No.
i	A 16	410 E	0.891	1.574	0.079 - 0.630	**071003**
	A 25	444 E	1.295	2.047	0.079 - 0.984	**071004**
	A 32	450 E	1.625	2.362	0.157 - 1.259	**071019**

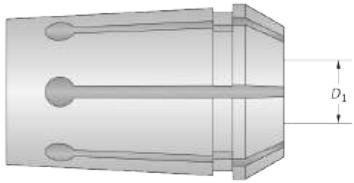
m = Metric (mm)
i = Imperial (in)

Accessories for Collet Chucks

ISO 10897-A (DIN 6388-A)

Collets





Metric (mm)

	Nominal Size	Diameter D_1	Part No.
ⓜ	A 16	2.00	**071140**
		2.50	**071141**
		3.00	**071142**
		3.50	**071143**
		4.00	**071144**
		4.50	**071145**
		5.00	**071146**
		5.50	**071147**
		6.00	**071148**
		6.50	**071149**
		7.00	**071150**
		7.50	**071151**
		8.00	**071152**
		8.50	**071153**
		9.00	**071154**
		9.50	**071155**
		10.00	**071156**
		10.50	**071157**
		11.00	**071158**
		11.50	**071159**
		12.00	**071160**
		12.50	**071161**
		13.00	**071162**
		13.50	**071163**
		14.00	**071164**
		14.50	**071165**
		15.00	**071166**
		15.50	**071167**
		16.00	**071168**
	A 25	2.00	**071169**
		3.00	**071170**
		4.00	**071171**
		5.00	**071172**
		6.00	**071173**
		7.00	**071174**
		8.00	**071175**
		9.00	**071176**
		10.00	**071177**
		11.00	**071178**
		12.00	**071179**
		13.00	**071180**

Metric (mm)

	Nominal Size	Diameter D_1	Part No.
ⓜ	A 25	14.00	**071181**
		15.00	**071182**
		16.00	**071183**
		17.00	**071184**
		18.00	**071185**
		19.00	**071186**
		20.00	**071187**
		21.00	**071188**
		22.00	**071189**
		23.00	**071190**
		24.00	**071191**
		25.00	**071192**
	A 32	4.00	**071612**
		5.00	**071419**
		6.00	**071420**
		7.00	**071613**
		8.00	**071421**
		9.00	**071614**
		10.00	**071422**
		11.00	**071666**
		12.00	**071423**
		13.00	**071667**
		14.00	**071668**
		15.00	**071669**
		16.00	**071424**
		17.00	**071670**
		18.00	**071665**
		19.00	**071671**
		20.00	**071416**
		21.00	**071672**
		22.00	**071673**
		23.00	**071674**
		24.00	**071675**
		25.00	**071417**
		26.00	**071676**
		27.00	**071677**
		28.00	**071678**
		29.00	**071679**
		30.00	**071633**
		31.00	**071680**
		32.00	**071418**

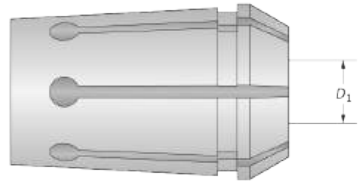
ⓜ = Metric (mm)
ⓘ = Imperial (in)

Accessories for Collet Chucks

ISO 10897-A (DIN 6388-A)

Collets





Imperial (in)

Nominal Size	Diameter D_1	Part No.
A 16	0.079	**071140**
	0.098	**071141**
	0.118	**071142**
	0.138	**071143**
	0.157	**071144**
	0.177	**071145**
	0.197	**071146**
	0.217	**071147**
	0.236	**071148**
	0.256	**071149**
	0.276	**071150**
	0.295	**071151**
	0.315	**071152**
	0.335	**071153**
	0.354	**071154**
	0.374	**071155**
	0.394	**071156**
	0.413	**071157**
	0.433	**071158**
	0.453	**071159**
	0.472	**071160**
	0.492	**071161**
	0.512	**071162**
	0.531	**071163**
	0.551	**071164**
	0.571	**071165**
	0.591	**071166**
	0.610	**071167**
	0.630	**071168**
A 25	0.078	**071169**
	0.118	**071170**
	0.157	**071171**
	0.196	**071172**
	0.236	**071173**
	0.275	**071174**
	0.315	**071175**
	0.354	**071176**
	0.393	**071177**
	0.433	**071178**
	0.472	**071179**
	0.511	**071180**

Imperial (in)

Nominal Size	Diameter D_1	Part No.
A 25	0.551	**071181**
	0.590	**071182**
	0.629	**071183**
	0.669	**071184**
	0.708	**071185**
	0.748	**071186**
	0.787	**071187**
	0.826	**071188**
	0.866	**071189**
	0.905	**071190**
	0.944	**071191**
	0.984	**071192**
A 32	0.157	**071612**
	0.196	**071419**
	0.236	**071420**
	0.275	**071613**
	0.315	**071421**
	0.354	**071614**
	0.393	**071422**
	0.433	**071666**
	0.472	**071423**
	0.511	**071667**
	0.551	**071668**
	0.590	**071669**
	0.629	**071424**
	0.669	**071670**
	0.708	**071665**
	0.748	**071671**
	0.787	**071416**
	0.826	**071672**
	0.866	**071673**
	0.905	**071674**
	0.944	**071675**
	0.984	**071417**
	1.023	**071676**
	1.063	**071677**
	1.102	**071678**
	1.141	**071679**
	1.181	**071633**
	1.220	**071680**
	1.259	**071418**

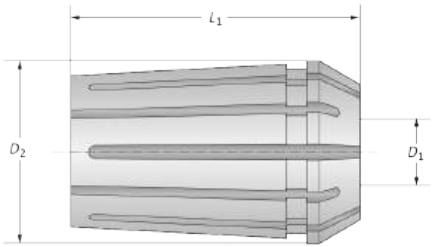
ⓜ = Metric (mm)
ⓘ = Imperial (in)

Accessories for Collet Chucks

ISO 10897-B (DIN 6388-B)



Collet Sets



Metric (mm)

	Nominal Size	Standard-No.	Set D_2	Set L_1	Set D_1	Part No.
	B 16	415 E	22.65	40.00	1.50 - 16.00	**071005**
ⓜ	B 25	462 E	32.90	52.00	3.50 - 25.00	**071006**
	B 32	467 E	41.30	60.00	5.50 - 32.00	**071022**

Imperial (in)

	Nominal Size	Standard-No.	Set D_2	Set L_1	Set D_1	Part No.
	B 16	415 E	0.892	1.575	0.059 - 0.630	**071005**
ⓘ	B 25	462 E	1.295	2.047	0.138 - 0.984	**071006**
	B 32	467 E	1.626	2.362	0.217 - 1.260	**071022**



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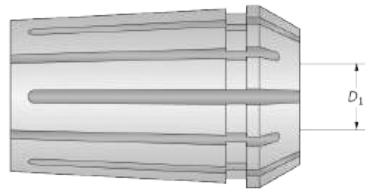
ⓜ = Metric (mm)
ⓘ = Imperial (in)

Accessories for Collet Chucks

ISO 10897-B (DIN 6388-B)

Collets





Metric (mm)

	Nominal Size	Diameter D_1	Part No.
m	B 16	1.50 - 2.00	**071625**
		2.00 - 2.50	**071626**
		2.50 - 3.00	**071621**
		3.00 - 3.50	**071622**
		3.50 - 4.00	**071193**
		4.00 - 4.50	**071194**
		4.50 - 5.00	**071195**
		5.00 - 5.50	**071196**
		5.50 - 6.00	**071197**
		6.00 - 6.50	**071198**
		6.50 - 7.00	**071199**
		7.00 - 7.50	**071200**
		7.50 - 8.00	**071201**
		8.00 - 8.50	**071202**
		8.50 - 9.00	**071203**
		9.00 - 9.50	**071204**
		9.50 - 10.00	**071205**
		10.00 - 10.50	**071206**
		10.50 - 11.00	**071207**
		11.00 - 11.50	**071208**
		11.50 - 12.00	**071209**
		12.00 - 12.50	**071210**
		12.50 - 13.00	**071211**
		13.00 - 13.50	**071212**
		13.50 - 14.00	**071213**
		14.00 - 14.50	**071214**
		14.50 - 15.00	**071215**
		15.00 - 15.50	**071216**
		15.50 - 16.00	**071217**
	B 25	3.50 - 4.00	**071627**
		4.00 - 4.50	**071628**
		4.50 - 5.00	**071218**
		5.00 - 5.50	**071219**
		5.50 - 6.00	**071220**
		6.00 - 6.50	**071221**
		6.50 - 7.00	**071222**
		7.00 - 7.50	**071223**
		7.50 - 8.00	**071224**
		8.00 - 8.50	**071225**
		8.50 - 9.00	**071226**
		9.00 - 9.50	**071227**
		9.50 - 10.00	**071228**
		10.00 - 10.50	**071229**
		10.50 - 11.00	**071230**
		11.00 - 11.50	**071231**

Metric (mm)

	Nominal Size	Diameter D_1	Part No.
m	B 25	11.50 - 12.00	**071232**
		12.00 - 12.50	**071233**
		12.50 - 13.00	**071234**
		13.00 - 13.50	**071235**
		13.50 - 14.00	**071236**
		14.00 - 14.50	**071237**
		14.50 - 15.00	**071238**
		15.00 - 15.50	**071239**
		15.50 - 16.00	**071240**
		16.00 - 16.50	**071241**
		16.50 - 17.00	**071242**
		17.00 - 17.50	**071243**
		17.50 - 18.00	**071244**
		18.00 - 18.50	**071245**
		18.50 - 19.00	**071246**
		19.00 - 19.50	**071247**
		19.50 - 20.00	**071248**
		20.00 - 20.50	**071249**
		20.50 - 21.00	**071250**
		21.00 - 21.50	**071251**
		21.50 - 22.00	**071252**
		22.00 - 22.50	**071253**
		22.50 - 23.00	**071254**
		23.00 - 23.50	**071255**
		23.50 - 24.00	**071256**
		24.00 - 24.50	**071257**
		24.50 - 25.00	**071258**
	B 32	5.50 - 6.00	**071686**
		6.00 - 6.50	**071687**
		6.50 - 7.00	**071688**
		7.00 - 7.50	**071689**
		7.50 - 8.00	**071690**
		8.00 - 8.50	**071691**
		8.50 - 9.00	**071692**
		9.00 - 9.50	**071693**
		9.50 - 10.00	**071542**
		10.00 - 10.50	**071543**
		10.50 - 11.00	**071544**
		11.00 - 11.50	**071545**
		11.50 - 12.00	**071546**
		12.00 - 12.50	**071547**
		12.50 - 13.00	**071548**
		13.00 - 13.50	**071549**
		13.50 - 14.00	**071550**
		14.00 - 14.50	**071551**

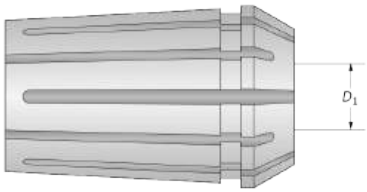
m = Metric (mm)
i = Imperial (in)

Accessories for Collet Chucks

ISO 10897-B (DIN 6388-B)

Collets





Metric (mm)

Nominal Size	Diameter D_1	Part No.
B 32	14.50 - 15.00	**071552**
	15.00 - 15.50	**071553**
	15.50 - 16.00	**071554**
	16.00 - 16.50	**071555**
	16.50 - 17.00	**071556**
	17.00 - 17.50	**071557**
	17.50 - 18.00	**071558**
	18.00 - 18.50	**071559**
	18.50 - 19.00	**071560**
	19.00 - 19.50	**071561**
	19.50 - 20.00	**071562**
	20.00 - 20.50	**071563**
	20.50 - 21.00	**071564**
	21.00 - 21.50	**071565**
	21.50 - 22.00	**071566**
	22.00 - 22.50	**071567**
	22.50 - 23.00	**071568**
	23.00 - 23.50	**071569**
	23.50 - 24.00	**071570**
	24.00 - 24.50	**071571**
	24.50 - 25.00	**071572**
	25.00 - 25.50	**071573**
	25.50 - 26.00	**071574**
	26.00 - 26.50	**071575**
	26.50 - 27.00	**071576**
	27.00 - 27.50	**071577**
	27.50 - 28.00	**071578**
	28.00 - 28.50	**071579**
	28.50 - 29.00	**071580**
	29.00 - 29.50	**071581**
	29.50 - 30.00	**071582**
	30.00 - 30.50	**071583**
	30.50 - 31.00	**071584**
	31.00 - 31.50	**071585**
	31.50 - 32.00	**071586**

Imperial (in)

Nominal Size	Diameter D_1	Part No.
B 16	0.059 - 0.079	**071625**
	0.079 - 0.098	**071626**
	0.098 - 0.118	**071621**
	0.118 - 0.138	**071622**
	0.138 - 0.157	**071193**
	0.157 - 0.177	**071194**
	0.177 - 0.197	**071195**
	0.197 - 0.217	**071196**
	0.217 - 0.236	**071197**
	0.236 - 0.256	**071198**
	0.256 - 0.276	**071199**
	0.276 - 0.295	**071200**
	0.295 - 0.315	**071201**
	0.315 - 0.335	**071202**
	0.335 - 0.354	**071203**
	0.354 - 0.374	**071204**
	0.374 - 0.394	**071205**
	0.394 - 0.413	**071206**
	0.413 - 0.433	**071207**
	0.433 - 0.453	**071208**
	0.453 - 0.472	**071209**
	0.472 - 0.492	**071210**
	0.492 - 0.512	**071211**
	0.512 - 0.531	**071212**
	0.531 - 0.551	**071213**
	0.551 - 0.571	**071214**
	0.571 - 0.591	**071215**
	0.591 - 0.610	**071216**
	0.610 - 0.630	**071217**
B 25	0.138 - 0.157	**071627**
	0.157 - 0.177	**071628**
	0.177 - 0.197	**071218**
	0.197 - 0.217	**071219**
	0.217 - 0.236	**071220**
	0.236 - 0.256	**071221**
	0.256 - 0.276	**071222**
	0.276 - 0.295	**071223**
	0.295 - 0.315	**071224**
	0.315 - 0.335	**071225**
	0.335 - 0.354	**071226**
	0.354 - 0.374	**071227**
	0.374 - 0.394	**071228**
	0.394 - 0.413	**071229**
	0.413 - 0.433	**071230**
	0.433 - 0.453	**071231**



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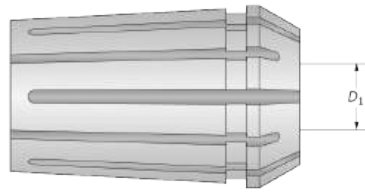
ⓜ = Metric (mm)
ⓘ = Imperial (in)

Accessories for Collet Chucks

ISO 10897-B (DIN 6388-B)

Collets





Imperial (in)

Nominal Size	Diameter D_1	Part No.
B 25	0.453 - 0.472	**071232**
	0.472 - 0.492	**071233**
	0.492 - 0.512	**071234**
	0.512 - 0.531	**071235**
	0.531 - 0.551	**071236**
	0.551 - 0.571	**071237**
	0.571 - 0.591	**071238**
	0.591 - 0.610	**071239**
	0.610 - 0.630	**071240**
	0.630 - 0.650	**071241**
	0.650 - 0.669	**071242**
	0.669 - 0.689	**071243**
	0.689 - 0.709	**071244**
	0.709 - 0.728	**071245**
	0.728 - 0.748	**071246**
	0.748 - 0.768	**071247**
	0.768 - 0.787	**071248**
	0.787 - 0.807	**071249**
	0.807 - 0.827	**071250**
	0.827 - 0.846	**071251**
	0.846 - 0.866	**071252**
	0.866 - 0.866	**071253**
	0.866 - 0.906	**071254**
	0.906 - 0.925	**071255**
	0.925 - 0.945	**071256**
	0.945 - 0.965	**071257**
	0.965 - 0.984	**071258**
B 32	0.217 - 0.236	**071686**
	0.236 - 0.256	**071687**
	0.256 - 0.276	**071688**
	0.276 - 0.295	**071689**
	0.295 - 0.315	**071690**
	0.315 - 0.335	**071691**
	0.335 - 0.354	**071692**
	0.354 - 0.374	**071693**
	0.374 - 0.394	**071542**
	0.394 - 0.413	**071543**
	0.413 - 0.433	**071544**
	0.433 - 0.453	**071545**
	0.453 - 0.472	**071546**
	0.472 - 0.492	**071547**
	0.492 - 0.512	**071548**
	0.512 - 0.531	**071549**
	0.531 - 0.551	**071550**
	0.551 - 0.571	**071551**

Imperial (in)

Nominal Size	Diameter D_1	Part No.
B 32	0.571 - 0.591	**071552**
	0.591 - 0.610	**071553**
	0.610 - 0.630	**071554**
	0.630 - 0.650	**071555**
	0.650 - 0.669	**071556**
	0.669 - 0.689	**071557**
	0.689 - 0.709	**071558**
	0.709 - 0.728	**071559**
	0.728 - 0.748	**071560**
	0.748 - 0.768	**071561**
	0.768 - 0.787	**071562**
	0.787 - 0.807	**071563**
	0.807 - 0.827	**071564**
	0.827 - 0.846	**071565**
	0.846 - 0.866	**071566**
	0.866 - 0.866	**071567**
	0.866 - 0.906	**071568**
	0.906 - 0.925	**071569**
	0.925 - 0.945	**071570**
	0.945 - 0.965	**071571**
	0.965 - 0.984	**071572**
	0.984 - 1.004	**071573**
	1.004 - 1.024	**071574**
	1.024 - 1.043	**071575**
	1.043 - 1.063	**071576**
	1.063 - 1.083	**071577**
	1.083 - 1.102	**071578**
	1.102 - 1.122	**071579**
	1.122 - 1.142	**071580**
	1.142 - 1.161	**071581**
	1.161 - 1.181	**071582**
	1.181 - 1.201	**071583**
	1.201 - 1.220	**071584**
	1.220 - 1.240	**071585**
	1.240 - 1.260	**071586**

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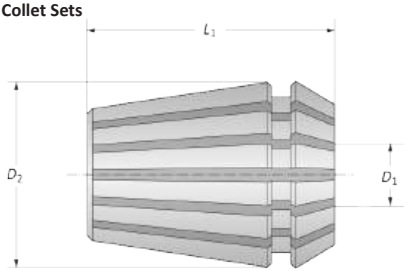
Ⓜ = Metric (mm)
Ⓘ = Imperial (in)

Accessories for Collet Chucks

ISO 15488-B (DIN 6499-B)



Collet Sets



Metric (mm)

Nominal Size	Standard-No.	Diameter D_1	Set D_2	Set L_1	Part No.
ER 8	4004 E	1.00 - 5.00	8.50	13.50	**071034**
ER 11	4008 E	1.00 - 7.00	11.00	18.00	**071028**
ER 16	426 E	0.50 - 10.00	16.00	27.50	**071029**
ER 25	430 E	1.50 - 16.00	25.00	34.00	**071031**
ER 32	470 E	2.00 - 20.00	32.00	40.00	**071032**
ER 40	472 E	3.00 - 26.00	40.00	46.00	**071033**

Imperial (in)

Nominal Size	Standard-No.	Diameter D_1	Set D_2	Set L_1	Part No.
ER 8	4004 E	0.039 - 0.197	0.335	0.531	**071034**
ER 11	4008 E	0.039 - 0.276	0.433	0.709	**071028**
ER 16	426 E	0.020 - 0.394	0.630	1.083	**071029**
ER 25	430 E	0.059 - 0.630	0.984	1.339	**071031**
ER 32	470 E	0.079 - 0.787	1.260	1.575	**071032**
ER 40	472 E	0.118 - 1.024	1.575	1.811	**071033**

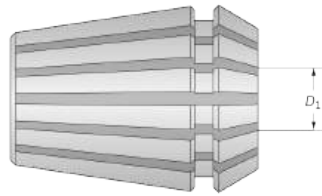
ⓜ = Metric (mm)
ⓘ = Imperial (in)

Accessories for Collet Chucks

ISO 15488-B (DIN 6499-B)

Collets





Metric (mm)

	Nominal Size	Diameter D_1	Part No.
ⓜ	ER 8	1.00	**071986**
		1.50	**071987**
		2.00	**071988**
		2.50	**071989**
		2.60 - 3.00	**071990**
		3.10 - 3.50	**071991**
		3.60 - 4.00	**071992**
		4.10 - 4.50	**071993**
		4.60 - 5.00	**071994**
	ER 11	1.00	**071700**
		1.50	**071701**
		2.00	**071702**
		2.50	**071703**
		2.60 - 3.00	**071704**
		3.10 - 3.50	**071705**
		3.60 - 4.00	**071706**
		4.10 - 4.50	**071707**
		4.60 - 5.00	**071708**
		5.10 - 5.50	**071709**
		5.60 - 6.00	**071710**
		6.10 - 6.50	**071711**
		6.60 - 7.00	**071712**
	ER 16	0.50 - 1.00	**071713**
		1.00 - 1.50	**071714***
		1.00 - 2.00	**071715**
		2.00 - 2.50	**071716***
		2.50 - 3.00	**071717**
		3.00 - 3.50	**071718***
		3.50 - 4.00	**071719**
		4.00 - 4.50	**271132***
		4.00 - 5.00	**071720**
		5.00 - 5.50	**271133***
		5.50 - 6.00	**071721**
		6.00 - 6.50	**271134***
		6.00 - 7.00	**071722**
		7.00 - 7.50	**271135***
		7.50 - 8.00	**071723**
		8.00 - 8.50	**271136***
		8.50 - 9.00	**071724**
		9.00 - 9.50	**271137***
		9.00 - 10.00	**071725**
	ER 25	1.50 - 2.00	**071743**
		2.00 - 2.50	**071744***
		2.50 - 3.00	**071745**

Metric (mm)

	Nominal Size	Diameter D_1	Part No.
ⓜ	ER 25	3.00 - 3.50	**271128***
		3.50 - 4.00	**071746**
		4.00 - 4.50	**271129***
		4.50 - 5.00	**071747**
		5.00 - 5.50	**271130***
		5.50 - 6.00	**071748**
		6.00 - 6.50	**271131***
		6.50 - 7.00	**071749**
		7.00 - 8.00	**071750**
		8.00 - 9.00	**071751**
		9.00 - 10.00	**071752**
		10.00 - 11.00	**071753**
		11.00 - 12.00	**071754**
		12.00 - 13.00	**071755**
		13.00 - 14.00	**071756**
		14.00 - 15.00	**071757**
		15.00 - 16.00	**071758**
	ER 32	2.00 - 3.00	**071761**
		3.00 - 4.00	**071762**
		4.00 - 5.00	**071763**
		5.00 - 6.00	**071764**
		6.00 - 7.00	**071765**
		7.00 - 8.00	**071766**
		8.00 - 9.00	**071767**
		9.00 - 10.00	**071768**
		10.00 - 11.00	**071769**
		11.00 - 12.00	**071770**
		12.00 - 13.00	**071771**
		13.00 - 14.00	**071772**
		14.00 - 15.00	**071773**
		15.00 - 16.00	**071774**
		16.00 - 17.00	**071775**
		17.00 - 18.00	**071776**
		18.00 - 19.00	**071777**
		19.00 - 20.00	**071778**
		17.00 - 18.00	**071776**
		18.00 - 19.00	**071777**
		19.00 - 20.00	**071778**
	ER 40	3.00 - 4.00	**071779**
		4.00 - 5.00	**071780**
		5.00 - 6.00	**071781**
		6.00 - 7.00	**071782**
		7.00 - 8.00	**071783**
		8.00 - 9.00	**071784**

*Items not contained in set.

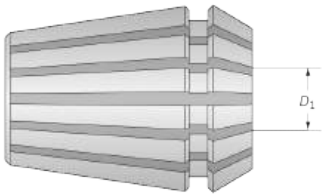
ⓜ = Metric (mm)
ⓘ = Imperial (in)

Accessories for Collet Chucks

ISO 15488-B (DIN 6499-B)

Collets





Metric (mm)

Nominal Size	Diameter D_1	Part No.
ER 40	9.00 - 10.00	**071785**
	10.00 - 11.00	**071786**
	11.00 - 12.00	**071787**
	12.00 - 13.00	**071788**
	13.00 - 14.00	**071789**
	14.00 - 15.00	**071790**
	15.00 - 16.00	**071791**
	16.00 - 17.00	**071792**
	17.00 - 18.00	**071793**
	18.00 - 19.00	**071794**
	19.00 - 20.00	**071795**
	20.00 - 21.00	**071796**
	21.00 - 22.00	**071797**
	22.00 - 23.00	**071798**
	23.00 - 24.00	**071799**
	24.00 - 25.00	**071800**
	25.00 - 26.00	**071801**

Imperial (in)

Nominal Size	Diameter D_1	Part No.
ER 8	0.039	**071986**
	0.059	**071987**
	0.079	**071988**
	0.098	**071989**
	0.102 - 0.118	**071990**
	0.122 - 0.138	**071991**
	0.142 - 0.157	**071992**
	0.161 - 0.177	**071993**
	0.181 - 0.197	**071994**
ER 11	0.039	**071700**
	0.059	**071701**
	0.079	**071702**
	0.098	**071703**
	0.102 - 0.118	**071704**
	0.122 - 0.138	**071705**
	0.142 - 0.157	**071706**
	0.161 - 0.177	**071707**
	0.181 - 0.197	**071708**
	0.201 - 0.217	**071709**
	0.220 - 0.354	**071710**
	0.240 - 0.256	**071711**
	0.260 - 0.276	**071712**
ER 16	0.020 - 0.039	**071713**
	0.039 - 0.059	**071714***
	0.039 - 0.079	**071715**
	0.079 - 0.098	**071716***
	0.098 - 0.118	**071717**
	0.118 - 0.138	**071718***
	0.138 - 0.157	**071719**
	0.157 - 0.177	**271132***
	0.157 - 0.197	**071720**
	0.197 - 0.217	**271133***
	0.217 - 0.236	**071721**
	0.236 - 0.256	**271134***
	0.236 - 0.276	**071722**
	0.276 - 0.295	**271135***
	0.295 - 0.315	**071723**
	0.315 - 0.335	**271136***
	0.335 - 0.354	**071724**
	0.354 - 0.374	**271137***
	0.354 - 0.394	**071725**
ER 25	0.059 - 0.079	**071743**
	0.079 - 0.098	**071744***
	0.098 - 0.118	**071745**

*Items not contained in set.

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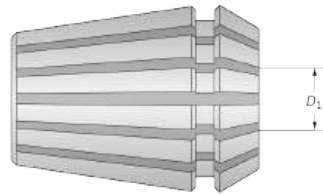
ⓜ = Metric (mm)
ⓘ = Imperial (in)

Accessories for Collet Chucks

ISO 15488-B (DIN 6499-B)

Collets





Imperial (in)

Nominal Size	Diameter D_1	Part No.
ER 25	0.118 - 0.138	**271128***
	0.138 - 0.157	**071746**
	0.157 - 0.177	**271129***
	0.177 - 0.197	**071747**
	0.197 - 0.217	**271130***
	0.217 - 0.236	**071748**
	0.236 - 0.256	**271131***
	0.256 - 0.276	**071749**
	0.276 - 0.315	**071750**
	0.315 - 0.354	**071751**
	0.354 - 0.394	**071752**
	0.394 - 0.433	**071753**
	0.433 - 0.472	**071754**
	0.472 - 0.512	**071755**
	0.512 - 0.551	**071756**
	0.551 - 0.591	**071757**
	0.591 - 0.630	**071758**
ER 32	0.079 - 0.118	**071761**
	0.118 - 0.157	**071762**
	0.157 - 0.197	**071763**
	0.197 - 0.236	**071764**
	0.236 - 0.276	**071765**
	0.276 - 0.315	**071766**
	0.315 - 0.354	**071767**
	0.354 - 0.394	**071768**
	0.394 - 0.433	**071769**
	0.433 - 0.472	**071770**
	0.472 - 0.512	**071771**
	0.512 - 0.551	**071772**
	0.551 - 0.591	**071773**
	0.591 - 0.630	**071774**
	0.630 - 0.669	**071775**
	0.669 - 0.709	**071776**
	0.709 - 0.748	**071777**
	0.748 - 0.787	**071778**
	0.669 - 0.709	**071776**
	0.709 - 0.748	**071777**
	0.748 - 0.787	**071778**
ER 40	0.118 - 0.157	**071779**
	0.157 - 0.197	**071780**
	0.197 - 0.236	**071781**
	0.236 - 0.276	**071782**
	0.276 - 0.315	**071783**
	0.315 - 0.354	**071784**

Imperial (in)

Nominal Size	Diameter D_1	Part No.
ER 40	0.354 - 0.394	**071785**
	0.394 - 0.433	**071786**
	0.433 - 0.472	**071787**
	0.472 - 0.512	**071788**
	0.512 - 0.551	**071789**
	0.551 - 0.591	**071790**
	0.591 - 0.630	**071791**
	0.630 - 0.669	**071792**
	0.669 - 0.709	**071793**
	0.709 - 0.748	**071794**
	0.748 - 0.787	**071795**
	0.787 - 0.827	**071796**
	0.827 - 0.866	**071797**
	0.866 - 0.906	**071798**
	0.906 - 0.945	**071799**
	0.945 - 0.984	**071800**
	0.984 - 1.024	**071801**

*Items not contained in set.

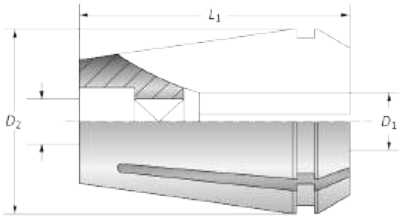
ⓜ = Metric (mm)
ⓘ = Imperial (in)

Collet Sets for Taps DIN 371/374/376

ISO 15488-B (DIN 6499-B)



Collet Sets



Metric (mm)

	Nominal Size	Standard-No.	Clamping Range D_1	Collet Set D_2	Collet Set L_1	Part No.
m	ER 16	426 EGB	4.50 - 7.00	16.00	27.50	**071045**
	ER 25	430 EGB	4.50 - 12.00	25.00	34.00	**071047**
	ER 32	470 EGB	4.50 - 16.00	32.00	40.00	**071048**
	ER 40	472 EGB	7.00 - 20.00	40.00	46.00	**071049**

Imperial (in)

	Nominal Size	Standard-No.	Clamping Range D_1	Collet Set D_2	Collet Set L_1	Part No.
i	ER 16	426 EGB	0.177 - 0.276	0.630	1.083	**071045**
	ER 25	430 EGB	0.177 - 0.472	0.984	1.339	**071047**
	ER 32	470 EGB	0.177 - 0.630	1.260	1.575	**071048**
	ER 40	472 EGB	0.276 - 0.787	1.575	1.811	**071049**

NOTE: To lock these collets, we recommend using the clamping nuts with sliding ring for higher clamping forces.

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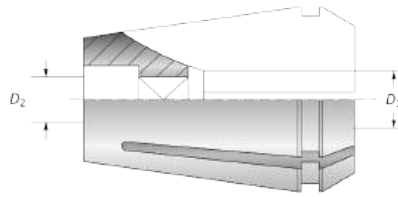
m = Metric (mm)
i = Imperial (in)

Collet Sets for Taps DIN 371/374/376

ISO 15488-B (DIN 6499-B)

Taps





Metric (mm)

	Shank		Tap		
	D_1	Square Shank	DIN 371	DIN 374	DIN 376
	4.50	3.40	M 4	M 6 x...	M 6
	5.50	4.30	–	M 7 x...	M 7
	6.00	4.90	M 4,5/5/6	M 8 x...	M 8
	7.00	5.50	M 7	M 9/10 x...	M 9/10
	8.00	6.20	M 8	M 6 x...	M 11
	9.00	7.00	M 9	M 6 x...	M 12
ⓜ	10.00	8.00	M 10	–	–
	11.00	9.00	–	M 14 x...	M 14
	12.00	9.00	M 12	M 16 x...	M 16
	14.00	11.00	–	M 18 x...	M 18
	16.00	12.00	–	M 20 x...	M 20
	18.00	14.00	–	M 22/24 x...	M 22/24
	20.00	16.00	–	M 27 x...	M 27

Imperial (in)

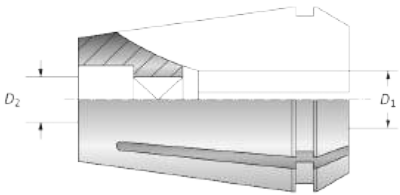
	Shank		Tap		
	D_1	Square Shank	DIN 371	DIN 374	DIN 376
	0.177	0.134	M 4	M 6 x...	M 6
	0.217	0.169	–	M 7 x...	M 7
	0.236	0.193	M 4,5/5/6	M 8 x...	M 8
	0.276	0.217	M 7	M 9/10 x...	M 9/10
	0.315	0.244	M 8	M 6 x...	M 11
	0.354	0.276	M 9	M 6 x...	M 12
ⓘ	0.394	0.315	M 10	–	–
	0.433	0.354	–	M 14 x...	M 14
	0.472	0.354	M 12	M 16 x...	M 16
	0.551	0.433	–	M 18 x...	M 18
	0.630	0.472	–	M 20 x...	M 20
	0.709	0.551	–	M 22/24 x...	M 22/24
	0.787	0.630	–	M 27 x...	M 27

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Collet Set Accessories for Taps DIN 371/374/376

ISO 15488-B (DIN 6499-B)





Metric (mm)

Nominal Size	Suitable Taps D_1	Suitable Taps Square Shank	Part No.
ER 16	4.50	3.40	**071901**
	5.50	4.30	**071902**
	6.00	4.90	**071903**
	7.00	5.50	**071904**
ER 25	4.50	3.40	**071912**
	5.50	4.30	**071913**
	6.00	4.90	**071914**
	7.00	5.50	**071915**
	8.00	6.20	**071916**
	9.00	7.00	**071917**
	10.00	8.00	**071918**
	11.00	9.00	**071919**
	12.00	9.00	**071920**
ER 32	4.50	3.40	**071921**
	5.50	4.30	**071922**
	6.00	4.90	**071923**
	7.00	5.50	**071924**
	8.00	6.20	**071925**
	9.00	7.00	**071926**
	10.00	8.00	**071927**
	11.00	9.00	**071928**
	12.00	9.00	**071929**
	14.00	11.00	**071930**
	16.00	12.00	**071931**
ER 40	7.00	5.50	**071932**
	8.00	6.20	**071933**
	9.00	7.00	**071934**
	10.00	8.00	**071935**
	11.00	9.00	**071936**
	12.00	9.00	**071937**
	14.00	11.00	**071938**
	16.00	12.00	**071939**
	18.00	14.50	**071940**
	20.00	16.00	**071941**

Imperial (in)

Nominal Size	Suitable Taps D_1	Suitable Taps Square Shank	Part No.
ER 16	0.177	0.134	**071901**
	0.217	0.169	**071902**
	0.236	0.193	**071903**
	0.276	0.217	**071904**
ER 25	0.177	0.134	**071912**
	0.217	0.169	**071913**
	0.236	0.193	**071914**
	0.276	0.217	**071915**
	0.315	0.244	**071916**
	0.354	0.276	**071917**
	0.394	0.315	**071918**
	0.433	0.354	**071919**
	0.472	0.354	**071920**
ER 32	0.177	0.134	**071921**
	0.217	0.169	**071922**
	0.236	0.193	**071923**
	0.276	0.217	**071924**
	0.315	0.244	**071925**
	0.354	0.276	**071926**
	0.394	0.315	**071927**
	0.433	0.354	**071928**
	0.472	0.354	**071929**
	0.551	0.433	**071930**
	0.630	0.472	**071931**
ER 40	0.276	0.217	**071932**
	0.315	0.244	**071933**
	0.354	0.276	**071934**
	0.394	0.315	**071935**
	0.433	0.354	**071936**
	0.472	0.354	**071937**
	0.551	0.433	**071938**
	0.630	0.472	**071939**
	0.709	0.571	**071940**
	0.787	0.630	**071941**

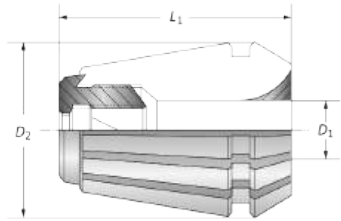
ⓜ = Metric (mm)
ⓘ = Imperial (in)

Collets for Mill Cutters with Pull Thread System

ISO 15488-B (DIN 6499-B)

Collet Sets





Metric (mm)

	Nominal Size	Standard-No.	Clamping Range D_2	Collet L_1	Collet D_1	Part No.
m	ER 32	470 ECL	32.00	46.00	6.00 - 16.00	**071052**
	ER 40	472 ECL	40.00	52.00	6.00 - 25.00	**071053**

Imperial (in)

	Nominal Size	Standard-No.	Clamping Range D_2	Collet L_1	Collet D_1	Part No.
i	ER 32	470 ECL	1.260	1.811	0.236 - 0.630	**071052**
	ER 40	472 ECL	1.575	2.047	0.236 - 0.984	**071053**

Collets

Metric (mm)

	Nominal Size	Collet D_1	Part No.
m	ER 32	6.00	**071826**
		8.00	**071827**
		10.00	**071828**
		12.00	**071829**
		16.00	**071830**
	ER 40	6.00	**071831**
		8.00	**071832**
		10.00	**071833**
		12.00	**071834**
		16.00	**071835**
		20.00	**071836**
		25.00	**071837**

Imperial (in)

	Nominal Size	Collet D_1	Part No.
i	ER 32	0.236	**071826**
		0.315	**071827**
		0.394	**071828**
		0.472	**071829**
		0.630	**071830**
	ER 40	0.236	**071831**
		0.315	**071832**
		0.394	**071833**
		0.472	**071834**
		0.630	**071835**
		0.787	**071836**
		0.984	**071837**

NOTE: To lock these collets, we recommend using the clamping nuts with sliding ring for higher clamping forces.

m = Metric (mm)
i = Imperial (in)

Accessories for Collet Chucks

ISO 10897 (DIN 6388)

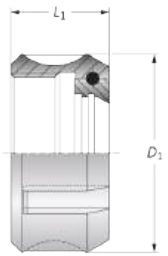
Clamping Nuts: DIN 6388 / ISO 10897 - 1:10

Metric (mm)

	Nominal Size	Clamping Nut D_1	L_1	Clamping Range	Torque	Part No.
ⓜ	16	43.00	24.00	2.00 - 16.00	100 N·m	**068048**
	25	60.00	30.00	2.00 - 25.00	180 N·m	**068052**
	32	72.00	33.50	4.00 - 32.00	220 N·m	**161099**

Imperial (in)

	Nominal Size	Clamping Nut D_1	L_1	Clamping Range	Torque	Part No.
ⓘ	16	1.693	0.945	0.079 - 0.630	73.8 lb-ft	**068048**
	25	2.362	1.181	0.079 - 0.984	123.8 lb-ft	**068052**
	32	2.835	1.319	0.157 - 1.260	162.3 lb-ft	**161099**



Clamping Nuts for Sealing Discs: DIN 6388 / ISO 10897 - 1:10

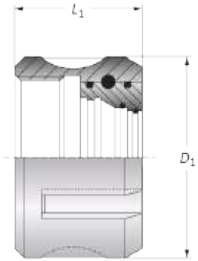
Metric (mm)

	Nominal Size	Clamping Nut D_1	L_1	Clamping Range	Torque	Part No.
ⓜ	16	43.00	31.50	2.00 - 16.00	100 N·m	**275001**
	25	60.00	38.00	2.00 - 25.00	180 N·m	**275003**
	32	72.00	42.00	4.00 - 32.00	220 N·m	**276001**

Imperial (in)

	Nominal Size	Clamping Nut D_1	L_1	Clamping Range	Torque	Part No.
ⓘ	16	1.693	1.240	0.079 - 0.591	73.8 lb-ft	**275001**
	25	2.362	1.496	0.079 - 0.984	123.8 lb-ft	**275003**
	32	2.835	1.654	0.157 - 1.260	162.3 lb-ft	**276001**

NOTE: With ball bearing, for use with sealing discs.



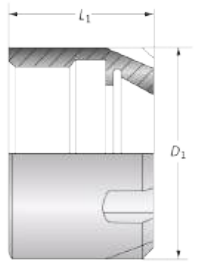
Mini Clamping Nuts

Metric (mm)

	Nominal Size	Clamping Nut D_1	L_1	Clamping Range	Torque	Part No.
ⓜ	ER 08	12.00	10.80	1.00 - 4.00	8 N·m	**415357**
	ER 11	16.00	12.00	1.00 - 7.00	16 N·m	**415358**
	ER 16	22.00	18.00	1.00 - 10.00	25 N·m	**415359**

Imperial (in)

	Nominal Size	Clamping Nut D_1	L_1	Clamping Range	Torque	Part No.
ⓘ	ER 08	0.472	0.425	0.039 - 0.157	5.9 lb-ft	**415357**
	ER 11	0.630	0.472	0.039 - 0.276	11.8 lb-ft	**415358**
	ER 16	0.866	0.709	0.039 - 0.394	18.4 lb-ft	**415359**



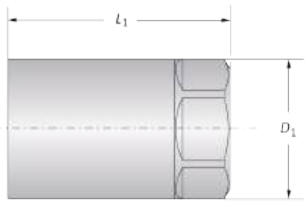
Clamping Nuts for Erickson Collet Chuck System

Metric (mm)

	Nominal Size	Clamping Nut D_1	L_1	Clamping Range	Part No.
ⓜ	6	14.00	28.00	1.00 - 6.50	**162095**
	10	21.00	36.00	1.00 - 10.00	**162093**

Imperial (in)

	Nominal Size	Clamping Nut D_1	L_1	Clamping Range	Part No.
ⓘ	6	0.551	1.102	0.039 - 0.256	**162095**
	10	0.827	1.417	0.039 - 0.394	**162093**



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ⓜ = Metric (mm)
ⓘ = Imperial (in)

Accessories for Collet Chucks

ISO 15488 (DIN 6499)

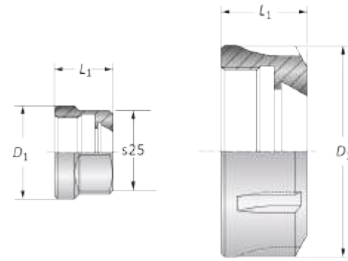
One Piece Clamping Nuts: DIN 6499 / ISO 15488 - 8°

Metric (mm)

	Nominal Size	Clamping Nut D_1	L_1	Clamping Range	Torque	Part No.
m	ER 16	28.00	17.50	1.00 - 10.00	60 N·m	**215922**
	ER 25	42.00	20.00	2.00 - 16.00	100 N·m	**215924**
	ER 32	50.00	22.50	2.00 - 20.00	140 N·m	**215925**
	ER 40	63.00	25.50	3.00 - 26.00	180 N·m	**215926**

Imperial (in)

	Nominal Size	Clamping Nut D_1	L_1	Clamping Range	Torque	Part No.
i	ER 16	1.102	0.689	0.039 - 0.394	44.3 lb-ft	**215922**
	ER 25	1.654	0.787	0.079 - 0.630	73.8 lb-ft	**215924**
	ER 32	1.969	0.886	0.079 - 0.787	103.3 lb-ft	**215925**
	ER 40	2.480	1.004	0.118 - 1.024	132.8 lb-ft	**215926**



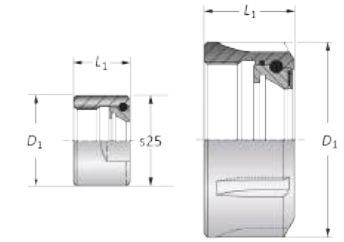
Clamping Nuts with Sliding Ring: DIN 6499 / ISO 15488 - 8°

Metric (mm)

	Nominal Size	Clamping Nut D_1	L_1	Clamping Range	Torque	Part No.
m	ER 16	28.00	20.30	1.00 - 10.00	60 N·m	**315015**
	ER 25	42.00	22.40	2.00 - 16.00	100 N·m	**315016**
	ER 32	50.00	25.00	2.00 - 20.00	140 N·m	**315017**
	ER 40	63.00	28.30	3.00 - 26.00	180 N·m	**315018**

Imperial (in)

	Nominal Size	Clamping Nut D_1	L_1	Clamping Range	Torque	Part No.
i	ER 16	1.102	0.984	0.039 - 0.394	44.3 lb-ft	**315015**
	ER 25	1.654	1.083	0.079 - 0.630	73.8 lb-ft	**315016**
	ER 32	1.969	1.201	0.079 - 0.787	103.3 lb-ft	**315017**
	ER 40	2.480	1.339	0.118 - 1.024	132.8 lb-ft	**315018**



m = Metric (mm)
i = Imperial (in)

Accessories for Collet Chucks

ISO 15488 (DIN 6499)

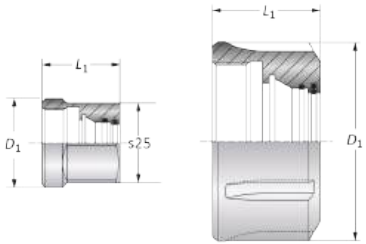
One Piece Clamping Nuts for use with Sealing Disks: DIN 6499 / ISO 15488 - 8°

Metric (mm)

	Nominal Size	Clamping Nut D_1	L_1	Clamping Range	Torque	Part No.
ⓜ	ER 16	28.00	25.00	1.00 - 10.00	60 N·m	**277001**
	ER 25	42.00	27.50	2.00 - 16.00	100 N·m	**277005**
	ER 32	50.00	30.50	2.00 - 20.00	140 N·m	**277007**
	ER 40	63.00	34.00	3.00 - 26.00	180 N·m	**278001**

Imperial (in)

	Nominal Size	Clamping Nut D_1	L_1	Clamping Range	Torque	Part No.
ⓘ	ER 16	1.102	0.984	0.039 - 0.394	44.3 lb-ft	**277001**
	ER 25	1.654	1.083	0.079 - 0.630	73.8 lb-ft	**277005**
	ER 32	1.969	1.201	0.079 - 0.787	103.3 lb-ft	**277007**
	ER 40	2.480	1.339	0.118 - 1.024	132.8 lb-ft	**278001**



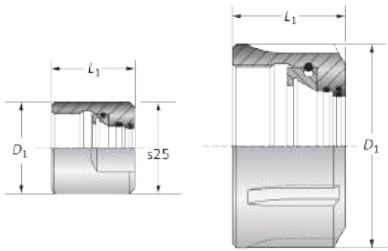
Clamping Nuts with Sliding Ring for use with Sealing Disks: DIN 6499 / ISO 15488 - 8°

Metric (mm)

	Nominal Size	Clamping Nut D_1	L_1	Clamping Range	Torque	Part No.
ⓜ	ER 16	28.00	25.00	1.00 - 10.00	60 N·m	**277002**
	ER 25	42.00	28.50	2.00 - 16.00	100 N·m	**277006**
	ER 32	50.00	31.50	2.00 - 20.00	140 N·m	**277008**
	ER 40	63.00	35.00	3.00 - 26.00	180 N·m	**278002**

Imperial (in)

	Nominal Size	Clamping Nut D_1	L_1	Clamping Range	Torque	Part No.
ⓘ	ER 16	1.102	0.984	0.039 - 0.394	44.3 lb-ft	**277002**
	ER 25	1.654	1.122	0.079 - 0.630	73.8 lb-ft	**277006**
	ER 32	1.969	1.240	0.079 - 0.787	103.3 lb-ft	**277008**
	ER 40	2.480	1.378	0.118 - 1.024	132.8 lb-ft	**278002**



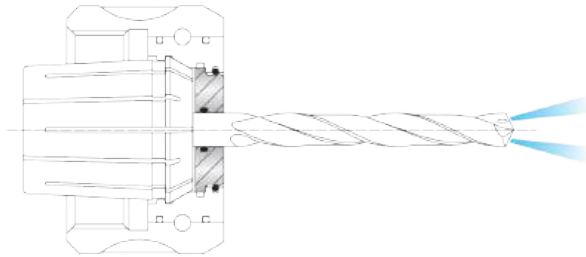
J

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Sealing Disks for Collet Chucks

ISO 10897 (DIN 6388)





Metric (mm)

	Nominal Size	Sealing Disk Diameter	Sealing Disk Part No.
m	16	2.50 - 3.00	**275010**
		3.00 - 3.50	**275011**
		3.50 - 4.00	**275012**
		4.00 - 4.50	**275013**
		4.50 - 5.00	**275014**
		5.00 - 5.50	**275015**
		5.50 - 6.00	**275016**
		6.00 - 6.50	**275017**
		6.50 - 7.00	**275018**
		7.00 - 7.50	**275019**
		7.50 - 8.00	**275020**
		8.00 - 8.50	**275021**
		8.50 - 9.00	**275022**
		9.00 - 9.50	**275023**
		9.50 - 10.00	**275024**
		10.00 - 10.50	**275025**
		10.50 - 11.00	**275026**
		11.00 - 11.50	**275027**
		11.50 - 12.00	**275028**
		12.00 - 12.50	**275029**
		12.50 - 13.00	**275030**
		13.00 - 13.50	**275031**
		13.50 - 14.00	**275032**
		14.00 - 14.50	**275033**
		14.50 - 15.00	**275034**
		15.00 - 15.50	**275035**
		15.50 - 16.00	**275036**
	25	2.50 - 3.00	**275040**
		3.00 - 3.50	**275041**
		3.50 - 4.00	**275042**
		4.00 - 4.50	**275043**
		4.50 - 5.00	**275044**
		5.00 - 5.50	**275045**
		5.50 - 6.00	**275046**
		6.00 - 6.50	**275047**
		6.50 - 7.00	**275048**
		7.00 - 7.50	**275049**
		7.50- 8.00	**275050**
		8.00 - 8.50	**275051**
		8.50 - 9.00	**275052**
		9.00 - 9.50	**275053**
		9.50 - 10.00	**275054**
		10.00 - 10.50	**275055**
		10.50 - 11.00	**275056**
		11.00 - 11.50	**275057**

	Nominal Size	Sealing Disk Diameter	Sealing Disk Part No.
m	25	11.50 - 12.00	**275058**
		12.00 - 12.50	**275059**
		12.50 - 13.00	**275060**
		13.00 - 13.50	**275061**
		13.50 - 14.00	**275062**
		14.00 - 14.50	**275063**
		14.50 - 15.00	**275064**
		15.00 - 15.50	**275065**
		15.50 - 16.00	**275066**
		16.00 - 16.50	**275067**
		16.50 - 17.00	**275068**
		17.00 - 17.50	**275069**
		17.50 - 18.00	**275070**
		18.00 - 18.50	**275071**
		18.50 - 19.00	**275072**
		19.00 - 19.50	**275073**
		19.50 - 20.00	**275074**
		20.00 - 20.50	**275075**
		20.50 - 21.00	**275076**
		21.00 - 21.50	**275077**
		21.50 - 22.00	**275078**
		22.00 - 22.50	**275079**
		22.50 - 23.00	**275080**
		23.00 - 23.50	**275081**
		23.50 - 24.00	**275082**
		24.00 - 24.50	**275083**
		24.50 - 25.00	**275084**
	32	3.50 - 4.00	**276005**
		4.00 - 4.50	**276006**
		4.50 - 5.00	**276007**
		5.00 - 5.50	**276008**
		5.50 - 6.00	**276009**
		6.00 - 6.50	**276010**
		6.50 - 7.00	**276011**
		7.00 - 7.50	**276012**
		7.50 - 8.00	**276013**
		8.00 - 8.50	**276014**
		8.50 - 9.00	**276015**
		9.00 - 9.50	**276016**
		9.50 - 10.00	**276017**
		10.00 - 10.50	**276018**
		10.50 - 11.00	**276019**
		11.00 - 11.50	**276020**
		11.50 - 12.00	**276021**
		12.00 - 12.50	**276022**

	Nominal Size	Sealing Disk Diameter	Sealing Disk Part No.
m	32	12.50 - 13.00	**276023**
		13.00 - 13.50	**276024**
		13.50 - 14.00	**276025**
		14.00 - 14.50	**276026**
		14.50 - 15.00	**276027**
		15.00 - 15.50	**276028**
		15.50 - 16.00	**276029**
		16.00 - 16.50	**276030**
		16.50 - 17.00	**276031**
		17.00 - 17.50	**276032**
		17.50 - 18.00	**276033**
		18.00 - 18.50	**276034**
		18.50 - 19.00	**276035**
		19.00 - 19.50	**276036**
		19.50 - 20.00	**276037**
		20.00 - 20.50	**276038**
		20.50 - 21.00	**276039**
		21.00- 21.50	**276040**
		21.50 - 22.00	**276041**
		22.00 - 22.50	**276042**
		22.50 - 23.00	**276043**
		23.00 - 23.50	**276044**
		23.50 - 24.00	**276045**
		24.00 - 24.50	**276046**
		24.50 - 25.00	**276047**
		25.00 - 25.50	**276048**
		25.50 - 26.00	**276049**
		26.00 - 26.50	**276050**
		26.50 - 27.00	**276051**
		27.50 - 28.00	**276052**
		27.50 - 28.00	**276053**
		28.00 - 28.50	**276054**
		28.50 - 29.00	**276055**
		29.00 - 29.50	**276056**
		29.50 - 30.00	**276057**
		30.00 - 30.50	**276058**
		30.50 - 31.00	**276059**
		31.00 - 31.50	**276060**
		31.50 - 32.00	**276061**

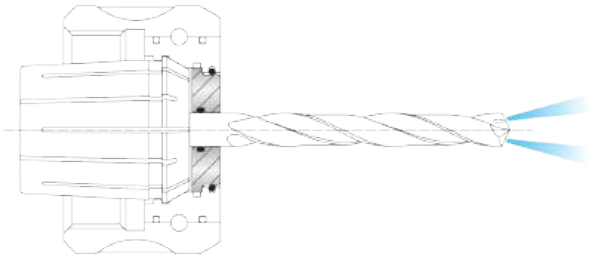
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m = Metric (mm)
i = Imperial (in)

Sealing Disks for Collet Chucks

ISO 10897 (DIN 6388)





Imperial (in)

Nominal Size	Sealing Disk Diameter	Sealing Disk Part No.
16	0.098 - 0.118	275010
	0.118 - 0.138	275011
	0.138 - 0.157	275012
	0.157 - 0.177	275013
	0.177 - 0.197	275014
	0.197 - 0.217	275015
	0.217 - 0.236	275016
	0.236 - 0.256	275017
	0.256 - 0.276	275018
	0.276 - 0.295	275019
	0.295 - 0.315	275020
	0.315 - 0.335	275021
	0.335 - 0.354	275022
	0.354 - 0.374	275023
	0.374 - 0.394	275024
	0.394 - 0.413	275025
	0.413 - 0.433	275026
	0.433 - 0.453	275027
	0.453 - 0.472	275028
	0.472 - 0.492	275029
	0.492 - 0.512	275030
	0.512 - 0.531	275031
	0.531 - 0.551	275032
	0.551 - 0.571	275033
	0.571 - 0.591	275034
	0.591 - 0.610	275035
	0.610 - 0.630	275036
25	0.098 - 0.118	275040
	0.118 - 0.138	275041
	0.138 - 0.157	275042
	0.157 - 0.177	275043
	0.177 - 0.197	275044
	0.197 - 0.217	275045
	0.217 - 0.236	275046
	0.236 - 0.256	275047
	0.256 - 0.276	275048
	0.276 - 0.295	275049
	0.295 - 0.315	275050
	0.315 - 0.335	275051
	0.335 - 0.354	275052
	0.354 - 0.374	275053
	0.374 - 0.394	275054
	0.394 - 0.413	275055
	0.413 - 0.433	275056
	0.433 - 0.453	275057

Nominal Size	Sealing Disk Diameter	Sealing Disk Part No.
25	0.453 - 0.472	275058
	0.472 - 0.492	275059
	0.492 - 0.512	275060
	0.512 - 0.531	275061
	0.531 - 0.551	275062
	0.551 - 0.571	275063
	0.571 - 0.591	275064
	0.591 - 0.610	275065
	0.610 - 0.630	275066
	0.630 - 0.650	275067
	0.650 - 0.669	275068
	0.669 - 0.689	275069
	0.689 - 0.709	275070
	0.709 - 0.728	275071
	0.728 - 0.748	275072
	0.748 - 0.768	275073
	0.768 - 0.787	275074
	0.787 - 0.807	275075
	0.807 - 0.827	275076
	0.807 - 0.846	275077
	0.846 - 0.866	275078
	0.866 - 0.886	275079
	0.886 - 0.906	275080
	0.906 - 0.925	275081
	0.925 - 0.945	275082
	0.945 - 0.965	275083
	0.965 - 0.984	275084
32	0.138 - 0.157	276005
	0.157 - 0.177	276006
	0.177 - 0.197	276007
	0.197 - 0.217	276008
	0.217 - 0.236	276009
	0.236 - 0.256	276010
	0.256 - 0.276	276011
	0.276 - 0.295	276012
	0.295 - 0.315	276013
	0.315 - 0.335	276014
	0.335 - 0.354	276015
	0.354 - 0.374	276016
	0.374 - 0.394	276017
	0.394 - 0.413	276018
	0.413 - 0.433	276019
	0.433 - 0.453	276020
	0.453 - 0.472	276021
	0.472 - 0.492	276022

Nominal Size	Sealing Disk Diameter	Sealing Disk Part No.
32	0.492 - 0.512	276023
	0.512 - 0.531	276024
	0.531 - 0.551	276025
	0.551 - 0.571	276026
	0.571 - 0.591	276027
	0.591 - 0.610	276028
	0.610 - 0.630	276029
	0.630 - 0.650	276030
	0.650 - 0.669	276031
	0.669 - 0.689	276032
	0.669 - 0.709	276033
	0.709 - 0.728	276034
	0.728 - 0.748	276035
	0.748 - 0.768	276036
	0.768 - 0.787	276037
	0.787 - 0.807	276038
	0.807 - 0.827	276039
	0.827 - 0.846	276040
	0.846 - 0.866	276041
	0.866 - 0.886	276042
	0.886 - 0.906	276043
	0.906 - 0.925	276044
	0.925 - 0.945	276045
	0.945 - 0.965	276046
	0.965 - 0.984	276047
	0.984 - 1.004	276048
	1.004 - 1.024	276049
	1.024 - 1.043	276050
	1.043 - 1.063	276051
	1.063 - 1.102	276052
	1.063 - 1.102	276053
	1.102 - 1.102	276054
	1.122 - 1.142	276055
	1.142 - 1.161	276056
	1.161 - 1.181	276057
	1.181 - 1.201	276058
	1.201 - 1.220	276059
	1.220 - 1.240	276060
	1.240 - 1.260	276061

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Sealing Disks for Collet Chucks

ISO 15488 (DIN 6499)





Metric (mm)

Nominal Size	Sealing Disk Diameter	Sealing Disk Part No.
ER 16	2.50 - 3.00	**277010**
	3.00 - 3.50	**277011**
	3.50 - 4.00	**277012**
	4.00 - 4.50	**277013**
	4.50 - 5.00	**277014**
	5.00 - 5.50	**277015**
	5.50 - 6.00	**277016**
	6.00 - 6.50	**277017**
	6.50 - 7.00	**277018**
	7.00 - 7.50	**277019**
	7.50 - 8.00	**277020**
	8.00 - 8.50	**277021**
	8.50 - 9.00	**277022**
	9.00 - 9.50	**277023**
	9.50 - 10.00	**277024**
ER 25	2.50 - 3.00	**277025**
	3.00 - 3.50	**277026**
	3.50 - 4.00	**277027**
	4.00 - 4.50	**277028**
	4.50 - 5.00	**277029**
	5.00 - 5.50	**277030**
	5.50 - 6.00	**277031**
	6.00 - 6.50	**277032**
	6.50 - 7.00	**277033**
	7.00 - 7.50	**277034**
	7.50 - 8.00	**277035**
	8.00 - 8.50	**277036**
	8.50 - 9.00	**277037**
	9.00 - 9.50	**277038**
	9.50 - 10.00	**277039**
	10.00 - 10.50	**277040**
	10.50 - 11.00	**277041**
	11.00 - 11.50	**277042**
	11.50 - 12.00	**277043**
	12.00 - 12.50	**277044**
	12.50 - 13.00	**277045**
	13.00 - 13.50	**277046**
	13.50 - 14.00	**277047**
	14.00 - 14.50	**277048**
	14.50 - 15.00	**277049**
	15.00 - 15.50	**277050**
	15.50 - 16.00	**277051**
ER 32	2.50 - 3.00	**277055**
	3.00 - 3.50	**277056**
	3.50 - 4.00	**277057**

Nominal Size	Sealing Disk Diameter	Sealing Disk Part No.
ER 32	4.00 - 4.50	**277058**
	4.50 - 5.00	**277059**
	5.00 - 5.50	**277060**
	5.50 - 6.00	**277061**
	6.00 - 6.50	**277062**
	6.50 - 7.00	**277063**
	7.00 - 7.50	**277064**
	7.50 - 8.00	**277065**
	8.00 - 8.50	**277066**
	8.50 - 9.00	**277067**
	9.00 - 9.50	**277068**
	9.50 - 10.00	**277069**
	10.00 - 10.50	**277070**
	10.50 - 11.00	**277071**
	11.00 - 11.50	**277072**
	11.50 - 12.00	**277073**
	12.00 - 12.50	**277074**
	12.50 - 13.00	**277075**
	13.00 - 13.50	**277076**
	13.50 - 14.00	**277077**
	14.00 - 14.50	**277078**
	14.50 - 15.00	**277079**
	15.00 - 15.50	**277080**
	15.50 - 16.00	**277081**
	16.00 - 16.50	**277082**
	16.50 - 17.00	**277083**
	17.00 - 17.50	**277084**
	17.50 - 18.00	**277085**
	18.00 - 18.50	**277086**
	18.50 - 19.00	**277087**
	19.00 - 19.50	**277088**
	19.50 - 20.00	**277089**
ER 40	2.50 - 3.00	**278005**
	3.00 - 3.50	**278006**
	3.50 - 4.00	**278007**
	4.00 - 4.50	**278008**
	4.50 - 5.00	**278009**
	5.00 - 5.50	**278010**
	5.50 - 6.00	**278011**
	6.00 - 6.50	**278012**
	6.50 - 7.00	**278013**
	7.00 - 7.50	**278014**
	7.50 - 8.00	**278015**
	8.00 - 8.50	**278016**
	8.50 - 9.00	**278017**

Nominal Size	Sealing Disk Diameter	Sealing Disk Part No.
ER 40	9.00 - 9.50	**278018**
	9.50 - 10.00	**278019**
	10.00 - 10.50	**278020**
	10.50 - 11.00	**278021**
	11.00 - 11.50	**278022**
	11.50 - 12.00	**278023**
	12.00 - 12.50	**278024**
	12.50 - 13.00	**278025**
	13.00 - 13.50	**278026**
	13.50 - 14.00	**278027**
	14.00 - 14.50	**278028**
	14.50 - 15.00	**278029**
	15.00 - 15.50	**278030**
	15.50 - 16.00	**278031**
	16.00- 16.50	**278032**
	16.50 - 17.00	**278033**
	17.00 - 17.50	**278034**
	17.50 - 18.00	**278035**
	18.00 - 18.50	**278036**
	18.50 - 19.00	**278037**
	19.00 - 19.50	**278038**
	19.50 - 20.00	**278039**
	20.00 - 20.50	**278040**
	20.50 - 21.00	**278041**
	21.00 - 21.50	**278042**
	21.50 - 22.00	**278043**
	22.00 - 22.50	**278044**
	22.50 - 23.00	**278045**
	23.00 - 23.50	**278046**
	23.50 - 24.00	**278047**
	24.00 - 24.50	**278048**
	24.50 - 25.00	**278049**
	25.00 - 25.50	**278050**
	25.50 - 26.00	**278051**

J

Ⓜ = Metric (mm)
Ⓘ = Imperial (in)

Sealing Disks for Collet Chucks

ISO 15488 (DIN 6499)





Imperial (in)

Nominal Size	Sealing Disk Diameter	Sealing Disk Part No.
ER 16	0.098 - 0.118	**277010**
	0.117 - 0.138	**277011**
	0.138 - 0.157	**277012**
	0.157 - 0.177	**277013**
	0.177 - 0.197	**277014**
	0.197 - 0.217	**277015**
	0.217 - 0.236	**277016**
	0.236 - 0.256	**277017**
	0.256 - 0.276	**277018**
	0.276 - 0.295	**277019**
	0.295 - 0.315	**277020**
	0.315 - 0.335	**277021**
	0.335 - 0.354	**277022**
	0.354 - 0.374	**277023**
	0.374 - 0.394	**277024**
ER 25	0.098 - 0.118	**277025**
	0.118 - 0.138	**277026**
	0.138 - 0.157	**277027**
	0.157 - 0.177	**277028**
	0.177 - 0.197	**277029**
	0.197 - 0.217	**277030**
	0.217 - 0.236	**277031**
	0.236 - 0.256	**277032**
	0.256 - 0.276	**277033**
	0.276 - 0.295	**277034**
	0.295 - 0.315	**277035**
	0.315 - 0.335	**277036**
	0.335 - 0.354	**277037**
	0.354 - 0.374	**277038**
	0.374 - 0.394	**277039**
	0.394 - 0.413	**277040**
	0.413 - 0.433	**277041**
	0.433 - 0.453	**277042**
	0.453 - 0.472	**277043**
	0.472 - 0.492	**277044**
	0.492 - 0.512	**277045**
	0.512 - 0.531	**277046**
	0.531 - 0.551	**277047**
	0.551 - 0.571	**277048**
	0.571 - 0.591	**277049**
	0.591 - 0.610	**277050**
	0.610 - 0.630	**277051**
ER 32	0.098 - 0.118	**277055**
	0.118 - 0.138	**277056**
	0.138 - 0.157	**277057**

Nominal Size	Sealing Disk Diameter	Sealing Disk Part No.
ER 32	0.157 - 0.177	**277058**
	0.177 - 0.197	**277059**
	0.197 - 0.217	**277060**
	0.217 - 0.236	**277061**
	0.236 - 0.256	**277062**
	0.256 - 0.276	**277063**
	0.276 - 0.295	**277064**
	0.295 - 0.315	**277065**
	0.315 - 0.335	**277066**
	0.335 - 0.354	**277067**
	0.354 - 0.374	**277068**
	0.374 - 0.394	**277069**
	0.394 - 0.413	**277070**
	0.413 - 0.433	**277071**
	0.433 - 0.453	**277072**
	0.453 - 0.472	**277073**
	0.472 - 0.492	**277074**
	0.492 - 0.512	**277075**
	0.512 - 0.531	**277076**
	0.531 - 0.551	**277077**
	0.551 - 0.571	**277078**
	0.571 - 0.591	**277079**
	0.591 - 0.610	**277080**
	0.610 - 0.630	**277081**
	0.630 - 0.650	**277082**
	0.650 - 0.669	**277083**
	0.669 - 0.689	**277084**
	0.689 - 0.709	**277085**
	0.709 - 0.728	**277086**
	0.728 - 0.748	**277087**
	0.748 - 0.768	**277088**
	0.768 - 0.787	**277089**
ER 40	0.098 - 0.118	**278005**
	0.118 - 0.138	**278006**
	0.138 - 0.157	**278007**
	0.157 - 0.177	**278008**
	0.177 - 0.197	**278009**
	0.197 - 0.217	**278010**
	0.217 - 0.236	**278011**
	0.236 - 0.256	**278012**
	0.256 - 0.276	**278013**
	0.276 - 0.295	**278014**
	0.295 - 0.315	**278015**
	0.315 - 0.335	**278016**
	0.335 - 0.354	**278017**

Nominal Size	Sealing Disk Diameter	Sealing Disk Part No.
ER 40	0.354 - 0.374	**278018**
	0.374 - 0.394	**278019**
	0.394 - 0.413	**278020**
	0.413 - 0.433	**278021**
	0.433 - 0.453	**278022**
	0.453 - 0.472	**278023**
	0.472 - 0.492	**278024**
	0.492 - 0.512	**278025**
	0.512 - 0.531	**278026**
	0.531 - 0.551	**278027**
	0.551 - 0.571	**278028**
	0.571 - 0.591	**278029**
	0.591 - 0.610	**278030**
	0.610 - 0.630	**278031**
	0.630 - 0.650	**278032**
	0.650 - 0.669	**278033**
	0.669 - 0.689	**278034**
	0.689 - 0.709	**278035**
	0.709 - 0.728	**278036**
	0.728 - 0.748	**278037**
	0.748 - 0.768	**278038**
	0.768 - 0.787	**278039**
	0.787 - 0.807	**278040**
	0.807 - 0.827	**278041**
	0.827 - 0.846	**278042**
	0.846 - 0.866	**278043**
	0.866 - 0.886	**278044**
	0.866 - 0.906	**278045**
	0.906 - 0.925	**278046**
	0.925 - 0.945	**278047**
	0.945 - 0.965	**278048**
	0.965 - 0.984	**278049**
	0.984 - 1.004	**278050**
	1.004 - 1.024	**278051**

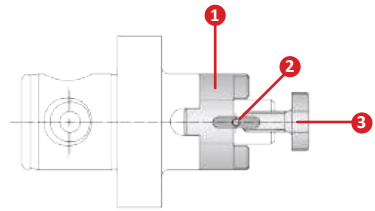
J

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Accessories for Milling Machine Arbors

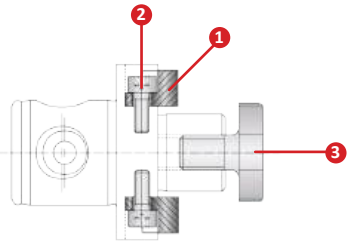
Accessories for Milling Machine Arbors

Shell-Mill Adapter	Part No.		
	1. Clutch Drive Ring	2. Axial Drive Key	3. Retaining Screw
13	**115708**	**115709**	**115707**
16	**115696**	**215608**	**115697**
22	**115341**	**215609**	**115345**
27	**115342**	**215610**	**115346**
32	**115343**	**215611**	**115347**
40	**115344**	**215612**	**115348**



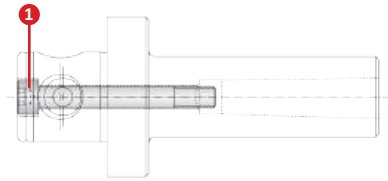
Accessories for Milling Machine Arbors

Shell-Mill Adapter	Part No.		
	1. Drive Key	2. Cap Screw	3. Retaining Screw
16	**215701**	**115566**	**115697**
22	**215702**	**108109**	**115345**
27	**215703**	**108109**	**115346**
32	**215704**	**115147**	**115347**
40	**215705**	**116152**	**115348**
60	**115643**	**115237**	—



Accessories for Holding Arbors

Adapter Sleeves	Part No.	
	1. Cap Screw	Service Key
209022	**115929**	s5
209023	**115930**	s7
209024	**115932**	s8
209025	**115933**	s5
209026	**115169**	s8
209027	**115934**	s10
209028	**115936**	s12

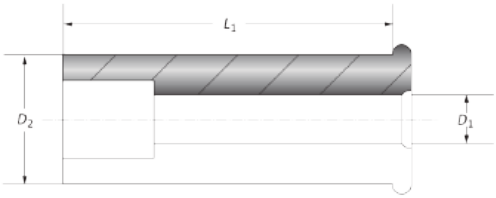


J

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Reducing Sleeves for Hydraulic Clamping Chucks





Metric (mm)

	Nominal Size D_2	Reducing Sleeve L_1	D_1	Part No.
ⓜ	20.00	50.50	3.00	**271045**
			4.00	**271046**
			5.00	**271047**
			6.00	**271003**
			7.00	**271049**
			8.00	**271004**
			9.00	**271050**
			10.00	**271005**
			11.00	**271051**
			12.00	**271006**
			13.00	**271052**
			14.00	**271007**
			15.00	**271018**
			16.00	**271008**

Imperial (in)

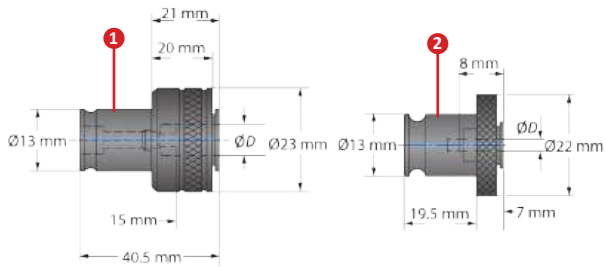
	Nominal Size D_2	Reducing Sleeve L_1	D_1	Part No.
ⓘ	0.787	1.988	0.118	**271045**
			0.157	**271046**
			0.197	**271047**
			0.236	**271003**
			0.276	**271049**
			0.315	**271004**
			0.354	**271050**
			0.394	**271005**
			0.433	**271051**
			0.472	**271006**
			0.512	**271052**
			0.551	**271007**
			0.591	**271018**
			0.630	**271008**

NOTE: For cylindrical shanks with shank tolerance h6 for clamping diameter 3 mm and 8 mm and with shank tolerance h7 for clamping diameter 10 mm - 32 mm.
NOTE: Reduction sleeve with adjustable stop.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Quick-Change Adapters





Metric (mm)

Shank Dimensions			Quick Change Adapter								Part No.	
	Nominal Size	*D* x Square Shank	DIN 352	DIN 353	DIN 371	DIN 374	DIN 376	DIN 2182	DIN 2183	Torque Setting	1.	2.
ⓜ	0	2.50 x 2.10	M 1	—	M 1	—	M 3.5	1/16"	—	1.5 - 2	**233070**	**K24358**
		2.80 x 2.10	M 2	—	M 2	M 4	M 4	3/32"	5/32"	2 - 3	**233071**	**K24276**
		3.50 x 2.70	M 3	—	M 3	M 5	M 5	1/8"	—	4 - 6	**233072**	**K24277**
		4.00 x 3.00	M 3.5	—	M 3.5	—	—	—	—	1.5 - 2	**233073**	**K24278**
		4.50 x 3.40	M 4	—	M 4	M 6	M 6	5/32"	1/4"	6 - 9	**233074**	**K24279**
		6.00 x 4.90	M 8	—	—	M 8	M 8	—	—	16 - 21	**233075**	**K24280**
		7.00 x 5.50	M 10	G 1/8"	—	M 10	M 10	1/4"	3/8"	27 - 32	**233076**	**K24281**
		8.00 x 6.20	—	—	M 8	—	—	5/16"	7/16"	16 - 21	**233077**	**K24391**

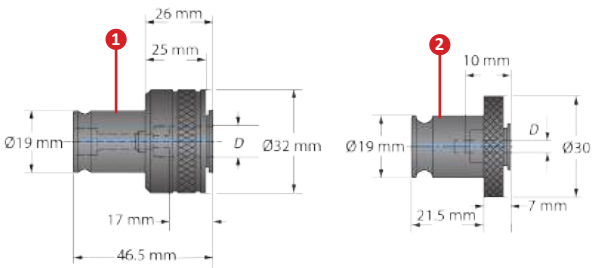
Imperial (in)

Shank Dimensions			Quick Change Adapter								Part No.	
	Nominal Size	*D* x Square Shank	DIN 352	DIN 353	DIN 371	DIN 374	DIN 376	DIN 2182	DIN 2183	Torque Setting	1.	2.
ⓘ	0	0.098 x 0.083	M 1	—	M 1	—	M 3.5	1/16"	—	1.5 - 2	**233070**	**K24358**
		0.110 x 0.083	M 2	—	M 2	M 4	M 4	3/32"	5/32"	2 - 3	**233071**	**K24276**
		0.138 x 0.106	M 3	—	M 3	M 5	M 5	1/8"	—	4 - 6	**233072**	**K24277**
		0.157 x 0.118	M 3.5	—	M 3.5	—	—	—	—	1.5 - 2	**233073**	**K24278**
		0.177 x 0.138	M 4	—	M 4	M 6	M 6	5/32"	1/4"	6 - 9	**233074**	**K24279**
		0.236 x 0.193	M 8	—	—	M 8	M 8	—	—	16 - 21	**233075**	**K24280**
		0.276 x 0.217	M 10	G 1/8"	—	M 10	M 10	1/4"	3/8"	27 - 32	**233076**	**K24281**
		0.315 x 0.244	—	—	M 8	—	—	5/16"	7/16"	16 - 21	**233077**	**K24391**

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Quick-Change Adapters





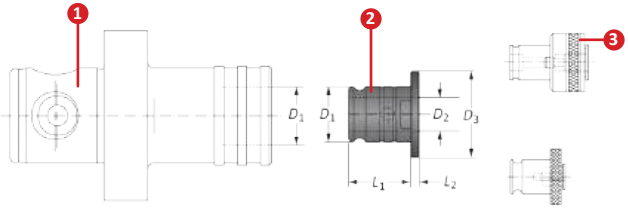
Metric (mm)

Shank Dimensions			Quick Change Adapter								Part No.	
	Nominal Size	*D* x Square Shank	DIN 352	DIN 353	DIN 371	DIN 374	DIN 376	DIN 2182	DIN 2183	Torque Setting	1.	2.
m	1	2.80 x 2.10	M 2	—	M 2.8	M 4	M 4	3/32"	5/32"	2 - 3	**K17847**	**K23259**
		3.50 x 2.70	M 3	—	M 3.5	M 5	M 5	1/8"	—	4 - 6	**233001**	**K18455**
		4.00 x 3.00	M 3.5	—	M 3.5	—	—	—	—	1.5 - 2	**233002**	**K22439**
		4.50 x 3.40	M 4	—	M 4	M 6	M 6	5/32"	1/4"	6 - 9	**233003**	**K16414**
		6.00 x 4.90	M 8	—	—	M 8	M 8	—	—	16 - 21	**233004**	**K16415**
		7.00 x 5.50	M 10	G 1/8"	—	M 10	M 10	1/4"	3/8"	27 - 32	**233005**	**K16418**
		8.00 x 6.20	—	—	M 8	—	—	5/16"	7/16"	16 - 21	**233006**	**K16416**
		9.00 x 7.00	M 12	—	—	M 12	M 12	3/8"	1/2"	37 - 44	**233007**	**K18454**
		10.00 x 8.00	—	—	M 10	—	—	—	—	27 - 32	**233008**	**K16417**
		11.00 x 9.00	M 14	G 1/4"	—	M 14	M 14	—	9/16"	50 - 53	**233009**	**K22440**

Imperial (in)

Shank Dimensions			Quick Change Adapter								Part No.	
	Nominal Size	*D* x Square Shank	DIN 352	DIN 353	DIN 371	DIN 374	DIN 376	DIN 2182	DIN 2183	Torque Setting	1.	2.
i	1	0.110 x 0.083	M 2	—	M 2.8	M 4	M 4	3/32"	5/32"	2 - 3	**K17847**	**K23259**
		0.138 x 0.106	M 3	—	M 3.5	M 5	M 5	1/8"	—	4 - 6	**233001**	**K18455**
		0.157 x 0.118	M 3.5	—	M 3.5	—	—	—	—	1.5 - 2	**233002**	**K22439**
		0.177 x 0.134	M 4	—	M 4	M 6	M 6	5/32"	1/4"	6 - 9	**233003**	**K16414**
		0.236 x 0.193	M 8	—	—	M 8	M 8	-	—	16 - 21	**233004**	**K16415**
		0.276 x 0.217	M 10	G 1/8"	—	M 10	M 10	1/4"	3/8"	27 - 32	**233005**	**K16418**
		0.315 x 0.244	—	—	M 8	—	—	5/16"	7/16"	16 - 21	**233006**	**K16416**
		0.354 x 0.276	M 12	—	—	M 12	M 12	3/8"	1/2"	37 - 44	**233007**	**K18454**
		0.394 x 0.315	—	—	M 10	—	—	—	—	27 - 32	**233008**	**K16417**
		0.433 x 0.354	M 14	G 1/4"	—	M 14	M 14	—	9/16"	50 - 53	**233009**	**K22440**





Reducers for Quick-Change Adapters

Metric (mm)

1. Tapping Chuck			2. Quick Change Adapter		3. Reducer						
	Nominal Size	D_1	Nominal Size	D_1	D_1	D_2	D_3	L_1	L_2	Weight (kg)	Part No.
m	1	19.00	0	13.00	19.00	13.00	30.00	21.50	4.00	0.12	**161038**
	2	31.00	1	19.00	31.00	19.00	48.00	35.00	5.00	0.48	**162094**

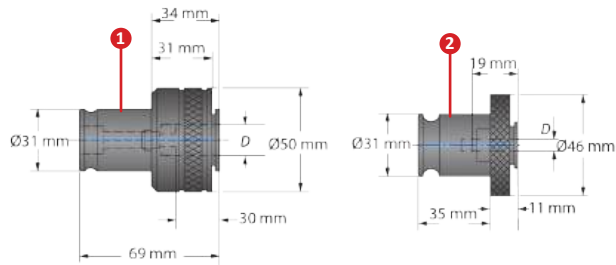
Imperial (in)

1. Tapping Chuck			2. Quick Change Adapter		3. Reducer						
	Nominal Size	D_1	Nominal Size	D_1	D_1	D_2	D_3	L_1	L_2	Weight (lbs)	Part No.
i	1	0.748	0	0.512	0.748	0.512	1.181	0.846	0.157	0.264	**161038**
	2	1.220	1	0.748	1.220	0.748	1.890	1.378	0.197	1.058	**162094**

m = Metric (mm)
i = Imperial (in)

Quick-Change Adapters





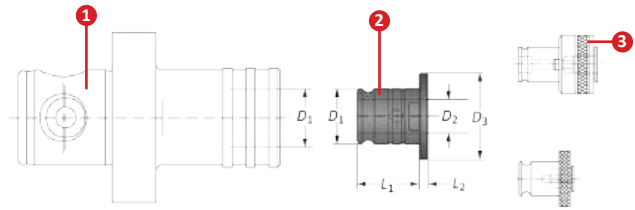
Metric (mm)

Shank Dimensions			Quick Change Adapter								Part No.	
	Nominal Size	*D* x Square Shank	DIN 352	DIN 353	DIN 371	DIN 374	DIN 376	DIN 2182	DIN 2183	Torque Setting	1.	2.
		7.00 x 5.50	M 10	G 1/8"	-	M 10	M 10	1/4"	3/8"	27 - 32	**233020**	**K15282**
		8.00 x 6.20	-	-	M 8	-	-	5/16"	7/16"	16 - 21	**233021**	**K15283**
		9.00 x 7.00	M 12	-	-	M 12	M 12	3/8"	1/2"	37 - 44	**233022**	**K15284**
		10.00 x 8.00	-	-	M 10	-	-	-	-	27 - 32	**233023**	**K18456**
m	2	11.00 x 9.00	M 14	G 1/4"	-	M 14	M 14	-	9/16"	50 - 53	**233024**	**K16419**
		12.00 x 9.00	M 16	G 3/8"	-	M 16	M 16	-	5/8"	55 - 58	**233025**	**K15285**
		14.00 x 11.00	M 18	-	-	M 18	M 18	-	11/16"	85 - 90	**233026**	**K16420**
		16.00 x 12.00	M 20	G 1/2"	-	M 20	M 20	-	13/16"	110 - 115	**233027**	**K15286**
		18.00 x 14.50	M 24	-	-	M 24	M 24	-	15/16"	110 - 115	**233028**	**K18457**

Imperial (in)

Shank Dimensions			Quick Change Adapter								Part No.	
	Nominal Size	*D* x Square Shank	DIN 352	DIN 353	DIN 371	DIN 374	DIN 376	DIN 2182	DIN 2183	Torque Setting	1.	2.
		0.276 x 0.217	M 10	G 1/8"	-	M 10	M 10	1/4"	3/8"	27 - 32	**233020**	**K15282**
		0.315 x 0.244	-	-	M 8	-	-	5/16"	7/16"	16 - 21	**233021**	**K15283**
		0.354 x 0.276	M 12	-	-	M 12	M 12	3/8"	1/2"	37 - 44	**233022**	**K15284**
		0.394 x 0.315	-	-	M 10	-	-	-	-	27 - 32	**233023**	**K18456**
i	2	0.433 x 0.354	M 14	G 1/4"	-	M 14	M 14	-	9/16"	50 - 53	**233024**	**K16419**
		0.472 x 0.354	M 16	G 3/8"	-	M 16	M 16	-	5/8"	55 - 58	**233025**	**K15285**
		0.551 x 0.433	M 18	-	-	M 18	M 18	-	11/16"	85 - 90	**233026**	**K16420**
		0.630 x 0.472	M 20	G 1/2"	-	M 20	M 20	-	13/16"	110 - 115	**233027**	**K15286**
		0.709 x 0.571	M 24	-	-	M 24	M 24	-	15/16"	110 - 115	**233028**	**K18457**





Reducers for Quick-Change Adapters

Metric (mm)

1. Tapping Chuck		2. Quick Change Adapter		3. Reducer						
Nominal Size	D_1	Nominal Size	D_1	D_1	D_2	D_3	L_1	L_2	Weight (kg)	Part No.
1	19.00	0	13.00	19.00	13.00	30.00	21.50	4.00	0.12	**161038**
2	31.00	1	19.00	31.00	19.00	48.00	35.00	5.00	0.48	**162094**

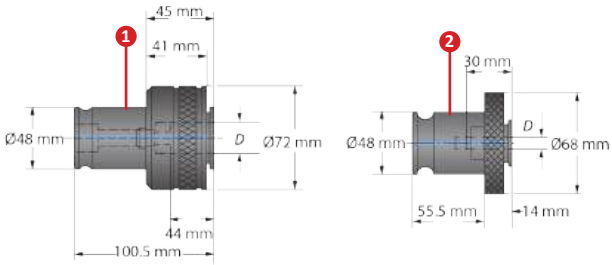
Imperial (in)

1. Tapping Chuck		2. Quick Change Adapter		3. Reducer						
Nominal Size	D_1	Nominal Size	D_1	D_1	D_2	D_3	L_1	L_2	Weight (lbs)	Part No.
1	0.748	0	0.512	0.748	0.512	1.181	0.846	0.157	0.264	**161038**
2	1.220	1	0.748	1.220	0.748	1.890	1.378	0.197	1.058	**162094**

m = Metric (mm)
i = Imperial (in)

Quick-Change Adapters





Metric (mm)

Shank Dimensions			Quick Change Adapter								Part No.	
	Nominal Size	*D* x Square Shank	DIN 352	DIN 353	DIN 371	DIN 374	DIN 376	DIN 2182	DIN 2183	Torque Setting	1.	2.
m	3	11.00 x 9.00	M 14	G 1/4"	—	M 14	M 14	—	9/18"	50 - 53	**233040**	**K22434**
		12.00 x 9.00	M 16	G 3/8"	—	M 16	M 16	—	5/8"	55 - 58	**233041**	**K22435**
		14.00 x 11.00	M 18	—	—	M 18	M 18	—	11/16"	85 - 90	**233042**	**K22436**
		16.00 x 12.00	M 20	G 1/2"	—	M 20	M 20	—	13/18"	100 - 106	**233043**	**K22437**
		18.00 x 14.50	M 24	—	—	M 24	M 24	—	15/16"	140 - 150	**233044**	**K16421**
		20.00 x 16.50	M 27	G 3/4"	—	M 27	M 27	—	1"	150 - 160	**233045**	**K16422**
		22.00 x 18.00	M 30	G 7/8"	—	M 30	M 30	—	1 1/8"	240 - 250	**233046**	**K16423**
		25.00 x 22.00	M 33	G 1"	—	M 33	M 33	—	1 1/4"	260 - 270	**233047**	**K16424**
		28.00 x 22.00	M 36	G 1-1/8"	—	M 36	M 36	—	1 3/8"	260 - 270	**233048**	**K22438**

Imperial (in)

Shank Dimensions			Quick Change Adapter								Part No.	
	Nominal Size	*D* x Square Shank	DIN 352	DIN 353	DIN 371	DIN 374	DIN 376	DIN 2182	DIN 2183	Torque Setting	1.	2.
i	3	0.433 x 0.354	M 14	G 1/4"	—	M 14	M 14	—	9/18"	50 - 53	**233040**	**K22434**
		0.472 x 0.354	M 16	G 3/8"	—	M 16	M 16	—	5/8"	55 - 58	**233041**	**K22435**
		0.551 x 0.433	M 18	—	—	M 18	M 18	—	11/16"	85 - 90	**233042**	**K22436**
		0.630 x 0.472	M 20	G 1/2"	—	M 20	M 20	—	13/18"	100 - 106	**233043**	**K22437**
		0.709 x 0.571	M 24	—	—	M 24	M 24	—	15/16"	140 - 150	**233044**	**K16421**
		0.787 x 0.650	M 27	G 3/4"	—	M 27	M 27	—	1"	150 - 160	**233045**	**K16422**
		0.866 x 0.709	M 30	G 7/8"	—	M 30	M 30	—	1 1/8"	240 - 250	**233046**	**K16423**
		0.984 x 0.866	M 33	G 1"	—	M 33	M 33	—	1 1/4"	260 - 270	**233047**	**K16424**
		1.102 x 0.866	M 36	G 1-1/8"	—	M 36	M 36	—	1 3/8"	260 - 270	**233048**	**K22438**

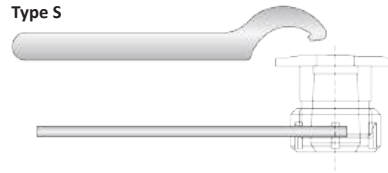
m = Metric (mm)
i = Imperial (in)

Service Keys for Collet Systems

Service Keys for ISO 10897 (DIN 6388) Collet Chuck Systems

Service Key			
Nominal Size	Size	Type	Part No.
16	40 - 42	S	**068179**
25	58 - 62	S	**068182**
32	68 - 75	S	**115867**

Type S



Service Keys for ISO 15488 (DIN 6499) Collet Chuck Systems

Service Key				
Nominal Size	Size	Service Key	Type	Part No.
ER 08 Mini	9.0	–	X	**415373**
ER 11 Mini	12.0	–	X	**415374**
ER 16 Mini	17.5	–	X	**415375**
ER 16	–	25	P	**215927**
ER 25	42.0	–	T	**215929**
ER 32	50.0	–	T	**215930**
ER 40	63.0	–	T	**215931**

Type X for Mini Clamping Nut



Service Keys for Erickson Collet Chuck Systems

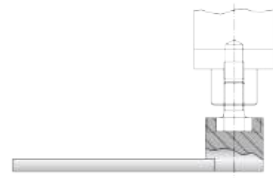
Service Keys		
Service Key	Type	Part No.
13	P	**315689**
19	P	**315691**

Type P



Service Keys for Milling Machine and Holding Arbors

Service Keys	
Service Key	Part No.
13	**115785**
16	**115699**
22	**115660**
27	**115661**
32	**115662**
40	**115663**
60	**315637**



m = Metric (mm)
i = Imperial (in)

Notes

SECTION

B10-K

UPA Facing and Boring Heads

UPA Facing and Boring Heads





Operation Facing and Boring

In 1936, the first model of the Wohlhaupter Universal facing and boring head was developed to launch the start of Wohlhaupter boring products. It became a staple to the boring industry.

Universal Facing and Boring heads are used on universal milling and boring machines, boring mills, and jig boring machines for machining stationary workpieces in individual and batch productions.

Applicable Industries

- Aerospace
- Agriculture
- Automotive
- Defense
- General Production
- Heavy Equipment
- Hydraulics
- Marine
- Medical
- Oil and Gas
- Renewable Energy/ Energy
- Tool, Mold, and Die

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Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

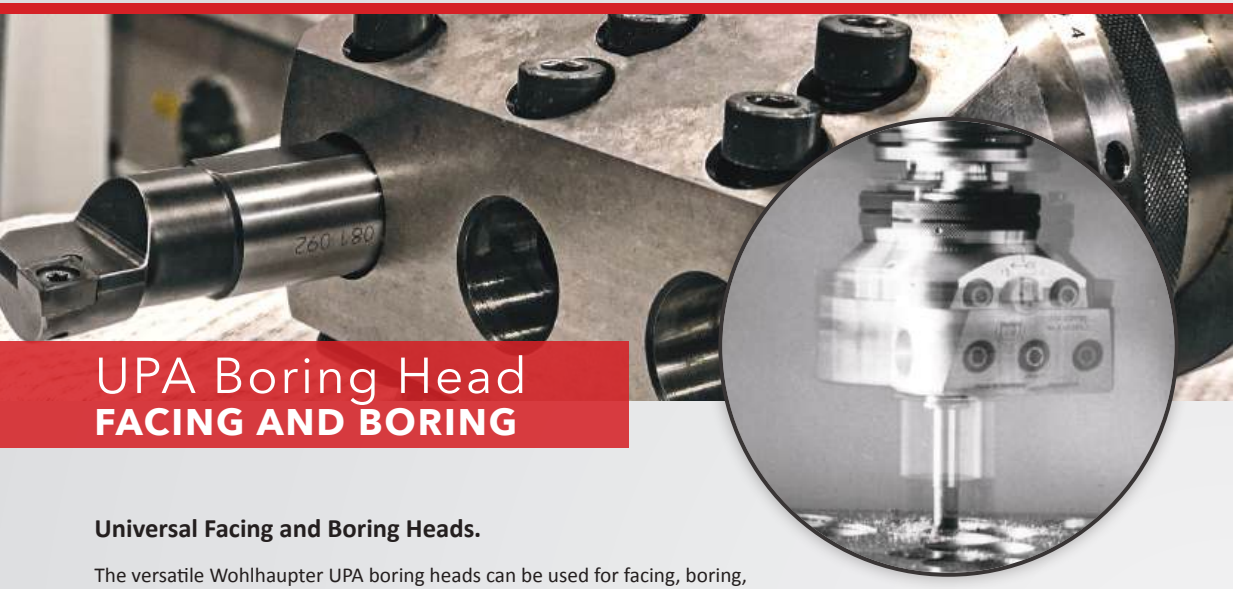
There are safety signal words also used in the catalog. Safety messages follow these words:

WARNING means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.



UPA Boring Head
FACING AND BORING

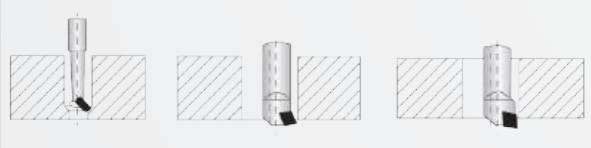
Universal Facing and Boring Heads.

The versatile Wohlhaupter UPA boring heads can be used for facing, boring, and taper turning. They are available in right- or left-handed types.

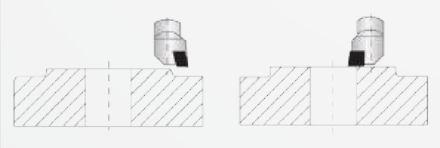
Precise and ***versatile*** boring heads.

- Diameter range: 0.00 mm - 620.00 mm (0.000" - 24.409").
- Slide adjustment up to 112.00 mm (4.410").
- Can be used in a variety of operations.

UNIVERSAL
FACING and BORING *Applications*



Boring with different tools



Facing

From inside outward

From outside inward



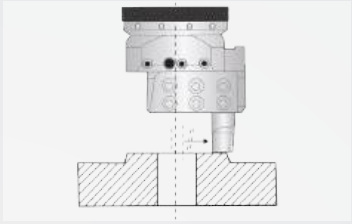
Recessing

Outside turning

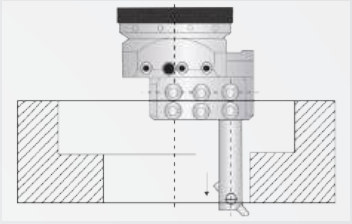
Thread cutting



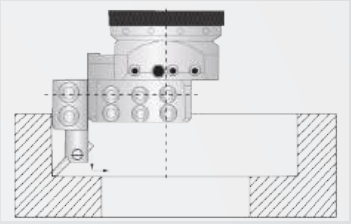
Taper turning



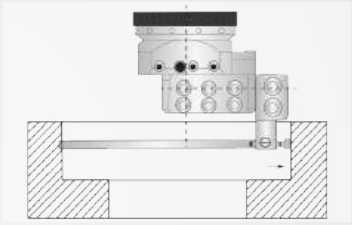
Facing with boring bar directly in slide.



Boring with long boring bar.



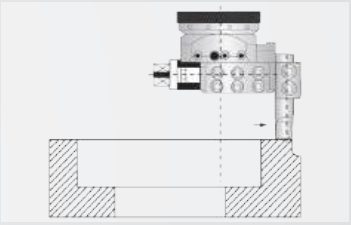
Boring and facing with short boring bar holder and a boring bar.



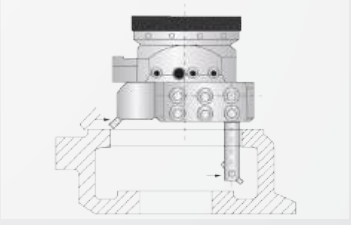
Recessing with short boring bar holder and a boring bar.



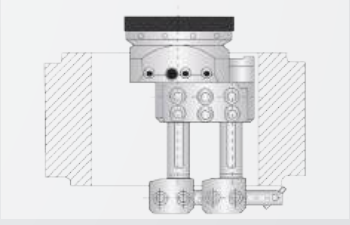
Deep hole boring with boring bar directly in slide.



Large diameter facing with a long boring bar holder.



Facing in two areas with one boring bar and a boring bar holder.



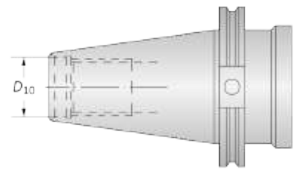
Facing the reverse side by using boring bar holders contained in attachment.

UPA 3

Master Shanks

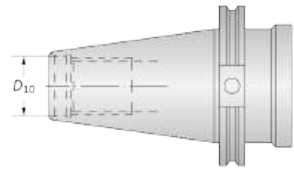
CAT Shanks

	Style	D_{10}	Weight (lbs)	Part No.
i	CAT 40	5/8 - 11	2.336	**130001T013939**
	CAT 50	1 - 8	7.054	**130001T011624**



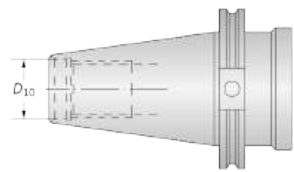
SK (DIN 69871)

	Style	D_{10}	Weight (kg)	Part No.
m	ISO 40	M16	1.00	**130001T013815**



DIN 2080

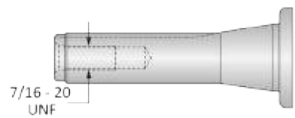
	Style	D_{10}	Weight (kg)	Part No.
	ISO 30	M12	0.40	**130001T003673**
	ISO 40	M16 (chucking groove)	0.80	**130001T010229**
m	ISO 40	M16 (cap screw clamping)	1.00	**130001T003703**
	ISO 50	M24	2.80	**130001T003704**
	ISO 50	M24 (chucking groove)	2.80	**130001T010048**





R-8 Shanks

Weight	Part No.
0.48 kg (1.058 lbs)	**130001T007166**

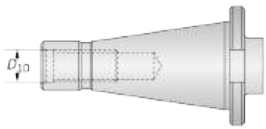


UPA 3

Master Shanks

NMTB Shanks

	Style	D_{10}	Weight (lbs)	Part No.
i	NMTB 40	5/8 - 11	1.984	**130001T004498**
	NMTB 50	1 - 8	5.798	**130001T004480**



Morse Taper Shanks (Metric (mm))

	Style	Type	D_{10}	Weight (kg)	Part No.
	MT 3	DIN 1806	—	0.30	**130001T004509**
m	MT 4	DIN 2207	M16	0.70	**130001T004256**
	MT 4	—	M14 SIP	1.00	**130001T004255**

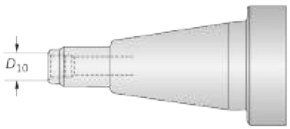


Morse Taper Shanks (Imperial (in))

	Style	Type	D_{10}	Weight (lbs)	Part No.
	MT 3	DIN 1806	—	0.661	**130001T004509**
i	MT 4	DIN 1806	5/8 - 11	1.212	**130001T003590**
	MT 5	DIN 1806	1 - 8	2.976	**130001T003920**

Norm Taper

	Style	D_{10}	Weight (kg)	Part No.
m	40xS 20x2 with bolts DECKEL	M12 x 1	1.00	**130001T005070**



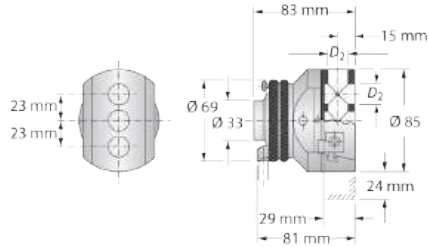
Differential Screw

Thread	Weight	Part No.
M16 x 2	0.03 kg (0.066 lbs)	**KW9208**



UPA 3

Boring Heads



Metric (mm)

	Boring Range	Boring Head D_2	Weight (kg)	Part No.
m	0.00 - 260.00	18.00	2.10	**005020**

Imperial (in)

	Boring Range	Boring Head D_2	Weight (lbs)	Part No.
i	0.000 - 10.234	0.750	4.629	**006020**

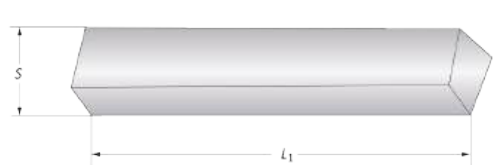
Metric (mm)

	Square Turning Bit S	Square Turning Bit L_1	Weight (g)	Part No.
m	6.00	40.00	11	**089001**

Imperial (in)

	Square Turning Bit S	Square Turning Bit L_1	Weight (oz)	Part No.
i	0.236	1.574	0.035	**089001**

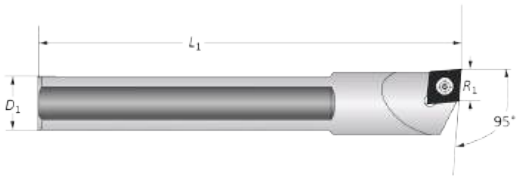
Square Turning Bit



K

UPA 3

Boring Bars

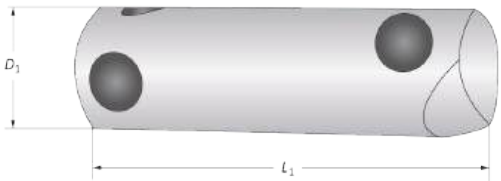


Metric (mm)

	Boring Bar D_1	L_1	R_1	Weight (kg)	Type	Insert Form	Part No.
m	18.00	80.00	13.50	0.10	Right	103	**081087**
	18.00	80.00	13.50	0.10	Left	103	**218088**

Imperial (in)

	Boring Bar D_1	L_1	R_1	Weight (lbs)	Type	Insert Form	Part No.
i	0.750	3.149	0.531	0.220	Right	103	**0750BFBR**
	0.750	3.149	0.531	0.220	Left	103	**0750BFBL**



Metric (mm)

	Boring Bar D_1	L_1	Boring Depth	Part No.
m	18.00	60.00	30.00	**073003**
	18.00	90.00	60.00	**073004**
	18.00	120.00	90.00	**073005**

Imperial (in)

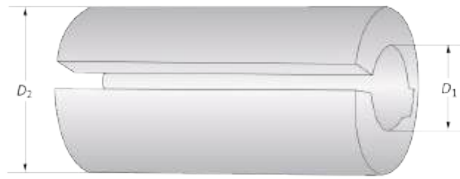
	Boring Bar D_1	L_1	Boring Depth	Part No.
i	0.750	2.362	1.181	**074003**
	0.750	3.543	2.362	**074004**
	0.750	4.724	3.543	**074005**

K

UPA 3

Accessories

Reducing Sleeves



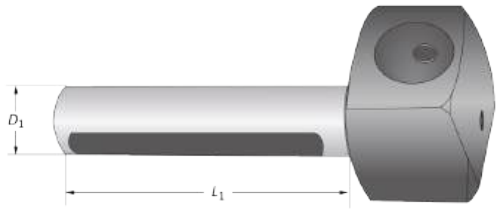
Metric (mm)

	Reducing Sleeve D_2	Reducing Sleeve D_1	Weight (kg)	Part No.
m	18.00	8.00	0.10	**071103**
	18.00	10.00	0.10	**071104**
	18.00	12.00	0.10	**071105**
	18.00	14.00	0.10	**071106**

Imperial (in)

	Reducing Sleeve D_2	Reducing Sleeve D_1	Weight (lbs)	Part No.
i	0.750	0.313	0.220	**072104**
	0.750	0.375	0.220	**072105**
	0.750	0.500	0.220	**072106**
	0.750	0.625	0.220	**072107**

Boring Bar Holder



Metric (mm)

	Boring Bar Holder D_1	Boring Bar Holder L_1	Working Diameter Range	Part No.
m	18.00	82.00	85.00 - 190.00	**075001**
	18.00	120.00	160.00 - 260.00	**075002**

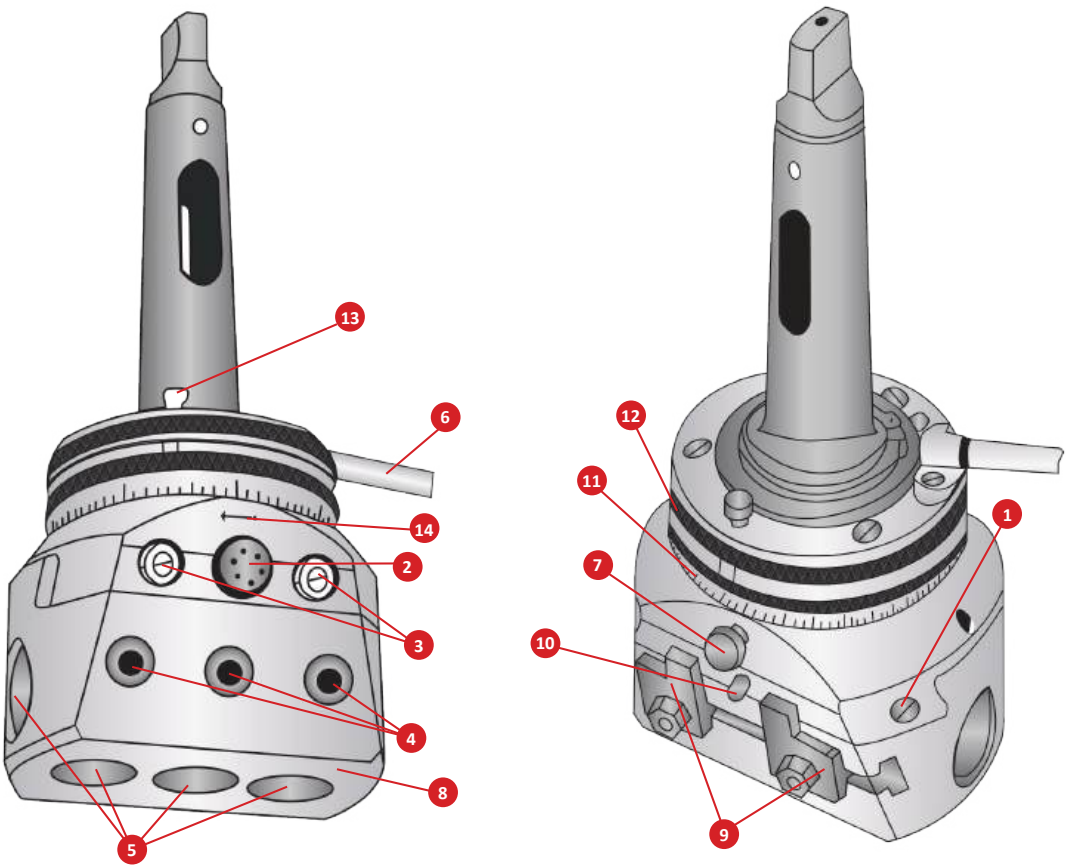
Imperial (in)

	Boring Bar Holder D_1	Boring Bar Holder L_1	Working Diameter Range	Part No.
i	0.750	3.228	3.346 - 7.480	**076001**
	0.750	4.724	6.299 - 10.236	**076002**

K

UPA 3

Boring Head Diagram



No.	Part	No.	Part
1	Regulating screw	8	Slide
2	Locking screw	9	Stop
3	Setting screws	10	Fixed pin
4	Fastening screw	11	Scale ring
5	Tool post holes	12	Holding ring
6	Holding rod	13	Button for return movement
7	Feed button	14	Arrow

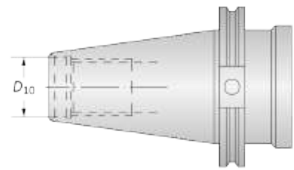
K

UPA 4 and 5-S 6

Master Shanks

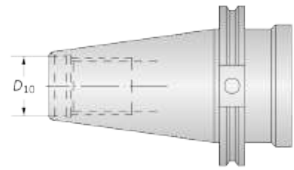
CAT Shanks

	Style	D_{10}	Weight (lbs)	Part No.
i	CAT 40	5/8 - 11	3.196	**130005T013939**
	CAT 50	1 - 8	7.054	**130005T011624**



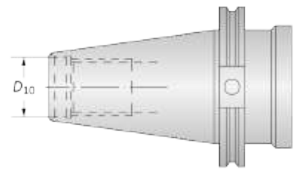
SK (DIN 69871)

	Style	D_{10}	Weight (kg)	Part No.
m	ISO 40	M16	1.60	**130005T013815**
	ISO 50	M24	3.00	**130005T013960**



DIN 2080

	Style	D_{10}	Weight (kg)	Part No.
m	ISO 40	M16 (cap nut clamps)	1.20	**130005T003703**
	ISO 50	M24	2.90	**130005T003704**
	ISO 40	M16 (chucking groove)	1.20	**130005T010229**
	ISO 50	M24 (chucking groove)	3.00	**130005T010048**



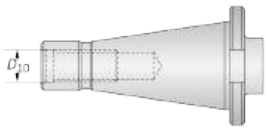


UPA 4 and 5-S 6

Master Shanks

NMTB Shanks

	Style	D_{10}	Weight (lbs)	Part No.
	NMTB 40	5/8 - 11	2.866	**130005T004498**
i	NMTB 40	5/8 - 11	2.866	**130005T010327**
	NMTB 50	1 - 8	6.393	**130005T004480**



Morse Taper Shanks (Metric (mm))

	Style	Weight (kg)	Part No.
m	MT 4	0.86	**130005T003590***
	MT 5	1.65	**130005T003920**



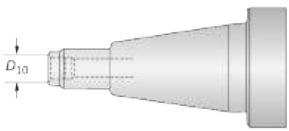
Morse Taper Shanks (Imperial (in))

	Style	Weight (lbs)	Part No.
i	MT 4	1.895	**130005T003590***
	MT 5	3.639	**130005T003920**

*Shank can only be used with UPA 4 boring heads.

Norm Taper

	Style	D_{10}	Weight (kg)	Part No.
m	40xS 20x2 with bolts DECKEL	M12 x 1	1.20	**130005T005070**



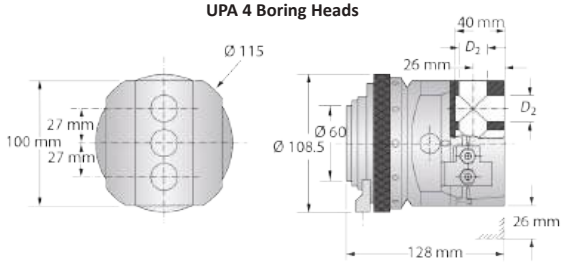
Differential Screw

Thread	Weight	Part No.
M20 x 2.5	0.07 kg (0.154 lbs)	**KW9209**

UPA 4 and 5-S 6

Boring Heads

UPA 4 Boring Heads



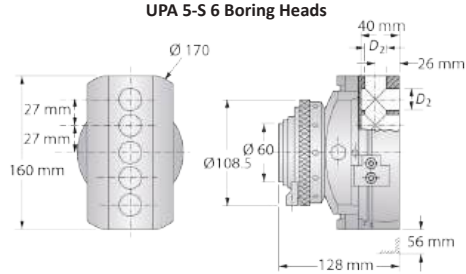
Metric (mm)

	Boring Range	Boring Head D_2	Weight (kg)	Part No.
m	0.00 - 400.00	22.00	6.50	**007020**

Imperial (in)

	Boring Range	Boring Head D_2	Weight (lbs)	Part No.
i	0.000 - 15.748	0.875	14.330	**008020**

UPA 5-S 6 Boring Heads



Metric (mm)

	Boring Range	Boring Head D_2	Weight (kg)	Part No.
m	0.00 - 620.00	22.00	7.90	**013020**

Imperial (in)

	Boring Range	Boring Head D_2	Weight (lbs)	Part No.
i	0.000 - 24.409	0.875	17.416	**014020**

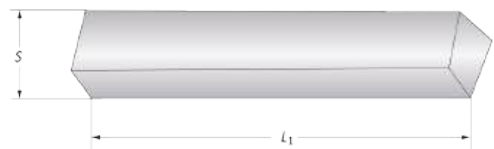
Metric (mm)

	Square Turning Bit S	Square Turning Bit L_1	Weight (g)	Part No.
m	6.00	40.00	11	**089001**

Imperial (in)

	Square Turning Bit S	Square Turning Bit L_1	Weight (oz)	Part No.
i	0.236	1.574	0.035	**089001**

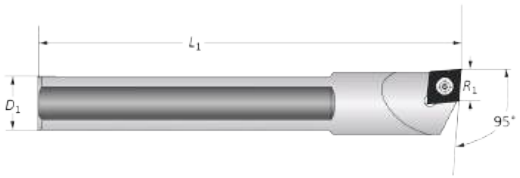
Square Turning Bit



K

UPA 4 and 5-S 6

Boring Bars

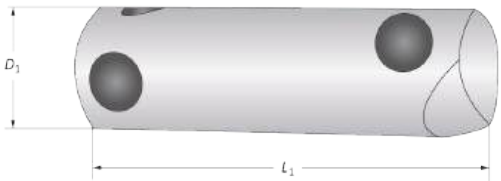


Metric (mm)

	Boring Bar				Type	Insert Form	Part No.
	D_1	L_1	R_1	Weight (kg)			
m	22.00	100.00	13.50	0.10	Right	103	**081092**
	22.00	100.00	13.50	0.10	Left	103	**218089**

Imperial (in)

	Boring Bar				Type	Insert Form	Part No.
	D_1	L_1	R_1	Weight (lbs)			
i	0.875	3.937	0.531	0.220	Right	103	**0875BFBR**
	0.875	3.937	0.531	0.220	Left	103	**0875BFBL**



Metric (mm)

	Boring Bar		Boring Depth	Part No.
	D_1	L_1		
m	22.00	85.00	45.00	**073006**
	22.00	125.00	85.00	**073007**
	22.00	165.00	125.00	**073008**

Imperial (in)

	Boring Bar		Boring Depth	Part No.
	D_1	L_1		
i	0.875	3.346	1.771	**074006**
	0.875	4.921	3.346	**074007**
	0.875	6.496	4.921	**074008**

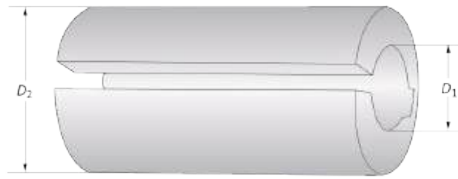


K

UPA 4 and 5-S 6

Accessories

Reducing Sleeves



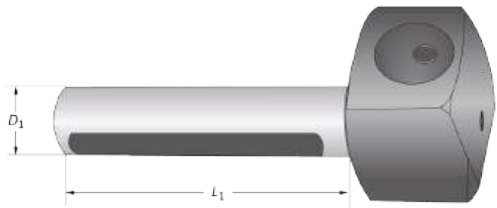
Metric (mm)

	Reducing Sleeve D_2	Reducing Sleeve D_1	Weight (kg)	Part No.
	22.00	8.00	0.10	**071107**
	22.00	10.00	0.10	**071108**
m	22.00	12.00	0.10	**071109**
	22.00	14.00	0.08	**071110**
	22.00	18.00	0.08	**071111**

Imperial (in)

	Reducing Sleeve D_2	Reducing Sleeve D_1	Weight (lbs)	Part No.
	0.875	0.312	0.220	**072108**
	0.875	0.375	0.220	**072109**
i	0.875	0.500	0.220	**072110**
	0.875	0.625	0.176	**072111**
	0.875	0.750	0.176	**072112**

Boring Bar Holder



Metric (mm)

	Boring Bar Holder D_1	Boring Bar Holder L_1	Working Diameter Range UPA 4	Working Diameter Range UPA 5-S 6	Part No.
m	22.00	98.00	115.00 - 240.00	120.00 - 400.00	**075003**
	22.00	180.00	220.00 - 400.00	270.00 - 620.00	**075004**

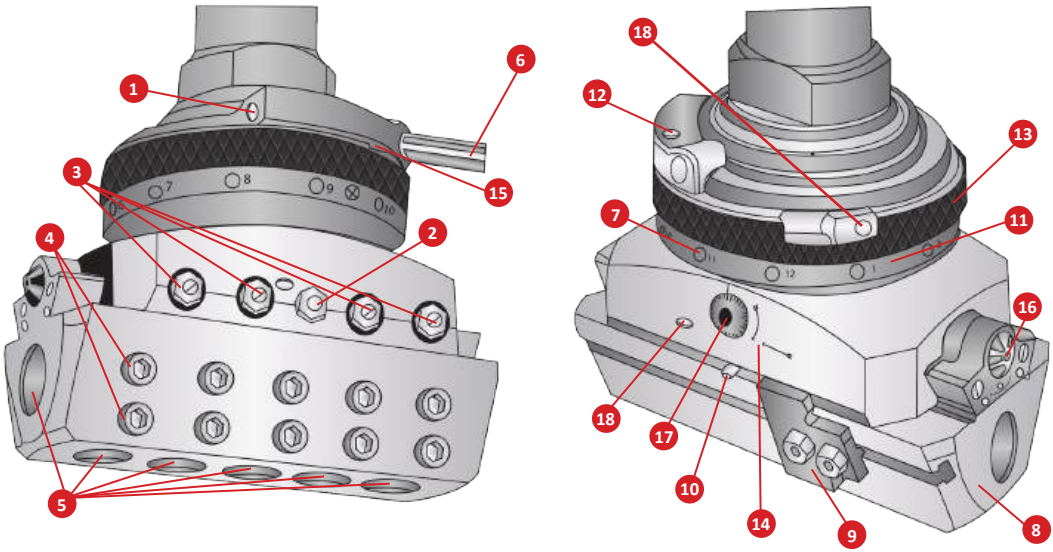
Imperial (in)

	Boring Bar Holder D_1	Boring Bar Holder L_1	Working Diameter Range UPA 4	Working Diameter Range UPA 5-S 6	Part No.
i	0.875	3.858	4.527 - 9.448	4.724 - 15.748	**076003**
	0.875	7.087	8.661 - 15.748	10.630 - 24.408	**076004**

K

UPA 4 and 5-S 6

Boring Head Diagram



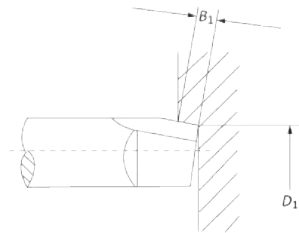
No.	Part	No.	Part
1	Regulating screw	10	Fixed pin
2	Locking screw	11	Scale ring
3	Setting screws	12	Retaining pin
4	Fastening screws	13	Feed ring
5	Tool post holes	14	Arrow
6	Holding rod	15	Recess
7	Feed buttons	16	Quick setting dial
8	Slide with rotation bores	17	Fine setting dial
9	Stop	18	Release ring

K

Technical Information

Technical Data

	Type	UPA 3	UPA 4	UPA 5-S 6
	Working accuracy	±0.005	±0.005	±0.005
	Diameter range	25.00	35.00	45.00
	MT shank	3.00	4.00	5.00
	ISO shank	30.00	40.00	40.00
	Facing and boring range	0.00 - 260.00	0.00 - 400.00	0.00 - 620.00
	Adjustment of slide (max)	48.00	52.00	112.00
	Self-activated feed of slide per revolution	0.05	0.02, 0.04, 0.06, 0.08, 0.10, 0.12, 0.14, 0.16, 0.18, 0.20, 0.22, 0.24	0.02, 0.04, 0.06, 0.08, 0.10, 0.12, 0.14, 0.16, 0.18, 0.20, 0.22, 0.24
m	Fine adjustment of one division	0.01	0.01	0.01
	Fine adjustment of one revolution	1.00	0.40	0.40
	Rapid return per revolution	1.00	–	–
	Rapid return setting per revolution	–	6.00	6.00
	Largest diameter of slide	85.00	115.00	170.00
	Height of boring head without shank	81.00	128.00	128.00
	Tool locations in slide	18.00	22.00	22.00
	Max permissible revolutions	1000	600	600
	End cut off accuracy	±0.05	±0.05	±0.05
	Weight of head (without shank) (kg)	2.1	6.5	7.9



Chip Production Values

	Chip Cutting Guide	Type	UPA 3	UPA 4	UPA 5-S 6
	Max load	KW	2.50	7.00	9.50
	With slide feed	mm/rev.	0.05	0.08, 0.12, 0.24	0.08, 0.12, 0.24
	For smaller working Ø	D_1	60.00	150.00	200.00
m	Maximum width of chip	B_1	4.00	7.00, 6.00, 4.00	8.00, 7.00, 5.00
	Maximum working Ø	D_1	260.00	400.00	500.00 / 620.00
	Max width of clip without reinforcement rings	B_1	2.00	2.20, 2.00, 1.50	2.50, 2.00, 1.50
	Max width of clip with reinforcement rings*	B_1	–	4.50, 4.00, 3.00	5.00, 4.00, 3.00

*By using the reinforcement rings contained in the normal attachment, chip cutting capacity is increased by 100%.



Notes

SECTION

B10-L

Lay Down Cartridges

Lay Down Cartridges



Powerful | Versatile | Engineered Solutions

ES-Bore lay down cartridges can be easily mounted onto the body of a custom tool, while the dimensions allow the cartridge to fit onto existing bodies. Wohlhaupter's fine boring ES-Bore cartridges are available in both digital 3E^{TECH+} and analog versions to make quick and accurate adjustments while at the machine.

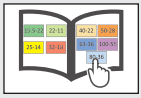
From premachining holes with heavy stock removal to finish machining with tight tolerances and excellent surface finish, Wohlhaupter's extensive range of lay down cartridges can help you achieve specific boring solutions. Wohlhaupter's lay down cartridges bring innovative concepts designed to improve productivity, reduce scrap, and reduce the cost per part.

Applicable Industries

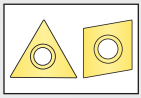
- Aerospace
- Agriculture
- Automotive
- Defense
- General Production
- Heavy Equipment
- Hydraulics
- Marine
- Medical
- Oil and Gas
- Renewable Energy/ Energy
- Tool, Mold, and Die

Reference Icons

The following icons will appear throughout the catalog to help you navigate between products.



MVS Connection Color Guide
Detailed instructions and information regarding the MVS connection(s).



Inserts
For use with insert holder boring heads and boring bars using indexable inserts.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.

This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

WARNING means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

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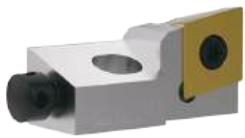
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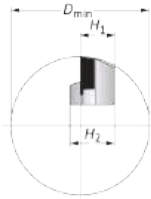
ES-Bore Fine Boring Cartridges

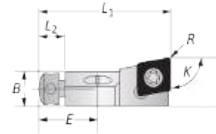
Fine Boring Cartridges 9
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Compact Lay Down Cartridges

80° Rhomboid







Metric (mm)

	K	Insert Form	ISO	D_{min} Boring Range	Designation	Insert Holder L_1	L_2	B	H_1	H_2	F	R Radius	E	Part No.
	45°	101	CC..0602..	25.00	SCSCR08CK-06	24.00	6.00	6.50	8.00	10.00	10.00	0.40	13.00	**345010**
		103	CC..09T3..	40.00	SCSCR10CK-09	32.00	7.50	10.00	10.00	13.00	14.50	0.80	17.00	**345005**
	60°	101	CC..0602..	25.00	SCTCR08CK-06	28.00	6.00	6.50	8.00	10.00	7.00	0.40	13.00	**345011**
		103	CC..09T3..	40.00	SCTCR10CK-09	38.00	7.50	10.00	10.00	13.00	9.70	0.80	17.00	**345006**
	70°	101	CC..0602..	25.00	SCPCR08CK-06	28.00	6.00	6.50	8.00	10.00	8.00	0.40	13.00	**345012**
		103	CC..09T3..	40.00	SCPCR10CK-09	38.00	7.50	10.00	10.00	13.00	11.00	0.80	17.00	**345007**
ⓜ	75°	101	CC..0602..	25.00	SCRCR08CK-06	28.00	6.00	6.50	8.00	10.00	8.50	0.40	13.00	**345013**
		103	CC..09T3..	40.00	SCRCR10CK-09	38.00	7.50	10.00	10.00	13.00	11.70	0.80	17.00	**345008**
	80°	101	CC..0602..	25.00	SC0CR08CK-06	28.00	6.00	6.50	8.00	10.00	9.00	0.40	13.00	**345014**
		103	CC..09T3..	40.00	SC0CR10CK-09	38.00	7.50	10.00	10.00	13.00	12.50	0.80	17.00	**345009**
	90°	101	CC..0602..	25.00	SCFCR08CK-06	28.00	6.00	6.50	8.00	10.00	10.00	0.40	13.00	**345001**
		103	CC..09T3..	40.00	SCFCR10CK-09	38.00	7.50	10.00	10.00	13.00	14.00	0.80	17.00	**345002**
		104	CC..1204..	50.00	SCFCR12CK-12	45.00	8.00	14.00	12.00	16.00	20.00	0.80	20.00	**345003**
		105	CC..1605..	55.00	SCFCR14CK-16	54.00	8.00	16.00	14.00	18.00	23.00	0.80	23.50	**345004**

Imperial (in)

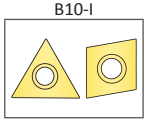
	K	Insert Form	ISO	D_{min} Boring Range	Designation	Insert Holder L_1	L_2	B	H_1	H_2	F	R Radius	E	Part No.
	45°	101	CC..0602..	0.984	SCSCR08CK-06	0.944	0.236	0.255	0.314	0.393	0.393	0.015	0.511	**345010**
		103	CC..09T3..	1.574	SCSCR10CK-09	1.259	0.295	0.393	0.393	0.511	0.570	0.031	0.669	**345005**
	60°	101	CC..0602..	0.984	SCTCR08CK-06	1.102	0.236	0.255	0.314	0.393	0.275	0.015	0.511	**345011**
		103	CC..09T3..	1.574	SCTCR10CK-09	1.496	0.295	0.393	0.393	0.511	0.381	0.031	0.669	**345006**
	70°	101	CC..0602..	0.984	SCPCR08CK-06	1.102	0.236	0.255	0.314	0.393	0.314	0.015	0.511	**345012**
		103	CC..09T3..	1.574	SCPCR10CK-09	1.496	0.295	0.393	0.393	0.511	0.433	0.031	0.669	**345007**
ⓘ	75°	101	CC..0602..	0.984	SCRCR08CK-06	1.102	0.236	0.255	0.314	0.393	0.334	0.015	0.511	**345013**
		103	CC..09T3..	1.574	SCRCR10CK-09	1.496	0.295	0.393	0.393	0.511	0.460	0.031	0.669	**345008**
	80°	101	CC..0602..	0.984	SC0CR08CK-06	1.102	0.236	0.255	0.314	0.393	0.354	0.015	0.511	**345014**
		103	CC..09T3..	1.574	SC0CR10CK-09	1.496	0.295	0.393	0.393	0.511	0.492	0.031	0.669	**345009**
	90°	101	CC..0602..	0.984	SCFCR08CK-06	1.102	0.236	0.255	0.314	0.393	0.393	0.015	0.511	**345001**
		103	CC..09T3..	1.574	SCFCR10CK-09	1.496	0.295	0.393	0.393	0.511	0.551	0.031	0.669	**345002**
		104	CC..1204..	1.968	SCFCR12CK-12	1.771	0.314	0.551	0.472	0.629	0.787	0.031	0.787	**345003**
		105	CC..1605..	2.165	SCFCR14CK-16	2.125	0.314	0.629	0.551	0.708	0.905	0.031	0.925	**345004**



L

B10-I

Key on B10-L: 2

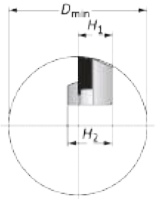


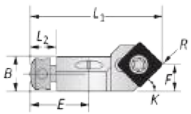
ⓜ = Metric (mm)
ⓘ = Imperial (in)

Compact Lay Down Cartridges

Square







Metric (mm)

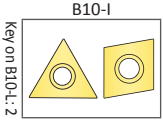
	K	Insert Form	ISO	D_{min} Boring Range	Designation	Insert Holder L_1	L_2	B	H_1	H_2	F	R Radius	E	Part No.
	45°	112	SC..09T3..	40.00	SSSCR10CK-09	32.00	7.50	10.00	10.00	13.00	14.00	0.80	17.00	**345015**
	60°	112	SC..09T3..	40.00	SSTCR10CK-09	38.00	7.50	10.00	10.00	13.00	9.70	0.80	17.00	**345016**
ⓜ	70°	112	SC..09T3..	40.00	SSPCR10CK-09	38.00	7.50	10.00	10.00	13.00	11.00	0.80	17.00	**345017**
	75°	112	SC..09T3..	40.00	SSRCR10CK-09	38.00	7.50	10.00	10.00	13.00	11.70	0.80	17.00	**345018**
	80°	112	SC..09T3..	40.00	SS0CR10CK-09	38.00	7.50	10.00	10.00	13.00	12.50	0.80	17.00	**345019**

Imperial (in)

	K	Insert Form	ISO	D_{min} Boring Range	Designation	Insert Holder L_1	L_2	B	H_1	H_2	F	R Radius	E	Part No.
	45°	112	SC..09T3..	1.574	SSSCR10CK-09	1.260	0.295	0.393	0.393	0.511	0.551	0.031	0.669	**345015**
	60°	112	SC..09T3..	1.574	SSTCR10CK-09	1.496	0.295	0.393	0.393	0.511	0.381	0.031	0.669	**345016**
ⓘ	70°	112	SC..09T3..	1.574	SSPCR10CK-09	1.496	0.295	0.393	0.393	0.511	0.433	0.031	0.669	**345017**
	75°	112	SC..09T3..	1.574	SSRCR10CK-09	1.496	0.295	0.393	0.393	0.511	0.460	0.031	0.669	**345018**
	80°	112	SC..09T3..	1.574	SS0CR10CK-09	1.496	0.295	0.393	0.393	0.511	0.472	0.031	0.669	**345019**



B10-I

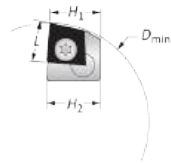


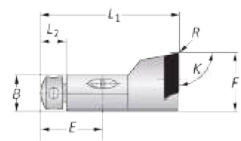
ⓜ = Metric (mm)
ⓘ = Imperial (in)

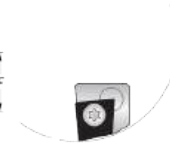
Compact Lay Down Cartridges

Tangential









Metric (mm)

	K	Insert Form	Type	D_{min} Boring Range	Insert Holder L_1	L_2	B	H_1	H_2	F	R Radius	E	L	Part No.
m	90°	04	Right	54.00	38.00	7.50	10.00	14.00	15.00	16.00	0.50	17.00	10.50	**345023**
			Left	54.00	38.00	7.50	10.00	14.00	15.00	16.00	0.50	17.00	10.50	**345025**
		05	Right	70.00	45.00	8.00	14.00	19.00	20.00	22.00	0.50	20.00	14.50	**345020**
			Left	70.00	45.00	8.00	14.00	19.00	20.00	22.00	0.50	20.00	14.50	**345022**

Imperial (in)

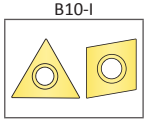
	K	Insert Form	Type	D_{min} Boring Range	Insert Holder L_1	L_2	B	H_1	H_2	F	R Radius	E	L	Part No.
i	90°	04	Right	2.125	1.496	0.295	0.393	0.551	0.590	0.629	0.019	0.669	0.413	**345023**
			Left	2.125	1.496	0.295	0.393	0.551	0.590	0.629	0.019	0.669	0.413	**345025**
		05	Right	2.755	2.755	0.314	0.551	0.748	0.787	0.866	0.019	0.787	0.570	**345020**
			Left	2.755	2.755	0.314	0.551	0.748	0.787	0.866	0.019	0.787	0.570	**345022**



L

B10-I

Key on B10-L: 2

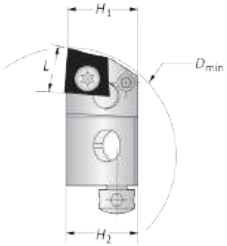


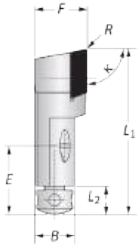
m = Metric (mm)
i = Imperial (in)

Compact Lay Down Cartridges

Tangential - Radial Cutting







Metric (mm)

	K	Insert Form	Type	D_{min} Boring Range	Insert Holder L_1	L_2	B	H_1	H_2	F	R Radius	E	L	Part No.
ⓜ	90°	04	Right	54.00	41.00	7.50	10.00	17.00	18.00	13.00	0.50	17.00	10.50	**345024**
		05	Right	70.00	50.00	8.00	14.00	21.00	22.00	17.00	0.50	20.00	14.50	**345021**

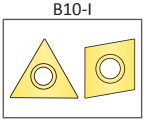
Imperial (in)

	K	Insert Form	Type	D_{min} Boring Range	Insert Holder L_1	L_2	B	H_1	H_2	F	R Radius	E	L	Part No.
ⓘ	90°	04	Right	2.125	1.614	0.295	0.393	0.669	0.708	0.511	0.019	0.669	0.413	**345024**
		05	Right	2.755	1.968	0.314	0.551	0.826	0.866	0.669	0.019	0.787	0.570	**345021**

L

B10-I

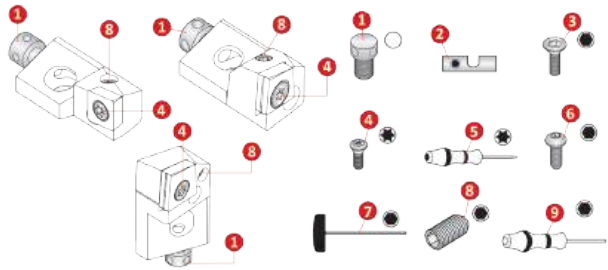
Key on B10-L: 2



ⓜ = Metric (mm)
ⓘ = Imperial (in)

Compact Lay Down Cartridges

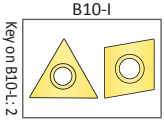
Accessories



Insert Holder Part No.	1. Axial Barrel Screw	2. Shim	3. Insert Screw	4. Insert Screw	5. Torx® Driver	6. Holder Fixing Screw	7. Hex Driver	8. Radial Set Screw	9. Hex Driver
345001	215742	345201	215461	115676	115590	215343	415577	114224	215472
345002	415299	345202	116433	115673	115664	215634	415164	070161	215473
345003	215250	345203	116433	415298	215150	215431	415164	215467	115575
345004	215265	345204	116433	215149	215150	315476	415165	215467	115575
345005	415299	345216	116433	115673	115664	215634	415164	070161	215473
345006	415299	345218	116433	115673	115664	215634	415164	070161	215473
345007	415299	345208	116433	115673	115664	215634	415164	070161	215473
345008	415299	345208	116433	115673	115664	215634	415164	070161	215473
345009	415299	345202	116433	115673	115664	215634	415164	070161	215473
345010	215742	345211	215461	115676	115590	215343	415577	114224	215472
345011	215742	345211	215461	115676	115590	215343	415577	114224	215472
345012	215742	345213	215461	115676	115590	215343	415577	114224	215472
345013	215742	345213	215461	115676	115590	215343	415577	114224	215472
345014	215742	345201	215461	115676	115590	215343	415577	114224	215472
345015	415299	345215	116433	115673	115664	215634	415164	070161	215473
345016	415299	345216	116433	115673	115664	215634	415164	070161	215473
345017	415299	345218	116433	115673	115664	215634	415164	070161	215473
345018	415299	345218	116433	115673	115664	215634	415164	070161	215473
345019	415299	345208	116433	115673	115664	215634	415164	070161	215473
345020	215250	345220	116433	415949	215150	315476	415165	215467	115575
345021	215250	345221	116433	415949	215150	315476	415165	215104	115575
345022	215250	345222	116433	415949	215150	315476	415165	215467	115575
345023	415299	345223	116433	415977	115664	215634	415164	415280	215473
345024	415299	345224	116433	415977	115664	215634	415164	070161	215473
345025	415299	345225	116433	415977	115664	215634	415164	415280	215473

L

B10-I

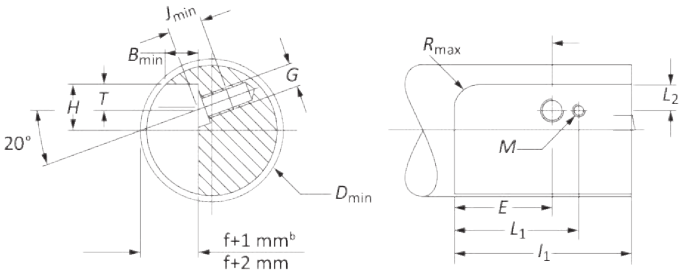


m = Metric (mm)
i = Imperial (in)

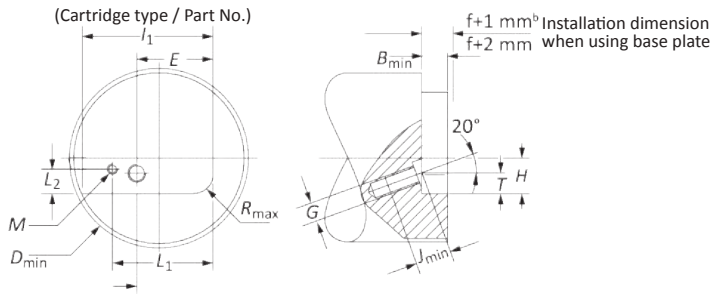
Compact Lay Down Cartridges

Mounting Dimensions

Axial



Radial



Metric (mm)

	D_{min}	Installation Dimensions H	R_{max}	B_{min}	Mounting Thread and Base Plate E	L_1	T	L_2	G	M	J_{min}	Cartridge Type
	25.00	8.00	2.00	6.50	13.00	18.50	4.50	4.20	M4	M2	8.00	**XXXXX 08CK [1,2]**
	40.00	10.00	2.50	10.00	17.00	24.50	5.00	4.70	M6	M3	11.00	**XXXXX 10CK**
	50.00	12.00	5.50	14.00	20.00	28.00	6.00	5.70	M6	M3	12.00	**XXXXX 12CK**
	55.00	14.00	5.50	16.00	23.50	33.00	6.00	7.20	M8	M3	13.00	**XXXXX 14CK**
ⓜ	70.00	20.00	6.50	14.00	20.00	27.50	6.00	11.20	M8	M3	15.00	**345020**
		22.00	6.50	14.00	20.00	28.00	6.00	11.20	M8	M3	15.00	**345021***
		20.00	6.50	14.00	20.00	27.50	6.00	11.20	M8	M3	15.00	**345022**
	54.00	15.00	3.00	10.00	17.00	23.50	5.00	9.70	M6	M3	11.00	**345023**
		18.00	3.00	10.00	17.00	24.00	5.00	9.20	M6	M3	11.00	**345024***
		15.00	3.00	10.00	17.00	23.50	5.00	9.70	M6	M3	11.00	**345025**

Imperial (in)

	D_{min}	Installation Dimensions H	R_{max}	B_{min}	Mounting Thread and Base Plate E	L_1	T	L_2	G	M	J_{min}	Cartridge Type
	0.984	0.315	0.079	0.256	0.512	0.728	0.177	0.165	M4	M2	0.315	**XXXXX 08CK [1,2]**
	1.575	0.394	0.098	0.394	0.669	0.965	0.197	0.185	M6	M3	0.433	**XXXXX 10CK**
	1.969	0.472	0.217	0.551	0.787	1.102	0.236	0.224	M6	M3	0.472	**XXXXX 12CK**
	2.165	0.551	0.217	0.630	0.925	1.299	0.236	0.276	M8	M3	0.512	**XXXXX 14CK**
ⓘ	2.756	0.787	0.256	0.551	0.787	1.083	0.236	0.441	M8	M3	0.591	**345020**
		0.866	0.256	0.551	0.787	1.102	0.236	0.441	M8	M3	0.591	**345021***
		0.787	0.256	0.551	0.787	1.083	0.236	0.441	M8	M3	0.591	**345022**
	2.126	0.591	0.118	0.394	0.669	0.925	0.197	0.382	M6	M3	0.433	**345023**
		0.709	0.118	0.394	0.669	0.945	0.197	0.362	M6	M3	0.433	**345024***
		0.591	0.118	0.394	0.669	0.925	0.197	0.382	M6	M3	0.433	**345025**

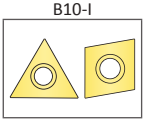
***Radial**

1. From D_{min} 25 mm - 32 mm, the short clamp holder is 0.5 mm from the middle.

2. Installation with base plate.

B10-I

Key on B10-L: 2

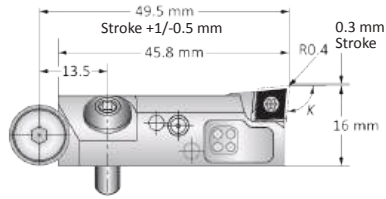


ⓜ = Metric (mm)
ⓘ = Imperial (in)

ES-Bore Fine Boring Cartridges: ≥ 28.00 mm (1.102")

Fine Boring Cartridges



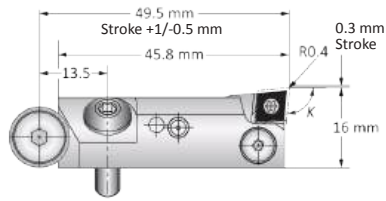


Digital 3E^{TECH+} Cartridges

K	Insert Form	ISO	Type	Metric		Imperial		Part No.
				Minimum Boring Diameter (mm)	Weight (kg)	Minimum Boring Diameter (in)	Weight (lbs)	
90°	20	TOGX 0802..	Right	28.00	0.06	1.102	0.132	**345042**
			Left	28.00	0.06	1.102	0.132	**345043**
	101	CC.. 0602..	Right	28.00	0.06	1.102	0.132	**345032**
			Left	28.00	0.06	1.102	0.132	**345033**
95°	20	TOGX 0802..	Right	28.00	0.06	1.102	0.132	**345040**
			Left	28.00	0.06	1.102	0.132	**345041**
	101	CC.. 0602..	Right	28.00	0.06	1.102	0.132	**345030**
			Left	28.00	0.06	1.102	0.132	**345031**

NOTE: ES-Bore digital fine boring cartridges must be used with the new 3E^{TECH+} and adapter plate. The ES-Bore cannot be used with 3E^{TECH}.
NOTE: 3E^{TECH+} module, adapter, and charging unit sold separately.



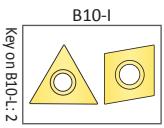


Analog Cartridges

K	Insert Form	ISO	Type	Metric			Imperial		
				Minimum Boring Diameter (mm)	Weight (kg)	Part No.	Minimum Boring Diameter (in)	Weight (lbs)	Part No.
90°	20	TOGX 0802..	Right	28.00	0.06	**345046**	1.102	0.132	**346046**
			Left	28.00	0.06	**345047**	1.102	0.132	**346047**
	101	CC.. 0602..	Right	28.00	0.06	**345036**	1.102	0.132	**346036**
			Left	28.00	0.06	**345037**	1.102	0.132	**346037**
95°	20	TOGX 0802..	Right	28.00	0.06	**345044**	1.102	0.132	**346044**
			Left	28.00	0.06	**345045**	1.102	0.132	**346045**
	101	CC.. 0602..	Right	28.00	0.06	**345034**	1.102	0.132	**346034**
			Left	28.00	0.06	**345035**	1.102	0.132	**346035**



L

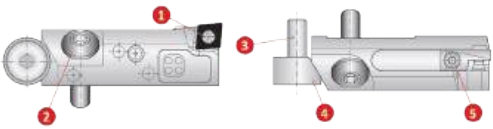


Ⓜ = Metric (mm)
ⓘ = Imperial (in)

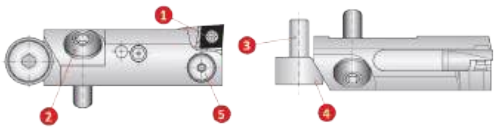
ES-Bore Fine Boring Cartridges: ≥ 28.00 mm (1.102")

Accessories

ES-Bore Digital 3E^{TECH+}



ES-Bore Analog



Screws and Service Keys

	1 Insert Screw		2 Mounting Screw	3 Height Adjusting Screw	4 Height Adjusting Wedge	5 Diameter Adjusting Screw*
	Insert Form 101	Insert Form 20				
Screw	115676 (T8)	115535 (T7)	515553 (s3)	115466 (s3)	415721	—
Service Key	115590	115591	051110	051110	—	115590

*Diameter adjusting screw must not be removed from the fine boring cartridge.

3E^{TECH+} Digital Readout Module

1. Module	2. Charging Unit*
536015	536016

NOTE: WEEE-Reg.-Nr. DE 15820388
*Charging unit sold separately.
NOTE: 3E^{TECH+} digital adjustment accuracy of 0.001 mm (0.00005") on diameter.



Adapter Plate for 3E^{TECH+}

Type	Part No.
Right	536017
Left	536018

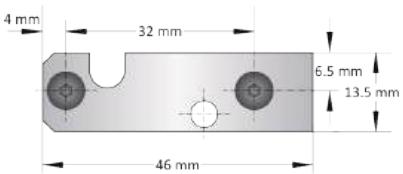
NOTE: Adapter sold separately.

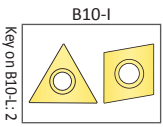


ES-Bore Shim Assembly (Unfinished)

	Part No.
Shim Assembly (Shim with 2 Screws)	345048
Replacement Screw	116438

NOTE: Shim can be used for both right-hand and left-hand cutting to achieve desired diameter for insert with alternative nose radius. Face grinding and screw hole countersinking will be required.

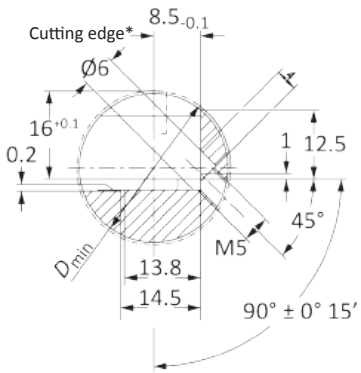




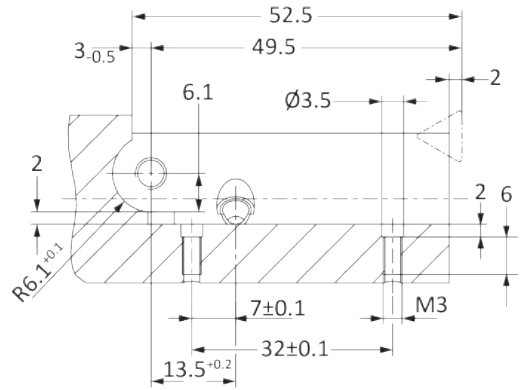
m = Metric (mm)
i = Imperial (in)

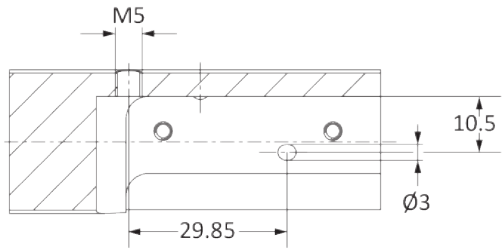
ES-Bore Fine Boring Cartridges: ≥ 28.00 mm (1.102")

Mounting Dimensions

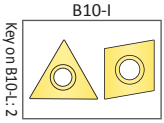


*For D ≤ 32 mm cutting edge 1 mm before center.





L



m = Metric (mm)
i = Imperial (in)

Notes

SECTION

B10-M

Accessories / Technical Information

Accessories/ Technical Information



WOHLHAUPTER®

MultiBore® Boring Tools

Ø 0.40 mm - 3255.00 mm (0.016" - 128.150")



Reference Icons

The following icons will appear throughout the catalog to help you navigate between products.



MVS Connection Color Guide
Detailed instructions and information regarding the MVS connection(s).

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.

	This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

WARNING means that failure to follow the precautions in this message could result in tool failure and serious injury.
NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.
NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.
Visit www.alliedmachine.com for the most up-to-date information and procedures.

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Clamping Pieces 4
Heavy Metal Balancing Screws 5
Wrenches/Drivers 6
Drivers 7
Driver and Wrench Sets 8

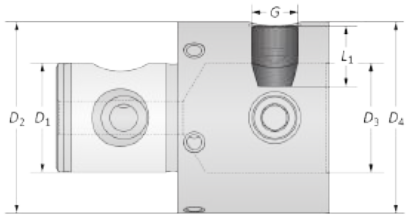
Boring Guidelines

Recommended Length-to-Diameter 9
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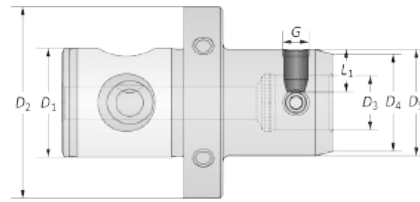
Accessories

Threaded Taper Pins

Extensions



Reducers



Threaded Taper Pins for Extensions

Connection		Taper Pin			Part No.		Service Key	
		Metric (mm)	Imperial (in)					
D_2 | D_1	D_4 | D_3	*L*	*L*	*G*	Steel	Titanum	Key	Torque
19.5 - 11	19.5 - 11	6.50	0.256	M5 x 0.5	**115949**	—	s2.5 / A	3.5 N·m
22 - 11	22 - 11	8.30	0.327	M5 x 0.5	**215375**	—	s2.5 / A	3.5 N·m
25 - 14	25 - 14	8.30	0.327	M8 x 1.0	**132174**	—	s4 / B	12.0 N·m
32 - 18	32 - 18	10.40	0.409	M8 x 1.0	**132142**	—	s4 / B	12.0 N·m
40 - 22	40 - 22	14.50	0.571	M10 x 1.0	**133113**	—	s5 / B	22.0 N·m
50 - 28	50 - 28	16.70	0.657	M12 x 1.0	**132145**	**415334**	s6 / B	25.0 N·m
63 - 36	63 - 36	19.80	0.780	M16 x 1.5	**132146**	**415336**	s8 / B	30.0 N·m
80 - 36	80 - 36	28.80	1.134	M16 x 1.5	**132191**	**415335**	s8 / B	30.0 N·m
100 - 56	100 - 56	34.00	1.339	M24 x 2.0	**215470**	**415337**	s12 / B	45.0 N·m

Threaded Taper Pins for Reducers

Connection		Taper Pin					Part No.		Service Key	
		Metric (mm)		Imperial (in)						
D_2 | D_1	D_4 | D_3	D_5	*L*	D_5	*L*	*G*	Steel	Titanum	Key	Torque
32 - 18	22 - 11	32.00	8.30	1.260	0.327	M5 x 0.5	**215375**	—	s2.5 / A	3.5 N·m
	25 - 14	32.00	10.40	1.260	0.409	M8 x 1.0	**132142**	—	s4 / B	12.0 N·m
40 - 22	22 - 11	40.00	16.00	1.575	0.630	M5 x 0.5	**215376**	—	s2.5 / A	3.5 N·m
50 - 28	22 - 11	50.00	16.00	1.969	0.630	M5 x 0.5	**215376**	—	s2.5 / A	3.5 N·m
	25 - 14	32.00	10.40	1.260	0.409	M8 x 1.0	**132142**	—	s4 / B	12.0 N·m
		36.00	10.40	1.417	0.409	M8 x 1.0	**132142**	—	s4 / B	12.0 N·m
	32 - 18	35.00	10.40	1.378	0.409	M8 x 1.0	**132142**	—	s4 / B	12.0 N·m
		37.00	14.50	1.457	0.571	M8 x 1.0	**132143**	—	s4 / B	12.0 N·m
		40.00	14.50	1.575	0.571	M8 x 1.0	**132143**	—	s4 / B	12.0 N·m
		46.00	14.50	1.811	0.571	M8 x 1.0	**132143**	—	s4 / B	12.0 N·m
	40 - 22	40.00	14.50	1.575	0.571	M10 x 1.0	**133113**	—	s5 / B	22.0 N·m
		47.00	17.80	1.850	0.701	M10 x 1.0	**132144**	—	s5 / B	22.0 N·m
63 - 36	22 - 11	63.00	16.00	2.480	0.630	M5 x 0.5	**215376**	—	s2.5 / A	3.5 N·m
	25 - 14	32.00	10.40	1.260	0.409	M8 x 1.0	**132142**	—	s4 / B	12.0 N·m
		36.00	10.40	1.417	0.409	M8 x 1.0	**132142**	—	s4 / B	12.0 N·m
	32 - 18	35.00	10.40	1.378	0.409	M8 x 1.0	**132142**	—	s4 / B	12.0 N·m
		40.00	14.50	1.575	0.571	M8 x 1.0	**132143**	—	s4 / B	12.0 N·m
		46.00	14.50	1.811	0.571	M8 x 1.0	**132143**	—	s4 / B	12.0 N·m
	40 - 22	40.00	14.50	1.575	0.571	M10 x 1.0	**133113**	—	s5 / B	22.0 N·m
		47.00	17.80	1.850	0.701	M10 x 1.0	**132144**	—	s5 / B	22.0 N·m
		50.00	17.80	1.969	0.701	M10 x 1.0	**132144**	—	s5 / B	22.0 N·m
	50 - 28	63.00	16.70	2.480	0.657	M12 x 1.0	**132145**	**415334**	s6 / B	25.0 N·m
80 - 36	63 - 36	80.00	19.80	3.150	0.780	M16 x 1.5	**132146**	**415336**	s8 / B	30.0 N·m

NOTE: Steel or titanium taper pins are used in balancing the Alu-Line tooling.

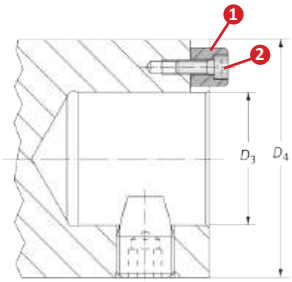
M

B10: ix - x

Key on B10-M: 2

Accessories

Clamping Pieces

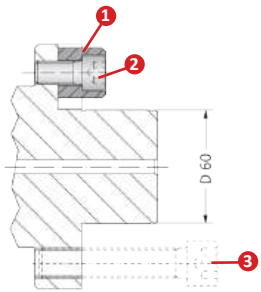


Clamping Pieces for MVS 100 - 56

Connection	1.Torque			2.Cap Screw		
	Service Key	*D x L*	Part No.	Service Key	*D x L*	Part No.
100 - 56	–	–	**115641**	S5 / B	M6 x 1 x 16	**115147**

Clamping Pieces for D 60 / D 40

Connection	1. Torque Part No.
D 60	**115643 (125 mm)**
	KW31562 (110 mm)
D 40	**117143**



Clamping Pieces for D 60 / D 40

Connection	2. Cap Screw		
	Service Key	*D x L*	Part No.
D 60	s10 / B	M12 x 1.75 x 25	**115237**
D 40	s5 / B	M6 x 1 x 16	**115147**

Clamping Pieces for D 60 / D 40

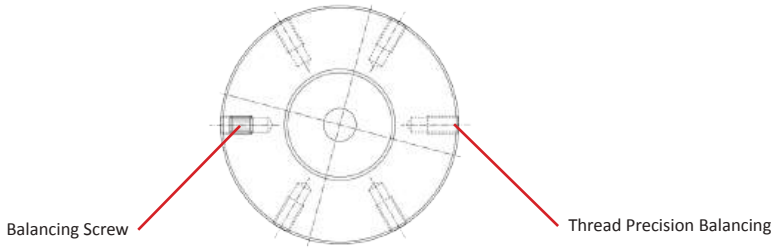
Connection	3. Cap Screw		
	Service Key	*D x L*	Part No.
D 60	s14 / C	M16 x 2 x 80	**115170**[1]
		M16 x 2 x 55	**215189**[2]
D 40	s10 / B	M12 x 1.75 x 75	**315186**[3]
		M12 x 1.75 x 50	**077104**[2]

[1] To mount boring tools above Ø 200.00 mm (7.874"), see section B10-H.
[2] Cap screws used for mounting cutter heads to DIN 1830.
[3] Ø 200.00 mm - 520.00 mm (7.874" - 20.472").

B10: ix - x
Key on B10-M: 2

Accessories

Heavy Metal Balancing Screws



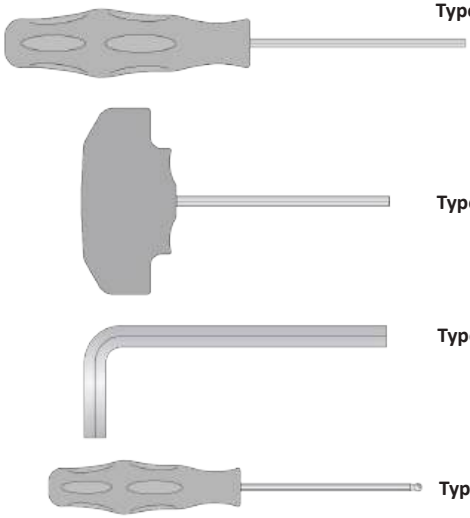
Balancing Screw		
Nominal Size	**Service Key**	**Part No.**
M5 x 0.8 x 6	0.8 x 4 / K	**415573**
M6 x 1 x 6	0.8 x 4 / K	**415284**
M6 x 1 x 8	0.8 x 4 / K	**415341**
M6 x 1 x 10	0.8 x 4 / K	**415283**
M8 x 1.25 x 8	1.2 x 6.5 / K	**415285**
M8 x 1.25 x 10	1.2 x 6.5 / K	**415286**
M8 x 1.25 x 12	1.2 x 6.5 / K	**415287**

Accessories

Wrenches/Drivers

Service Keys for Insert Holders and Fixing Screws (Type A, B, C, F)

Service Key	Part No.
S1.5 / A	**215472**
s2 / A	**215473**
s2 / B	**415761**
s2.5 / A	**115575**
s2.5 / B	**415577**
s3 / A	**115630**
s3 / B	**415578**
s4 / B	**115576**
s4 / F	**315265**
s4 / B	**415164**
s5 / B	**115577**
s5 / B	**415165**
s6 / B	**115578**
s8 / B	**115579**
s8 / C	**415611**
s10 / B	**115580**
s12 / B	**215638**
s14 / C	**215639**



Type A

Type B

Type C

Type F

Wrench (Type P)

Service Key	Part No.
13 / P	**315689**
15 / P	**315690**
19 / P	**315691**



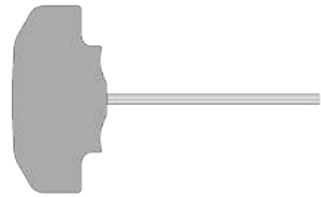
Type P

Accessories

Drivers

Fixed Torque Driver (Type B, H)

Service Key	Part No.
T6 / H	**115537**
T7 / H	**115591**
T8 / H	**115590**
T15 / H	**115664**
T20 / H	**215150**
T25 / B	**415121**



Type B



Type H

Torque Driver (Type H)

Service Key	Part No.
T6 / H	**415507**
T7 / H	**415508**
T8 / H	**415514**
T15 / H	**415510**
T20 / H	**415543**



Type H

Torque Driver (Type K)

Service Key	Part No.
0.5 x 3 / K	**315322**
0.8 x 4 / K	**415579**
1.2 x 6.5 / K	**415580**



Type K

Accessories

Driver and Wrench Sets



Torque Driver Set: Torx® Bits, Hexagon Bits, Flat Blade Bits

Type	Size	Pieces	Set Part No.
Flat Blade Bit	0.3 - 1.2 (N·m)	1	103086
	1.2 - 3.0 (N·m)	1	
	4.0 - 8.0 (N·m)	1	
	0.5 x 3.0	1	
Torque Driver	T6	3	
	T7	3	
	T8	3	
	T16	1	
	T20	1	
	T25	1	
Hexagon Bit	s2	3	
	s2.5	3	
	s3	2	
	s4	2	
	s5	1	

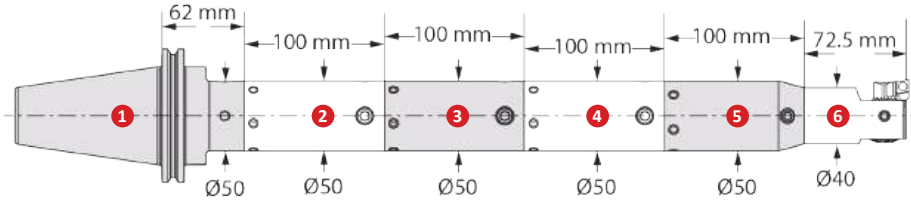
25 Piece Wrench Set

Type	Size	Set Part No.
A	s1.5 / s2 / s2.5 / s3 / s4	103025
B	s4 / s5 / s6 / s8 / s10 / s12 / s14	
C	s7	
F	s4	
H	T6 / T7 / T8 / T15 / T20 / T25	
K	0.5 x 3	
P	s13 / s15 / s19	

M

Guidelines for Not Exceeding Recommended Length-to-Diameter Ratio

To calculate, see graphics below:



Too many components!

NOTE: Length-to-diameter ratio is calculated using body diameters not cutting diameter.
NOTE: Do not exceed recommended 10xD length-to-diameter ratio or exceed four total components (including shank).

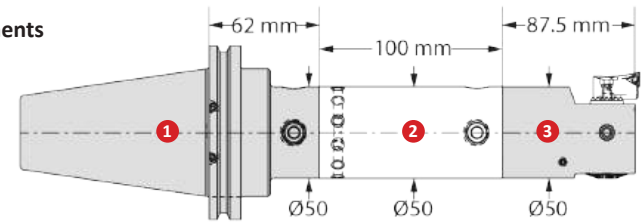
Step 1: Find L : D by component. **Step 2:** Add each L : D average.

1. 1.2 = 62/50 → 1.2
2. 2.0 = 100/50 → 2.0
3. 2.0 = 100/50 → 2.0
4. 2.0 = 100/50 → 2.0
5. 2.0 = 100/50 → 2.0
6. 1.8 = 72.5/40 → +1.8

11.0 = L : D ratio

Too long with too many components!

Alu-Line® Components



NOTE: Length-to-diameter ratio is calculated using body diameters not cutting diameter.
NOTE: Do not exceed recommended 5xD length-to-diameter ratio when using Alu-Line (Aluminum) components or exceed four total components (including shank).

Step 1: Find L : D by component. **Step 2:** Add each L : D average.

1. 1.2 = 62/50 → 1.2
2. 2.0 = 100/50 → 2.0
3. 1.8 = 72.5/40 → +1.8

5.0 = L : D ratio

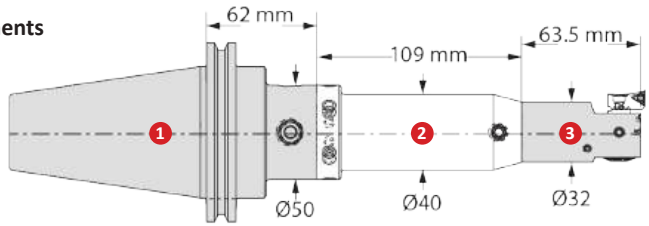
⚠ WARNING **Tool failure can cause serious injury. To prevent:**
-Do not exceed recommended 10xD length-to-diameter ratio or exceed four total components (including shank).
-When using Alu-Line® components, do not exceed recommended 5xD length-to-diameter ratio.
-When using tool steel components, do not exceed recommended 6xD length-to-diameter ratio.
-When using heavy metal components, do not exceed recommended 8xD length-to-diameter ratio.
-When using a carbide shank, do not exceed recommended 9xD length-to-diameter ratio.
-When using a NOVI[TECH®] module, do not exceed recommended 10xD length-to-diameter ratio.
Factory technical assistance is available for you through our Application Engineering department: **appeng@alliedmachine.com.**

M

Guidelines for Not Exceeding Recommended Length-to-Diameter Ratio

To calculate, see graphics below:

Tool Steel Components



NOTE: Length-to-diameter ratio is calculated using body diameters not cutting diameter.
NOTE: When using steel components, do not exceed recommended 6xD length-to-diameter ratio or exceed four total components (including shank).

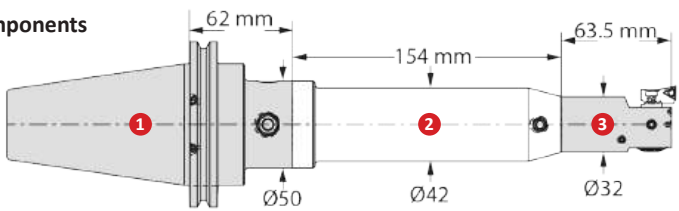
Step 1: Find L : D by component.

1. 1.2 = 62/50
2. 2.7 = 109/40
3. 2.0 = 63.5/32

Step 2: Add each L : D average.

1.2
2.7
+2.0
5.9 = L : D ratio

Heavy Metal Components



NOTE: Length-to-diameter ratio is calculated using body diameters not cutting diameter.
NOTE: When using a heavy metal components, do not exceed recommended 8xD length-to-diameter ratio or exceed four total components (including shank).

Step 1: Find L : D by component.

1. 1.2 = 62/50
2. 3.6 = 154/42
3. 2.0 = 63.5/32

Step 2: Add each L : D average.

1.2
3.6
+2.0
6.8 = L : D ratio

⚠ WARNING **Tool failure can cause serious injury. To prevent:**

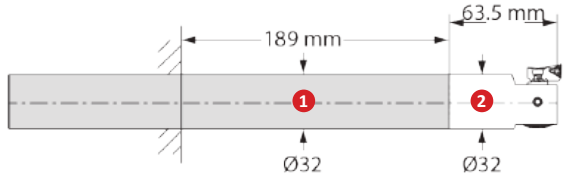
-Do not exceed recommended 10xD length-to-diameter ratio or exceed four total components (including shank).
-When using Alu-Line® components, do not exceed recommended 5xD length-to-diameter ratio.
-When using tool steel components, do not exceed recommended 6xD length-to-diameter ratio.
-When using heavy metal components, do not exceed recommended 8xD length-to-diameter ratio.
-When using a carbide shank, do not exceed recommended 9xD length-to-diameter ratio.
-When using a NOVI$^{TECH®}$ module, do not exceed recommended 10xD length-to-diameter ratio.
Factory technical assistance is available for you through our Application Engineering department: **appeng@alliedmachine.com.**

M

Guidelines for Not Exceeding Recommended Length-to-Diameter Ratio

To calculate, see graphics below:

Carbide Shank

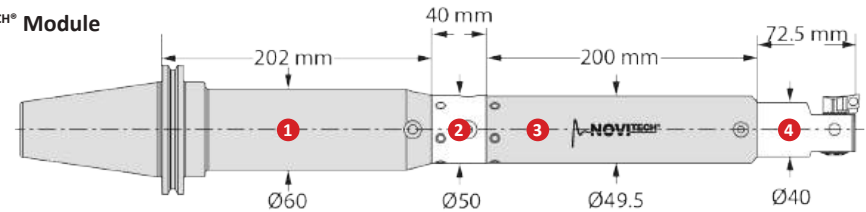


NOTE: Length-to-diameter ratio is calculated using body diameters not cutting diameter.
NOTE: When using carbide shank components, do not exceed recommended 9xD length-to-diameter ratio or exceed four total components.

Step 1: Find L : D by component.
1. 5.9 = 189/32
2. 2.0 = 63.5/32

Step 2: Add each L : D average.
5.9
+2.0
7.9 = L : D ratio

NOVI$^{TECH®}$ Module



NOTE: Length-to-diameter ratio is calculated using body diameters not cutting diameter.
NOTE: Do not exceed recommended 10xD length-to-diameter ratio when using NOVI$^{TECH®}$ intermediate modules or exceed four total components (including shank).
NOTE: The NOVI$^{TECH®}$ intermediate module should always be assembled as close as possible to the cutting edge (i.e. the next component behind the boring head).

Step 1: Find L : D by component.
1. 3.3 = 202/60
2. 0.8 = 40/50
3. 4.0 = 200/49.5
4. 1.8 = 72.5/40

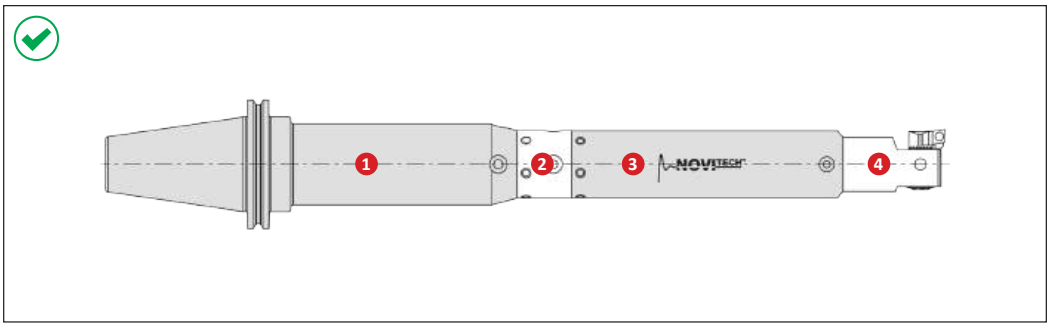
Step 2: Add each L : D average.
3.3
0.8
4.0
+1.8
9.9 = L : D ratio

Component	Alu-Line®	Tool Steel	Heavy Metal	Carbide	NOVI$^{TECH®}$
Length-to-Diameter Ratio	5xD	6xD	8xD	9xD	10xD

⚠ WARNING **Tool failure can cause serious injury. To prevent:**
-Do not exceed recommended 10xD length-to-diameter ratio or exceed four total components (including shank).
-When using Alu-Line® components, do not exceed recommended 5xD length-to-diameter ratio.
-When using tool steel components, do not exceed recommended 6xD length-to-diameter ratio.
-When using heavy metal components, do not exceed recommended 8xD length-to-diameter ratio.
-When using a carbide shank, do not exceed recommended 9xD length-to-diameter ratio.
-When using a NOVI$^{TECH®}$ module, do not exceed recommended 10xD length-to-diameter ratio.
Factory technical assistance is available for you through our Application Engineering department: **appeng@alliedmachine.com.**

Calculating Tool Assembly Weight

To calculate, see graphics below:



Step 1: Find weight for each component circled in the example table below.

Example:

MVS Connection	Boring Range	4 Boring Head					
D_1 | D_2	A	X_1	X_2	L_2	D_5	Weight	Part No.
40 - 22	53.01 - 65.98	75.00	39.00	72.50	–	0.70 (kg)	**310004**
40 - 22	2.087 - 2.598	2.953	1.535	2.854	–	1.543 (lbs)	**320004**

Step 2: Calculate total assembly weight.

1. 6.6 kg
2. 0.6 kg
3. 3.5 kg
4. + 0.7 kg

11.4 kg

Step 3: Consult machine tool builder to ensure tool assembly weight does not exceed machine capabilities.

⚠ WARNING **Tool failure can cause serious injury. To prevent:**

-Do not exceed recommended 10xD length-to-diameter ratio or exceed four total components (including shank).
-When using Alu-Line® components, do not exceed recommended 5xD length-to-diameter ratio.
-When using tool steel components, do not exceed recommended 6xD length-to-diameter ratio.
-When using heavy metal components, do not exceed recommended 8xD length-to-diameter ratio.
-When using a carbide shank, do not exceed recommended 9xD length-to-diameter ratio.
-When using a NOVI$^{TECH®}$ module, do not exceed recommended 10xD length-to-diameter ratio.
Factory technical assistance is available for you through our Application Engineering department: **appeng@alliedmachine.com.**

CRITERION®
BORING
PRODUCT CATALOG







ALLIED MACHINE & ENGINEERING®

www.alliedmachine.com

SECTION

B20-CRT

Criterion® Boring Systems

Criterion® Modular Boring Systems





Boring holes doesn't have to be boring

Criterion modular boring systems bring speed, tolerance, toughness, and versatility to your boring applications.

- MBS Finish Boring Tools
  - 0.050" - 0.750"
- CBS Finish Boring Tools
  - 0.050" - 0.750"
- MDS Finish Boring Tools
  - 18.00 mm - 33.00 mm (0.710" - 1.280")
- Cri-Bore® Microadjusting Finish Boring Heads
  - 27.00 mm - 128.00 mm (1.050" - 5.065")
- Large Cri-Bore® Finish Boring / OD Turning System
  - 127.00 mm - 308.00 mm (5.000" - 12.125")
- CB Style Versatile Finish Boring Heads
  - 0.250" - 21.500"

Applicable Industries

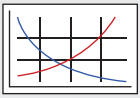
- Aerospace
- Agriculture
- Automotive
- Defense
- General Production
- Heavy Equipment
- Hydraulics
- Marine
- Medical
- Oil and Gas
- Renewable Energy/ Energy
- Tool, Mold, and Die

Reference Icons

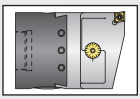
The following icons will appear throughout the catalog to help you navigate between products.



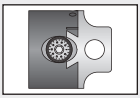
Setup / Assembly Information
Detailed instructions and information regarding the corresponding part(s).



Recommended Cutting Data
Speed and feed recommendations for optimum and safe drilling.



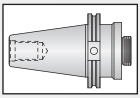
Boring Heads - Insert Holders
Microadjusting boring heads that use inserts for cutting.



Boring Heads - Boring Bar Holders
Standard and microadjusting boring heads that use boring bars for cutting.



Head-to-Shank Adapters
Extensions and reducers that attach the boring head to the shank.



Shanks
A variety of shanks for different machines.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

⚠ WARNING means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

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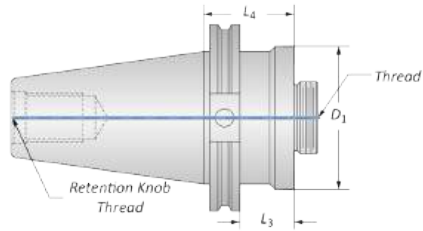
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Master Shanks

CAT 40/50 and BT Flange Shanks

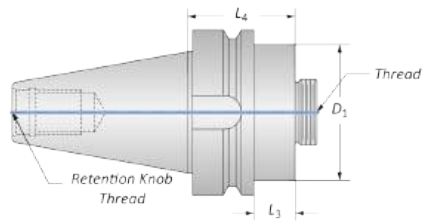
CAT 40/50



Imperial (in)

Style	D_1	L_3	L_4	Shank Weight (lbs)	Shank Thread	Shank Retention Knob Thread	Part No.
CAT40	1.500	0.370	1.770	2.490	7/8 - 20	5/8 - 11	**CB1500-CV40**
	2.000	1.130	1.880	2.700	7/8 - 20	5/8 - 11	**CB2000-CV40**
	2.500	1.130	1.880	3.120	1-1/2 - 18	5/8 - 11	**CB2500-CV40**
	3.000	1.180	1.880	3.410	1-1/2 - 18	5/8 - 11	**CB3000-CV40**
CAT50	1.500	0.370	1.770	7.120	7/8 - 20	1 - 8	**CB1500-CV50**
	2.000	1.130	1.880	7.330	7/8 - 20	1 - 8	**CB2000-CV50**
	2.500	1.130	1.880	7.740	1-1/2 - 18	1 - 8	**CB2500-CV50**
	3.000	1.130	1.880	8.030	1-1/2 - 18	1 - 8	**CB3000-CV50**
	3.380	1.380	2.130	9.440	2-1/4 - 10	1 - 8	**CB6000-CV50**

BT Flange Shanks



Imperial (in)

Style	D_1	L_3	L_4	Shank Weight (lbs)	Shank Thread	Shank Retention Knob Thread	Part No.
BT30	1.500	0.900	1.770	1.360	7/8 - 20	M12 x 1.75	**CB1500-BT30**
BT40	1.500	0.710	1.770	2.540	7/8 - 20	M16 x 2	**CB1500-BT40**
	2.000	0.500	1.560	2.620	7/8 - 20	M16 x 2	**CB2000-BT40**
	2.500	0.870	2.060	3.690	1-1/2 - 18	M16 x 2	**CB2500-BT40**
	3.000	1.000	2.060	3.980	1-1/2 - 18	M16 x 2	**CB3000-BT40**
BT50	1.500	0.270	1.770	8.220	7/8 - 20	M24 x 3	**CB1500-BT50**
	2.000	0.060	1.560	8.250	7/8 - 20	M24 x 3	**CB2000-BT50**
	3.000	0.500	2.060	9.410	1-1/2 - 18	M24 x 3	**CB3000-BT50**
	3.380	0.630	2.130	10.500	2-1/4 - 10	M24 x 3	**CB6000-BT50**

NOTE: Taper ground to AT3 tolerance.

⚠ WARNING **Assembly of modular components may cause machine damage and/or serious injury. To prevent:**
-Do not exceed the **allowable weight** for your machine tool.
-Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
For detailed guidelines on safe configurations, **please refer to pages B20: 45 - 46 or visit www.alliedmachine.com/CriterionBoringGuidelines.**

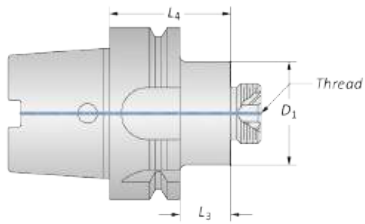
B20: 47 - 48
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B20: 7 - 8
B20: 22
B20: 35

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Master Shanks

HSK and Straight Shanks

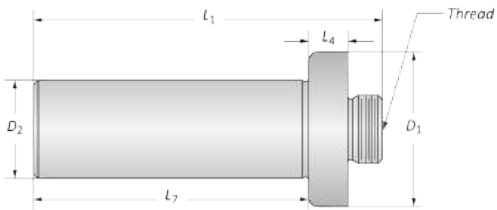
HSK Shanks



Imperial (in)

Style	D_1	Shank L_3	Shank L_4	Shank Weight (lbs)	Shank Thread	Part No.
HSK63	1.500	0.730	1.750	1.820	7/8 - 20	**CB1500-HSK63A**
	2.000	0.730	1.750	2.090	7/8 - 20	**CB2000-HSK63A**
	3.000	0.500	2.150	3.200	1-1/2 - 18	**CB3000-HSK63A**
HSK100	1.500	0.500	2.270	6.300	7/8 - 20	**CB1500-HSK100A**
	2.000	0.500	2.270	6.470	7/8 - 20	**CB2000-HSK100A**
	3.000	0.500	2.270	7.180	1-1/2 - 18	**CB3000-HSK100A**

Straight Shanks



Imperial (in)

D_1	Shank D_1	Shank L_4	Shank L_7	Shank L_1	Shank Weight (lbs)	Shank Thread	Part No.
1.110	0.500	0.250	2.000	2.690	0.240	7/8 - 20	**SS0500-087520**
	0.625	0.250	2.370	3.060	0.340	7/8 - 20	**SS0625-087520**
	0.750	0.250	2.750	3.440	0.480	7/8 - 20	**SS0750-087520**
	1.000	0.250	3.120	3.810	0.820	7/8 - 20	**SS1000-087520**
1.860	0.750	0.250	3.120	3.870	0.810	1-1/2 - 18	**SS0750-150018**
	1.000	0.250	3.120	3.870	1.110	1-1/2 - 18	**SS1000-150018**
	1.250	0.250	3.880	4.630	1.760	1-1/2 - 18	**SS1250-150018**
	1.500	0.250	4.630	5.380	2.720	1-1/2 - 18	**SS1500-150018**
2.000	2.000	—	6.380	6.880	5.850	1-1/2 - 18	**SS2000-150018**

⚠ WARNING **Assembly of modular components may cause machine damage and/or serious injury. To prevent:**
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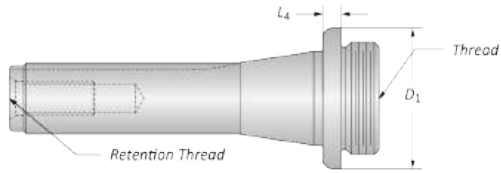
B20: 47 - 48
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Master Shanks

R-8 and Morse Taper Shanks

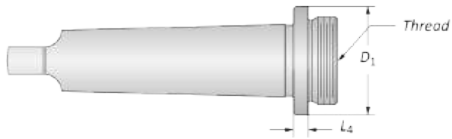
R-8 Shanks



Imperial (in)

	Shank					
	D_1	L_4	Weight (lbs)	Thread	Retention Knob Thread	Part No.
i	1.110	0.470	0.990	7/8 - 20	7/16 - 20	**R8-087520**
	1.860	0.370	1.270	1-1/2 - 18	7/16 - 20	**R8-150018**

Morse Taper Shanks



Imperial (in)

	Style		Shank			
		D_1	L_4	Weight (lbs)	Thread	Part No.
	2 Taper	1.110	0.250	0.380	7/8 - 20	**MT2-375THD87520***
		1.110	0.250	0.390	7/8 - 20	**MT2-087520**
i	3 Taper	1.110	0.250	0.710	7/8 - 20	**MT3-087520**
		1.860	0.250	1.000	1-1/2 - 18	**MT3-150018**
	4 Taper	1.230	0.250	1.350	7/8 - 20	**MT4-087520**
		1.860	0.250	1.700	1-1/2 - 18	**MT4-150018**
	5 Taper	1.860	0.250	3.770	1-1/2 - 18	**MT5-150018**

*Item features a 3/8 - 16 thread instead of tang.

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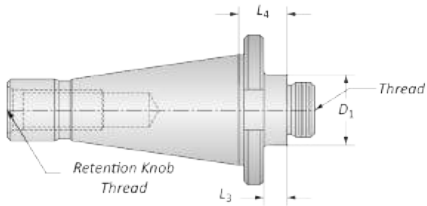
B20: 47 - 48
Key on B20: 2
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B20: 7 - 8
B20: 22
B20: 35

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Master Shanks

NMTB and DIN 2080 Shanks

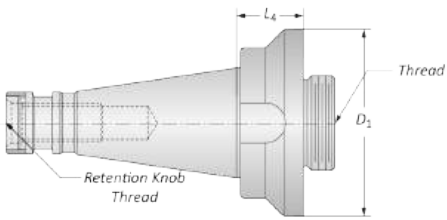
NMTB Taper Shanks



Imperial (in)

	Style	D_1	Shank L_3	Shank L_4	Shank Weight (lbs)	Shank Thread	Shank Retention Knob Thread	Part No.
	NMTB 30	1.120	0.370	0.790	0.810	7/8 - 20	1/2 - 13	**NMTB30-087520**
		1.850	0.630	1.050	1.190	1-1/2 - 18	1/2 - 13	**NMTB30-150018**
ⓘ	NMTB 40	1.120	0.370	0.770	1.780	7/8 - 20	5/8 - 11	**NMTB40-087520**
ⓘ		1.850	0.630	1.020	2.310	1-1/2 - 18	5/8 - 11	**NMTB40-150018**
	NMTB 50	1.970	0.510	1.250	6.750	7/8 - 20	1 - 8	**NMTB50-087520**
		1.870	0.400	1.210	6.870	1-1/2 - 18	1 - 8	**NMTB50-150018**
		3.380	0.500	1.250	8.320	2-1/4 - 10	1 - 8	**NMTB50-225010**

DIN 2080



Metric (mm)

D_1	Shank L_3	Shank L_4	Shank Weight (kg)	Shank Thread	Shank Retention Knob Thread	Part No.
50.00	17.00	25.70	0.45 (kg)	7/8 - 20	M12	**CB050M-ISO30**
	11.00	27.70	0.91 (kg)	7/8 - 20	M16	**CB050M-ISO40**
ⓜ	11.00	39.40	2.88 (kg)	7/8 - 20	M24	**CB050M-ISO50**
76.00	22.00	27.70	1.32 (kg)	11/2 - 18	M16	**CB076M-ISO40**
	36.00	39.40	3.36 (kg)	11/2 - 18	M24	**CB076M-ISO50**

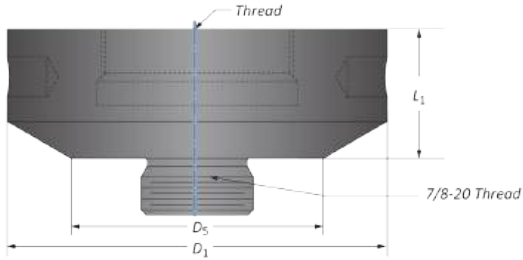
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B20: 22
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Intermediate Modules

Reducers



Imperial (in)

	Reducer					
	D_1	D_5	L_1	Weight (lbs)	Thread	Part No.
	1.500	1.000	1.000	0.440	7/8 - 20	**CB1500-IRCB1000**
		1.250	1.000	0.450	7/8 - 20	**CB1500-IRCB1250**
	2.000	1.000	1.000	0.720	7/8 - 20	**CB2000-IRCB1000**
		1.250	1.000	0.760	7/8 - 20	**CB2000-IRCB1250**
		1.500	1.000	0.800	7/8 - 20	**CB2000-IRCB1500**
	3.000	1.000	1.250	1.610	1-1/2 - 18	**CB3000-IRCB1000**
		1.250	1.250	1.750	1-1/2 - 18	**CB3000-IRCB1250**
		1.500	1.250	1.840	1-1/2 - 18	**CB3000-IRCB1500**
		2.000	1.250	2.020	1-1/2 - 18	**CB3000-IRCB2000**

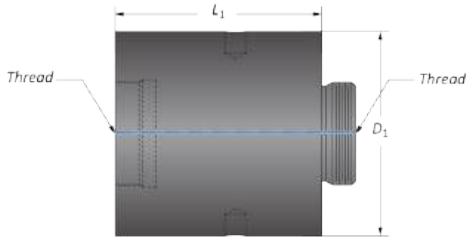
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B20: 3 - 6
B20: 22
B20: 35

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ⓘ = Imperial (in)

Intermediate Modules

Extensions



Imperial (in)

	Reducer				
	D_1	L_1	Weight (lbs)	Thread	Part No.
	1.000	1.000	0.190	7/8 - 20	**CB1000-IA1000**
		2.000	0.390	7/8 - 20	**CB1000-IA2000**
	1.250	1.250	0.390	7/8 - 20	**CB1250-IA1250**
		2.500	0.800	7/8 - 20	**CB1250-IA2500**
ⓘ	1.500	1.500	0.700	7/8 - 20	**CB1500-IA1500**
		3.000	1.410	7/8 - 20	**CB1500-IA3000**
	2.000	2.000	1.660	7/8 - 20	**CB2000-IA2000**
		4.000	3.350	7/8 - 20	**CB2000-IA4000**
	3.000	3.000	5.730	1-1/2 - 18	**CB3000-IA3000**
		6.000	11.500	1-1/2 - 18	**CB3000-IA6000**

⚠ WARNING **Assembly of modular components may cause machine damage and/or serious injury. To prevent:**
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WE KNOW
SPEED MATTERS.

MBS Finish Boring Tool

Ideal for small diameter bores and high spindle speeds.

Compact design great for live tooling.

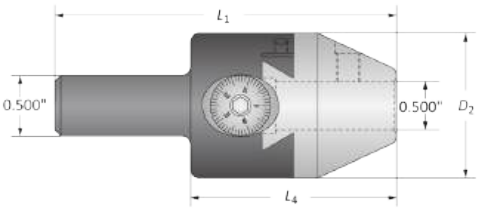
Cylindrical shank can be dropped into existing tool holders.



MBS Finish Boring Tool

Diameter Range: 0.050" - 0.750"





Imperial (in)

	Boring Range	Boring Head L_1	Boring Head L_4	Boring Head D_2	Weight (lbs)	Part No.
ⓘ	0.050 - 0.750	3.500	2.125	1.500	0.900	**MBS0500B**

IMPORTANT: Wax covered gib screws are factory set and should not be removed. Adjustment of these screws will cause performance issues.
Imperial (in) = 0.001" adjustment on diameter.
NOTE: Max spindle speed: 7,000 RPM at 0 radial offset.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to pages **B20: 47 - 48** for recommended application specific parameters or factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

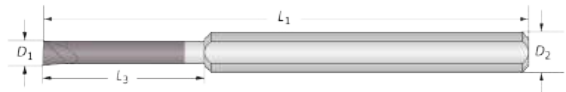
B20: 47 - 48
Key on B20: 2
B20: 43 - 44

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Mini Coated Boring Bars

Diameter Range: 0.050" - 0.275"





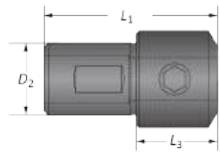
Imperial (in)

	Boring Range	Boring Head L_3	Boring Head L_1	Boring Head D_2	Weight (lbs)	Part No.
	0.050	0.300	1.500	0.125	0.010	**0050GA**
	0.060	0.300	1.500	0.125	0.010	**0060GA**
	0.080	0.500	1.500	0.125	0.010	**0080GA**
	0.100	0.600	1.500	0.125	0.010	**0100GA**
ⓘ	0.110	0.700	1.500	0.125	0.010	**0110GA**
	0.120	0.750	2.500	0.250	0.020	**0120HA**
	0.140	0.750	2.500	0.250	0.020	**0140HA**
	0.160	0.875	2.500	0.250	0.020	**0160HA**
	0.180	1.125	2.500	0.250	0.020	**0180HA**
	0.200	1.250	2.500	0.250	0.020	**0200HA**

NOTE: Reducing sleeve required.

Reducing Sleeves







Imperial (in)

	Reducing Sleeve D_3	Reducing Sleeve D_2	Reducing Sleeve L_1	Reducing Sleeve L_3	Weight (lbs)	Part No.
ⓘ	0.125	0.500	2.000	0.220	0.100	**BTH-01250500**
	0.250	0.500	1.312	—	0.050	**BTH-02500500**

B20: 47 - 48
Key on B20: 2

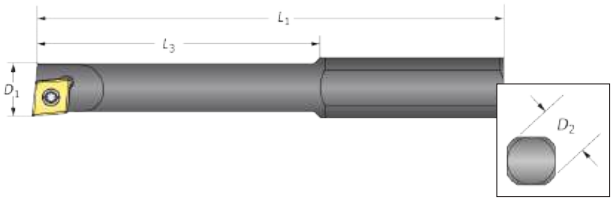
B20: 43 - 44

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Boring Bars

Diameter Range: 0.050" - 0.750"





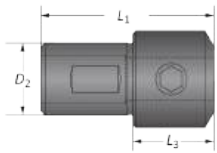
Imperial (in)

	Style	Min. Boring Diameter D_1	Boring Bar L_3	Boring Bar L_1	Boring Bar D_2	Weight (lbs)	Insert Form	Part No.
	Steel	0.250	1.062	2.500	0.500	0.080	WBGX0301..	**0250B**
		0.312	1.437	2.750	0.500	0.080	WBGX0301..	**0312B**
		0.375	1.750	3.062	0.500	0.100	WBGX0301..	**0375B**
ⓘ		0.437	2.062	3.375	0.500	0.110	CC..215..	**0437B**
		0.500	2.187	3.500	0.500	0.140	CC..215..	**0500B**
	Heavy Metal	0.365	2.250	4.000	0.312	0.080	CC..215..	**0365HM***
		0.550	3.250	6.000	0.500	0.300	CC..215..	**0550BHM**
	Carbide	0.625	4.500	8.000	0.500	0.410	CC..215..	**0625BCS**

***Reducing sleeve required.**

Reducing Sleeves



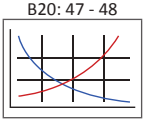




Imperial (in)

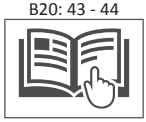
	Reducing Sleeve D_3	Reducing Sleeve D_2	Reducing Sleeve L_1	Reducing Sleeve L_3	Weight (lbs)	Part No.
ⓘ	0.312	0.500	1.312	—	0.040	**BTH-03120500**
	0.375	0.500	1.312	—	0.030	**BTH-03750500**

B20: 47 - 48



Key on B20: 2

B20: 43 - 44



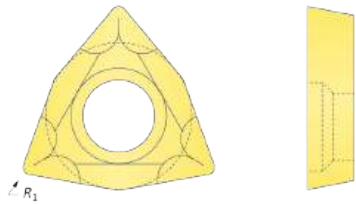
Inserts sold separately.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Boring Inserts

Trigon | 80° Diamond

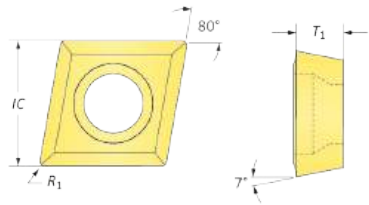
Coated Trigon Insert



Imperial (in)

	Insert Form	Insert R_1	Part No.
ⓘ	WBGX0301..	0.004	**WBGX030101**

Coated 80° Diamond Insert



Imperial (in)

	Insert Form	Insert *IC*	Insert T_1	Insert R_1	Part No.
ⓘ	CC..215..	0.250	0.094	0.008	**CCMT060202**

B20: 47 - 48
Key on B20: 2
B20: 43 - 44

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Notes

WE KNOW
REACH MATTERS.

CBS Finish Boring Tool

Ease the stress of reaching past fixturing.

Ideal for small diameter bores with long overhangs.

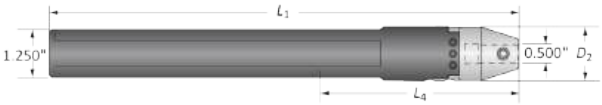
Cylindrical shank can be dropped into existing end mill (side-lock) holders.



CBS Finish Boring Tool

Diameter Range: 0.050" - 0.750"





Imperial (in)

	Boring Range	Boring Head L_1	Boring Head L_4	Boring Head D_2	Weight (lbs)	Part No.
ⓘ	0.050 - 0.750	10.600	8.320	1.250	3.100	**CBS1250B**

IMPORTANT: Wax covered gib screws are factory set and should not be removed. Adjustment of these screws will cause performance issues.
Imperial (in) = 0.001" adjustment on diameter.
NOTE: Max spindle speed: 3,500 RPM at 0 radial offset.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to pages **B20: 47 - 48** for recommended application specific parameters or factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

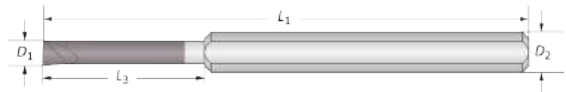
B20: 47 - 48
Key on B20: 2
B20: 43 - 44

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Mini Coated Boring Bars

Diameter Range: 0.050" - 0.275"





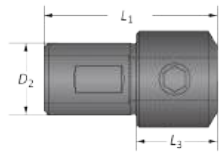
Imperial (in)

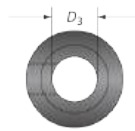
	Boring Range	Boring Head L_3	Boring Head L_1	Boring Head D_2	Weight (lbs)	Part No.
	0.050	0.300	1.500	0.125	0.010	**0050GA**
	0.060	0.300	1.500	0.125	0.010	**0060GA**
	0.080	0.500	1.500	0.125	0.010	**0080GA**
	0.100	0.600	1.500	0.125	0.010	**0100GA**
ⓘ	0.110	0.700	1.500	0.125	0.010	**0110GA**
	0.120	0.750	2.500	0.250	0.020	**0120HA**
	0.140	0.750	2.500	0.250	0.020	**0140HA**
	0.160	0.875	2.500	0.250	0.020	**0160HA**
	0.180	1.125	2.500	0.250	0.020	**0180HA**
	0.200	1.250	2.500	0.250	0.020	**0200HA**

NOTE: Reducing sleeve required.

Reducing Sleeves







Imperial (in)

	Reducing Sleeve D_3	Reducing Sleeve D_2	Reducing Sleeve L_1	Reducing Sleeve L_3	Weight (lbs)	Part No.
	0.125	0.500	2.000	0.220	0.100	**BTH-01250500**
ⓘ	0.250	0.500	1.312	—	0.050	**BTH-02500500**
	0.375	0.500	1.312	—	0.030	**BTH-03750500**

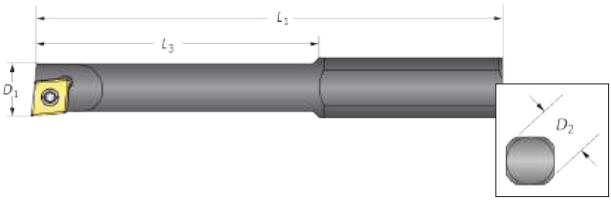
B20: 47 - 48
Key on B20: 2
B20: 43 - 44

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Boring Bars and Inserts

Diameter Range: 0.050" - 0.750"

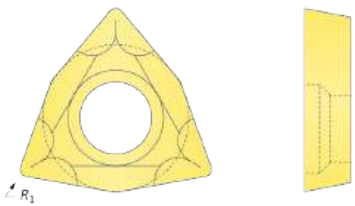




Imperial (in)

	Style	Min. Boring Diameter D_1	Boring Bar L_3	Boring Bar L_1	Boring Bar D_2	Weight (lbs)	Insert Form	Part No.
i	Steel	0.250	1.062	2.500	0.500	0.080	WBGX0301..	**0250B**
		0.312	1.437	2.750	0.500	0.080	WBGX0301..	**0312B**
		0.375	1.750	3.062	0.500	0.100	WBGX0301..	**0375B**
		0.437	2.062	3.375	0.500	0.110	CC..215..	**0437B**
		0.500	2.187	3.500	0.500	0.140	CC..215..	**0500B**

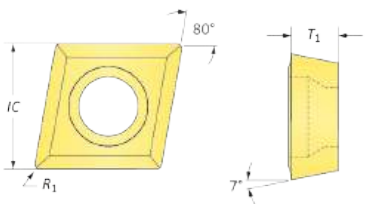
Coated Trigon Insert



Imperial (in)

	Insert Form	Insert R_1	Part No.
i	WBGX0301..	0.004	**WBGX030101**

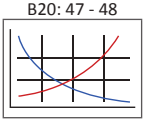
Coated 80° Diamond Insert



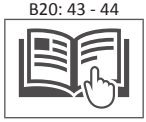
Imperial (in)

	Insert Form	Insert IC	Insert T_1	Insert R_1	Part No.
i	CC..215..	0.250	0.094	0.008	**CCMT060202**

B20: 47 - 48
Key on B20: 2



B20: 43 - 44



Inserts sold separately.

m = Metric (mm)
i = Imperial (in)



WE KNOW
CONVENIENCE MATTERS.

MDS Finish Boring Tool

Compact design and rugged insert holder make it one of the toughest boring tools under 25.40 mm (1.000") diameter.

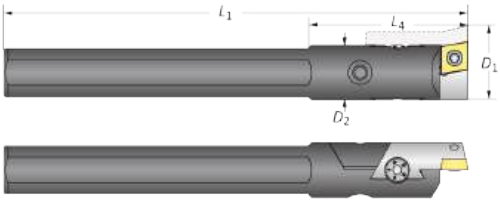
Cylindrical shank can be dropped into existing end mill (side-lock) holders.

Available in both metric (mm) and imperial (in) versions.

MDS Finish Boring Tools and Inserts

Diameter Range: 18.00 mm - 33.00 mm (0.710" - 1.280")





Metric (mm)

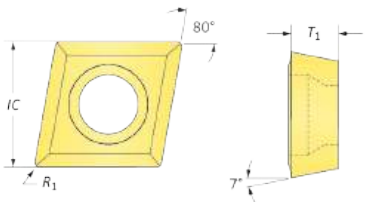
	Boring Range	Boring Head L_1	Boring Head *Max* L_4	Boring Head D_2	Weight (kg)	Insert Form	Part No.
ⓜ	18.00 - 24.25	133.00	85.37	16.00	0.18	CC..0602..	**MDS16M**
	22.00 - 33.00	160.00	112.37	20.00	0.32	CC..0602..	**MDS20M**

Imperial (in)

	Boring Range	Boring Head L_1	Boring Head *Max* L_4	Boring Head D_2	Weight (lbs)	Insert Form	Part No.
ⓘ	0.710 - 0.960	5.250	3.386	0.625	0.400 (lbs)	CC..215..	**MDS0625**
	0.890 - 1.280	6.310	4.435	0.750	0.700 (lbs)	CC..215..	**MDS0750**

Metric (mm) = 0.020 mm adjustment on diameter.
Imperial (in) = 0.001" adjustment on diameter.
NOTE: Max spindle speed: 305 m/min (1,000 SFM) at 0 radial offset.

Coated 80° Diamond Insert



Metric (mm)

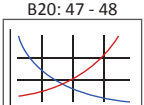
	Insert Form	Insert *IC*	Insert T_1	Insert R_1	Part No.
ⓜ	CC..0602..	6.35	2.38	0.20	**CCMT060202**

Imperial (in)

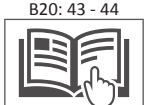
	Insert Form	Insert *IC*	Insert T_1	Insert R_1	Part No.
ⓘ	CC..215..	0.250	0.094	0.008	**CCMT060202**

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to pages **B20: 47 - 48** for recommended application specific parameters or factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

B20: 47 - 48
Key on B20: 2



B20: 43 - 44



Inserts sold separately.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

WE KNOW
TOLERANCE MATTERS.

Cri-Bore® Microadjusting

Allows for 0.001 mm (0.00005") on diameter bore increments.

Modular system can be used on virtually any machine.

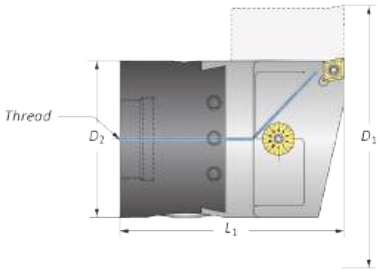
Available in both metric (mm) and imperial (in) versions.



Cri-Bore® Microadjusting Finish Boring Heads

Diameter Range: 27.00 mm - 128.00 mm (1.050" - 5.065")





Metric (mm)

	Boring Range D_1	Thread Connection	Boring Head L_1	Boring Head D_2	Weight (kg)	Insert Form	Part No.
	27.00 - 33.00	7/8 - 20	68.35	25.00	0.23	CC..0602..	**CB025MCC**
						TC..1102..	**CB025MTC**
	33.00 - 41.00	7/8 - 20	73.65	32.00	0.36	CC..0602..	**CB032MCC**
						TC..1102..	**CB032MTC**
ⓜ	41.00 - 68.00	7/8 - 20	81.25	38.00	0.59	CC..09T3..	**CB038MCC**
						TC..16T3..	**CB038MTC**
	53.00 - 84.00	7/8 - 20	91.30	50.00	1.09	CC..09T3..	**CB050MCC**
						TC..16T3..	**CB050MTC**
	78.00 - 128.00	1-1/2 - 18	104.25	76.00	2.36	CC..09T3..	**CB076MCC**
						TC..16T3..	**CB076MTC**

Imperial (in)

	Boring Range D_1	Thread Connection	Boring Head L_1	Boring Head D_2	Weight (lbs)	Insert Form	Part No.
	1.050 - 1.320	7/8 - 20	2.690	1.000	0.500	CC..215..	**CB1000CC**
						TC..215..	**CB1000TC**
	1.300 - 1.600	7/8 - 20	2.900	1.250	0.800	CC..215..	**CB1250CC**
						TC..215..	**CB1250TC**
ⓘ	1.585 - 2.700	7/8 - 20	3.200	1.500	1.300	CC..325..	**CB1500CC**
						TC..325..	**CB1500TC**
	2.060 - 3.320	7/8 - 20	3.590	2.000	2.400	CC..325..	**CB2000CC**
						TC..325..	**CB2000TC**
	3.065 - 5.065	1-1/2 - 18	4.100	3.000	5.800	CC..325..	**CB3000CC**
						TC..325..	**CB3000TC**

IMPORTANT: Wax covered gib screws are factory set and should not be removed. Adjustment of these screws will cause performance issues.
Metric (mm) = 0.001 mm adjustment on diameter.
Imperial (in) = 0.00005" adjustment on diameter.
NOTE: Max spindle speed: 305 m/min (1,000 SFM) at 0 radial offset.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to pages **B20: 47 - 48** for recommended application specific parameters or factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

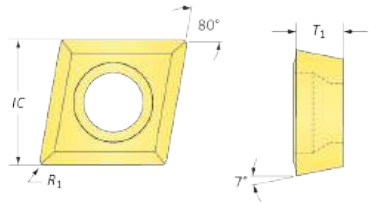
B20: 47 - 48
Key on B20: 2
B20: 43 - 44
B20: 7 - 8
B20: 3 - 6

Inserts sold separately.
ⓜ = Metric (mm)
ⓘ = Imperial (in)

Boring Inserts

80° Diamond Insert | 60° Triangle Insert

Coated 80° Diamond Inserts



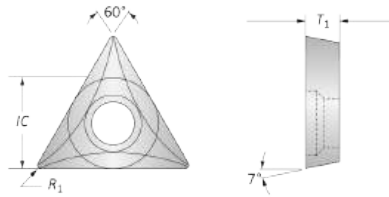
Metric (mm)

	Insert Form	Insert IC	Insert T_1	Insert R_1	Part No.
ⓜ	CC..0602..	6.35	2.38	0.20	**CCMT060202**
				0.40	**CCMT060204**
	CC..09T3..	9.53	3.97	0.20	**CCMT09T302**
				0.40	**CCMT09T304**

Imperial (in)

	Insert Form	Insert IC	Insert T_1	Insert R_1	Part No.
ⓘ	CC..215..	0.250 0.250	0.094	0.008	**CCMT060202**
				0.016	**CCMT060204**
	CC..325..	0.375	0.156	0.008	**CCMT09T302**
				0.016	**CCMT09T304**

Coated 60° Triangle Inserts



Metric (mm)

	Insert Form	Insert IC	Insert T_1	Insert R_1	Part No.
ⓜ	TC..1102..	6.35	2.38	0.20	**TCGT110202**
				0.40	**TCGT110204**
	TC..16T3..	9.53	3.97	0.40	**TCGT16T304**

Imperial (in)

	Insert Form	Insert IC	Insert T_1	Insert R_1	Part No.
ⓘ	TC..215..	0.250	0.094	0.008	**TCGT110202**
				0.016	**TCGT110204**
	TC..325..	0.375	0.156	0.016	**TCGT16T304**

B20: 47 - 48
Key on B20: 2
B20: 43 - 44

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Notes



EXTEND YOUR BORING RANGE.

Large Cri-Bore® Finish Boring / OD Turning System

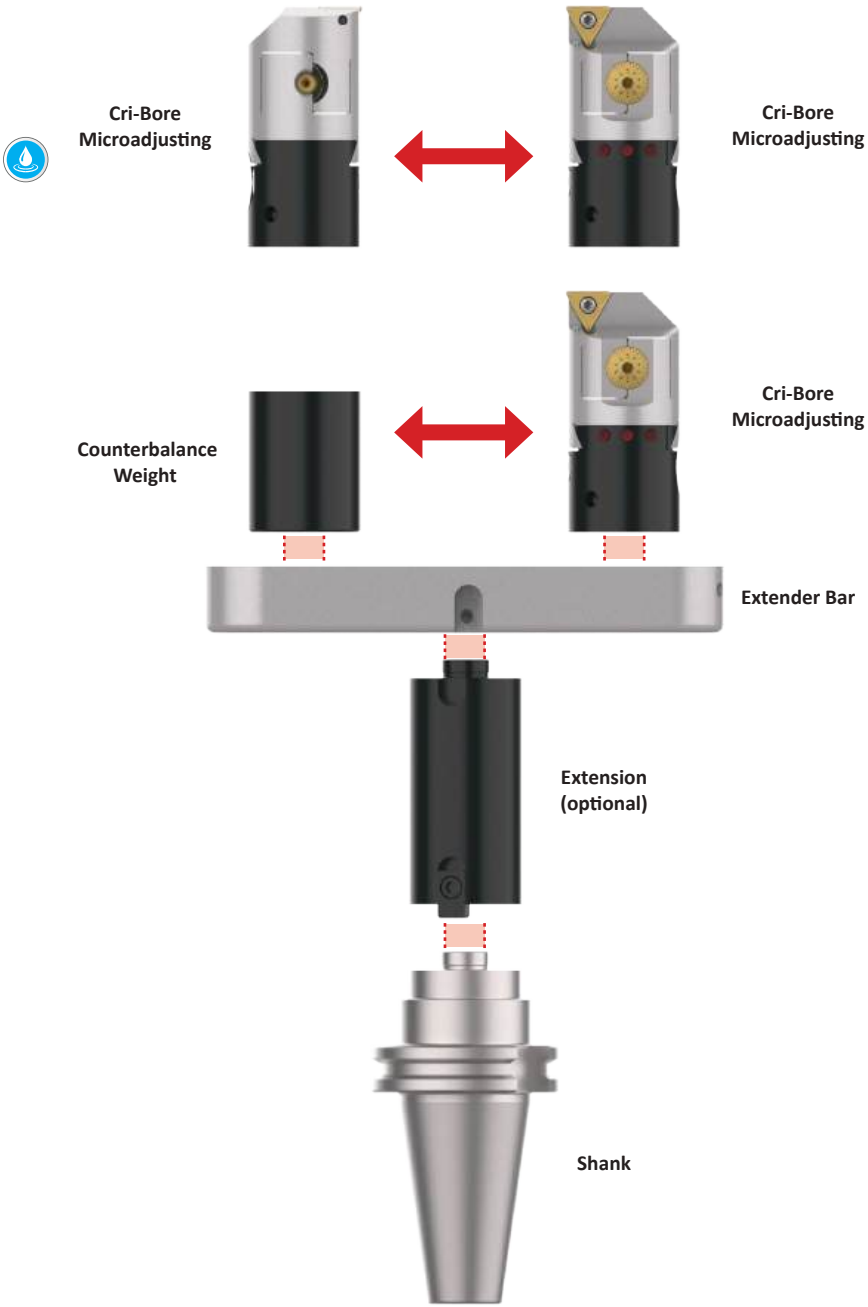
Extend the diameter range for internal and external boring.

Modular tooling system allows for CAT, BT, or HSK shanks.

Allows for 0.001 mm (0.00005") on diameter bore increments.

Large Cri-Bore System

Overview



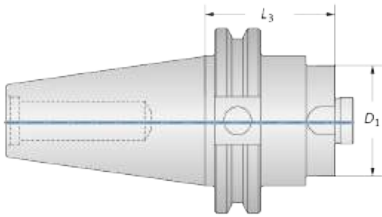
⚠ WARNING **Assembly of modular components may cause machine damage and/or serious injury. To prevent:**

-Do not exceed the **allowable weight** for your machine tool.
-Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
For detailed guidelines on safe configurations, **please refer to pages B20: 45 - 46 or visit www.alliedmachine.com/CriterionBoringGuidelines.**

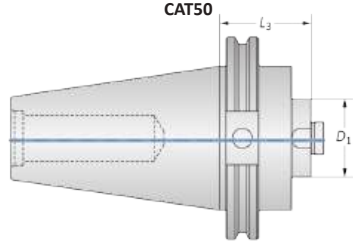
Shanks

ID: 127.00 mm - 307.90 mm (5.000" - 12.125") | OD: 18.10 mm - 198.80 mm (0.710" - 7.830")

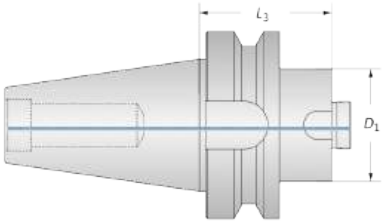
CAT40



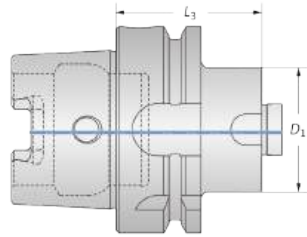
CAT50



BT40



HSK63A



Metric (mm)

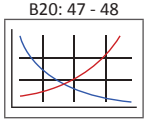
	Insert L_3	Insert D_1	Taper	Weight (kg)	Part No.
ⓜ	44.45	38.10	CAT40	1.09	**LCB1500-CV40**
			CAT50	3.16	**LCB1500-CV50**
			BT40	1.12	**LCB1500-BT40**
			HSK63A	0.79	**LCB1500-HSK63A**

Imperial (in)

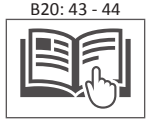
	Insert L_3	Insert D_1	Taper	Weight (lbs)	Part No.
ⓘ	1.750	1.500	CAT40	2.410	**LCB1500-CV40**
			CAT50	6.960	**LCB1500-CV50**
			BT40	2.460	**LCB1500-BT40**
			HSK63A	1.750	**LCB1500-HSK63A**

⚠ WARNING **Assembly of modular components may cause machine damage and/or serious injury. To prevent:**
-Do not exceed the **allowable weight** for your machine tool.
-Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
For detailed guidelines on safe configurations, **please refer to pages B20: 45 - 46 or visit www.alliedmachine.com/CriterionBoringGuidelines.**

B20: 47 - 48
Key on B20: 2



B20: 43 - 44

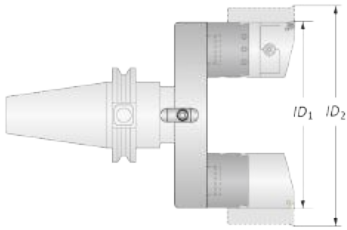


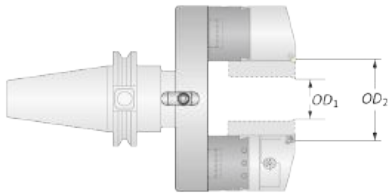
Inserts sold separately.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Extender Bars and Extensions

ID: 127.00 mm - 307.90 mm (5.000" - 12.125") | OD: 18.10 mm - 198.80 mm (0.710" - 7.830")





Metric (mm)

Extender Bar					
ID_1	ID_2	OD_1	OD_2	Weight (kg)	Part No.
127.00	155.50	18.10	46.40	0.71	**LCB1500-56EBK**
152.40	180.90	43.50	71.80	0.87	**LCB1500-67EBK**
177.80	206.30	68.90	97.20	1.04	**LCB1500-78EBK**
203.20	231.70	94.30	122.60	1.20	**LCB1500-89EBK**
228.60	257.10	119.70	148.00	1.37	**LCB1500-910EBK**
254.00	282.50	145.10	173.40	1.53	**LCB1500-1011EBK**
279.40	307.90	170.50	198.80	1.69	**LCB1500-1112EBK**

Imperial (in)

Extender Bar					
ID_1	ID_2	OD_1	OD_2	Weight (lbs)	Part No.
5.000	6.125	0.710	1.830	1.560	**LCB1500-56EBK**
6.000	7.125	1.710	2.830	1.920	**LCB1500-67EBK**
7.000	8.125	2.710	3.830	2.290	**LCB1500-78EBK**
8.000	9.125	3.710	4.830	2.650	**LCB1500-89EBK**
9.000	10.125	4.710	5.830	3.010	**LCB1500-910EBK**
10.000	11.125	5.710	6.830	3.370	**LCB1500-1011EBK**
11.000	12.125	6.710	7.830	3.730	**LCB1500-1112EBK**

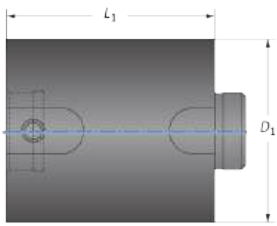
Large Cri-Bore Extensions

Metric (mm)

Counterweight			
D_1	L_1	Weight (kg)	Part No.
38.10	38.10	0.30	**LCB1500-IA1500**
38.10	76.20	0.60	**LCB1500-IA3000**
38.10	114.30	0.90	**LCB1500-IA4500**

Imperial (in)

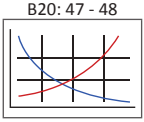
Counterweight			
D_1	L_1	Weight (lbs)	Part No.
1.500	1.500	0.660	**LCB1500-IA1500**
1.500	3.000	1.330	**LCB1500-IA3000**
1.500	4.500	1.980	**LCB1500-IA4500**



NOTE: Only one extension can be used per boring assembly. Extensions cannot be combined.

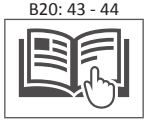
⚠ WARNING **Assembly of modular components may cause machine damage and/or serious injury. To prevent:**
-Do not exceed the **allowable weight** for your machine tool.
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For detailed guidelines on safe configurations, **please refer to pages B20: 45 - 46 or visit www.alliedmachine.com/CriterionBoringGuidelines.**

B20: 47 - 48



Key on B20: 2

B20: 43 - 44



Inserts sold separately.

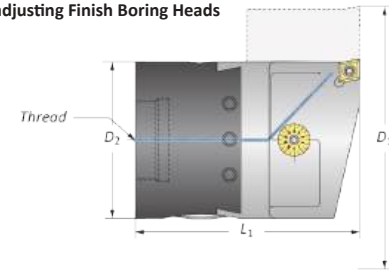
Ⓜ = Metric (mm)
ⓘ = Imperial (in)

Boring Heads and Counterweights

ID: 127.00 mm - 307.90 mm (5.000" - 12.125") | OD: 18.10 mm - 198.80 mm (0.710" - 7.830")

Cri-Bore® Microadjusting Finish Boring Heads





Metric (mm)

	Thread Connection	Boring Head L_1	Boring Head D_2	Weight (kg)	Insert Form	Part No.
ⓜ	7/8 - 20	81.25	38.00	0.59	CC..09T3..	**CB038MCC**
					TC..16T3..	**CB038MTC**

Imperial (in)

	Thread Connection	Boring Head L_1	Boring Head D_2	Weight (lbs)	Insert Form	Part No.
ⓘ	7/8 - 20	3.200	1.500	1.300	CC..325..	**CB1500CC**
					TC..325..	**CB1500TC**

IMPORTANT: Wax covered gib screws are factory set and should not be removed. Adjustment of these screws will cause performance issues.
Metric (mm) = 0.001 mm adjustment on diameter. | Imperial (in) = 0.00005" adjustment on diameter.
NOTE: Max spindle speed ID boring: 305 m/min (1,000 SFM) at 0 radial offset and used with counterweight or additional boring head.
NOTE: Max spindle speed OD boring: Contact our Application Engineering department.

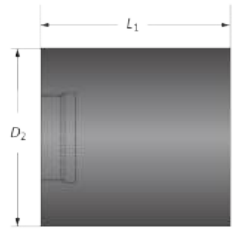
Large Cri-Bore Counterweights

Metric (mm)

	Counterweight D_2	Counterweight L_1	Weight (kg)	Part No.
ⓜ	38.10	65.53	0.57	**LCB1500-CBWTA**

Imperial (in)

	Counterweight D_2	Counterweight L_1	Weight (lbs)	Part No.
ⓘ	1.500	2.580	1.250	**LCB1500-CBWTA**



IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to pages **B20: 47 - 48** for recommended application specific parameters or factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

⚠ WARNING **Assembly of modular components may cause machine damage and/or serious injury. To prevent:**
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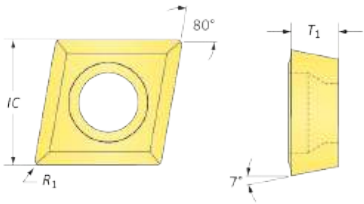
B20: 47 - 48
Key on B20: 2
B20: 43 - 44

Inserts sold separately.
ⓜ = Metric (mm)
ⓘ = Imperial (in)

Boring Inserts

80° Diamond Insert | 60° Triangle Insert

Coated 80° Diamond Inserts



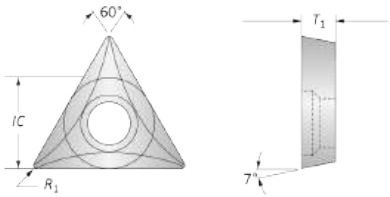
Metric (mm)

	Insert Form	Insert IC	Insert T_1	R_1	Part No.
ⓜ	CC..09T3..	9.53	3.97	0.20	**CCMT09T302**
				0.40	**CCMT09T304**
				0.80	**CCMT09T308**

Imperial (in)

	Insert Form	Insert IC	Insert T_1	R_1	Part No.
ⓘ	CC..325..	0.375	0.156	0.008	**CCMT09T302**
				0.016	**CCMT09T304**
				0.031	**CCMT09T308**

Coated 60° Triangle Inserts



Metric (mm)

	Insert Form	Insert IC	Insert T_1	R_1	Part No.
ⓜ	TC..16T3..	9.53	3.97	0.40	**TCGT16T304**

Imperial (in

	Insert Form	Insert IC	Insert T_1	R_1	Part No.
ⓘ	TC..325..	0.375	0.156	0.016	**TCGT16T304**

B20: 47 - 48
Key on B20: 2
B20: 43 - 44

ⓜ = Metric (mm)
ⓘ = Imperial (in)



NEED VERSATILITY?
NO PROBLEM.

CB Style Versatile Boring

Wide range of diameters produced with a single boring head.

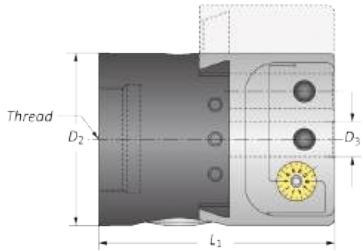
Allows for 0.001" adjustment on bore diameter and 0.000050" with CB2500BMA.

Maximum toughness and maximum versatility.

CB Microadjusting Versatile Boring Head

Diameter Range: 0.250" - 3.125"





Imperial (in)

	Boring Range D_1	Thread Connection	Boring Head L_1	Boring Head D_2	Boring Head D_3	Weight (lbs)	Part No.
ⓘ	0.250 - 3.125	1-1/2 - 18	3.375	2.500	0.500	3.400	**CB2500BMA**

IMPORTANT: Wax covered gib screws are factory set and should not be removed. Adjustment of these screws will cause performance issues.
Imperial (in) = 0.00005" adjustment on diameter.
NOTE: Max spindle speed: 2,000 RPM at 0 radial offset.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to pages **B20: 47 - 48** for recommended application specific parameters or factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

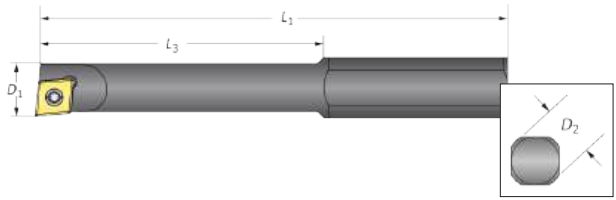
B20: 47 - 48
B20: 43 - 44
B20: 7 - 8
B20: 3 - 6
Key on B20: 2

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Boring Bars

Diameter Range: 0.050" - 0.750"





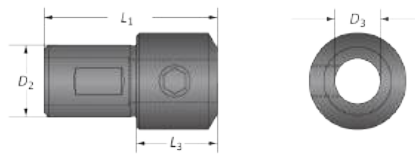
Imperial (in)

	Style	Min. Boring Diameter D_1	Boring Bar L_3	Boring Bar L_1	Boring Bar D_2	Weight (lbs)	Insert Form	Part No.
	Steel	0.250	1.062	2.500	0.500	0.080	WBGX0301..	**0250B**
		0.312	1.437	2.750	0.500	0.080	WBGX0301..	**0312B**
		0.375	1.750	3.062	0.500	0.100	WBGX0301..	**0375B**
ⓘ		0.437	2.062	3.375	0.500	0.110	CC..215..	**0437B**
		0.500	2.187	3.500	0.500	0.140	CC..215..	**0500B**
	Heavy Metal	0.365	2.250	4.000	0.312	0.080	CC..215..	**0365HM***
		0.550	3.250	6.000	0.500	0.300	CC..215..	**0550BHM**
	Carbide	0.625	4.500	8.000	0.500	0.410	CC..215..	**0625BCS**

*Reducing sleeve required.

Reducing Sleeves





Imperial (in)

	Reducing Sleeve D_3	Reducing Sleeve D_2	Reducing Sleeve L_1	Reducing Sleeve L_3	Weight (lbs)	Part No.
ⓘ	0.312	0.500	1.312	—	0.040	**BTH-03120500**
	0.375	0.500	1.312	—	0.030	**BTH-03750500**

B20: 47 - 48
Key on B20: 2
B20: 43 - 44

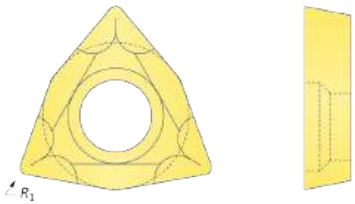
Inserts sold separately.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Boring Inserts

Trigon | 80° Diamond

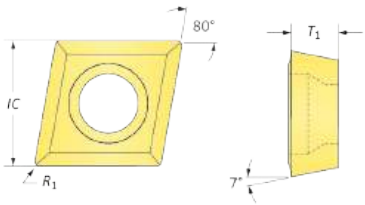
Coated Trigon Insert



Imperial (in)

	Insert Form	Insert R_1	Part No.
ⓘ	WBGX0301..	0.004	**WBGX030101**

Coated 80° Diamond Insert



Imperial (in)

	Insert Form	Insert *IC*	Insert T_1	Insert R_1	Part No.
ⓘ	CC..215..	0.250	0.094	0.008	**CCMT060202**
				0.016	**CCMT060204**
				0.031	**CCMT060208**

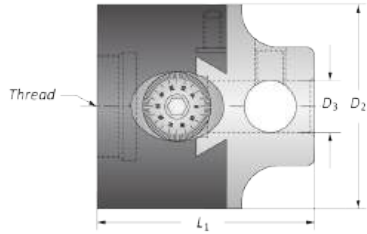
B20: 47 - 48
Key on B20: 2
B20: 43 - 44

ⓜ = Metric (mm)
ⓘ = Imperial (in)

CB Versatile Boring Head

Diameter Range: 0.250" - 21.500"





Imperial (in)

Boring Range D_1	Thread Connection	Boring Head L_1	Boring Head D_2	Boring Head D_3	Weight (lbs)	Max Spindle Speed (RPM)	Part No.
0.250 - 6.687	7/8 - 20	2.435	2.000	0.500	1.600	2500	**CB202B**
0.250 - 11.000	1-1/2 - 18	3.166	3.000	0.750	4.700	1750	**CB203D**
0.500 - 13.437	1-1/2 - 18	3.715	4.000	1.000	9.300	800	**CB204E**
0.500 - 21.500	2-1/4 - 10	5.475	6.000	1.500	26.400	500	**CB206F**

IMPORTANT: Wax covered gib screws are factory set and should not be removed. Adjustment of these screws will cause performance issues.

Imperial (in) = 0.001" adjustment on diameter.

NOTE: Max spindle speed: RPM (in table) at 0 radial offset.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to pages **B20: 47 - 48** for recommended application specific parameters or factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

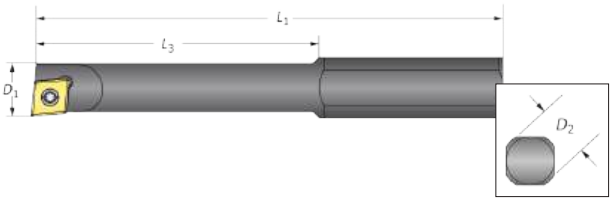
B20: 47 - 48
Key on B20: 2
B20: 43 - 44
B20: 7 - 8
B20: 3 - 6

m = Metric (mm)
i = Imperial (in)

Boring Bars

Diameter Range: 0.050" - 0.750"



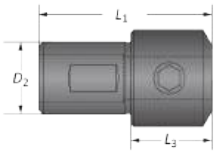


Imperial (in)

Style	Min. Boring Diameter D_1	Boring Bar D_2	Boring Bar L_3	Boring Bar L_1	Weight (lbs)	Insert Form	Part No.
Steel	0.250	0.500	1.062	2.500	0.080	WBGX0301..	**0250B**
	0.312	0.500	1.437	2.750	0.080	WBGX0301..	**0312B**
	0.375	0.500	1.750	3.062	0.100	WBGX0301..	**0375B**
	0.437	0.500	2.062	3.375	0.110	CC..215..	**0437B**
	0.500	0.500	2.187	3.500	0.140	CC..215..	**0500B**
	0.500	0.750	2.500	4.250	0.280	CC..215..	**0500D**
	0.750	0.750	3.000	4.687	0.430	CC..325..	**0750D**
	1.000	0.750	3.500	5.125	0.570	CC..325..	**1000D**
	1.250	0.750	4.000	5.562	0.570	CC..325..	**1250D**
Heavy Metal	0.365	0.312	2.250	4.000	0.080	CC..215..	**0365HM**
	0.425	0.375	2.250	4.000	0.110	CC..215..	**0425BHM**
	0.550	0.500	3.250	6.000	0.300	CC..215..	**0550BHM**
	0.688	0.625	4.250	8.000	0.630	CC..325..	**0688CHM**
	0.832	0.750	4.750	10.000	1.150	CC..325..	**0832DHM**
Carbide	0.625	0.500	4.500	8.000	0.410	CC..215..	**0625BCS**
	0.875	0.750	6.000	10.000	1.130	CC..325..	**0875DCS**

Reducing Sleeves



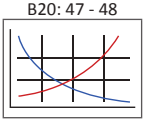




Imperial (in)

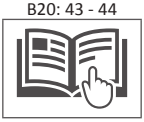
Reducing Sleeve D_3	Reducing Sleeve D_2	Reducing Sleeve L_1	Reducing Sleeve L_3	Weight (lbs)	Part No.
0.312	0.500	1.312	—	0.040	**BTH-03120500**
0.375	0.500	1.312	—	0.030	**BTH-03750500**
0.375	0.750	2.406	—	0.190	**BTH-03750750**
0.500	0.750	2.406	0.910	0.040	**BTH-05000750**
0.625	0.750	1.500	—	0.060	**BTH-06250750**
0.750	1.000	2.405	1.125	0.400	**BTH-07501000**
0.750	1.500	3.000	1.000	1.400	**BTH-07501500**

B20: 47 - 48



Key on B20: 2

B20: 43 - 44



Inserts sold separately.

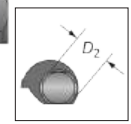
ⓜ = Metric (mm)
ⓘ = Imperial (in)

Cross Hole Boring Bars

Diameter Range: 2.875" - 21.500"







Imperial (in)

	Min. Boring Diameter	Boring Bar D_2	Boring Bar L_1	Weight (lbs)	Insert Form	Part No.
	2.875	0.500	2.750	0.140	CC..215..	**0500BCH**
ⓘ	4.937	0.750	4.750	0.550	CC..325..	**0750DCH**
	5.625	1.000	5.310	1.020	CC..325..	**1000ECH**
	9.093	1.500	9.125	4.130	CC..43..	**1500FCH**

B20: 47 - 48
Key on B20: 2

B20: 43 - 44

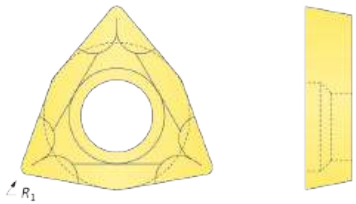
Inserts sold separately.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Boring Inserts

Trigon | 80° Diamond

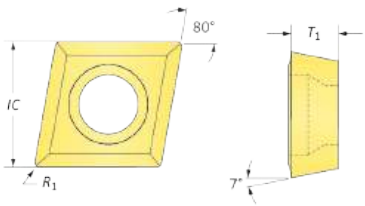
Coated Trigon Insert



Imperial (in)

	Insert Form	Insert R_1	Part No.
ⓘ	WBGX0301..	0.004	**WBGX030101**

Coated 80° Diamond Insert



Imperial (in)

	Insert Form	IC	Insert T_1	Insert R_1	Part No.
ⓘ	CC..215..	0.250	0.094	0.008	**CCMT060202**
				0.016	**CCMT060204**
				0.031	**CCMT060208**
	CC..325...	0.375	0.156	0.008	**CCMT09T302**
				0.016	**CCMT09T304**
				0.031	**CCMT09T308**
	CC..43..	0.500	0.188	0.031	**CCMT120408**

B20: 47 - 48
Key on B20: 2
B20: 43 - 44

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Accessories

Screws, Driver, and Wrenches

Insert Screws and Drivers

Insert Form	Insert Part No.	Thread	Insert Driver Part No.	Technical Information	
				Torque Specs	Key Size
WBGX0301..	**215377**	M2x4	**115537**	0.6 (N·m)	T6
CC..215.. CC..0602..	**115676**	M2.5x5	**115590**	1.2 (N·m)	T8
CC..32500 CC..09T3 (<Ø37mm)	**115672**	M3.5x7.5	**115664**	3.0 (N·m)	T15
CC..32500 CC..09T3 (>Ø36mm)	**115673**	M3.5x9	**115664**	3.0 (N·m)	T15
CC..43.. CC..1204..	**215149**	M4.5x11.5	**215150**	5.0 (N·m)	T20
TC..215.. TC..1102..	**115676**	M2.5x5	**115590**	1.2 (N·m)	T8
TC..325.. TC..16T3	**115673**	M3.5x9	**115664**	3.0 (N·m)	T15

Pin Spanner Wrenches

Body Diameter	Pin Spanner Wrench Part No.
25.00 mm (1.000")	**CB1000-PSW**
32.00 mm (1.250")	**CB1250-PSW**
38.00 mm (1.500")	**CB1500-PSW**
38.00 mm (2.000")	**CB2000-PSW**
63.50 mm (2.500")	**CB2500-PSW**
76.00 mm (3.000")	**CB3000-PSW**
101.00 mm (4.000")	**CB4000-PSW**

Hardware Kits

Boring Head Part No.	Hardware Kit Part No.	Boring Head Part No.	Hardware Kit Part No.	Boring Head Part No.	Hardware Kit Part No.
CB-038MA	**CB038-HDW**	CB032MTC	**CB032M-HDW**	CB101M-TP	**CB101M-HDW**
CB-038MB	**CB038-HDW**	CB038M-CP	**CB038-HDW**	CB1250-CP	**CB1250-HDW**
CB-050MA	**CB050M-HDW**	CB038M-CPMA	**CB038-HDW**	CB1250-CPMA	**CB1250-HDW**
CB-050MB	**CB050M-HDW**	CB038M-TP	**CB038-HDW**	CB1250-TP	**CB1250-HDW**
CB-064MBMA	**CB050M-HDW**	CB038M-TPMA	**CB038-HDW**	CB1250-TPMA	**CB1250-HDW**
CB-076MD	**CB076M-HDW**	CB038MCC	**CB038-HDW**	CB1250CC	**CB1250-HDW**
CB-076MDMA	**CB076M-HDW**	CB038MTC	**CB038-HDW**	CB1250TC	**CB1250-HDW**
CB-101ME	**CB101M-HDW**	CB050M-CP	**CB2000-HDW**	CB1500-CP	**CB1500-HDW**
CB-1500AMA	**CB1500-HDW**	CB050M-CPMA	**CB050M-HDW**	CB1500-CPMA	**CB1500-HDW**
CB-1500B	**CB1500-HDW**	CB050M-TP	**CB2000-HDW**	CB1500-TP	**CB1500-HDW**
CB-202A	**CB2000-HDW**	CB050M-TP	**CB050M-HDW**	CB1500-TPMA	**CB1500-HDW**
CB-202B	**CB2000-HDW**	CB050M-TPMA	**CB050M-HDW**	CB1500CC	**CB1500-HDW**
CB-203D	**CB3000-HDW**	CB050M-TPMA	**CB050M-HDW**	CB1500TC	**CB1500-HDW**
CB-204E	**CB4000-HDW**	CB050M-TPMA	**CB050M-HDW**	CB2000-CPMA	**CB2000-HDW**
CB-206F	**CB6000-HDW**	CB050MCC	**CB050M-HDW**	CB2000-TPMA	**CB2000-HDW**
CB-2375A	**CB1500-HDW**	CB050MTC	**CB050M-HDW**	CB2000CC	**CB2000-HDW**
CB-2500BMA	**CB2000-HDW**	CB076M-CP	**CB076M-HDW**	CB2000TC	**CB2000-HDW**
CB-3000DMA	**CB3000-HDW**	CB076M-CPMA	**CB076M-HDW**	CB202B	**CB2000-HDW**
CB025M-CP	**CB025M-HDW**	CB076M-TPMA	**CB076M-HDW**	CB203D	**CB3000-HDW**
CB025M-CPMA	**CB025M-HDW**	CB076MCC	**CB076M-HDW**	CB204E	**CB4000-HDW**
CB025M-TP	**CB025M-HDW**	CB076MTC	**CB076M-HDW**	CB206F	**CB6000-HDW**
CB025M-TPMA	**CB025M-HDW**	CB1000-CP	**CB1000-HDW**	CB2500BMA	**CB2000-HDW**
CB025MCC	**CB025M-HDW**	CB1000-CPMA	**CB1000-HDW**	CB3000-CP	**CB3000-HDW**
CB025MTC	**CB025M-HDW**	CB1000-TP	**CB1000-HDW**	CB3000-CPMA	**CB3000-HDW**
CB032M-CPMA	**CB032M-HDW**	CB1000-TPMA	**CB1000-HDW**	CB3000-TP	**CB3000-HDW**
CB032M-TP	**CB032M-HDW**	CB1000CC	**CB1000-HDW**	CB3000-TPMA	**CB3000-HDW**
CB032M-TPMA	**CB032M-HDW**	CB1000TC	**CB1000-HDW**	CB3000CC	**CB3000-HDW**
CB032MCC	**CB032M-HDW**	CB101-CP	**CB101M-HDW**	CB3000TC	**CB3000-HDW**

Hardware Kits

Boring Head Part No.	Hardware Kit Part No.
CB4000-CP	**CB4000-HDW**
CB4000-TP	**CB4000-HDW**
CB4000-TP	**CB4000-HDW**
CB4000-TP	**CB4000-HDW**
CBER16-CP	**CB0625-HDW**
CBER16-SG	**CB0625-HDW**
CBER16-TP	**CB0625-HDW**
CBER16M-CP	**CB0625-HDW**
CBER16M-TP	**CB0625-HDW**
CBER16MS-CP	**CB0625-HDW**
CBER16MS-TP	**CB0625-HDW**
CBER16S-CP	**CB0625-HDW**
CBER16S-SG	**CB0625-HDW**
CBER16S-TP	**CB0625-HDW**
CBER20-CP	**CB0625-HDW**
CBER20-SG	**CB0625-HDW**
CBER20-TP	**CB0625-HDW**
CBER20M-CP	**CB0625-HDW**
CBER20M-TP	**CB0625-HDW**
CBER20MS-CP	**CB0625-HDW**
CBER20MS-TP	**CB0625-HDW**
CBER20S-CP	**CB0625-HDW**
CBER20S-SG	**CB0625-HDW**
CBER20S-TP	**CB0625-HDW**
CBER25-CP	**CB0750-HDW**
CBER25-SH	**CB0750-HDW**
CBER25-TP	**CB0750-HDW**
CBER25-TP	**CB0750-HDW**
CBER25M-CP	**CB0750-HDW**
CBER25MS-CP	**CB0750-HDW**
CBER25MS-TP	**CB0750-HDW**
CBER25S-CP	**CB0750-HDW**
CBER25S-SH	**CB0750-HDW**
CBER25S-TP	**CB0750-HDW**
CBER32-CP	**CB1000-HDW**
CBER32-CPMA	**CB1000-HDW**
CBER32-SA	**CB1000-HDW**
CBER32-TP	**CB1000-HDW**
CBER32-TPMA	**CB1000-HDW**
CBER32M-CP	**CB1000-HDW**
CBER32M-CPMA	**CB1000-HDW**
CBER32M-TP	**CB1000-HDW**
CBER32M-TPMA	**CB1000-HDW**
CBER32MS-CP	**CB1000-HDW**
CBER32MS-CPMA	**CB1000-HDW**
CBER32MS-TP	**CB1000-HDW**
CBER32MS-TPMA	**CB1000-HDW**
CBER32S-CP	**CB1000-HDW**
CBER32S-CPMA	**CB1000-HDW**
CBER32S-SA	**CB1000-HDW**
CBER32S-TP	**CB1000-HDW**
CBER32S-TPMA	**CB1000-HDW**
CBER40-CP	**CB1250-HDW**
CBER40-CPMA	**CB1250-HDW**
CBER40-SB	**CB1250-HDW**
CBER40-TP	**CB1250-HDW**
CBER40-TPMA	**CB1250-HDW**
CBER40M-CP	**CB1250-HDW**
CBER40M-CPMA	**CB1250-HDW**
CBER40M-TP	**CB1250-HDW**
CBER40M-TPMA	**CB1250-HDW**
CBER40MS-CP	**CB1250-HDW**
CBER40MS-TP	**CB1250-HDW**
CBER40MS-TPMA	**CB1250-HDW**

Boring Head Part No.	Hardware Kit Part No.
CBER40S-CP	**CB1250-HDW**
CBER40S-CPMA	**CB1250-HDW**
CBER40S-CPMA	**CB1250-HDW**
CBER40S-SB	**CB1250-HDW**
CBER40S-TP	**CB1250-HDW**
CBER40S-TPMA	**CB1250-HDW**
CBO32M-CP	**CB032M-HDW**
CBO76M-TP	**CB076M-HDW**
CBR-0625CP	**CB0625-HDW**
CBR-0625SG	**CB0625-HDW**
CBR-0628TP	**CB0625-HDW**
CBR-0750CP	**CB0750-HDW**
CBR-0750SH	**CB0750-HDW**
CBR-0750TP	**CB0750-HDW**
CBR-1000CP	**CB1000-HDW**
CBR-1000CPMA	**CB1000-HDW**
CBR-1000SA	**CB1000-HDW**
CBR-1000TP	**CB1000-HDW**
CBR-1000TPMA	**CB1000-HDW**
CBR-1250CP	**CB1250-HDW**
CBR-1250CPMA	**CB1250-HDW**
CBR-1250SB	**CB1250-HDW**
CBR-1250TP	**CB1250-HDW**
CBR-1250TPMA	**CB1250-HDW**
CBS-0625CP	**CB0625-HDW**
CBS-0625SG	**CB0625-HDW**
CBS-0625TP	**CB0625-HDW**
CBS-0750CP	**CB0750-HDW**
CBS-0750SH	**CB0750-HDW**
CBS-0750TP	**CB0750-HDW**
CBS-1000CP	**CB1000-HDW**
CBS-1000CPMA	**CB1000-HDW**
CBS-1000SA	**CB1000-HDW**
CBS-1000TP	**CB1000-HDW**
CBS-1000TPMA	**CB1000-HDW**
CBS-1250CP	**CB1250-HDW**
CBS-1250CPMA	**CB1250-HDW**
CBS-1250SB	**CB1250-HDW**
CBS-1250TP	**CB1250-HDW**
CBS-1250TPMA	**CB1250-HDW**
CBS1250B	**CB1250-HDW**
CP050M-CP	**CB050M-HDW**
CSL-202	**CB2000-HDW**
CSL-203	**CB3000-HDW**
CSL-204	**CB4000-HDW**
CT025M-0	**CT025M-HDW**
CT025M-1	**CT025M-HDW**
CT025M-2	**CT025M-HDW**
CT032M-0	**CT032M-HDW**
CT032M-1	**CT032M-HDW**
CT032M-2	**CT032M-HDW**
CT038-2	**CT038M-HDW**
CT038M-0	**CT038M-HDW**
CT038M-1	**CT038M-HDW**
CT050M-0	**CT050M-HDW**
CT050M-1	**CT050M-HDW**
CT050M-2	**CT050M-HDW**
CT076M-0	**CT076M-HDW**
CT076M-1	**CT076M-HDW**
CT076M-2	**CT076M-HDW**
CT1000-0	**CT1000-HDW**
CT1000-1	**CT1000-HDW**
CT1000-2	**CT1000-HDW**
CT1250-0	**CT1250-HDW**

Boring Head Part No.	Hardware Kit Part No.
CT1250-1	**CT1250-HDW**
CT1250-2	**CT1250-HDW**
CT1500-0	**CT1500-HDW**
CT1500-1	**CT1500-HDW**
CT1500-2	**CT1500-HDW**
CT2000-0	**CT2000-HDW**
CT2000-1	**CT2000-HDW**
CT2000-2	**CT2000-HDW**
CT3000-0	**CT3000-HDW**
CT3000-1	**CT3000-HDW**
CT3000-2	**CT3000-HDW**
MB002-500	**CB1500-HDW**
MB002-625	**CB1500-HDW**
MB002-750	**CB1500-HDW**
MB152-500	**CB1500-HDW**
MB152-625	**CB1500-HDW**
MB152-750	**CB1500-HDW**
MBS0500B	**CB1500-HDW**
SQ-1500B	**S1500-HDW**
SQ-2000B	**S2000-HDW**
SQ-3000D	**S3000-HDW**
SQ-3000E	**S3000-HDW**
TMT-0750H	**TMT0750-HDW**
TMT-1000H	**TMT0750-HDW**

Technical Information

Torque Specs

Torque Specs						
Assembly Item Number	**Lock Screw (N·m)**	**Locking Screw Allen Key Size**	**Dial Adjust Allen Key Size**	**Microadjusting Dial Allen Key Size**	**Clamping Screw Allen Key Size**	**Insert Torx® Screw Driver Size**
MBS0500B	1.4	5/64	5/32	—	1/8	—
CBS1250B	0.7	1/16	5/32	—	1/8	—
MDS0625	1.4	9/64	7/64	—	—	T8
MDS0750	1.5	5/32	7/64	—	—	T15
MDS16M	1.4	2.5 mm	2.5 mm	—	—	T8
MDS20M	1.5	3.0 mm	2.5 mm	—	—	T15
CB1000CC	0.6	0.050	5/32	3/32	—	T8
CB1000TC	0.6	0.050	5/32	3/32	—	T8
CB1250CC	0.7	1/16	5/32	3/32	—	T8
CB1250TC	0.7	1/16	5/32	3/32	—	T8
CB1500CC	1.4	5/64	5/32	7/64	—	T15
CB1500TC	1.4	5/64	5/32	7/64	—	T15
CB2000CC	2.3	3/32	5/32	7/64	—	T15
CB2000TC	2.3	3/32	5/32	7/64	—	T15
CB3000CC	5.3	1/8	1/4	7/64	—	T15
CB3000TC	5.3	1/8	1/4	7/64	—	T15
CB025MCC	0.6	1.5 mm	4.0 mm	2.5 mm	—	T8
CB025MTC	0.6	1.5 mm	4.0 mm	2.5 mm	—	T8
CB032MCC	0.7	2.0 mm	4.0 mm	2.5 mm	—	T8
CB032MTC	0.7	2.0 mm	4.0 mm	2.5 mm	—	T8
CB038MCC	1.4	2.0 mm	4.0 mm	3.0 mm	—	T15
CB038MTC	1.4	2.0 mm	4.0 mm	3.0 mm	—	T15
CB050MCC	2.3	2.5 mm	4.0 mm	3.0 mm	—	T15
CB050MTC	2.3	2.5 mm	4.0 mm	3.0 mm	—	T15
CB076MCC	5.3	3.0 mm	6.0 mm	3.0 mm	—	T15
CB076MTC	5.3	3.0 mm	6.0 mm	3.0 mm	—	T15
CB2500BMA	2.3	3/32	1/4	7/64	7/32	—
CB202B	2.3	3/32	5/32	—	5/32	—
CB203D	5.3	1/8	1/4	—	7/32	—
CB204E	12.4	5/32	1/4	—	7/32	—
CB206F	12.4	5/32	5/16	—	1/4	—

Notes

Setup Instructions

Standard Adjusting Boring Heads

Adjusting Standard Adjusting Boring Heads (see Figure B1)

1. Loosen locking screw (6).
2. Turn dial screw (3) to desired graduation.
3. Tighten locking screw (6) to proper torque spec (laser marked on tool).

IMPORTANT: Do not loosen the gib screws (5). It can cause poor performance.

NOTE: To machine smaller bore diameters, turn dial screw (3) counterclockwise one full rotation to remove any backlash. Once backlash is mitigated, turn dial screw (3) clockwise to desired graduation.

No.	Part
1.	Bar holder
2.	Boring head body
3.	Dial screw
4.	Bar holder set screws
5.	Gib screws (DO NOT ADJUST)
6.	Locking screw

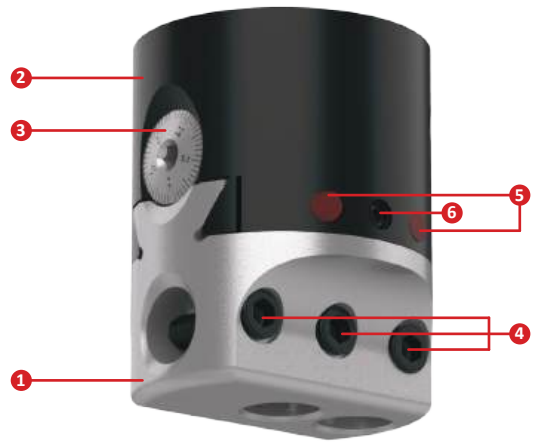


Figure B1

Setup Instructions

Microadjusting Boring Heads

Setting Up Microadjusting Boring Heads (see Figure B2)

Set the microadjusting dial screw range

1. The microadjusting dial screws (4) only have a total range of 0.152 mm (0.006") on diameter. To zero, turn dial (4) clockwise until dial screw bottoms out. Turn the dial (4) two complete turns counterclockwise. Turn dial (4) one half turn clockwise. Dial is now centered for 0.076 mm (0.003") positive or negative travel.

Setting the diameter of the boring head

2. Loosen locking screw (6).
3. Turn dial screw (3) to adjust to the desired diameter using a presetter or plunge indicator or the dial screw (3).
4. Tighten the locking screw (6) to the proper torque spec (laser marked on the tool).
   - Microadjustments will be made at the machine.
5. Make a shallow test cut (roughly 6.35 mm (0.250") deep) to determine the actual diameter.
6. Use the microadjusting dial (4) to adjust to the finish diameter. Do not release the locking screw (6) for microadjustments.
   - If the hole diameter is more than 0.05 mm (0.002") from the target hole size, return to step two.

IMPORTANT: Do not loosen the gib screws (5). It can cause poor performance.

NOTE: Backlash occurs when the diameter of the boring head needs to be decreased. To remove backlash, turn the dial (3) counterclockwise at least one half of a full rotation past the desired adjustment. Once backlash is mitigated, turn dial screw (3) clockwise to the desired adjustment.

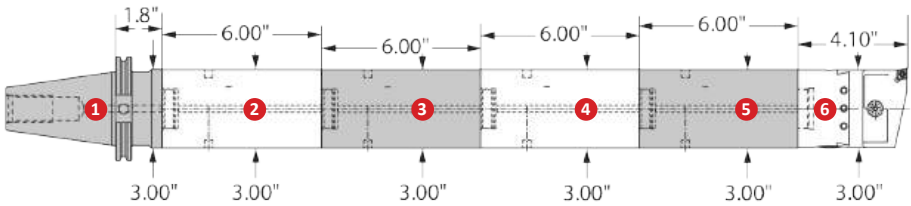
No.	Part
1	Bar holder
2	Boring head body
3	Dial screw
4	Microadjusting dial screw
5	Gib screws (DO NOT ADJUST)
6	Locking screw



Figure B2

Guidelines for Not Exceeding Recommended Length-to-Diameter Ratio

To calculate, see graphics below:



Too many components!

NOTE: Length-to-diameter ratio is calculated using body diameters not cutting diameter.

Step 1: Find L : D by component.

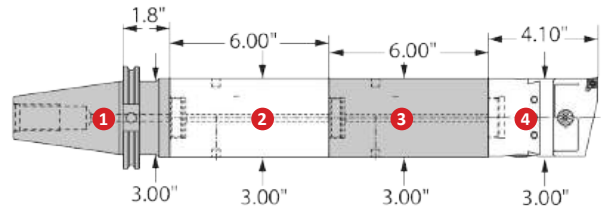
1. 0.6 = 1.88/3.00
2. 2.0 = 6.00/3.00
3. 2.0 = 6.00/3.00
4. 2.0 = 6.00/3.00
5. 2.0 = 6.00/3.00
6. 1.4 = 4.10/3.00

Step 2: Add each L : D average.

0.6 + 2.0 + 2.0 + 2.0 + 2.0 + 1.4

10.0 = L : D ratio

Too long with too many components!



NOTE: Length-to-diameter ratio is calculated using body diameters not cutting diameter.

Step 1: Find L : D by component.

1. 0.6 = 1.88/3.00
2. 2.0 = 6.00/3.00
3. 2.0 = 6.00/3.00
4. 1.4 = 4.10/3.00

Step 2: Add each L : D average.

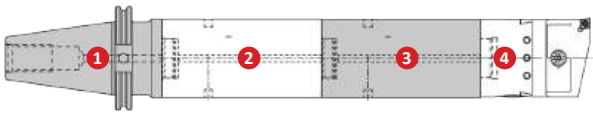
0.6 + 2.0 + 2.0 + 1.4

6.0 = L : D ratio

⚠ WARNING **Tool failure can cause serious injury. To prevent:**
-Do not exceed recommended 9xD length-to-diameter ratio or exceed 4 total components (including shank).
Factory technical assistance is available for you through our Application Engineering department: **appeng@alliedmachine.com.**

Calculating Tool Assembly Weight

To calculate, see graphics below:



Step 1: Find weight for each component circled in the example table below.

Example:

Imperial (in)

Boring Range D_1	Thread Connection	Boring Head L_1	Boring Head D_2	Weight (lbs)	Insert Form	Part No.
1.050 - 1.320	7/8 - 20	2.690	1.000	0.500	CC..215..	**CB1000CC**
					TC..215..	**CB1000TC**
1.300 - 1.600	7/8 - 20	2.900	1.250	0.800	CC..215..	**CB1250CC**
					TC..215..	**CB1250TC**
1.585 - 2.700	7/8 - 20	3.200	1.500	1.300	CC..325..	**CB1500CC**
					TC..325..	**CB1500TC**
2.060 - 3.320	7/8 - 20	3.590	2.000	2.400	CC..325..	**CB2000CC**
					TC..325..	**CB2000TC**
3.065 - 5.065	1-1/2 - 18	4.100	3.000	5.800	CC..325..	**CB3000CC**
					TC..325..	**CB3000TC**

Step 2: Calculate total assembly weight.

1 8.03 lbs
2 11.50 lbs
3 11.50 lbs
4 + 5.80 lbs
36.83 lbs

Step 3: Consult machine tool builder to ensure tool assembly weight does not exceed machine capabilities.

⚠ WARNING **Exceeding weight capacity for machine tool spindle and tool changer can cause machine damage and/or serious injury. To prevent:**
-Consult machine tool builder for machine's weight limitations.
Factory technical assistance is available for you through our Application Engineering department: **appeng@alliedmachine.com.**

Recommended Drilling Data | Metric (mm)

CRITERION®

ISO	Material	Hardness (BHN)	Grade	Speed (m/min)	Recommended Feed (mm / tooth) Nose Radius 0.1 mm	0.2 mm	0.4 mm	0.8 mm
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 250	Carbide	160 - 300	0.02 - 0.07	0.05 - 0.13	0.10 - 0.15	0.15 - 0.23
P	**Low-Carbon Steel** 1010, 1020, 1025, 1522, etc.	85 - 275	Carbide	145 - 280	0.02 - 0.05	0.05 - 0.10	0.07 - 0.13	0.13 - 0.20
P	**Medium-Carbon Steel** 1030, 1040, 1050, 1527, etc.	125 - 325	Carbide	145 - 250	0.02 - 0.05	0.05 - 0.10	0.07 - 0.13	0.13 - 0.20
P	**Alloy Steel** 4140, 5140, 8640, etc.	125 - 375	Carbide	120 - 210	0.02 - 0.05	0.05 - 0.10	0.07 - 0.13	0.13 - 0.20
P	**High-Strength Alloy** 4340, 4330V, 300M, etc.	225 - 400	Carbide	100 - 180	0.02 - 0.05	0.05 - 0.10	0.07 - 0.13	0.13 - 0.20
P	**Structural Steel** A36, A285, A516, etc.	100 - 350	Carbide	145 - 280	0.02 - 0.05	0.05 - 0.10	0.07 - 0.13	0.13 - 0.20
P	**Tool Steel** H-13, H-21, A-4, S-3, etc.	150 - 250	Carbide	100 - 180	0.02 - 0.05	0.05 - 0.07	0.07 - 0.10	0.10 - 0.15
M	**Stainless Steel 400 Series** 416, 420, etc.	185 - 350	Carbide	90 - 160	0.02 - 0.05	0.05 - 0.10	0.07 - 0.10	0.10 - 0.15
M	**Stainless Steel 300 Series** 304, 316, 17-4PH, etc.	135 - 275	Carbide	90 - 160	0.02 - 0.05	0.05 - 0.10	0.07 - 0.10	0.10 - 0.15
M	**Super Duplex Stainless Steel**	135 - 275	Carbide	90 - 160	0.02 - 0.05	0.05 - 0.10	0.07 - 0.10	0.10 - 0.15
K	**SG / Nodular Cast Iron**	120 - 320	Carbide	145 - 260	0.02 - 0.05	0.05 - 0.10	0.07 - 0.13	0.13 - 0.20
K	**Grey / White Iron**	180 - 320	Carbide	180 - 306	0.02 - 0.05	0.05 - 0.10	0.07 - 0.13	0.13 - 0.20
N	**Cast Aluminum**	30 - 180	Carbide	260 - 306	0.02 - 0.05	0.05 - 0.10	0.07 - 0.13	0.13 - 0.20
N	**Wrought Aluminum**	30 - 180	Carbide	205 - 305	0.02 - 0.07	0.05 - 0.13	0.10 - 0.15	0.15 - 0.23
N	**Aluminum Bronze**	100 - 250	Carbide	145 - 280	0.02 - 0.05	0.05 - 0.10	0.10 - 0.13	0.13 - 0.20
N	**Brass**	100	Carbide	205 - 305	0.02 - 0.05	0.05 - 0.10	0.07 - 0.13	0.13 - 0.20
N	**Copper**	60	Carbide	100 - 180	0.02 - 0.05	0.05 - 0.07	0.07 - 0.10	0.10 - 0.13
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 310	Carbide	30 - 70	0.02 - 0.05	0.05 - 0.07	0.07 - 0.13	0.10 - 0.15
S	**Titanium Alloy**	140 - 310	Carbide	40 - 90	0.02 - 0.05	0.05 - 0.07	0.07 - 0.13	0.10 - 0.15
S	**Aerospace Alloy** S82	185 - 350	Carbide	40 - 90	0.02 - 0.05	0.05 - 0.07	0.07 - 0.13	0.10 - 0.15
H	**Wear Plate**	400 - 600	Carbide	30 - 60	0.02 - 0.05	0.05 - 0.07	0.07 - 0.10	0.10 - 0.15
H	**Hardened Steel**	300 - 500	Carbide	40 - 80	0.02 - 0.05	0.05 - 0.07	0.07 - 0.10	0.10 - 0.15

NOTE: Speed not to exceed max recommended RPM for boring head.

Deep Hole Boring Speed Adjustment

⚠ For Dynamic Boring Tool Length			
Boring Type	**7xD**	**8xD**	**9xD**
Finishing	0.70	0.50	0.30

Recommended Speed Example

If the recommended speed for a finish boring assembly under 5xD is 260 m/min, then the speed for an 8xD finish boring assembly in the same application would be 260 m/min. (260 m/min x 0.50 = 130 m/min)

5xD = 260 m/min	8xD = 130 m/min

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to pages **B20: 47 - 48** for recommended application specific parameters or factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

⚠ WARNING **Assembly of modular components may cause machine damage and/or serious injury. To prevent:**
-Do not exceed the **allowable weight** for your machine tool.
-Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
For detailed guidelines on safe configurations, **please refer to pages B20: 45 - 46 or visit www.alliedmachine.com/CriterionBoringGuidelines.**

Recommended Drilling Data | Imperial (in)

CRITERION®

ISO	Material	Hardness (BHN)	Grade	Speed (SFM)	Recommended Feed (inch / tooth) Nose Radius 0.004"	0.008"	0.016"	0.031"
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 250	Carbide	525 - 975	0.001 - 0.003	0.002 - 0.005	0.004 - 0.006	0.006 - 0.009
P	**Low-Carbon Steel** 1010, 1020, 1025, 1522, etc.	85 - 275	Carbide	475 - 925	0.001 - 0.002	0.002 - 0.004	0.003 - 0.005	0.005 - 0.008
P	**Medium-Carbon Steel** 1030, 1040, 1050, 1527, etc.	125 - 325	Carbide	475 - 825	0.001 - 0.002	0.002 - 0.004	0.003 - 0.005	0.005 - 0.008
P	**Alloy Steel** 4140, 5140, 8640, etc.	125 - 375	Carbide	400 - 700	0.001 - 0.002	0.002 - 0.004	0.003 - 0.005	0.005 - 0.008
P	**High-Strength Alloy** 4340, 4330V, 300M, etc.	225 - 400	Carbide	325 - 600	0.001 - 0.002	0.002 - 0.004	0.003 - 0.005	0.005 - 0.008
P	**Structural Steel** A36, A285, A516, etc.	100 - 350	Carbide	475 - 925	0001 - 0.002	0.002 - 0.004	0.003 - 0.005	0.005 - 0.008
P	**Tool Steel** H-13, H-21, A-4, S-3, etc.	150 - 250	Carbide	325 - 600	0.001 - 0.002	0.002 - 0.003	0.003 - 0.004	0.004 - 0.006
M	**Stainless Steel 400 Series** 416, 420, etc.	185 - 350	Carbide	300 - 525	0.001 - 0.002	0.002 - 0.004	0.003 - 0.004	0.004 - 0.006
M	**Stainless Steel 300 Series** 304, 316, 17-4PH, etc.	135 - 275	Carbide	300 - 525	0.001 - 0.002	0.002 - 0.004	0.003 - 0.004	0.004 - 0.006
M	**Super Duplex Stainless Steel**	135 - 275	Carbide	300 - 525	0.001 - 0.002	0.002 - 0.004	0.003 - 0.004	0.004 - 0.006
K	**SG / Nodular Cast Iron**	120 - 320	Carbide	475 - 850	0.001 - 0.002	0.002 - 0.004	0.003 - 0.005	0.005 - 0.008
K	**Grey / White Iron**	180 - 320	Carbide	600 - 1000	0.001 - 0.002	0.002 - 0.004	0.003 - 0.005	0.005 - 0.008
N	**Cast Aluminum**	30 - 180	Carbide	850 - 1000	0.001 - 0.002	0.002 - 0.004	0.003 - 0.005	0.005 - 0.008
N	**Wrought Aluminum**	30 - 180	Carbide	675 - 1000	0.001 - 0.003	0.002 - 0.005	0.004 - 0.006	0.006 - 0.009
N	**Aluminum Bronze**	100 - 250	Carbide	475 - 925	0.001 - 0.002	0.002 - 0.004	0.004 - 0.005	0.005 - 0.008
N	**Brass**	100	Carbide	675 - 1000	0.001 - 0.002	0.002 - 0.004	0.003 - 0.005	0.005 - 0.008
N	**Copper**	60	Carbide	325 - 600	0.001 - 0.002	0.002 - 0.003	0.003 - 0.004	0.004 - 0.005
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 310	Carbide	100 - 225	0.001 - 0.002	0.002 - 0.003	0.003 - 0.005	0.004 - 0.006
S	**Titanium Alloy**	140 - 310	Carbide	125 - 300	0.001 - 0.002	0.002 - 0.003	0.003 - 0.005	0.004 - 0.006
S	**Aerospace Alloy** S82	185 - 350	Carbide	125 - 300	0.001 - 0.002	0.002 - 0.003	0.003 - 0.005	0.004 - 0.006
H	**Wear Plate**	400 - 600	Carbide	100 - 200	0.001 - 0.002	0.002 - 0.003	0.003 - 0.004	0.004 - 0.006
H	**Hardened Steel**	300 - 500	Carbide	125 - 275	0.001 - 0.002	0.002 - 0.003	0.003 - 0.004	0.004 - 0.006

NOTE: Speed not to exceed max recommended RPM for boring head.

Deep Hole Boring Speed Adjustment

⚠ For Dynamic Boring Tool Length			
Boring Type	**7xD**	**8xD**	**9xD**
Finishing	0.70	0.50	0.30

Recommended Speed Example

If the recommended speed for a finish boring assembly under 5xD is 400 SFM, then the speed for an 8xD finish boring assembly in the same application would be 200 SFM. (400 SFM x 0.50 = 200 SFM)

5xD = 400 SFM	8xD = 200 SFM

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to pages **B20: 47 - 48** for recommended application specific parameters or factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.

⚠ WARNING **Assembly of modular components may cause machine damage and/or serious injury. To prevent:**

-Do not exceed the **allowable weight** for your machine tool.
-Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
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REAMING
PRODUCT CATALOG









ALLIED MACHINE & ENGINEERING

www.alliedmachine.com

REAMER STYLES



Monobloc

- Diameter range: 5.800 mm - 32.100 mm.
- Available with central or radial through coolant.
- Can be used for through or blind holes.
- Cylindrical shanks improve concentricity.
- Expandable to accommodate for wear.



Replaceable Head

- Diameter range: 9.600 mm - 80.600 mm.
- Heads are available as fixed or expanding for improved productivity.
- Straight, left-hand, or right-hand helical flutes provide solutions for both through and blind holes.
- Cylindrical or modular shanks improve concentricity.



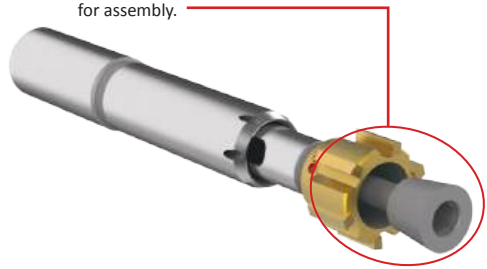
Cutting Ring

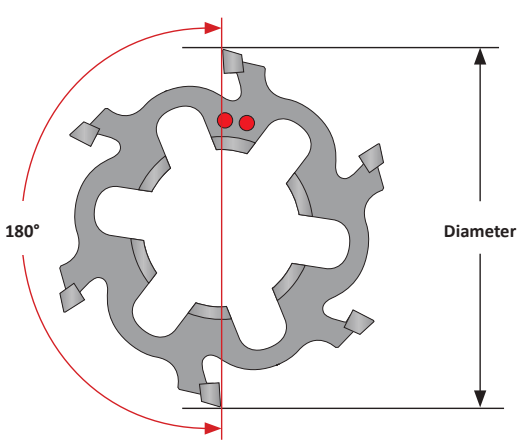
- Diameter range: 17.600 mm - 200.600 mm.
- The cutting edges are positioned asymmetrically to assure the best roundness of the hole.
- Holes with tight tolerances can be accommodated, and the expansion ensures a perfect holding of the reaming diameter.

General Reaming Notes

- If the depth is over 9xD, use a short length reamer to pilot the hole. Then finish with the longer length ⚠.
- For blind-hole applications, always use central coolant. If in doubt, contact Allied's Application Engineering department.
- More stock allowance can be taken in softer materials. Less stock allowance should be taken in harder materials.
- A common practice is to rapid out of the cut on through holes and to breakout only 2 mm past the reaming depth.

IMPORTANT: Always use Molykote® (anti-seize applicant) on the conical seat and the threads on the central screw for assembly.





NOTE: The position of the dimples indicates which two cutting teeth are 180° opposed. Diameter measurements should be taken from these two cutting teeth.

⚠ WARNING **Tool failure can cause serious injury. To prevent:**

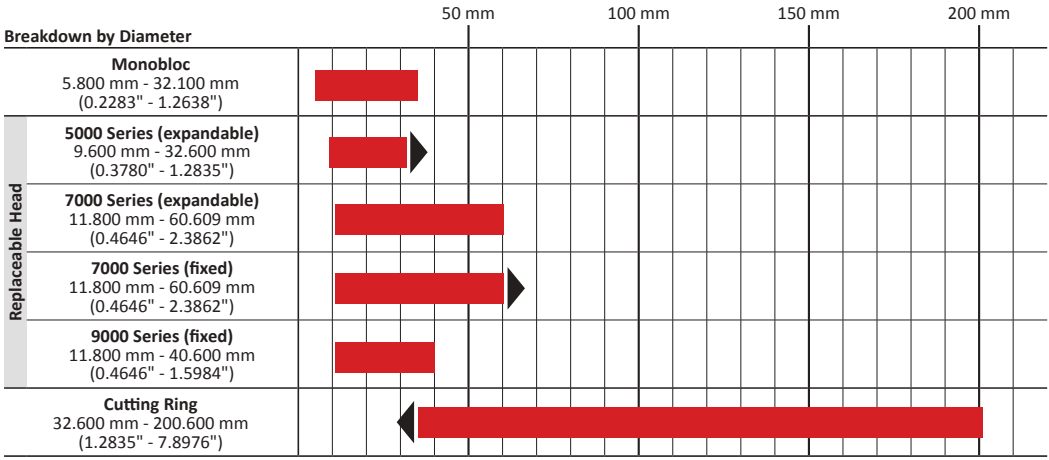
- When using holders without support bushing, use a shorter reamer to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

Reaming Overview

Quick Selection Guide

Breakdown by Diameter



▶ Any product line with a black arrow indicates that nonstandard diameters can be ordered by contacting Application Engineering.

Breakdown by Features

	Reamer Style	Capable Tolerance	Fastest Setup	Replaceable Cutting Head	Expandable to Adjust for Wear	Recondition Available	Cylindrical Shanks	Modular Shanks	Through-Coolant Options
	 Monobloc	H6			✓	✓	✓		✓
Replaceable Head	 5000 Series (expandable)	H6	✓	✓	✓		✓	✓	✓
Replaceable Head	 7000 Series (expandable)	H6		✓	✓	✓	✓	✓	✓
Replaceable Head	 7000 Series (fixed)	H7	✓	✓		✓	✓	✓	✓
Replaceable Head	 9000 Series (fixed)	H7	✓	✓			✓	✓	✓
	 Cutting Ring	H6		✓	✓	✓	✓	✓	✓

For more details on how to select a reamer, see the following pages.

Reaming Overview

How The Reamers Works

How the Reamer **Works**

- The cut is made in the lead-in zone (3), and the chip is made on the cutting face (1). The chip is removed by coolant.
- The lead-in (3) is defined depending on the application, the workpiece material, and the stock allowance.
- The radial land (2) is important for holding a good alignment, improving the surface roughness, and giving an effect similar to burnishing. The dimension of the radial land depends on the diameter.
- The radial land (2) is manufactured to be tapered on the rear.
- Fixed reamers are manufactured at the exact tapered value. Expandable reamers must be adjusted to the exact diameter. Both are already supplied at the nominal diameter by the manufacturer.
- The undercut of the cutting edge (5) avoids retract marks on the piece when the reamer is retracted from the cut.
- The front of the cutting edge (6) does not cut; if this feature is needed, a frontal lead must be supplied.

When to **Apply** a Reamer

- When the requested tolerance on diameter is IT8 or less.
- When the requested finish is 1.6 µm (63 µin) Ra or greater.
- When the critical geometry characteristics of the hole are the roundness and straightness.
- When parts are being mass produced.
- When the parts are large and expensive.

Elements of the Cutting Tooth

(1) Cutting Face

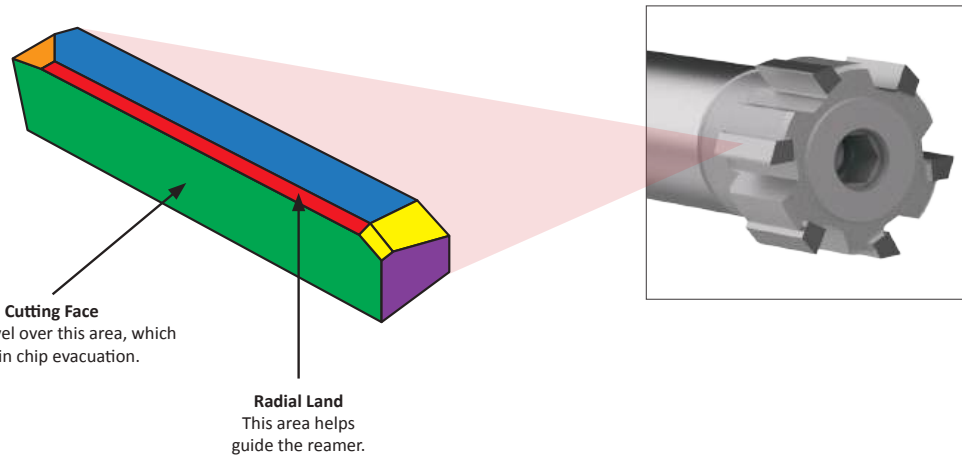
(2) Radial Land

(3) Lead-in / Primary Face / Secondary Face

(4) Rear Face

(5) Undercut of Cutting Edge

(6) Front of Cutting Edge



Reaming Overview

Reamer Recommendation Guide

	ISO Material	Hardness (BHN)	Uninterrupted Cut					Interrupted Cut		
			Lead					Lead		
			Through Hole		Blind Hole			Through Hole	Blind Hole	
			1 Straight	2 Left-Hand Helical	1 Right-Hand Helical	2 Straight	Substrate & Coating	Left-Hand Helical	Right-Hand Helical	Substrate & Coating
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	—	N, K	E	E, K	G, K	Cermet Uncoated	E	E	Carbide TiN
P	**Low-Carbon Steel** 1010, 1020, 1522, 1144, etc.	<250	N, K	E	E, K	G, K	Cermet Uncoated	E	E	Carbide TiN
P	**Medium-Carbon Steel** 1030, 1040, 1050, 1140, 1151, etc.	<300	N, K	E	E, K	G, K	Cermet Uncoated	E	E	Carbide TiAlN
P	**Alloy Steel** 4140, 5140, 8640, etc.	<350	G, K	E	E, K	G, K	Cermet Uncoated	E	E	Carbide TiAlN
P	**High-Strength Alloy** 4340, 4330V, 300M, etc.	240 - 450	G, K	M	M, K	G, K	Carbide Alcrona	M*	M	Carbide Alcrona
P	**Structural Steel**	—	G, K	E	E	G, K	Cermet Alcrona	E	E	Carbide Alcrona
P	**Tool Steel**	—	K	M	M, K	K	Carbide TiAlN	M*	M*	Carbide TiAlN
S	**High-Temp Alloy**	—	G	M	M	G	Carbide TiAlN	M*	M*	Carbide TiAlN
S	**Titanium Alloys**	—	T	—	—	T	Carbide T	E	E	Carbide T
M	**Austenitic Stainless Steel** 304, 316, etc.	—	K	M	M, K	K	Carbide Alcrona	M	M	Carbide Alcrona
M	**Ferritic Martensitic Stainless Steel** 416, 420, 17-4PH, 15-5PH, etc.	—	N	E	K	K	Cermet or Carbide Alcrona	E	E	Carbide Alcrona
K	**Ductile Cast Iron** Spheroidal - GS500	<130	V	E	E	V	Carbide Alcrona	E	E	Carbide Alcrona
K		130+	V	E	E	V	Cermet Alcrona	E	E	Carbide Alcrona
K	**Grey Cast Iron** GC15 - GC20 - GC25 - GC35	—	V	E	E	V	Carbide TiAlN	E	E	Carbide TiAlN
N	**Bronze Brass Copper**	<300	—	E	K	K	Carbide TiN	E	E	Carbide TiN
N	**Aluminum**	< 7% Si	V	E	E	V	Carbide Uncoated	E	E	Carbide Uncoated
N		7% Si+	G	E	E	G	PCD Uncoated	E	E	PCD Uncoated

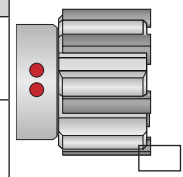
*Contact our Application Engineering department for special geometries to improve tool life.

Reaming Overview

Lead-in Angle Information

Straight Flute

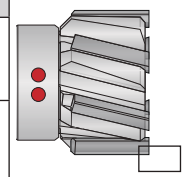
Lead-in	Angles	Chip Evacuation	Description
A	45°, 8°	⟷	Lead-in can be used to improve finish.
F	90°	⟷	Can be used for stock removal at the bottom of the hole. Reduce the feed by 40% of the values on the recommended cutting data pages.
G	45°	⟷	Standard and suitable for most materials.
L	75°	⟷	May provide improved straightness. Reduce the feed by 40% of the values on the recommended cutting data pages.
N	20°	⟷	Ideal for through holes. It is possible to increase the feed up to 100% of the values on the recommended cutting data pages.
T	30°	⟷	Suitable for titanium based alloys.
V	45°	⟷	Suitable for most materials and increases tool life.
K	80°, 0.10x45°	⟷	Excellent at breaking small chips that are easy to evacuate in blind-hole applications. Requires 50% increased feed rate, which will result in reduced tool life when compared to other leads.



Straight

Helical Flute (Right-Hand) - *Blind-hole Applications Only*

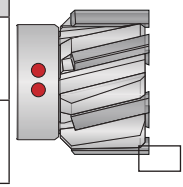
Lead-in	Angles	Chip Evacuation	Description
E	25°	←	Standard and suitable for most materials.
M	45°	←	May provide better penetration rates in steels over 200 BHN.
K	80°, 0.10x45°	←	Excellent at breaking small chips that are easy to evacuate in blind-hole applications. Requires 50% increased feed rate, which will result in reduced tool life when compared to other leads.



Helical

Helical Flute (Left-Hand) - *Through-hole Applications Only*

Lead-in	Angles	Chip Evacuation	Description
E	25°	→	Standard and suitable for most materials. **NOTE:** Through-hole applications only.
M	45°	→	May provide better penetration rates in steels over 200 BHN. **NOTE:** Through-hole applications only.



Helical

Reaming Overview

Coatings, Cutting Materials, and Dimple Indicators

Coating Information



Uncoated
Ideal for nonferrous applications.



TiN (N)
Ideal for general purpose applications.



TiAlN (A)
Provides higher heat resistance to improve tool life.



TiCN (C)
Provides improved surface finish.



Alcrona (K)
Provides excellent wear resistance and can help increase cutting speeds.



Hardcut (H)
Ideal for cast iron and hardened steel applications.



R Coating (R)
Improved tool life in cast iron materials.



T Coating (T)
Optimized tool life in titanium and very hard materials.

Cutting Material Information

Material	Indicator	Details
Carbide	K	A fine-grain carbide suitable for all conventional reaming applications. Recommended where rigidity is not excellent and speeds must be reduced.
Cermet	S	Cermet provides high wear resistance and is recommended for abrasive and increased speed applications. Not recommended for poor rigidity or interrupted cuts.

Dimple Indicators

Material	Replaceable Head Style		Monobloc Style	Cutting Ring Style
	9000 Series	7000 and 5000 Series		
Carbide	Chamfered Profile	Two Dimples	Two Dimples	Two Dimples
				
Cermet	Sharp Edge Profile	Two Dimples with Line	Two Dimples with Line	Two Dimples with Line
				

NOTE: The dimple location also indicates which two cutting teeth are 180° opposed.

SECTION

C10-RAS

Radial Adjusting Shanks

Radial Adjusting Shanks



Radial Adjusting Shanks

- Large range of shanks for different machine types.
- Highly adjustable for improved concentricity.
- All shanks are available with through coolant.

Applicable Industries

- Aerospace
- Agriculture
- Automotive
- Defense
- General Production
- Heavy Equipment
- Medical
- Oil and Gas
- Renewable Energy/ Energy
- Tool, Mold, and Die

S.C.A.M.I.®

Reference Icons

The following icons will appear throughout the catalog to help you navigate between products.



Setup / Assembly Information
Detailed instructions and information regarding the corresponding part(s).



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

WARNING means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

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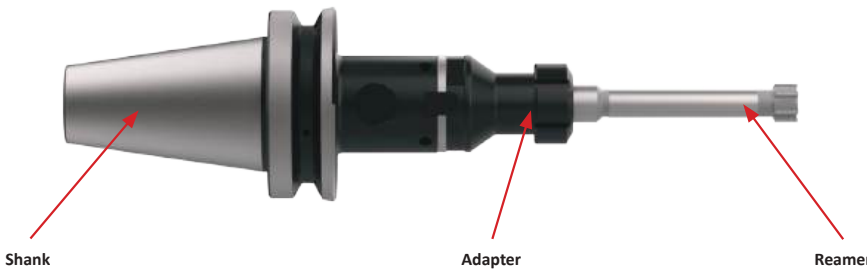
Product Overview

Cerit® System

Large range of shanks for different machine types	Highly adjustable for improved concentricity	All shanks are available with through coolant

All the Pieces You Need

Modular System courtesy of





DIN 69871/1 B and A



HSK-A DIN 69893/1



JMTBA MAS-403
BT B and BT



Straight



Collet Chuck Adapter



Cylindrical Shank Adapter

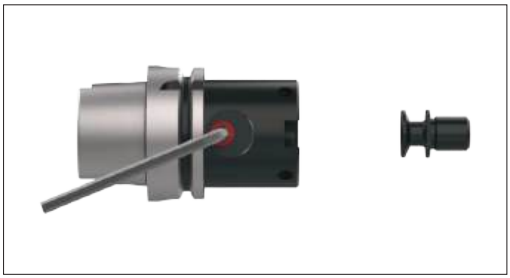
Product Overview

Setup Information

Radial Adjusting Shanks and Ring Style Arbors

The following is a quick guide for setting up a radial adjusting shank and a ring style reamer. The ring reamer arbor does not contain the tang needed to connect to the shank. The tang must first be removed from the shank and then installed into the reamer arbor (demonstrated below).

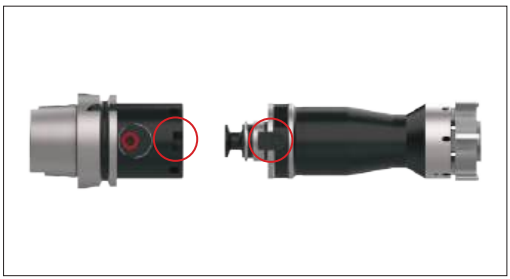




Step 1:
The tang comes installed with the shank. Loosen the clamping screw on each side and remove the tang from the shank.



Step 2:
Thread the tang into the back end of the ring arbor. Use a bench vise and wrench to tighten.



Step 3:
Assemble the ring arbor to the shank. With the clamping screws still loosened, align the key on the arbor to the keyway on the shank.

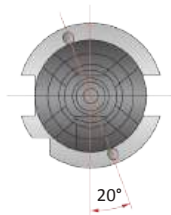


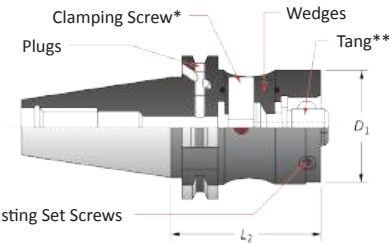
Step 4:
Once the ring arbor is connected with the shank, tighten the clamping screws to secure the tang back into place.

Radial Adjusting Shanks

DIN 69871-1 B and A | JMTBA MAS-403 BT B and BT







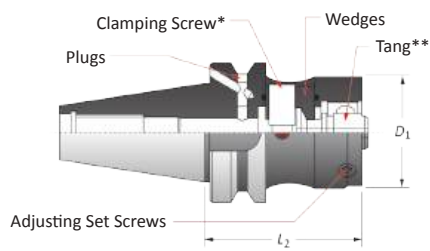
Maximum radial adjustment is ± 0.20 mm (0.008") on diameter.

Shank					Spare Parts					
ISO Taper	D_1	L_2	Retention Knob Thread Size	Part No.	Wedges + O-Ring	Clamping Screw*	Adjusting Set Screws	Plugs	Replacement Tang**	Clamping Screw Key
40	50	65	M16 x 2	**02B.40.50L.65**	ATR14102.2.3	ATR14102.1	M8x1x10G	M5x5TG	ATT14103	6 mm
	63	85	M16 x 2	**02B.40.63L.85**	ATR14108.2.3	ATR14108.1	M8x1x14G	M5x5TG	ATT14104	6 mm
45	50	70	M20 x 2.5	**02B.45.50L.70**	ATR14102.2.3	ATR14102.1	M8x1x10G	M5x5TG	ATT14103	6 mm
	63	70	M20 x 2.5	**02B.45.63L.70**	ATR14108.2.3	ATR14108.1	M8x1x14G	M5x5TG	ATT14104	6 mm
50	50	70	M24 x 3	**02B.50.50L.70**	ATR14102.2.3	ATR14102.1	M8x1x10G	M5x5TG	ATT14103	6 mm
	63	70	M24 x 3	**02B.50.63L.70**	ATR14108.2.3	ATR14108.1	M8x1x14G	M5x5TG	ATT14104	6 mm
	80	70	M24 x 3	❖ **02B.50.80L.70**	ATR18775.2.3	ATR18775.1	M8x1x20G	M5x5TG	ATT14104	6 mm

* Light torque exerted on the clamping screw transmits high axial forces, which provide stiffness and extreme accuracy to the assembly.
** Tang must be fitted to all reamer arbors and adapters prior to assembly.
❖ Could cause interference with tool changer mechanism.
NOTE: Shanks can be converted into DIN 69871/1A coolant by screwing the two plugs clockwise to the end of their stroke.







Maximum radial adjustment is ± 0.20 mm (0.008") on diameter.

Shank					Spare Parts					
BT Taper	D_1	L_2	Retention Knob Thread Size	Part No.	Wedges + O-Ring	Clamping Screw*	Adjusting Set Screws	Plugs	Replacement Tang**	Clamping Screw Key
40	50	70	M16 x 2	**BTB.40.50L.70**	ATR14102.2.3	ATR14102.1	M8x1x10G	M5x5TG	ATT14103	6 mm
	63	80	M16 x 2	**BTB.40.63L.80**	ATR14108.2.3	ATR14108.1	M8x1x14G	M5x5TG	ATT14104	6 mm
50	50	90	M24 x 3	**BTB.50.50L.90**	ATR14102.2.3	ATR14102.1	M8x1x10G	M5x5TG	ATT14103	6 mm
	63	90	M24 x 3	**BTB.50.63L.90**	ATR14108.2.3	ATR14108.1	M8x1x14G	M5x5TG	ATT14104	6 mm
	80	90	M24 x 3	**BTB.50.80L.90**	ATR18775.2.3	ATR18775.1	M8x1x20G	M5x5TG	ATT14104	6 mm

* Light torque exerted on the clamping screw transmits high axial forces, which provide stiffness and extreme accuracy to the assembly.
** Tang must be fitted to all reamer arbors and adapters prior to assembly.
NOTE: Shanks can be converted into MAS-403 BT coolant by screwing the two plugs clockwise to the end of their stroke.

C10: 3 -4
Key on C10: 2

Modular system courtesy of Ceriff.

Reference Key

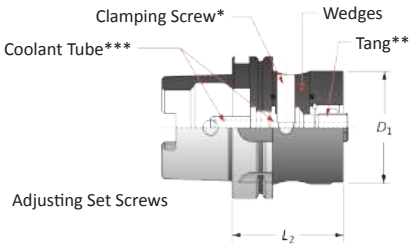
Symbol	Attribute
D_1	Modular shank size
L_2	Gage length

Radial Adjusting Shanks

HSK-A DIN 69893-1 | Straight



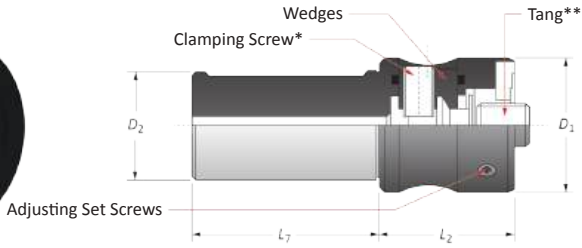




Shank				Spare Parts						
HSK	D_1	L_2	Part No.	Wedges + O-Ring	Clamping Screw*	Adjusting Set Screws	Replacement Tang**	Clamping Screw Key	Coolant Tube Key	Coolant Tube***
63	50	70	**HSKA.63.50L.70**	ATR14102.2.3	ATR14102.1	M8x1x10G	ATT14103	6 mm	ATR23856	ATT23728
	63	75	**HSKA.63.63L.75**	ATR.41613.4	ATR14108.1	M8x1x14G	ATT14104	6 mm	ATR23856	ATT23728
100	50	80	**HSKA.100.50L.80**	ATR14102.2.3	ATR14102.1	M8x1x10G	ATT14103	6 mm	ATR23856	ATT23656
	63	80	**HSKA.100.63L.80**	ATR14108.2.3	ATR14108.1	M8x1x14G	ATT14104	6 mm	ATR23856	ATT23656
	80	80	**HSKA.100.80L.80**	ATR18775.2.3	ATR18775.1	M8x1x20G	ATT14104	6 mm	ATR23856	ATT23656

* Light torque exerted on the clamping screw transmits high axial forces, which provide stiffness and extreme accuracy to the assembly.
** Tang must be fitted to all ring arbors and adapters prior to assembly.
*** Coolant tube sold separately.





Shank					Spare Parts				
D_1	D_2	L_2	L_7	Part No.	Wedges + O-Ring	Clamping Screw*	Adjusting Set Screws	Replacement Tang**	Clamping Screw Key
50	25	50	70	**CIL.25.50.50**	ATR14102.2.3	ATR14102.1	M8x1x10G	ATT14103	6 mm
	32	50	70	**CIL.32.50.50**	ATR14102.2.3	ATR14102.1	M8x1x10G	ATT14103	6 mm
	40	50	70	**CIL.40.50.50**	ATR14102.2.3	ATR14102.1	M8x1x10G	ATT14103	6 mm

* Light torque exerted on the clamping screw transmits high axial forces, which provide stiffness and extreme accuracy to the assembly.
** Tang must be fitted to all ring arbors and adapters prior to assembly.

Reference Key

Symbol	Attribute
D_1	Modular shank size
D_2	Shank diameter
L_2	Gage length
L_7	Shank length

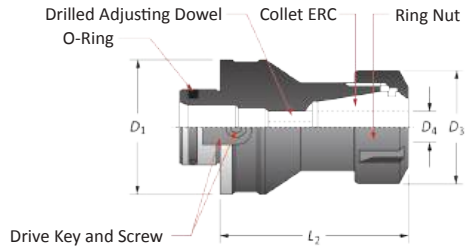
C10: 3 -4
Key on C10: 2

Modular system courtesy of Ceriff.

Radial Adjusting Adapters

Collet Chuck Adapters





Adapter						Spare Parts					
Collet Sleeve Size*	D_1	D_3	D_4	L_2	Part No.	Clamping Screw	Ring Nut	Adjusting Dowel	Drive Key	Ring Nut Wrench	Adjusting Dowel Key
ERC25	50	42	0.5 - 16 mm	70	**30.50R.25.70**	M4x8V	G25S	M12x16GF	TAB3924	CH25S	6 mm
ERC32	50	50	1 - 20 mm	70	**30.50R.32.70**	M4x8V	G32S	M16x15x18GF	TAB3924	CH32S	8 mm
ERC32	63	50	1 - 20 mm	90	**30.63R.32.90**	M6x12V	G32S	M12x16GF	TAB3923.1	CH32S	6 mm
ERC40	63	63	2 - 30 mm	90	**30.63R.40.90**	M6x12V	G40S	M20x2x20GF	TAB3923.1	CH40S	10 mm
ERC32	80	50	1 - 20 mm	90	**30.80R.32.90**	M6x16V	G32S	M12x16GF	TAB3923.2	CH32S	6 mm
ERC40	80	63	2 - 30 mm	90	**30.80R.40.90**	M6x16V	G40S	M20x2x20GF	TAB3923.2	CH40S	10 mm

*Collet sleeve not included.

Reference Key

Symbol	Attribute
D_1	Modular shank size
D_3	Body diameter
D_4	Shank diameter
L_2	Gage length

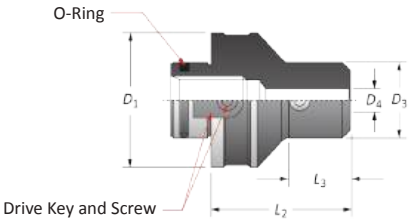
C10: 3 -4
Key on C10: 2

Modular system courtesy of Ceriè.

Radial Adjusting Adapters

Cylindrical Shank Adapters





Adapter						Spare Parts			
D_1	D_4	D_3	L_2	L_3	Part No.	Drive Key	Screw	Set Screw	Set Screw Key
50	6	25	50	22.5	**35.50R.06.50**	TAB3924	M4x8V	M6x8G	3 mm
	8	28	50	24.5	**35.50R.08.50**	TAB3924	M4x8V	M8x8G	4 mm
	10	35	50	26.5	**35.50R.10.50**	TAB3924	M4x8V	M10x10G	5 mm
	12	42	60	38.5	**35.50R.12.60**	TAB3924	M4x8V	M12x12G	6 mm
	14	44	60	42	**35.50R.14.60**	TAB3924	M4x8V	M12x12G	6 mm
	16	48	60	40	**35.50R.16.60**	TAB3924	M4x8V	M14x14G	6 mm
	18	50	60	—	**35.50R.18.60**	TAB3924	M4x8V	M14x14G	6 mm
	20	52	60	41	**35.50R.20.60**	TAB3924	M4x8V	M16x2x14G	8 mm
63	8	28	60	28	**35.63R.08.60**	TAB3923.1	M6x12V	M8x8G	4 mm
	10	35	70	40	**35.63R.10.70**	TAB3923.1	M6x12V	M10x10G	5 mm
	12	42	70	42	**35.63R.12.70**	TAB3923.1	M6x12V	M12x12G	6 mm
	14	44	60	32	**35.63R.14.60**	TAB3923.1	M6x12V	M12x12G	6 mm
	16	48	70	44	**35.63R.16.70**	TAB3923.1	M6x12V	M14x14G	6 mm
	18	50	70	40	**35.63R.18.70**	TAB3923.1	M6x12V	M14x14G	6 mm
	20	52	70	45	**35.63R.20.70**	TAB3923.1	M6x12V	M16x2x14G	8 mm
50	25	65	80	61	**40.50R.25.80**	TAB3924	M4x8V	M18x2x18G	8 mm
	32	72	80	65	**40.50R.32.80**	TAB3924	M4x8V	M20x2x18G	10 mm
63	25	65	80	58	**40.63R.25.80**	TAB3923.1	M6x12V	M18x2x18G	8 mm
	32	72	80	—	**40.63R.32.80**	TAB3923.1	M6x12V	M20x2x18G	10 mm
80	25	65	80	50.5	**40.80R.25.80**	TAB3923.2	M6x12V	M18x2x18G	8 mm
	32	72	80	54	**40.80R.32.80**	TAB3923.2	M6x12V	M20x2x18G	10 mm

Reference Key

Symbol	Attribute
D_1	Modular shank size
D_3	Body diameter
D_4	Shank diameter
L_2	Gage length
L_3	Reference length

C10: 3 -4
Key on C10: 2

Modular system courtesy of Ceriff.

SECTION

C20-MBR

Monobloc Style Reamers



MONOBLOC REAMERS

5.800 mm - 32.100 mm
(0.2283" - 1.2638")



Made for high-precision production

The monobloc reamer is an excellent replacement for solid carbide reamers because it allows for diameter expansion to accommodate for cutting edge wear. The monobloc reamer can also be repaired to new condition, which extends the life of the investment. ALVAN reamers hold tight tolerances while improving the surface finish of the hole. Our expandable option accommodates for cutting edge wear.

- Ideal for diameters under 15.00 mm (0.5906").
- Improves hole quality and surface finish.
- Expandable design accommodates for wear.

Applicable Industries

- Aerospace
- Agriculture
- Automotive
- Defense
- General Production
- Heavy Equipment
- Medical
- Oil and Gas
- Renewable Energy/ Energy
- Tool, Mold, and Die

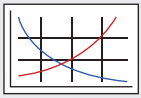
S.C.A.M.I.®

Reference Icons

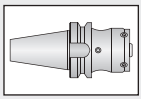
The following icons will appear throughout the catalog to help you navigate between products.



Setup / Assembly Information
Detailed instructions and information regarding the corresponding part(s).



Recommended Cutting Data
Speed and feed recommendations for optimum and safe drilling.



Modular Connection Shanks
Refers to Cerit modular shanks that can connect with reamers.



Coolant-Through Option
Indicates that the product is coolant through.

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Visit www.alliedmachine.com for the most up-to-date information and procedures.

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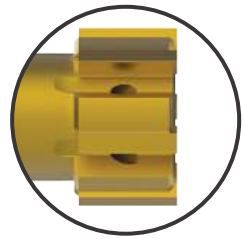
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Introduction Information

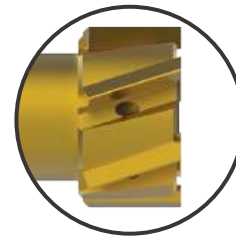
Product Overview

Monobloc Reamer Features

- Diameter range: 5.800 mm - 32.100 mm (0.2283" - 1.2638").
- Available with straight or left-hand helical flutes.
- Expands to accommodate for wear.
- Available with cylindrical shanks only.
- Workday lead time 15 - 25 days (quantity dependent).
- Available for recondition.



Straight Flute

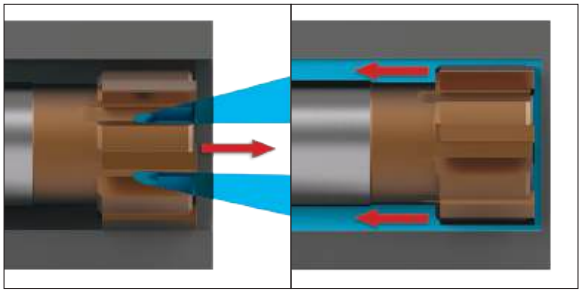


Left-Hand Helical Flute



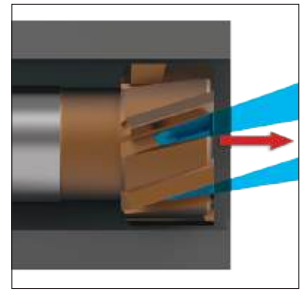
Uncoated | TiN Coated | TiAlN Coated | TiCN Coated | Alcrona Coated | Hardcut Coated | R Coated | T Coated

Straight Flute - Through or Blind Holes



Use for either through-hole or blind-hole applications. The coolant flow determines the direction of the chip evacuation.

Left-Hand Helical Flute - Through Holes Only



Use when reaming through-hole applications. The cutting action of the helical flutes forces the chips forward for evacuation.

Introduction Information

Product Nomenclature

Monobloc Style Reamers

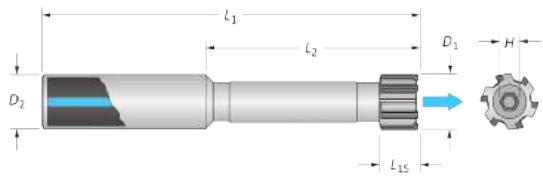
	9	3627	–	KL		E	–	06000	+	003	–	003
Diameter Unit	**Shank Measure**	**Series**		**Substrate and Coating**		**Lead-in**		**Diameter**		**Tolerance***		
Blank = Metric (mm) **I** = Imperial (in)	**Blank** = Metric (mm) **9** = Imperial (in)	**2441** **3620** **3627** **2431** **3610** **3617**		**Cermet** **KL** = Uncoated **KN** = TiN **KC** = TiCN **KA** = TiAlN **KK** = Alcrona **KH** = Hardcut **KR** = R **KT** = T	**Cermet** **SV** = Uncoated **SN** = TiN **SC** = TiCN **SA** = TiAlN **SK** = Alcrona **SH** = Hardcut **SR** = R **ST** = T	**E** **M** **A** **F** **G** **L** **N** **T** **V** **K**		**XXXXX** = X.XXXX" XX.XXX mm		**4 decimal places** = inch tolerance **3 decimal places** = mm tolerance		

*The total tolerance capable is 0.005 mm (0.0002").
NOTE: If diameter and tolerance are specified in inch units, put an "**I**" at the beginning of the item number.

C20

Reference Key

Symbol	Attribute
D_1	Reamer diameter
D_2	Shank diameter
L_1	Overall length
L_2	Body length
L_{15}	Cutting edge length
H	Hex key



PRODUCT DETAILS

Series Details

	Series	2441	3620	3627	2431	3610	3617
Flute	Straight	●	●		●	●	
	Left-hand helical			●			●
Length	Short	●	●	●			
	Long				●	●	●
Coolant	Radial		●	●		●	●
	Central	●			●		

Reamer Lead-In

	Straight Flute								Left-hand helical	
	T	F	N	G	L	A	V	K	E	M
P			●	●		◐	○	◐	●	
M			◐	●				◐	●	
K				◐			●	◐	◐	●
N				●			◐		●	◐
S	●			◐					●	◐
H			◐	●					◐	●

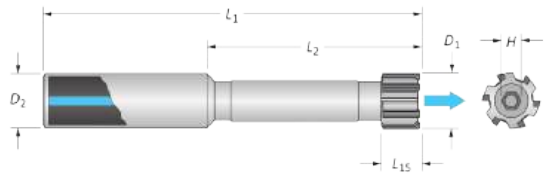
● Best ◐ Better ○ Good

NOTE: For more detailed descriptions of cutting material, lead-ins, and coatings, please see pg. **xv - xvi.**

2441 Series

Short Length





Series	2441	Flute	Straight	Application	Blind Holes	Coolant	Central

Metric Shank Part No. 2441-XXX-D_1+XXXX-XXXX					Inch Shank Part No. 92441-XXX-D_1+XXXX-XXXX					No. of Teeth	H (mm)
D_1 Range	L_{15}	L_2	L_1	D_2	D_1 Range	L_{15}	L_2	L_1	D_2		
5.800 - 6.609	8	40	80	12	0.2283 - 0.2602	0.315	1.575	3.071	0.500	4	1.5
6.610 - 7.609	8	40	80	12	0.2603 - 0.2996	0.315	1.575	3.071	0.500	4	2
7.610 - 8.609	10	40	80	12	0.2997 - 0.3389	0.394	1.575	3.071	0.500	4	2.5
8.610 - 9.609	10	50	90	12	0.3390 - 0.3783	0.394	1.969	3.465	0.500	4	2.5
9.610 - 10.609	10	50	95	12	0.3784 - 0.4177	0.394	1.969	3.740	0.500	6	3
10.610 - 11.609	10	60	105	12	0.4178 - 0.4570	0.394	1.969	3.740	0.500	6	3
11.610 - 12.609	10	60	105	12	0.4571 - 0.4964	0.394	1.969	3.740	0.500	6	3
12.610 - 13.609	10	60	105	12	0.4965 - 0.5358	0.394	1.969	3.740	0.500	6	4
13.610 - 14.609	10	70	115	12	0.5359 - 0.5752	0.394	1.969	3.740	0.500	6	4
14.610 - 15.609	10	70	115	12	0.5753 - 0.6145	0.394	1.969	3.740	0.500	6	4
15.610 - 16.609	10	80	130	16	0.6146 - 0.6539	0.394	1.969	3.937	0.625	6	4
16.610 - 17.609	10	80	130	16	0.6540 - 0.6933	0.394	1.969	3.937	0.625	6	5
17.610 - 18.609	12	90	140	16	0.6934 - 0.7326	0.472	1.969	3.937	0.625	6	5
18.610 - 19.109	12	90	150	20	0.7327 - 0.7523	0.472	2.362	4.724	0.750	6	5
19.110 - 20.109	12	100	160	20	0.7524 - 0.7917	0.472	2.362	4.724	0.750	6	5
20.110 - 21.109	12	100	160	20	0.7918 - 0.8311	0.472	2.362	4.724	0.750	6	5
21.110 - 22.109	12	100	160	20	0.8312 - 0.8704	0.472	2.362	4.724	0.750	6	6
22.110 - 23.109	12	100	160	20	0.8705 - 0.9098	0.472	2.362	4.724	0.750	6	6
23.110 - 24.109	12	100	160	20	0.9099 - 0.9492	0.472	2.362	4.724	0.750	6	6
24.110 - 25.109	12	100	160	20	0.9493 - 0.9885	0.472	2.362	4.724	0.750	6	6
25.110 - 26.109	16	110	170	25	0.9886 - 1.0279	0.472	2.953	5.315	1.000	6	6
26.110 - 27.109	16	110	170	25	1.0280 - 1.0673	0.551	2.953	5.315	1.000	6	6
27.110 - 28.109	16	110	170	25	1.0674 - 1.1067	0.551	2.953	5.315	1.000	6	8
28.110 - 29.109	16	110	170	25	1.1068 - 1.1460	0.551	2.953	5.315	1.000	6	8
29.110 - 30.109	16	110	170	25	1.1461 - 1.1854	0.551	2.953	5.315	1.000	6	8
30.110 - 31.109	16	110	170	25	1.1855 - 1.2248	0.551	2.953	5.315	1.000	6	8
31.110 - 32.100	16	110	170	25	1.2249 - 1.2638	0.551	2.953	5.315	1.000	6	8

Coating and Substrate Code (Part No. 2441-XXX-D_1+XXXX-XXXX)

Grade	Uncoated	TiN	TiCN	TiAlN	Alcrona	Hardcut	R Coating	T Coating
Carbide	KL	KN	KC	KA	KK	KH	KR	KT
Cermet	SV	SN	SC	SA	SK	SH	SR	ST

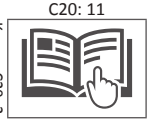
Lead-in (Part No. 2441-XXX-D_1+XXXX-XXXX)

ISO Material	T	F	N	G	L	A	V	K
P			●	●		◐	○	◐
M			◐	●				◐
K				◐			●	◐
N				●			◐	
S	●			◐				
H			◐	●				

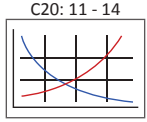
● Best ◐ Better ○ Good

Key on C20: 2

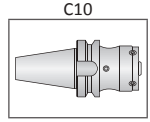
C20: 11



C20: 11 - 14



C10



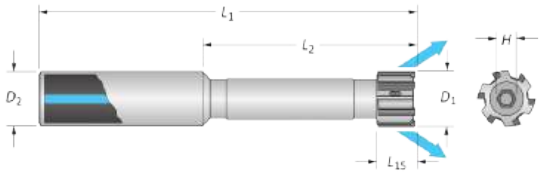
2441 – K N F – 030600 + 005 – 005

- 2441 Series - Metric Shank
- Carbide
- TiN Coating
- F Lead-in
- Diameter
- Tolerance

3620 Series

Short Length





Series	3620	Flute	Straight	Application	Through Holes	Coolant	Radial

Metric Shank Part No. 3620-XXX-D_1+XXXX-XXXX					Inch Shank Part No. 93620-XXX-D_1+XXXX-XXXX					No. of Teeth	H (mm)
D_1 Range	L_{15}	L_2	L_1	D_2	D_1 Range	L_{15}	L_2	L_1	D_2		
5.800 - 6.609	8	40	78	12	0.2283 - 0.2602	0.315	1.575	3.071	0.500	4	1.5
6.610 - 7.609	8	40	78	12	0.2603 - 0.2996	0.315	1.575	3.071	0.500	4	2
7.610 - 8.609	10	40	78	12	0.2997 - 0.3389	0.394	1.575	3.071	0.500	4	2.5
8.610 - 9.609	10	50	88	12	0.3390 - 0.3783	0.394	1.969	3.465	0.500	4	2.5
9.610 - 10.609	10	50	95	12	0.3784 - 0.4177	0.394	1.969	3.740	0.500	6	3
10.610 - 11.609	10	50	95	12	0.4178 - 0.4570	0.394	1.969	3.740	0.500	6	3
11.610 - 12.609	10	50	95	12	0.4571 - 0.4964	0.394	1.969	3.740	0.500	6	3
12.610 - 13.609	10	50	95	12	0.4965 - 0.5358	0.394	1.969	3.740	0.500	6	4
13.610 - 14.609	10	50	95	12	0.5359 - 0.5752	0.394	1.969	3.740	0.500	6	4
14.610 - 15.609	10	50	95	12	0.5753 - 0.6145	0.394	1.969	3.740	0.500	6	4
15.610 - 16.609	10	50	100	16	0.6146 - 0.6539	0.394	1.969	3.937	0.625	6	4
16.610 - 17.609	10	50	100	16	0.6540 - 0.6933	0.394	1.969	3.937	0.625	6	5
17.610 - 18.609	12	50	100	16	0.6934 - 0.7326	0.472	1.969	3.937	0.625	6	5
18.610 - 19.109	12	60	120	20	0.7327 - 0.7523	0.472	2.362	4.724	0.750	6	5
19.110 - 20.109	12	60	120	20	0.7524 - 0.7917	0.472	2.362	4.724	0.750	6	5
20.110 - 21.109	12	60	120	20	0.7918 - 0.8311	0.472	2.362	4.724	0.750	6	5
21.110 - 22.109	12	60	120	20	0.8312 - 0.8704	0.472	2.362	4.724	0.750	6	6
22.110 - 23.109	12	60	120	20	0.8705 - 0.9098	0.472	2.362	4.724	0.750	6	6
23.110 - 24.109	12	60	120	20	0.9099 - 0.9492	0.472	2.362	4.724	0.750	6	6
24.110 - 25.109	12	60	120	20	0.9493 - 0.9885	0.472	2.362	4.724	0.750	6	6
25.110 - 26.109	16	70	135	25	0.9886 - 1.0279	0.472	2.953	5.315	1.000	6	6
26.110 - 27.109	16	70	135	25	1.0280 - 1.0673	0.551	2.953	5.315	1.000	6	6
27.110 - 28.109	16	70	135	25	1.0674 - 1.1067	0.551	2.953	5.315	1.000	6	8
28.110 - 29.109	16	70	135	25	1.1068 - 1.1460	0.551	2.953	5.315	1.000	6	8
29.110 - 30.109	16	70	135	25	1.1461 - 1.1854	0.551	2.953	5.315	1.000	6	8
30.110 - 31.109	16	70	135	25	1.1855 - 1.2248	0.551	2.953	5.315	1.000	6	8
31.110 - 32.100	16	70	135	25	1.2249 - 1.2638	0.551	2.953	5.315	1.000	6	8

Coating and Substrate Code (Part No. 3620-XXX-D_1+XXXX-XXXX)

Grade	Uncoated	TiN	TiCN	TiAlN	Alcrona	Hardcut	R Coating	T Coating
Carbide	KL	KN	KC	KA	KK	KH	KR	KT
Cermet	SV	SN	SC	SA	SK	SH	SR	ST

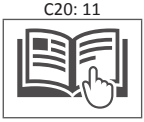
Lead-in (Part No. 3620-XXX-D_1+XXXX-XXXX)

ISO Material	T	F	N	G	L	A	V	K
P			●	●		◐	○	◐
M			◐	●				◐
K				◐			●	◐
N				●			◐	
S	●			◐				
H			◐	●				

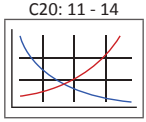
● Best ◐ Better ○ Good

Key on C20: 2

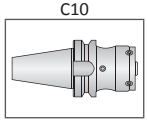
C20: 11



C20: 11 - 14



C10



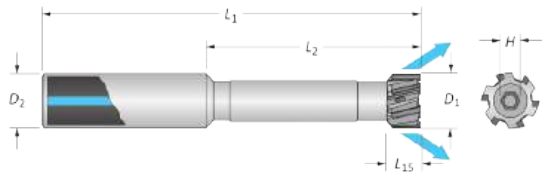
3620 – K N F – 030600 + 005 – 005

- 3620 Series - Metric Shank
- Carbide
- TiN Coating
- F Lead-in
- Diameter
- Tolerance

3627 Series

Short Length





Series	3627	Flute	Helical	Application	Through Holes	Coolant	Radial

Metric Shank Part No. 3627-XXX-D_1+XXXX-XXXX					Inch Shank Part No. 93627-XXX-D_1+XXXX-XXXX					No. of Teeth	H (mm)
D_1 Range	L_{15}	L_2	L_1	D_2	D_1 Range	L_{15}	L_2	L_1	D_2		
5.800 - 6.609	8	40	80	12	0.2283 - 0.2602	0.315	1.575	3.150	0.500	4	1.5
6.610 - 7.609	8	40	80	12	0.2603 - 0.2996	0.315	1.575	3.150	0.500	4	2
7.610 - 8.609	10	40	80	12	0.2997 - 0.3389	0.394	1.575	3.150	0.500	4	2.5
8.610 - 9.609	10	50	90	12	0.3390 - 0.3783	0.394	1.969	3.543	0.500	4	2.5
9.610 - 10.609	10	50	95	12	0.3784 - 0.4177	0.394	1.969	3.740	0.500	6	3
10.610 - 11.609	10	60	105	12	0.4178 - 0.4570	0.394	2.362	4.134	0.500	6	3
11.610 - 12.609	10	60	105	12	0.4571 - 0.4964	0.394	2.362	4.134	0.500	6	3
12.610 - 13.609	10	60	105	12	0.4965 - 0.5358	0.394	2.362	4.134	0.500	6	4
13.610 - 14.609	10	70	115	12	0.5359 - 0.5752	0.394	2.756	4.528	0.500	6	4
14.610 - 15.609	10	70	115	12	0.5753 - 0.6145	0.394	2.756	4.528	0.500	6	4
15.610 - 16.609	10	80	130	16	0.6146 - 0.6539	0.394	3.150	5.118	0.625	6	4
16.610 - 17.609	10	80	130	16	0.6540 - 0.6933	0.394	3.150	5.118	0.625	6	5
17.610 - 18.609	12	90	140	16	0.6934 - 0.7326	0.472	3.543	5.512	0.625	6	5
18.610 - 19.109	12	90	150	20	0.7327 - 0.7523	0.472	3.543	5.906	0.750	6	5
19.110 - 20.109	12	100	160	20	0.7524 - 0.7917	0.472	3.937	6.299	0.750	6	5
20.110 - 21.109	12	100	160	20	0.7918 - 0.8311	0.472	3.937	6.299	0.750	6	5
21.110 - 22.109	12	100	160	20	0.8312 - 0.8704	0.472	3.937	6.299	0.750	6	6
22.110 - 23.109	12	100	160	20	0.8705 - 0.9098	0.472	3.937	6.299	0.750	6	6
23.110 - 24.109	12	100	160	20	0.9099 - 0.9492	0.472	3.937	6.299	0.750	6	6
24.110 - 25.109	12	100	160	20	0.9493 - 0.9885	0.472	3.937	6.299	0.750	6	6
25.110 - 26.109	16	110	170	25	0.9886 - 1.0279	0.472	4.331	6.693	1.000	6	6
26.110 - 27.109	16	110	170	25	1.0280 - 1.0673	0.551	4.331	6.693	1.000	6	6
27.110 - 28.109	16	110	170	25	1.0674 - 1.1067	0.551	4.331	6.693	1.000	6	8
28.110 - 29.109	16	110	170	25	1.1068 - 1.1460	0.551	4.331	6.693	1.000	6	8
29.110 - 30.109	16	110	170	25	1.1461 - 1.1854	0.551	4.331	6.693	1.000	6	8
30.110 - 31.109	16	110	170	25	1.1855 - 1.2248	0.551	4.331	6.693	1.000	6	8
31.110 - 32.100	16	110	170	25	1.2249 - 1.2638	0.551	4.331	6.693	1.000	6	8

Coating and Substrate Code (Part No. 3627-XXX-D_1+XXXX-XXXX)

Grade	Uncoated	TiN	TiCN	TiAlN	Alcrona	Hardcut	R Coating	T Coating
Carbide	KL	KN	KC	KA	KK	KH	KR	KT
Cermet	SV	SN	SC	SA	SK	SH	SR	ST

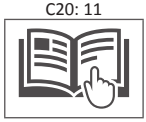
Lead-in (Part No. 3627-XXX-D_1+XXXX-XXXX)

ISO Material	E	M
P	●	
M	●	
K	◐	●
N	●	◐
S	●	◐
H	◐	●

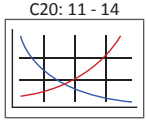
● Best ◐ Better ○ Good

Key on C20: 2

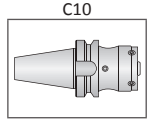
C20: 11



C20: 11 - 14



C10



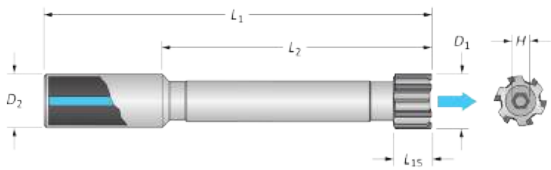
3627 – K N F – 030600 + 005 – 005

- 3627 Series - Metric Shank
- Carbide
- TiN Coating
- F Lead-in
- Diameter
- Tolerance

2431 Series

Long Length





C20

Series	2431	Flute	Straight	Application	Blind Holes	Coolant	Central

Metric Shank Part No. 2431-XXX-D_1+XXXX-XXXX					Inch Shank Part No. 92431-XXX-D_1+XXXX-XXXX					No. of Teeth	H (mm)
D_1 Range	L_{15}	L_2	L_1	D_2	D_1 Range	L_{15}	L_2	L_1	D_2		
5.800 - 6.609	8	85	123	12	0.2283 - 0.2602	0.315	3.346	4.843	0.500	4	1.5
6.610 - 7.609	8	85	123	12	0.2603 - 0.2996	0.315	3.346	4.843	0.500	4	2
7.610 - 8.609	10	85	123	12	0.2997 - 0.3389	0.394	3.346	4.843	0.500	4	2.5
8.610 - 9.609	10	85	123	12	0.3390 - 0.3783	0.394	3.346	4.843	0.500	4	2.5
9.610 - 10.609	10	115	160	12	0.3784 - 0.4177	0.394	4.528	6.299	0.500	6	3
10.610 - 11.609	10	115	160	12	0.4178 - 0.4570	0.394	4.528	6.299	0.500	6	3
11.610 - 12.609	10	115	160	12	0.4571 - 0.4964	0.394	4.528	6.299	0.500	6	3
12.610 - 13.609	10	115	160	12	0.4965 - 0.5358	0.394	4.528	6.299	0.500	6	4
13.610 - 14.609	10	115	160	12	0.5359 - 0.5752	0.394	4.528	6.299	0.500	6	4
14.610 - 15.609	10	115	160	12	0.5753 - 0.6145	0.394	4.528	6.299	0.500	6	4
15.610 - 16.609	10	130	180	16	0.6146 - 0.6539	0.394	5.118	7.087	0.625	6	4
16.610 - 17.609	10	130	180	16	0.6540 - 0.6933	0.394	5.118	7.087	0.625	6	5
17.610 - 18.609	12	130	180	16	0.6934 - 0.7326	0.472	5.118	7.087	0.625	6	5
18.610 - 19.109	12	140	200	20	0.7327 - 0.7523	0.472	5.512	7.874	0.750	6	5
19.110 - 20.109	12	140	200	20	0.7524 - 0.7917	0.472	5.512	7.874	0.750	6	5
20.110 - 21.109	12	140	200	20	0.7918 - 0.8311	0.472	5.512	7.874	0.750	6	5
21.110 - 22.109	12	140	200	20	0.8312 - 0.8704	0.472	5.512	7.874	0.750	6	6
22.110 - 23.109	12	140	200	20	0.8705 - 0.9098	0.472	5.512	7.874	0.750	6	6
23.110 - 24.109	12	140	200	20	0.9099 - 0.9492	0.472	5.512	7.874	0.750	6	6
24.110 - 25.109	12	140	200	20	0.9493 - 0.9885	0.472	5.512	7.874	0.750	6	6
25.110 - 26.109	16	150	210	25	0.9886 - 1.0279	0.472	5.906	8.268	1.000	6	6
26.110 - 27.109	16	150	210	25	1.0280 - 1.0673	0.551	5.906	8.268	1.000	6	6
27.110 - 28.109	16	150	210	25	1.0674 - 1.1067	0.551	5.906	8.268	1.000	6	8
28.110 - 29.109	16	150	210	25	1.1068 - 1.1460	0.551	5.906	8.268	1.000	6	8
29.110 - 30.109	16	150	210	25	1.1461 - 1.1854	0.551	5.906	8.268	1.000	6	8
30.110 - 31.109	16	150	210	25	1.1855 - 1.2248	0.551	5.906	8.268	1.000	6	8
31.110 - 32.100	16	150	210	25	1.2249 - 1.2638	0.551	5.906	8.268	1.000	6	8

Coating and Substrate Code (Part No. 2431-XXX-D_1+XXXX-XXXX)

Grade	Uncoated	TiN	TiCN	TiAlN	Alcrona	Hardcut	R Coating	T Coating
Carbide	KL	KN	KC	KA	KK	KH	KR	KT
Cermet	SV	SN	SC	SA	SK	SH	SR	ST

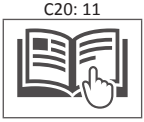
Lead-in (Part No. 2431-XXX-D_1+XXXX-XXXX)

ISO Material	T	F	N	G	L	A	V	K
P			●	●		◐	○	◐
M			◐	●				◐
K				◐			●	◐
N				●			◐	
S	●			◐				
H			◐	●				

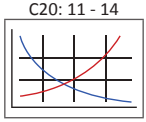
● Best ◐ Better ○ Good

Key on C20: 2

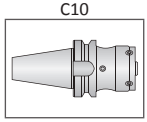
C20: 11



C20: 11 - 14



C10



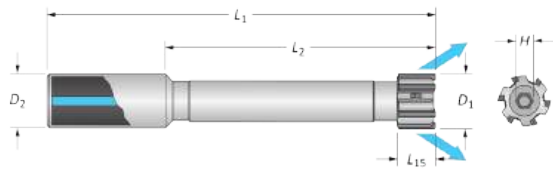
2431 – K N F – 030600 + 005 – 005

- 2431 – 2441 Series - Metric Shank
- K – Carbide
- N – TiN Coating
- F – F Lead-in
- 030600 – Diameter
- 005 – 005 – Tolerance

3610 Series

Long Length





Series	3610	Flute	Straight	Application	Through Holes	Coolant	Radial

Metric Shank Part No. 3610-XXX-D_1+XXXX-XXXX					Inch Shank Part No. 93610-XXX-D_1+XXXX-XXXX					No. of Teeth	H (mm)
D_1 Range	L_{15}	L_2	L_1	D_2	D_1 Range	L_{15}	L_2	L_1	D_2		
5.800 - 6.609	8	85	123	12	0.2283 - 0.2602	0.315	3.346	4.843	0.500	4	1.5
6.610 - 7.609	8	85	123	12	0.2603 - 0.2996	0.315	3.346	4.843	0.500	4	2
7.610 - 8.609	10	85	123	12	0.2997 - 0.3389	0.394	3.346	4.843	0.500	4	2.5
8.610 - 9.609	10	85	123	12	0.3390 - 0.3783	0.394	3.346	4.843	0.500	4	2.5
9.610 - 10.609	10	115	160	12	0.3784 - 0.4177	0.394	4.528	6.299	0.500	6	3
10.610 - 11.609	10	115	160	12	0.4178 - 0.4570	0.394	4.528	6.299	0.500	6	3
11.610 - 12.609	10	115	160	12	0.4571 - 0.4964	0.394	4.528	6.299	0.500	6	3
12.610 - 13.609	10	115	160	12	0.4965 - 0.5358	0.394	4.528	6.299	0.500	6	4
13.610 - 14.609	10	115	160	12	0.5359 - 0.5752	0.394	4.528	6.299	0.500	6	4
14.610 - 15.609	10	115	160	12	0.5753 - 0.6145	0.394	4.528	6.299	0.500	6	4
15.610 - 16.609	10	130	180	16	0.6146 - 0.6539	0.394	5.118	7.087	0.625	6	4
16.610 - 17.609	10	130	180	16	0.6540 - 0.6933	0.394	5.118	7.087	0.625	6	5
17.610 - 18.609	12	130	180	16	0.6934 - 0.7326	0.472	5.118	7.087	0.625	6	5
18.610 - 19.109	12	140	200	20	0.7327 - 0.7523	0.472	5.512	7.874	0.750	6	5
19.110 - 20.109	12	140	200	20	0.7524 - 0.7917	0.472	5.512	7.874	0.750	6	5
20.110 - 21.109	12	140	200	20	0.7918 - 0.8311	0.472	5.512	7.874	0.750	6	5
21.110 - 22.109	12	140	200	20	0.8312 - 0.8704	0.472	5.512	7.874	0.750	6	6
22.110 - 23.109	12	140	200	20	0.8705 - 0.9098	0.472	5.512	7.874	0.750	6	6
23.110 - 24.109	12	140	200	20	0.9099 - 0.9492	0.472	5.512	7.874	0.750	6	6
24.110 - 25.109	12	140	200	20	0.9493 - 0.9885	0.472	5.512	7.874	0.750	6	6
25.110 - 26.109	16	150	210	25	0.9886 - 1.0279	0.472	5.906	8.268	1.000	6	6
26.110 - 27.109	16	150	210	25	1.0280 - 1.0673	0.551	5.906	8.268	1.000	6	6
27.110 - 28.109	16	150	210	25	1.0674 - 1.1067	0.551	5.906	8.268	1.000	6	8
28.110 - 29.109	16	150	210	25	1.1068 - 1.1460	0.551	5.906	8.268	1.000	6	8
29.110 - 30.109	16	150	210	25	1.1461 - 1.1854	0.551	5.906	8.268	1.000	6	8
30.110 - 31.109	16	150	210	25	1.1855 - 1.2248	0.551	5.906	8.268	1.000	6	8
31.110 - 32.100	16	150	210	25	1.2249 - 1.2638	0.551	5.906	8.268	1.000	6	8

Coating and Substrate Code (Part No. 3610-XXX-D_1+XXXX-XXXX)

Grade	Uncoated	TiN	TiCN	TiAlN	Alcrona	Hardcut	R Coating	T Coating
Carbide	KL	KN	KC	KA	KK	KH	KR	KT
Cermet	SV	SN	SC	SA	SK	SH	SR	ST

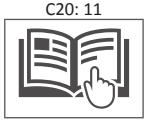
Lead-in (Part No. 3610-XXX-D_1+XXXX-XXXX)

ISO Material	T	F	N	G	L	A	V	K
P			●	●		◐	○	◐
M			◐	●				◐
K				◐			●	◐
N				●			◐	
S	●			◐				
H			◐	●				

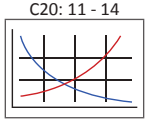
● Best ◐ Better ○ Good

Key on C20: 2

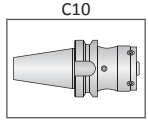
C20: 11



C20: 11 - 14



C10



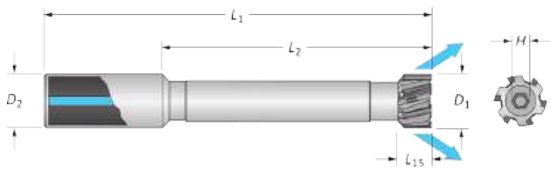
3610 – K N F – 030600 + 005 – 005

- 3610 Series - Metric Shank
- Carbide
- TiN Coating
- F Lead-in
- Diameter
- Tolerance

3617 Series

Long Length





C20

Series	3617	Flute	Helical	Application	Through Holes	Coolant	Radial

Metric Shank Part No. 3617-XXX-D_1+XXXX-XXXX					Inch Shank Part No. 93617-XXX-D_1+XXXX-XXXX					No. of Teeth	H (mm)
D_1 Range	L_{15}	L_2	L_1	D_2	D_1 Range	L_{15}	L_2	L_1	D_2		
5.800 - 6.609	8	85	123	12	0.2283 - 0.2602	0.315	3.346	4.843	0.500	4	1.5
6.610 - 7.609	8	85	123	12	0.2603 - 0.2996	0.315	3.346	4.843	0.500	4	2
7.610 - 8.609	10	85	123	12	0.2997 - 0.3389	0.394	3.346	4.843	0.500	4	2.5
8.610 - 9.609	10	85	123	12	0.3390 - 0.3783	0.394	3.346	4.843	0.500	4	2.5
9.610 - 10.609	10	115	160	12	0.3784 - 0.4177	0.394	4.528	6.299	0.500	6	3
10.610 - 11.609	10	115	160	12	0.4178 - 0.4570	0.394	4.528	6.299	0.500	6	3
11.610 - 12.609	10	115	160	12	0.4571 - 0.4964	0.394	4.528	6.299	0.500	6	3
12.610 - 13.609	10	115	160	12	0.4965 - 0.5358	0.394	4.528	6.299	0.500	6	4
13.610 - 14.609	10	115	160	12	0.5359 - 0.5752	0.394	4.528	6.299	0.500	6	4
14.610 - 15.609	10	115	160	12	0.5753 - 0.6145	0.394	4.528	6.299	0.500	6	4
15.610 - 16.609	10	130	180	16	0.6146 - 0.6539	0.394	5.118	7.087	0.625	6	4
16.610 - 17.609	10	130	180	16	0.6540 - 0.6933	0.394	5.118	7.087	0.625	6	5
17.610 - 18.609	12	130	180	16	0.6934 - 0.7326	0.472	5.118	7.087	0.625	6	5
18.610 - 19.109	12	140	200	20	0.7327 - 0.7523	0.472	5.512	7.874	0.750	6	5
19.110 - 20.109	12	140	200	20	0.7524 - 0.7917	0.472	5.512	7.874	0.750	6	5
20.110 - 21.109	12	140	200	20	0.7918 - 0.8311	0.472	5.512	7.874	0.750	6	5
21.110 - 22.109	12	140	200	20	0.8312 - 0.8704	0.472	5.512	7.874	0.750	6	6
22.110 - 23.109	12	140	200	20	0.8705 - 0.9098	0.472	5.512	7.874	0.750	6	6
23.110 - 24.109	12	140	200	20	0.9099 - 0.9492	0.472	5.512	7.874	0.750	6	6
24.110 - 25.109	12	140	200	20	0.9493 - 0.9885	0.472	5.512	7.874	0.750	6	6
25.110 - 26.109	16	150	210	25	0.9886 - 1.0279	0.472	5.906	8.268	1.000	6	6
26.110 - 27.109	16	150	210	25	1.0280 - 1.0673	0.551	5.906	8.268	1.000	6	6
27.110 - 28.109	16	150	210	25	1.0674 - 1.1067	0.551	5.906	8.268	1.000	6	8
28.110 - 29.109	16	150	210	25	1.1068 - 1.1460	0.551	5.906	8.268	1.000	6	8
29.110 - 30.109	16	150	210	25	1.1461 - 1.1854	0.551	5.906	8.268	1.000	6	8
30.110 - 31.109	16	150	210	25	1.1855 - 1.2248	0.551	5.906	8.268	1.000	6	8
31.110 - 32.100	16	150	210	25	1.2249 - 1.2638	0.551	5.906	8.268	1.000	6	8

Coating and Substrate Code (Part No. 3617-XXX-D_1+XXXX-XXXX)

Grade	Uncoated	TiN	TiCN	TiAlN	Alcrona	Hardcut	R Coating	T Coating
Carbide	KL	KN	KC	KA	KK	KH	KR	KT
Cermet	SV	SN	SC	SA	SK	SH	SR	ST

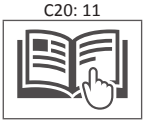
Lead-in (Part No. 3617-XXX-D_1+XXXX-XXXX)

ISO Material	E	M
P	●	
M	●	
K	◐	●
N	●	◐
S	●	◐
H	◐	●

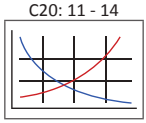
● Best ◐ Better ○ Good

Key on C20: 2

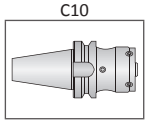
C20: 11



C20: 11 - 14



C10



3617 – K N F – 030600 + 005 – 005

- 3617 Series - Metric Shank
- Carbide
- TiN Coating
- F Lead-in
- Diameter
- Tolerance

Setup Information





Tolerance

All monobloc reamers are ground to the requested diameter and set in the middle of the hole tolerance ready for use.

Adjustment

The adjustment must be made to compensate for wear to the cutting edges when the size reaches its lower tolerance. This operation can be repeated several times until the surface finish of the hole deteriorates to an unacceptable level. Then the reamer must be reground. The maximum expansion is about 1% of the diameter.

Notes

Recommended Drilling Data | Metric (mm)

MONOBLOC

ISO	Material	Hardness (BHN)	Speed (m/min) Uncoated Carbide	Coated Carbide	Cermet
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 180	7 - 15	60 - 80	90 - 300
		180 - 250	6 - 10	40 - 70	80 - 200
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180	7 - 15	60 - 80	90 - 300
		180 - 275	6 - 10	40 - 70	80 - 200
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180	7 - 15	60 - 80	90 - 300
		180 - 325	6 - 10	40 - 70	80 - 200
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180	6 - 10	40 - 70	80 - 200
		180 - 375	4 - 8	30 - 50	60 - 150
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450	3 - 6	15 - 30	60 - 120
	Structural Steel A36, A285, A516, etc.	125 - 180	7 - 15	60 - 80	90 - 300
		180 - 350	6 - 10	40 - 70	80 - 200
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	7 - 15	60 - 80	90 - 300
		200 - 250	6 - 10	40 - 70	80 - 200
M	**Stainless Steel 400 Series** 416, 420, etc.	135 - 350	4 - 10	30 - 50	60 - 150
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275	4 - 10	30 - 50	60 - 150
K	**Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)**	< 200	15 - 30	50 - 70	—
		> 200	10 - 20	50 - 70	—
	Spheroidal Cast Iron (Ferritic)	260 - 320	8 - 12	30 - 50	60 - 120
N	**Copper and Alloys, and Brass**	< 500	10 - 18	100 - 200	—
	Bronze, and Bronze Phosphorous	< 180	10 - 20	80 - 160	100 - 300
	Aluminum and Alloys	< 150	15 - 30	100 - 200	—
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 310	4 - 10	30 - 50	—
	Titanium Alloy	140 - 310	4 - 15	30 - 50	—

Formulas

1. **RPM = (318.47 • m/min) / DIA**

where:

RPM	= revolutions per minute (rev/min)
m/min	= speed (m/min)
DIA	= diameter of drill (mm)

2. **mm/min = RPM • mm/rev**

where:

mm/min	= mm per minute (mm/min)
RPM	= revolutions per minute (rev/min)
mm/rev	= feed rate (mm/rev)

3. **m/min = RPM • 0.003 • DIA**

where:

m/min	= speed (m/min)
RPM	= revolutions per minute (rev/min)
DIA	= diameter of drill (mm)

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Factory technical assistance is available through our Application Engineering department.

Recommended Drilling Data | Metric (mm)

MONOBLOC

Recommended Feed (mm/rev) by Reamer Diameter					
5.80 mm - 10.00 mm		10.01 mm - 22.00 mm		22.01 mm - 32.10 mm	
Lead A, G	Lead E, N, M	Lead A, G	Lead E, N, M	Lead A, G	Lead E, N, M
0.20 - 0.40	0.30 - 0.60	0.40 - 0.60	0.40 - 1.00	0.50 - 0.80	0.60 - 1.20
0.20 - 0.40	0.30 - 0.50	0.30 - 0.60	0.30 - 0.80	0.40 - 0.70	0.40 - 1.00
0.20 - 0.40	0.30 - 0.60	0.40 - 0.60	0.40 - 1.00	0.50 - 0.80	0.60 - 1.20
0.20 - 0.40	0.30 - 0.50	0.30 - 0.60	0.30 - 0.80	0.40 - 0.70	0.40 - 1.00
0.20 - 0.40	0.30 - 0.60	0.40 - 0.60	0.40 - 1.00	0.50 - 0.80	0.60 - 1.20
0.20 - 0.40	0.30 - 0.50	0.30 - 0.60	0.30 - 0.80	0.40 - 0.70	0.40 - 1.00
0.20 - 0.40	0.30 - 0.60	0.40 - 0.60	0.40 - 1.00	0.50 - 0.80	0.60 - 1.20
0.20 - 0.40	0.30 - 0.50	0.30 - 0.60	0.30 - 0.80	0.40 - 0.70	0.40 - 1.00
0.15 - 0.30	0.20 - 0.40	0.20 - 0.50	0.30 - 0.60	0.30 - 0.60	0.40 - 0.80
0.20 - 0.40	0.30 - 0.60	0.40 - 0.60	0.40 - 1.00	0.50 - 0.80	0.60 - 1.20
0.20 - 0.40	0.30 - 0.50	0.30 - 0.60	0.30 - 0.80	0.40 - 0.70	0.40 - 1.00
0.20 - 0.40	0.30 - 0.60	0.40 - 0.60	0.40 - 1.00	0.50 - 0.80	0.60 - 1.20
0.20 - 0.40	0.30 - 0.50	0.30 - 0.60	0.30 - 0.80	0.40 - 0.70	0.40 - 1.00
0.20 - 0.40	0.30 - 0.50	0.30 - 0.60	0.30 - 0.80	0.40 - 0.70	0.40 - 1.00
0.20 - 0.40	0.30 - 0.50	0.30 - 0.60	0.30 - 0.80	0.40 - 0.70	0.40 - 1.00
0.20 - 0.40	0.30 - 0.60	0.35 - 0.60	0.50 - 0.80	0.40 - 1.00	0.60 - 1.50
0.20 - 0.40	0.30 - 0.60	0.35 - 0.60	0.50 - 0.80	0.40 - 1.00	0.60 - 1.50
0.20 - 0.40	0.30 - 0.60	0.35 - 0.60	0.50 - 0.80	0.40 - 1.00	0.60 - 1.50
0.20 - 0.40	—	0.40 - 0.70	—	0.50 - 0.80	—
0.15 - 0.30	—	0.20 - 0.40	—	0.30 - 0.60	—
0.20 - 0.40	—	0.40 - 0.70	—	0.50 - 0.80	—
0.15 - 0.30	—	0.20 - 0.40	—	0.30 - 0.50	—
0.15 - 0.30	—	0.20 - 0.40	—	0.30 - 0.50	—

Recommended Drilling Data | Imperial (in)

MONOBLOC

ISO	Material	Hardness (BHN)	Speed (SFM) Uncoated Carbide	Coated Carbide	Cermet
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 180	25 - 50	200 - 260	300 - 980
		180 - 250	20 - 35	130 - 230	260 - 660
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180	25 - 50	200 - 260	300 - 980
		180 - 275	20 - 35	130 - 230	260 - 660
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180	25 - 50	200 - 260	300 - 980
		180 - 325	20 - 35	130 - 230	260 - 660
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180	20 - 35	130 - 230	260 - 660
		180 - 375	15 - 25	100 - 160	200 - 490
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450	10 - 20	50 - 100	200 - 390
	Structural Steel A36, A285, A516, etc.	125 - 180	25 - 50	200 - 260	300 - 980
		180 - 350	20 - 35	130 - 230	260 - 660
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	25 - 50	200 - 260	300 - 980
		200 - 250	20 - 35	130 - 230	260 - 660
M	**Stainless Steel 400 Series** 416, 420, etc.	135 - 350	15 - 25	100 - 160	200 - 490
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275	15 - 25	100 - 160	200 - 490
K	**Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)**	< 200	50 - 100	160 - 230	—
		> 200	35 - 65	160 - 230	—
	Spheroidal Cast Iron (Ferritic)	260 - 320	25 - 40	100 - 160	200 - 400
N	**Copper and Alloys, and Brass**	< 500	35 - 60	330 - 660	—
	Bronze, and Bronze Phosphorous	< 180	35 - 65	260 - 520	330 - 980
	Aluminum and Alloys	< 150	50 - 100	330 - 660	—
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 310	15 - 25	60 - 200	—
	Titanium Alloy	140 - 310	15 - 25	60 - 200	—

Formulas

1. **RPM = (3.82 • SFM) / DIA**

where:

RPM = revolutions per minute (rev/min)
SFM = speed (ft/min)
DIA = diameter of drill (inch)

2. **IPM = RPM • IPR**

where:

IPM = inches per minute (in/min)
RPM = revolutions per minute (rev/min)
IPR = feed rate (in/rev)

3. **SFM = RPM • 0.262 • DIA**

where:

SFM = speed (ft/min)
RPM = revolutions per minute (rev/min)
DIA = diameter of drill (inch)

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Factory technical assistance is available through our Application Engineering department.

Recommended Drilling Data | Imperial (in)

MONOBLOC

Recommended Feed (IPR) by Reamer Diameter					
0.2283" - 0.3940"		0.3941" - 0.7090"		0.7091" - 1.2638"	
Lead A, G	Lead E, N, M	Lead A, G	Lead E, N, M	Lead A, G	Lead E, N, M
0.008 - 0.016	0.012 - 0.024	0.016 - 0.024	0.016 - 0.047	0.020 - 0.031	0.024 - 0.047
0.008 - 0.016	0.012 - 0.020	0.012 - 0.024	0.012 - 0.031	0.016 - 0.028	0.016 - 0.047
0.008 - 0.016	0.012 - 0.024	0.016 - 0.024	0.016 - 0.047	0.020 - 0.031	0.024 - 0.047
0.008 - 0.016	0.012 - 0.020	0.012 - 0.024	0.012 - 0.031	0.016 - 0.028	0.016 - 0.047
0.008 - 0.016	0.012 - 0.024	0.016 - 0.024	0.016 - 0.047	0.020 - 0.031	0.024 - 0.047
0.008 - 0.016	0.012 - 0.020	0.012 - 0.024	0.012 - 0.031	0.016 - 0.028	0.016 - 0.047
0.008 - 0.016	0.012 - 0.024	0.016 - 0.024	0.016 - 0.047	0.020 - 0.031	0.024 - 0.047
0.008 - 0.016	0.012 - 0.020	0.012 - 0.024	0.012 - 0.031	0.016 - 0.028	0.016 - 0.047
0.006 - 0.012	0.008 - 0.016	0.008 - 0.020	0.012 - 0.024	0.012 - 0.024	0.016 - 0.031
0.008 - 0.016	0.012 - 0.024	0.016 - 0.024	0.016 - 0.047	0.020 - 0.031	0.024 - 0.047
0.008 - 0.016	0.012 - 0.020	0.012 - 0.024	0.012 - 0.031	0.016 - 0.028	.0016 - 0.047
0.008 - 0.016	0.012 - 0.024	0.016 - 0.024	0.016 - 0.047	0.020 - 0.031	0.024 - 0.047
0.008 - 0.016	0.012 - 0.020	0.012 - 0.024	0.012 - 0.031	0.016 - 0.028	0.016 - 0.047
0.008 - 0.016	0.012 - 0.020	0.012 - 0.024	0.012 - 0.031	0.016 - 0.028	0.016 - 0.047
0.008 - 0.016	0.012 - 0.020	0.012 - 0.024	0.012 - 0.031	0.016 - 0.028	0.016 - 0.047
0.008 - 0.016	0.012 - 0.024	0.014 - 0.024	0.020 - 0.031	0.016 - 0.047	0.024 - 0.059
0.008 - 0.016	0.012 - 0.024	0.014 - 0.024	0.020 - 0.031	0.016 - 0.047	0.024 - 0.059
0.008 - 0.016	0.012 - 0.024	0.014 - 0.024	0.020 - 0.031	0.016 - 0.047	0.024 - 0.059
0.008 - 0.016	—	0.016 - 0.028	—	0.020 - 0.031	—
0.006 - 0.012	—	0.008 - 0.016	—	0.012 - 0.024	—
0.008 - 0.016	—	0.016 - 0.028	—	0.020 - 0.031	—
0.006 - 0.012	—	0.008 - 0.016	—	0.012 - 0.020	—
0.006 - 0.012	—	0.008 - 0.016	—	0.012 - 0.020	—

Stock Allowance and Coolant | Metric (mm)

MONOBLOC

ISO	Material	Hardness (BHN)	Coolant	Recommended Stock (mm) by Reamer Diameter* 5.80 mm - 10.00 mm	10.01 mm - 22.00 mm	22.01 mm - 32.10 mm
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 180	Water Soluble / Cutting Oil	0.08 - 0.15	0.15 - 0.25	0.15 - 0.30
		180 - 250				
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180				
		180 - 275				
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180				
		180 - 325				
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180				
		180 - 375				
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450				
	Structural Steel A36, A285, A516, etc.	125 - 180				
		180 - 350				
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200				
		200 - 250				
M	**Stainless Steel 400 Series** 416, 420, etc.	135 - 350	Water Soluble / Cutting Oil	0.08 - 0.15	0.15 - 0.25	0.15 - 0.30
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275				
K	**Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)**	< 200	Water Soluble / Cutting Oil	0.08 - 0.15	0.15 - 0.25	0.15 - 0.30
		> 200				
	Spheroidal Cast Iron (Ferritic)	260 - 320				
N	**Copper and Alloys, and Brass**	< 500	Water Soluble	0.08 - 0.15	0.15 - 0.25	0.15 - 0.30
	Bronze, and Bronze Phosphorous	< 180	Water Soluble / Cutting Oil			
	Aluminum and Alloys	< 150				
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 310	Water Soluble / Cutting Oil	0.10 - 0.20	0.15 - 0.25	0.20 - 0.40
	Titanium Alloy	140 - 310				

*Stock value is on diameter.



Stock Allowance and Coolant | Imperial (in)

MONOBLOC

ISO	Material	Hardness (BHN)	Coolant	Recommended Stock (in) by Reamer Diameter* 0.2283" - 0.3940"	0.3941" - 0.7090"	0.7091" - 1.2638"
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 180	Water Soluble / Cutting Oil	0.006 - 0.012	0.008 - 0.016	0.010 - 0.020
		180 - 250				
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180				
		180 - 275				
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180				
		180 - 325				
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180				
		180 - 375				
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450				
	Structural Steel A36, A285, A516, etc.	125 - 180				
		180 - 350				
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200				
		200 - 250				
M	**Stainless Steel 400 Series** 416, 420, etc.	135 - 350	Water Soluble / Cutting Oil	0.006 - 0.012	0.008 - 0.016	0.010 - 0.020
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275				
K	**Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)**	< 200	Water Soluble / Cutting Oil	0.006 - 0.012	0.008 - 0.016	0.010 - 0.020
		> 200				
	Spheroidal Cast Iron (Ferritic)	260 - 320				
N	**Copper and Alloys, and Brass**	< 500	Water Soluble	0.006 - 0.012	0.008 - 0.016	0.010 - 0.020
	Bronze, and Bronze Phosphorous	< 180	Water Soluble / Cutting Oil			
	Aluminum and Alloys	< 150				
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 310	Water Soluble / Cutting Oil	0.008 - 0.016	0.012 - 0.016	0.012 - 0.020
	Titanium Alloy	140 - 310				

*Stock value is on diameter.

SECTION

C30-RHR

Replaceable Head Reamers



REPLACEABLE HEAD REAMERS

7000, 9000, & 5000 Series



Efficient high-production performance

7000 Series
Features both expandable and fixed heads in multiple diameters within the same arbor to reduce inventory requirements.

- 11.800 mm - 60.609 mm (0.4646" - 2.3862")

9000 Series
Quick-change fixed head design for reduced downtime when assembling and indexing new heads in high-production applications.

- 11.800 mm - 40.600 mm (0.4646" - 1.5984")

5000 Series
Twist-locking expandable head design that excels in applications requiring extremely tight tolerances where minimizing operator intervention is critical.

- 9.600 mm - 32.600 mm (0.3780" - 1.2835")

S.C.A.M.I.®

Applicable Industries

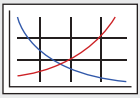
- Aerospace
- Agriculture
- Automotive
- Defense
- General Production
- Heavy Equipment
- Medical
- Oil and Gas
- Renewable Energy/ Energy
- Tool, Mold, and Die

Reference Icons

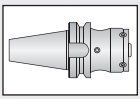
The following icons will appear throughout the catalog to help you navigate between products.



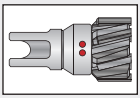
Setup / Assembly Information
Detailed instructions and information regarding the corresponding part(s).



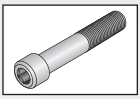
Recommended Cutting Data
Speed and feed recommendations for optimum and safe drilling.



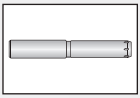
Modular Connection Shanks
Refers to Cerit modular shanks that can connect with reamers.



Replaceable Reamer Heads
Refers to the reamer head options that connect to the reamer mandrels.



Replaceable Reamer Screws
Refers to the reamer head screw options that connect the head to the reamer mandrels.



Replaceable Reamer Mandrels
Refers to the reamer mandrel options that connect with the head and screw.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

WARNING means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

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Introduction Information

Product Overview

Expandable Heads

5000 Series	7000 Series
	
• 9.600 mm - 32.600 mm (0.3780" - 1.2835"). • Heads arrive set to finish diameter and specified tolerance. • Twist-lock heads for precision locating of the head to the mandrel. • Best TIR repeatability from head to head providing consistent tool wear and maximized tool life.	• 11.800 mm - 60.609 mm (0.4646" - 2.3862"). • Multiple diameters within the same arbor reduce inventory requirements. • Coolant configurations for blind and through-hole applications. • Reamer head reconditions are available upon request. • Expands up to 1% on diameter to accommodate for wear. • ± 0.005 mm (0.0002") tolerance capability.

Fixed Heads

7000 Series	9000 Series
	
• 11.800 mm - 60.609 mm (0.4646" - 2.3862"). • 60.610 mm - 80.600 mm (2.3863" - 3.1732") diameters available as specials by contacting Application Engineering. • Multiple diameters within the same arbor reduce inventory requirements. • Coolant configurations for blind and through-hole applications. • Reamer head reconditions are available upon request. • Nonexpanding diameter for simple oN·machine replacement. • H7 tolerance capability.	• 11.800 mm - 40.600 mm (0.4646" - 1.5984"). • Heads are precision ground to finish diameter. • Quick-change heads require minimal downtime for replacement. • Sintered carbide or cermet design provides improved rigidity in difficult applications. • H7 tolerance capability.

Coatings

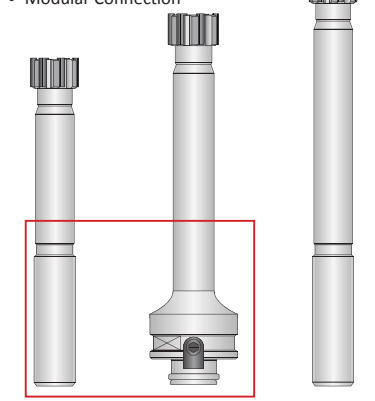
Uncoated	TiN	TiAlN	TiCN	Alcrona	Hardcut	R Coating	T Coating
							

Reference Key

Symbol	Attribute
D_1	Reamer head diameter
D_2	Shank diameter
L_1	Overall length
L_2	Length of cut
H	Hex key (listed with screws)

Mandrel Shanks Available:

- Cylindrical
- Modular Connection



Introduction Information

Product Nomenclature

7000 Series Replaceable Reamer Heads

	7400	–	KN		G	–	12000
Diameter Unit	**Series**		**Substrate and Coating**		**Lead-in**		**Diameter**
Blank = Metric (mm) **I** = Imperial (in)	**7400** **7405** **7600** **7605** **7700** **7705**		**Cermet** **KL** = Uncoated **KN** = TiN **KC** = TiCN **KA** = TiAlN **KK** = Alcrona **KH** = Hardcut **KR** = R **KT** = T	**Cermet** **SV** = Uncoated **SN** = TiN **SC** = TiCN **SA** = TiAlN **SK** = Alcrona **SH** = Hardcut **SR** = R coating **ST** = T	**E** **M** **A** **G** **L** **N** **T** **V** **K**		**XXXXX** = X.XXXX" XX.XXX mm



C30

NOTE: For reconditions, put an "R" at the beginning of the item number (7000 series only).
NOTE: Contact Application Engineering about optional add-on features for 7000 series.

9000/5000 Series Replaceable Reamer Heads

	9700	–	KN		G	H	–	12000	+	000	–	018
Diameter Unit	**Series**		**Substrate and Coating**		**Lead-in**	**Optional add-on**		**Diameter**		**Tolerance***		
Blank = Metric (mm) **I** = Imperial (in)	**9400** **9600** **9700** **5400** **5401** **5600** **5700**		**Cermet** **KL** = Uncoated **KN** = TiN **KC** = TiCN **KA** = TiAlN **KK** = Alcrona **KH** = Hardcut **KR** = R **KT** = T	**Cermet** **SV** = Uncoated **SN** = TiN **SC** = TiCN **SA** = TiAlN **SK** = Alcrona **SH** = Hardcut **SR** = R **ST** = T	**E** **M** **A** **F** **G** **L** **N** **T** **V** **K**	**Blank =** No add-on **H =** Half circular face **Z =** Double back taper **HZ =** Half circular face and double back taper		**XXXXX** = X.XXXX" XX.XXX mm		**4 decimal places** = inch tolerance **3 decimal places** = mm tolerance		

*The total tolerance capable for 5000 series reamers is 0.005 mm (0.0002") and H7 for 9000 series reamers.

Series Details

Series		7000 Series						5000 Series				9000 Series		
		7400	7600	7700	7405	7605	7705	5400	5401	5600	5700	9400	9600	9700
Flute	Straight	●			●			●	●			●		
	Right-hand helical		●			●				●			●	
	Left-hand helical			●			●				●			●
Head	Fixed	●	●	●								●	●	●
	Expandable				●	●	●	●	●	●	●			
Coolant	Radial *(through hole)*	—	—	—	—	—	—	●			●	—	—	—
	Central *(blind hole)*	—	—	—	—	—	—		●	●		—	—	—

7000 Series Replaceable Head Reamer

Overview

7000 SERIES

11.800 mm - 80.600 mm (0.4646" - 3.1732")



- Features both expandable and fixed diameter heads.
- Multiple diameters within the same arbor reduce inventory requirements.
- Coolant configurations for blind and through-hole applications.
- Available with brazed carbide, cermet, or PCD cutting edges.
- Reamer head reconditions are available upon request.

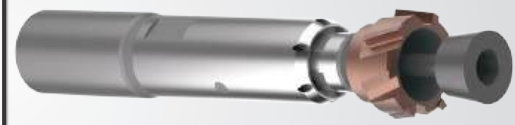
C30

fixed head reamers



- Nonexpanding diameter for simple oN·machine replacement.
- H7 tolerance capability.

expandable head reamers



- Expands to accommodate for wear.
- ± 0.005 mm (0.0002") tolerance capability.

Lead Time in Workdays

7000 Series		2 - 5 pcs	6 - 19 pcs	20+ pcs
Fixed	Coated	20	25	25
	Uncoated	15	20	20
Expandable	Coated	20	25	30
	Uncoated	15	20	25

Building Your Complete Tool

You will need all three pieces to complete your replaceable head reamer assembly. The item numbers for the screws and the mandrels are listed on their respective pages. However, there is a guide on the pages where the heads are located. You must follow the guide to build the item number for the reamer head that you need.

The complete mandrel item numbers are listed on their respective pages. You do not need to build the mandrel numbers.

1 **Select Your Head**



2 **Select Your Screw**

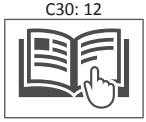


3 **Select Your Mandrel**

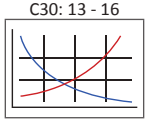


Key on C30: 2

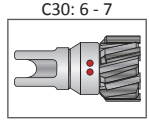
C30: 12



C30: 13 - 16



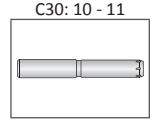
C30: 6 - 7



C30: 8 - 9



C30: 10 - 11



Reamer Heads

Expandable

Build Your Part No.

1 Series

7405 Series	7605 Series	7705 Series

2 Flute Style

Your flute style is based on your series selection (above).

Straight Flute	Helical Flute (Right-Hand)	Helical Flute (Left-Hand)
		

3 Carbide Grade and Coating Codes

These are the combinations of grades and coatings you can choose from.



	Uncoated	TiN	TiCN	TiAlN	Alcrona	Hardcut	R Coating	T Coating
Carbide	KL	KN	KC	KA	KK	KH	KR	KT
Cermet	SV	SN	SC	SA	SK	SH	SR	ST

4 Lead-in Recommendations

	T	F	N	G	L	A	V	K
P			●	●		◐	○	◐
M			◐	●				◐
K				◐			●	◐
N				●			◐	
S	●			◐				
H			◐	●				

	E	M	K
P	●		◐
M	●		◐
K	◐	●	◐
N	●	◐	
S	●	◐	
H	◐	●	

	E	M
P	●	
M	●	
K	◐	●
N	●	◐
S	●	◐
H	◐	●

5 Diameter

For the diameter portion of the item number, refer to the following tables:

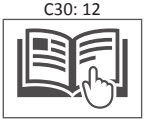
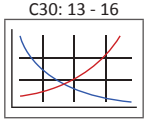
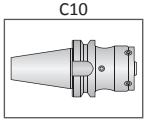
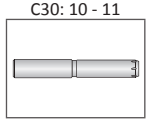
Metric (mm)		Imperial (in)	
D_1 Range	Tolerance (min/max)	D_1 Range	Tolerance (min/max)
11.800 - 18.000	-0.005 / +0.005	0.4646 - 0.7086	-0.0002 / +0.0002
18.001 - 30.000		0.7087 - 1.1810	
30.001 - 40.000		1.1811 - 1.5747	
40.001 - 50.000		1.5748 - 1.9684	
50.001 - 60.609		1.9685 - 2.3862	

● Best ◐ Better ○ Good

7405 – K N G – 50000

- 50000 – Diameter
- G – Lead-in
- N – TiN Coating
- K – Carbide
- 05 – Expandable Style
- 74 – Straight Flute

Key on C30: 2

C30: 12	C30: 13 - 16	C10	C30: 8 - 9	C30: 10 - 11
				

Reamer Heads

Fixed

Build Your Part No.

1 Series

7400 Series	7600 Series	7700 Series

2 Flute Style

Your flute style is based on your series selection (above).

Straight Flute	Helical Flute (Right-Hand)	Helical Flute (Left-Hand)
		

3 Carbide Grade and Coating Codes

These are the combinations of grades and coatings you can choose from.



	Uncoated	TiN	TiCN	TiAlN	Alcrona	Hardcut	R Coating	T Coating
Carbide	KL	KN	KC	KA	KK	KH	KR	KT
Cermet	SV	SN	SC	SA	SK	SH	SR	ST

4 Lead-in Recommendations

	T	F	N	G	L	A	V	K
P			●	●		◐	○	◐
M			◐	●				◐
K				◐			●	◐
N				●			◐	
S	●			◐				
H			◐	●				

	E	M	K
P	●		◐
M	●		◐
K	◐	●	◐
N	●	◐	
S	●	◐	
H	◐	●	

	E	M
P	●	
M	●	
K	◐	●
N	●	◐
S	●	◐
H	◐	●

5 Diameter

For the diameter portion of the item number, refer to the following tables:

Metric (mm)		Imperial (in)	
D_1 Range	Tolerance (min/max)	D_1 Range	Tolerance (min/max)
11.800 - 18.000	+0 / +0.018	0.4646 - 0.7086	+0 / +0.0007
18.001 - 30.000	+0 / +0.021	0.7087 - 1.1810	+0 / +0.0008
30.001 - 50.000	+0 / +0.025	1.1811 - 1.9684	+0 / +0.0010
50.001 - 60.609	+0 / +0.030	1.9685 - 2.3862	+0 / +0.0012

60.610 mm - 80.600 mm (2.3863" - 3.1732") diameters are available as specials by contacting Application Engineering.

● Best ◐ Better ○ Good

7400 – K N G – 50000

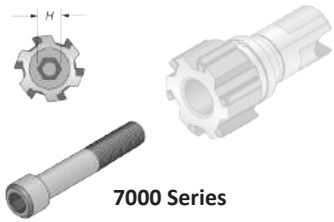
- 50000 – Diameter
- G – Lead-in
- N – TiN Coating
- K – Carbide
- 00 – Fixed Style
- 74 – Straight Flute

C30: 12 | C30: 13 - 16 | C10 | C30: 8 - 9 | C30: 10 - 11

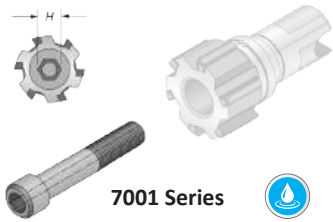
Key on C30: 2

Replaceable Head Screws

Fixed



7000 Series



7001 Series

D_1 Range*			H
Metric (mm)	Imperial (in)	Part No.	(mm)
11.800 - 14.609	0.4646 - 0.5751	**7000-VI-001**	2.5
14.610 - 17.609	0.5752 - 0.6932	**7000-VI-002**	3
17.610 - 21.609	0.6933 - 0.8507	**7000-VI-003**	4
21.610 - 26.609	0.8508 - 1.0475	**7000-VI-004**	5
26.610 - 32.609	1.0476 - 1.2838	**7000-VI-005**	6
32.610 - 40.609	1.2839 - 1.5987	**7000-VI-006**	6
40.610 - 50.609	1.5988 - 1.9924	**7000-VI-007**	8
50.610 - 60.609	1.9925 - 2.3862	**7000-VI-008**	10
60.610 - 80.600	2.3863 - 3.1732	**7000-VI-009**	12

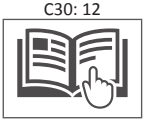
D_1 Range*			H
Metric (mm)	Imperial (in)	Part No.	(mm)
11.800 - 14.609	0.4646 - 0.5751	**7001-VI-001**	2.5
14.610 - 17.609	0.5752 - 0.6932	**7001-VI-002**	3
17.610 - 21.609	0.6933 - 0.8507	**7001-VI-003**	4
21.610 - 26.609	0.8508 - 1.0475	**7001-VI-004**	5
26.610 - 32.609	1.0476 - 1.2838	**7001-VI-005**	6
32.610 - 40.609	1.2839 - 1.5987	**7001-VI-006**	6
40.610 - 50.609	1.5988 - 1.9924	**7001-VI-007**	8
50.610 - 60.609	1.9925 - 2.3862	**7001-VI-008**	10
60.610 - 80.600	2.3863 - 3.1732	**7001-VI-009**	12

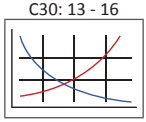
* 60.610 mm - 80.600 mm (2.3863" - 3.1732") diameter heads are available as specials by contacting Application Engineering.

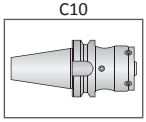
7000 Series Locking Screws	
Radial Coolant Only	No Coolant
	
7000 Series Mandrels	7001 Series Mandrels

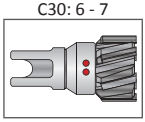
7001 Series Locking Screws	
Radial and Central Coolant	Central Coolant Only
	
7000 Series Mandrels	7001 Series Mandrels

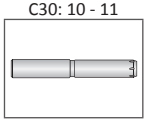
Key on C30: 2

C30: 12 

C30: 13 - 16 

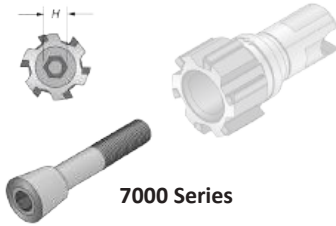
C10 

C30: 6 - 7 

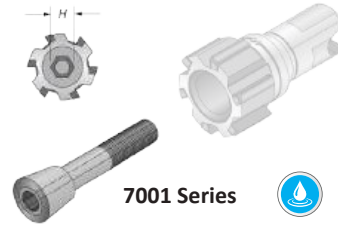
C30: 10 - 11 

Replaceable Head Screws

Expandable



7000 Series



7001 Series

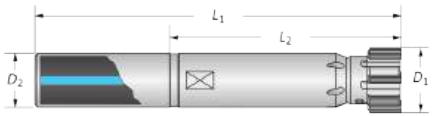
D_1 Range*			H
Metric (mm)	Imperial (in)	Part No.	(mm)
11.800 - 12.609	0.4646 - 0.4964	**7000-VI-012**	3.5
12.610 - 13.609	0.4965 - 0.5357	**7000-VI-013**	
13.610 - 14.609	0.5358 - 0.5751	**7000-VI-014**	
14.610 - 15.609	0.5752 - 0.6145	**7000-VI-015**	4
15.610 - 16.609	0.6146 - 0.6538	**7000-VI-016**	
16.610 - 17.609	0.6539 - 0.6932	**7000-VI-017**	
17.610 - 18.609	0.6933 - 0.7326	**7000-VI-018**	5
18.610 - 19.609	0.7327 - 0.7719	**7000-VI-019**	
19.610 - 20.609	0.7720 - 0.8113	**7000-VI-020**	
20.610 - 21.609	0.8114 - 0.8507	**7000-VI-021**	
21.610 - 22.609	0.8508 - 0.8901	**7000-VI-022**	6
22.610 - 23.609	0.8902 - 0.9294	**7000-VI-023**	
23.610 - 24.609	0.9295 - 0.9688	**7000-VI-024**	
24.610 - 25.609	0.9689 - 1.0082	**7000-VI-025**	
25.610 - 26.609	1.0083 - 1.0475	**7000-VI-026**	
26.610 - 27.609	1.0476 - 1.0869	**7000-VI-027**	8
27.610 - 28.609	1.0870 - 1.1263	**7000-VI-028**	
28.610 - 29.609	1.1264 - 1.1656	**7000-VI-029**	
29.610 - 30.609	1.1657 - 1.2050	**7000-VI-030**	
30.610 - 31.609	1.2051 - 1.2444	**7000-VI-031**	
31.610 - 32.609	1.2445 - 1.2838	**7000-VI-032**	
32.610 - 33.609	1.2839 - 1.3231	**7000-VI-033**	10
33.610 - 34.609	1.3232 - 1.3625	**7000-VI-034**	
34.610 - 35.609	1.3626 - 1.4019	**7000-VI-035**	
35.610 - 36.609	1.4020 - 1.4412	**7000-VI-036**	
36.610 - 37.609	1.4413 - 1.4806	**7000-VI-037**	
37.610 - 38.609	1.4807 - 1.5200	**7000-VI-038**	
38.610 - 39.609	1.5201 - 1.5593	**7000-VI-039**	
39.610 - 40.609	1.5594 - 1.5987	**7000-VI-040**	
40.610 - 41.609	1.5988 - 1.6381	**7000-VI-041**	12
41.610 - 42.609	1.6382 - 1.6775	**7000-VI-042**	
42.610 - 43.609	1.6776 - 1.7168	**7000-VI-043**	
43.610 - 44.609	1.7169 - 1.7562	**7000-VI-044**	
44.610 - 45.609	1.7563 - 1.7956	**7000-VI-045**	
45.610 - 46.609	1.7957 - 1.8349	**7000-VI-046**	
46.610 - 47.609	1.8350 - 1.8743	**7000-VI-047**	
47.610 - 48.609	1.8744 - 1.9137	**7000-VI-048**	
48.610 - 49.609	1.9138 - 1.9530	**7000-VI-049**	
49.610 - 50.609	1.9531 - 1.9924	**7000-VI-050**	
50.610 - 51.609	1.9925 - 2.0318	**7000-VI-051**	
51.610 - 52.609	2.0319 - 2.0712	**7000-VI-052**	
52.610 - 53.609	2.0713 - 2.1105	**7000-VI-053**	
53.610 - 54.609	2.1106 - 2.1499	**7000-VI-054**	
54.610 - 55.609	2.1500 - 2.1893	**7000-VI-055**	
55.610 - 56.609	2.1894 - 2.2286	**7000-VI-056**	
56.610 - 57.609	2.2287 - 2.2680	**7000-VI-057**	
57.610 - 58.609	2.2681 - 2.3074	**7000-VI-058**	
58.610 - 59.609	2.3075 - 2.3468	**7000-VI-059**	
59.610 - 60.609	2.3469 - 2.3862	**7000-VI-060**	

D_1 Range*			H
Metric (mm)	Imperial (in)	Part No.	(mm)
11.800 - 12.609	0.4646 - 0.4964	**7001-VI-012**	3.5
12.610 - 13.609	0.4965 - 0.5357	**7001-VI-013**	
13.610 - 14.609	0.5358 - 0.5751	**7001-VI-014**	
14.610 - 15.609	0.5752 - 0.6145	**7001-VI-015**	4
15.610 - 16.609	0.6146 - 0.6538	**7001-VI-016**	
16.610 - 17.609	0.6539 - 0.6932	**7001-VI-017**	
17.610 - 18.609	0.6933 - 0.7326	**7001-VI-018**	5
18.610 - 19.609	0.7327 - 0.7719	**7001-VI-019**	
19.610 - 20.609	0.7720 - 0.8113	**7001-VI-020**	
20.610 - 21.609	0.8114 - 0.8507	**7001-VI-021**	
21.610 - 22.609	0.8508 - 0.8901	**7001-VI-022**	6
22.610 - 23.609	0.8902 - 0.9294	**7001-VI-023**	
23.610 - 24.609	0.9295 - 0.9688	**7001-VI-024**	
24.610 - 25.609	0.9689 - 1.0082	**7001-VI-025**	
25.610 - 26.609	1.0083 - 1.0475	**7001-VI-026**	
26.610 - 27.609	1.0476 - 1.0869	**7001-VI-027**	8
27.610 - 28.609	1.0870 - 1.1263	**7001-VI-028**	
28.610 - 29.609	1.1264 - 1.1656	**7001-VI-029**	
29.610 - 30.609	1.1657 - 1.2050	**7001-VI-030**	
30.610 - 31.609	1.2051 - 1.2444	**7001-VI-031**	
31.610 - 32.609	1.2445 - 1.2838	**7001-VI-032**	
32.610 - 33.609	1.2839 - 1.3231	**7001-VI-033**	10
33.610 - 34.609	1.3232 - 1.3625	**7001-VI-034**	
34.610 - 35.609	1.3626 - 1.4019	**7001-VI-035**	
35.610 - 36.609	1.4020 - 1.4412	**7001-VI-036**	
36.610 - 37.609	1.4413 - 1.4806	**7001-VI-037**	
37.610 - 38.609	1.4807 - 1.5200	**7001-VI-038**	
38.610 - 39.609	1.5201 - 1.5593	**7001-VI-039**	
39.610 - 40.609	1.5594 - 1.5987	**7001-VI-040**	
40.610 - 41.609	1.5988 - 1.6381	**7001-VI-041**	12
41.610 - 42.609	1.6382 - 1.6775	**7001-VI-042**	
42.610 - 43.609	1.6776 - 1.7168	**7001-VI-043**	
43.610 - 44.609	1.7169 - 1.7562	**7001-VI-044**	
44.610 - 45.609	1.7563 - 1.7956	**7001-VI-045**	
45.610 - 46.609	1.7957 - 1.8349	**7001-VI-046**	
46.610 - 47.609	1.8350 - 1.8743	**7001-VI-047**	
47.610 - 48.609	1.8744 - 1.9137	**7001-VI-048**	
48.610 - 49.609	1.9138 - 1.9530	**7001-VI-049**	
49.610 - 50.609	1.9531 - 1.9924	**7001-VI-050**	
50.610 - 51.609	1.9925 - 2.0318	**7001-VI-051**	
51.610 - 52.609	2.0319 - 2.0712	**7001-VI-052**	
52.610 - 53.609	2.0713 - 2.1105	**7001-VI-053**	
53.610 - 54.609	2.1106 - 2.1499	**7001-VI-054**	
54.610 - 55.609	2.1500 - 2.1893	**7001-VI-055**	
55.610 - 56.609	2.1894 - 2.2286	**7001-VI-056**	
56.610 - 57.609	2.2287 - 2.2680	**7001-VI-057**	
57.610 - 58.609	2.2681 - 2.3074	**7001-VI-058**	
58.610 - 59.609	2.3075 - 2.3468	**7001-VI-059**	
59.610 - 60.609	2.3469 - 2.3862	**7001-VI-060**	

Mandrels

Cylindrical







Short

D_1 Range*		Mandrel				Part No.	
Metric (mm)	Imperial (in)	L_2 (mm)	L_1 (mm)	D_2 (mm)	No. of Teeth	7000 Series	7001 Series
11.800 - 14.609	0.4646 - 0.5751	50	95	12	6	**7000-MC-001**	**7001-MC-001**
14.610 - 17.609	0.5752 - 0.6932	65	113	16	6	**7000-MC-002**	**7001-MC-002**
17.610 - 21.609	0.6933 - 0.8507	75	125	20	6	**7000-MC-003**	**7001-MC-003**
21.610 - 26.609	0.8508 - 1.0475	85	135	20	6	**7000-MC-004**	**7001-MC-004**
26.610 - 32.609	1.0476 - 1.2838	105	161	25	6	**7000-MC-005**	**7001-MC-005**
32.610 - 40.609	1.2839 - 1.5987	120	180	32	6	**7000-MC-006**	**7001-MC-006**
40.610 - 45.609	1.5988 - 1.7956	120	180	32	6	**7000-MC-007**	**7001-MC-007**
45.610 - 50.609	1.7957 - 1.9924	120	180	32	8	**7000-MC-075**	**7001-MC-075**
50.610 - 60.609	1.9925 - 2.3862	120	190	32	8	**7000-MC-008**	**7001-MC-008**
60.610 - 80.600	2.3863 - 3.1732	120	180	32	8/10/12	**7000-MC-009**	—

Long

D_1 Range*		Mandrel				Part No.	
Metric (mm)	Imperial (in)	L_2 (mm)	L_1 (mm)	D_2 (mm)	No. of Teeth	7000 Series	7001 Series
11.800 - 14.609	0.4646 - 0.5751	95	140	12	6	**7000-ML-001**	**7001-ML-001**
14.610 - 17.609	0.5752 - 0.6932	105	153	16	6	**7000-ML-002**	**7001-ML-002**
17.610 - 21.609	0.6933 - 0.8507	125	175	20	6	**7000-ML-003**	**7001-ML-003**
21.610 - 26.609	0.8508 - 1.0475	145	195	20	6	**7000-ML-004**	**7001-ML-004**
26.610 - 32.609	1.0476 - 1.2838	165	221	25	6	**7000-ML-005**	**7001-ML-005**
32.610 - 40.609	1.2839 - 1.5987	185	245	32	6	**7000-ML-006**	**7001-ML-006**
40.610 - 45.609	1.5988 - 1.7956	185	245	32	6	**7000-ML-007**	**7001-ML-007**
45.610 - 50.609	1.7957 - 1.9924	185	245	32	8	**7000-ML-075**	**7001-ML-075**
50.610 - 60.609	1.9925 - 2.3862	185	255	32	8	**7000-ML-008**	**7001-ML-008**
60.610 - 80.600	2.3863 - 3.1732	185	245	32	8/10/12	**7000-ML-009**	—

* 60.610 mm - 80.600 mm (2.3863" - 3.1732") diameter heads are available as specials by contacting Application Engineering.

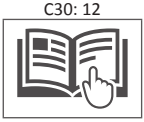
7000 Series Locking Screws

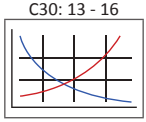
Radial Coolant Only	No Coolant
	
7000 Series Mandrels	7001 Series Mandrels

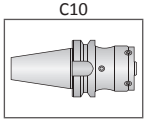
7001 Series Locking Screws

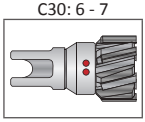
Radial and Central Coolant	Central Coolant Only
	
7000 Series Mandrels	7001 Series Mandrels

Key on C30: 2

C30: 12 

C30: 13 - 16 

C10 

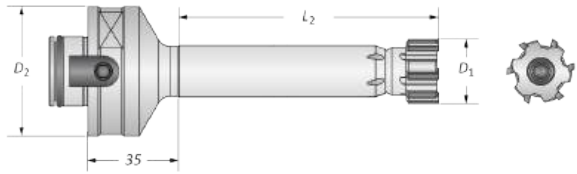
C30: 6 - 7 

C30: 8 - 9 

Mandrels

Modular Shank | AR Upper Receiver



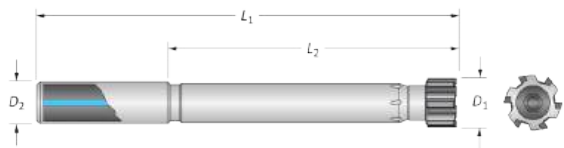


Standard

D_1 Range*		Mandrel			Part No.	
Metric (mm)	Imperial (in)	L_2 (mm)	D_2 (mm)	No. of Teeth	7000 Series	7001 Series
11.800 - 14.609	0.4646 - 0.5751	65	50	6	**7000-MM-001**	**7001-MM-001**
14.610 - 17.609	0.5752 - 0.6932	80	50	6	**7000-MM-002**	**7001-MM-002**
17.610 - 21.609	0.6933 - 0.8507	90	50	6	**7000-MM-003**	**7001-MM-003**
21.610 - 26.609	0.8508 - 1.0475	100	50	6	**7000-MM-004**	**7001-MM-004**
26.610 - 32.609	1.0476 - 1.2838	110	50	6	**7000-MM-005**	**7001-MM-005**
32.610 - 40.609	1.2839 - 1.5987	120	50	6	**7000-MM-006**	**7001-MM-006**
40.610 - 45.609	1.5988 - 1.7956	120	50	6	**7000-MM-007**	**7001-MM-007**
45.610 - 50.609	1.7957 - 1.9924	120	50	8	**7000-MM-075**	**7001-MM-075**
50.610 - 60.609	1.9925 - 2.3862	120	50	8	**7000-MM-008**	**7001-MM-008**
60.610 - 80.600	2.3863 - 3.1732	120	63	8/10/12	**7000-MM-009**	—

* 60.610 mm - 80.600 mm (2.3863" - 3.1732") diameter heads are available as specials by contacting Application Engineering.





D_1		Mandrel				Part No.
Metric (mm)	Imperial (in)	L_2 (in)	L_1 (in)	D_2 (in)	No. of Teeth	7000 Series
30.163	1.1875	9.65	11.65	0.75	6	**7000-MC-AR10**
25.400	1.0000	8.66	10.63	0.75	6	**7000-MC-AR15**

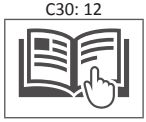
7000 Series Locking Screws

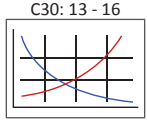
Radial Coolant Only	No Coolant
	
7000 Series Mandrels	7001 Series Mandrels

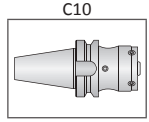
7001 Series Locking Screws

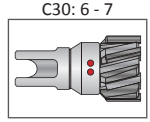
Radial and Central Coolant	Central Coolant Only
	
7000 Series Mandrels	7001 Series Mandrels

Key on C30: 2

C30: 12 

C30: 13 - 16 

C10 

C30: 6 - 7 

C30: 8 - 9 

Setup Information

Fixed Head Style



Tolerance: Fixed reamers are manufactured at 2/3 of the tolerance.

Recommended Tightening Torque

Metric		Imperial	
D_1 Range (mm)	Torque (N·m)	D_1 Range (inch)	Torque (in-lbs)
11.800 - 14.609	2.5	0.4646 - 0.5751	22.13
14.610 - 17.609	3.5	0.5752 - 0.6932	30.98
17.610 - 21.609	5.0	0.6933 - 0.8507	44.25
21.610 - 26.609	7.0	0.8508 - 1.0475	61.96
26.610 - 32.609	10.0	1.0476 - 1.2838	88.51
32.610 - 40.609	12.0	1.2839 - 1.5987	106.21
40.610 - 50.609	16.0	1.5988 - 1.9924	141.61
50.610 - 60.609	20.0	1.9925 - 2.3862	177.01

Expandable Head Style



Tolerance: Expandable reamers are manufactured to the middle of the tolerance.

Expanding Heads Adjustment

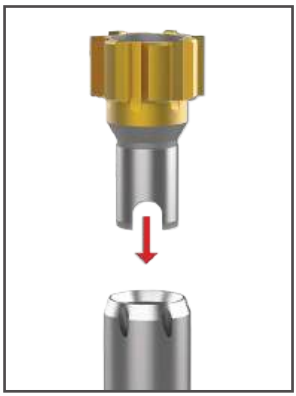
When the size reaches its lower tolerance, the head can be adjusted to compensate for wear to the cutting edges. This operation can be repeated several times until the surface finish of the hole deteriorates to an unacceptable level.

Adjustment Procedure

Slowly turn the right-hand threaded screw clockwise while checking the diameter setting of the reamer with a micrometer. When the required diameter is achieved, the tool is ready for use.

Replaceable Head Reamer 7000 Series Assembly

Fixed and Expandable Styles



Step 1:
Insert the replaceable reamer head into the mandrel.



Step 2:
Insert the screw into the reamer head opening to secure it to the mandrel.

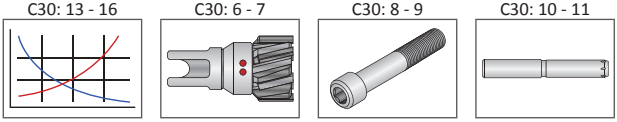


Step 3:
Tighten the screw.

NOTE: We recommend lubricating the thread and the conical surface of contact between the reamer head and the screw with antifriction MOLYKOTE® grease.

Key on C30: 2

C30: 13 - 16 C30: 6 - 7 C30: 8 - 9 C30: 10 - 11



Recommended Drilling Data | Metric (mm)

7000 SERIES

ISO	Material	Hardness (BHN)	Speed (m/min) Uncoated Carbide	Coated Carbide	Cermet
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 180	10 - 20	60 - 80	90 - 300
		180 - 250	7 - 15	40 - 70	80 - 200
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180	10 - 20	60 - 80	90 - 300
		180 - 275	7 - 15	40 - 70	80 - 200
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180	10 - 20	60 - 80	90 - 300
		180 - 325	7 - 15	40 - 70	80 - 200
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180	6 - 10	40 - 60	50 - 60
		180 - 375	4 - 8	40 - 50	60 - 120
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450	4 - 8	40 - 50	60 - 120
	Structural Steel A36, A285, A516, etc.	125 - 180	10 - 20	60 - 80	90 - 300
		180 - 350	7 - 15	40 - 70	80 - 200
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	10 - 20	60 - 80	90 - 300
		200 - 250	7 - 15	40 - 70	80 - 200
M	**Stainless Steel 400 Series** 416, 420, etc.	135 - 350	6 - 10	40 - 60	50 - 60
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275	6 - 10	40 - 60	50 - 60
K	**Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)**	< 200	20 - 40	120 - 200	—
		> 200	15 - 30	120 - 200	—
	Spheroidal Cast Iron (Ferritic)	260 - 320	10 - 15	—	90 - 140
N	**Copper and Alloys, and Brass**	< 500	60 - 200	100 - 200	—
	Bronze, and Bronze Phosphorous	< 180	20 - 40	80 - 160	100 - 300
	Aluminum and Alloys	< 150	20 - 100	—	—
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 310	4 - 10	30 - 50	—
	Titanium Alloy	140 - 310	4 - 15	30 - 50	—

Formulas

1. **RPM = (318.47 • m/min) / DIA**

where:

RPM	= revolutions per minute (rev/min)
m/min	= speed (m/min)
DIA	= diameter of drill (mm)

2. **mm/min = RPM • mm/rev**

where:

mm/min	= mm per minute (mm/min)
RPM	= revolutions per minute (rev/min)
mm/rev	= feed rate (mm/rev)

3. **m/min = RPM • 0.003 • DIA**

where:

m/min	= speed (m/min)
RPM	= revolutions per minute (rev/min)
DIA	= diameter of drill (mm)

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Factory technical assistance is available through our Application Engineering department.

Recommended Drilling Data | Metric (mm)

7000 SERIES

Recommended Feed (mm/rev) by Reamer Diameter					
11.80 mm - 21.60 mm		21.61 mm - 39.60 mm		39.61 mm - 80.60 mm	
Lead A, G	Lead E, N, M	Lead A, G	Lead E, N, M	Lead A, G	Lead E, N, M
0.25 - 0.60	0.50 - 1.00	0.30 - 0.80	0.60 - 1.20	0.60 - 1.00	0.70 - 1.50
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.25 - 0.60	0.50 - 1.00	0.30 - 0.80	0.60 - 1.20	0.60 - 1.00	0.70 - 1.50
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.25 - 0.60	0.50 - 1.00	0.30 - 0.80	0.60 - 1.20	0.60 - 1.00	0.70 - 1.50
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.25 - 0.50	0.30 - 0.60	0.30 - 0.60	0.40 - 0.80	0.40 - 0.70	0.50 - 1.00
0.25 - 0.50	0.30 - 0.60	0.30 - 0.60	0.40 - 0.80	0.40 - 0.70	0.50 - 1.00
0.25 - 0.60	0.50 - 1.00	0.30 - 0.80	0.60 - 1.20	0.60 - 1.00	0.70 - 1.50
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.25 - 0.60	0.50 - 1.00	0.30 - 0.80	0.60 - 1.20	0.60 - 1.00	0.70 - 1.50
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.20 - 0.60	0.50 - 1.00	0.30 - 0.70	0.60 - 1.20	0.40 - 0.80	0.80 - 1.60
0.20 - 0.60	0.50 - 1.00	0.30 - 0.70	0.60 - 1.20	0.40 - 0.80	0.80 - 1.60
0.20 - 0.60	0.50 - 0.60	0.30 - 0.70	0.60 - 1.20	0.40 - 0.80	0.80 - 1.60
0.20 - 0.40	—	0.30 - 0.60	—	0.40 - 0.80	—
0.30 - 0.60	0.40 - 1.00	0.30 - 0.60	0.50 - 1.20	0.30 - 0.60	0.60 - 1.50
0.30 - 0.60	—	0.40 - 1.00	—	0.40 - 1.00	—
0.20 - 0.40	—	0.30 - 0.50	—	0.40 - 0.60	—
0.20 - 0.40	—	0.30 - 0.50	—	0.40 - 0.60	—

Recommended Drilling Data | Imperial (in)

7000 SERIES

ISO	Material	Hardness (BHN)	Speed (SFM) Uncoated Carbide	Coated Carbide	Cermet
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 180	33 - 66	197 - 262	295 - 984
		180 - 250	23 - 49	131 - 230	262 - 656
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180	33 - 66	197 - 262	295 - 984
		180 - 275	23 - 49	131 - 230	262 - 656
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180	33 - 66	197 - 262	295 - 984
		180 - 325	23 - 49	131 - 230	262 - 656
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180	20 - 33	131 - 197	164 - 197
		180 - 375	13 - 26	131 - 164	197 - 394
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450	13 - 26	131 - 164	197 - 394
	Structural Steel A36, A285, A516, etc.	125 - 180	33 - 66	197 - 262	295 - 984
		180 - 350	23 - 49	131 - 230	262 - 656
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	33 - 66	197 - 262	295 - 984
		200 - 250	23 - 49	131 - 230	262 - 656
M	**Stainless Steel 400 Series** 416, 420, etc.	135 - 350	20 - 33	131 - 197	164 - 197
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275	20 - 33	131 - 197	164 - 197
K	**Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)**	< 200	66 - 131	394 - 656	—
		> 200	49 - 98	394 - 656	—
	Spheroidal Cast Iron (Ferritic)	260 - 320	33 - 49	—	295 - 459
N	**Copper and Alloys, and Brass**	< 500	197 - 656	328 - 656	—
	Bronze, and Bronze Phosphorous	< 180	66 - 131	262 - 525	328 - 984
	Aluminum and Alloys	< 150	66 - 328	—	—
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 310	13 - 33	98 - 164	—
	Titanium Alloy	140 - 310	13 - 49	98 - 164	—

Formulas

1. **RPM = (3.82 • SFM) / DIA**

where:

RPM = revolutions per minute (rev/min)
SFM = speed (ft/min)
DIA = diameter of drill (inch)

2. **IPM = RPM • IPR**

where:

IPM = inches per minute (in/min)
RPM = revolutions per minute (rev/min)
IPR = feed rate (in/rev)

3. **SFM = RPM • 0.262 • DIA**

where:

SFM = speed (ft/min)
RPM = revolutions per minute (rev/min)
DIA = diameter of drill (inch)

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Factory technical assistance is available through our Application Engineering department.

Recommended Drilling Data | Imperial (in)

7000 SERIES

Recommended Feed (IPR) by Reamer Diameter					
0.4646" - 0.8504"		0.8505" - 1.5590"		1.5591" - 3.1732"	
Lead A, G	**Lead E, N, M**	**Lead A, G**	**Lead E, N, M**	**Lead A, G**	**Lead E, N, M**
0.010 - 0.024	0.020 - 0.039	0.012 - 0.031	0.024 - 0.047	0.024 - 0.039	0.028 - 0.059
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.010 - 0.024	0.020 - 0.039	0.012 - 0.031	0.024 - 0.047	0.024 - 0.039	0.028 - 0.059
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.010 - 0.024	0.020 - 0.039	0.012 - 0.031	0.024 - 0.047	0.024 - 0.039	0.028 - 0.059
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.010 - 0.020	0.012 - 0.024	0.012 - 0.024	0.016 - 0.031	0.016 - 0.028	0.020 - 0.039
0.010 - 0.020	0.012 - 0.024	0.012 - 0.024	0.016 - 0.031	0.016 - 0.028	0.020 - 0.039
0.010 - 0.024	0.020 - 0.039	0.012 - 0.031	0.024 - 0.047	0.024 - 0.039	0.028 - 0.059
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.010 - 0.024	0.020 - 0.039	0.012 - 0.031	0.024 - 0.047	0.024 - 0.039	0.028 - 0.059
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.008 - 0.024	0.020 - 0.039	0.012 - 0.028	0.024 - 0.047	0.016 - 0.031	0.031 - 0.063
0.008 - 0.024	0.020 - 0.039	0.012 - 0.028	0.024 - 0.047	0.016 - 0.031	0.031 - 0.063
0.008 - 0.024	0.020 - 0.024	0.012 - 0.028	0.024 - 0.047	0.016 - 0.031	0.031 - 0.063
0.008 - 0.016	—	0.012 - 0.024	—	0.016 - 0.031	—
0.012 - 0.024	0.016 - 0.039	0.012 - 0.024	0.020 - 0.047	0.012 - 0.024	0.024 - 0.059
0.012 - 0.024	—	0.016 - 0.039	—	0.016 - 0.039	—
0.008 - 0.016	—	0.012 - 0.020	—	0.016 - 0.024	—
0.008 - 0.016	—	0.012 - 0.020	—	0.016 - 0.024	—

Stock Allowance and Coolant | Metric (mm)

7000 SERIES

ISO	Material	Hardness (BHN)	Coolant	Recommended Stock (mm) by Reamer Diameter* 11.80 mm - 21.60 mm	21.61 mm - 39.60 mm	39.61 mm - 80.60 mm
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 180	Water Soluble / Cutting Oil	0.15 - 0.25	0.20 - 0.40	0.30 - 0.40
		180 - 250				
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180				
		180 - 275				
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180				
		180 - 325				
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180				
		180 - 375				
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450				
	Structural Steel A36, A285, A516, etc.	125 - 180				
		180 - 350				
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200				
		200 - 250				
M	**Stainless Steel 400 Series** 416, 420, etc.	135 - 350	Water Soluble / Cutting Oil	0.15 - 0.25	0.20 - 0.40	0.30 - 0.40
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275				
K	**Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)**	< 200	Water Soluble / Cutting Oil	0.15 - 0.25	0.20 - 0.40	0.30 - 0.40
		> 200				
	Spheroidal Cast Iron (Ferritic)	260 - 320				
N	**Copper and Alloys, and Brass**	< 500	Water Soluble	0.15 - 0.25	0.20 - 0.40	0.30 - 0.40
	Bronze, and Bronze Phosphorous	< 180	Water Soluble / Cutting Oil			
	Aluminum and Alloys	< 150				
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 310	Water Soluble / Cutting Oil	0.15 - 0.25	0.20 - 0.40	0.30 - 0.40
	Titanium Alloy	140 - 310				

*Stock value is on diameter.

Stock Allowance and Coolant | Imperial (in)

7000 SERIES

ISO	Material	Hardness (BHN)	Coolant	Recommended Stock (in) by Reamer Diameter* 0.4646" - 0.8504"	0.8505" - 1.5590"	1.5591" - 3.1732"
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 180	Water Soluble / Cutting Oil	0.006 - 0.010	0.008 - 0.016	0.012 - 0.016
		180 - 250				
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180				
		180 - 275				
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180				
		180 - 325				
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180				
		180 - 375				
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450				
	Structural Steel A36, A285, A516, etc.	125 - 180				
		180 - 350				
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200				
		200 - 250				
M	**Stainless Steel 400 Series** 416, 420, etc.	135 - 350	Water Soluble / Cutting Oil	0.006 - 0.010	0.008 - 0.016	0.012 - 0.016
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275				
K	**Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)**	< 200	Water Soluble / Cutting Oil	0.006 - 0.010	0.008 - 0.016	0.012 - 0.016
		> 200				
	Spheroidal Cast Iron (Ferritic)	260 - 320				
N	**Copper and Alloys, and Brass**	< 500	Water Soluble	0.006 - 0.010	0.008 - 0.016	0.012 - 0.016
	Bronze, and Bronze Phosphorous	< 180	Water Soluble / Cutting Oil			
	Aluminum and Alloys	< 150				
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 310	Water Soluble / Cutting Oil	0.006 - 0.010	0.008 - 0.016	0.012 - 0.016
	Titanium Alloy	140 - 310				

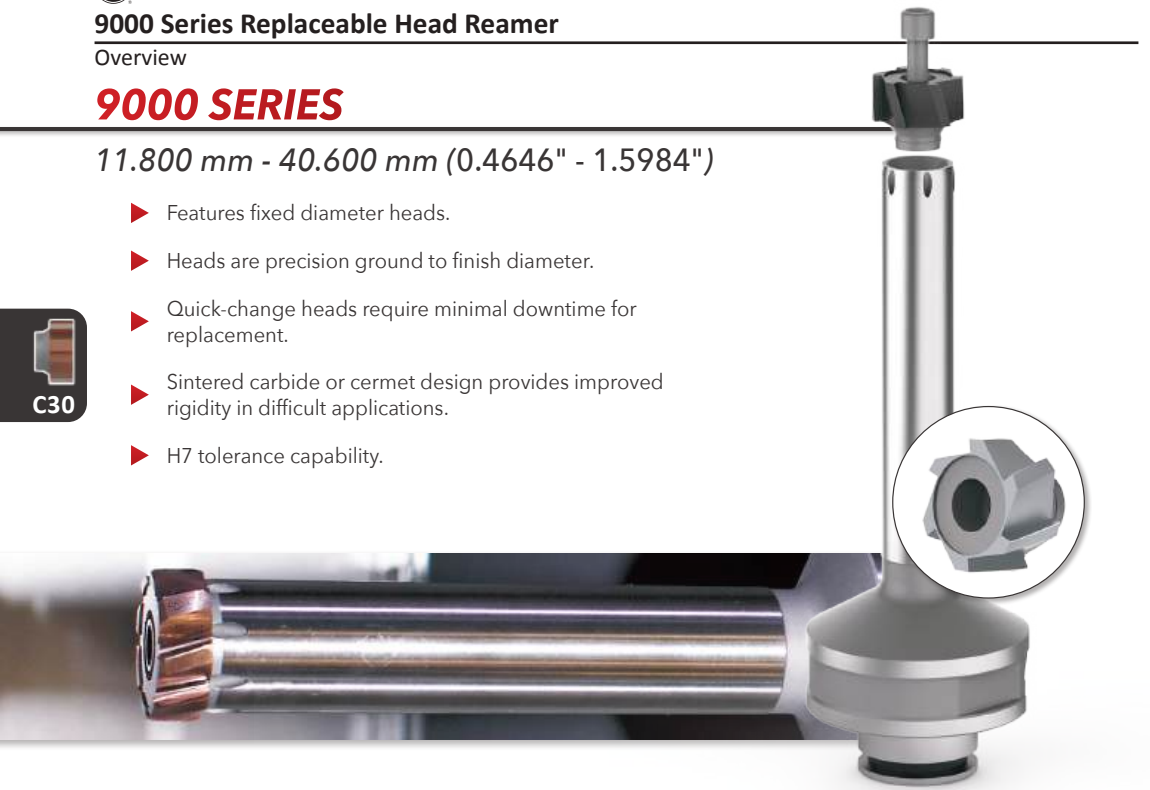
*Stock value is on diameter.

9000 Series Replaceable Head Reamer

Overview

9000 SERIES

11.800 mm - 40.600 mm (0.4646" - 1.5984")



- Features fixed diameter heads.
- Heads are precision ground to finish diameter.
- Quick-change heads require minimal downtime for replacement.
- Sintered carbide or cermet design provides improved rigidity in difficult applications.
- H7 tolerance capability.

C30

Lead Time in Workdays

9000 Series	2 - 9 pcs	10 - 49 pcs	50 - 99 pcs	100+ pcs
Coated	20	25	30	35
Uncoated	15	20	25	30

Building Your Complete Tool

You will need all three pieces to complete your replaceable head reamer assembly. The item numbers for the screws and the mandrels are listed on their respective pages. However, there is a guide on the pages where the heads are located. You must follow the guide to build the item number for the reamer head that you need.

The complete mandrel item numbers are listed on their respective pages. You do not need to build the mandrel numbers.

1 **Select Your Head**



2 **Select Your Screw**

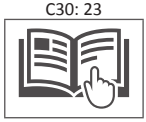


3 **Select Your Mandrel**

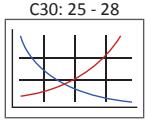


Key on C30: 2

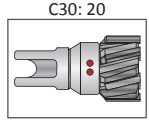
C30: 23



C30: 25 - 28



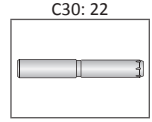
C30: 20



C30: 21



C30: 22



Reamer Heads

Fixed

Build Your Part No.

1 Series

9400 Series	9600 Series	9700 Series

2 Flute Style

Your flute style is based on your series selection (above).

Straight Flute	Helical Flute (Right-Hand)	Helical Flute (Left-Hand)
		

3 Carbide Grade and Coating Codes

These are the combinations of grades and coatings you can choose from.



	Uncoated	TiN	TiCN	TiAlN	Alcrona	Hardcut	R Coating	T Coating
Carbide	KL	KN	KC	KA	KK	KH	KR	KT
Cermet	SV	SN	SC	SA	SK	SH	SR	ST

4 Lead-in Recommendations

	T	F	N	G	L	A	V	K
P			●	●		◐	○	◐
M			◐	●				◐
K				◐			●	◐
N				●			◐	
S	●			◐				
H			◐	●				

	E	M	K
P	●		◐
M	●		◐
K	◐	●	◐
N	●	◐	
S	●	◐	
H	◐	●	

	E	M
P	●	
M	●	
K	◐	●
N	●	◐
S	●	◐
H	◐	●

5 Optional Add-ons

Add-on	Indicator	Description
Half Circular Face	H	Provides improved tool life in materials over 25 Rc.
Double Back Taper	Z	Provides improved tool life in materials over 25 Rc but should not be used in applications requiring less than a 32 Ra surface finish.

5 Diameter

For the diameter portion of the item number, refer to the following tables:

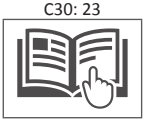
Metric (mm)		Imperial (in)	
D_1 Range	Tolerance (min/max)	D_1 Range	Tolerance (min/max)
11.800 - 18.000	+0 / +0.018	0.4646 - 0.7086	+0 / +0.0007
18.001 - 30.000	+0 / +0.021	0.7087 - 1.1810	+0 / +0.0008
30.001 - 40.600	+0 / +0.025	1.1811 - 1.5984	+0 / +0.0010

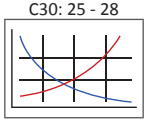
● Best ◐ Better ○ Good

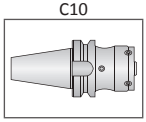
94 00 – K N G H – 030600 + 025 – 025

- 94 – Straight Flute
- 00 – Fixed Style
- K – Carbide
- N – TiN Coating
- G – Lead-in
- H – Half circular face
- 030600 – Diameter
- 025 – 025 – Tolerance

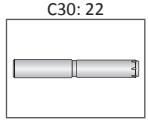
Key on C30: 2


C30: 23


C30: 25 - 28

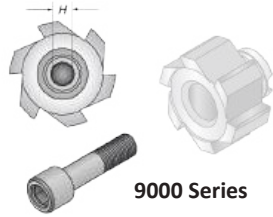

C10


C30: 21

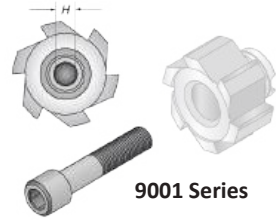

C30: 22

Replaceable Head Screws

Expandable



9000 Series



9001 Series

D_1 Range* Metric (mm)	D_1 Range* Imperial (in)	Part No.	*H* (mm)
11.800 - 14.609	0.4646 - 0.5751	**9000-VI-001**	2.5
14.610 - 17.609	0.5752 - 0.6932	**9000-VI-002**	3
17.610 - 21.609	0.6933 - 0.8507	**9000-VI-003**	4
21.610 - 26.609	0.8508 - 1.0475	**9000-VI-004**	5
26.610 - 32.609	1.0476 - 1.2838	**9000-VI-005**	6
32.610 - 40.600	1.2839 - 1.5984	**9000-VI-006**	6

D_1 Range* Metric (mm)	D_1 Range* Imperial (in)	Part No.	*H* (mm)
11.800 - 14.609	0.4646 - 0.5751	**9001-VI-001**	2.5
14.610 - 17.609	0.5752 - 0.6932	**9001-VI-002**	3
17.610 - 21.609	0.6933 - 0.8507	**9001-VI-003**	4
21.610 - 26.609	0.8508 - 1.0475	**9001-VI-004**	5
26.610 - 32.609	1.0476 - 1.2838	**9001-VI-005**	6
32.610 - 40.600	1.2839 - 1.5984	**9001-VI-006**	6

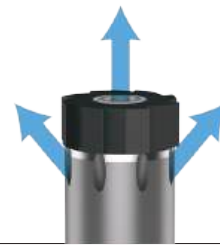
9000 Series Locking Screws

Radial Coolant Only



9001 Series Locking Screws

Radial and Central Coolant



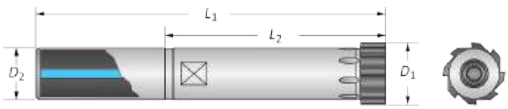
Key on C30: 2

C30: 23 C30: 25 - 28 C10 C30: 20 C30: 22

Mandrels

Cylindrical





Short

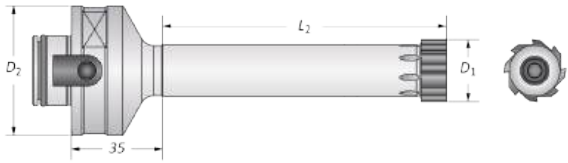
D_1 Range		Mandrel				
Metric (mm)	Imperial (in)	L_2 (mm)	L_1 (mm)	D_2 (mm)	No. of Teeth	Part No.
11.800 - 14.609	0.4646 - 0.5751	50.00	95.00	12.00	6	**9000-MC-001**
14.610 - 17.609	0.5752 - 0.6932	65.00	113.00	16.00	6	**9000-MC-002**
17.610 - 21.609	0.6933 - 0.8507	75.00	125.00	20.00	6	**9000-MC-003**
21.610 - 26.609	0.8508 - 1.0475	85.00	135.00	20.00	8	**9000-MC-004**
26.610 - 32.609	1.0476 - 1.2838	105.00	161.00	25.00	8	**9000-MC-005**
32.610 - 36.609	1.2839 - 1.4412	120.00	180.00	32.00	10	**9000-MC-006**
36.610 - 40.600	1.4413 - 1.5984	120.00	180.00	32.00	10	**9000-MC-007**

Long

D_1 Range		Mandrel				
Metric (mm)	Imperial (in)	L_2 (mm)	L_1 (mm)	D_2 (mm)	No. of Teeth	Part No.
11.800 - 14.609	0.4646 - 0.5751	95.00	140.00	12.00	6	**9000-ML-001**
14.610 - 17.609	0.5752 - 0.6932	105.00	153.00	16.00	6	**9000-ML-002**
17.610 - 21.609	0.6933 - 0.8507	125.00	175.00	20.00	6	**9000-ML-003**
21.610 - 26.609	0.8508 - 1.0475	145.00	195.00	20.00	8	**9000-ML-004**
26.610 - 32.609	1.0476 - 1.2838	165.00	221.00	25.00	8	**9000-ML-005**
32.610 - 36.609	1.2839 - 1.4412	185.00	245.00	32.00	10	**9000-ML-006**
36.610 - 40.600	1.4413 - 1.5984	185.00	245.00	32.00	10	**9000-ML-007**

Modular

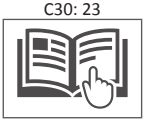


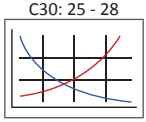


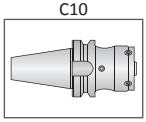
Long

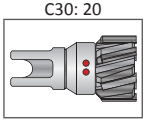
D_1 Range		Mandrel			
Metric (mm)	Imperial (in)	L_2 (mm)	D_2 (mm)	No. of Teeth	Part No.
11.800 - 14.609	0.4646 - 0.5751	65.00	50.00	6	**9000-MM-001**
14.610 - 17.609	0.5752 - 0.6932	80.00	50.00	6	**9000-MM-002**
17.610 - 21.609	0.6933 - 0.8507	100.00	50.00	6	**9000-MM-003**
21.610 - 26.609	0.8508 - 1.0475	110.00	50.00	8	**9000-MM-004**
26.610 - 32.609	1.0476 - 1.2838	120.00	50.00	8	**9000-MM-005**
32.610 - 36.609	1.2839 - 1.4412	120.00	50.00	10	**9000-MM-006**
36.610 - 40.600	1.4413 - 1.5984	120.00	50.00	10	**9000-MM-007**

Key on C30: 2

C30: 23 

C30: 25 - 28 

C10 

C30: 20 

C30: 21 

Setup Information

Fixed Head Style

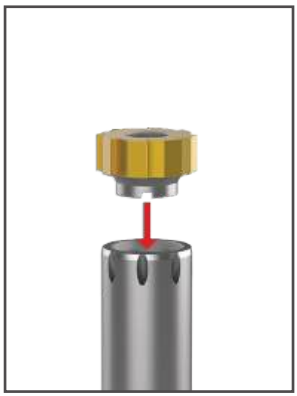


Tolerance: Fixed reamers are manufactured at 2/3 of the tolerance.

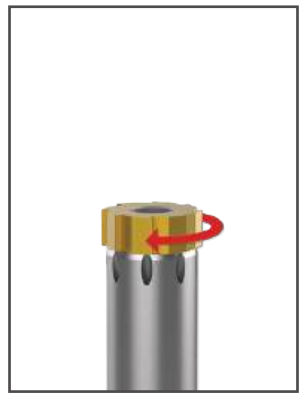
Recommended Tightening Torque

Metric		Imperial	
D_1 Range (mm)	Torque (N·m)	D_1 Range (inch)	Torque (in-lbs)
11.800 - 14.609	2.5	0.4646 - 0.5751	22.13
14.610 - 17.609	3.5	0.5752 - 0.6932	30.98
17.610 - 21.609	4.5	0.6933 - 0.8507	39.83
21.610 - 26.609	6.0	0.8508 - 1.0475	53.10
26.610 - 32.609	10.0	1.0476 - 1.2838	88.51
32.610 - 40.600	12.0	1.2839 - 1.5984	106.21

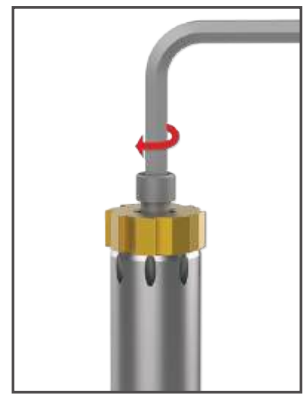
Replaceable Head Reamer 9000 Series Assembly



Step 1:
Carefully clean the connecting surfaces and insert the replaceable reamer head into the mandrel.



Step 2:
Screw the head in by hand clockwise until it makes contact the mandrel.



Step 3:
Tighten the screw according to the predetermined value in the table.

C30: 25 - 28
Key on C30: 2
C30: 20
C30: 21
C30: 22

Notes



Recommended Drilling Data | Metric (mm)

9000 SERIES

ISO	Material	Hardness (BHN)	Speed (m/min) Uncoated Carbide	Coated Carbide	Cermet
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 180	10 - 20	60 - 80	90 - 300
		180 - 250	7 - 15	40 - 70	80 - 200
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180	10 - 20	60 - 80	90 - 300
		180 - 275	7 - 15	40 - 70	80 - 200
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180	10 - 20	60 - 80	90 - 300
		180 - 325	7 - 15	40 - 70	80 - 200
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180	6 - 10	40 - 60	50 - 60
		180 - 375	4 - 8	60 - 120	—
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450	4 - 8	60 - 120	—
	Structural Steel A36, A285, A516, etc.	125 - 180	10 - 20	60 - 80	90 - 300
		180 - 350	7 - 15	40 - 70	80 - 200
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	10 - 20	60 - 80	90 - 300
		200 - 250	7 - 15	40 - 70	80 - 200
M	**Stainless Steel 400 Series** 416, 420, etc.	135 - 350	6 - 10	40 - 60	50 - 60
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275	6 - 10	40 - 60	50 - 60
K	**Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)**	< 200	20 - 40	120 - 200	—
		> 200	15 - 30	120 - 200	—
	Spheroidal Cast Iron (Ferritic)	260 - 320	10 - 15	—	90 - 140
N	**Copper and Alloys, and Brass**	< 500	60 - 200	100 - 200	-
	Bronze, and Bronze Phosphorous	< 180	20 - 40	80 - 160	100 - 300
	Aluminum and Alloys	< 150	20 - 100	—	—
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 310	6 - 10	15 - 30	—
	Titanium Alloy	140 - 310	6 - 10	15 - 30	—

Formulas

1. **RPM = (318.47 • m/min) / DIA**

where:

RPM	= revolutions per minute (rev/min)
m/min	= speed (m/min)
DIA	= diameter of drill (mm)

2. **mm/min = RPM • mm/rev**

where:

mm/min	= mm per minute (mm/min)
RPM	= revolutions per minute (rev/min)
mm/rev	= feed rate (mm/rev)

3. **m/min = RPM • 0.003 • DIA**

where:

m/min	= speed (m/min)
RPM	= revolutions per minute (rev/min)
DIA	= diameter of drill (mm)

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Factory technical assistance is available through our Application Engineering department.

Recommended Drilling Data | Metric (mm)

9000 SERIES

Recommended Feed (mm/rev) by Reamer Diameter					
11.80 mm - 21.60 mm		21.61 mm - 39.60 mm		39.61 mm - 40.60 mm	
Lead A, G	Lead E, N, M	Lead A, G	Lead E, N, M	Lead A, G	Lead E, N, M
0.25 - 0.60	0.50 - 1.00	0.30 - 0.80	0.60 - 1.20	0.60 - 1.00	0.70 - 1.50
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.25 - 0.60	0.50 - 1.00	0.30 - 0.80	0.60 - 1.20	0.60 - 1.00	0.70 - 1.50
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.25 - 0.60	0.50 - 1.00	0.30 - 0.80	0.60 - 1.20	0.60 - 1.00	0.70 - 1.50
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.25 - 0.50	0.30 - 0.60	0.30 - 0.60	0.40 - 0.80	0.40 - 0.70	0.50 - 1.00
0.25 - 0.50	0.30 - 0.60	0.30 - 0.60	0.40 - 0.80	0.40 - 0.70	0.50 - 1.00
0.25 - 0.60	0.50 - 1.00	0.30 - 0.80	0.60 - 1.20	0.60 - 1.00	0.70 - 1.50
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.25 - 0.60	0.50 - 1.00	0.30 - 0.80	0.60 - 1.20	0.60 - 1.00	0.70 - 1.50
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.20 - 0.60	0.50 - 1.00	0.30 - 0.70	0.60 - 1.20	0.40 - 0.80	0.80 - 1.60
0.20 - 0.60	0.50 - 1.00	0.30 - 0.70	0.60 - 1.20	0.40 - 0.80	0.80 - 1.60
0.20 - 0.60	0.50 - 1.00	0.30 - 0.70	0.60 - 1.20	0.40 - 0.80	0.80 - 1.60
0.20 - 0.40	—	0.30 - 0.60	—	0.40 - 0.80	—
0.30 - 0.60	0.40 - 1.00	0.30 - 0.60	0.50 - 1.20	0.30 - 0.60	0.60 - 1.50
0.30 - 0.60	—	0.40 - 1.00	—	0.40 - 1.00	—
0.20 - 0.40	—	0.30 - 0.50	—	0.40 - 0.60	—
0.20 - 0.40	—	0.30 - 0.50	—	0.40 - 0.60	—

Recommended Drilling Data | Imperial (in)

9000 SERIES

ISO	Material	Hardness (BHN)	Speed (SFM) Uncoated Carbide	Coated Carbide	Cermet
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 180	33 - 66	197 - 262	295 - 984
		180 - 250	23 - 49	131 - 230	262 - 656
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180	33 - 66	197 - 262	295 - 984
		180 - 275	23 - 49	131 - 230	262 - 656
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180	33 - 66	197 - 262	295 - 984
		180 - 325	23 - 49	131 - 230	262 - 656
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180	20 - 33	131 - 197	164 - 197
		180 - 375	13 - 26	197 - 394	—
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450	13 - 26	197 - 394	—
	Structural Steel A36, A285, A516, etc.	125 - 180	33 - 66	197 - 262	295 - 984
		180 - 350	23 - 49	131 - 230	262 - 656
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	33 - 66	197 - 262	295 - 984
		200 - 250	23 - 49	131 - 230	262 - 656
M	**Stainless Steel 400 Series** 416, 420, etc.	135 - 350	20 - 33	131 - 197	164 - 197
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275	20 - 33	131 - 197	164 - 197
K	**Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)**	< 200	66 - 131	394 - 656	—
		> 200	49 - 98	394 - 656	—
	Spheroidal Cast Iron (Ferritic)	260 - 320	33 - 49	—	295 - 459
N	**Copper and Alloys, and Brass**	< 500	197 - 656	328 - 656	—
	Bronze, and Bronze Phosphorous	< 180	66 - 131	262 - 525	328 - 984
	Aluminum and Alloys	< 150	66 - 328	—	—
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 310	20 - 33	49 - 98	—
	Titanium Alloy	140 - 310	20 - 33	49 - 98	—

Formulas

1. **RPM = (3.82 • SFM) / DIA**

where:

RPM = revolutions per minute (rev/min)
SFM = speed (ft/min)
DIA = diameter of drill (inch)

2. **IPM = RPM • IPR**

where:

IPM = inches per minute (in/min)
RPM = revolutions per minute (rev/min)
IPR = feed rate (in/rev)

3. **SFM = RPM • 0.262 • DIA**

where:

SFM = speed (ft/min)
RPM = revolutions per minute (rev/min)
DIA = diameter of drill (inch)

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Factory technical assistance is available through our Application Engineering department.

Recommended Drilling Data | Imperial (in)

9000 SERIES

Recommended Feed (IPR) by Reamer Diameter					
0.4646" - 0.8504"		0.8505" - 1.5590"		1.5591" - 1.5984"	
Lead A, G	Lead E, N, M	Lead A, G	Lead E, N, M	Lead A, G	Lead E, N, M
0.010 - 0.024	0.020 - 0.039	0.012 - 0.031	0.024 - 0.047	0.024 - 0.039	0.028 - 0.059
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.010 - 0.024	0.020 - 0.039	0.012 - 0.031	0.024 - 0.047	0.024 - 0.039	0.028 - 0.059
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.010 - 0.024	0.020 - 0.039	0.012 - 0.031	0.024 - 0.047	0.024 - 0.039	0.028 - 0.059
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.010 - 0.020	0.012 - 0.024	0.012 - 0.024	0.016 - 0.031	0.016 - 0.028	0.020 - 0.039
0.010 - 0.020	0.012 - 0.024	0.012 - 0.024	0.016 - 0.031	0.016 - 0.028	0.020 - 0.039
0.010 - 0.024	0.020 - 0.039	0.012 - 0.031	0.024 - 0.047	0.024 - 0.039	0.028 - 0.059
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.010 - 0.024	0.020 - 0.039	0.012 - 0.031	0.024 - 0.047	0.024 - 0.039	0.028 - 0.059
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.008 - 0.024	0.020 - 0.039	0.012 - 0.028	0.024 - 0.047	0.016 - 0.031	0.031 - 0.063
0.008 - 0.024	0.020 - 0.039	0.012 - 0.028	0.024 - 0.047	0.016 - 0.031	0.031 - 0.063
0.008 - 0.024	0.020 - 0.039	0.012 - 0.028	0.024 - 0.047	0.016 - 0.031	0.031 - 0.063
0.008 - 0.016	—	0.012 - 0.024	—	0.016 - 0.031	—
0.012 - 0.024	0.016 - 0.039	0.012 - 0.024	0.020 - 0.047	0.012 - 0.024	0.024 - 0.059
0.012 - 0.024	—	0.016 - 0.039	—	0.016 - 0.039	—
0.008 - 0.016	—	0.012 - 0.020	—	0.016 - 0.024	—
0.008 - 0.016	—	0.012 - 0.020	—	0.016 - 0.024	—

Stock Allowance and Coolant | Metric (mm)

9000 SERIES

ISO	Material	Hardness (BHN)	Coolant	Recommended Stock (mm) by Reamer Diameter* 11.80 mm - 21.60 mm	21.61 mm - 39.60 mm	39.61 mm - 40.60 mm
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 180	Water Soluble / Cutting Oil	0.15 - 0.25	0.20 - 0.40	0.30 - 0.40
		180 - 250				
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180				
		180 - 275				
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180				
		180 - 325				
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180				
		180 - 375				
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450				
	Structural Steel A36, A285, A516, etc.	125 - 180				
		180 - 350				
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200				
		200 - 250				
M	**Stainless Steel 400 Series** 416, 420, etc.	135 - 350	Water Soluble / Cutting Oil	0.15 - 0.25	0.20 - 0.40	0.30 - 0.40
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275				
K	**Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)**	< 200	Water Soluble / Cutting Oil	0.15 - 0.25	0.20 - 0.40	0.30 - 0.40
		> 200				
	Spheroidal Cast Iron (Ferritic)	260 - 320				
N	**Copper and Alloys, and Brass**	< 500	Water Soluble	0.15 - 0.25	0.20 - 0.40	0.30 - 0.40
	Bronze, and Bronze Phosphorous	< 180	Water Soluble / Cutting Oil			
	Aluminum and Alloys	< 150				
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 310	Water Soluble / Cutting Oil	0.15 - 0.25	0.20 - 0.40	0.30 - 0.40
	Titanium Alloy	140 - 310				

*Stock value is on diameter.

Stock Allowance and Coolant | Imperial (in)

9000 SERIES

ISO	Material	Hardness (BHN)	Coolant	Recommended Stock (in) by Reamer Diameter* 0.4646" - 0.8504"	0.8505" - 1.5590"	1.5591" - 1.5984"
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 180	Water Soluble / Cutting Oil	0.006 - 0.010	0.008 - 0.016	0.012 - 0.016
		180 - 250				
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180				
		180 - 275				
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180				
		180 - 325				
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180				
		180 - 375				
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450				
	Structural Steel A36, A285, A516, etc.	125 - 180				
		180 - 350				
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200				
		200 - 250				
M	**Stainless Steel 400 Series** 416, 420, etc.	135 - 350	Water Soluble / Cutting Oil	0.006 - 0.010	0.008 - 0.016	0.012 - 0.016
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275				
K	**Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)**	< 200	Water Soluble / Cutting Oil	0.006 - 0.010	0.008 - 0.016	0.012 - 0.016
		> 200				
	Spheroidal Cast Iron (Ferritic)	260 - 320				
N	**Copper and Alloys, and Brass**	< 500	Water Soluble	0.006 - 0.010	0.008 - 0.016	0.012 - 0.016
	Bronze, and Bronze Phosphorous	< 180	Water Soluble / Cutting Oil			
	Aluminum and Alloys	< 150				
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 310	Water Soluble / Cutting Oil	0.006 - 0.010	0.008 - 0.016	0.012 - 0.016
	Titanium Alloy	140 - 310				

*Stock value is on diameter.

5000 Series Replaceable Head Reamer

Overview

5000 SERIES

9.600 mm - 32.600 mm (0.3780" - 1.2835")



- Features expandable diameter heads.
- Heads arrive set to finish diameter and specified tolerance.
- Twist-lock heads for precision locating of the head to the mandrel.
- Best TIR repeatability from head to head providing consistent tool wear and maximized tool life.
- Available with brazed carbide or cermet cutting edges.

C30

Lead Time in Workdays

5000 Series	2 - 9 pcs	10 - 49 pcs	50 - 99 pcs	100+ pcs
Coated	20	25	30	35
Uncoated	15	20	25	30

Building Your Complete Tool

You will need both pieces to complete your replaceable head reamer assembly. The complete mandrel item numbers are listed on their respective pages. However, there is a guide on the pages where the heads are located. You must follow the guide to build the item number for the reamer head that you need.

The 5000 series reamers use a twist lock on reamer head, so the screw is included with the head assembly.





Key on C30: 2

C30: 34

C30: 35 - 38

C30: 32

C30: 33

Reamer Heads

Expandable

Build Your Part No.

1 Series

5400 Series *Radial Coolant*	5401 Series *Central Coolant*	5600 Series *Central Coolant*	5700 Series *Radial Coolant*

2 Flute Style

Your flute style is based on your series selection (above).

Straight Flute	Helical Flute (Right-Hand)	Helical Flute (Left-Hand)
		

3 Carbide Grade and Coating Codes

These are the combinations of grades and coatings you can choose from.



	Uncoated	TiN	TiCN	TiAlN	Alcrona	Hardcut	R Coating	T Coating
Carbide	KL	KN	KC	KA	KK	KH	KR	KT
Cermet	SV	SN	SC	SA	SK	SH	SR	ST

4 Lead-in Recommendations

	T	F	N	G	L	A	V	K
P			●	●		◐	○	◐
M			◐	●				◐
K				◐			●	◐
N				●			◐	
S	●			◐				
H			◐	●				

	E	M	K
P	●		◐
M	●		◐
K	◐	●	◐
N	●	◐	
S	●	◐	
H	◐	●	

	E	M
P	●	
M	●	
K	◐	●
N	●	◐
S	●	◐
H	◐	●

5 Optional Add-ons

Add-on	Indicator	Description
Half Circular Face	H	Provides improved tool life in materials over 25 Rc.
Double Back Taper	Z	Provides improved tool life in materials over 25 Rc but should not be used in applications requiring less than a 32 Ra surface finish.

5 Diameter

For the diameter portion of the item number, refer to the following tables:

Metric (mm)		Imperial (in)	
D_1 Range	Tolerance (min/max)	D_1 Range	Tolerance (min/max)
9.600 - 11.609	-0.005 / +0.005	0.3780 - 0.4570	-0.0002 / +0.0002
11.610 - 14.609		0.4571 - 0.5751	
14.610 - 17.609		0.5752 - 0.6932	
17.610 - 21.609		0.6933 - 0.8507	
21.610 - 26.609		0.8508 - 1.0475	
26.610 - 32.600		1.0476 - 1.2835	

● Best ◐ Better ○ Good

5401 – K N G H – 030600 + 005 – 005

- 5401 – Straight Flute, Central Coolant
- K – Carbide
- N – TiN Coating
- G – G Lead-in
- H – Half circular face
- 030600 – Diameter
- 005 – 005 – Tolerance

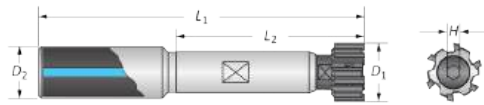
Key on C30: 2

C30: 34 | C30: 35 - 38 | C10 | C30: 33

Mandrels

Cylindrical





C30

Short

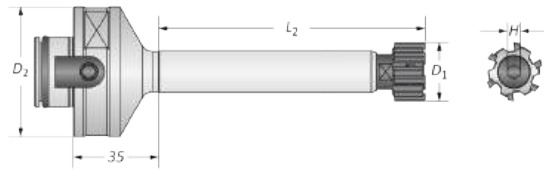
D_1 Range*		Mandrel			H	No. of	Part No.	
Metric (mm)	Imperial (in)	L_2 (mm)	L_1 (mm)	D_2 (mm)	(mm)	Teeth	Mandrel	Wrench
9.600 - 11.609	0.3780 - 0.4570	50.00	95.00	12.00	3	6	**5000-MC-001**	**5000-CH-007**
11.610 - 14.609	0.4571 - 0.5751	50.00	95.00	12.00	3.5	6	**5000-MC-002**	**5000-CH-008**
14.610 - 17.609	0.5752 - 0.6932	65.00	113.00	16.00	4	6	**5000-MC-003**	**5000-CH-010**
17.610 - 21.609	0.6933 - 0.8507	75.00	125.00	20.00	5	6	**5000-MC-004**	**5000-CH-012**
21.610 - 26.609	0.8508 - 1.0475	85.00	135.00	20.00	6	6	**5000-MC-005**	**5000-CH-015**
26.610 - 32.600	1.0476 - 1.2835	105.00	161.00	25.00	8	6	**5000-MC-006**	**5000-CH-019**

Long

D_1 Range*		Mandrel			H	No. of	Part No.	
Metric (mm)	Imperial (in)	L_2 (mm)	L_1 (mm)	D_2 (mm)	(mm)	Teeth	Mandrel	Wrench
9.600 - 11.609	0.3780 - 0.4570	95.00	140.00	12.00	3	6	**5000-ML-001**	**5000-CH-007**
11.610 - 14.609	0.4571 - 0.5751	95.00	140.00	12.00	3.5	6	**5000-ML-002**	**5000-CH-008**
14.610 - 17.609	0.5752 - 0.6932	105.00	153.00	16.00	4	6	**5000-ML-003**	**5000-CH-010**
17.610 - 21.609	0.6933 - 0.8507	125.00	175.00	20.00	5	6	**5000-ML-004**	**5000-CH-012**
21.610 - 26.609	0.8508 - 1.0475	145.00	195.00	20.00	6	6	**5000-ML-005**	**5000-CH-015**
26.610 - 32.600	1.0476 - 1.2835	165.00	221.00	25.00	8	6	**5000-ML-006**	**5000-CH-019**

Modular





Standard

D_1 Range*		Mandrel		H	No. of	Part No.	
Metric (mm)	Imperial (in)	L_2 (mm)	D_2 (mm)	(mm)	Teeth	Mandrel	Wrench
9.600 - 11.609	0.3780 - 0.4570	65.00	50.00	3	6	**5000-MM-001**	**5000-CH-007**
11.610 - 14.609	0.4571 - 0.5751	65.00	50.00	3.5	6	**5000-MM-002**	**5000-CH-008**
14.610 - 17.609	0.5752 - 0.6932	80.00	50.00	4	6	**5000-MM-003**	**5000-CH-010**
17.610 - 21.609	0.6933 - 0.8507	100.00	50.00	5	6	**5000-MM-004**	**5000-CH-012**
21.610 - 26.609	0.8508 - 1.0475	110.00	50.00	6	6	**5000-MM-005**	**5000-CH-015**
26.610 - 32.600	1.0476 - 1.2835	120.00	50.00	8	6	**5000-MM-006**	**5000-CH-019**

Key on C30: 2

C30: 34 C30: 35 - 38 C10 C30: 32

Setup Information

Expandable Head Style



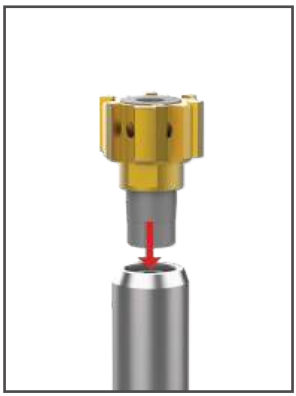


Tolerance: Expandable reamers are manufactured to the middle of the tolerance.

Expanding Heads Adjustment

When the size reaches its lower tolerance, the head can be adjusted to compensate for wear to the cutting edges. This operation can be repeated several times until the surface finish of the hole deteriorates to an unacceptable level.

Replaceable Head Reamer 5000 Series Assembly



Step 1:
Carefully clean the connecting surfaces and insert the replaceable reamer head into the mandrel. Screw it in by hand clockwise.



Step 2:
Tighten the replaceable head down with a wrench until the flat surface of the head is in complete contact with the mandrel.



Step 3:
Compensate for wear by adjusting the front expansion screw while using a wrench to keep the head still.

C30: 35 - 38
Key on C30: 2
C30: 32
C30: 33

Recommended Drilling Data | Metric (mm)

5000 SERIES

ISO	Material	Hardness (BHN)	Speed (m/min) Uncoated Carbide	Coated Carbide	Coated Cermet	Uncoated Cermet
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 180	15 - 20	60 - 80	120 - 200	120 - 200
		180 - 250	20 - 40	80 - 100	120 - 200	120 - 200
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180	15 - 20	60 - 80	120 - 200	120 - 200
		180 - 275	20 - 40	80 - 100	120 - 200	120 - 200
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180	15 - 20	60 - 80	120 - 200	120 - 200
		180 - 325	20 - 40	80 - 100	120 - 200	120 - 200
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180	10 - 15	60 - 80	—	100 - 150
		180 - 375	8 - 10	60 - 80	—	—
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450	8 - 10	60 - 80	—	—
	Structural Steel A36, A285, A516, etc.	125 - 180	15 - 20	60 - 80	120 - 200	120 - 200
		180 - 350	20 - 40	80 - 100	120 - 200	120 - 200
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	15 - 20	60 - 80	120 - 200	120 - 200
		200 - 250	20 - 40	80 - 100	120 - 200	120 - 200
M	**Stainless Steel 400 Series** 416, 420, etc.	135 - 350	8 - 10	—	—	50 - 60
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275	8 - 10	30 - 40	—	—
K	**Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)**	< 200	20 - 30	150 - 200	—	—
		> 200	15 - 20	—	100 - 200	—
	Spheroidal Cast Iron (Ferritic)	260 - 320	15 - 20	—	100 - 120	—
N	**Copper and Alloys, and Brass**	< 500	80 - 100	100 - 200	—	—
	Bronze, and Bronze Phosphorous	< 180	40 - 80	80 - 160	—	150 - 200
	Aluminum and Alloys	< 150	100 - 300	100 - 300	100 - 300	100 - 300
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 310	5 - 7	20 - 30	—	—
	Titanium Alloy	140 - 310	10 - 15	—	—	—

Formulas

1. **RPM = (318.47 • m/min) / DIA**

where:

RPM	= revolutions per minute (rev/min)
m/min	= speed (m/min)
DIA	= diameter of drill (mm)

2. **mm/min = RPM • mm/rev**

where:

mm/min	= mm per minute (mm/min)
RPM	= revolutions per minute (rev/min)
mm/rev	= feed rate (mm/rev)

3. **m/min = RPM • 0.003 • DIA**

where:

m/min	= speed (m/min)
RPM	= revolutions per minute (rev/min)
DIA	= diameter of drill (mm)

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Factory technical assistance is available through our Application Engineering department.

Recommended Drilling Data | Metric (mm)

5000 SERIES

Recommended Feed (mm/rev) by Reamer Diameter					
9.61 mm - 17.60 mm		17.61 mm - 26.60 mm		26.61 mm - 32.60 mm	
Lead A, G	Lead E, N, M	Lead A, G	Lead E, N, M	Lead A, G	Lead E, N, M
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.25 - 0.50	0.30 - 0.60	0.30 - 0.60	0.40 - 0.80	0.40 - 0.70	0.50 - 1.00
0.25 - 0.50	0.30 - 0.60	0.30 - 0.60	0.40 - 0.80	0.40 - 0.70	0.50 - 1.00
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.25 - 0.50	0.30 - 0.60	0.30 - 0.60	0.40 - 0.80	0.40 - 0.70	0.50 - 1.00
0.25 - 0.50	0.30 - 0.60	0.30 - 0.60	0.40 - 0.80	0.40 - 0.70	0.50 - 1.00
0.30 - 0.60	0.50 - 1.00	0.30 - 0.60	0.60 - 1.20	0.40 - 0.80	0.60 - 1.20
0.30 - 0.60	0.50 - 1.00	0.30 - 0.60	0.60 - 1.20	0.40 - 0.80	0.60 - 1.20
0.30 - 0.60	0.50 - 1.00	0.30 - 0.60	0.60 - 1.20	0.40 - 0.80	0.60 - 1.20
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.30 - 0.60	0.50 - 1.00	0.30 - 0.60	0.60 - 1.20	0.40 - 0.80	0.60 - 1.20
0.25 - 0.50	0.30 - 0.60	0.30 - 0.60	0.40 - 0.80	0.40 - 0.70	0.50 - 1.00
0.25 - 0.50	0.30 - 0.60	0.30 - 0.60	0.40 - 0.80	0.40 - 0.70	0.50 - 1.00

Recommended Drilling Data | Imperial (in)

5000 SERIES

ISO	Material	Hardness (BHN)	Speed (SFM) Uncoated Carbide	Coated Carbide	Coated Cermet	Uncoated Cermet
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 180	49 - 66	197 - 262	394 - 656	394 - 656
		180 - 250	66 - 131	262 - 328	394 - 656	394 - 656
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180	49 - 66	197 - 262	394 - 656	394 - 656
		180 - 275	66 - 131	262 - 328	394 - 656	394 - 656
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180	49 - 66	197 - 262	394 - 656	394 - 656
		180 - 325	66 - 131	262 - 328	394 - 656	394 - 656
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180	33 - 49	197 - 262	—	328 - 492
		180 - 375	26 - 33	197 - 262	—	—
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450	26 - 33	197 - 262	—	—
	Structural Steel A36, A285, A516, etc.	125 - 180	49 - 66	197 - 262	394 - 656	394 - 656
		180 - 350	66 - 131	262 - 328	394 - 656	394 - 656
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	49 - 66	197 - 262	394 - 656	394 - 656
		200 - 250	66 - 131	262 - 328	394 - 656	394 - 656
M	**Stainless Steel 400 Series** 416, 420, etc.	135 - 350	26 - 33	—	—	164 - 197
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275	26 - 33	98 - 131	—	—
K	**Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)**	< 200	66 - 98	492 - 656	—	—
		> 200	49 - 66	—	328 - 656	—
	Spheroidal Cast Iron (Ferritic)	260 - 320	49 - 66	—	328 - 394	—
N	**Copper and Alloys, and Brass**	< 500	262 - 328	328 - 656	—	—
	Bronze, and Bronze Phosphorous	< 180	131 - 262	262 - 525	—	492 - 656
	Aluminum and Alloys	< 150	328 - 984	328 - 984	328 - 984	328 - 984
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 310	16 - 23	66 - 98	—	—
	Titanium Alloy	140 - 310	33 - 49	—	—	—

Formulas

1. **RPM = (3.82 • SFM) / DIA**

where:

RPM = revolutions per minute (rev/min)
SFM = speed (ft/min)
DIA = diameter of drill (inch)

2. **IPM = RPM • IPR**

where:

IPM = inches per minute (in/min)
RPM = revolutions per minute (rev/min)
IPR = feed rate (in/rev)

3. **SFM = RPM • 0.262 • DIA**

where:

SFM = speed (ft/min)
RPM = revolutions per minute (rev/min)
DIA = diameter of drill (inch)

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Factory technical assistance is available through our Application Engineering department.

Recommended Drilling Data | Imperial (in)

5000 SERIES

Recommended Feed (IPR) by Reamer Diameter					
0.3780" - 0.6932"		0.6933" - 1.0475"		1.0476" - 1.2835"	
Lead A, G	Lead E, N, M	Lead A, G	Lead E, N, M	Lead A, G	Lead E, N, M
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.010 - 0.020	0.012 - 0.024	0.012 - 0.024	0.016 - 0.031	0.016 - 0.028	0.020 - 0.039
0.010 - 0.020	0.012 - 0.024	0.012 - 0.024	0.016 - 0.031	0.016 - 0.028	0.020 - 0.039
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.010 - 0.020	0.012 - 0.024	0.012 - 0.024	0.016 - 0.031	0.016 - 0.028	0.020 - 0.039
0.010 - 0.020	0.012 - 0.024	0.012 - 0.024	0.016 - 0.031	0.016 - 0.028	0.020 - 0.039
0.012 - 0.024	0.020 - 0.039	0.012 - 0.024	0.024 - 0.047	0.016 - 0.031	0.024 - 0.047
0.012 - 0.024	0.020 - 0.039	0.012 - 0.024	0.024 - 0.047	0.016 - 0.031	0.024 - 0.047
0.012 - 0.024	0.020 - 0.039	0.012 - 0.024	0.024 - 0.047	0.016 - 0.031	0.024 - 0.047
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.012 - 0.024	0.020 - 0.039	0.012 - 0.024	0.024 - 0.047	0.016 - 0.031	0.024 - 0.047
0.010 - 0.020	0.012 - 0.024	0.012 - 0.024	0.016 - 0.031	0.016 - 0.028	0.020 - 0.039
0.010 - 0.020	0.012 - 0.024	0.012 - 0.024	0.016 - 0.031	0.016 - 0.028	0.020 - 0.039

Stock Allowance and Coolant | Metric (mm)

5000 SERIES

ISO	Material	Hardness (BHN)	Coolant	Recommended Stock (mm) by Reamer Diameter* 9.61 mm - 17.60 mm	17.61 mm - 26.60 mm	26.61 mm - 32.60 mm
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 180	Water Soluble / Cutting Oil	0.15 - 0.25	0.20 - 0.40	0.30 - 0.40
		180 - 250				
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180				
		180 - 275				
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180				
		180 - 325				
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180				
		180 - 375				
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450				
	Structural Steel A36, A285, A516, etc.	125 - 180				
		180 - 350				
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200				
		200 - 250				
M	**Stainless Steel 400 Series** 416, 420, etc.	135 - 350	Water Soluble / Cutting Oil	0.15 - 0.25	0.20 - 0.40	0.30 - 0.40
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275				
K	**Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)**	< 200	Water Soluble / Cutting Oil	0.15 - 0.25	0.20 - 0.40	0.30 - 0.40
		> 200				
	Spheroidal Cast Iron (Ferritic)	260 - 320				
N	**Copper and Alloys, and Brass**	< 500	Water Soluble	0.15 - 0.25	0.20 - 0.40	0.30 - 0.40
	Bronze, and Bronze Phosphorous	< 180	Water Soluble / Cutting Oil			
	Aluminum and Alloys	< 150				
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 310	Water Soluble / Cutting Oil	0.15 - 0.25	0.20 - 0.40	0.30 - 0.40
	Titanium Alloy	140 - 310				

*Stock value is on diameter.

Stock Allowance and Coolant | Imperial (in)

5000 SERIES

ISO	Material	Hardness (BHN)	Coolant	Recommended Stock (in) by Reamer Diameter* 0.3780" - 0.6932"	0.6933" - 1.0475"	1.5591" - 1.5984"
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 180	Water Soluble / Cutting Oil	0.006 - 0.010	0.008 - 0.016	0.012 - 0.016
		180 - 250				
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180				
		180 - 275				
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180				
		180 - 325				
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180				
		180 - 375				
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450				
	Structural Steel A36, A285, A516, etc.	125 - 180				
		180 - 350				
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200				
		200 - 250				
M	**Stainless Steel 400 Series** 416, 420, etc.	135 - 350	Water Soluble / Cutting Oil	0.006 - 0.010	0.008 - 0.016	0.012 - 0.016
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275				
K	**Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)**	< 200	Water Soluble / Cutting Oil	0.006 - 0.010	0.008 - 0.016	0.012 - 0.016
		> 200				
	Spheroidal Cast Iron (Ferritic)	260 - 320				
N	**Copper and Alloys, and Brass**	< 500	Water Soluble	0.006 - 0.010	0.008 - 0.016	0.012 - 0.016
	Bronze, and Bronze Phosphorous	< 180	Water Soluble / Cutting Oil			
	Aluminum and Alloys	< 150				
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 310	Water Soluble / Cutting Oil	0.006 - 0.010	0.008 - 0.016	0.012 - 0.016
	Titanium Alloy	140 - 310				

*Stock value is on diameter.

SECTION

C40-CRR

Cutting Ring Reamers



CUTTING RING REAMERS

32.600 mm - 200.600 mm
(1.2835" - 7.8976")



Hole roundness without compromise

The cutting ring style reamers are ideal for large diameter holes because they eliminate the need to replace a large solid reamer, reducing waste. The unique design allows for diameter expansion to accommodate for cutting edge wear. The cutting ring style reamer can also be repaired to new condition, which extends the life of the investment. ALVAN reamers hold tight tolerances while improving the surface finish of the hole.

- Multiple cutting edges, which are set asymmetrically to guarantee almost perfect hole geometry.
- Expandable to maintain size tolerance, which is particularly useful when repairing the cutting edges.
- Asymmetrically positioned cutting edges to assure the best roundness of the hole.

Applicable Industries

- Aerospace
- Agriculture
- Automotive
- Defense
- General Production
- Heavy Equipment
- Medical
- Oil and Gas
- Renewable Energy/ Energy
- Tool, Mold, and Die

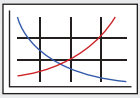
S.C.A.M.I.®

Reference Icons

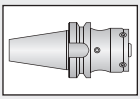
The following icons will appear throughout the catalog to help you navigate between products.



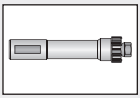
Setup / Assembly Information
Detailed instructions and information regarding the corresponding part(s).



Recommended Cutting Data
Speed and feed recommendations for optimum and safe drilling.



Modular Connection Shanks
Refers to Cerit modular shanks that can connect with reamers.



Cutting Ring Mandrels
Refers to the reamer mandrel options that connect with the cutting ring.



Cutting Rings
Refers to the available cutting ring options.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

WARNING means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

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Introduction Information

Product Overview

Cutting Ring Reamer Features

- Diameter range: 17.600 mm - 200.600 mm (0.6929" - 7.8976").
- Available with straight or left-hand helical flutes.
- Expands to accommodate for wear.
- Mandrels are available for both through holes or blind holes.
- Workday lead time 20 - 25 days.
- Available for recondition.



Straight Flute



Left-Hand Helical Flute



Uncoated



TiN Coated



TiAlN Coated



TiCN Coated



Alcrona Coated



Hardcut Coated

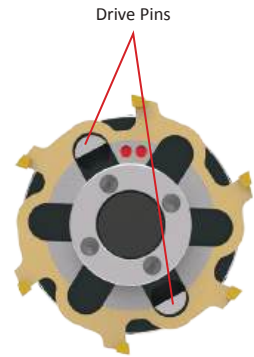


R Coated



T Coated





Introduction Information

Product Nomenclature

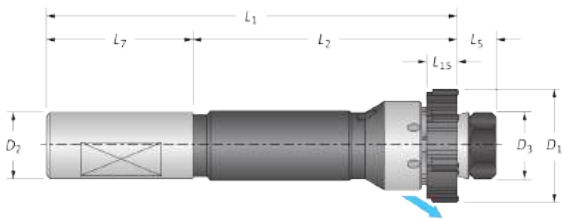
Cutting Rings

	2	ANC-ST			F	–	20000	+	003	–	003
Diameter Unit		**Substrate and Coating**			**Lead-in**		**Diameter**		**Tolerance***		
Blank = Metric (mm) **I** = Imperial (in)			Carbide	Cermet	**E**		**XXXXX** = X.XXXX" XX.XXX mm		**4 decimal places** = inch tolerance **3 decimal places** = mm tolerance		
		Uncoated	**000-KT**	**AVC-ST**	**M**						
		TiN	**TIN-KT**	**ANC-ST**	**A**						
		TiCN	**TIC-KT**	**ACC-ST**	**F**						
		TiAlN	**TIA-KT**	**AAC-ST**	**G**						
		Alcrona	**TLK-KT**	**ALK-ST**	**L**						
		Hardcut	**TLH-KT**	**ALH-ST**	**N**						
		R coated	**TLR-KT**	**ALR-ST**	**T**						
		T coated	**TLT-KT**	**ALT-ST**	**V**						
					K						

*The total tolerance capable is 0.005 mm (0.0002").
NOTE: If diameter and tolerance are specified in inch units, put an "**I**" at the beginning of the item number.

Reference Key

Symbol	Attribute
D_1	Reamer diameter
D_2	Shank diameter
D_3	Maximum conical ring diameter
L_1	Overall length
L_2	Length of cut
L_5	Maximum overhang
L_7	Shank length
L_{15}	Flute length



Building Your Complete Tool

You will need both pieces to complete your ring style reamer assembly. There is a guide on the page where the rings are located. You must follow the guide to build the item number for the reamer ring that you need.

However, the complete mandrel item numbers are listed on their respective pages. You do not need to build the mandrel numbers.

1

Select Your Ring

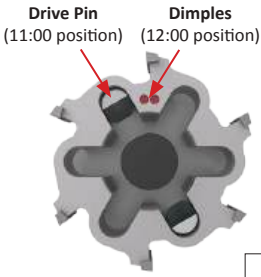


2

Select Your Mandrel



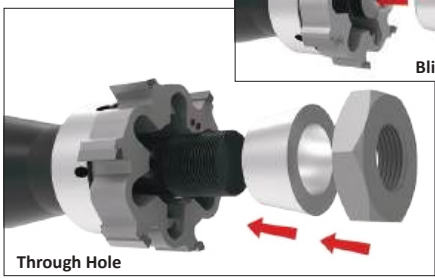
Setup Information



Step 1:

With the drive pins assembled, insert the cutting ring onto the mandrel. Make sure the dimples are at the 12:00 position with the drive pin at the 11:00 position.







Adjustment Procedure

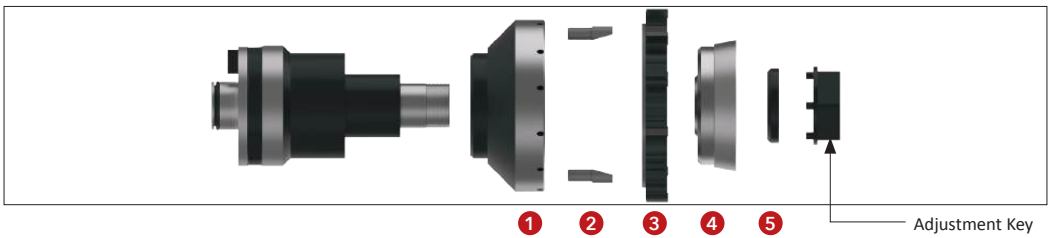
1. Turn the conical ring slowly using an adjustment key (left-hand thread). Adjustment keys are supplied with reamers from diameter 17.600 mm to 40.599 mm.
2. Check the diameter setting of the cutting ring with a micrometer.
3. When the required diameter is achieved, unscrew the conical ring until there is a click and the drive pins are in traction in the opposite direction to the cutting action of the reamer. The reamer is ready for use.

Step 2:

Insert the conical ring. Tighten the lock nut to set the desired reamer size (left-hand thread). Then loosen the lock nut slightly until it "clicks" against the drive wall.

NOTE: We recommend lubricating the thread and the conical surface of contact between the cutting ring and the conical ring with antifriction MOLYKOTE® grease.

For Diameter Range: 100.600 mm - 200.600 mm



Assembly

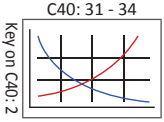
1. With the drive pins (2) assembled, mount the flange (1) onto the mandrel. Assemble the cutting ring (3) so the slot on the left side of the dimple is mounted onto the drive pins (2). Insert the conical ring (4).
2. Screw the ring nut (5) onto the mandrel and tighten manually so the conical ring (4) makes contact with the cutting ring (3). The thread is left-handed.

   NOTE: We recommend lubricating the thread and the conical surface of contact between the cutting ring and the conical ring with antifriction MOLYKOTE® grease.

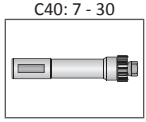
Adjustment Procedure

1. Turn the ring nut (5) slowly using a pin spanner.
2. Check the diameter setting of the cutting ring with a micrometer. Make sure the drive pins (2) are in traction and in the opposite direction of the cutting action of the reamer.
3. When the required diameter is achieved, the tool is ready to use.

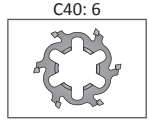
C40: 31 - 34



C40: 7 - 30



C40: 6



ⓜ = Metric (mm)
ⓘ = Imperial (in)

Cutting Rings

17.600 mm - 200.600 mm (0.6929" - 7.8976")







Metric (mm)

	D_1 Range Metric (mm)	L_{15} Straight Flute	L_{15} Helical Flute	Number of Teeth
ⓜ	32.600 - 45.599	16.00	16.00	6
	45.600 - 79.599	18.50	18.50	6
	79.600 - 100.599	18.50	18.50	8
	100.600 - 110.599	18.50	18.50	10
	110.600 - 200.600	18.50	18.50	12

Imperial (in)

	D_1 Range Imperial (inch)	L_{15} Straight Flute	L_{15} Helical Flute	Number of Teeth
ⓘ	1.2835 - 1.7952	0.630	0.630	6
	1.7953 - 3.1338	0.728	0.728	6
	3.1339 - 3.9606	0.728	0.728	8
	3.9607 - 4.3543	0.728	0.728	10
	4.3544 - 7.8976	0.728	0.728	12

2ANC-ST F – 055298 + 003 – 003

- 2ANC-ST: Cermet with TiN Coating
- F: Lead-in
- 055298: Diameter
- 003 – 003: Tolerance

Coating and Substrate Codes

Grade	Uncoated	TiN	TiCN	TiAlN	Alcrona	Hardcut	R Coating	T Coating
Carbide	2000-KT	2TIN-KT	2TIC-KT	2TIA-KT	2TLK-KT	2TLH-KT	2TLR-KT	2TLT-KT
Cermet	2AVC-ST	2ANC-ST	2ACC-ST	2AAC-ST	2ALK-ST	2ALH-ST	2ALR-ST	2ALT-ST

Reamer Lead-In

	Straight Flute T	F	N	G	L	A	V	K	Left-hand helical E	M
P			●	●		◐	○	◐	●	
M			◐	●				◐	●	
K				◐			●	◐	◐	●
N				●			◐		●	◐
S	●			◐					●	◐
H			◐	●					◐	●

● Best ◐ Better ○ Good

NOTE: For more detailed descriptions of cutting material, lead-ins, and coatings, please see pg. **xv - xvi.**

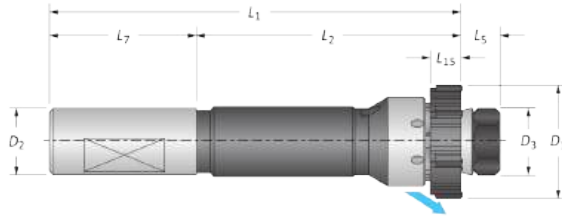
Key on C40: 2
C40: 5
C40: 31 - 34
C10
C40: 7 - 30

ⓜ = Metric (mm)
ⓘ = Imperial (in)

4550 Series Mandrels

17.600 mm - 100.599 mm (0.6929" - 3.9606")





Series	4550	Shank Type	Cylindrical	Application	Through Holes	Coolant	Radial

Metric (mm)

D_1 Range	Mandrel D_3	L_5	L_{15}	L_2	L_1	Shank L_7	D_2	Teeth	Part No. (Complete Mandrel^) With Flat	Without Flat
17.600 - 21.599	12.0	11.0	11.0	81	142.0	50	20	6	**4550-MC-010***	**4550A-MC-010***
21.600 - 25.599	12.0	11.0	12.0	81	142.0	50	20	6	**4550-MC-020***	**4550A-MC-020***
25.600 - 32.599	15.6	11.0	14.0	102	163.0	50	20	6	**4550-MC-030***	**4550A-MC-030***
32.600 - 40.599	22.0	14.0	16.0	102	172.0	56	25	6	**4550-MC-040**	**4550A-MC-040**
40.600 - 45.599	25.4	15.0	16.0	102	173.0	56	25	6	**4550-MC-050**	**4550A-MC-050**
45.600 - 49.599	30.0	20.5	18.5	105	185.5	60	32	6	**4550-MC-060**	**4550A-MC-060**
49.600 - 60.599	30.0	20.5	18.5	105	185.5	60	32	6	**4550-MC-070**	**4550A-MC-070**
60.600 - 70.599	40.0	24.5	18.5	105	189.5	60	32	6	**4550-MC-080**	**4550A-MC-080**
70.600 - 79.599	40.0	24.5	18.5	105	189.5	60	32	6	**4550-MC-090**	**4550A-MC-090**
79.600 - 90.599	56.0	28.5	18.5	105	203.5	70	40	8	**4550-MC-100**	**4550A-MC-100**
90.600 - 100.599	56.0	28.5	18.5	105	203.5	70	40	8	**4550-MC-110**	**4550A-MC-110**

Imperial (in)

D_1 Range	Mandrel D_3	L_5	L_{15}	L_2	L_1	Shank L_7	D_2	Teeth	Part No. (Complete Mandrel^) With Flat	Without Flat
0.6929 - 0.8504	0.472	0.433	0.433	3.189	5.591	1.969	0.750	6	**94550-MC-010***	**94550A-MC-010***
0.8505 - 1.0078	0.472	0.433	0.472	3.189	5.591	1.969	0.750	6	**94550-MC-020***	**94550A-MC-020***
1.0079 - 1.2834	0.614	0.433	0.551	4.016	6.417	1.969	0.750	6	**94550-MC-030***	**94550A-MC-030***
1.2835 - 1.5984	0.866	0.551	0.630	4.016	6.772	2.205	1.000	6	**94550-MC-040**	**94550A-MC-040**
1.5985 - 1.7952	1.000	0.591	0.630	4.016	6.811	2.205	1.000	6	**94550-MC-050**	**94550A-MC-050**
1.7953 - 1.9527	1.181	0.807	0.728	4.134	7.303	2.362	1.250	6	**94550-MC-060**	**94550A-MC-060**
1.9528 - 2.3858	1.181	0.807	0.728	4.134	7.303	2.362	1.250	6	**94550-MC-070**	**94550A-MC-070**
2.3859 - 2.7795	1.575	0.965	0.728	4.134	7.461	2.362	1.250	6	**94550-MC-080**	**94550A-MC-080**
2.7796 - 3.1338	1.575	0.965	0.728	4.134	7.461	2.362	1.250	6	**94550-MC-090**	**94550A-MC-090**
3.1339 - 3.5669	2.205	1.122	0.728	4.134	8.012	2.756	1.500	8	**94550-MC-100**	**94550A-MC-100**
3.5670 - 3.9606	2.205	1.122	0.728	4.134	8.012	2.756	1.500	8	**94550-MC-110**	**94550A-MC-110**

^Complete mandrel does not include cutting ring.

* 17.600 mm - 32.599 mm (0.6929" - 1.2834") diameter cutting rings are available as specials by contacting Application Engineering.

C40

C40: 5 C40: 31 - 34 C10 C40: 6

Key on C40: 2

m = Metric (mm)
i = Imperial (in)

4550 Series Mandrels

Spare Parts



Metric (mm)

	Part No. (Complete Mandrel^)		Spare Parts 1.		2.	3.	
	With Flat	Without Flat	Drive Pins	Number of Drive Pins	Conical Ring	Nut	Wrench Size (mm)
	4550-MC-010	4550A-MC-010	2000-CO-010	3	2010-AC-010	2000-DA-010	10
	4550-MC-020	4550A-MC-020	2000-CO-020	3	2010-AC-010	2000-DA-010	10
	4550-MC-030	4550A-MC-030	2000-CO-030	3	2010-AC-020	2000-DA-020	13
	4550-MC-040	4550A-MC-040	2000-CO-040	2	2010-AC-030	2000-DA-060	19
	4550-MC-050	4550A-MC-050	2000-CO-060	2	2010-AC-040	2000-DA-090	22
ⓜ	4550-MC-060	4550A-MC-060	2000-CO-060	2	2010-AC-050	2000-GH-880	30 ◆
	4550-MC-070	4550A-MC-070	2000-CO-070	2	2010-AC-050	2000-GH-880	30 ◆
	4550-MC-080	4550A-MC-080	2000-CO-080	2	2010-AC-060	2000-GH-900	40 ◆
	4550-MC-090	4550A-MC-090	2000-CO-090	2	2010-AC-060	2000-GH-900	40 ◆
	4550-MC-100	4550A-MC-100	2000-CO-090	2	2010-AC-070	2000-GH-920	56 ◆
	4550-MC-110	4550A-MC-110	2000-CO-090	2	2010-AC-070	2000-GH-920	56 ◆

Imperial (in)

	Part No. (Complete Mandrel^)		Spare Parts 1.		2.	3.	
	With Flat	Without Flat	Drive Pins	Number of Drive Pins	Conical Ring	Nut	Wrench Size (mm)
	94550-MC-010	94550A-MC-010	2000-CO-010	3	2010-AC-010	2000-DA-010	10
	94550-MC-020	94550A-MC-020	2000-CO-020	3	2010-AC-010	2000-DA-010	10
	94550-MC-030	94550A-MC-030	2000-CO-030	3	2010-AC-020	2000-DA-020	13
	94550-MC-040	94550A-MC-040	2000-CO-040	2	2010-AC-030	2000-DA-060	19
	94550-MC-050	94550A-MC-050	2000-CO-060	2	2010-AC-040	2000-DA-090	22
ⓘ	94550-MC-060	94550A-MC-060	2000-CO-060	2	2010-AC-050	2000-GH-880	30 ◆
	94550-MC-070	94550A-MC-070	2000-CO-070	2	2010-AC-050	2000-GH-880	30 ◆
	94550-MC-080	94550A-MC-080	2000-CO-080	2	2010-AC-060	2000-GH-900	40 ◆
	94550-MC-090	94550A-MC-090	2000-CO-090	2	2010-AC-060	2000-GH-900	40 ◆
	94550-MC-100	94550A-MC-100	2000-CO-090	2	2010-AC-070	2000-GH-920	56 ◆
	94550-MC-110	94550A-MC-110	2000-CO-090	2	2010-AC-070	2000-GH-920	56 ◆

^Complete mandrel does not include cutting ring.
◆ Spanner wrench.

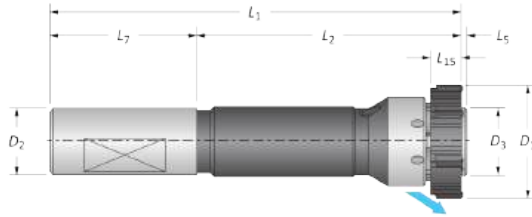
Key on C40: 2
C40: 5
C40: 31 - 34
C10
C40: 6

ⓜ = Metric (mm)
ⓘ = Imperial (in)

4555 Series Mandrels

17.600 mm - 100.599 mm (0.6929" - 3.9606")





Series	4555	Shank Type	Cylindrical	Application	Blind Holes	Coolant	Radial

Metric (mm)

	D_1 Range	Mandrel D_3	L_5	L_{15}	L_2	L_1	Shank L_7	D_2	Teeth	Part No. (Complete Mandrel^) With Flat	Without Flat
	17.600 - 21.599	11.2	1.0	11.0	81	132.0	50	20	6	**4555-MC-010***	**4555A-MC-010***
	21.600 - 25.599	11.2	1.0	12.0	81	132.0	50	20	6	**4555-MC-020***	**4555A-MC-020***
	25.600 - 29.599	15.1	1.0	14.0	102	153.0	50	20	6	**4555-MC-030***	**4555A-MC-030***
	29.600 - 32.599	15.1	1.0	14.0	102	153.0	50	20	6	**4555-MC-035***	**4555A-MC-035***
	32.600 - 36.599	20.3	1.0	16.0	102	159.0	56	25	6	**4555-MC-040**	**4555A-MC-040**
	36.600 - 40.599	20.3	1.0	16.0	102	159.0	56	25	6	**4555-MC-045**	**4555A-MC-045**
	40.600 - 45.599	24.1	1.0	16.0	102	159.0	56	25	6	**4555-MC-050**	**4555A-MC-050**
ⓜ	45.600 - 49.599	27.9	1.5	18.5	105	166.5	60	32	6	**4555-MC-060**	**4555A-MC-060**
	49.600 - 55.599	27.9	1.5	18.5	105	166.5	60	32	6	**4555-MC-070**	**4555A-MC-070**
	55.600 - 60.599	27.9	1.5	18.5	105	166.5	60	32	6	**4555-MC-075**	**4555A-MC-075**
	60.600 - 65.599	37.1	1.5	18.5	105	166.5	60	32	6	**4555-MC-080**	**4555A-MC-080**
	65.600 - 70.599	37.1	1.5	18.5	105	166.5	60	32	6	**4555-MC-085**	**4555A-MC-085**
	70.600 - 79.599	37.1	1.5	18.5	105	166.5	60	32	6	**4555-MC-090**	**4555A-MC-090**
	79.600 - 90.599	53.1	1.5	18.5	105	176.5	70	40	8	**4555-MC-100**	**4555A-MC-100**
	90.600 - 100.599	53.1	1.5	18.5	105	176.5	70	40	8	**4555-MC-110**	**4555A-MC-110**

Imperial (in)

	D_1 Range	Mandrel D_3	L_5	L_{15}	L_2	L_1	Shank L_7	D_2	Teeth	Part No. (Complete Mandrel^) With Flat	Without Flat
	0.6929 - 0.8504	0.441	0.039	0.433	3.189	5.197	1.969	0.750	6	**94555-MC-010***	**94555A-MC-010***
	0.8505 - 1.0078	0.441	0.039	0.472	3.189	5.197	1.969	0.750	6	**94555-MC-020***	**94555A-MC-020***
	1.0079 - 1.1653	0.594	0.039	0.551	4.016	6.024	1.969	0.750	6	**94555-MC-030***	**94555A-MC-030***
	1.1654 - 1.2834	0.594	0.039	0.551	4.016	6.024	1.969	0.750	6	**94555-MC-035***	**94555A-MC-035***
	1.2835 - 1.4409	0.799	0.039	0.630	4.016	6.260	2.205	1.000	6	**94555-MC-040**	**94555A-MC-040**
	1.4410 - 1.5984	0.799	0.039	0.630	4.016	6.260	2.205	1.000	6	**94555-MC-045**	**94555A-MC-045**
	1.5985 - 1.7952	0.949	0.039	0.630	4.016	6.260	2.205	1.000	6	**94555-MC-050**	**94555A-MC-050**
ⓘ	1.7953 - 1.9527	1.098	0.059	0.728	4.134	6.555	2.362	1.250	6	**94555-MC-060**	**94555A-MC-060**
	1.9528 - 2.1889	1.098	0.059	0.728	4.134	6.555	2.362	1.250	6	**94555-MC-070**	**94555A-MC-070**
	2.1890 - 2.3858	1.098	0.059	0.728	4.134	6.555	2.362	1.250	6	**94555-MC-075**	**94555A-MC-075**
	2.3859 - 2.5826	1.461	0.059	0.728	4.134	6.555	2.362	1.250	6	**94555-MC-080**	**94555A-MC-080**
	2.5827 - 2.7795	1.461	0.059	0.728	4.134	6.555	2.362	1.250	6	**94555-MC-085**	**94555A-MC-085**
	2.7796 - 3.1338	1.461	0.059	0.728	4.134	6.555	2.362	1.250	6	**94555-MC-090**	**94555A-MC-090**
	3.1339 - 3.5669	2.091	0.059	0.728	4.134	6.949	2.756	1.500	8	**94555-MC-100**	**94555A-MC-100**
	3.5670 - 3.9606	2.091	0.059	0.728	4.134	6.949	2.756	1.500	8	**94555-MC-110**	**94555A-MC-110**

^Complete mandrel does not include cutting ring.

* 17.600 mm - 32.599 mm (0.6929" - 1.2834") diameter cutting rings are available as specials by contacting Application Engineering.

C40: 5
Key on C40: 2
C40: 31 - 34
C10
C40: 6

ⓜ = Metric (mm)
ⓘ = Imperial (in)

4555 Series Mandrels

Spare Parts



Metric (mm)

	Part No. (Complete Mandrel^)		Spare Parts 1.		Spare Parts 2.			Spare Parts 3.	
	With Flat	Without Flat	Drive Pins	Number of Drive Pins	Conical Ring	Conical Ring (2nd Expansion)	Conical Ring (3rd Expansion)	Adjusting Key	Wrench Size (mm)
	4555-MC-010	**4555A-MC-010**	2000-CO-010	3	4001-AC-115	4001-AC-215	—	4001-CH-015	10
	4555-MC-020	**4555A-MC-020**	2000-CO-020	3	4001-AC-115	4001-AC-215	—	4001-CH-015	10
	4555-MC-030	**4555A-MC-030**	2000-CO-030	3	4001-AC-125	4001-AC-225	4001-AC-325	4001-CH-025	13
	4555-MC-035	**4555A-MC-035**	2000-CO-040	2	4001-AC-125	4001-AC-225	4001-AC-325	4001-CH-025	13
	4555-MC-040	**4555A-MC-040**	2000-CO-040	2	4001-AC-135	4001-AC-235	4001-AC-335	4001-CH-035	18
	4555-MC-045	**4555A-MC-045**	2000-CO-050	2	4001-AC-135	4001-AC-235	4001-AC-335	4001-CH-035	18
	4555-MC-050	**4555A-MC-050**	2000-CO-060	2	4001-AC-145	4001-AC-245	4001-AC-345	4001-CH-045	22
ⓜ	**4555-MC-060**	**4555A-MC-060**	2000-CO-060	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055	26
	4555-MC-070	**4555A-MC-070**	2000-CO-070	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055	26
	4555-MC-075	**4555A-MC-075**	2000-CO-080	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055	26
	4555-MC-080	**4555A-MC-080**	2000-CO-080	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065	34
	4555-MC-085	**4555A-MC-085**	2000-CO-090	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065	34
	4555-MC-090	**4555A-MC-090**	2000-CO-090	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065	34
	4555-MC-100	**4555A-MC-100**	2000-CO-090	2	4001-AC-185	4001-AC-285	4001-AC-385	4001-CH-085	46
	4555-MC-110	**4555A-MC-110**	2000-CO-090	2	4001-AC-185	4001-AC-285	4001-AC-385	4001-CH-085	46

Imperial (in)

	Part No. (Complete Mandrel^)		Spare Parts 1.		Spare Parts 2.			Spare Parts 3.	
	With Flat	Without Flat	Drive Pins	Number of Drive Pins	Conical Ring	Conical Ring (2nd Expansion)	Conical Ring (3rd Expansion)	Adjusting Key	Wrench Size (mm)
	94555-MC-010	**94555A-MC-010**	2000-CO-010	3	4001-AC-115	4001-AC-215	—	4001-CH-015	10
	94555-MC-020	**94555A-MC-020**	2000-CO-020	3	4001-AC-115	4001-AC-215	—	4001-CH-015	10
	94555-MC-030	**94555A-MC-030**	2000-CO-030	3	4001-AC-125	4001-AC-225	4001-AC-325	4001-CH-025	13
	94555-MC-035	**94555A-MC-035**	2000-CO-040	2	4001-AC-125	4001-AC-225	4001-AC-325	4001-CH-025	13
	94555-MC-040	**94555A-MC-040**	2000-CO-040	2	4001-AC-135	4001-AC-235	4001-AC-335	4001-CH-035	18
	94555-MC-045	**94555A-MC-045**	2000-CO-050	2	4001-AC-135	4001-AC-235	4001-AC-335	4001-CH-035	18
	94555-MC-050	**94555A-MC-050**	2000-CO-060	2	4001-AC-145	4001-AC-245	4001-AC-345	4001-CH-045	22
ⓘ	**94555-MC-060**	**94555A-MC-060**	2000-CO-060	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055	26
	94555-MC-070	**94555A-MC-070**	2000-CO-070	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055	26
	94555-MC-075	**94555A-MC-075**	2000-CO-080	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055	26
	94555-MC-080	**94555A-MC-080**	2000-CO-080	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065	34
	94555-MC-085	**94555A-MC-085**	2000-CO-090	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065	34
	94555-MC-090	**94555A-MC-090**	2000-CO-090	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065	34
	94555-MC-100	**94555A-MC-100**	2000-CO-090	2	4001-AC-185	4001-AC-285	4001-AC-385	4001-CH-085	46
	94555-MC-110	**94555A-MC-110**	2000-CO-090	2	4001-AC-185	4001-AC-285	4001-AC-385	4001-CH-085	46

^Complete mandrel does not include cutting ring.

Key on C40: 2

C40: 5

C40: 31 - 34

C10

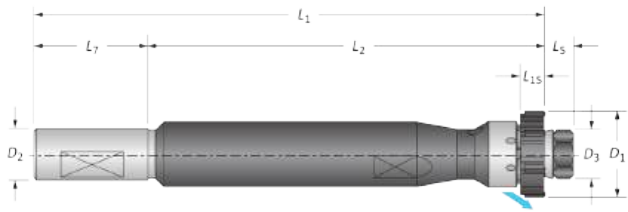
C40: 6

ⓜ = Metric (mm)
ⓘ = Imperial (in)

4500 Series Mandrels

17.600 mm - 100.599 mm (0.6929" - 3.9606")





Series	4500	Shank Type	Cylindrical	Application	Through Holes	Coolant	Radial

Metric (mm)

D_1 Range	Mandrel D_3	L_5	L_{15}	L_2	L_1	Shank L_7	D_2	Teeth	Part No. (Complete Mandrel^) With Flat	Without Flat
17.600 - 21.599	12.0	11.0	11.0	121	182.0	50	20	6	**4500-MC-010***	**4500A-MC-010***
21.600 - 25.599	12.0	11.0	12.0	121	182.0	50	20	6	**4500-MC-020***	**4500A-MC-020***
25.600 - 32.599	15.6	11.0	14.0	153	214.0	50	20	6	**4500-MC-030***	**4500A-MC-030***
32.600 - 40.599	22.0	14.0	16.0	179	249.0	56	25	6	**4500-MC-040**	**4500A-MC-040**
40.600 - 45.599	25.4	15.0	16.0	201	272.0	56	25	6	**4500-MC-050**	**4500A-MC-050**
45.600 - 49.599	30.0	20.5	18.5	214	294.5	60	32	6	**4500-MC-060**	**4500A-MC-060**
49.600 - 60.599	30.0	20.5	18.5	214	294.5	60	32	6	**4500-MC-070**	**4500A-MC-070**
60.600 - 70.599	40.0	24.5	18.5	237	321.5	60	32	6	**4500-MC-080**	**4500A-MC-080**
70.600 - 79.599	40.0	24.5	18.5	237	321.5	60	32	6	**4500-MC-090**	**4500A-MC-090**
79.600 - 90.599	56.0	28.5	18.5	245	343.5	70	40	6	**4500-MC-100**	**4500A-MC-100**
90.600 - 100.599	56.0	28.5	18.5	245	343.5	70	40	8	**4500-MC-110**	**4500A-MC-110**

Imperial (in)

D_1 Range	Mandrel D_3	L_5	L_{15}	L_2	L_1	Shank L_7	D_2	Teeth	Part No. (Complete Mandrel^) With Flat	Without Flat
0.6929 - 0.8504	0.472	0.433	0.433	4.764	7.165	1.969	0.750	6	**94500-MC-010***	**94500A-MC-010***
0.8505 - 1.0078	0.472	0.433	0.472	4.764	7.165	1.969	0.750	6	**94500-MC-020***	**94500A-MC-020***
1.0079 - 1.2834	0.614	0.433	0.551	6.024	8.425	1.969	0.750	6	**94500-MC-030***	**94500A-MC-030***
1.2835 - 1.5984	0.866	0.551	0.630	7.047	9.803	2.205	1.000	6	**94500-MC-040**	**94500A-MC-040**
1.5985 - 1.7952	0.866	0.551	0.630	7.047	9.803	2.205	1.000	6	**94500-MC-050**	**94500A-MC-050**
1.7953 - 1.9527	1.000	0.591	0.630	7.913	10.709	2.205	1.000	6	**94500-MC-060**	**94500A-MC-060**
1.9528 - 2.3858	1.181	0.807	0.728	8.425	11.594	2.362	1.250	6	**94500-MC-070**	**94500A-MC-070**
2.3859 - 2.7795	1.575	0.965	0.728	9.331	12.657	2.362	1.250	6	**94500-MC-080**	**94500A-MC-080**
2.7796 - 3.1338	1.575	0.965	0.728	9.331	12.657	2.362	1.250	6	**94500-MC-090**	**94500A-MC-090**
3.1339 - 3.5669	2.205	1.122	0.728	9.646	13.524	2.756	1.500	6	**94500-MC-100**	**94500A-MC-100**
3.5670 - 3.9606	2.205	1.122	0.728	9.646	13.524	2.756	1.500	8	**94500-MC-110**	**94500A-MC-110**

^Complete mandrel does not include cutting ring.

* 17.600 mm - 32.599 mm (0.6929" - 1.2834") diameter cutting rings are available as specials by contacting Application Engineering.

C40: 5 C40: 31 - 34 C10 C40: 6

Key on C40: 2

(m) = Metric (mm)
(i) = Imperial (in)

4500 Series Mandrels

Spare Parts



Metric (mm)

	Part No. (Complete Mandrel^)		Spare Parts 1.		2.	3.	
	With Flat	Without Flat	Drive Pins	Number of Drive Pins	Conical Ring	Nut	Wrench Size (mm)
	4500-MC-010	**4500A-MC-010**	2000-CO-010	3	2010-AC-010	2000-DA-010	10
	4500-MC-020	**4500A-MC-020**	2000-CO-020	3	2010-AC-010	2000-DA-010	10
	4500-MC-030	**4500A-MC-030**	2000-CO-030	3	2010-AC-020	2000-DA-020	13
	4500-MC-040	**4500A-MC-040**	2000-CO-040	2	2010-AC-030	2000-DA-060	19
	4500-MC-050	**4500A-MC-050**	2000-CO-060	2	2010-AC-040	2000-DA-090	22
(m)	**4500-MC-060**	**4500A-MC-060**	2000-CO-060	2	2010-AC-050	2000-GH-880	30 ◆
	4500-MC-070	**4500A-MC-070**	2000-CO-070	2	2010-AC-050	2000-GH-880	30 ◆
	4500-MC-080	**4500A-MC-080**	2000-CO-080	2	2010-AC-060	2000-GH-900	40 ◆
	4500-MC-090	**4500A-MC-090**	2000-CO-090	2	2010-AC-060	2000-GH-900	40 ◆
	4500-MC-100	**4500A-MC-100**	2000-CO-090	2	2010-AC-070	2000-GH-920	56 ◆
	4500-MC-110	**4500A-MC-110**	2000-CO-090	2	2010-AC-070	2000-GH-920	56 ◆

Imperial (in)

	Part No. (Complete Mandrel^)		Spare Parts 1.		2.	3.	
	With Flat	Without Flat	Drive Pins	Number of Drive Pins	Conical Ring	Nut	Wrench Size (mm)
	94500-MC-010	**94500A-MC-010**	2000-CO-010	3	2010-AC-010	2000-DA-010	10
	94500-MC-020	**94500A-MC-020**	2000-CO-020	3	2010-AC-010	2000-DA-010	10
	94500-MC-030	**94500A-MC-030**	2000-CO-030	3	2010-AC-020	2000-DA-020	13
	94500-MC-040	**94500A-MC-040**	2000-CO-040	2	2010-AC-030	2000-DA-060	19
	94500-MC-050	**94500A-MC-050**	2000-CO-060	2	2010-AC-040	2000-DA-090	22
(i)	**94500-MC-060**	**94500A-MC-060**	2000-CO-060	2	2010-AC-050	2000-GH-880	30 ◆
	94500-MC-070	**94500A-MC-070**	2000-CO-070	2	2010-AC-050	2000-GH-880	30 ◆
	94500-MC-080	**94500A-MC-080**	2000-CO-080	2	2010-AC-060	2000-GH-900	40 ◆
	94500-MC-090	**94500A-MC-090**	2000-CO-090	2	2010-AC-060	2000-GH-900	40 ◆
	94500-MC-100	**94500A-MC-100**	2000-CO-090	2	2010-AC-070	2000-GH-920	56 ◆
	94500-MC-110	**94500A-MC-110**	2000-CO-090	2	2010-AC-070	2000-GH-920	56 ◆

^Complete mandrel does not include cutting ring.
◆ Spanner wrench.

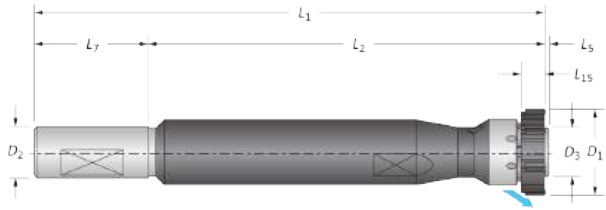
Key on C40: 2
C40: 5
C40: 31 - 34
C10
C40: 6

(m) = Metric (mm)
(i) = Imperial (in)

4505 Series Mandrels

17.600 mm - 100.599 mm (0.6929" - 3.9606")





Series	4505	Shank Type	Cylindrical	Application	Blind Holes	Coolant	Radial

Metric (mm)

D_1 Range	Mandrel D_3	L_5	L_{15}	L_2	L_1	Shank L_7	D_2	Teeth	Part No. (Complete Mandrel^) With Flat	Without Flat
17.600 - 21.599	11.2	1.0	11.0	121	172.0	50	20	6	**4505-MC-010***	**4505A-MC-010***
21.600 - 25.599	11.2	1.0	12.0	121	172.0	50	20	6	**4505-MC-020***	**4505A-MC-020***
25.600 - 29.599	15.1	1.0	14.0	153	204.0	50	20	6	**4505-MC-030***	**4505A-MC-030***
29.600 - 32.599	15.1	1.0	14.0	153	204.0	50	20	6	**4505-MC-035***	**4505A-MC-035***
32.600 - 36.599	20.3	1.0	16.0	179	236.0	56	25	6	**4505-MC-040**	**4505A-MC-040**
36.600 - 40.599	20.3	1.0	16.0	179	236.0	56	25	6	**4505-MC-045**	**4505A-MC-045**
40.600 - 45.599	24.1	1.0	16.0	201	258.0	56	25	6	**4505-MC-050**	**4505A-MC-050**
45.600 - 49.599	27.9	1.5	18.5	214	275.5	60	32	6	**4505-MC-060**	**4505A-MC-060**
49.600 - 55.599	27.9	1.5	18.5	214	275.5	60	32	6	**4505-MC-070**	**4505A-MC-070**
55.600 - 60.599	27.9	1.5	18.5	214	275.5	60	32	6	**4505-MC-075**	**4505A-MC-075**
60.600 - 65.599	37.1	1.5	18.5	237	298.5	60	32	6	**4505-MC-080**	**4505A-MC-080**
65.600 - 70.599	37.1	1.5	18.5	237	298.5	60	32	6	**4505-MC-085**	**4505A-MC-085**
70.600 - 79.599	37.1	1.5	18.5	237	298.5	60	32	6	**4505-MC-090**	**4505A-MC-090**
79.600 - 90.599	53.1	1.5	18.5	245	316.5	70	40	8	**4505-MC-100**	**4505A-MC-100**
90.600 - 100.599	53.1	1.5	18.5	245	316.5	70	40	8	**4505-MC-110**	**4505A-MC-110**

Imperial (in)

D_1 Range	Mandrel D_3	L_5	L_{15}	L_2	L_1	Shank L_7	D_2	Teeth	Part No. (Complete Mandrel^) With Flat	Without Flat
0.6929 - 0.8504	0.441	0.039	0.433	4.764	6.772	1.969	0.750	6	**94505-MC-010***	**94505A-MC-010***
0.8505 - 1.0078	0.441	0.039	0.472	4.764	6.772	1.969	0.750	6	**94505-MC-020***	**94505A-MC-020***
1.0079 - 1.1653	0.594	0.039	0.551	6.024	8.031	1.969	0.750	6	**94505-MC-030***	**94505A-MC-030***
1.1654 - 1.2834	0.594	0.039	0.551	6.024	8.031	1.969	0.750	6	**94505-MC-035***	**94505A-MC-035***
1.2835 - 1.4409	0.799	0.039	0.630	7.047	9.291	2.205	1.000	6	**94505-MC-040**	**94505A-MC-040**
1.4410 - 1.5984	0.799	0.039	0.630	7.047	9.291	2.205	1.000	6	**94505-MC-045**	**94505A-MC-045**
1.5985 - 1.7952	0.949	0.039	0.630	7.913	10.157	2.205	1.000	6	**94505-MC-050**	**94505A-MC-050**
1.7953 - 1.9527	1.098	0.059	0.728	8.425	10.846	2.362	1.250	6	**94505-MC-060**	**94505A-MC-060**
1.9528 - 2.1889	1.098	0.059	0.728	8.425	10.846	2.362	1.250	6	**94505-MC-070**	**94505A-MC-070**
2.1890 - 2.3858	1.098	0.059	0.728	8.425	10.846	2.362	1.250	6	**94505-MC-075**	**94505A-MC-075**
2.3859 - 2.5826	1.461	0.059	0.728	9.331	11.752	2.362	1.250	6	**94505-MC-080**	**94505A-MC-080**
2.5827 - 2.7795	1.461	0.059	0.728	9.331	11.752	2.362	1.250	6	**94505-MC-085**	**94505A-MC-085**
2.7796 - 3.1338	1.461	0.059	0.728	9.331	11.752	2.362	1.250	6	**94505-MC-090**	**94505A-MC-090**
3.1339 - 3.5669	2.091	0.059	0.728	9.646	12.461	2.756	1.500	8	**94505-MC-100**	**94505A-MC-100**
3.5670 - 3.9606	2.091	0.059	0.728	9.646	12.461	2.756	1.500	8	**94505-MC-110**	**94505A-MC-110**

^Complete mandrel does not include cutting ring.

* 17.600 mm - 32.599 mm (0.6929" - 1.2834") diameter cutting rings are available as specials by contacting Application Engineering.

C40: 5
Key on C40: 2
C40: 31 - 34
C10
C40: 6

(m) = Metric (mm)
(i) = Imperial (in)

4505 Series Mandrels

Spare Parts



Metric (mm)

	Part No. (Complete Mandrel^)		Spare Parts 1.		Spare Parts 2.			Spare Parts 3.	
	With Flat	Without Flat	Drive Pins	Number of Drive Pins	Conical Ring	Conical Ring (2nd Expansion)	Conical Ring (3rd Expansion)	Adjusting Key	Wrench Size (mm)
	4505-MC-010	**4505A-MC-010**	2000-CO-010	3	4001-AC-115	4001-AC-215	—	4001-CH-015	10
	4505-MC-020	**4505A-MC-020**	2000-CO-020	3	4001-AC-115	4001-AC-215	—	4001-CH-015	10
	4505-MC-030	**4505A-MC-030**	2000-CO-030	3	4001-AC-125	4001-AC-225	4001-AC-325	4001-CH-025	13
	4505-MC-035	**4505A-MC-035**	2000-CO-040	2	4001-AC-125	4001-AC-225	4001-AC-325	4001-CH-025	13
	4505-MC-040	**4505A-MC-040**	2000-CO-040	2	4001-AC-135	4001-AC-235	4001-AC-335	4001-CH-035	18
	4505-MC-045	**4505A-MC-045**	2000-CO-050	2	4001-AC-135	4001-AC-235	4001-AC-335	4001-CH-035	18
	4505-MC-050	**4505A-MC-050**	2000-CO-060	2	4001-AC-145	4001-AC-245	4001-AC-345	4001-CH-045	22
ⓜ	**4505-MC-060**	**4505A-MC-060**	2000-CO-060	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055	26
	4505-MC-070	**4505A-MC-070**	2000-CO-070	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055	26
	4505-MC-075	**4505A-MC-075**	2000-CO-080	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055	26
	4505-MC-080	**4505A-MC-080**	2000-CO-080	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065	34
	4505-MC-085	**4505A-MC-085**	2000-CO-090	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065	34
	4505-MC-090	**4505A-MC-090**	2000-CO-090	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065	34
	4505-MC-100	**4505A-MC-100**	2000-CO-090	2	4001-AC-185	4001-AC-285	4001-AC-385	4001-CH-085	46
	4505-MC-110	**4505A-MC-110**	2000-CO-090	2	4001-AC-185	4001-AC-285	4001-AC-385	4001-CH-085	46

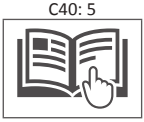
Imperial (in)

	Part No. (Complete Mandrel^)		Spare Parts 1.		Spare Parts 2.			Spare Parts 3.	
	With Flat	Without Flat	Drive Pins	Number of Drive Pins	Conical Ring	Conical Ring (2nd Expansion)	Conical Ring (3rd Expansion)	Adjusting Key	Wrench Size (mm)
	94505-MC-010	**94505A-MC-010**	2000-CO-010	3	4001-AC-115	4001-AC-215	—	4001-CH-015	10
	94505-MC-020	**94505A-MC-020**	2000-CO-020	3	4001-AC-115	4001-AC-215	—	4001-CH-015	10
	94505-MC-030	**94505A-MC-030**	2000-CO-030	3	4001-AC-125	4001-AC-225	4001-AC-325	4001-CH-025	13
	94505-MC-035	**94505A-MC-035**	2000-CO-040	2	4001-AC-125	4001-AC-225	4001-AC-325	4001-CH-025	13
	94505-MC-040	**94505A-MC-040**	2000-CO-040	2	4001-AC-135	4001-AC-235	4001-AC-335	4001-CH-035	18
	94505-MC-045	**94505A-MC-045**	2000-CO-050	2	4001-AC-135	4001-AC-235	4001-AC-335	4001-CH-035	18
	94505-MC-050	**94505A-MC-050**	2000-CO-060	2	4001-AC-145	4001-AC-245	4001-AC-345	4001-CH-045	22
ⓘ	**94505-MC-060**	**94505A-MC-060**	2000-CO-060	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055	26
	94505-MC-070	**94505A-MC-070**	2000-CO-070	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055	26
	94505-MC-075	**94505A-MC-075**	2000-CO-080	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055	26
	94505-MC-080	**94505A-MC-080**	2000-CO-080	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065	34
	94505-MC-085	**94505A-MC-085**	2000-CO-090	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065	34
	94505-MC-090	**94505A-MC-090**	2000-CO-090	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065	34
	94505-MC-100	**94505A-MC-100**	2000-CO-090	2	4001-AC-185	4001-AC-285	4001-AC-385	4001-CH-085	46
	94505-MC-110	**94505A-MC-110**	2000-CO-090	2	4001-AC-185	4001-AC-285	4001-AC-385	4001-CH-085	46

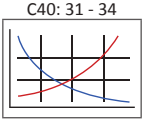
^Complete mandrel does not include cutting ring.

Key on C40: 2

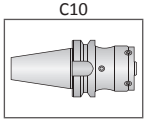
C40: 5



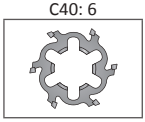
C40: 31 - 34



C10



C40: 6

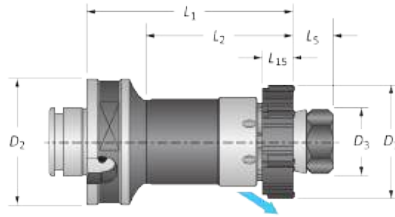


ⓜ = Metric (mm)
ⓘ = Imperial (in)

4330 Series Mandrels

17.600 mm - 100.599 mm (0.6929" - 3.9606")





Series	4330	Shank Type	Modular	Application	Through Holes	Coolant	Radial

Metric (mm)

	D_1 Range		Mandrel					Shank		Part No.
	Metric (mm)	Imperial (inch)	D_3	L_5	L_{15}	L_2	L_1	D_2	Teeth	(Complete Mandrel^)
	17.600 - 21.599	0.6929 - 0.8504	12.0	11.0	11.0	55	75	50	6	**4330-MC-010***
	21.600 - 25.599	0.8505 - 1.0078	12.0	11.0	12.0	55	75	50	6	**4330-MC-020***
	25.600 - 32.599	1.0079 - 1.2834	15.6	11.0	14.0	60	80	50	6	**4330-MC-030***
	32.600 - 40.599	1.2835 - 1.5984	22.0	14.0	16.0	60	80	50	6	**4330-MC-040**
	40.600 - 45.599	1.5985 - 1.7952	25.4	15.0	16.0	60	80	50	6	**4330-MC-050**
m	45.600 - 49.599	1.7953 - 1.9527	30.0	20.5	18.5	60	80	50	6	**4330-MC-060**
	49.600 - 60.599	1.9528 - 2.3858	30.0	20.5	18.5	60	80	50	6	**4330-MC-070**
	60.600 - 70.599	2.3859 - 2.7795	40.0	24.5	18.5	65	90	63	6	**4330-MC-080**
	70.600 - 79.599	2.7796 - 3.1338	40.0	24.5	18.5	65	90	63	6	**4330-MC-090**
	79.600 - 90.599	3.1339 - 3.5669	56.0	28.5	18.5	65	90	63	8	**4330-MC-100**
	90.600 - 100.599	3.5670 - 3.9606	56.0	28.5	18.5	65	90	63	8	**4330-MC-110**

^Complete mandrel does not include cutting ring.

* 17.600 mm - 32.599 mm (0.6929" - 1.2834") diameter cutting rings are available as specials by contacting Application Engineering.

C40

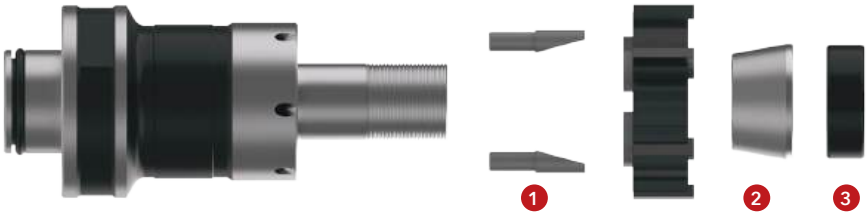
Key on C40: 2

C40: 5 | C40: 31 - 34 | C10 | C40: 6

m = Metric (mm)
i = Imperial (in)

4330 Series Mandrels

Spare Parts



Metric (mm)

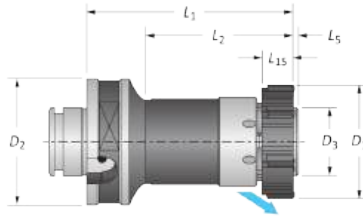
	Part No. (Complete Mandrel^)	Spare Parts 1. Drive Pins	1. Number of Drive Pins	2. Conical Ring	3. Nut	3. Wrench Size (mm)
	4330-MC-010	2000-CO-010	3	2010-AC-010	2000-DA-010	10
	4330-MC-020	2000-CO-020	3	2010-AC-010	2000-DA-010	10
	4330-MC-030	2000-CO-030	3	2010-AC-020	2000-DA-020	13
	4330-MC-040	2000-CO-040	2	2010-AC-030	2000-DA-060	19
	4330-MC-050	2000-CO-060	2	2010-AC-040	2000-DA-090	22
ⓜ	**4330-MC-060**	2000-CO-060	2	2010-AC-050	2000-GH-880	30 ◆
	4330-MC-070	2000-CO-070	2	2010-AC-050	2000-GH-880	30 ◆
	4330-MC-080	2000-CO-080	2	2010-AC-060	2000-GH-900	40 ◆
	4330-MC-090	2000-CO-090	2	2010-AC-060	2000-GH-900	40 ◆
	4330-MC-100	2000-CO-090	2	2010-AC-070	2000-GH-920	56 ◆
	4330-MC-110	2000-CO-090	2	2010-AC-070	2000-GH-920	56 ◆

^Complete mandrel does not include cutting ring.
◆ Spanner wrench.

4335 Series Mandrels

17.600 mm - 100.599 mm (0.6929" - 3.9606")





Series	4335	Shank Type	Modular	Application	Blind Holes	Coolant	Radial

Metric (mm)

	D_1 Range		Mandrel					Shank		Part No.
	Metric (mm)	Imperial (inch)	D_3	L_5	L_{15}	L_2	L_1	D_2	Teeth	(Complete Mandrel^)
	17.600 - 21.599	0.6929 - 0.8504	11.2	1.0	11.0	55	75	50	6	**4335-MC-010***
	21.600 - 25.599	0.8505 - 1.0078	11.2	1.0	12.0	55	75	50	6	**4335-MC-020***
	25.600 - 29.599	1.0079 - 1.1653	15.1	1.0	14.0	60	80	50	6	**4335-MC-030***
	29.600 - 32.599	1.1654 - 1.2834	15.1	1.0	14.0	60	80	50	6	**4335-MC-035***
	32.600 - 36.599	1.2835 - 1.4409	20.3	1.0	16.0	60	80	50	6	**4335-MC-040**
	36.600 - 40.599	1.4410 - 1.5984	20.3	1.0	16.0	60	80	50	6	**4335-MC-045**
	40.600 - 45.599	1.5985 - 1.7952	24.1	1.0	16.0	60	80	50	6	**4335-MC-050**
ⓜ	45.600 - 49.599	1.7953 - 1.9527	27.9	1.5	18.5	60	80	50	6	**4335-MC-060**
	49.600 - 55.599	1.9528 - 2.1889	27.9	1.5	18.5	60	80	50	6	**4335-MC-070**
	55.600 - 60.599	2.1890 - 2.3858	27.9	1.5	18.5	60	80	50	6	**4335-MC-075**
	60.600 - 65.599	2.3859 - 2.5826	37.1	1.5	18.5	65	90	63	6	**4335-MC-080**
	65.600 - 70.599	2.5827 - 2.7795	37.1	1.5	18.5	65	90	63	6	**4335-MC-085**
	70.600 - 79.599	2.7796 - 3.1338	37.1	1.5	18.5	65	90	63	6	**4335-MC-090**
	79.600 - 90.599	3.1339 - 3.5669	53.1	1.5	18.5	65	90	63	8	**4335-MC-100**
	90.600 - 100.599	3.5670 - 3.9606	53.1	1.5	18.5	65	90	63	8	**4335-MC-110**

^Complete mandrel does not include cutting ring.

* 17.600 mm - 32.599 mm (0.6929" - 1.2834") diameter cutting rings are available as specials by contacting Application Engineering.

C40

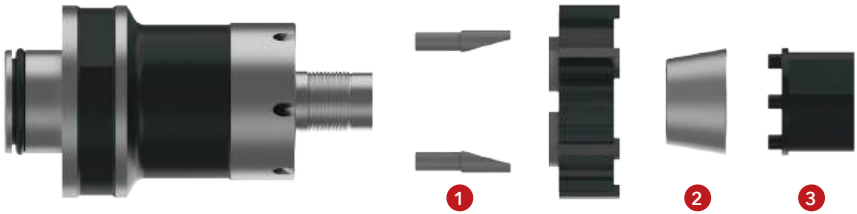
Key on C40: 2

C40: 5 C40: 31 - 34 C10 C40: 6

ⓜ = Metric (mm)
ⓘ = Imperial (in)

4335 Series Mandrels

Spare Parts



Metric (mm)

	Part No. (Complete Mandrel^)	Spare Parts 1. Drive Pins	1. Number of Drive Pins	2. Conical Ring	2. Conical Ring (2nd Expansion)	2. Conical Ring (3rd Expansion)	3. Adjusting Key	3. Wrench Size (mm)
	4335-MC-010	2000-CO-010	3	4001-AC-115	4001-AC-215	—	4001-CH-015	10
	4335-MC-020	2000-CO-020	3	4001-AC-115	4001-AC-215	—	4001-CH-015	10
	4335-MC-030	2000-CO-030	3	4001-AC-125	4001-AC-225	4001-AC-325	4001-CH-025	13
	4335-MC-035	2000-CO-040	2	4001-AC-125	4001-AC-225	4001-AC-325	4001-CH-025	13
	4335-MC-040	2000-CO-040	2	4001-AC-135	4001-AC-235	4001-AC-335	4001-CH-035	18
	4335-MC-045	2000-CO-050	2	4001-AC-135	4001-AC-235	4001-AC-335	4001-CH-035	18
	4335-MC-050	2000-CO-060	2	4001-AC-145	4001-AC-245	4001-AC-345	4001-CH-045	22
ⓜ	**4335-MC-060**	2000-CO-060	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055	26
	4335-MC-070	2000-CO-070	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055	26
	4335-MC-075	2000-CO-080	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055	26
	4335-MC-080	2000-CO-080	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065	34
	4335-MC-085	2000-CO-090	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065	34
	4335-MC-090	2000-CO-090	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065	34
	4335-MC-100	2000-CO-090	2	4001-AC-185	4001-AC-285	4001-AC-385	4001-CH-085	46
	4335-MC-110	2000-CO-090	2	4001-AC-185	4001-AC-285	4001-AC-385	4001-CH-085	46

^Complete mandrel does not include cutting ring.

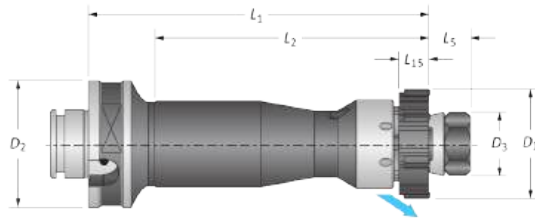
Key on C40: 2
C40: 5
C40: 31 - 34
C10
C40: 6

ⓜ = Metric (mm)
ⓘ = Imperial (in)

4350 Series Mandrels

17.600 mm - 100.599 mm (0.6929" - 3.9606")





Series	4350	Shank Type	Modular	Application	Through Holes	Coolant	Radial

Metric (mm)

	D_1 Range		Mandrel					Shank		Part No.
	Metric (mm)	Imperial (inch)	D_3	L_5	L_{15}	L_2	L_1	D_2	Teeth	(Complete Mandrel^)
	17.600 - 21.599	0.6929 - 0.8504	12.0	11.0	11.0	81	116	50	6	**4350-MC-010***
	21.600 - 25.599	0.8505 - 1.0078	12.0	11.0	12.0	81	116	50	6	**4350-MC-020***
	25.600 - 32.599	1.0079 - 1.2834	15.6	11.0	14.0	102	137	50	6	**4350-MC-030***
	32.600 - 40.599	1.2835 - 1.5984	22.0	14.0	16.0	102	137	50	6	**4350-MC-040**
	40.600 - 45.599	1.5985 - 1.7952	25.4	15.0	16.0	102	137	50	6	**4350-MC-050**
ⓜ	45.600 - 49.599	1.7953 - 1.9527	30.0	20.5	18.5	105	140	50	6	**4350-MC-060**
	49.600 - 60.599	1.9528 - 2.3858	30.0	20.5	18.5	105	140	50	6	**4350-MC-070**
	60.600 - 70.599	2.3859 - 2.7795	40.0	24.5	18.5	105	140	63	6	**4350-MC-080**
	70.600 - 79.599	2.7796 - 3.1338	40.0	24.5	18.5	105	140	63	6	**4350-MC-090**
	79.600 - 90.599	3.1339 - 3.5669	56.0	28.5	18.5	105	140	63	8	**4350-MC-100**
	90.600 - 100.599	3.5670 - 3.9606	56.0	28.5	18.5	105	140	63	8	**4350-MC-110**

^Complete mandrel does not include cutting ring.

* 17.600 mm - 32.599 mm (0.6929" - 1.2834") diameter cutting rings are available as specials by contacting Application Engineering.

C40

Key on C40: 2

C40: 5 | C40: 31 - 34 | C10 | C40: 6

ⓜ = Metric (mm)
ⓘ = Imperial (in)

4350 Series Mandrels

Spare Parts



Metric (mm)

	Part No. (Complete Mandrel^)	Spare Parts 1. Drive Pins	1. Number of Drive Pins	2. Conical Ring	3. Nut	3. Wrench Size (mm)
	4350-MC-010	2000-CO-010	3	2010-AC-010	2000-DA-010	10
	4350-MC-020	2000-CO-020	3	2010-AC-010	2000-DA-010	10
	4350-MC-030	2000-CO-030	3	2010-AC-020	2000-DA-020	13
	4350-MC-040	2000-CO-040	2	2010-AC-030	2000-DA-060	19
	4350-MC-050	2000-CO-060	2	2010-AC-040	2000-DA-090	22
ⓜ	**4350-MC-060**	2000-CO-060	2	2010-AC-050	2000-GH-880	30 ◆
	4350-MC-070	2000-CO-070	2	2010-AC-050	2000-GH-880	30 ◆
	4350-MC-080	2000-CO-080	2	2010-AC-060	2000-GH-900	40 ◆
	4350-MC-090	2000-CO-090	2	2010-AC-060	2000-GH-900	40 ◆
	4350-MC-100	2000-CO-090	2	2010-AC-070	2000-GH-920	56 ◆
	4350-MC-110	2000-CO-090	2	2010-AC-070	2000-GH-920	56 ◆

^Complete mandrel does not include cutting ring.

◆ Spanner wrench.

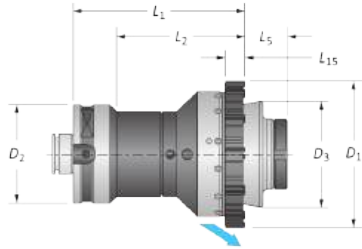
Key on C40: 2
C40: 5
C40: 31 - 34
C10
C40: 6

ⓜ = Metric (mm)
ⓘ = Imperial (in)

4350 Series Mandrels

100.600 mm - 200.600 mm (3.9606" - 7.8976")





Series	4350	Shank Type	Modular	Application	Through Holes	Coolant	Radial

Metric (mm)

	D_1 Range		Mandrel					Shank		Part No.
	Metric (mm)	Imperial (inch)	D_3	L_5	L_{15}	L_2	L_1	D_2	Teeth	(Complete Mandrel^)
	100.600 - 110.599	3.9606 - 4.3543	73.8	35.5	18.5	—	140	80	10	**4350-MC-120**
	110.600 - 115.599	4.3544 - 4.5511	80.8	35.5	18.5	—	140	80	12	**4350-MC-130**
	115.600 - 120.599	4.5512 - 4.7480	86.8	35.5	18.5	—	140	80	12	**4350-MC-140**
	120.600 - 125.599	4.7481 - 4.9448	86.8	35.5	18.5	—	140	80	12	**4350-MC-150**
	125.600 - 132.599	4.9449 - 5.2204	90.8	35.5	18.5	—	140	80	12	**4350-MC-160**
	132.600 - 139.599	5.2205 - 5.4960	90.8	35.5	18.5	—	140	80	12	**4350-MC-170**
ⓜ	139.600 - 145.599	5.4961 - 5.7322	102.8	35.5	18.5	—	140	80	12	**4350-MC-180**
	145.600 - 155.599	5.7323 - 6.1259	107.8	35.5	18.5	—	140	80	12	**4350-MC-190**
	155.600 - 165.599	6.1260 - 6.5196	107.8	48.5	18.5	—	140	80	12	**4350-MC-200**
	165.600 - 175.599	6.5197 - 6.9133	117.8	48.5	18.5	—	140	80	12	**4350-MC-210**
	175.600 - 185.599	6.9134 - 7.3070	127.8	48.5	18.5	—	140	80	12	**4350-MC-220**
	185.600 - 195.599	7.3071 - 7.7007	137.8	48.5	18.5	—	140	80	12	**4350-MC-230**
	195.600 - 200.600	7.7008 - 7.8976	145.8	48.5	18.5	—	140	80	12	**4350-MC-240**

^Complete mandrel does not include cutting ring.

C40

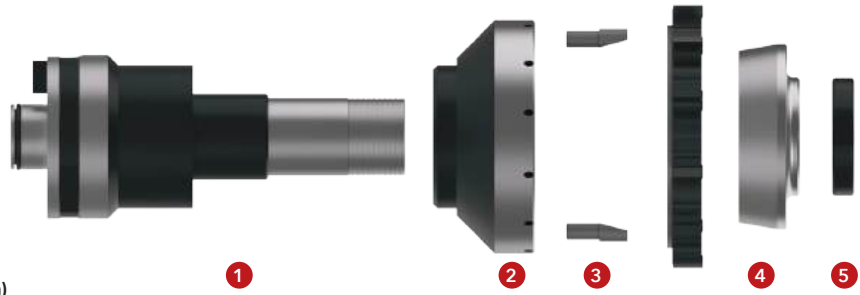
Key on C40: 2

C40: 5 C40: 31 - 34 C10 C40: 6

ⓜ = Metric (mm)
ⓘ = Imperial (in)

4350 Series Mandrels

Spare Parts



Metric (mm)

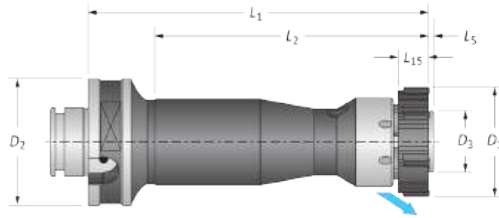
	Part No. (Complete Mandrel^)	Spare Parts 1. Mandrel	2. Flange	3. Drive Pins	3. Number of Drive Pins	4. Conical Ring	5. Nut	5. Wrench Size (mm)
ⓜ	**4350-MC-120**	4350-MA-120	4355-FL-035	2000-CO-090	2	2060-BU-010	2000-GH-095	58 ◆
	4350-MC-130	4350-MA-120	4355-FL-045	2000-CO-090	2	2060-BU-020	2000-GH-095	58 ◆
	4350-MC-140	4350-MA-120	4355-FL-055	2000-CO-090	2	2060-BU-030	2000-GH-095	58 ◆
	4350-MC-150	4350-MA-120	4355-FL-065	2000-CO-090	2	2060-BU-030	2000-GH-095	58 ◆
	4350-MC-160	4350-MA-120	4355-FL-075	2000-CO-100	2	2060-BU-040	2000-GH-095	58 ◆
	4350-MC-170	4350-MA-120	4355-FL-085	2000-CO-100	2	2060-BU-040	2000-GH-095	58 ◆
	4350-MC-180	4350-MA-120	4355-FL-095	2000-CO-100	2	2060-BU-050	2000-GH-095	58 ◆
	4350-MC-190	4350-MA-120	4355-FL-105	2000-CO-110	2	2060-BU-060	2000-GH-095	58 ◆
	4350-MC-200	4350-MA-200	4355-FL-115	2000-CO-110	2	2060-BU-070	2000-GH-120	90 ◆
	4350-MC-210	4350-MA-200	4355-FL-125	2000-CO-110	2	2060-BU-080	2000-GH-120	90 ◆
	4350-MC-220	4350-MA-200	4355-FL-135	2000-CO-120	2	2060-BU-090	2000-GH-120	90 ◆
	4350-MC-230	4350-MA-200	4355-FL-145	2000-CO-120	2	2060-BU-100	2000-GH-120	90 ◆
	4350-MC-240	4350-MA-200	4355-FL-155	2000-CO-120	2	2060-BU-110	2000-GH-120	90 ◆

^Complete mandrel does not include cutting ring.
◆ Spanner wrench.

4355 Series Mandrels

17.600 mm - 100.599 mm (0.6929" - 3.9606")





Series	4355	Shank Type	Modular	Application	Blind Holes	Coolant	Radial

Metric (mm)

D_1 Range		Mandrel					Shank		Part No.
Metric (mm)	Imperial (inch)	D_3	L_5	L_{15}	L_2	L_1	D_2	Teeth	(Complete Mandrel^)
17.600 - 21.599	0.6929 - 0.8504	11.2	1.0	11.0	81	116	50	6	**4355-MC-010***
21.600 - 25.599	0.8505 - 1.0078	11.2	1.0	12.0	81	116	50	6	**4355-MC-020***
25.600 - 29.599	1.0079 - 1.1653	15.1	1.0	14.0	102	137	50	6	**4355-MC-030***
29.600 - 32.599	1.1654 - 1.2834	15.1	1.0	14.0	102	137	50	6	**4355-MC-035***
32.600 - 36.599	1.2835 - 1.4409	20.3	1.0	16.0	102	137	50	6	**4355-MC-040**
36.600 - 40.599	1.4410 - 1.5984	20.3	1.0	16.0	102	137	50	6	**4355-MC-045**
40.600 - 45.599	1.5985 - 1.7952	24.1	1.0	16.0	102	137	50	6	**4355-MC-050**
45.600 - 49.599	1.7953 - 1.9527	27.9	1.5	18.5	105	140	50	6	**4355-MC-060**
49.600 - 55.599	1.9528 - 2.1889	27.9	1.5	18.5	105	140	50	6	**4355-MC-070**
55.600 - 60.599	2.1890 - 2.3858	27.9	1.5	18.5	105	140	50	6	**4355-MC-075**
60.600 - 65.599	2.3859 - 2.5826	37.1	1.5	18.5	105	140	63	6	**4355-MC-080**
65.600 - 70.599	2.5827 - 2.7795	37.1	1.5	18.5	105	140	63	6	**4355-MC-085**
70.600 - 79.599	2.7796 - 3.1338	37.1	1.5	18.5	105	140	63	6	**4355-MC-090**
79.600 - 90.599	3.1339 - 3.5669	53.1	1.5	18.5	105	140	63	8	**4355-MC-100**
90.600 - 100.599	3.5670 - 3.9606	53.1	1.5	18.5	105	140	63	8	**4355-MC-110**

^Complete mandrel does not include cutting ring.

* 17.600 mm - 32.599 mm (0.6929" - 1.2834") diameter cutting rings are available as specials by contacting Application Engineering.

C40: 5 | C40: 31 - 34 | C10 | C40: 6

Key on C40: 2

Ⓜ = Metric (mm)
ⓘ = Imperial (in)

4355 Series Mandrels

Spare Parts



Metric (mm)

	Part No. (Complete Mandrel^)	Spare Parts 1. Drive Pins	1. Number of Drive Pins	2. Conical Ring	2. Conical Ring (2nd Expansion)	2. Conical Ring (3rd Expansion)	3. Adjusting Key	3. Wrench Size (mm)
	4355-MC-010	2000-CO-010	3	4001-AC-115	4001-AC-215	—	4001-CH-015	10
	4355-MC-020	2000-CO-020	3	4001-AC-115	4001-AC-215	—	4001-CH-015	10
	4355-MC-030	2000-CO-030	3	4001-AC-125	4001-AC-225	4001-AC-325	4001-CH-025	13
	4355-MC-035	2000-CO-040	2	4001-AC-125	4001-AC-225	4001-AC-325	4001-CH-025	13
	4355-MC-040	2000-CO-040	2	4001-AC-135	4001-AC-235	4001-AC-335	4001-CH-035	18
	4355-MC-045	2000-CO-050	2	4001-AC-135	4001-AC-235	4001-AC-335	4001-CH-035	18
	4355-MC-050	2000-CO-060	2	4001-AC-145	4001-AC-245	4001-AC-345	4001-CH-045	22
ⓜ	**4355-MC-060**	2000-CO-060	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055	26
	4355-MC-070	2000-CO-070	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055	26
	4355-MC-075	2000-CO-080	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055	26
	4355-MC-080	2000-CO-080	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065	34
	4355-MC-085	2000-CO-090	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065	34
	4355-MC-090	2000-CO-090	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065	34
	4355-MC-100	2000-CO-090	2	4001-AC-185	4001-AC-285	4001-AC-385	4001-CH-085	46
	4355-MC-110	2000-CO-090	2	4001-AC-185	4001-AC-285	4001-AC-385	4001-CH-085	46

^Complete mandrel does not include cutting ring.

◆ Spanner wrench.

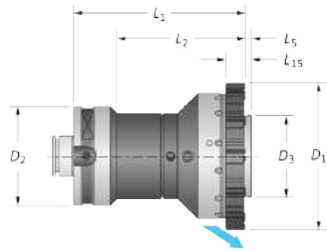
Key on C40: 2
C40: 5
C40: 31 - 34
C10
C40: 6

ⓜ = Metric (mm)
ⓘ = Imperial (in)

4355 Series Mandrels

100.600 mm - 200.600 mm (3.9606" - 7.8976")





Series	4355	Shank Type	Modular	Application	Blind Holes	Coolant	Radial

Metric (mm)

	D_1 Range		Mandrel					Shank		Part No.
	Metric (mm)	Imperial (inch)	D_3	L_5	L_{15}	L_2	L_1	D_2	Teeth	(Complete Mandrel^)
	100.600 - 110.599	3.9606 - 4.3543	70.3	1.5	18.5	—	140	80	10	**4355-MC-120**
	110.600 - 115.599	4.3544 - 4.5511	76.3	1.5	18.5	—	140	80	12	**4355-MC-130**
	115.600 - 120.599	4.5512 - 4.7480	83.3	1.5	18.5	—	140	80	12	**4355-MC-140**
	120.600 - 125.599	4.7481 - 4.9448	87.3	1.5	18.5	—	140	80	12	**4355-MC-150**
	125.600 - 132.599	4.9449 - 5.2204	87.3	1.5	18.5	—	140	80	12	**4355-MC-160**
	132.600 - 139.599	5.2205 - 5.4960	87.3	1.5	18.5	—	140	80	12	**4355-MC-170**
ⓜ	139.600 - 145.599	5.4961 - 5.7322	99.3	1.5	18.5	—	140	80	12	**4355-MC-180**
	145.600 - 155.599	5.7323 - 6.1259	104.3	1.5	18.5	—	140	80	12	**4355-MC-190**
	155.600 - 165.599	6.1260 - 6.5196	104.3	1.5	18.5	—	140	80	12	**4355-MC-200**
	165.600 - 175.599	6.5197 - 6.9133	114.3	1.5	18.5	—	140	80	12	**4355-MC-210**
	175.600 - 185.599	6.9134 - 7.3070	124.3	1.5	18.5	—	140	80	12	**4355-MC-220**
	185.600 - 195.599	7.3071 - 7.7007	134.3	1.5	18.5	—	140	80	12	**4355-MC-230**
	195.600 - 200.600	7.7008 - 7.8976	142.3	1.5	18.5	—	140	80	12	**4355-MC-240**

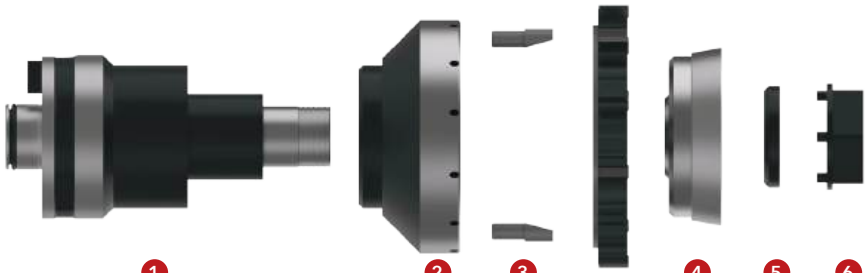
^Complete mandrel does not include cutting ring.

C40: 5 | C40: 31 - 34 | C10 | C40: 6
Key on C40: 2

ⓜ = Metric (mm)
ⓘ = Imperial (in)

4355 Series Mandrels

Spare Parts



Metric (mm)

	Part No. (Complete Mandrel^)	Spare Parts 1. Mandrel	2. Flange	3. Drive Pins	Number of Drive Pins	4. Conical Ring	5. Nut	6. Adjusting Key	Wrench Size (mm)
	4355-MC-120	4355-MA-120	4355-FL-035	2000-CO-090	2	4001-AC-116	4001-GH-035	4001-CH-135	46
	4355-MC-130	4355-MA-120	4355-FL-045	2000-CO-090	2	4001-AC-126	4001-GH-035	4001-CH-135	46
	4355-MC-140	4355-MA-120	4355-FL-055	2000-CO-090	2	4001-AC-136	4001-GH-035	4001-CH-135	46
	4355-MC-150	4355-MA-120	4355-FL-065	2000-CO-090	2	4001-AC-136	4001-GH-035	4001-CH-135	46
	4355-MC-160	4355-MA-120	4355-FL-075	2000-CO-100	2	4001-AC-146	4001-GH-035	4001-CH-135	46
	4355-MC-170	4355-MA-120	4355-FL-085	2000-CO-100	2	4001-AC-146	4001-GH-035	4001-CH-135	46
ⓜ	**4355-MC-180**	4355-MA-120	4355-FL-095	2000-CO-100	2	4001-AC-156	4001-GH-035	4001-CH-135	46
	4355-MC-190	4355-MA-120	4355-FL-105	2000-CO-110	2	4001-AC-166	4001-GH-035	4001-CH-135	46
	4355-MC-200	4355-MA-200	4355-FL-115	2000-CO-110	2	4001-AC-176	4001-GH-115	4001-CH-115	46
	4355-MC-210	4355-MA-200	4355-FL-125	2000-CO-110	2	4001-AC-186	4001-GH-115	4001-CH-115	46
	4355-MC-220	4355-MA-200	4355-FL-135	2000-CO-120	2	4001-AC-196	4001-GH-115	4001-CH-115	46
	4355-MC-230	4355-MA-200	4355-FL-145	2000-CO-120	2	4001-AC-117	4001-GH-115	4001-CH-115	46
	4355-MC-240	4355-MA-200	4355-FL-155	2000-CO-120	2	4001-AC-127	4001-GH-115	4001-CH-115	46

^Complete mandrel does not include cutting ring.

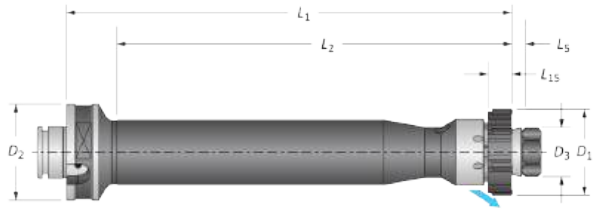
Key on C40: 2
C40: 5
C40: 31 - 34
C10
C40: 6

ⓜ = Metric (mm)
ⓘ = Imperial (in)

4300 Series Mandrels

17.600 mm - 100.599 mm (0.6929" - 3.9606")





Series	4300	Shank Type	Modular	Application	Through Holes	Coolant	Radial

Metric (mm)

	D_1 Range		Mandrel					Shank		Part No.
	Metric (mm)	Imperial (inch)	D_3	L_5	L_{15}	L_2	L_1	D_2	Teeth	(Complete Mandrel^)
	17.600 - 21.599	0.6929 - 0.8504	12.0	11.0	11.0	121	156	50	6	**4300-MC-010***
	21.600 - 25.599	0.8505 - 1.0078	12.0	11.0	12.0	121	156	50	6	**4300-MC-020***
	25.600 - 32.599	1.0079 - 1.2834	15.6	11.0	14.0	153	188	50	6	**4300-MC-030***
	32.600 - 40.599	1.2835 - 1.5984	22.0	14.0	16.0	179	214	50	6	**4300-MC-040**
	40.600 - 45.599	1.5985 - 1.7952	25.4	15.0	16.0	201	236	50	6	**4300-MC-050**
ⓜ	45.600 - 49.599	1.7953 - 1.9527	30.0	20.5	18.5	214	249	50	6	**4300-MC-060**
	49.600 - 60.599	1.9528 - 2.3858	30.0	20.5	18.5	214	249	50	6	**4300-MC-070**
	60.600 - 70.599	2.3859 - 2.7795	40.0	24.5	18.5	237	272	63	6	**4300-MC-080**
	70.600 - 79.599	2.7796 - 3.1338	40.0	24.5	18.5	237	272	63	6	**4300-MC-090**
	79.600 - 90.599	3.1339 - 3.5669	56.0	28.5	18.5	245	280	63	8	**4300-MC-100**
	90.600 - 100.599	3.5670 - 3.9606	56.0	28.5	18.5	245	280	63	8	**4300-MC-110**

^Complete mandrel does not include cutting ring.

* 17.600 mm - 32.599 mm (0.6929" - 1.2834") diameter cutting rings are available as specials by contacting Application Engineering.

C40

Key on C40: 2

C40: 5 C40: 31 - 34 C10 C40: 6

ⓜ = Metric (mm)
ⓘ = Imperial (in)

4300 Series Mandrels

Spare Parts



Metric (mm)

	Part No. (Complete Mandrel^)	Spare Parts 1. Drive Pins	1. Number of Drive Pins	2. Conical Ring	3. Nut	3. Wrench Size (mm)
	4300-MC-010	2000-CO-010	3	2010-AC-010	2000-DA-010	10
	4300-MC-020	2000-CO-020	3	2010-AC-010	2000-DA-010	10
	4300-MC-030	2000-CO-030	3	2010-AC-020	2000-DA-020	13
	4300-MC-040	2000-CO-040	2	2010-AC-030	2000-DA-060	19
	4300-MC-050	2000-CO-060	2	2010-AC-040	2000-DA-090	22
ⓜ	**4300-MC-060**	2000-CO-060	2	2010-AC-050	2000-GH-880	30
	4300-MC-070	2000-CO-070	2	2010-AC-050	2000-GH-880	30
	4300-MC-080	2000-CO-080	2	2010-AC-060	2000-GH-900	40
	4300-MC-090	2000-CO-090	2	2010-AC-060	2000-GH-900	40
	4300-MC-100	2000-CO-090	2	2010-AC-070	2000-GH-920	56
	4300-MC-110	2000-CO-090	2	2010-AC-070	2000-GH-920	56

^Complete mandrel does not include cutting ring.

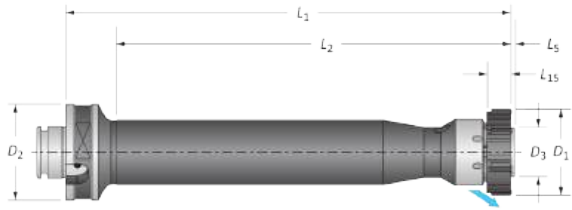
Key on C40: 2
C40: 5
C40: 31 - 34
C10
C40: 6

ⓜ = Metric (mm)
ⓘ = Imperial (in)

4305 Series Mandrels

17.600 mm - 100.599 mm (0.6929" - 3.9606")





Series	4305	Shank Type	Modular	Application	Blind Holes	Coolant	Radial

Metric (mm)

	D_1 Range		Mandrel					Shank		Part No.
	Metric (mm)	Imperial (inch)	D_3	L_5	L_{15}	L_2	L_1	D_2	Teeth	(Complete Mandrel^)
	17.600 - 21.599	0.6929 - 0.8504	11.2	1.0	11.0	121	156	50	6	**4305-MC-010***
	21.600 - 25.599	0.8505 - 1.0078	11.2	1.0	12.0	121	156	50	6	**4305-MC-020***
	25.600 - 29.599	1.0079 - 1.1653	15.1	1.0	14.0	153	188	50	6	**4305-MC-030***
	29.600 - 32.599	1.1654 - 1.2834	15.1	1.0	14.0	153	188	50	6	**4305-MC-035***
	32.600 - 36.599	1.2835 - 1.4409	20.3	1.0	16.0	179	214	50	6	**4305-MC-040**
	36.600 - 40.599	1.4410 - 1.5984	20.3	1.0	16.0	179	214	50	6	**4305-MC-045**
	40.600 - 45.599	1.5985 - 1.7952	24.1	1.0	16.0	201	236	50	6	**4305-MC-050**
ⓜ	45.600 - 49.599	1.7953 - 1.9527	27.9	1.5	18.5	214	249	50	6	**4305-MC-060**
	49.600 - 55.599	1.9528 - 2.1889	27.9	1.5	18.5	214	249	50	6	**4305-MC-070**
	55.600 - 60.599	2.1890 - 2.3858	27.9	1.5	18.5	214	249	50	6	**4305-MC-075**
	60.600 - 65.599	2.3859 - 2.5826	37.1	1.0	18.5	237	272	63	6	**4305-MC-080**
	65.600 - 70.599	2.5827 - 2.7795	37.1	1.0	18.5	237	272	63	6	**4305-MC-085**
	70.600 - 79.599	2.7796 - 3.1338	37.1	1.0	18.5	237	272	63	6	**4305-MC-090**
	79.600 - 90.599	3.1339 - 3.5669	53.1	1.5	18.5	245	280	63	8	**4305-MC-100**
	90.600 - 100.599	3.5670 - 3.9606	53.1	1.5	18.5	245	280	63	8	**4305-MC-110**

^Complete mandrel does not include cutting ring.

* 17.600 mm - 32.599 mm (0.6929" - 1.2834") diameter cutting rings are available as specials by contacting Application Engineering.

C40: 5 | C40: 31 - 34 | C10 | C40: 6

Key on C40: 2

ⓜ = Metric (mm)
ⓘ = Imperial (in)

4305 Series Mandrels

Spare Parts



Metric (mm)

	Part No. (Complete Mandrel^)	Spare Parts 1. Drive Pins	1. Number of Drive Pins	2. Conical Ring	2. Conical Ring (2nd Expansion)	2. Conical Ring (3rd Expansion)	3. Adjusting Key	Wrench Size (mm)
	4305-MC-010	2000-CO-010	3	4001-AC-115	4001-AC-215	—	4001-CH-015	10
	4305-MC-020	2000-CO-020	3	4001-AC-115	4001-AC-215	—	4001-CH-015	10
	4305-MC-030	2000-CO-030	3	4001-AC-125	4001-AC-225	4001-AC-325	4001-CH-025	13
	4305-MC-035	2000-CO-040	2	4001-AC-125	4001-AC-225	4001-AC-325	4001-CH-025	13
	4305-MC-040	2000-CO-040	2	4001-AC-135	4001-AC-235	4001-AC-335	4001-CH-035	18
	4305-MC-045	2000-CO-050	2	4001-AC-135	4001-AC-235	4001-AC-335	4001-CH-035	18
	4305-MC-050	2000-CO-060	2	4001-AC-145	4001-AC-245	4001-AC-345	4001-CH-045	22
ⓜ	**4305-MC-060**	2000-CO-060	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055	26
	4305-MC-070	2000-CO-070	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055	26
	4305-MC-075	2000-CO-080	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055	26
	4305-MC-080	2000-CO-080	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065	34
	4305-MC-085	2000-CO-090	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065	34
	4305-MC-090	2000-CO-090	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065	34
	4305-MC-100	2000-CO-090	2	4001-AC-185	4001-AC-285	4001-AC-385	4001-CH-085	46
	4305-MC-110	2000-CO-090	2	4001-AC-185	4001-AC-285	4001-AC-385	4001-CH-085	46

^Complete mandrel does not include cutting ring.

Recommended Drilling Data | Metric (mm)

CUTTING RINGS

ISO	Material	Hardness (BHN)	Speed (m/min) Uncoated Carbide	Coated Carbide	Cermet
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 180	7 - 15	60 - 80	90 - 300
		180 - 250	6 - 10	40 - 70	80 - 200
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180	7 - 15	60 - 80	90 - 300
		180 - 275	6 - 10	40 - 70	80 - 200
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180	7 - 15	60 - 80	90 - 300
		180 - 325	6 - 10	40 - 70	80 - 200
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180	6 - 10	40 - 70	80 - 200
		180 - 375	4 - 8	30 - 50	60 - 150
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450	3 - 6	15 - 30	60 - 120
	Structural Steel A36, A285, A516, etc.	125 - 180	7 - 15	60 - 80	90 - 300
		180 - 350	6 - 10	40 - 70	80 - 200
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	7 - 15	60 - 80	90 - 300
		200 - 250	6 - 10	40 - 70	80 - 200
M	**Stainless Steel 400 Series** 416, 420, etc.	135 - 350	4 - 8	30 - 50	60 - 150
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275	4 - 8	30 - 50	60 - 150
K	**Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)**	< 200	15 - 30	50 - 70	—
		> 200	10 - 20	50 - 70	—
	Spheroidal Cast Iron (Ferritic)	260 - 320	8 - 12	30 - 50	60 - 120
N	**Copper and Alloys, and Brass**	< 500	10 - 18	100 - 200	—
	Bronze, and Bronze Phosphorous	< 180	10 - 20	80 - 160	100 - 300
	Aluminum and Alloys	< 150	15 - 30	100 - 200	—
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 310	4 - 8	30 - 50	—
	Titanium Alloy	140 - 310	4 - 8	30 - 50	—

Formulas

1. **RPM = (318.47 • m/min) / DIA**

where:

RPM	= revolutions per minute (rev/min)
m/min	= speed (m/min)
DIA	= diameter of drill (mm)

2. **mm/min = RPM • mm/rev**

where:

mm/min	= mm per minute (mm/min)
RPM	= revolutions per minute (rev/min)
mm/rev	= feed rate (mm/rev)

3. **m/min = RPM • 0.003 • DIA**

where:

m/min	= speed (m/min)
RPM	= revolutions per minute (rev/min)
DIA	= diameter of drill (mm)

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Factory technical assistance is available through our Application Engineering department.

Recommended Drilling Data | Metric (mm)

CUTTING RINGS

Recommended Feed (mm/rev) by Reamer Diameter					
17.60 mm - 40.00 mm		40.01 mm - 80.00 mm		80.01 mm - 200.00 mm	
Lead A, G	Lead E, N, M	Lead A, G	Lead E, N, M	Lead A, G	Lead E, N, M
0.50 - 0.80	0.60 - 1.20	0.50 - 1.00	0.80 - 1.60	0.80 - 1.50	1.00 - 2.20
0.40 - 0.70	0.40 - 1.00	0.50 - 0.80	0.60 - 1.40	0.80 - 1.20	1.00 - 2.00
0.50 - 0.80	0.60 - 1.20	0.50 - 1.00	0.80 - 1.60	0.80 - 1.50	1.00 - 2.20
0.40 - 0.70	0.40 - 1.00	0.50 - 0.80	0.60 - 1.40	0.80 - 1.20	1.00 - 2.00
0.50 - 0.80	0.60 - 1.20	0.50 - 1.00	0.80 - 1.60	0.80 - 1.50	1.00 - 2.20
0.40 - 0.70	0.40 - 1.00	0.50 - 0.80	0.60 - 1.40	0.80 - 1.20	1.00 - 2.00
0.50 - 0.80	0.60 - 1.20	0.50 - 1.00	0.80 - 1.60	0.80 - 1.50	1.00 - 2.20
0.40 - 0.70	0.40 - 1.00	0.50 - 0.80	0.60 - 1.40	0.80 - 1.20	1.00 - 2.00
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.60 - 1.00	0.70 - 1.40
0.50 - 0.80	0.60 - 1.20	0.50 - 1.00	0.80 - 1.60	0.80 - 1.50	1.00 - 2.20
0.40 - 0.70	0.40 - 1.00	0.50 - 0.80	0.60 - 1.40	0.80 - 1.20	1.00 - 2.00
0.50 - 0.80	0.60 - 1.20	0.50 - 1.00	0.80 - 1.60	0.80 - 1.50	1.00 - 2.20
0.40 - 0.70	0.40 - 1.00	0.50 - 0.80	0.60 - 1.40	0.80 - 1.20	1.00 - 2.00
0.40 - 0.70	0.40 - 1.00	0.50 - 0.80	0.60 - 1.40	0.80 - 1.20	1.00 - 2.00
0.40 - 0.70	0.40 - 1.00	0.50 - 0.80	0.60 - 1.40	0.80 - 1.20	1.00 - 2.00
0.40 - 1.00	0.60 - 1.50	0.60 - 1.30	0.80 - 1.60	0.80 - 1.70	1.00 - 2.25
0.40 - 1.00	0.60 - 1.50	0.60 - 1.30	0.80 - 1.60	0.80 - 1.70	1.00 - 2.25
0.40 - 1.00	0.60 - 1.50	0.60 - 1.30	0.80 - 1.60	0.80 - 1.70	1.00 - 2.25
0.50 - 0.80	—	0.60 - 1.00	—	0.80 - 1.40	—
0.30 - 0.60	—	0.40 - 0.80	—	0.60 - 1.00	—
0.50 - 0.80	—	0.60 - 1.00	—	0.80 - 1.40	—
0.30 - 0.50	—	0.40 - 0.60	—	0.50 - 0.70	—
0.30 - 0.50	—	0.40 - 0.60	—	0.50 - 0.70	—

Recommended Drilling Data | Imperial (in)

CUTTING RINGS

ISO	Material	Hardness (BHN)	Speed (SFM) Uncoated Carbide	Coated Carbide	Cermet
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 180	25 - 50	200 - 260	300 - 980
		180 - 250	20 - 35	130 - 230	260 - 660
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180	25 - 50	200 - 260	300 - 980
		180 - 275	20 - 35	130 - 230	260 - 660
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180	25 - 50	200 - 260	300 - 980
		180 - 325	20 - 35	130 - 230	260 - 660
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180	20 - 35	130 - 230	260 - 660
		180 - 375	15 - 25	100 - 160	200 - 490
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450	10 - 20	50 - 100	200 - 390
	Structural Steel A36, A285, A516, etc.	125 - 180	25 - 50	200 - 260	300 - 980
		180 - 350	20 - 35	130 - 230	260 - 660
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	25 - 50	200 - 260	300 - 980
		200 - 250	20 - 35	130 - 230	260 - 660
M	**Stainless Steel 400 Series** 416, 420, etc.	135 - 350	15 - 25	100 - 160	200 - 490
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275	15 - 25	100 - 160	200 - 490
K	**Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)**	< 200	50 - 100	160 - 230	—
		> 200	35 - 65	160 - 230	—
	Spheroidal Cast Iron (Ferritic)	260 - 320	25 - 40	100 - 160	200 - 400
N	**Copper and Alloys, and Brass**	< 500	35 - 60	330 - 660	—
	Bronze, and Bronze Phosphorous	< 180	35 - 65	260 - 520	330 - 980
	Aluminum and Alloys	< 150	50 - 100	330 - 660	—
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 310	15 - 25	60 - 200	—
	Titanium Alloy	140 - 310	15 - 25	60 - 200	—



C40

Formulas

1. **RPM = (3.82 • SFM) / DIA**

where:

RPM = revolutions per minute (rev/min)
SFM = speed (ft/min)
DIA = diameter of drill (inch)

2. **IPM = RPM • IPR**

where:

IPM = inches per minute (in/min)
RPM = revolutions per minute (rev/min)
IPR = feed rate (in/rev)

3. **SFM = RPM • 0.262 • DIA**

where:

SFM = speed (ft/min)
RPM = revolutions per minute (rev/min)
DIA = diameter of drill (inch)

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Factory technical assistance is available through our Application Engineering department.

Recommended Drilling Data | Imperial (in)

CUTTING RINGS

Recommended Feed (IPR) by Reamer Diameter					
0.6929" - 1.5750"		1.5751" - 3.1500"		3.1501" - 7.8972"	
Lead A, G	Lead E, N, M	Lead A, G	Lead E, N, M	Lead A, G	Lead E, N, M
0.020 - 0.031	0.024 - 0.047	0.020 - 0.039	0.031 - 0.063	0.031 - 0.059	0.039 - 0.087
0.016 - 0.028	0.016 - 0.039	0.020 - 0.031	0.024 - 0.055	0.031 - 0.047	0.039 - 0.079
0.020 - 0.031	0.024 - 0.047	0.020 - 0.039	0.031 - 0.063	0.031 - 0.059	0.039 - 0.087
0.016 - 0.028	0.016 - 0.039	0.020 - 0.031	0.024 - 0.055	0.031 - 0.047	0.039 - 0.079
0.020 - 0.031	0.024 - 0.047	0.020 - 0.039	0.031 - 0.063	0.031 - 0.059	0.039 - 0.087
0.016 - 0.028	0.016 - 0.039	0.020 - 0.031	0.024 - 0.055	0.031 - 0.047	0.039 - 0.079
0.020 - 0.031	0.024 - 0.047	0.020 - 0.039	0.031 - 0.063	0.031 - 0.059	0.039 - 0.087
0.016 - 0.028	0.016 - 0.039	0.020 - 0.031	0.024 - 0.055	0.031 - 0.047	0.039 - 0.079
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.024 - 0.039	0.028 - 0.055
0.020 - 0.031	0.024 - 0.047	0.020 - 0.039	0.031 - 0.063	0.031 - 0.059	0.039 - 0.087
0.016 - 0.028	0.016 - 0.039	0.020 - 0.031	0.024 - 0.055	0.031 - 0.047	0.039 - 0.079
0.020 - 0.031	0.024 - 0.047	0.020 - 0.039	0.031 - 0.063	0.031 - 0.059	0.039 - 0.087
0.016 - 0.028	0.016 - 0.039	0.020 - 0.031	0.024 - 0.055	0.031 - 0.047	0.039 - 0.079
0.016 - 0.028	0.016 - 0.039	0.020 - 0.031	0.024 - 0.055	0.031 - 0.047	0.039 - 0.079
0.016 - 0.028	0.016 - 0.039	0.020 - 0.031	0.024 - 0.055	0.031 - 0.047	0.039 - 0.079
0.016 - 0.039	0.024 - 0.059	0.024 - 0.051	0.031 - 0.063	0.031 - 0.067	0.039 - 0.088
0.016 - 0.039	0.024 - 0.059	0.024 - 0.051	0.031 - 0.063	0.031 - 0.067	0.039 - 0.088
0.016 - 0.039	0.024 - 0.059	0.024 - 0.051	0.031 - 0.063	0.031 - 0.067	0.039 - 0.088
0.020 - 0.031	—	0.024 - 0.039	—	0.031 - 0.055	—
0.012 - 0.024	—	0.016 - 0.031	—	0.024 - 0.039	—
0.020 - 0.031	—	0.024 - 0.039	—	0.031 - 0.055	—
0.012 - 0.020	—	0.016 - 0.024	—	0.020 - 0.028	—
0.012 - 0.020	—	0.016 - 0.024	—	0.020 - 0.028	—



C40

Stock Allowance and Coolant | Metric (mm)

CUTTING RINGS

ISO	Material	Hardness (BHN)	Coolant	Recommended Stock (mm) by Reamer Diameter* 17.60 mm - 40.00 mm	40.01 mm - 80.00 mm	80.01 mm - 200.00 mm
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 180	Water Soluble / Cutting Oil	0.15 - 0.30	0.20 - 0.40	0.25 - 0.50
		180 - 250				
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180				
		180 - 275				
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180				
		180 - 325				
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180				
		180 - 375				
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450				
	Structural Steel A36, A285, A516, etc.	125 - 180				
		180 - 350				
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200				
		200 - 250				
M	**Stainless Steel 400 Series** 416, 420, etc.	135 - 350	Water Soluble / Cutting Oil	0.15 - 0.30	0.20 - 0.40	0.25 - 0.50
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275				
K	**Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)**	< 200	Water Soluble / Cutting Oil	0.15 - 0.30	0.20 - 0.40	0.25 - 0.50
		> 200				
	Spheroidal Cast Iron (Ferritic)	260 - 320				
N	**Copper and Alloys, and Brass**	< 500	Water Soluble	0.15 - 0.30	0.20 - 0.40	0.25 - 0.50
	Bronze, and Bronze Phosphorous	< 180	Water Soluble / Cutting Oil			
	Aluminum and Alloys	< 150				
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 310	Water Soluble / Cutting Oil	0.20 - 0.40	0.30 - 0.40	0.30 - 0.50
	Titanium Alloy	140 - 310				

*Stock value is on diameter.

Stock Allowance and Coolant | Imperial (in)

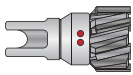
CUTTING RINGS

ISO	Material	Hardness (BHN)	Coolant	Recommended Stock (in) by Reamer Diameter* 0.6929" - 1.5750"	1.5751" - 3.1500"	3.1501" - 7.8972"
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 180	Water Soluble / Cutting Oil	0.006 - 0.012	0.008 - 0.016	0.010 - 0.020
		180 - 250				
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180				
		180 - 275				
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180				
		180 - 325				
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180				
		180 - 375				
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450				
	Structural Steel A36, A285, A516, etc.	125 - 180				
		180 - 350				
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200				
		200 - 250				
M	**Stainless Steel 400 Series** 416, 420, etc.	135 - 350	Water Soluble / Cutting Oil	0.006 - 0.012	0.008 - 0.016	0.010 - 0.020
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275				
K	**Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)**	< 200	Water Soluble / Cutting Oil	0.006 - 0.012	0.008 - 0.016	0.010 - 0.020
		> 200				
	Spheroidal Cast Iron (Ferritic)	260 - 320				
N	**Copper and Alloys, and Brass**	< 500	Water Soluble	0.006 - 0.012	0.008 - 0.016	0.010 - 0.020
	Bronze, and Bronze Phosphorous	< 180	Water Soluble / Cutting Oil			
	Aluminum and Alloys	< 150				
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 310	Water Soluble / Cutting Oil	0.008 - 0.016	0.012 - 0.016	0.012 - 0.020
	Titanium Alloy	140 - 310				

*Stock value is on diameter.

Reconditioning Service

All ALVAN reamers can be reconditioned to help reduce your overall tooling costs. This service is provided through Allied Machine & Engineering by utilizing the expertise of S.C.A.M.I. We will process the tools with a 25-35 workday lead time, depending on the style, the date we receive the tools, and the purchase order.

Reamer Style		Lead Time (workdays)	Part No.	Reconditioned Part No.
	Replaceable Head*	25	I7405-SVG-10000	**R**I7405SVG10000
	Monobloc	35	AL3620I04853	AL3620I04853**RP1**
	Cutting Ring	35	AL2TIAI05820	AL2TIAI05820**RP1**

*Only 7000 series heads are eligible for reconditioning.

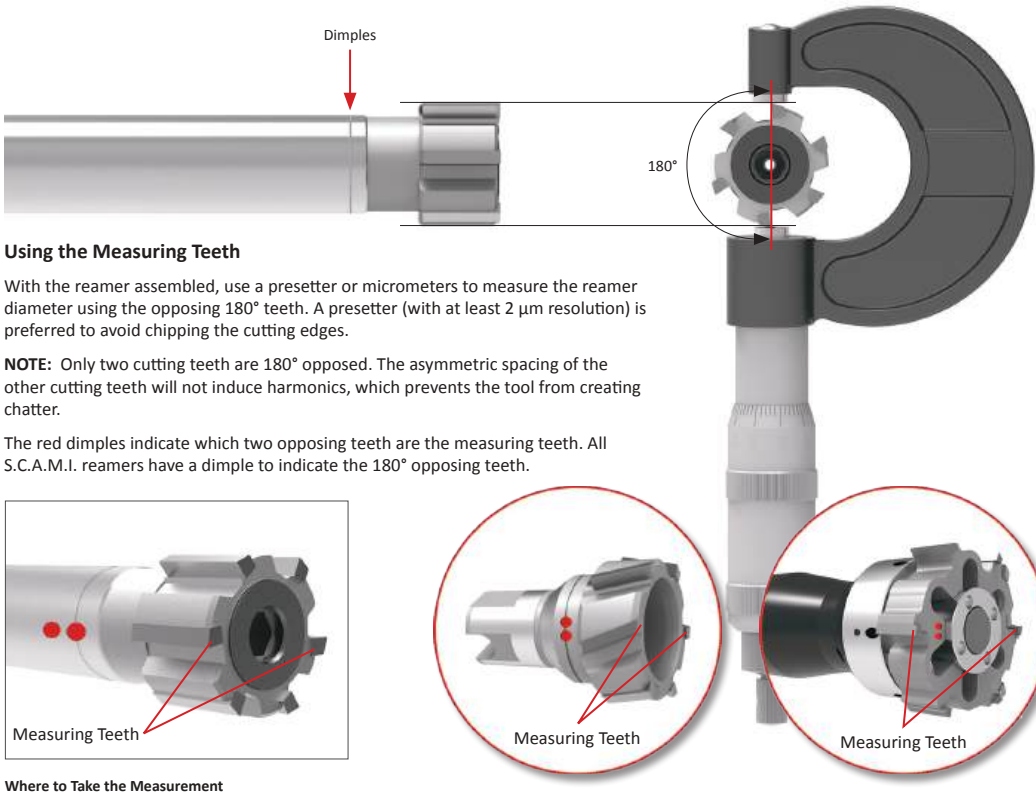


Parts to be Reconditioned
(packaged safely)

Purchase Order

Allied Machine & Engineering
Attn: Regrind Department
120 Deeds Drive
Dover, OH 44622
United States

Diameter Measurement



Using the Measuring Teeth

With the reamer assembled, use a presetter or micrometers to measure the reamer diameter using the opposing 180° teeth. A presetter (with at least 2 µm resolution) is preferred to avoid chipping the cutting edges.

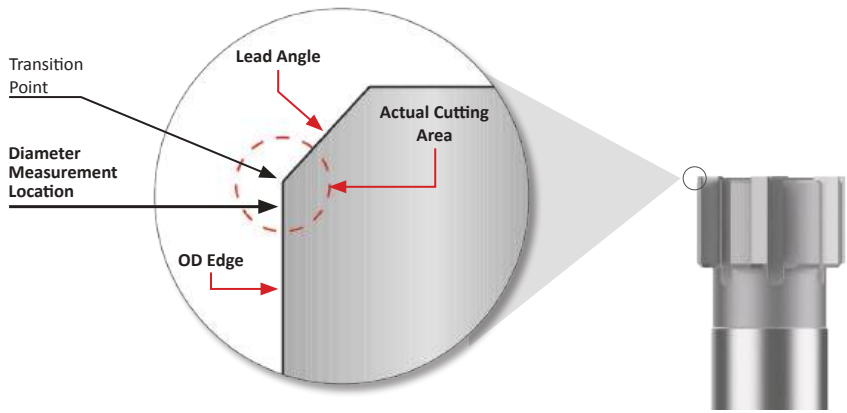
NOTE: Only two cutting teeth are 180° opposed. The asymmetric spacing of the other cutting teeth will not induce harmonics, which prevents the tool from creating chatter.

The red dimples indicate which two opposing teeth are the measuring teeth. All S.C.A.M.I. reamers have a dimple to indicate the 180° opposing teeth.

Where to Take the Measurement

When measuring the diameter, take the measurement from the area of the cutting tooth just below the transition from the lead angle to the OD edge. See the illustration below.

The back side of the OD edge has a back taper. This is why measuring from the location just below the lead angle/OD edge transition point results in the most accurate measurement (before the taper begins).



TIR Measurement

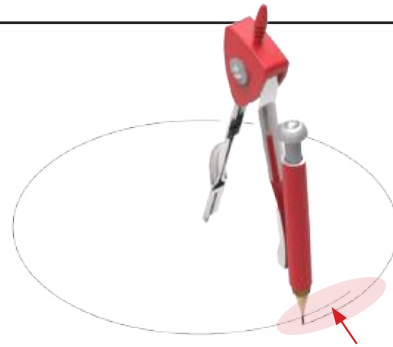
What is TIR?

Total indicator runout (TIR) refers to the distance to which the reamer is cutting off-center. In an ideal situation, the tool would begin in the exact center of the hole, and it would then rotate and cut in a perfect circle. This would result in a TIR of 0.

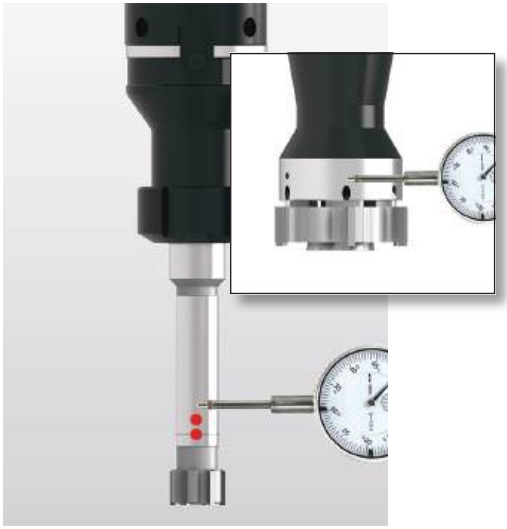
Because a perfect TIR of 0 is not practical, the goal is to maintain a TIR as close to 0 as possible. The closer the TIR is to 0, the better the reamer will perform.

Allied Machine recommends a TIR of < 0.013 mm (0.0005").

Think of attempting to draw a perfect circle with a drafting compass, but the pencil runs slightly outside the point where the circle began because the center point shifted during the pencil's path. This slight area of overlap would be the TIR.



TIR: How far from center the tool will move during its path.



Step 1:

Check the TIR first on the mandrel (or ground) area of the reamer. Center the indicator in line with the dimple.

Measure the TIR by rotating the tool until the indicator reaches the highest value.



Step 2:

Next, check the TIR on the cutting teeth of the reamer.

NOTE: Rotate the tool counterclockwise to avoid chipping the cutting teeth with the indicator.

TIR Adjustment



Step 1:

Place the tool into the machine spindle. Make contact with the four radial adjustment screws in a concentric fashion (this results in equal pressure surrounding the tool).

Tighten #1, then #3, followed by #2 and #4.



Step 2:

Swipe the dial indicator around the ground portion of the arbor near the coolant outlet holes to verify the TIR.

The TIR should be within 0.013 mm (0.0005") (as close to 0 as possible). This will ensure the TIR check on the cutting teeth will be more true. It also means the arbor is running true to the shank.

Step 3:

Once the TIR is checked on the arbor, check the TIR on the cutting teeth. Rotate the tool counterclockwise to avoid chipping the cutting teeth.

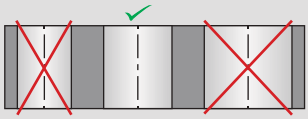




Step 4:

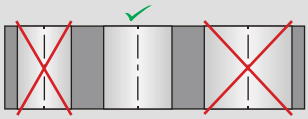
Tighten down the central clamping screws. During the tightening, the tool body will shift slightly. Repeat the TIR check on the cutting teeth and adjust as necessary.

Troubleshooting Guide



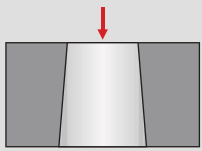
Oversized Hole

- Reamer is running eccentric to the center of the machine spindle. ▶ Use modular system with radial adjustment.
- Excessive misalignment causing reamer to cut on back taper. ▶ Fix the misalignment.
- Material buildup on cutting edges. ▶ Replace the coolant or change the cutting speed.
- Reamer diameter is too large. ▶ Use smaller reamer or regrind existing reamer.



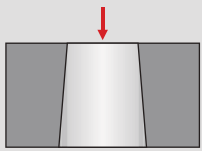
Undersized Hole

- The reamer diameter is too small. ▶ Use larger reamer.
- The reamer diameter is worn. ▶ Expand, regrind, or replace the reamer.
- The coolant is not suitable. ▶ Replace the coolant.
- Stock allowance is too small. ▶ Increase the stock allowance.
- The cutting speed is too low. ▶ Increase the cutting speed.



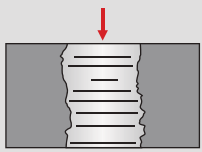
Tapered Hole

- Excessive misalignment. ▶ Correct the misalignment.



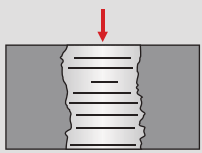
Burr at Hole Entry

- Excessive misalignment. ▶ Correct the misalignment.



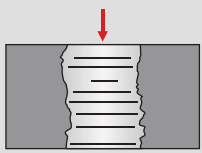
Hole is Not Straight

- Concentricity and alignment error between the workpiece and the tool. ▶ Correct the misalignment and use the modular system with radial adjustment.
- Asymmetrical cutting or angled surfaces. ▶ Create a chamfer on the lead-in.



Poor Hole Finish

- One cutting edge is chipped. ▶ Regrind the reamer.
- The lead-in is irregular. ▶ Regrind the reamer.
- Back taper on the cutting edge is too great. ▶ Regrind the reamer.
- Excessive misalignment. ▶ Correct the misalignment or use the modular system.
- Cutting data is not correct. ▶ Verify the cutting data.
- Poor chip evacuation. ▶ Verify the coolant volume and pressure or use through-tool coolant.



Reamer Creates Excessive Torque Loading

- Back taper on the cutting edge is too small. ▶ Regrind the reamer.
- The radially ground land is too wide. ▶ Regrind the reamer.
- The coolant is not suitable. ▶ Replace the coolant.

Notes

ROLLER BURNISHING PRODUCT CATALOG









ALLIED MACHINE & ENGINEERING

www.alliedmachine.com

SECTION

D00-BRN

S.C.A.M.I.® Roller Burnishers

ROLLER BURNISHING

3.95 mm - 165.90 mm
(0.1555" - 6.5315")



Get the Finish You Need

Allied Machine is proud to offer roller burnishing tools from S.C.A.M.I. These hole finishing tools provide an extremely high-quality surface finish on both through-hole and blind-hole applications. With roller burnishing, you can eliminate the need for slower and more costly finishing processes and secondary operations such as grinding, honing, and lapping.

Not only will the roller burnishing tools create a smooth surface finish, but they will also harden the material and increase the wear resistance of the part. The benefits of this single operation result in the hole quality you should expect from Allied Machine. Large range of shanks for different machine types.

- Creates fine surface finshes.
- Eliminates other processes and saves you money.
- Increases wear and corrosion resistance.

S.C.A.M.I.®

Applicable Industries

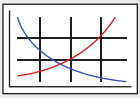
- Aerospace
- Agriculture
- Automotive
- Defense
- General Production
- Heavy Equipment
- Hydraulics
- Marine
- Medical
- Renewable Energy/ Energy
- Tool, Mold, and Die

Reference Icons

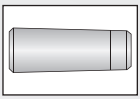
The following icons will appear throughout the catalog to help you navigate between products.



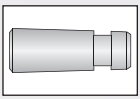
Setup / Assembly Information
Detailed instructions and information regarding the corresponding part(s).



Recommended Cutting Data
Speed and feed recommendations for optimum and safe drilling.



Through-Hole Rolls
Refers to the rolls available for through-hole burnishing tools.



Blind-Hole Rolls
Refers to the rolls available for blind-hole burnishing tools.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

WARNING means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

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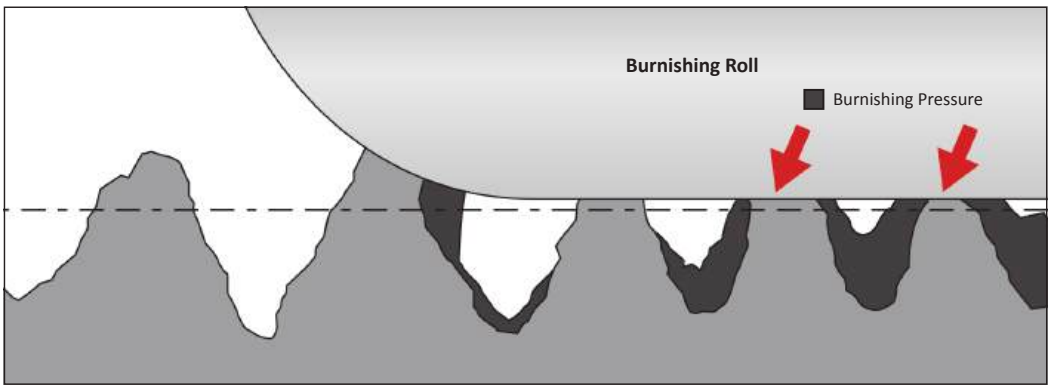
Roller Burnishing Overview

The Principle of Roller Burnishing

The Principle of Roller Burnishing

Roller burnishing is a cold-working process that produces a fine surface finish. The planetary rotation of the hardened rolls creates pressure over a metal surface. Unlike cold rolling, which produces large sectional changes, roller burnishing involves cold-working on the surface of the workpiece to improve the surface structure.

All machined surfaces consist of a series of peaks and valleys, all having irregular height and spacing. The plastic deformation created by roller burnishing is a displacement of the material in the peaks. When under pressure, the material in the peaks flows into the valleys. During the process, tool marks and irregularities are rolled out, resulting in a mirror-like finish with a tough, work-hardened surface that is also wear and corrosion resistant.



Advantages of Roller Burnishing: Metallurgical Properties

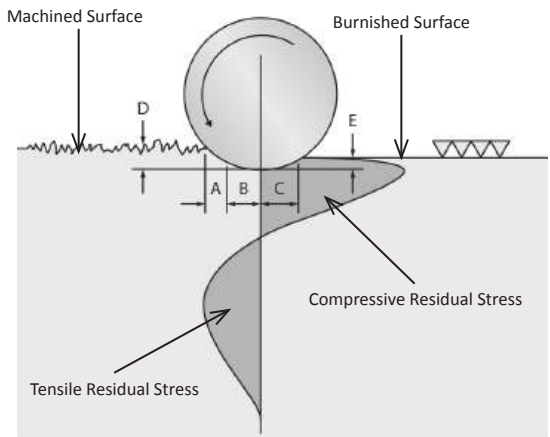
- Grain structure is condensed and refined.
- The compacted surface is ***smoother, harder, and more wear resistant*** than ground or honed surfaces.
- The process reduces surface porosity and also removes scratches that could hold reactive substances or contaminants. ***This increases the corrosion resistance***.
- Depending on the material, the surface hardness can be ***increased by as much as 10 points Rockwell C***. This may eliminate the need for heat treatment.
- The plastic deformation induces residual compressive stresses in the surface of the part. This increases the strength properties and fatigue life of the part because any forces on the part must overcome these residual stresses, as well as the tensile strength of the materials, before fatigue conditions occur.

Advantages of Roller Burnishing: Surface Finish

- Creates a high finish to any machinable metal.
- Surfaces that are bored, reamed, or turned to 125 microinches or more can be finished to 4 microinch CLA or less in one pass (at feed rates of 125 to 300 mm/min).
- Roller burnishing replaces grinding, honing, lapping, and other expensive secondary operations.
- Tool marks are rolled out.

The Process

- The first contact with the machined surface occurs in Section A.
- Plastic deformation occurs in Section B as the yield point of the surface is exceeded.
- Section D is the pressurized depth.
- Once the material endures the maximum compressive strain (Section C), it starts relieving elastically (Section E) through the finishing zone.
- This leaves a smooth surface and a compressive residual stress of significant peak value.
- The stresses formed on the material during the compression decrease toward the center. These stresses reach approximately 1 mm below the surface. This increases the surface hardness.



Roller Burnishing Overview

When to Roller Burnish

Conditions for Roller Burnishing

Roller burnishing is a cold-working process used to achieve fine hole finishes. In order to achieve the most optimal results, adhere to the benchmarks below:

- **Finishing:** The ductility and hardness of the workpiece material along with the surface preparation dictates the quality of the burnished finish.
- **Workability:** Any ductile and malleable material up to RC40 can be roller burnished.
- **Worked Surface Properties:** Workpieces with an interrupted surface within 10% of the circumference can be successfully burnished with a standard tool (see Figures 1 and 2).

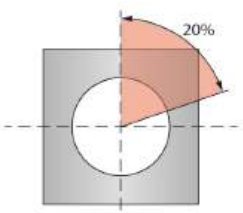


Figure 1

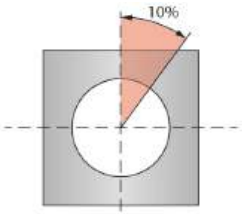


Figure 2

- **Tolerance of the Burnished Piece:** The tolerance range achieved from the burnishing will be equal to that achieved from the premachining since no material will be removed.

The ideal surface for burnishing consists of a succession of peaks. These peaks correspond on regular feed of the preparation tool (see Figure 3). We suggest the ALVAN® expandable reamer for preburnishing because it creates a uniform roughness and a tolerance range of H6 - H7.

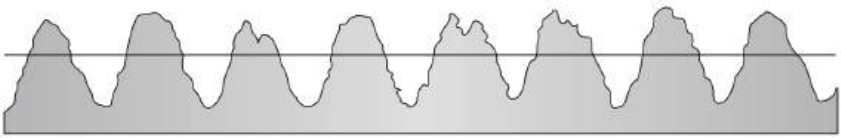


Figure 3

Premachining tapers and surface irregularities caused by cutting tool failure must be noted because these conditions cannot be corrected by the roller burnishing process (see Figures 4 and 5).

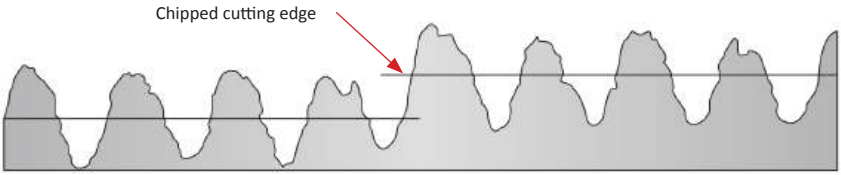


Figure 4

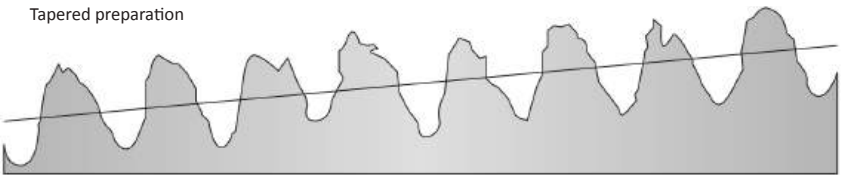


Figure 5

Roller Burnishing Overview

Product Offering



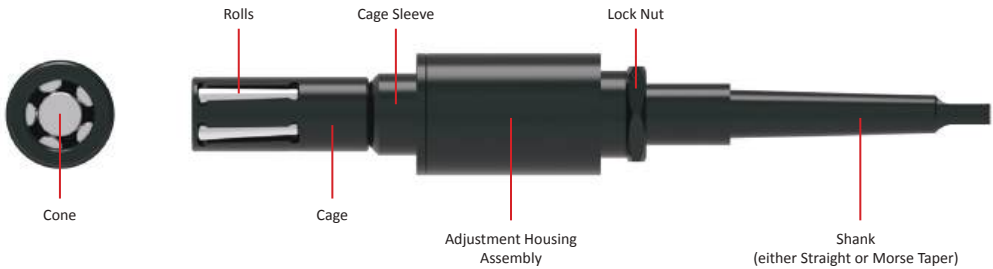
Through-Hole Style
3.95 mm - 165.90 mm (0.1555" - 6.5315")



Blind-Hole Style
5.89 mm - 165.90 mm (0.2319" - 6.5315")

Advantages of the Roller Burnishing Tool

- ***Provides accurate size control***
  tolerances within 0.013 mm (0.0005") or better (depending on variables such as material).
- ***Produces fine surface finishes***
  between 0.03 - 0.4 micromillimeters Ra (1 - 16 microinches Ra).
- ***Increases surface hardness***
  by 5 - 10% or more.
- ***Performs a much cleaner operation***
  than honing or other abrasive finishing methods.
- ***Provides versatility***
  because the operation can be performed on any rotating spindle.
- ***Eliminates the need for slower and costly finishing processes and secondary operations***
  such as grinding, honing, lapping, etc.



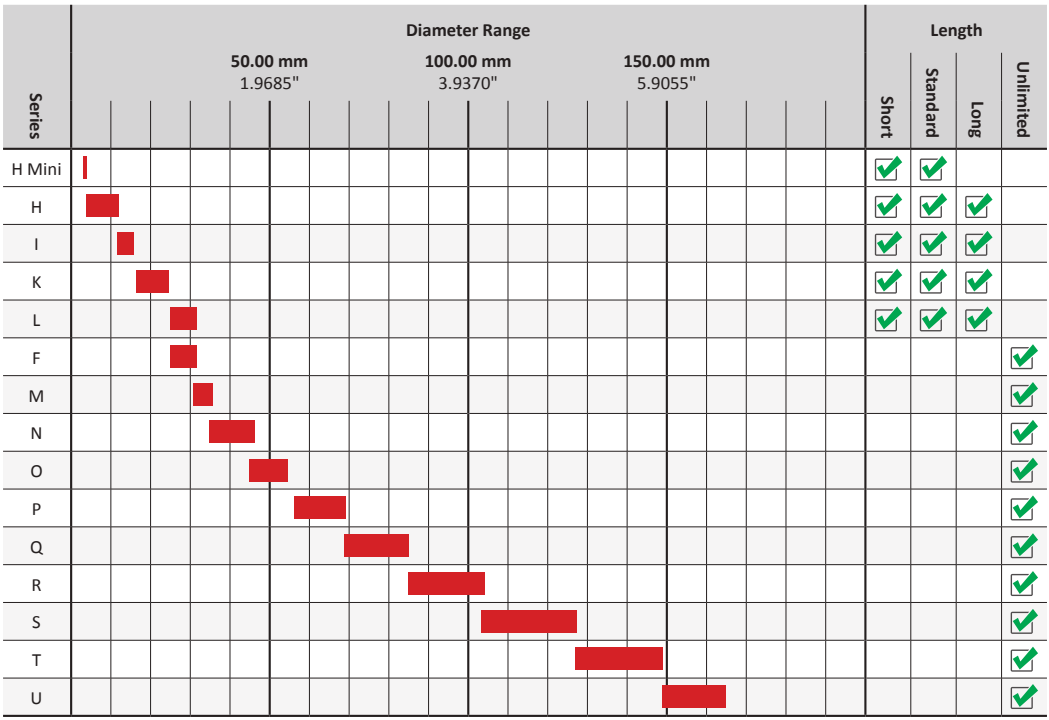
The Tool Components

All roller burnishing tools (both through hole and blind hole) are composed of the basic burnisher assembly including:

- Cage
- Cone
- Rolls
- Shank (either straight or Morse Taper)

Roller Burnishing Overview

Product Selection Guide



NOTE: For H series, through-hole tools start at 3.95 mm (0.1555") and blind-hole tools start at 5.89 mm (0.2319").

When to *ORDER UP*

In some cases, there will be a diameter overlap between a series and the series after it. If the diameter you need falls into this overlap, choose the higher of the two series.

Example:
You need a 24.64 mm diameter tool. This diameter falls into both the K series and the L series.

- K series diameter range = 16.60 mm - 24.74 mm
- L series diameter range = 24.54 mm - 31.16 mm

In this scenario, you would choose the L series tool that covers the 24.64 mm diameter.

Roller Burnishing Overview

Product Nomenclature

Roller Burnisher

RDK	H	–	2	1	0	–	00470
Diameter Unit	**Series**		**Shank Type**	**Length**	**Cage Style**		**Diameter***
RDK = Through hole **RSK** = Blind hole	**H** **F** **P** **T** **I** **M** **Q** **U** **K** **N** **R** **L** **O** **S**		**0** = Straight (mini) **1** = Straight **2** = Morse Taper	**0** = Unlimited **1** = Short **2** = Standard **3** = Long	**0** = Standard **2** = Mini		**XXXXX** = XX.XXX mm **XXXXX** = X.XXXX"

*For through holes, use minimum diameter of burnishing range, and for blind holes, use the diameter to burnish.

Cone Reduction Factor (Blind Holes)

When burnishing blind holes, the cone must not extend past the end of the rolls. If it does, the cone will collide with the bottom of the hole. Each burnishing tool has an adjustment range of:

- Approximately 0.5 mm on diameter for tools below 12.7 mm.
- Approximately 1.0 mm on diameter for tools above 12.7 mm.

For through-hole burnishing tools, the standard cone value "x" is 1. If the standard cone is used for blind-hole burnishing, the only way it will not extend past the end of the rolls is to reduce the length of the cone. The required length reduction is dependent on the set diameter versus the minimum capable diameter of the tool. The factor of reduction (x) can be calculated using the formulas below and will be a whole integer number ranging from 2 - 8.

The "x" value could result in a decimal figure. If so, round down for answers below 0.80 and round up for answers 0.80 and above.

Diameter (5.89 mm - 12.77 mm)

$$x = 1 + \frac{Z - Y}{0.05}$$

Z = diameter of the hole
Y = minimum diameter setting of tool

Example: Z = 11.05 Y = 10.71 mm

$$x = 1 + \frac{11.05 - 10.71}{0.05} = 7.8$$

which is approximated at "x" = 8

Correct Cone: RSTH-038-10025

Diameter (12.64 mm - 127.94 mm)

$$x = 1 + \frac{Z - Y}{0.10}$$

Z = diameter of the hole
Y = minimum diameter setting of tool

Example: Z = 17.76 Y = 17.40 mm

$$x = 1 + \frac{17.76 - 17.40}{0.10} = 4.6$$

which is approximated at "x" = 4

Correct Cone: RSTK-034-00044

Diameter (127.90 mm - 165.90 mm)

$$xx = 31 + \frac{Z - Y}{0.10}$$

Z = diameter of the hole
Y = minimum diameter setting of tool

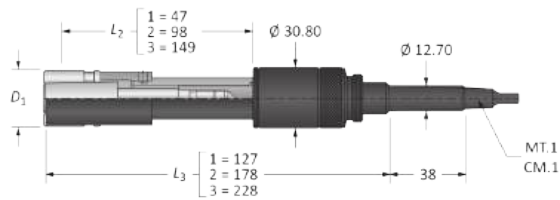
Example: Z = 148.20 Y = 147.90 mm

$$xx = 31 + \frac{148.20 - 147.90}{0.10} = 34$$

Correct Cone: RSTT-034-01480

Reference Key

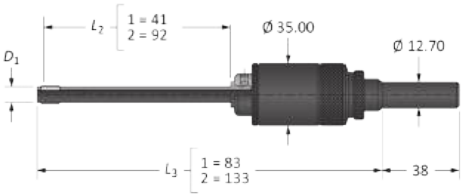
Symbol	Attribute
D_1	Diameter range
L_2	Burnishing length
L_3	Reference length



H Series (mini): 3.95 mm - 4.75 mm (0.1555" - 0.1870")

Through Holes





D_1			Part No.	Spare Parts			
						Rolls	
Metric (mm)	Imperial (in)	*L*	Straight Shank Assembly	Cage	Cone	Part No.	Qty
3.95 - 4.15	0.1555 - 0.1634	1	**RDKH-012-00395**	RDCH-012-10005	RDTH-031-10012	RDRY-704-00047	3
		2	**RDKH-022-00395**	RDCH-012-20005	RDTH-031-20012		
4.16 - 4.35	0.1638 - 0.1713	1	**RDKH-012-00416**	RDCH-012-10006	RDTH-035-10012	RDRY-704-00047	3
		2	**RDKH-022-00416**	RDCH-012-20006	RDTH-035-20012		
4.36 - 4.55	0.1717 - 0.1791	1	**RDKH-012-00436**	RDCH-012-10007	RDTH-031-10013	RDRY-704-00047	3
		2	**RDKH-022-00436**	RDCH-012-20007	RDTH-031-20013		
4.56 - 4.75	0.1795 - 0.1870	1	**RDKH-012-00456**	RDCH-012-10008	RDTH-035-10013	RDRY-704-00047	3
		2	**RDKH-022-00456**	RDCH-012-20008	RDTH-035-20013		

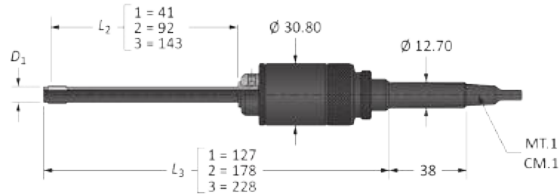
NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

D00: 39 - 40
D00: 41 - 44
D00: 37
Key on D00: 2

H Series: 4.70 mm - 12.77 mm (0.1850" - 0.5028")

Through Holes





D_1			Part No.		Spare Parts			
Metric (mm)	Imperial (in)	*L*	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone	Rolls Part No.	Qty
4.70 - 4.90	0.1850 - 0.1929	1	**RDKH-210-00470**	**RDKH-110-00470**	RDCH-011-10012	RDTH-031-10012	RDRY-704-00062	3
		2	**RDKH-220-00470**	**RDKH-120-00470**	RDCH-011-20012	RDTH-031-20012		
		3	**RDKH-230-00470**	**RDKH-130-00470**	RDCH-011-30012	RDTH-031-30012		
4.87 - 5.17	0.1917 - 0.2035	1	**RDKH-210-00487**	**RDKH-110-00487**	RDCH-011-10011	RSTH-033-10012	RDRY-704-00062	3
		2	**RDKH-220-00487**	**RDKH-120-00487**	RDCH-011-20011	RSTH-033-20012		
		3	**RDKH-230-00487**	**RDKH-130-00487**	RDCH-011-30011	RSTH-033-30012		
5.07 - 5.59	0.1996 - 0.2200	1	**RDKH-210-00507**	**RDKH-110-00507**	RDCH-011-10013	RDTH-031-10013	RDRY-704-00062	5
		2	**RDKH-220-00507**	**RDKH-120-00507**	RDCH-011-20013	RDTH-031-20013		
		3	**RDKH-230-00507**	**RDKH-130-00507**	RDCH-011-30013	RDTH-031-30013		
5.49 - 5.99	0.2161 - 0.2358	1	**RDKH-210-00549**	**RDKH-110-00549**	RDCH-011-10014	RDTH-031-10013	RDRY-704-00070	5
		2	**RDKH-220-00549**	**RDKH-120-00549**	RDCH-011-20014	RDTH-031-20013		
		3	**RDKH-230-00549**	**RDKH-130-00549**	RDCH-011-30014	RDTH-031-30013		
5.89 - 6.41	0.2319 - 0.2524	1	**RDKH-210-00589**	**RDKH-110-00589**	RDCH-011-10015	RDTH-031-10015	RDRY-704-00070	5
		2	**RDKH-220-00589**	**RDKH-120-00589**	RDCH-011-20015	RDTH-031-20015		
		3	**RDKH-230-00589**	**RDKH-130-00589**	RDCH-011-30015	RDTH-031-30015		
6.31 - 6.81	0.2484 - 0.2681	1	**RDKH-210-00631**	**RDKH-110-00631**	RDCH-011-10016	RDTH-031-10015	RDRY-704-00078	5
		2	**RDKH-220-00631**	**RDKH-120-00631**	RDCH-011-20016	RDTH-031-20015		
		3	**RDKH-230-00631**	**RDKH-130-00631**	RDCH-011-30016	RDTH-031-30015		
6.71 - 7.21	0.2642 - 0.2839	1	**RDKH-210-00671**	**RDKH-110-00671**	RDCH-011-10017	RDTH-031-10017	RDRY-704-00078	5
		2	**RDKH-220-00671**	**RDKH-120-00671**	RDCH-011-20017	RDTH-031-20017		
		3	**RDKH-230-00671**	**RDKH-130-00671**	RDCH-011-30017	RDTH-031-30017		
7.12 - 7.62	0.2803 - 0.3000	1	**RDKH-210-00712**	**RDKH-110-00712**	RDCH-011-10018	RDTH-031-10017	RDRY-704-00086	5
		2	**RDKH-220-00712**	**RDKH-120-00712**	RDCH-011-20018	RDTH-031-20017		
		3	**RDKH-230-00712**	**RDKH-130-00712**	RDCH-011-30018	RDTH-031-30017		
7.48 - 7.98	0.2945 - 0.3142	1	**RDKH-210-00748**	**RDKH-110-00748**	RDCH-011-10019	RDTH-031-10019	RDRY-704-00086	5
		2	**RDKH-220-00748**	**RDKH-120-00748**	RDCH-011-20019	RDTH-031-20019		
		3	**RDKH-230-00748**	**RDKH-130-00748**	RDCH-011-30019	RDTH-031-30019		
7.88 - 8.38	0.3102 - 0.3299	1	**RDKH-210-00788**	**RDKH-110-00788**	RDCH-011-10020	RDTH-031-10019	RDRY-704-00093	5
		2	**RDKH-220-00788**	**RDKH-120-00788**	RDCH-011-20020	RDTH-031-20019		
		3	**RDKH-230-00788**	**RDKH-130-00788**	RDCH-011-30020	RDTH-031-30019		
8.28 - 8.79	0.3260 - 0.3461	1	**RDKH-210-00828**	**RDKH-110-00828**	RDCH-011-10021	RDTH-031-10021	RDRY-704-00093	5
		2	**RDKH-220-00828**	**RDKH-120-00828**	RDCH-011-20021	RDTH-031-20021		
		3	**RDKH-230-00828**	**RDKH-130-00828**	RDCH-011-30021	RDTH-031-30021		

NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

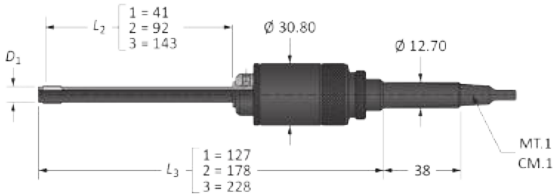
D00: 39 - 40
Key on D00: 2
D00: 41 - 44
D00: 37



H Series: 4.70 mm - 12.77 mm (0.1850" - 0.5028")

Through Holes





D_1			Part No.		Spare Parts			
Metric (mm)	Imperial (in)	*L*	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone	Rolls Part No.	Qty
8.66 - 9.16	0.3410 - 0.3606	1	**RDKH-210-00866**	**RDKH-110-00866**	RDCH-011-10022	RDTH-031-10019	RDRY-704-00109	5
		2	**RDKH-220-00866**	**RDKH-120-00866**	RDCH-011-20022	RDTH-031-20019		
		3	**RDKH-230-00866**	**RDKH-130-00866**	RDCH-011-30022	RDTH-031-30019		
9.06 - 9.57	0.3567 - 0.3768	1	**RDKH-210-00906**	**RDKH-110-00906**	RDCH-011-10023	RDTH-031-10021	RDRY-704-00109	5
		2	**RDKH-220-00906**	**RDKH-120-00906**	RDCH-011-20023	RDTH-031-20021		
		3	**RDKH-230-00906**	**RDKH-130-00906**	RDCH-011-30023	RDTH-031-30021		
9.48 - 9.99	0.3732 - 0.3933	1	**RDKH-210-00948**	**RDKH-110-00948**	RDCH-011-10024	RDTH-031-10024	RDRY-704-00109	5
		2	**RDKH-220-00948**	**RDKH-120-00948**	RDCH-011-20024	RDTH-031-20024		
		3	**RDKH-230-00948**	**RDKH-130-00948**	RDCH-011-30024	RDTH-031-30024		
9.91 - 10.42	0.3902 - 0.4102	1	**RDKH-210-00991**	**RDKH-110-00991**	RDCH-011-10025	RDTH-031-10025	RDRY-704-00109	5
		2	**RDKH-220-00991**	**RDKH-120-00991**	RDCH-011-20025	RDTH-031-20025		
		3	**RDKH-230-00991**	**RDKH-130-00991**	RDCH-011-30025	RDTH-031-30025		
10.29 - 10.80	0.4051 - 0.4252	1	**RDKH-210-01029**	**RDKH-110-01029**	RDCH-011-10026	RDTH-031-10024	RDRY-704-00125	5
		2	**RDKH-220-01029**	**RDKH-120-01029**	RDCH-011-20026	RDTH-031-20024		
		3	**RDKH-230-01029**	**RDKH-130-01029**	RDCH-011-30026	RDTH-031-30024		
10.71 - 11.21	0.4217 - 0.4413	1	**RDKH-210-01071**	**RDKH-110-01071**	RDCH-011-10027	RDTH-031-10025	RDRY-704-00125	5
		2	**RDKH-220-01071**	**RDKH-120-01071**	RDCH-011-20027	RDTH-031-20025		
		3	**RDKH-230-01071**	**RDKH-130-01071**	RDCH-011-30027	RDTH-031-30025		
11.11 - 11.61	0.4374 - 0.4571	1	**RDKH-210-01111**	**RDKH-110-01111**	RDCH-011-10028	RDTH-031-10028	RDRY-704-00125	5
		2	**RDKH-220-01111**	**RDKH-120-01111**	RDCH-011-20028	RDTH-031-20028		
		3	**RDKH-230-01111**	**RDKH-130-01111**	RDCH-011-30028	RDTH-031-30028		
11.46 - 11.96	0.4512 - 0.4709	1	**RDKH-210-01146**	**RDKH-110-01146**	RDCH-011-10029	RDTH-031-10024	RDRY-704-00148	5
		2	**RDKH-220-01146**	**RDKH-120-01146**	RDCH-011-20029	RDTH-031-20024		
		3	**RDKH-230-01146**	**RDKH-130-01146**	RDCH-011-30029	RDTH-031-30024		
11.89 - 12.39	0.4681 - 0.4878	1	**RDKH-210-01189**	**RDKH-110-01189**	RDCH-011-10030	RDTH-031-10025	RDRY-704-00148	5
		2	**RDKH-220-01189**	**RDKH-120-01189**	RDCH-011-20030	RDTH-031-20025		
		3	**RDKH-230-01189**	**RDKH-130-01189**	RDCH-011-30030	RDTH-031-30025		
12.27 - 12.77	0.4831 - 0.5028	1	**RDKH-210-01227**	**RDKH-110-01227**	RDCH-011-10031	RDTH-031-10028	RDRY-704-00148	5
		2	**RDKH-220-01227**	**RDKH-120-01227**	RDCH-011-20031	RDTH-031-20028		
		3	**RDKH-230-01227**	**RDKH-130-01227**	RDCH-011-30031	RDTH-031-30028		

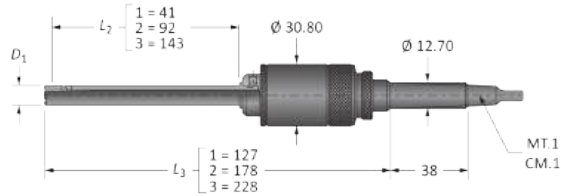
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D00: 41 - 44
D00: 37
Key on D00: 2

H Series: 4.70 mm - 12.77 mm (0.1850" - 0.5028")

Blind Holes





D_1			Part No.*		Spare Parts			
Metric (mm)	Imperial (in)	*L*	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone**	Rolls Part No.	Qty
5.89 - 6.41	0.2319 - 0.2524	1	**RSKH-210-xxxxx**	**RSKH-110-xxxxx**	RSCH-015-10015	RSTH-03x-10012	RSRY-708-00086	3
		2	**RSKH-220-xxxxx**	**RSKH-120-xxxxx**	RSCH-015-20015	RSTH-03x-20012		
		3	**RSKH-230-xxxxx**	**RSKH-130-xxxxx**	RSCH-015-30015	RSTH-03x-30012		
6.31 - 6.81	0.2484 - 0.2681	1	**RSKH-210-xxxxx**	**RSKH-110-xxxxx**	RSCH-015-10016	RSTH-03x-10013	RSRY-708-00086	3
		2	**RSKH-220-xxxxx**	**RSKH-120-xxxxx**	RSCH-015-20016	RSTH-03x-20013		
		3	**RSKH-230-xxxxx**	**RSKH-130-xxxxx**	RSCH-015-30016	RSTH-03x-30013		
6.71 - 7.21	0.2642 - 0.2839	1	**RSKH-210-xxxxx**	**RSKH-110-xxxxx**	RSCH-015-10017	RSTH-03x-10015	RSRY-708-00086	3
		2	**RSKH-220-xxxxx**	**RSKH-120-xxxxx**	RSCH-015-20017	RSTH-03x-20015		
		3	**RSKH-230-xxxxx**	**RSKH-130-xxxxx**	RSCH-015-30017	RSTH-03x-30015		
7.12 - 7.62	0.2803 - 0.3000	1	**RSKH-210-xxxxx**	**RSKH-110-xxxxx**	RSCH-015-10018	RSTH-03x-10017	RSRY-708-00086	3
		2	**RSKH-220-xxxxx**	**RSKH-120-xxxxx**	RSCH-015-20018	RSTH-03x-20017		
		3	**RSKH-230-xxxxx**	**RSKH-130-xxxxx**	RSCH-015-30018	RSTH-03x-30017		
7.48 - 7.98	0.2945 - 0.3142	1	**RSKH-210-xxxxx**	**RSKH-110-xxxxx**	RSCH-015-10019	RSTH-03x-10019	RSRY-708-00086	3
		2	**RSKH-220-xxxxx**	**RSKH-120-xxxxx**	RSCH-015-20019	RSTH-03x-20019		
		3	**RSKH-230-xxxxx**	**RSKH-130-xxxxx**	RSCH-015-30019	RSTH-03x-30019		
7.88 - 8.38	0.3102 - 0.3299	1	**RSKH-210-xxxxx**	**RSKH-110-xxxxx**	RSCH-015-10020	RSTH-03x-10021	RSRY-708-00086	3
		2	**RSKH-220-xxxxx**	**RSKH-120-xxxxx**	RSCH-015-20020	RSTH-03x-20021		
		3	**RSKH-230-xxxxx**	**RSKH-130-xxxxx**	RSCH-015-30020	RSTH-03x-30021		
8.28 - 8.79	0.3260 - 0.3461	1	**RSKH-210-xxxxx**	**RSKH-110-xxxxx**	RSCH-015-10021	RSTH-03x-10024	RSRY-708-00086	3
		2	**RSKH-220-xxxxx**	**RSKH-120-xxxxx**	RSCH-015-20021	RSTH-03x-20024		
		3	**RSKH-230-xxxxx**	**RSKH-130-xxxxx**	RSCH-015-30021	RSTH-03x-30024		
8.66 - 9.16	0.3410 - 0.3606	1	**RSKH-210-xxxxx**	**RSKH-110-xxxxx**	RSCH-015-10022	RSTH-03x-10015	RSRY-708-00125	3
		2	**RSKH-220-xxxxx**	**RSKH-120-xxxxx**	RSCH-015-20022	RSTH-03x-20015		
		3	**RSKH-230-xxxxx**	**RSKH-130-xxxxx**	RSCH-015-30022	RSTH-03x-30015		
9.06 - 9.57	0.3567 - 0.3768	1	**RSKH-210-xxxxx**	**RSKH-110-xxxxx**	RSCH-015-10023	RSTH-03x-10017	RSRY-708-00125	3
		2	**RSKH-220-xxxxx**	**RSKH-120-xxxxx**	RSCH-015-20023	RSTH-03x-20017		
		3	**RSKH-230-xxxxx**	**RSKH-130-xxxxx**	RSCH-015-30023	RSTH-03x-30017		

***** xxxxx = Indicate to 2 metric decimal places the size to be burnished (e.g. short series roller burnisher Ø 10.25 mm with MT.1 shank: RSKH-210-01025).

****** x = A number that will vary from 2 to 8 depending upon the exact diameter to be burnished. See page **D00: 7** for the correct identification of the "x" value.

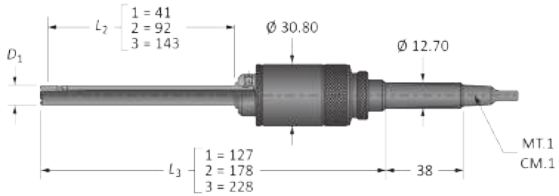
NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

D00: 39 - 40
D00: 41 - 44
D00: 38
Key on D00: 2

H Series: 4.70 mm - 12.77 mm (0.1850" - 0.5028")

Blind Holes





D_1			Part No.*		Spare Parts			
Metric (mm)	Imperial (in)	*L*	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone**	Rolls Part No.	Qty
9.48 - 9.99	0.3732 - 0.3933	1	**RSKH-210-xxxxx**	**RSKH-110-xxxxx**	RSCH-015-10024	RSTH-03x-10019	RSRY-708-00125	3
		2	**RSKH-220-xxxxx**	**RSKH-120-xxxxx**	RSCH-015-20024	RSTH-03x-20019		
		3	**RSKH-230-xxxxx**	**RSKH-130-xxxxx**	RSCH-015-30024	RSTH-03x-30019		
9.91 - 10.42	0.3902 - 0.4102	1	**RSKH-210-xxxxx**	**RSKH-110-xxxxx**	RSCH-015-10025	RSTH-03x-10021	RSRY-708-00125	3
		2	**RSKH-220-xxxxx**	**RSKH-120-xxxxx**	RSCH-015-20025	RSTH-03x-20021		
		3	**RSKH-230-xxxxx**	**RSKH-130-xxxxx**	RSCH-015-30025	RSTH-03x-30021		
10.29 - 10.80	0.4051 - 0.4252	1	**RSKH-210-xxxxx**	**RSKH-110-xxxxx**	RSCH-015-10026	RSTH-03x-10024	RSRY-708-00125	3
		2	**RSKH-220-xxxxx**	**RSKH-120-xxxxx**	RSCH-015-20026	RSTH-03x-20024		
		3	**RSKH-230-xxxxx**	**RSKH-130-xxxxx**	RSCH-015-30026	RSTH-03x-30024		
10.71 - 11.21	0.4217 - 0.4413	1	**RSKH-210-xxxxx**	**RSKH-110-xxxxx**	RSCH-015-10027	RSTH-03x-10025	RSRY-708-00125	3
		2	**RSKH-220-xxxxx**	**RSKH-120-xxxxx**	RSCH-015-20027	RSTH-03x-20025		
		3	**RSKH-230-xxxxx**	**RSKH-130-xxxxx**	RSCH-015-30027	RSTH-03x-30025		
11.11 - 11.61	0.4374 - 0.4571	1	**RSKH-210-xxxxx**	**RSKH-110-xxxxx**	RSCH-015-10028	RSTH-03x-10028	RSRY-708-00125	3
		2	**RSKH-220-xxxxx**	**RSKH-120-xxxxx**	RSCH-015-20028	RSTH-03x-20028		
		3	**RSKH-230-xxxxx**	**RSKH-130-xxxxx**	RSCH-015-30028	RSTH-03x-30028		
11.46 - 11.96	0.4512 - 0.4709	1	**RSKH-210-xxxxx**	**RSKH-110-xxxxx**	RSCH-015-10029	RSTH-03x-10021	RSRY-708-00156	3
		2	**RSKH-220-xxxxx**	**RSKH-120-xxxxx**	RSCH-015-20029	RSTH-03x-20021		
		3	**RSKH-230-xxxxx**	**RSKH-130-xxxxx**	RSCH-015-30029	RSTH-03x-30021		
11.89 - 12.39	0.4681 - 0.4878	1	**RSKH-210-xxxxx**	**RSKH-110-xxxxx**	RSCH-015-10030	RSTH-03x-10024	RSRY-708-00156	3
		2	**RSKH-220-xxxxx**	**RSKH-120-xxxxx**	RSCH-015-20030	RSTH-03x-20024		
		3	**RSKH-230-xxxxx**	**RSKH-130-xxxxx**	RSCH-015-30030	RSTH-03x-30024		
12.27 - 12.77	0.4831 - 0.5028	1	**RSKH-210-xxxxx**	**RSKH-110-xxxxx**	RSCH-015-10031	RSTH-03x-10025	RSRY-708-00156	3
		2	**RSKH-220-xxxxx**	**RSKH-120-xxxxx**	RSCH-015-20031	RSTH-03x-20025		
		3	**RSKH-230-xxxxx**	**RSKH-130-xxxxx**	RSCH-015-30031	RSTH-03x-30025		

***** xxxxx = Indicate to 2 metric decimal places the size to be burnished (e.g. short series roller burnisher Ø 10.25 mm with MT.1 shank: RSKH-210-01025).

****** x = A number that will vary from 2 to 8 depending upon the exact diameter to be burnished. See page **D00: 7** for the correct identification of the "x" value.

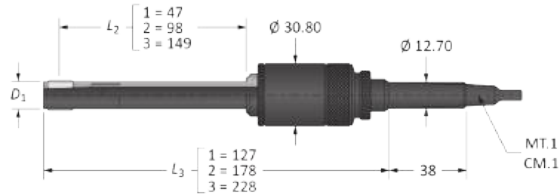
NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

D00: 39 - 40
D00: 41 - 44
D00: 38
Key on D00: 2

I Series: 12.64 mm - 16.85 mm (0.4976" - 0.6634")

Through Holes

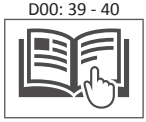


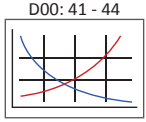


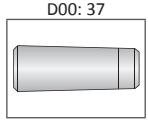
D_1			Part No.		Spare Parts			
							Rolls	
Metric (mm)	Imperial (in)	*L*	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone	Part No.	Qty
12.64 - 13.50	0.4976 - 0.5315	1	**RDKI-210-01264**	**RDKI-110-01264**	RDCI-400-00500	RDTI-031-10032	RDRY-704-00156	5
		2	**RDKI-220-01264**	**RDKI-120-01264**	RDCI-400-00500	RDTI-031-20032		
		3	**RDKI-230-01264**	**RDKI-130-01264**	RDCI-400-00500	RDTI-031-30032		
13.45 - 14.45	0.5295 - 0.5689	1	**RDKI-210-01345**	**RDKI-110-01345**	RDCI-400-00531	RDTI-031-10034	RDRY-704-00156	5
		2	**RDKI-220-01345**	**RDKI-120-01345**	RDCI-400-00531	RDTI-031-20034		
		3	**RDKI-230-01345**	**RDKI-130-01345**	RDCI-400-00531	RDTI-031-30034		
14.25 - 15.25	0.5610 - 0.6004	1	**RDKI-210-01425**	**RDKI-110-01425**	RDCI-400-00562	RDTI-031-10034	RDRY-704-00172	5
		2	**RDKI-220-01425**	**RDKI-120-01425**	RDCI-400-00562	RDTI-031-20034		
		3	**RDKI-230-01425**	**RDKI-130-01425**	RDCI-400-00562	RDTI-031-30034		
15.05 - 16.05	0.5925 - 0.6319	1	**RDKI-210-01505**	**RDKI-110-01505**	RDCI-400-00593	RDTI-031-10038	RDRY-704-00172	5
		2	**RDKI-220-01505**	**RDKI-120-01505**	RDCI-400-00593	RDTI-031-20038		
		3	**RDKI-230-01505**	**RDKI-130-01505**	RDCI-400-00593	RDTI-031-30038		
15.85 - 16.85	0.6240 - 0.6634	1	**RDKI-210-01585**	**RDKI-110-01585**	RDCI-400-00625	RDTI-031-10038	RDRY-701-00187	5
		2	**RDKI-220-01585**	**RDKI-120-01585**	RDCI-400-00625	RDTI-031-20038		
		3	**RDKI-230-01585**	**RDKI-130-01585**	RDCI-400-00625	RDTI-031-30038		

NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

D00: 39 - 40
Key on D00: 2
D00: 41 - 44
D00: 37



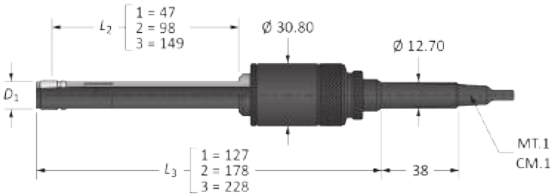




I Series: 12.64 mm - 16.85 mm (0.4976" - 0.6634")

Blind Holes





D_1			Part No.*		Spare Parts			
Metric (mm)	Imperial (in)	*L*	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone**	Rolls Part No.	Qty
12.64 - 13.50	0.4976 - 0.5315	1	**RSKI-210-xxxxx**	**RSKI-110-xxxxx**	RSCI-400-00500	RSTI-03x-10032	RSRY-708-00156	5
		2	**RSKI-220-xxxxx**	**RSKI-120-xxxxx**	RSCI-400-00500	RSTI-03x-20032		
		3	**RSKI-230-xxxxx**	**RSKI-130-xxxxx**	RSCI-400-00500	RSTI-03x-30032		
13.45 - 14.45	0.5295 - 0.5689	1	**RSKI-210-xxxxx**	**RSKI-110-xxxxx**	RSCI-400-00531	RSTI-03x-10034	RSRY-708-00156	5
		2	**RSKI-220-xxxxx**	**RSKI-120-xxxxx**	RSCI-400-00531	RSTI-03x-20034		
		3	**RSKI-230-xxxxx**	**RSKI-130-xxxxx**	RSCI-400-00531	RSTI-03x-30034		
14.25 - 15.25	0.5610 - 0.6004	1	**RSKI-210-xxxxx**	**RSKI-110-xxxxx**	RSCI-400-00562	RSTI-03x-10034	RSRY-708-00172	5
		2	**RSKI-220-xxxxx**	**RSKI-120-xxxxx**	RSCI-400-00562	RSTI-03x-20034		
		3	**RSKI-230-xxxxx**	**RSKI-130-xxxxx**	RSCI-400-00562	RSTI-03x-30034		
15.05 - 16.05	0.5925 - 0.6319	1	**RSKI-210-xxxxx**	**RSKI-110-xxxxx**	RSCI-400-00593	RSTI-03x-10038	RSRY-708-00172	5
		2	**RSKI-220-xxxxx**	**RSKI-120-xxxxx**	RSCI-400-00593	RSTI-03x-20038		
		3	**RSKI-230-xxxxx**	**RSKI-130-xxxxx**	RSCI-400-00593	RSTI-03x-30038		
15.85 - 16.85	0.6240 - 0.6634	1	**RSKI-210-xxxxx**	**RSKI-110-xxxxx**	RSCI-400-00625	RSTI-03x-10038	RSRY-708-00187	5
		2	**RSKI-220-xxxxx**	**RSKI-120-xxxxx**	RSCI-400-00625	RSTI-03x-20038		
		3	**RSKI-230-xxxxx**	**RSKI-130-xxxxx**	RSCI-400-00625	RSTI-03x-30038		

***** xxxxx = Indicate to 2 metric decimal places the size to be burnished (e.g. long series roller burnisher Ø 14.00 mm with MT.1 shank: RSKI-230-01400).

****** x = A number that will vary from 2 to 8 depending upon the exact diameter to be burnished. See page **D00: 7** for the correct identification of the "x" value.

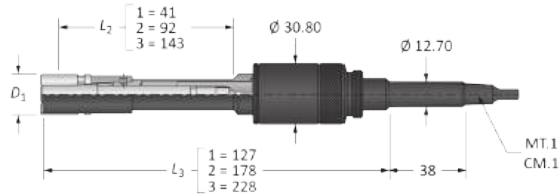
NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

D00: 39 - 40
D00: 41 - 44
D00: 38
Key on D00: 2

K Series: 16.60 mm - 24.74 mm (0.6535" - 0.9740")

Through Holes





D_1			Part No.		Spare Parts			
Metric (mm)	Imperial (in)	*L*	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone	Rolls Part No.	Qty
16.60 - 17.61	0.6535 - 0.6933	1	**RDKK-210-01660**	**RDKK-110-01660**	RDCK-011-00042	RDTK-031-00042	RDRY-701-00187	5
		2	**RDKK-220-01660**	**RDKK-120-01660**	RDCK-011-00042	RDTK-031-00042		
		3	**RDKK-230-01660**	**RDKK-130-01660**	RDCK-011-00042	RDTK-031-00042		
17.40 - 18.39	0.6850 - 0.7240	1	**RDKK-210-01740**	**RDKK-110-01740**	RDCK-011-00044	RDTK-031-00044	RDRY-701-00187	5
		2	**RDKK-220-01740**	**RDKK-120-01740**	RDCK-011-00044	RDTK-031-00044		
		3	**RDKK-230-01740**	**RDKK-130-01740**	RDCK-011-00044	RDTK-031-00044		
18.19 - 19.18	0.7161 - 0.7551	1	**RDKK-210-01819**	**RDKK-110-01819**	RDCK-011-00046	RDTK-031-00042	RDRY-701-00218	5
		2	**RDKK-220-01819**	**RDKK-120-01819**	RDCK-011-00046	RDTK-031-00042		
		3	**RDKK-230-01819**	**RDKK-130-01819**	RDCK-011-00046	RDTK-031-00042		
18.96 - 19.99	0.7465 - 0.7870	1	**RDKK-210-01896**	**RDKK-110-01896**	RDCK-011-00048	RDTK-031-00044	RDRY-701-00218	5
		2	**RDKK-220-01896**	**RDKK-120-01896**	RDCK-011-00048	RDTK-031-00044		
		3	**RDKK-230-01896**	**RDKK-130-01896**	RDCK-011-00048	RDTK-031-00044		
19.74 - 20.77	0.7772 - 0.8177	1	**RDKK-210-01974**	**RDKK-110-01974**	RDCK-011-00050	RDTK-031-00050	RDRY-701-00218	5
		2	**RDKK-220-01974**	**RDKK-120-01974**	RDCK-011-00050	RDTK-031-00050		
		3	**RDKK-230-01974**	**RDKK-130-01974**	RDCK-011-00050	RDTK-031-00050		
20.52 - 21.57	0.8079 - 0.8492	1	**RDKK-210-02052**	**RDKK-110-02052**	RDCK-011-00052	RDTK-031-00052	RDRY-701-00218	5
		2	**RDKK-220-02052**	**RDKK-120-02052**	RDCK-011-00052	RDTK-031-00052		
		3	**RDKK-230-02052**	**RDKK-130-02052**	RDCK-011-00052	RDTK-031-00052		
21.31 - 22.35	0.8390 - 0.8799	1	**RDKK-210-02131**	**RDKK-110-02131**	RDCK-011-00054	RDTK-031-00054	RDRY-701-00218	5
		2	**RDKK-220-02131**	**RDKK-120-02131**	RDCK-011-00054	RDTK-031-00054		
		3	**RDKK-230-02131**	**RDKK-130-02131**	RDCK-011-00054	RDTK-031-00054		
22.13 - 23.16	0.8713 - 0.9118	1	**RDKK-210-02213**	**RDKK-110-02213**	RDCK-011-00056	RDTK-031-00050	RDRY-701-00265	5
		2	**RDKK-220-02213**	**RDKK-120-02213**	RDCK-011-00056	RDTK-031-00050		
		3	**RDKK-230-02213**	**RDKK-130-02213**	RDCK-011-00056	RDTK-031-00050		
22.91 - 23.96	0.9020 - 0.9433	1	**RDKK-210-02291**	**RDKK-110-02291**	RDCK-011-00058	RDTK-031-00052	RDRY-701-00265	5
		2	**RDKK-220-02291**	**RDKK-120-02291**	RDCK-011-00058	RDTK-031-00052		
		3	**RDKK-230-02291**	**RDKK-130-02291**	RDCK-011-00058	RDTK-031-00052		
23.70 - 24.74	0.9331 - 0.9740	1	**RDKK-210-02370**	**RDKK-110-02370**	RDCK-011-00060	RDTK-031-00054	RDRY-701-00265	5
		2	**RDKK-220-02370**	**RDKK-120-02370**	RDCK-011-00060	RDTK-031-00054		
		3	**RDKK-230-02370**	**RDKK-130-02370**	RDCK-011-00060	RDTK-031-00054		

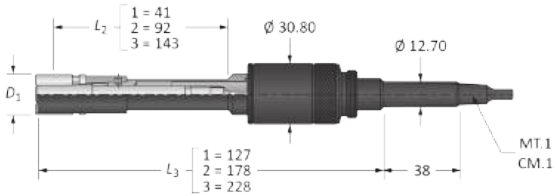
NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

D00: 39 - 40
Key on D00: 2
D00: 41 - 44
D00: 37

K Series: 16.60 mm - 24.74 mm (0.6535" - 0.9740")

Blind Holes





D_1			Part No.*		Spare Parts			
Metric (mm)	Imperial (in)	*L*	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone**	Rolls Part No.	Qty
16.60 - 17.61	0.6535 - 0.6933	1	**RSKK-210-xxxxx**	**RSKK-110-xxxxx**	RSCK-015-00042	RSTK-03x-00042	RSRY-708-00187	5
		2	**RSKK-220-xxxxx**	**RSKK-120-xxxxx**	RSCK-015-00042	RSTK-03x-00042		
		3	**RSKK-230-xxxxx**	**RSKK-130-xxxxx**	RSCK-015-00042	RSTK-03x-00042		
17.40 - 18.39	0.6850 - 0.7240	1	**RSKK-210-xxxxx**	**RSKK-110-xxxxx**	RSCK-015-00044	RSTK-03x-00044	RSRY-708-00187	5
		2	**RSKK-220-xxxxx**	**RSKK-120-xxxxx**	RSCK-015-00044	RSTK-03x-00044		
		3	**RSKK-230-xxxxx**	**RSKK-130-xxxxx**	RSCK-015-00044	RSTK-03x-00044		
18.19 - 19.18	0.7161 - 0.7551	1	**RSKK-210-xxxxx**	**RSKK-110-xxxxx**	RSCK-015-00046	RSTK-03x-00042	RSRY-708-00218	5
		2	**RSKK-220-xxxxx**	**RSKK-120-xxxxx**	RSCK-015-00046	RSTK-03x-00042		
		3	**RSKK-230-xxxxx**	**RSKK-130-xxxxx**	RSCK-015-00046	RSTK-03x-00042		
18.96 - 19.99	0.7465 - 0.7870	1	**RSKK-210-xxxxx**	**RSKK-110-xxxxx**	RSCK-015-00048	RSTK-03x-00044	RSRY-708-00218	5
		2	**RSKK-220-xxxxx**	**RSKK-120-xxxxx**	RSCK-015-00048	RSTK-03x-00044		
		3	**RSKK-230-xxxxx**	**RSKK-130-xxxxx**	RSCK-015-00048	RSTK-03x-00044		
19.74 - 20.77	0.7772 - 0.8177	1	**RSKK-210-xxxxx**	**RSKK-110-xxxxx**	RSCK-015-00050	RSTK-03x-00050	RSRY-708-00218	5
		2	**RSKK-220-xxxxx**	**RSKK-120-xxxxx**	RSCK-015-00050	RSTK-03x-00050		
		3	**RSKK-230-xxxxx**	**RSKK-130-xxxxx**	RSCK-015-00050	RSTK-03x-00050		
20.52 - 21.57	0.8079 - 0.8492	1	**RSKK-210-xxxxx**	**RSKK-110-xxxxx**	RSCK-015-00052	RSTK-03x-00052	RSRY-708-00218	5
		2	**RSKK-220-xxxxx**	**RSKK-120-xxxxx**	RSCK-015-00052	RSTK-03x-00052		
		3	**RSKK-230-xxxxx**	**RSKK-130-xxxxx**	RSCK-015-00052	RSTK-03x-00052		
21.31 - 22.35	0.8390 - 0.8799	1	**RSKK-210-xxxxx**	**RSKK-110-xxxxx**	RSCK-015-00054	RSTK-03x-00054	RSRY-708-00218	5
		2	**RSKK-220-xxxxx**	**RSKK-120-xxxxx**	RSCK-015-00054	RSTK-03x-00054		
		3	**RSKK-230-xxxxx**	**RSKK-130-xxxxx**	RSCK-015-00054	RSTK-03x-00054		
22.13 - 23.16	0.8713 - 0.9118	1	**RSKK-210-xxxxx**	**RSKK-110-xxxxx**	RSCK-015-00056	RSTK-03x-00050	RSRY-708-00265	5
		2	**RSKK-220-xxxxx**	**RSKK-120-xxxxx**	RSCK-015-00056	RSTK-03x-00050		
		3	**RSKK-230-xxxxx**	**RSKK-130-xxxxx**	RSCK-015-00056	RSTK-03x-00050		
22.91 - 23.96	0.9020 - 0.9433	1	**RSKK-210-xxxxx**	**RSKK-110-xxxxx**	RSCK-015-00058	RSTK-03x-00052	RSRY-708-00265	5
		2	**RSKK-220-xxxxx**	**RSKK-120-xxxxx**	RSCK-015-00058	RSTK-03x-00052		
		3	**RSKK-230-xxxxx**	**RSKK-130-xxxxx**	RSCK-015-00058	RSTK-03x-00052		
23.70 - 24.74	0.9331 - 0.9740	1	**RSKK-210-xxxxx**	**RSKK-110-xxxxx**	RSCK-015-00060	RSTK-03x-00054	RSRY-708-00265	5
		2	**RSKK-220-xxxxx**	**RSKK-120-xxxxx**	RSCK-015-00060	RSTK-03x-00054		
		3	**RSKK-230-xxxxx**	**RSKK-130-xxxxx**	RSCK-015-00060	RSTK-03x-00054		

***** xxxxx = Indicate to 2 metric decimal places the size to be burnished (e.g. standard series roller burnisher Ø 20.00 mm with MT.1 shank: RSKK-120-02000).

****** x = A number that will vary from 2 to 8 depending upon the exact diameter to be burnished. See page **D00: 7** for the correct identification of the "x" value.

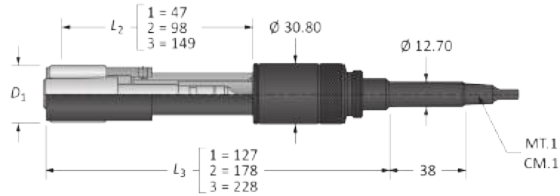
NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

D00: 39 - 40 D00: 41 - 44 D00: 38
Key on D00: 2

L Series: 24.54 mm - 31.16 mm (0.9661" - 1.2268")

Through Holes





D_1			Part No.		Spare Parts			
							Rolls	
Metric (mm)	Imperial (in)	*L*	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone	Part No.	Qty
24.54 - 25.59	0.9661 - 1.0075	1	**RDKL-210-02454**	**RDKL-110-02454**	RDCL-011-00062	RDTL-031-00062	RDRY-701-00265	5
		2	**RDKL-220-02454**	**RDKL-120-02454**	RDCL-011-00062	RDTL-031-00062		
		3	**RDKL-230-02454**	**RDKL-130-02454**	RDCL-011-00062	RDTL-031-00062		
25.38 - 26.42	0.9992 - 1.0402	1	**RDKL-210-02538**	**RDKL-110-02538**	RDCL-011-00064	RDTL-031-00064	RDRY-701-00265	7
		2	**RDKL-220-02538**	**RDKL-120-02538**	RDCL-011-00064	RDTL-031-00064		
		3	**RDKL-230-02538**	**RDKL-130-02538**	RDCL-011-00064	RDTL-031-00064		
26.16 - 27.20	1.0299 - 1.0709	1	**RDKL-210-02616**	**RDKL-110-02616**	RDCL-011-00066	RDTL-031-00066	RDRY-701-00265	7
		2	**RDKL-220-02616**	**RDKL-120-02616**	RDCL-011-00066	RDTL-031-00066		
		3	**RDKL-230-02616**	**RDKL-130-02616**	RDCL-011-00066	RDTL-031-00066		
26.95 - 28.00	1.0610 - 1.1024	1	**RDKL-210-02695**	**RDKL-110-02695**	RDCL-011-00068	RDTL-031-00068	RDRY-701-00265	7
		2	**RDKL-220-02695**	**RDKL-120-02695**	RDCL-011-00068	RDTL-031-00068		
		3	**RDKL-230-02695**	**RDKL-130-02695**	RDCL-011-00068	RDTL-031-00068		
27.73 - 28.77	1.0917 - 1.1327	1	**RDKL-210-02773**	**RDKL-110-02773**	RDCL-011-00070	RDTL-031-00070	RDRY-701-00265	7
		2	**RDKL-220-02773**	**RDKL-120-02773**	RDCL-011-00070	RDTL-031-00070		
		3	**RDKL-230-02773**	**RDKL-130-02773**	RDCL-011-00070	RDTL-031-00070		
28.55 - 29.59	1.1240 - 1.1650	1	**RDKL-210-02855**	**RDKL-110-02855**	RDCL-011-00072	RDTL-031-00066	RDRY-701-00312	7
		2	**RDKL-220-02855**	**RDKL-120-02855**	RDCL-011-00072	RDTL-031-00066		
		3	**RDKL-230-02855**	**RDKL-130-02855**	RDCL-011-00072	RDTL-031-00066		
29.34 - 30.39	1.1551 - 1.1965	1	**RDKL-210-02934**	**RDKL-110-02934**	RDCL-011-00074	RDTL-031-00068	RDRY-701-00312	7
		2	**RDKL-220-02934**	**RDKL-120-02934**	RDCL-011-00074	RDTL-031-00068		
		3	**RDKL-230-02934**	**RDKL-130-02934**	RDCL-011-00074	RDTL-031-00068		
30.12 - 31.16	1.1858 - 1.2268	1	**RDKL-210-03012**	**RDKL-110-03012**	RDCL-011-00076	RDTL-031-00070	RDRY-701-00312	7
		2	**RDKL-220-03012**	**RDKL-120-03012**	RDCL-011-00076	RDTL-031-00070		
		3	**RDKL-230-03012**	**RDKL-130-03012**	RDCL-011-00076	RDTL-031-00070		

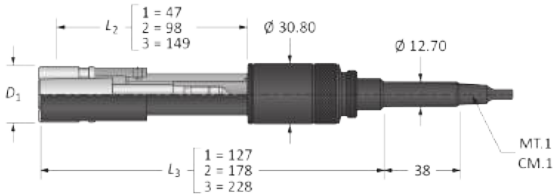
NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

D00: 39 - 40
D00: 41 - 44
D00: 37
Key on D00: 2

L Series: 24.54 mm - 31.16 mm (0.9661" - 1.2268")

Blind Holes





D_1			Part No.*		Spare Parts			
Metric (mm)	Imperial (in)	L	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone**	Rolls Part No.	Qty
24.54 - 25.59	0.9661 - 1.0075	1	RSKL-210-xxxxx	RSKL-110-xxxxx	RSCL-015-00062	RSTL-03x-00062	RSRY-708-00265	5
		2	RSKL-220-xxxxx	RSKL-120-xxxxx	RSCL-015-00062	RSTL-03x-00062		
		3	RSKL-230-xxxxx	RSKL-130-xxxxx	RSCL-015-00062	RSTL-03x-00062		
25.38 - 26.42	0.9992 - 1.0402	1	RSKL-210-xxxxx	RSKL-110-xxxxx	RSCL-015-00064	RSTL-03x-00064	RSRY-708-00265	7
		2	RSKL-220-xxxxx	RSKL-120-xxxxx	RSCL-015-00064	RSTL-03x-00064		
		3	RSKL-230-xxxxx	RSKL-130-xxxxx	RSCL-015-00064	RSTL-03x-00064		
26.16 - 27.20	1.0299 - 1.0709	1	RSKL-210-xxxxx	RSKL-110-xxxxx	RSCL-015-00066	RSTL-03x-00066	RSRY-708-00265	7
		2	RSKL-220-xxxxx	RSKL-120-xxxxx	RSCL-015-00066	RSTL-03x-00066		
		3	RSKL-230-xxxxx	RSKL-130-xxxxx	RSCL-015-00066	RSTL-03x-00066		
26.95 - 28.00	1.0610 - 1.1024	1	RSKL-210-xxxxx	RSKL-110-xxxxx	RSCL-015-00068	RSTL-03x-00068	RSRY-708-00265	7
		2	RSKL-220-xxxxx	RSKL-120-xxxxx	RSCL-015-00068	RSTL-03x-00068		
		3	RSKL-230-xxxxx	RSKL-130-xxxxx	RSCL-015-00068	RSTL-03x-00068		
27.73 - 28.77	1.0917 - 1.1327	1	RSKL-210-xxxxx	RSKL-110-xxxxx	RSCL-015-00070	RSTL-03x-00070	RSRY-708-00265	7
		2	RSKL-220-xxxxx	RSKL-120-xxxxx	RSCL-015-00070	RSTL-03x-00070		
		3	RSKL-230-xxxxx	RSKL-130-xxxxx	RSCL-015-00070	RSTL-03x-00070		
28.55 - 29.59	1.1240 - 1.1650	1	RSKL-210-xxxxx	RSKL-110-xxxxx	RSCL-015-00072	RSTL-03x-00066	RSRY-708-00312	7
		2	RSKL-220-xxxxx	RSKL-120-xxxxx	RSCL-015-00072	RSTL-03x-00066		
		3	RSKL-230-xxxxx	RSKL-130-xxxxx	RSCL-015-00072	RSTL-03x-00066		
29.34 - 30.39	1.1551 - 1.1965	1	RSKL-210-xxxxx	RSKL-110-xxxxx	RSCL-015-00074	RSTL-03x-00068	RSRY-708-00312	7
		2	RSKL-220-xxxxx	RSKL-120-xxxxx	RSCL-015-00074	RSTL-03x-00068		
		3	RSKL-230-xxxxx	RSKL-130-xxxxx	RSCL-015-00074	RSTL-03x-00068		
30.12 - 31.16	1.1858 - 1.2268	1	RSKL-210-xxxxx	RSKL-110-xxxxx	RSCL-015-00076	RSTL-03x-00070	RSRY-708-00312	7
		2	RSKL-220-xxxxx	RSKL-120-xxxxx	RSCL-015-00076	RSTL-03x-00070		
		3	RSKL-230-xxxxx	RSKL-130-xxxxx	RSCL-015-00076	RSTL-03x-00070		

***** xxxxx = Indicate to 2 metric decimal places the size to be burnished (e.g. short series roller burnisher Ø 27.50 mm with MT.1 shank: RSKL-210-02750).

****** x = A number that will vary from 2 to 8 depending upon the exact diameter to be burnished. See page **D00: 7** for the correct identification of the "x" value.

NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

D00: 39 - 40
D00: 41 - 44
D00: 38
Key on D00: 2

F Series: 24.54 mm - 31.16 mm (0.9661" - 1.2268")





Through Holes

D_1		Part No.		Spare Parts			
Metric (mm)	Imperial (in)	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone	Rolls Part No.	Qty
24.54 - 25.59	0.9661 - 1.0075	**RDKF-200-02454**	**RDKF-100-02454**	RDCL-011-00062	RDTF-031-00062	RDRY-701-00265	5
25.38 - 26.42	0.9992 - 1.0402	**RDKF-200-02538**	**RDKF-100-02538**	RDCL-011-00064	RDTF-031-00064	RDRY-701-00265	7
26.16 - 27.20	1.0299 - 1.0709	**RDKF-200-02616**	**RDKF-100-02616**	RDCL-011-00066	RDTF-031-00066	RDRY-701-00265	7
26.95 - 28.00	1.0610 - 1.1024	**RDKF-200-02695**	**RDKF-100-02695**	RDCL-011-00068	RDTF-031-00068	RDRY-701-00265	7
27.73 - 28.77	1.0917 - 1.1327	**RDKF-200-02773**	**RDKF-100-02773**	RDCL-011-00070	RDTF-031-00070	RDRY-701-00265	7
28.55 - 29.59	1.1240 - 1.1650	**RDKF-200-02855**	**RDKF-100-02855**	RDCL-011-00072	RDTF-031-00066	RDRY-701-00312	7
29.34 - 30.39	1.1551 - 1.1965	**RDKF-200-02934**	**RDKF-100-02934**	RDCL-011-00074	RDTF-031-00068	RDRY-701-00312	7
30.12 - 31.16	1.1858 - 1.2268	**RDKF-200-03012**	**RDKF-100-03012**	RDCL-011-00076	RDTF-031-00070	RDRY-701-00312	7

NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.





Blind Holes

D_1		Part No.*		Spare Parts			
Metric (mm)	Imperial (in)	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone**	Rolls Part No.	Qty
24.54 - 25.59	0.9661 - 1.0075	**RSKF-200-xxxxx**	**RSKF-100-xxxxx**	RSCL-015-00062	RSTF-03x-00062	RSRY-708-00265	5
25.38 - 26.42	0.9992 - 1.0402	**RSKF-200-xxxxx**	**RSKF-100-xxxxx**	RSCL-015-00064	RSTF-03x-00064	RSRY-708-00265	5
26.16 - 27.20	1.0299 - 1.0709	**RSKF-200-xxxxx**	**RSKF-100-xxxxx**	RSCL-015-00066	RSTF-03x-00066	RSRY-708-00265	5
26.95 - 28.00	1.0610 - 1.1024	**RSKF-200-xxxxx**	**RSKF-100-xxxxx**	RSCL-015-00068	RSTF-03x-00068	RSRY-708-00265	5
27.73 - 28.77	1.0917 - 1.1327	**RSKF-200-xxxxx**	**RSKF-100-xxxxx**	RSCL-015-00070	RSTF-03x-00070	RSRY-708-00265	5
28.55 - 29.59	1.1240 - 1.1650	**RSKF-200-xxxxx**	**RSKF-100-xxxxx**	RSCL-015-00072	RSTF-03x-00066	RSRY-708-00312	5
29.34 - 30.39	1.1551 - 1.1965	**RSKF-200-xxxxx**	**RSKF-100-xxxxx**	RSCL-015-00074	RSTF-03x-00068	RSRY-708-00312	5
30.12 - 31.16	1.1858 - 1.2268	**RSKF-200-xxxxx**	**RSKF-100-xxxxx**	RSCL-015-00076	RSTF-03x-00070	RSRY-708-00312	5

***** xxxxx = Indicate to 2 metric decimal places the size to be burnished (e.g. roller burnisher Ø 27.00 mm with MT.1 shank: RSKF-200-02700).

****** x = A number that will vary from 2 to 8 depending upon the exact diameter to be burnished. See page **D00: 7** for the correct identification of the "x" value.

NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

Key on D00: 2
D00: 39 - 40
D00: 41 - 44
D00: 37
D00: 38

M Series: 30.85 mm - 35.86 mm (1.2146" - 1.4118")



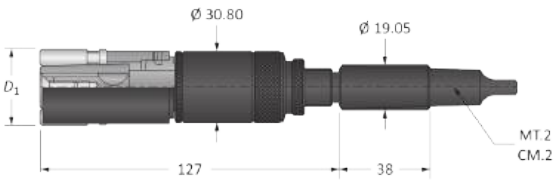


Through Holes

D_1		Part No.		Spare Parts			
Metric (mm)	Imperial (in)	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone	Rolls Part No.	Qty
30.85 - 31.90	1.2146 - 1.2559	**RDKM-200-03085**	**RDKM-100-03085**	RDCM-011-00078	RDTM-031-00078	RDRY-701-00265	7
31.67 - 32.71	1.2469 - 1.2878	**RDKM-200-03167**	**RDKM-100-03167**	RDCM-011-00080	RDTM-031-00080	RDRY-701-00265	7
32.44 - 33.47	1.2772 - 1.3177	**RDKM-200-03244**	**RDKM-100-03244**	RDCM-011-00082	RDTM-031-00082	RDRY-701-00265	7
33.24 - 34.29	1.3087 - 1.3500	**RDKM-200-03324**	**RDKM-100-03324**	RDCM-011-00084	RDTM-031-00078	RDRY-701-00312	7
34.05 - 35.09	1.3406 - 1.3815	**RDKM-200-03405**	**RDKM-100-03405**	RDCM-011-00086	RDTM-031-00080	RDRY-701-00312	7
34.83 - 35.86	1.3713 - 1.4118	**RDKM-200-03483**	**RDKM-100-03483**	RDCM-011-00088	RDTM-031-00082	RDRY-701-00312	7

NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.





Blind Holes

D_1		Part No.*		Spare Parts			
Metric (mm)	Imperial (in)	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone**	Rolls Part No.	Qty
30.85 - 31.90	1.2146 - 1.2559	**RSKM-200-xxxxx**	**RSKM-100-xxxxx**	RSCM-015-00078	RSTM-03x-00078	RSRY-708-00265	5
31.67 - 32.71	1.2469 - 1.2878	**RSKM-200-xxxxx**	**RSKM-100-xxxxx**	RSCM-015-00080	RSTM-03x-00080	RSRY-708-00265	5
32.44 - 33.47	1.2772 - 1.3177	**RSKM-200-xxxxx**	**RSKM-100-xxxxx**	RSCM-015-00082	RSTM-03x-00082	RSRY-708-00265	5
33.24 - 34.29	1.3087 - 1.3500	**RSKM-200-xxxxx**	**RSKM-100-xxxxx**	RSCM-015-00084	RSTM-03x-00078	RSRY-708-00312	5
34.05 - 35.09	1.3406 - 1.3815	**RSKM-200-xxxxx**	**RSKM-100-xxxxx**	RSCM-015-00086	RSTM-03x-00080	RSRY-708-00312	5
34.83 - 35.86	1.3713 - 1.4118	**RSKM-200-xxxxx**	**RSKM-100-xxxxx**	RSCM-015-00088	RSTM-03x-00082	RSRY-708-00312	5

***** xxxxx = Indicate to 2 metric decimal places the size to be burnished (e.g. roller burnisher Ø 35.00 mm with MT.2 shank: RSKM-200-03500).
****** x = A number that will vary from 2 to 8 depending upon the exact diameter to be burnished. See page **D00: 7** for the correct identification of the "x" value.
NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

D00: 39 - 40 | D00: 41 - 44 | D00: 37 | D00: 38
Key on D00: 2

N Series: 35.61 mm - 46.97 mm (1.4020" - 1.8492")

Through Holes





D_1		Part No.		Spare Parts			
Metric (mm)	Imperial (in)	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone	Rolls Part No.	Qty
35.61 - 36.66	1.4020 - 1.4433	**RDKN-200-03561**	**RDKN-100-03561**	RDCN-011-00090	RDTN-031-00090	RDRY-701-00312	7
36.40 - 37.44	1.4331 - 1.4740	**RDKN-200-03640**	**RDKN-100-03640**	RDCN-011-00092	RDTN-031-00092	RDRY-701-00312	7
37.18 - 38.23	1.4638 - 1.5051	**RDKN-200-03718**	**RDKN-100-03718**	RDCN-011-00094	RDTN-031-00094	RDRY-701-00312	7
38.00 - 39.04	1.4961 - 1.5370	**RDKN-200-03800**	**RDKN-100-03800**	RDCN-011-00096	RDTN-031-00096	RDRY-701-00312	7
38.79 - 39.82	1.5272 - 1.5677	**RDKN-200-03879**	**RDKN-100-03879**	RDCN-011-00098	RDTM-031-00080	RDRY-701-00406	7
39.57 - 40.62	1.5579 - 1.5992	**RDKN-200-03957**	**RDKN-100-03957**	RDCN-011-00100	RDTM-031-00082	RDRY-701-00406	7
40.36 - 41.40	1.5890 - 1.6299	**RDKN-200-04036**	**RDKN-100-04036**	RDCN-011-00102	RDTN-031-00090	RDRY-701-00406	7
41.18 - 42.21	1.6213 - 1.6618	**RDKN-200-04118**	**RDKN-100-04118**	RDCN-011-00104	RDTN-031-00092	RDRY-701-00406	7
41.96 - 43.01	1.6520 - 1.6933	**RDKN-200-04196**	**RDKN-100-04196**	RDCN-011-00106	RDTN-031-00094	RDRY-701-00406	7
42.75 - 43.79	1.6831 - 1.7240	**RDKN-200-04275**	**RDKN-100-04275**	RDCN-011-00108	RDTM-031-00082	RDRY-701-00468	7
43.53 - 44.58	1.7138 - 1.7551	**RDKN-200-04353**	**RDKN-100-04353**	RDCN-011-00110	RDTN-031-00090	RDRY-701-00468	7
44.35 - 45.39	1.7461 - 1.7870	**RDKN-200-04435**	**RDKN-100-04435**	RDCN-011-00112	RDTN-031-00092	RDRY-701-00468	7
45.14 - 46.17	1.7772 - 1.8177	**RDKN-200-04514**	**RDKN-100-04514**	RDCN-011-00114	RDTN-031-00094	RDRY-701-00468	7
45.92 - 46.97	1.8079 - 1.8492	**RDKN-200-04592**	**RDKN-100-04592**	RDCN-011-00116	RDTN-031-00096	RDRY-701-00468	7

NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

D00: 39 - 40
Key on D00: 2
D00: 41 - 44
D00: 37

N Series: 35.61 mm - 46.97 mm (1.4020" - 1.8492")

Blind Holes





D_1		Part No.*		Spare Parts			
Metric (mm)	Imperial (in)	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone**	Rolls Part No.	Qty
35.61 - 36.66	1.4020 - 1.4433	**RSKN-200-xxxxx**	**RSKN-100-xxxxx**	RSCN-015-00090	RSTN-03x-00090	RSRY-708-00312	5
36.40 - 37.44	1.4331 - 1.4740	**RSKN-200-xxxxx**	**RSKN-100-xxxxx**	RSCN-015-00092	RSTN-03x-00092	RSRY-708-00312	5
37.18 - 38.23	1.4638 - 1.5051	**RSKN-200-xxxxx**	**RSKN-100-xxxxx**	RSCN-015-00094	RSTN-03x-00094	RSRY-708-00312	5
38.00 - 39.04	1.4961 - 1.5370	**RSKN-200-xxxxx**	**RSKN-100-xxxxx**	RSCN-015-00096	RSTN-03x-00096	RSRY-708-00312	5
38.79 - 39.82	1.5272 - 1.5677	**RSKN-200-xxxxx**	**RSKN-100-xxxxx**	RSCN-015-00098	RSTM-03x-00080	RSRY-708-00406	5
39.57 - 40.62	1.5579 - 1.5992	**RSKN-200-xxxxx**	**RSKN-100-xxxxx**	RSCN-015-00100	RSTM-03x-00082	RSRY-708-00406	5
40.36 - 41.40	1.5890 - 1.6299	**RSKN-200-xxxxx**	**RSKN-100-xxxxx**	RSCN-015-00102	RSTN-03x-00090	RSRY-708-00406	5
41.18 - 42.21	1.6213 - 1.6618	**RSKN-200-xxxxx**	**RSKN-100-xxxxx**	RSCN-015-00104	RSTN-03x-00092	RSRY-708-00406	5
41.96 - 43.01	1.6520 - 1.6933	**RSKN-200-xxxxx**	**RSKN-100-xxxxx**	RSCN-015-00106	RSTN-03x-00094	RSRY-708-00406	5
42.75 - 43.79	1.6831 - 1.7240	**RSKN-200-xxxxx**	**RSKN-100-xxxxx**	RSCN-015-00108	RSTM-03x-00082	RSRY-708-00468	5
43.53 - 44.58	1.7138 - 1.7551	**RSKN-200-xxxxx**	**RSKN-100-xxxxx**	RSCN-015-00110	RSTN-03x-00090	RSRY-708-00468	5
44.35 - 45.39	1.7461 - 1.7870	**RSKN-200-xxxxx**	**RSKN-100-xxxxx**	RSCN-015-00112	RSTN-03x-00092	RSRY-708-00468	5
45.14 - 46.17	1.7772 - 1.8177	**RSKN-200-xxxxx**	**RSKN-100-xxxxx**	RSCN-015-00114	RSTN-03x-00094	RSRY-708-00468	5
45.92 - 46.97	1.8079 - 1.8492	**RSKN-200-xxxxx**	**RSKN-100-xxxxx**	RSCN-015-00116	RSTN-03x-00096	RSRY-708-00468	5

***** xxxxx = Indicate to 2 metric decimal places the size to be burnished (e.g. roller burnisher Ø 40.00 mm with straight shank: RSKN-100-04000).

****** x = A number that will vary from 2 to 8 depending upon the exact diameter to be burnished. See page **D00: 7** for the correct identification of the "x" value.

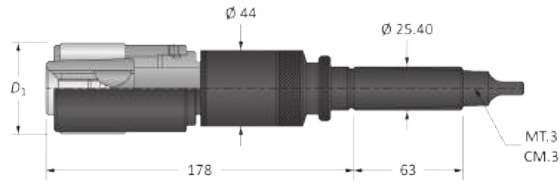
NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

D00: 39 - 40
D00: 41 - 44
D00: 38
Key on D00: 2

O Series: 46.71 mm - 56.49 mm (1.8390" - 2.2240")

Through Holes





D_1		Part No.		Spare Parts			
Metric (mm)	Imperial (in)	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone	Rolls Part No.	Qty
46.71 - 47.75	1.8390 - 1.8799	**RDKO-200-04671**	**RDKO-100-04671**	RDCO-011-00118	RDTO-031-00118	RDRY-701-00312	9
47.53 - 48.56	1.8713 - 1.9118	**RDKO-200-04753**	**RDKO-100-04753**	RDCO-011-00120	RDTO-031-00120	RDRY-701-00312	9
48.31 - 49.36	1.9020 - 1.9433	**RDKO-200-04831**	**RDKO-100-04831**	RDCO-011-00122	RDTO-031-00122	RDRY-701-00312	9
49.10 - 50.14	1.9331 - 1.9740	**RDKO-200-04910**	**RDKO-100-04910**	RDCO-011-00124	RDTO-031-00124	RDRY-701-00312	9
49.88 - 50.93	1.9638 - 2.0051	**RDKO-200-04988**	**RDKO-100-04988**	RDCO-011-00126	RDTO-031-00126	RDRY-701-00312	9
50.70 - 51.74	1.9961 - 2.0370	**RDKO-200-05070**	**RDKO-100-05070**	RDCO-011-00128	RDTO-031-00128	RDRY-701-00312	9
51.49 - 52.53	2.0272 - 2.0681	**RDKO-200-05149**	**RDKO-100-05149**	RDCO-011-00130	RDTO-031-00118	RDRY-701-00406	9
52.27 - 53.32	2.0579 - 2.0992	**RDKO-200-05227**	**RDKO-100-05227**	RDCO-011-00132	RDTO-031-00120	RDRY-701-00406	9
53.06 - 54.10	2.0890 - 2.1299	**RDKO-200-05306**	**RDKO-100-05306**	RDCO-011-00134	RDTO-031-00122	RDRY-701-00406	9
53.87 - 54.91	2.1209 - 2.1618	**RDKO-200-05387**	**RDKO-100-05387**	RDCO-011-00136	RDTO-031-00124	RDRY-701-00406	9
54.66 - 55.71	2.1520 - 2.1933	**RDKO-200-05466**	**RDKO-100-05466**	RDCO-011-00138	RDTO-031-00126	RDRY-701-00406	9
55.45 - 56.49	2.1831 - 2.2240	**RDKO-200-05545**	**RDKO-100-05545**	RDCO-011-00140	RDTO-031-00128	RDRY-701-00406	9

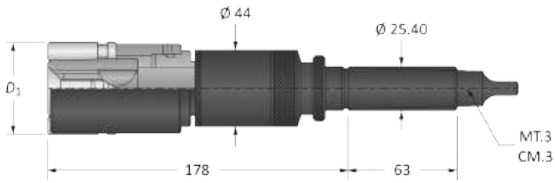
NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

D00: 39 - 40
Key on D00: 2
D00: 41 - 44
D00: 37

O Series: 46.71 mm - 56.49 mm (1.8390" - 2.2240")

Blind Holes





D_1		Part No.*		Spare Parts			
Metric (mm)	Imperial (in)	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone**	Rolls Part No.	Qty
46.71 - 47.75	1.8390 - 1.8799	**RSKO-200-xxxxx**	**RSKO-100-xxxxx**	RSCO-015-00118	RSTO-03x-00118	RSRY-708-00312	7
47.53 - 48.56	1.8713 - 1.9118	**RSKO-200-xxxxx**	**RSKO-100-xxxxx**	RSCO-015-00120	RSTO-03x-00120	RSRY-708-00312	7
48.31 - 49.36	1.9020 - 1.9433	**RSKO-200-xxxxx**	**RSKO-100-xxxxx**	RSCO-015-00122	RSTO-03x-00122	RSRY-708-00312	7
49.10 - 50.14	1.9331 - 1.9740	**RSKO-200-xxxxx**	**RSKO-100-xxxxx**	RSCO-015-00124	RSTO-03x-00124	RSRY-708-00312	7
49.88 - 50.93	1.9638 - 2.0051	**RSKO-200-xxxxx**	**RSKO-100-xxxxx**	RSCO-015-00126	RSTO-03x-00126	RSRY-708-00312	7
50.70 - 51.74	1.9961 - 2.0370	**RSKO-200-xxxxx**	**RSKO-100-xxxxx**	RSCO-015-00128	RSTO-03x-00128	RSRY-708-00312	7
51.49 - 52.53	2.0272 - 2.0681	**RSKO-200-xxxxx**	**RSKO-100-xxxxx**	RSCO-015-00130	RSTO-03x-00118	RSRY-708-00406	7
52.27 - 53.32	2.0579 - 2.0992	**RSKO-200-xxxxx**	**RSKO-100-xxxxx**	RSCO-015-00132	RSTO-03x-00120	RSRY-708-00406	7
53.06 - 54.10	2.0890 - 2.1299	**RSKO-200-xxxxx**	**RSKO-100-xxxxx**	RSCO-015-00134	RSTO-03x-00122	RSRY-708-00406	7
53.87 - 54.91	2.1209 - 2.1618	**RSKO-200-xxxxx**	**RSKO-100-xxxxx**	RSCO-015-00136	RSTO-03x-00124	RSRY-708-00406	7
54.66 - 55.71	2.1520 - 2.1933	**RSKO-200-xxxxx**	**RSKO-100-xxxxx**	RSCO-015-00138	RSTO-03x-00126	RSRY-708-00406	7
55.45 - 56.49	2.1831 - 2.2240	**RSKO-200-xxxxx**	**RSKO-100-xxxxx**	RSCO-015-00140	RSTO-03x-00128	RSRY-708-00406	7

***** xxxxx = Indicate to 2 metric decimal places the size to be burnished (e.g. roller burnisher Ø 50.25 mm with MT.3 shank: RSKO-200-05025).

****** x = A number that will vary from 2 to 8 depending upon the exact diameter to be burnished. See page **D00: 7** for the correct identification of the "x" value.

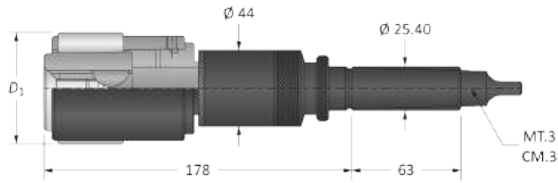
NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

D00: 39 - 40
D00: 41 - 44
D00: 38
Key on D00: 2

P Series: 56.23 mm - 69.19 mm (2.2138" - 2.7240")

Through Holes





D_1		Part No.		Spare Parts			
Metric (mm)	Imperial (in)	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone	Rolls Part No.	Qty
56.23 - 57.28	2.2138 - 2.2551	**RDKP-200-05623**	**RDKP-100-05623**	RDCP-011-00142	RDTP-031-00142	RDRY-701-00406	9
57.05 - 58.09	2.2461 - 2.2870	**RDKP-200-05705**	**RDKP-100-05705**	RDCP-011-00144	RDTP-031-00144	RDRY-701-00406	9
57.84 - 58.87	2.2772 - 2.3177	**RDKP-200-05784**	**RDKP-100-05784**	RDCP-011-00146	RDTP-031-00146	RDRY-701-00406	9
58.62 - 59.67	2.3079 - 2.3492	**RDKP-200-05862**	**RDKP-100-05862**	RDCP-011-00148	RDTP-031-00148	RDRY-701-00406	9
59.41 - 60.45	2.3390 - 2.3799	**RDKP-200-05941**	**RDKP-100-05941**	RDCP-011-00150	RDTP-031-00142	RDRY-701-00468	9
60.23 - 61.26	2.3713 - 2.4118	**RDKP-200-06023**	**RDKP-100-06023**	RDCP-011-00152	RDTP-031-00144	RDRY-701-00468	9
61.01 - 62.06	2.4020 - 2.4433	**RDKP-200-06101**	**RDKP-100-06101**	RDCP-011-00154	RDTP-031-00146	RDRY-701-00468	9
61.80 - 62.84	2.4330 - 2.4740	**RDKP-200-06180**	**RDKP-100-06180**	RDCP-011-00156	RDTP-031-00148	RDRY-701-00468	9
62.58 - 63.63	2.4638 - 2.5051	**RDKP-200-06258**	**RDKP-100-06258**	RDCP-011-00158	RDTP-031-00158	RDRY-701-00468	9
63.40 - 64.44	2.4961 - 2.5370	**RDKP-200-06340**	**RDKP-100-06340**	RDCP-011-00160	RDTP-031-00160	RDRY-701-00468	9
64.19 - 65.22	2.5272 - 2.5677	**RDKP-200-06419**	**RDKP-100-06419**	RDCP-011-00162	RDTP-031-00162	RDRY-701-00468	9
64.97 - 66.02	2.5579 - 2.5992	**RDKP-200-06497**	**RDKP-100-06497**	RDCP-011-00164	RDTP-031-00164	RDRY-701-00468	9
65.76 - 66.80	2.5890 - 2.6299	**RDKP-200-06576**	**RDKP-100-06576**	RDCP-011-00166	RDTP-031-00158	RDRY-701-00531	9
66.58 - 67.61	2.6213 - 2.6618	**RDKP-200-06658**	**RDKP-100-06658**	RDCP-011-00168	RDTP-031-00160	RDRY-701-00531	9
67.36 - 68.41	2.6520 - 2.6933	**RDKP-200-06736**	**RDKP-100-06736**	RDCP-011-00170	RDTP-031-00162	RDRY-701-00531	9
68.15 - 69.19	2.6830 - 2.7240	**RDKP-200-06815**	**RDKP-100-06815**	RDCP-011-00172	RDTP-031-00164	RDRY-701-00531	9

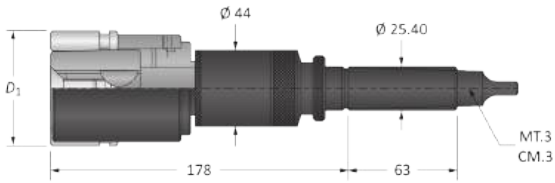
NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

D00: 39 - 40
Key on D00: 2
D00: 41 - 44
D00: 37

P Series: 56.23 mm - 69.19 mm (2.2138" - 2.7240")

Blind Holes





D_1		Part No.*		Spare Parts			
Metric (mm)	Imperial (in)	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone**	Rolls Part No.	Qty
56.23 - 57.28	2.2138 - 2.2551	**RSKP-200-xxxxx**	**RSKP-100-xxxxx**	RSCP-015-00142	RSTP-03x-00142	RSRY-708-00406	7
57.05 - 58.09	2.2461 - 2.2870	**RSKP-200-xxxxx**	**RSKP-100-xxxxx**	RSCP-015-00144	RSTP-03x-00144	RSRY-708-00406	7
57.84 - 58.87	2.2772 - 2.3177	**RSKP-200-xxxxx**	**RSKP-100-xxxxx**	RSCP-015-00146	RSTP-03x-00146	RSRY-708-00406	7
58.62 - 59.67	2.3079 - 2.3492	**RSKP-200-xxxxx**	**RSKP-100-xxxxx**	RSCP-015-00148	RSTP-03x-00148	RSRY-708-00406	7
59.41 - 60.45	2.3390 - 2.3799	**RSKP-200-xxxxx**	**RSKP-100-xxxxx**	RSCP-015-00150	RSTP-03x-00142	RSRY-708-00468	7
60.23 - 61.26	2.3713 - 2.4118	**RSKP-200-xxxxx**	**RSKP-100-xxxxx**	RSCP-015-00152	RSTP-03x-00144	RSRY-708-00468	7
61.01 - 62.06	2.4020 - 2.4433	**RSKP-200-xxxxx**	**RSKP-100-xxxxx**	RSCP-015-00154	RSTP-03x-00146	RSRY-708-00468	7
61.80 - 62.84	2.4330 - 2.4740	**RSKP-200-xxxxx**	**RSKP-100-xxxxx**	RSCP-015-00156	RSTP-03x-00148	RSRY-708-00468	7
62.58 - 63.63	2.4638 - 2.5051	**RSKP-200-xxxxx**	**RSKP-100-xxxxx**	RSCP-015-00158	RSTP-03x-00158	RSRY-708-00468	7
63.40 - 64.44	2.4961 - 2.5370	**RSKP-200-xxxxx**	**RSKP-100-xxxxx**	RSCP-015-00160	RSTP-03x-00160	RSRY-708-00468	7
64.19 - 65.22	2.5272 - 2.5677	**RSKP-200-xxxxx**	**RSKP-100-xxxxx**	RSCP-015-00162	RSTP-03x-00162	RSRY-708-00468	7
64.97 - 66.02	2.5579 - 2.5992	**RSKP-200-xxxxx**	**RSKP-100-xxxxx**	RSCP-015-00164	RSTP-03x-00164	RSRY-708-00468	7
65.76 - 66.80	2.5890 - 2.6299	**RSKP-200-xxxxx**	**RSKP-100-xxxxx**	RSCP-015-00166	RSTP-03x-00158	RSRY-708-00531	7
66.58 - 67.61	2.6213 - 2.6618	**RSKP-200-xxxxx**	**RSKP-100-xxxxx**	RSCP-015-00168	RSTP-03x-00160	RSRY-708-00531	7
67.36 - 68.41	2.6520 - 2.6933	**RSKP-200-xxxxx**	**RSKP-100-xxxxx**	RSCP-015-00170	RSTP-03x-00162	RSRY-708-00531	7
68.15 - 69.19	2.6830 - 2.7240	**RSKP-200-xxxxx**	**RSKP-100-xxxxx**	RSCP-015-00172	RSTP-03x-00164	RSRY-708-00531	7

***** xxxxx = Indicate to 2 metric decimal places the size to be burnished (e.g. roller burnisher Ø 60.05 mm with straight shank: RSKP-100-06005).

****** x = A number that will vary from 2 to 8 depending upon the exact diameter to be burnished. See page **D00: 7** for the correct identification of the "x" value.

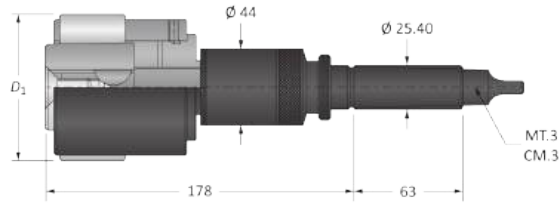
NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

D00: 39 - 40
D00: 41 - 44
D00: 38
Key on D00: 2

Q Series: 68.93 mm - 85.07 mm (2.7138" - 3.3492")

Through Holes





D_1		Part No.		Spare Parts			
Metric (mm)	Imperial (in)	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone	Rolls Part No.	Qty
68.93 - 69.98	2.7138 - 2.7551	**RDKQ-200-06893**	**RDKQ-100-06893**	RDCQ-011-00174	RDTQ-031-00174	RDRY-701-00531	9
69.75 - 70.79	2.7461 - 2.7870	**RDKQ-200-06975**	**RDKQ-100-06975**	RDCQ-011-00176	RDTQ-031-00176	RDRY-701-00531	9
70.54 - 71.57	2.7772 - 2.8177	**RDKQ-200-07054**	**RDKQ-100-07054**	RDCQ-011-00178	RDTQ-031-00178	RDRY-701-00531	9
71.32 - 72.40	2.8079 - 2.8504	**RDKQ-200-07132**	**RDKQ-100-07132**	RDCQ-011-00180	RDTQ-031-00180	RDRY-701-00531	9
72.11 - 73.15	2.8390 - 2.8799	**RDKQ-200-07211**	**RDKQ-100-07211**	RDCQ-011-00182	RDTQ-031-00182	RDRY-701-00531	9
72.93 - 73.96	2.8713 - 2.9118	**RDKQ-200-07293**	**RDKQ-100-07293**	RDCQ-011-00184	RDTQ-031-00184	RDRY-701-00531	9
73.71 - 74.75	2.9020 - 2.9429	**RDKQ-200-07371**	**RDKQ-100-07371**	RDCQ-011-00186	RDTQ-031-00174	RDRY-701-00625	9
74.50 - 75.54	2.9331 - 2.9740	**RDKQ-200-07450**	**RDKQ-100-07450**	RDCQ-011-00188	RDTQ-031-00176	RDRY-701-00625	9
75.28 - 76.33	2.9638 - 3.0051	**RDKQ-200-07528**	**RDKQ-100-07528**	RDCQ-011-00190	RDTQ-031-00178	RDRY-701-00625	9
76.10 - 77.14	2.9961 - 3.0370	**RDKQ-200-07610**	**RDKQ-100-07610**	RDCQ-011-00192	RDTQ-031-00180	RDRY-701-00625	9
76.89 - 77.93	3.0272 - 3.0681	**RDKQ-200-07689**	**RDKQ-100-07689**	RDCQ-011-00194	RDTQ-031-00182	RDRY-701-00625	9
77.67 - 78.72	3.0579 - 3.0992	**RDKQ-200-07767**	**RDKQ-100-07767**	RDCQ-011-00196	RDTQ-031-00184	RDRY-701-00625	9
78.46 - 79.50	3.0890 - 3.1299	**RDKQ-200-07846**	**RDKQ-100-07846**	RDCQ-011-00198	RDTQ-031-00198	RDRY-701-00625	9
79.27 - 80.31	3.1209 - 3.1618	**RDKQ-200-07927**	**RDKQ-100-07927**	RDCQ-011-00200	RDTQ-031-00200	RDRY-701-00625	9
80.06 - 81.11	3.1520 - 3.1933	**RDKQ-200-08006**	**RDKQ-100-08006**	RDCQ-011-00202	RDTQ-031-00202	RDRY-701-00625	9
80.85 - 81.89	3.1831 - 3.2240	**RDKQ-200-08085**	**RDKQ-100-08085**	RDCQ-011-00204	RDTQ-031-00204	RDRY-701-00625	9
81.63 - 82.68	3.2138 - 3.2551	**RDKQ-200-08163**	**RDKQ-100-08163**	RDCQ-011-00206	RDTQ-031-00198	RDRY-701-00687	9
82.45 - 83.49	3.2461 - 3.2870	**RDKQ-200-08245**	**RDKQ-100-08245**	RDCQ-011-00208	RDTQ-031-00200	RDRY-701-00687	9
83.24 - 84.27	3.2772 - 3.3177	**RDKQ-200-08324**	**RDKQ-100-08324**	RDCQ-011-00210	RDTQ-031-00202	RDRY-701-00687	9
84.02 - 85.07	3.3079 - 3.3492	**RDKQ-200-08402**	**RDKQ-100-08402**	RDCQ-011-00212	RDTQ-031-00204	RDRY-701-00687	9

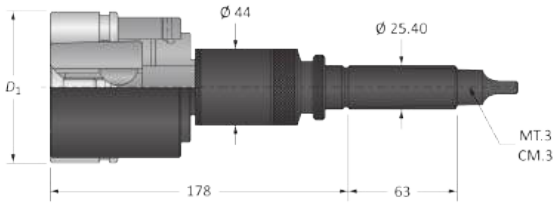
NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

D00: 39 - 40
Key on D00: 2
D00: 41 - 44
D00: 37

Q Series: 68.93 mm - 85.07 mm (2.7138" - 3.3492")

Blind Holes





D_1		Part No.*		Spare Parts			
Metric (mm)	Imperial (in)	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone**	Rolls Part No.	Qty
68.93 - 69.98	2.7138 - 2.7551	**RSKQ-200-xxxxx**	**RSKQ-100-xxxxx**	RSCQ-015-00174	RSTQ-03x-00174	RSRY-708-00531	7
69.75 - 70.79	2.7461 - 2.7870	**RSKQ-200-xxxxx**	**RSKQ-100-xxxxx**	RSCQ-015-00176	RSTQ-03x-00176	RSRY-708-00531	7
70.54 - 71.57	2.7772 - 2.8177	**RSKQ-200-xxxxx**	**RSKQ-100-xxxxx**	RSCQ-015-00178	RSTQ-03x-00178	RSRY-708-00531	7
71.32 - 72.40	2.8079 - 2.8504	**RSKQ-200-xxxxx**	**RSKQ-100-xxxxx**	RSCQ-015-00180	RSTQ-03x-00180	RSRY-708-00531	7
72.11 - 73.15	2.8390 - 2.8799	**RSKQ-200-xxxxx**	**RSKQ-100-xxxxx**	RSCQ-015-00182	RSTQ-03x-00182	RSRY-708-00531	7
72.93 - 73.96	2.8713 - 2.9118	**RSKQ-200-xxxxx**	**RSKQ-100-xxxxx**	RSCQ-015-00184	RSTQ-03x-00184	RSRY-708-00531	7
73.71 - 74.75	2.9020 - 2.9429	**RSKQ-200-xxxxx**	**RSKQ-100-xxxxx**	RSCQ-015-00186	RSTQ-03x-00174	RSRY-708-00625	7
74.50 - 75.54	2.9331 - 2.9740	**RSKQ-200-xxxxx**	**RSKQ-100-xxxxx**	RSCQ-015-00188	RSTQ-03x-00176	RSRY-708-00625	7
75.28 - 76.33	2.9638 - 3.0051	**RSKQ-200-xxxxx**	**RSKQ-100-xxxxx**	RSCQ-015-00190	RSTQ-03x-00178	RSRY-708-00625	7
76.10 - 77.14	2.9961 - 3.0370	**RSKQ-200-xxxxx**	**RSKQ-100-xxxxx**	RSCQ-015-00192	RSTQ-03x-00180	RSRY-708-00625	7
76.89 - 77.93	3.0272 - 3.0681	**RSKQ-200-xxxxx**	**RSKQ-100-xxxxx**	RSCQ-015-00194	RSTQ-03x-00182	RSRY-708-00625	7
77.67 - 78.72	3.0579 - 3.0992	**RSKQ-200-xxxxx**	**RSKQ-100-xxxxx**	RSCQ-015-00196	RSTQ-03x-00184	RSRY-708-00625	7
78.46 - 79.50	3.0890 - 3.1299	**RSKQ-200-xxxxx**	**RSKQ-100-xxxxx**	RSCQ-015-00198	RSTQ-03x-00198	RSRY-708-00625	7
79.27 - 80.31	3.1209 - 3.1618	**RSKQ-200-xxxxx**	**RSKQ-100-xxxxx**	RSCQ-015-00200	RSTQ-03x-00200	RSRY-708-00625	7
80.06 - 81.11	3.1520 - 3.1933	**RSKQ-200-xxxxx**	**RSKQ-100-xxxxx**	RSCQ-015-00202	RSTQ-03x-00202	RSRY-708-00625	7
80.85 - 81.89	3.1831 - 3.2240	**RSKQ-200-xxxxx**	**RSKQ-100-xxxxx**	RSCQ-015-00204	RSTQ-03x-00204	RSRY-708-00625	7
81.63 - 82.68	3.2138 - 3.2551	**RSKQ-200-xxxxx**	**RSKQ-100-xxxxx**	RSCQ-015-00206	RSTQ-03x-00198	RSRY-708-00687	7
82.45 - 83.49	3.2461 - 3.2870	**RSKQ-200-xxxxx**	**RSKQ-100-xxxxx**	RSCQ-015-00208	RSTQ-03x-00200	RSRY-708-00687	7
83.24 - 84.27	3.2772 - 3.3177	**RSKQ-200-xxxxx**	**RSKQ-100-xxxxx**	RSCQ-015-00210	RSTQ-03x-00202	RSRY-708-00687	7
84.02 - 85.07	3.3079 - 3.3492	**RSKQ-200-xxxxx**	**RSKQ-100-xxxxx**	RSCQ-015-00212	RSTQ-03x-00204	RSRY-708-00687	7

***** xxxxx = Indicate to 2 metric decimal places the size to be burnished (e.g. roller burnisher Ø 75.00 mm with MT.3 shank: RSKQ-200-07500).

****** x = A number that will vary from 2 to 8 depending upon the exact diameter to be burnished. See page **D00: 7** for the correct identification of the "x" value.

NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

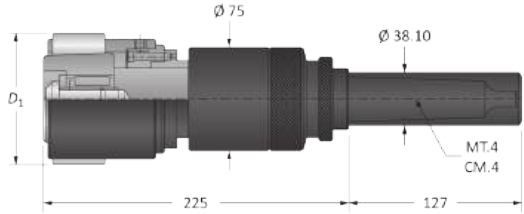
D00: 39 - 40 D00: 41 - 44 D00: 38

Key on D00: 2

R Series: 84.81 mm - 104.12 mm (3.3390" - 4.0992")

Through Holes

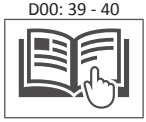


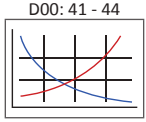


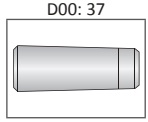
D_1		Part No.		Spare Parts			
Metric (mm)	Imperial (in)	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone	Rolls Part No.	Qty
84.81 - 85.85	3.3390 - 3.3799	**RDKR-200-08481**	**RDKR-100-08481**	RDCR-011-00214	RDTR-073-00001	RDRY-701-00468	9
85.63 - 86.66	3.3713 - 3.4118	**RDKR-200-08563**	**RDKR-100-08563**	RDCR-011-00216	RDTR-074-00001	RDRY-701-00468	9
86.41 - 87.45	3.4020 - 3.4429	**RDKR-200-08641**	**RDKR-100-08641**	RDCR-011-00218	RDTR-071-00001	RDRY-701-00531	9
87.20 - 88.24	3.4331 - 3.4740	**RDKR-200-08720**	**RDKR-100-08720**	RDCR-011-00220	RDTR-072-00001	RDRY-701-00531	9
87.99 - 89.03	3.4642 - 3.5051	**RDKR-200-08799**	**RDKR-100-08799**	RDCR-011-00222	RDTR-073-00001	RDRY-701-00531	9
88.79 - 89.84	3.4957 - 3.5370	**RDKR-200-08879**	**RDKR-100-08879**	RDCR-011-00224	RDTR-074-00001	RDRY-701-00531	9
89.59 - 90.63	3.5272 - 3.5681	**RDKR-200-08959**	**RDKR-100-08959**	RDCR-011-00226	RDTR-075-00001	RDRY-701-00531	9
90.37 - 91.42	3.5579 - 3.5992	**RDKR-200-09037**	**RDKR-100-09037**	RDCR-011-00228	RDTR-076-00001	RDRY-701-00531	9
91.16 - 92.20	3.5890 - 3.6299	**RDKR-200-09116**	**RDKR-100-09116**	RDCR-011-00230	RDTR-071-00001	RDRY-701-00625	9
91.97 - 93.02	3.6209 - 3.6622	**RDKR-200-09197**	**RDKR-100-09197**	RDCR-011-00232	RDTR-072-00001	RDRY-701-00625	9
92.76 - 93.80	3.6520 - 3.6929	**RDKR-200-09276**	**RDKR-100-09276**	RDCR-011-00234	RDTR-073-00001	RDRY-701-00625	9
93.55 - 94.59	3.6831 - 3.7240	**RDKR-200-09355**	**RDKR-100-09355**	RDCR-011-00236	RDTR-074-00001	RDRY-701-00625	9
94.34 - 95.38	3.7142 - 3.7551	**RDKR-200-09434**	**RDKR-100-09434**	RDCR-011-00238	RDTR-075-00001	RDRY-701-00625	9
95.15 - 96.19	3.7461 - 3.7870	**RDKR-200-09515**	**RDKR-100-09515**	RDCR-011-00240	RDTR-076-00001	RDRY-701-00625	9
95.94 - 96.98	3.7772 - 3.8181	**RDKR-200-09594**	**RDKR-100-09594**	RDCR-011-00242	RDTR-077-00001	RDRY-701-00625	9
96.72 - 97.77	3.8079 - 3.8492	**RDKR-200-09672**	**RDKR-100-09672**	RDCR-011-00244	RDTR-078-00001	RDRY-701-00625	9
97.51 - 98.55	3.8390 - 3.8799	**RDKR-200-09751**	**RDKR-100-09751**	RDCR-011-00246	RDTR-075-00001	RDRY-701-00687	9
98.32 - 99.37	3.8709 - 3.9122	**RDKR-200-09832**	**RDKR-100-09832**	RDCR-011-00248	RDTR-076-00001	RDRY-701-00687	9
99.11 - 100.15	3.9020 - 3.9429	**RDKR-200-09911**	**RDKR-100-09911**	RDCR-011-00250	RDTR-077-00001	RDRY-701-00687	9
99.90 - 100.94	3.9331 - 3.9740	**RDKR-200-09990**	**RDKR-100-09990**	RDCR-011-00252	RDTR-078-00001	RDRY-701-00687	9
100.69 - 101.73	3.9642 - 4.0051	**RDKR-200-10069**	**RDKR-100-10069**	RDCR-011-00254	RDTR-079-00001	RDRY-701-00687	9
101.50 - 102.54	3.9961 - 4.0370	**RDKR-200-10150**	**RDKR-100-10150**	RDCR-011-00256	RDTR-080-00001	RDRY-701-00687	9
102.29 - 103.33	4.0272 - 4.0681	**RDKR-200-10229**	**RDKR-100-10229**	RDCR-011-00258	RDTR-081-00001	RDRY-701-00687	9
103.07 - 104.12	4.0579 - 4.0992	**RDKR-200-10307**	**RDKR-100-10307**	RDCR-011-00260	RDTR-082-00001	RDRY-701-00687	9

NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

D00: 39 - 40
Key on D00: 2
D00: 41 - 44
D00: 37



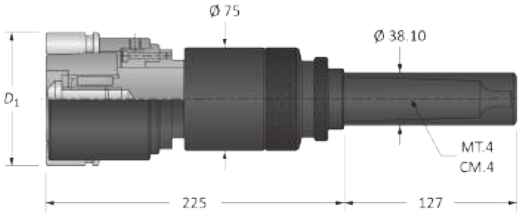




R Series: 84.81 mm - 104.12 mm (3.3390" - 4.0992")

Blind Holes





D_1		Part No.*		Spare Parts			
Metric (mm)	Imperial (in)	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone**	Rolls Part No.	Qty
84.81 - 85.85	3.3390 - 3.3799	**RSKR-200-xxxxx**	**RSKR-100-xxxxx**	RSCR-015-00214	RSTR-073-0000x	RSRY-708-00468	9
85.63 - 86.66	3.3713 - 3.4118	**RSKR-200-xxxxx**	**RSKR-100-xxxxx**	RSCR-015-00216	RSTR-074-0000x	RSRY-708-00468	9
86.41 - 87.45	3.4020 - 3.4429	**RSKR-200-xxxxx**	**RSKR-100-xxxxx**	RSCR-015-00218	RSTR-071-0000x	RSRY-708-00531	9
87.20 - 88.24	3.4331 - 3.4740	**RSKR-200-xxxxx**	**RSKR-100-xxxxx**	RSCR-015-00220	RSTR-072-0000x	RSRY-708-00531	9
87.99 - 89.03	3.4642 - 3.5051	**RSKR-200-xxxxx**	**RSKR-100-xxxxx**	RSCR-015-00222	RSTR-073-0000x	RSRY-708-00531	9
88.79 - 89.84	3.4957 - 3.5370	**RSKR-200-xxxxx**	**RSKR-100-xxxxx**	RSCR-015-00224	RSTR-074-0000x	RSRY-708-00531	9
89.59 - 90.63	3.5272 - 3.5681	**RSKR-200-xxxxx**	**RSKR-100-xxxxx**	RSCR-015-00226	RSTR-075-0000x	RSRY-708-00531	9
90.37 - 91.42	3.5579 - 3.5992	**RSKR-200-xxxxx**	**RSKR-100-xxxxx**	RSCR-015-00228	RSTR-076-0000x	RSRY-708-00531	9
91.16 - 92.20	3.5890 - 3.6299	**RSKR-200-xxxxx**	**RSKR-100-xxxxx**	RSCR-015-00230	RSTR-071-0000x	RSRY-708-00625	9
91.97 - 93.02	3.6209 - 3.6622	**RSKR-200-xxxxx**	**RSKR-100-xxxxx**	RSCR-015-00232	RSTR-072-0000x	RSRY-708-00625	9
92.76 - 93.80	3.6520 - 3.6929	**RSKR-200-xxxxx**	**RSKR-100-xxxxx**	RSCR-015-00234	RSTR-073-0000x	RSRY-708-00625	9
93.55 - 94.59	3.6831 - 3.7240	**RSKR-200-xxxxx**	**RSKR-100-xxxxx**	RSCR-015-00236	RSTR-074-0000x	RSRY-708-00625	9
94.34 - 95.38	3.7142 - 3.7551	**RSKR-200-xxxxx**	**RSKR-100-xxxxx**	RSCR-015-00238	RSTR-075-0000x	RSRY-708-00625	9
95.15 - 96.19	3.7461 - 3.7870	**RSKR-200-xxxxx**	**RSKR-100-xxxxx**	RSCR-015-00240	RSTR-076-0000x	RSRY-708-00625	9
95.94 - 96.98	3.7772 - 3.8181	**RSKR-200-xxxxx**	**RSKR-100-xxxxx**	RSCR-015-00242	RSTR-077-0000x	RSRY-708-00625	9
96.72 - 97.77	3.8079 - 3.8492	**RSKR-200-xxxxx**	**RSKR-100-xxxxx**	RSCR-015-00244	RSTR-078-0000x	RSRY-708-00625	9
97.51 - 98.55	3.8390 - 3.8799	**RSKR-200-xxxxx**	**RSKR-100-xxxxx**	RSCR-015-00246	RSTR-075-0000x	RSRY-708-00687	9
98.32 - 99.37	3.8709 - 3.9122	**RSKR-200-xxxxx**	**RSKR-100-xxxxx**	RSCR-015-00248	RSTR-076-0000x	RSRY-708-00687	9
99.11 - 100.15	3.9020 - 3.9429	**RSKR-200-xxxxx**	**RSKR-100-xxxxx**	RSCR-015-00250	RSTR-077-0000x	RSRY-708-00687	9
99.90 - 100.94	3.9331 - 3.9740	**RSKR-200-xxxxx**	**RSKR-100-xxxxx**	RSCR-015-00252	RSTR-078-0000x	RSRY-708-00687	9
100.69 - 101.73	3.9642 - 4.0051	**RSKR-200-xxxxx**	**RSKR-100-xxxxx**	RSCR-015-00254	RSTR-079-0000x	RSRY-708-00687	9
101.50 - 102.54	3.9961 - 4.0370	**RSKR-200-xxxxx**	**RSKR-100-xxxxx**	RSCR-015-00256	RSTR-080-0000x	RSRY-708-00687	9
102.29 - 103.33	4.0272 - 4.0681	**RSKR-200-xxxxx**	**RSKR-100-xxxxx**	RSCR-015-00258	RSTR-081-0000x	RSRY-708-00687	9
103.07 - 104.12	4.0579 - 4.0992	**RSKR-200-xxxxx**	**RSKR-100-xxxxx**	RSCR-015-00260	RSTR-082-0000x	RSRY-708-00687	9

***** xxxxx = Indicate to 2 metric decimal places the size to be burnished (e.g. roller burnisher Ø 100.00 mm with straight shank: RSKR-100-10000).

****** x = A number that will vary from 2 to 8 depending upon the exact diameter to be burnished. See page **D00: 7** for the correct identification of the "x" value.

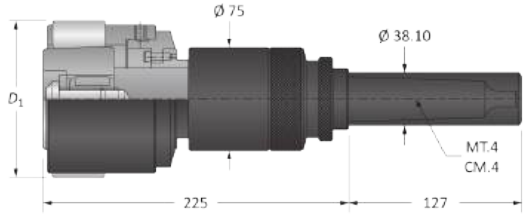
NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

Key on D00: 2
D00: 39 - 40
D00: 41 - 44
D00: 38

S Series: 103.86 mm - 127.94 mm (4.0890" - 5.0370")

Through Holes





D_1		Part No.		Spare Parts			
Metric (mm)	Imperial (in)	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone	Rolls Part No.	Qty
103.86 - 104.90	4.0890 - 4.1299	**RDKS-200-10386**	**RDKS-100-10386**	RDCS-011-00262	RDTS-083-00001	RDRY-701-00687	9
104.67 - 105.75	4.1209 - 4.1634	**RDKS-200-10467**	**RDKS-100-10467**	RDCS-011-00264	RDTS-084-00001	RDRY-701-00687	9
105.46 - 106.50	4.1520 - 4.1929	**RDKS-200-10546**	**RDKS-100-10546**	RDCS-011-00266	RDTS-085-00001	RDRY-701-00687	9
106.25 - 107.29	4.1831 - 4.2240	**RDKS-200-10625**	**RDKS-100-10625**	RDCS-011-00268	RDTS-086-00001	RDRY-701-00687	9
107.04 - 108.08	4.2142 - 4.2551	**RDKS-200-10704**	**RDKS-100-10704**	RDCS-011-00270	RDTS-087-00001	RDRY-701-00687	9
107.85 - 108.89	4.2461 - 4.2870	**RDKS-200-10785**	**RDKS-100-10785**	RDCS-011-00272	RDTS-088-00001	RDRY-701-00687	9
108.64 - 109.68	4.2772 - 4.3181	**RDKS-200-10864**	**RDKS-100-10864**	RDCS-011-00274	RDTS-089-00001	RDRY-701-00687	9
109.42 - 110.47	4.3079 - 4.3492	**RDKS-200-10942**	**RDKS-100-10942**	RDCS-011-00276	RDTS-090-00001	RDRY-701-00687	9
110.21 - 111.25	4.3390 - 4.3799	**RDKS-200-11021**	**RDKS-100-11021**	RDCS-011-00278	RDTS-083-00001	RDRY-701-00812	9
111.02 - 112.07	4.3709 - 4.4122	**RDKS-200-11102**	**RDKS-100-11102**	RDCS-011-00280	RDTS-084-00001	RDRY-701-00812	9
111.81 - 112.85	4.4020 - 4.4429	**RDKS-200-11181**	**RDKS-100-11181**	RDCS-011-00282	RDTS-085-00001	RDRY-701-00812	9
112.60 - 113.64	4.4331 - 4.4740	**RDKS-200-11260**	**RDKS-100-11260**	RDCS-011-00284	RDTS-086-00001	RDRY-701-00812	9
113.34 - 114.43	4.4622 - 4.5051	**RDKS-200-11334**	**RDKS-100-11334**	RDCS-011-00286	RDTS-087-00001	RDRY-701-00812	9
114.20 - 115.24	4.4961 - 4.5370	**RDKS-200-11420**	**RDKS-100-11420**	RDCS-011-00288	RDTS-088-00001	RDRY-701-00812	9
114.99 - 116.03	4.5272 - 4.5681	**RDKS-200-11499**	**RDKS-100-11499**	RDCS-011-00290	RDTS-089-00001	RDRY-701-00812	9
115.77 - 116.82	4.5579 - 4.5992	**RDKS-200-11577**	**RDKS-100-11577**	RDCS-011-00292	RDTS-090-00001	RDRY-701-00812	9
116.56 - 117.60	4.5890 - 4.6299	**RDKS-200-11656**	**RDKS-100-11656**	RDCS-011-00294	RDTS-091-00001	RDRY-701-00812	9
117.37 - 118.42	4.6209 - 4.6622	**RDKS-200-11737**	**RDKS-100-11737**	RDCS-011-00296	RDTS-092-00001	RDRY-701-00812	9
118.16 - 119.20	4.6520 - 4.6929	**RDKS-200-11816**	**RDKS-100-11816**	RDCS-011-00298	RDTS-093-00001	RDRY-701-00812	9
118.95 - 119.99	4.6831 - 4.7240	**RDKS-200-11895**	**RDKS-100-11895**	RDCS-011-00300	RDTS-094-00001	RDRY-701-00812	9
119.74 - 120.78	4.7142 - 4.7551	**RDKS-200-11974**	**RDKS-100-11974**	RDCS-011-00302	RDTS-095-00001	RDRY-701-00812	9
120.55 - 121.59	4.7461 - 4.7870	**RDKS-200-12055**	**RDKS-100-12055**	RDCS-011-00304	RDTS-096-00001	RDRY-701-00812	9
121.34 - 122.38	4.7772 - 4.8181	**RDKS-200-12134**	**RDKS-100-12134**	RDCS-011-00306	RDTS-097-00001	RDRY-701-00812	9
122.12 - 123.17	4.8079 - 4.8492	**RDKS-200-12212**	**RDKS-100-12212**	RDCS-011-00308	RDTS-098-00001	RDRY-701-00812	9
122.91 - 123.95	4.8390 - 4.8799	**RDKS-200-12291**	**RDKS-100-12291**	RDCS-011-00310	RDTS-099-00001	RDRY-701-00812	9
123.72 - 124.77	4.8709 - 4.9122	**RDKS-200-12372**	**RDKS-100-12372**	RDCS-011-00312	RDTS-100-00001	RDRY-701-00812	9
124.51 - 125.55	4.9020 - 4.9429	**RDKS-200-12451**	**RDKS-100-12451**	RDCS-011-01245	RDTS-031-01245	RDRY-701-00812	9
125.30 - 126.34	4.9331 - 4.9740	**RDKS-200-12530**	**RDKS-100-12530**	RDCS-011-01255	RDTS-031-01255	RDRY-701-00812	9
126.09 - 127.13	4.9642 - 5.0051	**RDKS-200-12609**	**RDKS-100-12609**	RDCS-011-01265	RDTS-031-01265	RDRY-701-00812	9
126.90 - 127.94	4.9961 - 5.0370	**RDKS-200-12690**	**RDKS-100-12690**	RDCS-011-01275	RDTS-031-01275	RDRY-701-00812	9

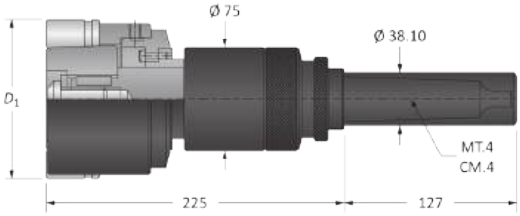
NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

D00: 39 - 40
Key on D00: 2
D00: 41 - 44
D00: 37

S Series: 103.86 mm - 127.94 mm (4.0890" - 5.0370")

Blind Holes





D_1		Part No.*		Spare Parts			
Metric (mm)	Imperial (in)	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone**	Rolls Part No.	Qty
103.86 - 104.90	4.0890 - 4.1299	**RSKS-200-xxxxx**	**RSKS-100-xxxxx**	RSCS-015-00262	RSTS-083-0000x	RSRY-708-00687	9
104.67 - 105.75	4.1209 - 4.1634	**RSKS-200-xxxxx**	**RSKS-100-xxxxx**	RSCS-015-00264	RSTS-084-0000x	RSRY-708-00687	9
105.46 - 106.50	4.1520 - 4.1929	**RSKS-200-xxxxx**	**RSKS-100-xxxxx**	RSCS-015-00266	RSTS-085-0000x	RSRY-708-00687	9
106.25 - 107.29	4.1831 - 4.2240	**RSKS-200-xxxxx**	**RSKS-100-xxxxx**	RSCS-015-00268	RSTS-086-0000x	RSRY-708-00687	9
107.04 - 108.08	4.2142 - 4.2551	**RSKS-200-xxxxx**	**RSKS-100-xxxxx**	RSCS-015-00270	RSTS-087-0000x	RSRY-708-00687	9
107.85 - 108.89	4.2461 - 4.2870	**RSKS-200-xxxxx**	**RSKS-100-xxxxx**	RSCS-015-00272	RSTS-088-0000x	RSRY-708-00687	9
108.64 - 109.68	4.2772 - 4.3181	**RSKS-200-xxxxx**	**RSKS-100-xxxxx**	RSCS-015-00274	RSTS-089-0000x	RSRY-708-00687	9
109.42 - 110.47	4.3079 - 4.3492	**RSKS-200-xxxxx**	**RSKS-100-xxxxx**	RSCS-015-00276	RSTS-090-0000x	RSRY-708-00687	9
110.21 - 111.25	4.3390 - 4.3799	**RSKS-200-xxxxx**	**RSKS-100-xxxxx**	RSCS-015-00278	RSTS-083-0000x	RSRY-708-00812	9
111.02 - 112.07	4.3709 - 4.4122	**RSKS-200-xxxxx**	**RSKS-100-xxxxx**	RSCS-015-00280	RSTS-084-0000x	RSRY-708-00812	9
111.81 - 112.85	4.4020 - 4.4429	**RSKS-200-xxxxx**	**RSKS-100-xxxxx**	RSCS-015-00282	RSTS-085-0000x	RSRY-708-00812	9
112.60 - 113.64	4.4331 - 4.4740	**RSKS-200-xxxxx**	**RSKS-100-xxxxx**	RSCS-015-00284	RSTS-086-0000x	RSRY-708-00812	9
113.34 - 114.43	4.4622 - 4.5051	**RSKS-200-xxxxx**	**RSKS-100-xxxxx**	RSCS-015-00286	RSTS-087-0000x	RSRY-708-00812	9
114.20 - 115.24	4.4961 - 4.5370	**RSKS-200-xxxxx**	**RSKS-100-xxxxx**	RSCS-015-00288	RSTS-088-0000x	RSRY-708-00812	9
114.99 - 116.03	4.5272 - 4.5681	**RSKS-200-xxxxx**	**RSKS-100-xxxxx**	RSCS-015-00290	RSTS-089-0000x	RSRY-708-00812	9
115.77 - 116.82	4.5579 - 4.5992	**RSKS-200-xxxxx**	**RSKS-100-xxxxx**	RSCS-015-00292	RSTS-090-0000x	RSRY-708-00812	9
116.56 - 117.60	4.5890 - 4.6299	**RSKS-200-xxxxx**	**RSKS-100-xxxxx**	RSCS-015-00294	RSTS-091-0000x	RSRY-708-00812	9
117.37 - 118.42	4.6209 - 4.6622	**RSKS-200-xxxxx**	**RSKS-100-xxxxx**	RSCS-015-00296	RSTS-092-0000x	RSRY-708-00812	9
118.16 - 119.20	4.6520 - 4.6929	**RSKS-200-xxxxx**	**RSKS-100-xxxxx**	RSCS-015-00298	RSTS-093-0000x	RSRY-708-00812	9
118.95 - 119.99	4.6831 - 4.7240	**RSKS-200-xxxxx**	**RSKS-100-xxxxx**	RSCS-015-00300	RSTS-094-0000x	RSRY-708-00812	9
119.74 - 120.78	4.7142 - 4.7551	**RSKS-200-xxxxx**	**RSKS-100-xxxxx**	RSCS-015-00302	RSTS-095-0000x	RSRY-708-00812	9
120.55 - 121.59	4.7461 - 4.7870	**RSKS-200-xxxxx**	**RSKS-100-xxxxx**	RSCS-015-00304	RSTS-096-0000x	RSRY-708-00812	9
121.34 - 122.38	4.7772 - 4.8181	**RSKS-200-xxxxx**	**RSKS-100-xxxxx**	RSCS-015-00306	RSTS-097-0000x	RSRY-708-00812	9
122.12 - 123.17	4.8079 - 4.8492	**RSKS-200-xxxxx**	**RSKS-100-xxxxx**	RSCS-015-00308	RSTS-098-0000x	RSRY-708-00812	9
122.91 - 123.95	4.8390 - 4.8799	**RSKS-200-xxxxx**	**RSKS-100-xxxxx**	RSCS-015-00310	RSTS-099-0000x	RSRY-708-00812	9
123.72 - 124.77	4.8709 - 4.9122	**RSKS-200-xxxxx**	**RSKS-100-xxxxx**	RSCS-015-00312	RSTS-100-0000x	RSRY-708-00812	9
124.51 - 125.55	4.9020 - 4.9429	**RSKS-200-xxxxx**	**RSKS-100-xxxxx**	RSCS-015-01245	RSTS-03x-01245	RSRY-708-00812	9
125.30 - 126.34	4.9331 - 4.9740	**RSKS-200-xxxxx**	**RSKS-100-xxxxx**	RSCS-015-01255	RSTS-03x-01255	RSRY-708-00812	9
126.09 - 127.13	4.9642 - 5.0051	**RSKS-200-xxxxx**	**RSKS-100-xxxxx**	RSCS-015-01265	RSTS-03x-01265	RSRY-708-00812	9
126.90 - 127.94	4.9961 - 5.0370	**RSKS-200-xxxxx**	**RSKS-100-xxxxx**	RSCS-015-01275	RSTS-03x-01275	RSRY-708-00812	9

***** xxxxx = Indicate to 2 metric decimal places the size to be burnished (e.g. roller burnisher Ø 120.05 mm with MT.4 shank: RSKS-200-12005).

****** x = A number that will vary from 2 to 8 depending upon the exact diameter to be burnished. See page **D00: 7** for the correct identification of the "x" value.

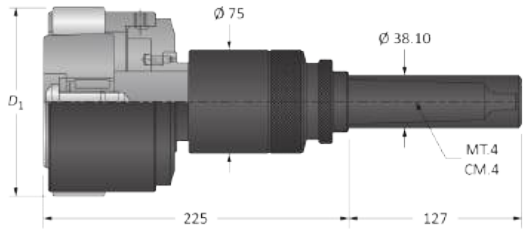
NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

D00: 39 - 40
D00: 41 - 44
D00: 38
Key on D00: 2

T Series: 127.90 mm - 149.90 mm (5.0354" - 5.9016")

Through Holes





D_1		Part No.		Spare Parts			
						Rolls	
Metric (mm)	Imperial (in)	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone	Part No.	Qty
127.90 - 128.90	5.0354 - 5.0748	**RDKT-200-12790**	**RDKT-100-12790**	RDCT-011-01280	RDTT-031-01280	RDRY-701-00812	11
128.90 - 129.90	5.0748 - 5.1142	**RDKT-200-12890**	**RDKT-100-12890**	RDCT-011-01290	RDTT-031-01290	RDRY-701-00812	11
129.90 - 130.90	5.1142 - 5.1535	**RDKT-200-12990**	**RDKT-100-12990**	RDCT-011-01300	RDTT-031-01300	RDRY-701-00812	11
130.90 - 131.90	5.1535 - 5.1929	**RDKT-200-13090**	**RDKT-100-13090**	RDCT-011-01310	RDTT-031-01310	RDRY-701-00812	11
131.90 - 132.90	5.1929 - 5.2323	**RDKT-200-13190**	**RDKT-100-13190**	RDCT-011-01320	RDTT-031-01320	RDRY-701-00812	11
132.90 - 133.90	5.2323 - 5.2717	**RDKT-200-13290**	**RDKT-100-13290**	RDCT-011-01330	RDTT-031-01330	RDRY-701-00812	11
133.90 - 134.90	5.2717 - 5.3110	**RDKT-200-13390**	**RDKT-100-13390**	RDCT-011-01340	RDTT-031-01340	RDRY-701-00812	11
134.90 - 135.90	5.3110 - 5.3504	**RDKT-200-13490**	**RDKT-100-13490**	RDCT-011-01350	RDTT-031-01350	RDRY-701-00812	11
135.90 - 136.90	5.3504 - 5.3898	**RDKT-200-13590**	**RDKT-100-13590**	RDCT-011-01360	RDTT-031-01360	RDRY-701-00812	11
136.90 - 137.90	5.3898 - 5.4291	**RDKT-200-13690**	**RDKT-100-13690**	RDCT-011-01370	RDTT-031-01370	RDRY-701-00812	11
137.90 - 138.90	5.4291 - 5.4685	**RDKT-200-13790**	**RDKT-100-13790**	RDCT-011-01380	RDTT-031-01380	RDRY-701-00812	11
138.90 - 139.90	5.4685 - 5.5079	**RDKT-200-13890**	**RDKT-100-13890**	RDCT-011-01390	RDTT-031-01390	RDRY-701-00812	11
139.90 - 140.90	5.5079 - 5.5472	**RDKT-200-13990**	**RDKT-100-13990**	RDCT-011-01400	RDTT-031-01400	RDRY-701-00812	11
140.90 - 141.90	5.5472 - 5.5866	**RDKT-200-14090**	**RDKT-100-14090**	RDCT-011-01410	RDTT-031-01410	RDRY-701-00812	11
141.60 - 142.90	5.5866 - 5.6260	**RDKT-200-14190**	**RDKT-100-14190**	RDCT-011-01420	RDTT-031-01420	RDRY-701-00812	11
142.90 - 143.90	5.6260 - 5.6654	**RDKT-200-14290**	**RDKT-100-14290**	RDCT-011-01430	RDTT-031-01430	RDRY-701-00812	11
143.90 - 144.90	5.6654 - 5.7047	**RDKT-200-14390**	**RDKT-100-14390**	RDCT-011-01440	RDTT-031-01440	RDRY-701-00812	11
144.90 - 145.90	5.7047 - 5.7441	**RDKT-200-14490**	**RDKT-100-14490**	RDCT-011-01450	RDTT-031-01450	RDRY-701-00812	11
145.90 - 146.90	5.7441 - 5.7835	**RDKT-200-14590**	**RDKT-100-14590**	RDCT-011-01460	RDTT-031-01460	RDRY-701-00812	11
146.90 - 147.90	5.7835 - 5.8228	**RDKT-200-14690**	**RDKT-100-14690**	RDCT-011-01470	RDTT-031-01470	RDRY-701-00812	11
147.90 - 148.90	5.8228 - 5.8622	**RDKT-200-14790**	**RDKT-100-14790**	RDCT-011-01480	RDTT-031-01480	RDRY-701-00812	11
148.90 - 149.90	5.8622 - 5.9016	**RDKT-200-14890**	**RDKT-100-14890**	RDCT-011-01490	RDTT-031-01490	RDRY-701-00812	11

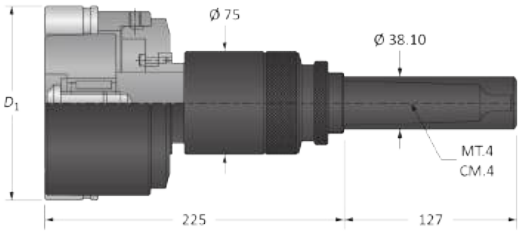
NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

D00: 39 - 40
Key on D00: 2
D00: 41 - 44
D00: 37

T Series: 127.90 mm - 149.90 mm (5.0354" - 5.9016")

Blind Holes





D_1		Part No.*		Spare Parts			
Metric (mm)	Imperial (in)	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone**	Rolls Part No.	Qty
127.90 - 128.90	5.0354 - 5.0748	**RSKT-200-xxxxx**	**RSKT-100-xxxxx**	RSCT-015-01280	RSTT-0xx-01280	RSRY-708-00812	11
128.90 - 129.90	5.0748 - 5.1142	**RSKT-200-xxxxx**	**RSKT-100-xxxxx**	RSCT-015-01290	RSTT-0xx-01290	RSRY-708-00812	11
129.90 - 130.90	5.1142 - 5.1535	**RSKT-200-xxxxx**	**RSKT-100-xxxxx**	RSCT-015-01300	RSTT-0xx-01300	RSRY-708-00812	11
130.90 - 131.90	5.1535 - 5.1929	**RSKT-200-xxxxx**	**RSKT-100-xxxxx**	RSCT-015-01310	RSTT-0xx-01310	RSRY-708-00812	11
131.90 - 132.90	5.1929 - 5.2323	**RSKT-200-xxxxx**	**RSKT-100-xxxxx**	RSCT-015-01320	RSTT-0xx-01320	RSRY-708-00812	11
132.90 - 133.90	5.2323 - 5.2717	**RSKT-200-xxxxx**	**RSKT-100-xxxxx**	RSCT-015-01330	RSTT-0xx-01330	RSRY-708-00812	11
133.90 - 134.90	5.2717 - 5.3110	**RSKT-200-xxxxx**	**RSKT-100-xxxxx**	RSCT-015-01340	RSTT-0xx-01340	RSRY-708-00812	11
134.90 - 135.90	5.3110 - 5.3504	**RSKT-200-xxxxx**	**RSKT-100-xxxxx**	RSCT-015-01350	RSTT-0xx-01350	RSRY-708-00812	11
135.90 - 136.90	5.3504 - 5.3898	**RSKT-200-xxxxx**	**RSKT-100-xxxxx**	RSCT-015-01360	RSTT-0xx-01360	RSRY-708-00812	11
136.90 - 137.90	5.3898 - 5.4291	**RSKT-200-xxxxx**	**RSKT-100-xxxxx**	RSCT-015-01370	RSTT-0xx-01370	RSRY-708-00812	11
137.90 - 138.90	5.4291 - 5.4685	**RSKT-200-xxxxx**	**RSKT-100-xxxxx**	RSCT-015-01380	RSTT-0xx-01380	RSRY-708-00812	11
138.90 - 139.90	5.4685 - 5.5079	**RSKT-200-xxxxx**	**RSKT-100-xxxxx**	RSCT-015-01390	RSTT-0xx-01390	RSRY-708-00812	11
139.90 - 140.90	5.5079 - 5.5472	**RSKT-200-xxxxx**	**RSKT-100-xxxxx**	RSCT-015-01400	RSTT-0xx-01400	RSRY-708-00812	11
140.90 - 141.90	5.5472 - 5.5866	**RSKT-200-xxxxx**	**RSKT-100-xxxxx**	RSCT-015-01410	RSTT-0xx-01410	RSRY-708-00812	11
141.60 - 142.90	5.5866 - 5.6260	**RSKT-200-xxxxx**	**RSKT-100-xxxxx**	RSCT-015-01420	RSTT-0xx-01420	RSRY-708-00812	11
142.90 - 143.90	5.6260 - 5.6654	**RSKT-200-xxxxx**	**RSKT-100-xxxxx**	RSCT-015-01430	RSTT-0xx-01430	RSRY-708-00812	11
143.90 - 144.90	5.6654 - 5.7047	**RSKT-200-xxxxx**	**RSKT-100-xxxxx**	RSCT-015-01440	RSTT-0xx-01440	RSRY-708-00812	11
144.90 - 145.90	5.7047 - 5.7441	**RSKT-200-xxxxx**	**RSKT-100-xxxxx**	RSCT-015-01450	RSTT-0xx-01450	RSRY-708-00812	11
145.90 - 146.90	5.7441 - 5.7835	**RSKT-200-xxxxx**	**RSKT-100-xxxxx**	RSCT-015-01460	RSTT-0xx-01460	RSRY-708-00812	11
146.90 - 147.90	5.7835 - 5.8228	**RSKT-200-xxxxx**	**RSKT-100-xxxxx**	RSCT-015-01470	RSTT-0xx-01470	RSRY-708-00812	11
147.90 - 148.90	5.8228 - 5.8622	**RSKT-200-xxxxx**	**RSKT-100-xxxxx**	RSCT-015-01480	RSTT-0xx-01480	RSRY-708-00812	11
148.90 - 149.90	5.8622 - 5.9016	**RSKT-200-xxxxx**	**RSKT-100-xxxxx**	RSCT-015-01490	RSTT-0xx-01490	RSRY-708-00812	11

***** xxxxx = Indicate to 2 metric decimal places the size to be burnished (e.g. roller burnisher Ø 140.00 mm with straight shank: RSKT-100-14000).

****** x = A number that will vary from 2 to 8 depending upon the exact diameter to be burnished. See page **D00: 7** for the correct identification of the "x" value.

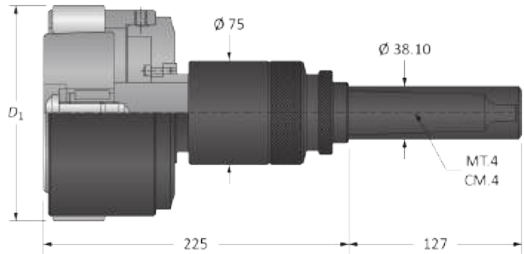
NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

D00: 39 - 40
D00: 41 - 44
D00: 38
Key on D00: 2

U Series: 149.90 mm - 165.90 mm (5.9016" - 6.5315")

Through Holes





D_1		Part No.		Spare Parts			
Metric (mm)	Imperial (in)	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone	Rolls Part No.	Qty
5.9016 - 5.9409	149.90 - 150.90	**RDKU-200-14990**	**RDKU-100-14990**	RDCU-011-01500	RDTU-031-01500	RDRY-701-00812	13
5.9409 - 5.9803	150.90 - 151.90	**RDKU-200-15090**	**RDKU-100-15090**	RDCU-011-01510	RDTU-031-01510	RDRY-701-00812	13
5.9803 - 6.0197	151.90 - 152.90	**RDKU-200-15190**	**RDKU-100-15190**	RDCU-011-01520	RDTU-031-01520	RDRY-701-00812	13
6.0197 - 6.0591	152.90 - 153.90	**RDKU-200-15290**	**RDKU-100-15290**	RDCU-011-01530	RDTU-031-01530	RDRY-701-00812	13
6.0591 - 6.0984	153.90 - 154.90	**RDKU-200-15390**	**RDKU-100-15390**	RDCU-011-01540	RDTU-031-01540	RDRY-701-00812	13
6.0984 - 6.1378	154.90 - 155.90	**RDKU-200-15490**	**RDKU-100-15490**	RDCU-011-01550	RDTU-031-01550	RDRY-701-00812	13
6.1378 - 6.1772	155.90 - 156.90	**RDKU-200-15590**	**RDKU-100-15590**	RDCU-011-01560	RDTU-031-01560	RDRY-701-00812	13
6.1772 - 6.2165	156.90 - 157.90	**RDKU-200-15690**	**RDKU-100-15690**	RDCU-011-01570	RDTU-031-01570	RDRY-701-00812	13
6.2165 - 6.2559	157.90 - 158.90	**RDKU-200-15790**	**RDKU-100-15790**	RDCU-011-01580	RDTU-031-01580	RDRY-701-00812	13
6.2559 - 6.2953	158.90 - 159.90	**RDKU-200-15890**	**RDKU-100-15890**	RDCU-011-01590	RDTU-031-01590	RDRY-701-00812	13
6.2953 - 6.3346	159.90 - 160.90	**RDKU-200-15990**	**RDKU-100-15990**	RDCU-011-01600	RDTU-031-01600	RDRY-701-00812	13
6.3346 - 6.3740	160.90 - 161.90	**RDKU-200-16090**	**RDKU-100-16090**	RDCU-011-01610	RDTU-031-01610	RDRY-701-00812	13
6.3740 - 6.4134	161.90 - 162.90	**RDKU-200-16190**	**RDKU-100-16190**	RDCU-011-01620	RDTU-031-01620	RDRY-701-00812	13
6.4134 - 6.4528	162.90 - 163.90	**RDKU-200-16290**	**RDKU-100-16290**	RDCU-011-01630	RDTU-031-01630	RDRY-701-00812	13
6.4528 - 6.4921	163.90 - 164.90	**RDKU-200-16390**	**RDKU-100-16390**	RDCU-011-01640	RDTU-031-01640	RDRY-701-00812	13
6.4921 - 6.5315	164.90 - 165.90	**RDKU-200-16490**	**RDKU-100-16490**	RDCU-011-01650	RDTU-031-01650	RDRY-701-00812	13

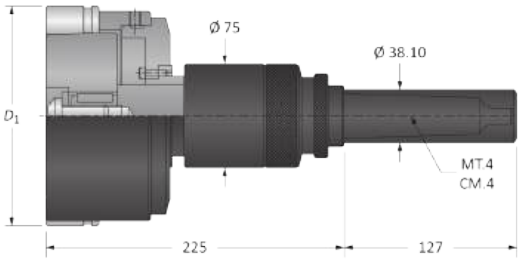
NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

D00: 39 - 40
D00: 41 - 44
D00: 37
Key on D00: 2

U Series: 149.90 mm - 165.90 mm (5.9016" - 6.5315")

Blind Holes





D_1		Part No.*		Spare Parts			
Metric (mm)	Imperial (in)	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone**	Rolls Part No.	Qty
149.90 - 150.90	5.9016 - 5.9409	**RSKU-200-xxxxx**	**RSKU-100-xxxxx**	RSCU-015-01500	RSTU-0xx-01500	RSRY-708-00812	13
150.90 - 151.90	5.9409 - 5.9803	**RSKU-200-xxxxx**	**RSKU-100-xxxxx**	RSCU-015-01510	RSTU-0xx-01510	RSRY-708-00812	13
151.90 - 152.90	5.9803 - 6.0197	**RSKU-200-xxxxx**	**RSKU-100-xxxxx**	RSCU-015-01520	RSTU-0xx-01520	RSRY-708-00812	13
152.90 - 153.90	6.0197 - 6.0591	**RSKU-200-xxxxx**	**RSKU-100-xxxxx**	RSCU-015-01530	RSTU-0xx-01530	RSRY-708-00812	13
153.90 - 154.90	6.0591 - 6.0984	**RSKU-200-xxxxx**	**RSKU-100-xxxxx**	RSCU-015-01540	RSTU-0xx-01540	RSRY-708-00812	13
154.90 - 155.90	6.0984 - 6.1378	**RSKU-200-xxxxx**	**RSKU-100-xxxxx**	RSCU-015-01550	RSTU-0xx-01550	RSRY-708-00812	13
155.90 - 156.90	6.1378 - 6.1772	**RSKU-200-xxxxx**	**RSKU-100-xxxxx**	RSCU-015-01560	RSTU-0xx-01560	RSRY-708-00812	13
156.90 - 157.90	6.1772 - 6.2165	**RSKU-200-xxxxx**	**RSKU-100-xxxxx**	RSCU-015-01570	RSTU-0xx-01570	RSRY-708-00812	13
157.90 - 158.90	6.2165 - 6.2559	**RSKU-200-xxxxx**	**RSKU-100-xxxxx**	RSCU-015-01580	RSTU-0xx-01580	RSRY-708-00812	13
158.90 - 159.90	6.2559 - 6.2953	**RSKU-200-xxxxx**	**RSKU-100-xxxxx**	RSCU-015-01590	RSTU-0xx-01590	RSRY-708-00812	13
159.90 - 160.90	6.2953 - 6.3346	**RSKU-200-xxxxx**	**RSKU-100-xxxxx**	RSCU-015-01600	RSTU-0xx-01600	RSRY-708-00812	13
160.90 - 161.90	6.3346 - 6.3740	**RSKU-200-xxxxx**	**RSKU-100-xxxxx**	RSCU-015-01610	RSTU-0xx-01610	RSRY-708-00812	13
161.90 - 162.90	6.3740 - 6.4134	**RSKU-200-xxxxx**	**RSKU-100-xxxxx**	RSCU-015-01620	RSTU-0xx-01620	RSRY-708-00812	13
162.90 - 163.90	6.4134 - 6.4528	**RSKU-200-xxxxx**	**RSKU-100-xxxxx**	RSCU-015-01630	RSTU-0xx-01630	RSRY-708-00812	13
163.90 - 164.90	6.4528 - 6.4921	**RSKU-200-xxxxx**	**RSKU-100-xxxxx**	RSCU-015-01640	RSTU-0xx-01640	RSRY-708-00812	13
164.90 - 165.90	6.4921 - 6.5315	**RSKU-200-xxxxx**	**RSKU-100-xxxxx**	RSCU-015-01650	RSTU-0xx-01650	RSRY-708-00812	13

***** xxxxx = Indicate to 2 metric decimal places the size to be burnished (e.g. roller burnisher Ø 160.00 mm with MT.4 shank: RSKU-200-16000).

****** x = A number that will vary from 2 to 8 depending upon the exact diameter to be burnished. See page **D00: 7** for the correct identification of the "x" value.

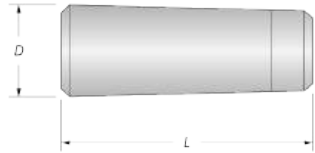
NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

Key on D00: 2
D00: 39 - 40
D00: 41 - 44
D00: 38

Burnishing Rolls

Through Holes





Rolls 704 and 707

Part No.	Metric (mm)		Imperial (in)	
	D	*L*	*D*	*L*
RDRY-704-00047	1.18	6.35	0.0465	0.2500
RDRY-704-00062	1.57	6.35	0.0618	0.2500
RDRY-704-00070	1.77	7.94	0.0697	0.3126
RDRY-704-00078	1.97	9.53	0.0776	0.3752
RDRY-704-00086	2.17	9.53	0.0854	0.3752
RDRY-704-00093	2.36	9.53	0.0929	0.3752
RDRY-704-00109	2.75	12.70	0.1083	0.5000
RDRY-704-00125	3.16	12.70	0.1244	0.5000
RDRY-704-00148	3.74	12.70	0.1472	0.5000
RDRY-704-00156	3.95	12.70	0.1555	0.5000
RDRY-704-00172	4.34	15.88	0.1709	0.6252
RDRY-704-00187	4.72	22.28	0.1858	0.8772
RDRY-707-00187	4.75	12.70	0.1870	0.5000
RDRY-704-00218	5.52	12.70	0.2173	0.5000
RDRY-707-00218	5.52	25.40	0.2173	1.0000
RDRY-704-00265	6.70	28.58	0.2638	1.1252
RDRY-704-00312	7.90	38.10	0.3110	1.5000
RDRY-707-00312	7.92	28.58	0.3118	1.1252
RDRY-704-00406	10.28	38.10	0.4047	1.5000
RDRY-704-00468	11.86	38.10	0.4669	1.5000
RDRY-704-00531	13.46	38.10	0.5299	1.5000
RDRY-704-00625	15.85	38.10	0.6240	1.5000
RDRY-704-00687	17.42	38.10	0.6858	1.5000
RDRY-704-00812	20.60	38.10	0.8110	1.5000

Rolls 701

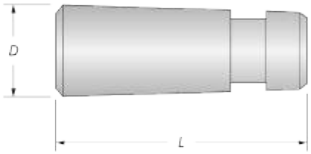
Part No.	Metric (mm)		Imperial (in)	
	D	*L*	*D*	*L*
RDRY-701-00187	4.65	22.28	0.1831	0.8772
RDRY-701-00218	5.43	25.4	0.2138	1.0000
RDRY-701-00265	6.63	28.58	0.261	1.1252
RDRY-701-00312	7.72	38.1	0.3039	1.5000
RDRY-701-00406	10.11	38.1	0.398	1.5000
RDRY-701-00468	11.68	38.1	0.4598	1.5000
RDRY-701-00531	13.28	38.1	0.5228	1.5000
RDRY-701-00625	15.67	38.1	0.6169	1.5000
RDRY-701-00687	17.27	38.1	0.6799	1.5000
RDRY-701-00812	20.42	38.1	0.8039	1.5000

D00: 39 - 40
D00: 41 - 44
Key on D00: 2

Burnishing Rolls

Blind Holes



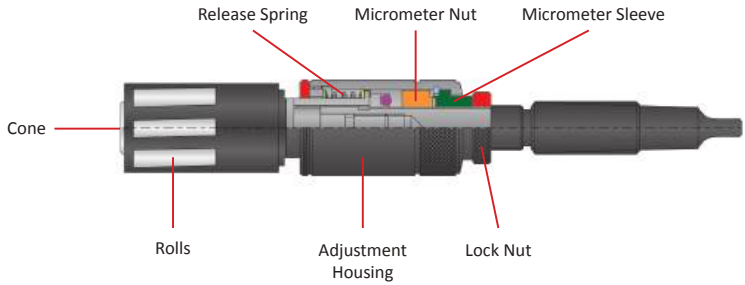


Rolls 708

Part No.	Metric (mm)		Imperial (in)	
	D	*L*	*D*	*L*
RSRY-708-00086	2.17	9.53	0.0854	0.3752
RSRY-708-00125	3.16	12.70	0.1244	0.5000
RSRY-708-00156	3.95	12.70	0.1555	0.5000
RSRY-708-00172	4.35	15.88	0.1709	0.6252
RSRY-708-00187	4.72	22.28	0.1858	0.8772
RSRY-708-00218	5.52	25.40	0.2173	0.5000
RSRY-708-00265	6.70	28.58	0.2638	1.1252
RSRY-708-00312	7.90	38.10	0.3110	1.5000
RSRY-708-00406	10.29	38.10	0.4047	1.5000
RSRY-708-00468	11.86	38.10	0.4669	1.5000
RSRY-708-00531	13.46	38.10	0.5299	1.5000
RSRY-708-00625	15.85	38.10	0.6240	1.5000
RSRY-708-00687	17.42	38.10	0.6858	1.5000
RSRY-708-00812	20.60	38.10	0.8110	1.5000

D00: 39 - 40
D00: 41 - 44
Key on D00: 2

Diameter Adjustment



Adjustment

The roller burnishing tool incorporates a shank, a body, and a planetary system of conical rolls that are evenly spaced by a retaining cage.

1. Unscrew the lock nut.
2. Pull the housing toward the lock nut and rotate to increase or decrease the diameter.
3. Tighten the lock nut.

IMPORTANT: As you increase the diameter, the cone moves forward, pushing the rolls outward. Because of this, the cone will protrude from the end of the cage, decreasing the clearance available in blind holes (see Figures 1 and 2).

Refer to chart below for clearance values.

Figure 1

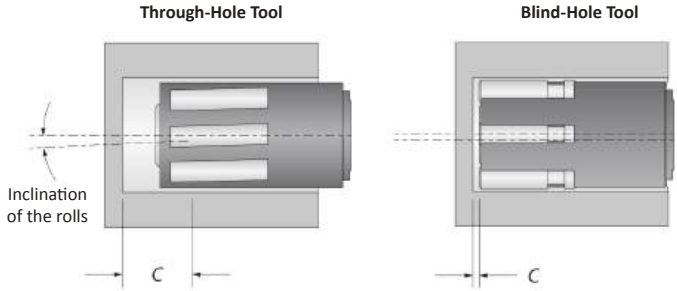


Figure 2



Larger Diameter = Extruded Cone = Decreased Clearance

Adjustment Range		Clearance (*C*) (mm)		
		Through Holes		Blind Holes
Metric (mm)	Imperial (inch)	Rolls 701	Rolls 704 / 707	Rolls 708
4.70 - 5.88	0.1850 - 0.2315	-	2.40	-
5.89 - 9.47	0.2319 - 0.3728	-	2.40	0.60
9.48 - 15.84	0.3732 - 0.6236	-	2.40	0.60
15.85 - 28.54	0.6240 - 1.1236	5.40	3.20	1.00
28.55 - 46.70	1.1240 - 1.8385	9.50	3.20	1.00
46.71 - 84.80	1.8390 - 3.3386	9.50	4.00	1.00
84.81 - 165.90	3.3390 - 6.5315	10.30	4.70	1.00

How it Works

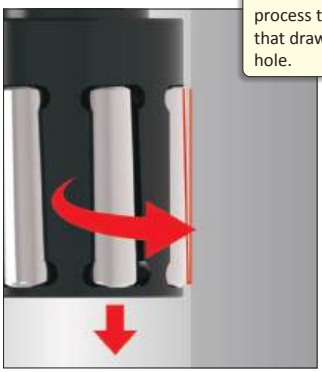


The roller burnishing tool must be aligned with the workpiece (maximum error = 0.1 mm).

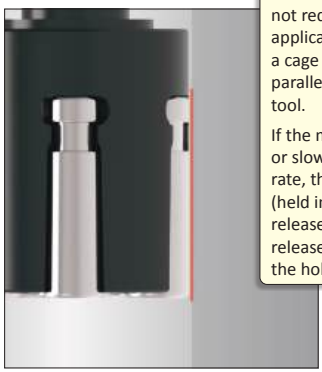
NOTE: If you are uncertain about the alignment error, a floating shank is recommended.



When the tool is in the hole, the cone pushes the rolls onto the surface to be burnished. The cage retains the rolls in an angled position to the axis of the tool.



This allows the pressure of the process to generate a self-feed that draws the tool into the hole.

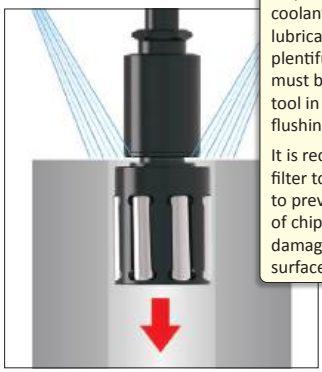


NOTE: When self-feed is not required (blind-hole applications), you must use a cage that holds the rolls parallel with the axis of the tool.

If the machine feed is stopped or slower than the natural rate, the rolls pull the cage (held in position by the release spring) and then release from the surface of the hole.



When retracting the tool, the release spring ensures the cage is withdrawn from the cone, which removes pressure from the rolls. This allows the tool to be retracted at a high feed rate.



If synthetic or water soluble coolant is not available, a lubrication is still required. A plentiful supply of lubricant must be fed directly to the tool in order to provide a good flushing and cleaning action.

It is recommended to fit a filter to the lubrication system to prevent the circulation of chips, which may cause damage to the burnished surface and/or the tool.

Recommended Drilling Data | Metric (mm)

ROLLER BURNISHERS

ISO	Material	Hardness (BHN)	Speed (m/min)	Recommended Feed (mm/rev) by Diameter			
				4.70 mm - 12.00 mm	12.01 mm - 25.00 mm	25.01 mm - 50.00 mm	50.01 mm - 165.90 mm
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 180	22 - 90	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
		180 - 250	22 - 90	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180	22 - 90	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
		180 - 275	22 - 90	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180	22 - 90	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
		180 - 325	22 - 90	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180	22 - 90	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
		180 - 375	22 - 90	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450	22 - 90	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
	Structural Steel A36, A285, A516, etc.	125 - 180	22 - 90	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
		180 - 350	22 - 90	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	22 - 90	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
		200 - 250	22 - 90	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
M	**Stainless Steel 400 Series** 416, 420, etc.	135 - 350	22 - 60	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275	22 - 60	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
K	**Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)**	< 200	22 - 90	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
		> 200	22 - 90	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
	Spheroidal Cast Iron (Ferritic)	260 - 320	22 - 90	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
N	**Copper and Alloys, and Brass**	< 500	45 - 105	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
	Bronze, and Bronze Phosphorous	< 180	45 - 105	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
	Aluminum and Alloys	< 150	45 - 105	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 310	15 - 45	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
	Titanium Alloy	140 - 310	15 - 45	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07

NOTE: For diameters less than 4.70 mm (0.1850"), please contact application engineering for recommended speed and feeds.

Max RPM

Series	Max RPM
H	2000
I	1500
K	1200
L	1000
F	1000
M	900
N	900
O	700
P	600
Q	500
R	300
S	300
T	250
U	200

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Factory technical assistance is available through our Application Engineering department.

Recommended Drilling Data | Imperial (in)

ROLLER BURNISHERS

ISO	Material	Hardness (BHN)	Speed (SFM)	Recommended Feed (IPR) by Diameter			
				0.1850" - 0.4724"	0.4725" - 0.9843"	0.9844" - 1.9685"	1.9686" - 6.5315"
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 180	75 - 300	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
		180 - 250	75 - 300	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180	75 - 300	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
		180 - 275	75 - 300	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180	75 - 300	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
		180 - 325	75 - 300	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180	75 - 300	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
		180 - 375	75 - 300	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450	75 - 300	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
	Structural Steel A36, A285, A516, etc.	125 - 180	75 - 300	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
		180 - 350	75 - 300	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	75 - 300	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
		200 - 250	75 - 300	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
M	**Stainless Steel 400 Series** 416, 420, etc.	135 - 350	75 - 200	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275	75 - 200	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
K	**Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)**	< 200	75 - 300	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
		> 200	75 - 300	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
	Spheroidal Cast Iron (Ferritic)	260 - 320	75 - 300	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
N	**Copper and Alloys, and Brass**	< 500	150 - 350	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
	Bronze, and Bronze Phosphorous	< 180	150 - 350	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
	Aluminum and Alloys	< 150	150 - 350	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 310	50 - 150	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
	Titanium Alloy	140 - 310	50 - 150	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121

NOTE: For diameters less than 4.70 mm (0.1850"), please contact application engineering for recommended speed and feeds.

Max RPM

Series	Max RPM
H	2000
I	1500
K	1200
L	1000
F	1000
M	900
N	900
O	700
P	600
Q	500
R	300
S	300
T	250
U	200

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Factory technical assistance is available through our Application Engineering department.

Stock Allowance | Metric (mm)

ROLLER BURNISHERS

ISO	Material	Hardness (BHN)	Recommended Stock (mm) by Diameter			
			4.70 mm - 12.00 mm	12.01 mm - 25.00 mm	25.01 mm - 50.00 mm	50.01 mm - 165.90 mm
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 180	0.010 - 0.018	0.018 - 0.041	0.025 - 0.046	0.030 - 0.051
		180 - 250	0.010 - 0.018	0.018 - 0.041	0.025 - 0.046	0.030 - 0.051
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180	0.010 - 0.018	0.018 - 0.041	0.025 - 0.046	0.030 - 0.051
		180 - 275	0.010 - 0.018	0.018 - 0.041	0.025 - 0.046	0.030 - 0.051
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180	0.010 - 0.018	0.018 - 0.041	0.025 - 0.046	0.030 - 0.051
		180 - 325	0.010 - 0.018	0.012 - 0.018	0.012 - 0.025	0.020 - 0.036
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180	0.010 - 0.018	0.018 - 0.041	0.025 - 0.046	0.030 - 0.051
		180 - 375	0.010 - 0.018	0.012 - 0.018	0.012 - 0.025	0.020 - 0.036
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450	0.010 - 0.018	0.012 - 0.018	0.012 - 0.025	0.020 - 0.036
	Structural Steel A36, A285, A516, etc.	125 - 180	0.010 - 0.018	0.018 - 0.041	0.025 - 0.046	0.030 - 0.051
		180 - 350	0.010 - 0.018	0.012 - 0.018	0.012 - 0.025	0.020 - 0.036
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	0.010 - 0.018	0.018 - 0.041	0.025 - 0.046	0.030 - 0.051
		200 - 250	0.010 - 0.018	0.012 - 0.018	0.012 - 0.025	0.020 - 0.036
M	**Stainless Steel 400 Series** 416, 420, etc.	135 - 350	0.010 - 0.018	0.018 - 0.041	0.025 - 0.046	0.030 - 0.051
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275	0.010 - 0.018	0.018 - 0.041	0.025 - 0.046	0.030 - 0.051
K	**Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)**	< 200	0.010 - 0.018	0.012 - 0.018	0.012 - 0.025	0.020 - 0.036
		> 200	0.010 - 0.018	0.012 - 0.018	0.012 - 0.025	0.020 - 0.036
	Spheroidal Cast Iron (Ferritic)	260 - 320	0.010 - 0.018	0.012 - 0.018	0.012 - 0.025	0.020 - 0.036
N	**Copper and Alloys, and Brass**	< 500	0.010 - 0.018	0.018 - 0.041	0.025 - 0.046	0.030 - 0.051
	Bronze, and Bronze Phosphorous	< 180	0.010 - 0.018	0.018 - 0.041	0.025 - 0.046	0.030 - 0.051
	Aluminum and Alloys	< 150	0.010 - 0.018	0.018 - 0.041	0.025 - 0.046	0.030 - 0.051
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 310	0.010 - 0.018	0.012 - 0.018	0.012 - 0.025	0.020 - 0.036
	Titanium Alloy	140 - 310	0.010 - 0.018	0.012 - 0.018	0.012 - 0.025	0.020 - 0.036

*Stock value is on diameter.

NOTE: For diameters less than 4.70 mm (0.1850"), please contact application engineering for recommended stock allowance.

Stock Allowance | Imperial (in)

ROLLER BURNISHERS

ISO	Material	Hardness (BHN)	Recommended Stock (in) by Diameter 0.1850" - 0.4724"	0.4725" - 0.9843"	0.9844" - 1.9685"	1.9686" - 6.5315"
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 180	0.0004 - 0.0007	0.0007 - 0.0016	0.0010 - 0.0018	0.0012 - 0.0020
		180 - 250	0.0004 - 0.0007	0.0007 - 0.0016	0.0010 - 0.0018	0.0012 - 0.0020
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180	0.0004 - 0.0007	0.0007 - 0.0016	0.0010 - 0.0018	0.0012 - 0.0020
		180 - 275	0.0004 - 0.0007	0.0007 - 0.0016	0.0010 - 0.0018	0.0012 - 0.0020
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180	0.0004 - 0.0007	0.0007 - 0.0016	0.0010 - 0.0018	0.0012 - 0.0020
		180 - 325	0.0004 - 0.0007	0.0005 - 0.0007	0.0005 - 0.0010	0.0008 - 0.0014
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180	0.0004 - 0.0007	0.0007 - 0.0016	0.0010 - 0.0018	0.0012 - 0.0020
		180 - 375	0.0004 - 0.0007	0.0005 - 0.0007	0.0005 - 0.0010	0.0008 - 0.0014
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450	0.0004 - 0.0007	0.0005 - 0.0007	0.0005 - 0.0010	0.0008 - 0.0014
	Structural Steel A36, A285, A516, etc.	125 - 180	0.0004 - 0.0007	0.0007 - 0.0016	0.0010 - 0.0018	0.0012 - 0.0020
		180 - 350	0.0004 - 0.0007	0.0005 - 0.0007	0.0005 - 0.0010	0.0008 - 0.0014
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	0.0004 - 0.0007	0.0007 - 0.0016	0.0010 - 0.0018	0.0012 - 0.0020
		200 - 250	0.0004 - 0.0007	0.0005 - 0.0007	0.0005 - 0.0010	0.0008 - 0.0014
M	**Stainless Steel 400 Series** 416, 420, etc.	135 - 350	0.0004 - 0.0007	0.0007 - 0.0016	0.0010 - 0.0018	0.0012 - 0.0020
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275	0.0004 - 0.0007	0.0007 - 0.0016	0.0010 - 0.0018	0.0012 - 0.0020
K	**Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)**	< 200	0.0004 - 0.0007	0.0005 - 0.0007	0.0005 - 0.0010	0.0008 - 0.0014
		> 200	0.0004 - 0.0007	0.0005 - 0.0007	0.0005 - 0.0010	0.0008 - 0.0014
	Spheroidal Cast Iron (Ferritic)	260 - 320	0.0004 - 0.0007	0.0005 - 0.0007	0.0005 - 0.0010	0.0008 - 0.0014
N	**Copper and Alloys, and Brass**	< 500	0.0004 - 0.0007	0.0007 - 0.0016	0.0010 - 0.0018	0.0012 - 0.0020
	Bronze, and Bronze Phosphorous	< 180	0.0004 - 0.0007	0.0007 - 0.0016	0.0010 - 0.0018	0.0012 - 0.0020
	Aluminum and Alloys	< 150	0.0004 - 0.0007	0.0007 - 0.0016	0.0010 - 0.0018	0.0012 - 0.0020
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 310	0.0004 - 0.0007	0.0005 - 0.0007	0.0005 - 0.0010	0.0008 - 0.0014
	Titanium Alloy	140 - 310	0.0004 - 0.0007	0.0005 - 0.0007	0.0005 - 0.0010	0.0008 - 0.0014

*Stock value is on diameter.

NOTE: For diameters less than 4.70 mm (0.1850"), please contact application engineering for recommended stock allowance.

THREAD MILLING
PRODUCT CATALOG









ALLIED MACHINE & ENGINEERING

www.alliedmachine.com

Threading Overview

Thread Mill Types



THREAD MILLING DONE ***RIGHT***



Solid Carbide Thread Mills	Notes
AccuThread® 856 	• Allied Machine's proprietary AM210® coating yields a 25-50% increase in tool life over competitor products. • Standard cutting lengths allow for multiple applications without the need for special thread mills. • Helical flute offers increased strength and rigidity when cutting forces are applied.
ThreadMills USA® 	• Helical flute offers increased strength and rigidity when cutting forces are applied. • High quality for consistent, predictable production. • Coolant-through options available. • TiAlN coating improves tool life versus uncoated tools.
AccuThread® T3 	• Allied Machine's proprietary AM210® coating yields a 25-50% increase in tool life over competitor products. • Standard cutting lengths allow for multiple applications without the need for special thread mills. • Helical flute offers increased strength and rigidity when cutting forces are applied.

Indexable Insert Thread Mills	Notes
AccuThread® 856 Bolt-in Style 	• Thread mill holders are manufactured from stainless steel that is engineered to dampen vibration during operation. • Extensive range of thread forms with two thread lengths. • Can produce left- or right-handed threads.
AccuThread® 856 Pin Style 	• Patented pin style locking system ensures unsurpassed repeatability. • Thread mill holders are manufactured from stainless steel that is engineered to dampen vibration during operation. • Extensive range of thread forms with two thread lengths.
AccuThread® 856 Indexable Inserts  Bolt-in Style  Pin Style	• Full profiles present on all inserts allow 100% thread form against 65-75% for tapping. • Allied Machine's premium carbide allows for extended tool life while providing high-quality thread forms. • Allied Machine's proprietary AM210® coating yields a 25-50% increase in tool life over competitor products.

Threading Overview

Insta-Code®

Insta-Code®

Find your thread mill. Create your program.

The all new software lets you choose the best thread mill product for your application and create the program code for your machine. Insta-Code is available as a PC download app (that can be used offline) and an online web app available 24/7 at www.alliedmachine.com/InstaCode.

Eliminate the wait. Get your program now.



Insta-Code also has a **Cycle Time Calculator.**



Online Version

- Generates thread mill G-code programs.
- Available online 24/7.
- No login required.
- No updates needed.
- Easily share the program code.
- Supported on all web browsers

Download Version

- Creates program code for multiple machine platforms.
- Suggests a thread mill based on application details.
- Provides estimated cycle time for improved production.
- Available for use offline.

Offline Version Updates

- Update your offline Insta-Code software.
- Download the updated .zip file, then transfer to the offline computer. Click "check for update" in your Insta-Code software and navigate to the downloaded zip file.
- This allows you to keep all your saved programs.

1. Download and open **Allied_Machine_Insta-Code.zip.**
2. Click on **setup.exe** to install the program.
3. **One click updates** are available for online computers.

Supported on all Windows OS.

www.alliedmachine.com/InstaCode

SECTION

E10-SCT

Solid Carbide Thread Mills



Solid Carbide Thread Mills

A solid choice for thread milling

Our solid carbide thread milling product line has been specifically designed to provide customers with a wide range of options. From the low cost, general production ThreadMills USA range to the high performance, high productivity AccuThread range, our solid carbide thread mills provide a comprehensive line of high-precision tooling that offers outstanding productivity with exceptional levels of tool life and thread accuracy.

- ThreadMills USA®
- AccuThread® 856
- AccuThread T3

Applicable Industries

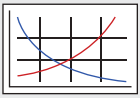
- Aerospace
- Agriculture
- Automotive
- Defense
- General Production
- Heavy Equipment
- Hydraulics
- Marine
- Medical
- Oil and Gas
- Renewable Energy/ Energy
- Tool, Mold, and Die

Reference Icons

The following icons will appear throughout the catalog to help you navigate between products.



Setup / Assembly Information
Detailed instructions and information regarding the corresponding part(s).



Recommended Cutting Data
Speed and feed recommendations for optimum and safe drilling.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

WARNING means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

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Solid Carbide Thread Mill Overview

Styles and Thread Forms

Straight BSW	Helical BSPP, NPS, NPSF, UN, ISO	Taper Helical BSPT, NPT, NPTF	Helical (3-Tooth Style) UN, ISO
 AccuThread® 856	 AccuThread® 856	 AccuThread® 856	 AccuThread® T3
 ThreadMills USA® (coolant and noncoolant)	 ThreadMills USA® (coolant and noncoolant)	 ThreadMills USA® (coolant and noncoolant)	

AccuThread® T3



Left-Hand Cutting

The tool continues to climb mill while it moves from top to bottom

► ***Advantage***

Improves tool life and produces a precise thread form

AM210® Coating

Multilayer PVD coating

► ***Advantage***

Improves cycle times and tool life

3 Cutting Teeth

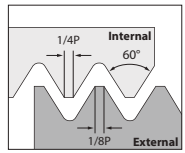
The tool cuts minimal threads at once and reduces side deflection

► ***Advantage***

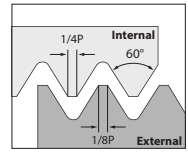
Cuts harder materials and produces deeper threads than a standard thread mill

Additional Information

- Available in UN and ISO thread forms.
- Available in imperial and metric shanks.
- Available in 2xD and 3xD lengths.



UN Thread Form



ISO Thread Form

Solid Carbide Thread Mill Overview

Port and Thread Finishing Kits



WE HAVE A KIT FOR THAT

Kits aren't for everyone, but if you work on different projects from day to day, you need to ***be prepared for the work tomorrow will bring.***

The Complete Package

Producing fully finished threaded hydraulic ports has never been easier. The Port and Thread Finishing Kit includes the AccuPort 432® port contour cutter with a dedicated AccuThread® 856 solid carbide thread mill in a single kit. You also receive the T-A® inserts and port form inserts needed to complete the assembly.

Port kits incorporate the AccuThread 856 solid carbide thread mills to increase the manufacturing flexibility by allowing hydraulic ports to be produced in just two operations. In addition, where a unique port profile is required, Allied Machine provides a dedicated special tooling solution using our extensive tool design and manufacturing experience to meet precise specifications.



NOTE: See our porting product catalog for the complete list of kits.



NOTE: See our porting product catalog for all the AccuPort 432 product line information.

CHAMFER SOLUTIONS *MADE EASY.*

T-A PRO® DRILL AND CHAMFER HOLDERS



Provides a 1.0 mm (0.040") x 45° (minimum) chamfer for various thread specifications.

Large range of diameters with a single holder.

Preselected diameters for standard thread sizes offer easy user selection.

View the T-A Pro drill and chamfer holders along with convenient thread size charts in the T-A Pro Catalog.

Solid Carbide Thread Mill Overview

Product Nomenclature

AccuThread® 856 Solid Carbide Thread Mills

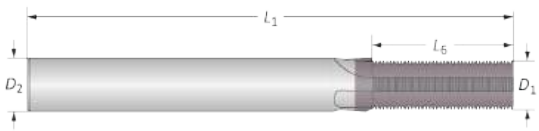
TM	U	K	0250	–	20	M
Thread Mill	**Thread Class**	**Coating**	**Min Thread Diameter**		**Thread Pitch**	**Shank**
TM = Standard	**U** = UN	**K** = AM210®	**0250** = 1/4 (Imperial)		**20** = UN 20 TPI	**Blank** = Imperial
HDTM = Heavy duty	**N** = NPT, NPTF	**U** = Uncoated	**0008** = #8 (Number Drill)		**075** = ISO 0.75	**M** = Metric
TW = Weldon flat	**B** = BSPP, BSPT, BSW		**0450** = M4.5 (ISO)		**NPT** = All pipe threads will show thread form	
	M = ISO					
	A = AccuPort® specific					

ThreadMills USA® Solid Carbide Thread Mills

TM	250	20	CH	M
Thread Mill	**Min Thread Diameter**	**Thread Pitch**	**Optional**	**Shank**
TM = Standard (TiAlN)	**0250** = 1/4 (Imperial)	**20** = UN 20 TPI	**CH** = Coolant hole	**Blank** = Imperial
TMFT = Uncoated	**0008** = #8 (Number Drill)	**075** = ISO 0.75	**DE** = Double end	**M** = Metric
HDTM = Heavy duty (TiAlN)	**0450** = M4.5 (ISO)	**NPT** = All pipe threads will show thread form		
HDTMFT = Heavy duty uncoated				

Reference Key

Symbol	Attribute
D_1	Maximum cutter diameter
D_2	Shank diameter
L_1	Overall length
L_6	Length of cut

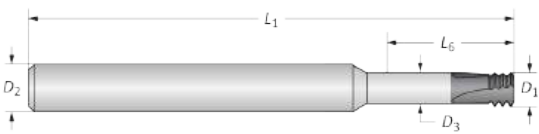


AccuThread® T3 Solid Carbide Thread Mills

TM	073	64	M	–	3T	2X
	Min Thread Diameter	**Thread Pitch**	**Shank**			**Shank**
	250 = 1/4 (Imperial)	**20** = UN 20 TPI	**Blank** = Imperial			**2X** = 2xD
	45 = M4.5 (ISO)	**075** = ISO 0.75	**M** = Metric			**3X** = 3xD

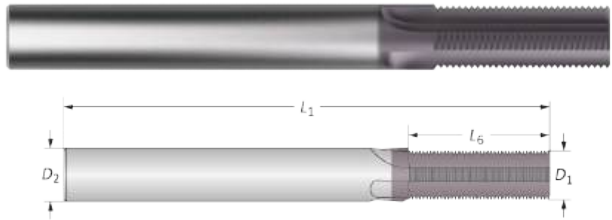
Reference Key

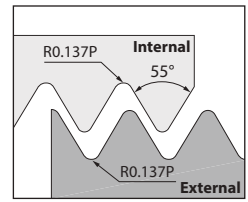
Symbol	Attribute
D_1	Maximum cutter diameter
D_2	Shank diameter
D_3	Undercut diameter
L_1	Overall length
L_6	Length of cut



Solid Carbide Thread Mills

BSW





Noncoolant

Metric (mm)

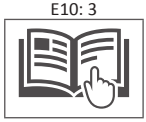
	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill D_1	Thread Mill D_2	Thread Mill L_6	Thread Mill L_1	Part No. ThreadMills USA®	Part No. AccuThread® 856
	20	1/4	3	4.50	6.00	10.16	58.00	**TM20BSWM**	**TMBK0250-20M**
	18	5/16	3	5.00	6.00	11.29	58.00	**TM18BSWM**	**TMBK0312-18M**
	16	3/8	5	7.00	8.00	14.29	64.00	**TM16BSWM**	**TMBK0375-16M**
	14	7/16	5	7.90	8.00	18.15	64.00	**TM14BSWM**	**TMBK0437-14M**
ⓜ	12	1/2	5	9.00	10.00	19.10	73.00	**TM12BSWM**	**TMBK0500-12M**
	11	5/8	5	11.90	12.00	23.10	84.00	**TM11BSWM**	**TMBK0625-11M**
	10	3/4	5	11.90	12.00	27.94	84.00	**TM10BSWM**	**TMBK0750-10M**
	9	7/8	6	15.90	16.00	28.23	93.00	**TM9BSWM**	**TMBK0875-9M**
	8	1	6	15.90	16.00	34.94	93.00	**TM8BSWM**	**TMBK1000-8M**

Imperial (in)

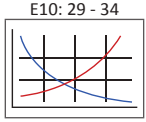
	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill D_1	Thread Mill D_2	Thread Mill L_6	Thread Mill L_1	Part No. ThreadMills USA®	Part No. AccuThread® 856
	20	1/4	3	0.177	0.250	0.400	2.500	**TM20BSW**	—
	18	5/16	3	0.197	0.250	0.445	2.500	**TM18BSW**	—
	16	3/8	5	0.276	0.312	0.563	3.000	**TM16BSW**	—
	14	7/16	5	0.311	0.312	0.715	3.000	**TM14BSW**	—
ⓘ	12	1/2	5	0.354	0.375	0.750	3.500	**TM12BSW**	—
	11	5/8	5	0.468	0.500	0.910	3.500	**TM11BSW**	—
	10	3/4	5	0.468	0.500	1.100	3.500	**TM10BSW**	—
	9	7/8	6	0.620	0.625	1.112	4.000	**TM9BSW**	—
	8	1	6	0.620	0.625	1.375	4.000	**TM8BSW**	—

Key on E10: 2

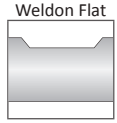
E10: 3



E10: 29 - 34



Weldon Flat

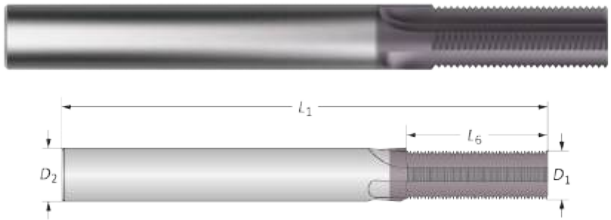


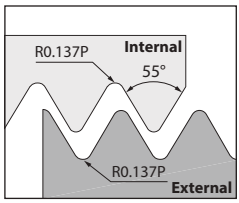
Replace the leading TM designator with TW.
(For shanks 6 mm (ⓜ) or 3/8" (ⓘ) and above.)
Ex: Cylindrical = **TM**NK0500-NPT | Weldon = **TW**NK0500-NPT
NOTE: Minimum order quantity is 2 pieces.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Solid Carbide Thread Mills

BSW





Coolant Through

Metric (mm)

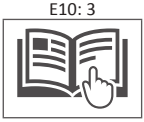
	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill D_1	Thread Mill D_2	Thread Mill L_6	Thread Mill L_1	Part No. ThreadMills USA®
	20	1/4	3	4.50	6.00	10.16	58.00	**TM20BSWCHM**
	18	5/16	3	5.00	6.00	11.29	58.00	**TM18BSWCHM**
	16	3/8	5	7.00	8.00	14.29	64.00	**TM16BSWCHM**
	14	7/16	5	7.90	8.00	18.15	64.00	**TM14BSWCHM**
ⓜ	12	1/2	5	9.00	10.00	19.10	84.00	**TM12BSWCHM**
	11	5/8	5	11.90	12.00	23.10	84.00	**TM11BSWCHM**
	10	3/4	5	11.90	12.00	27.94	84.00	**TM10BSWCHM**
	9	7/8	6	15.90	16.00	28.23	93.00	**TM9BSWCHM**
	8	1	6	15.90	16.00	34.94	93.00	**TM8BSWCHM**

Imperial (in)

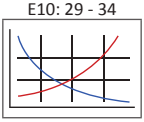
	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill D_1	Thread Mill D_2	Thread Mill L_6	Thread Mill L_1	Part No. ThreadMills USA®
	20	1/4	3	0.177	0.250	0.400	2.375	**TM20BSWCH**
	18	5/16	3	0.197	0.250	0.445	2.375	**TM18BSWCH**
	16	3/8	5	0.276	0.312	0.563	3.000	**TM16BSWCH**
	14	7/16	5	0.311	0.312	0.715	3.000	**TM14BSWCH**
ⓘ	12	1/2	5	0.354	0.375	0.750	3.000	**TM12BSWCH**
	11	5/8	5	0.468	0.500	0.910	3.500	**TM11BSWCH**
	10	3/4	5	0.468	0.500	1.100	3.500	**TM10BSWCH**
	9	7/8	6	0.620	0.625	1.112	4.000	**TM9BSWCH**
	8	1	6	0.620	0.625	1.375	4.000	**TM8BSWCH**

Key on E10: 2

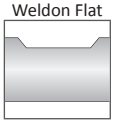
E10: 3



E10: 29 - 34



Weldon Flat



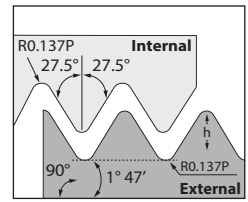
Replace the leading TM designator with TW.
(For shanks 6 mm (ⓜ) or 3/8" (ⓘ) and above.)
Ex: Cylindrical = **TM**NK0500-NPT | Weldon = **TW**NK0500-NPT
NOTE: Minimum order quantity is 2 pieces.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Solid Carbide Thread Mills

BSPT





Noncoolant

Metric (mm)

	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill D_1	D_2	L_6	L_1	Part No. ThreadMills USA®	AccuThread® 856
ⓜ	28	1/16 and 1/8	3	5.97	6.00	9.98	58.00	TM28BSPTM	TMBK0063-BSPTM
	19	1/4 and 3/8	4	9.91	10.00	14.73	73.00	TM19BSPTM	TMBK0250-BSPTM
	14	1/2 and 3/4	4	11.94	12.00	20.00	84.00	TM14BSPTM	TMBK0500-BSPTM
	11	1	4	15.75	16.00	32.31	93.00	TM11BSPTM	TMBK1000-BSPTM

Imperial (in)

	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill D_1	D_2	L_6	L_1	Part No. ThreadMills USA®	AccuThread® 856
ⓘ	28	1/16 and 1/8	3	0.240	0.250	0.393	2.500	TM28BSPT	—
	19	1/4 and 3/8	4	0.310	0.312	0.580	3.000	TM19BSPT	—
	14	1/2 and 3/4	4	0.470	0.500	0.787	3.500	TM14BSPT	—
	11	1	4	0.620	0.625	1.546	4.000	TM11BSPT	—

Coolant Through

Metric (mm)

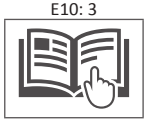
	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill D_1	D_2	L_6	L_1	Part No. ThreadMills USA®
ⓜ	28	1/16 and 1/8	3	5.97	6.00	9.98	58.00	TM28BSPTCHM
	19	1/4 and 3/8	4	9.91	10.00	14.73	84.00	TM19BSPTCHM
	14	1/2 and 3/4	4	11.94	12.00	20.00	84.00	TM14BSPTCHM
	11	1	4	15.75	16.00	32.31	93.00	TM11BSPTCHM

Imperial (in)

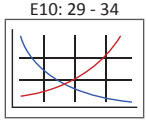
	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill D_1	D_2	L_6	L_1	Part No. ThreadMills USA®
ⓘ	28	1/16 and 1/8	3	0.240	0.250	0.393	2.375	TM28BSPTCH
	19	1/4 and 3/8	4	0.310	0.312	0.580	3.000	TM19BSPTCH
	14	1/2 and 3/4	4	0.470	0.500	0.787	3.500	TM14BSPTCH
	11	1	4	0.620	0.625	1.546	4.000	TM11BSPTCH

Key on E10: 2

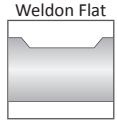
E10: 3



E10: 29 - 34



Weldon Flat



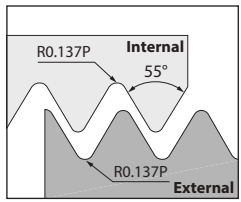
Replace the leading TM designator with TW.
(For shanks 6 mm (ⓜ) or 3/8" (ⓘ) and above.)
Ex: Cylindrical = **TM**NK0500-NPT | Weldon = **TW**NK0500-NPT
NOTE: Minimum order quantity is 2 pieces.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Solid Carbide Thread Mills

BSPP





Noncoolant

Metric (mm)

	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill D_1	D_2	L_6	L_1	Part No. ThreadMills USA®	AccuThread® 856
ⓜ	28	1/16 and 1/8	3	5.97	6.00	14.53	58.00	**TM28BSPPM**	**TMBK0063-BSPPM**
	19	1/4 and 3/8	4	9.91	10.00	18.72	73.00	**TM19BSPPM**	**TMBK0250-BSPPM**
		3/8	4	11.94	12.00	28.41	84.00	**HDTM19BSPPM**	—
	14	1/2 and 3/4	4	11.94	12.00	29.03	84.00	**TM14BSPPM**	**TMBK0500-BSPPM**
		3/4	5	15.75	16.00	34.47	93.00	**HDTM14BSPPM**	—
	11	1	4	15.75	16.00	34.67	93.00	**TM11BSPPM**	**TMBK1000-BSPPM**

Imperial (in)

	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill D_1	D_2	L_6	L_1	Part No. ThreadMills USA®	AccuThread® 856
ⓘ	28	1/16 and 1/8	3	0.240	0.250	0.572	2.500	**TM28BSPP**	—
	19	1/4 and 3/8	4	0.310	0.312	0.737	3.000	**TM19BSPP**	—
	14	1/2 and 3/4	4	0.470	0.500	1.143	3.500	**TM14BSPP**	—
	11	1	4	0.620	0.625	1.365	4.000	**TM11BSPP**	—

Coolant Through

Metric (mm)

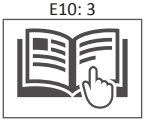
	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill D_1	D_2	L_6	L_1	Part No. ThreadMills USA®
ⓜ	28	1/16 and 1/8	3	5.97	6.00	14.53	58.00	**TM28BSPPCHM**
	19	1/4 and 3/8	4	9.91	10.00	18.72	84.00	**TM19BSPPCHM**
	14	1/2 and 3/4	4	11.94	12.00	29.03	84.00	**TM14BSPPCHM**
	11	1	4	15.75	16.00	34.67	93.00	**TM11BSPPCHM**

Imperial (in)

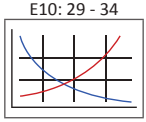
	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill D_1	D_2	L_6	L_1	Part No. ThreadMills USA®
ⓘ	28	1/16 and 1/8	3	0.240	0.250	0.572	2.375	**TM28BSPPCH**
	19	1/4 and 3/8	4	0.310	0.312	0.737	3.000	**TM19BSPPCH**
	14	1/2 and 3/4	4	0.470	0.500	1.143	3.500	**TM14BSPPCH**
	11	1	4	0.620	0.625	1.365	4.000	**TM11BSPPCH**

Key on E10: 2

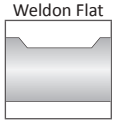
E10: 3



E10: 29 - 34



Weldon Flat



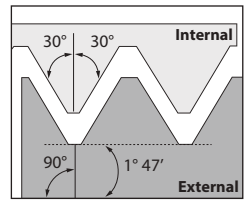
Replace the leading TM designator with TW.
(For shanks 6 mm (ⓜ) or 3/8" (ⓘ) and above.)
Ex: Cylindrical = **TM**NK0500-NPT | Weldon = **TW**NK0500-NPT
NOTE: Minimum order quantity is 2 pieces.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Solid Carbide Thread Mills

NPT





Noncoolant

Metric (mm)

	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill D_1	D_2	L_6	L_1	Part No. ThreadMills USA®	AccuThread® 856
ⓜ	27	1/16 and 1/8	3	5.95	6.00	11.30	58.00	TM27NPTM	TMNK0063-NPTM
		1/8	4	7.62	8.00	12.25	64.00	HDTM27NPTM	-
	18	1/4 and 3/8	4	7.75	8.00	15.70	64.00	TM18NPTM	TMNK0250-NPTM
				9.22	10.00	17.25	84.00	HDTM18NPTM	-
	14	1/2 and 3/4	4	11.95	12.00	23.70	84.00	TM14NPTM	TMNK0500-NPTM
		3/4	4	15.75	16.00	25.40	93.00	HDTM14NPTM	-
	11.5	1	4	15.75	16.00	28.75	93.00	TM11NPTM	TMNK1000-NPTM
			5	18.92	20.00	30.95	105.00	HDTM11NPTM	-
	8	2-1/2	5	19.75	20.00	38.10	115.00	TM8NPTM	TMNK2500-NPTM

Imperial (in)

	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill D_1	D_2	L_6	L_1	Part No. ThreadMills USA®	AccuThread® 856
ⓘ	27	1/16 and 1/8	3	0.245	0.250	0.437	2.500	TM27NPT	TMNK0063-NPT
		1/8	4	0.300	0.312	0.482	3.000	HDTM27NPT	HDTMNK0125-NPT
	18	1/4 and 3/8	4	0.305	0.312	0.625	3.000	TM18NPT	TMNK0250-NPT
				0.363	0.375	0.680	3.500	HDTM18NPT	HDTMNK0250-NPT
	14	1/2 and 3/4	4	0.495	0.500	0.875	3.500	TM14NPT	TMNK0500-NPT
		3/4	4	0.620	0.625	1.000	4.000	HDTM14NPT	HDTMNK0750-NPT
	11.5	1	4	0.620	0.625	1.125	4.000	TM11NPT	TMNK1000-NPT
			5	0.745	0.750	1.219	4.000	HDTM11NPT	HDTMNK1000-NPT
	8	2-1/2	4	0.745	0.750	1.500	5.000	TM8NPT	TMNK2500-NPT

Key on E10: 2

E10: 3

E10: 29 - 34

Weldon Flat

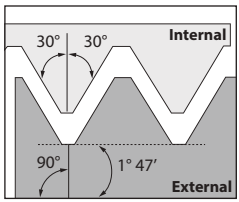
Replace the leading TM designator with TW.
(For shanks 6 mm (ⓜ) or 3/8" (ⓘ) and above.)
Ex: Cylindrical = **TM**NK0500-NPT | Weldon = **TW**NK0500-NPT
NOTE: Minimum order quantity is 2 pieces.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Solid Carbide Thread Mills

NPT





Coolant Through

Metric (mm)

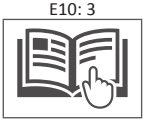
	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill D_1	Thread Mill D_2	Thread Mill L_6	Thread Mill L_1	Part No. ThreadMills USA®
m	27	1/16 and 1/8	3	5.95	6.00	11.30	58.00	TM27NPTCHM
		1/8	4	7.62	8.00	12.25	64.00	HDTM27NPTCHM
	18	1/4 and 3/8	4	7.75	8.00	15.70	64.00	TM18NPTCHM
				9.22	10.00	17.25	84.00	HDTM18NPTCHM
	14	1/2 and 3/4	4	11.95	12.00	23.70	84.00	TM14NPTCHM
		3/4	4	15.75	16.00	25.40	93.00	HDTM14NPTCHM
	11.5	1	4	15.75	16.00	28.75	93.00	TM11NPTCHM
			5	18.92	20.00	30.95	105.00	HDTM11NPTCHM
	8	2-1/2	5	19.75	20.00	38.10	115.00	TM8NPTCHM

Imperial (in)

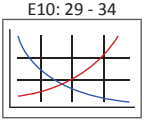
	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill D_1	Thread Mill D_2	Thread Mill L_6	Thread Mill L_1	Part No. ThreadMills USA®
i	27	1/16 and 1/8	3	0.245	0.250	0.437	2.375	TM27NPTCH
		1/8	4	0.300	0.312	0.482	3.000	HDTM27NPTCH
	18	1/4 and 3/8	4	0.305	0.312	0.625	3.000	TM18NPTCH
				0.363	0.375	0.680	3.000	HDTM18NPTCH
	14	1/2 and 3/4	4	0.495	0.500	0.875	3.500	TM14NPTCH
		3/4	4	0.620	0.625	1.000	4.000	HDTM14NPTCH
	11.5	1	4	0.620	0.625	1.125	4.000	TM11NPTCH
			5	0.745	0.750	1.219	4.000	HDTM11NPTCH
	8	2-1/2	5	0.745	0.750	1.500	5.000	TM8NPTCH

Key on E10: 2

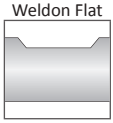
E10: 3



E10: 29 - 34



Weldon Flat



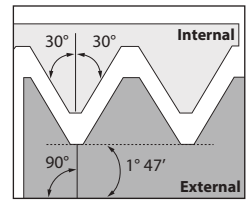
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Ex: Cylindrical = **TM**NK0500-NPT | Weldon = **TW**NK0500-NPT
NOTE: Minimum order quantity is 2 pieces.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Solid Carbide Thread Mills

NPTF





Noncoolant

Metric (mm)

	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill D_1	Thread Mill D_2	Thread Mill L_6	Thread Mill L_1	Part No. ThreadMills USA®	Part No. AccuThread® 856
	27	1/16 and 1/8	3	5.95	6.00	11.30	58.00	**TM27NPTFM**	**TMNK0063-NPTFM**
	18	1/4 and 3/8	4	7.75	8.00	15.70	64.00	**TM18NPTFM**	**TMNK0250-NPTFM**
ⓜ	14	1/2 and 3/4	4	11.95	12.00	23.70	84.00	**TM14NPTFM**	**TMNK0500-NPTFM**
	11.5	1	4	15.75	16.00	28.75	93.00	**TM11NPTFM**	**TMNK1000-NPTFM**
	8	2-1/2	5	19.75	20.00	38.10	115.00	**TM8NPTFM**	**TMNK2500-NPTFM**

Imperial (in)

	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill D_1	Thread Mill D_2	Thread Mill L_6	Thread Mill L_1	Part No. ThreadMills USA®	Part No. AccuThread® 856
	27	1/16 and 1/8	3	0.245	0.250	0.437	2.500	**TM27NPTF**	**TMNK0063-NPTF**
	18	1/4 and 3/8	4	0.305	0.312	0.625	3.000	**TM18NPTF**	**TMNK0250-NPTF**
ⓘ	14	1/2 and 3/4	4	0.495	0.500	0.875	3.500	**TM14NPTF**	**TMNK0500-NPTF**
	11.5	1	4	0.620	0.625	1.125	4.000	**TM11NPTF**	**TMNK1000-NPTF**
	8	2-1/2	4	0.745	0.750	1.500	5.000	**TM8NPTF**	**TMNK2500-NPTF**

Key on E10: 2

E10: 3

E10: 29 - 34

Weldon Flat

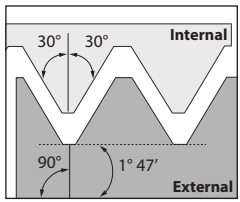
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Ex: Cylindrical = **TM**NK0500-NPT | Weldon = **TW**NK0500-NPT
NOTE: Minimum order quantity is 2 pieces.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Solid Carbide Thread Mills

NPTF





Coolant Through

Metric (mm)

	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill D_1	Thread Mill D_2	Thread Mill L_6	Thread Mill L_1	Part No. ThreadMills USA®
	27	1/16 and 1/8	3	5.95	6.00	11.30	58.00	**TM27NPTFCHM**
	18	1/4 and 3/8	4	7.75	8.00	15.70	64.00	**TM18NPTFCHM**
ⓜ	14	1/2 and 3/4	4	11.95	12.00	23.70	84.00	**TM14NPTFCHM**
	11.5	1	4	15.75	16.00	28.75	93.00	**TM11NPTFCHM**
	8	2-1/2	5	19.75	20.00	38.10	115.00	**TM8NPTFCHM**

Imperial (in)

	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill D_1	Thread Mill D_2	Thread Mill L_6	Thread Mill L_1	Part No. ThreadMills USA®
	27	1/16 and 1/8	3	0.245	0.250	0.437	2.375	**TM27NPTFCH**
	18	1/4 and 3/8	4	0.305	0.312	0.625	3.000	**TM18NPTFCH**
ⓘ	14	1/2 and 3/4	4	0.495	0.500	0.875	3.500	**TM14NPTFCH**
	11.5	1	4	0.620	0.625	1.125	4.000	**TM11NPTFCH**
	8	2-1/2	4	0.745	0.750	1.500	5.000	**TM8NPTFCH**

Key on E10: 2

E10: 3

E10: 29 - 34

Weldon Flat

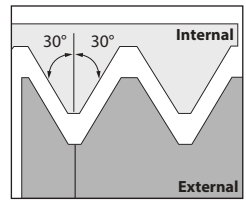
Replace the leading TM designator with TW.
(For shanks 6 mm (ⓜ) or 3/8" (ⓘ) and above.)
Ex: Cylindrical = **TM**NK0500-NPT | Weldon = **TW**NK0500-NPT
NOTE: Minimum order quantity is 2 pieces.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Solid Carbide Thread Mills

NPS





Noncoolant

Metric (mm)

	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill D_1	Thread Mill D_2	Thread Mill L_6	Thread Mill L_1	Part No. ThreadMills USA®
ⓜ	27	1/8	3	5.95	6.00	16.00	58.00	**TM27NPSM**
	18	1/4 and 3/8	4	9.40	10.00	22.60	84.00	**TM18NPSM**
	14	1/2 and 3/4	4	11.94	12.00	32.70	84.00	**TM14NPSM**
	11.5	1	4	15.75	16.00	35.35	93.00	**TM11NPSM**

Imperial (in)

	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill D_1	Thread Mill D_2	Thread Mill L_6	Thread Mill L_1	Part No. ThreadMills USA®
ⓘ	27	1/8	3	0.245	0.250	0.630	2.500	**TM27NPS**
	18	1/4 and 3/8	4	0.370	0.375	0.889	3.500	**TM18NPS**
	14	1/2 and 3/4	4	0.490	0.500	1.288	3.500	**TM14NPS**
	11.5	1	4	0.620	0.625	1.392	4.000	**TM11NPS**

Coolant Through

Metric (mm)

	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill D_1	Thread Mill D_2	Thread Mill L_6	Thread Mill L_1	Part No. ThreadMills USA®
ⓜ	27	1/8	3	5.95	6.00	16.00	58.00	**TM27NPSCHM**
	18	1/4 and 3/8	4	9.40	10.00	22.60	84.00	**TM18NPSCHM**
	14	1/2 and 3/4	4	11.94	12.00	32.70	84.00	**TM14NPSCHM**
	11.5	1	4	15.75	16.00	35.35	93.00	**TM11NPSCHM**

Imperial (in)

	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill D_1	Thread Mill D_2	Thread Mill L_6	Thread Mill L_1	Part No. ThreadMills USA®
ⓘ	27	1/8	3	0.245	0.250	0.630	2.375	**TM27NPSCH**
	18	1/4 and 3/8	4	0.370	0.375	0.889	3.000	**TM18NPSCH**
	14	1/2 and 3/4	4	0.490	0.500	1.288	3.500	**TM14NPSCH**
	11.5	1	4	0.620	0.625	1.392	4.000	**TM11NPSCH**

Key on E10: 2

E10: 3

E10: 29 - 34

Weldon Flat

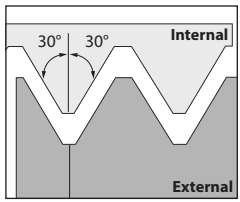
Replace the leading TM designator with TW.
(For shanks 6 mm (ⓜ) or 3/8" (ⓘ) and above.)
Ex: Cylindrical = **TM**NK0500-NPT | Weldon = **TW**NK0500-NPT
NOTE: Minimum order quantity is 2 pieces.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Solid Carbide Thread Mills

NPSF





Noncoolant

Metric (mm)

	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill D_1	Thread Mill D_2	Thread Mill L_6	Thread Mill L_1	Part No. ThreadMills USA®
ⓜ	27	1/8	3	5.95	6.00	16.00	58.00	**TM27NPSFM**
	18	1/4 and 3/8	4	9.40	10.00	22.60	84.00	**TM18NPSFM**
	14	1/2 and 3/4	4	11.94	12.00	32.70	84.00	**TM14NPSFM**
	11.5	1	4	15.75	16.00	35.35	93.00	**TM11NPSFM**

Imperial (in)

	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill D_1	Thread Mill D_2	Thread Mill L_6	Thread Mill L_1	Part No. ThreadMills USA®
ⓘ	27	1/8	3	0.245	0.250	0.630	2.500	**TM27NPSF**
	18	1/4 and 3/8	4	0.370	0.375	0.889	3.500	**TM18NPSF**
	14	1/2 and 3/4	4	0.490	0.500	1.288	3.500	**TM14NPSF**
	11.5	1	4	0.620	0.625	1.392	4.000	**TM11NPSF**

Coolant Through

Metric (mm)

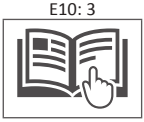
	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill D_1	Thread Mill D_2	Thread Mill L_6	Thread Mill L_1	Part No. ThreadMills USA®
ⓜ	27	1/8	3	5.95	6.00	16.00	58.00	**TM27NPSFCHM**
	18	1/4 and 3/8	4	9.40	10.00	22.60	84.00	**TM18NPSFCHM**
	14	1/2 and 3/4	4	11.94	12.00	32.70	84.00	**TM14NPSFCHM**
	11.5	1	4	15.75	16.00	35.35	93.00	**TM11NPSFCHM**

Imperial (in)

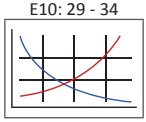
	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill D_1	Thread Mill D_2	Thread Mill L_6	Thread Mill L_1	Part No. ThreadMills USA®
ⓘ	27	1/8	3	0.245	0.250	0.630	2.375	**TM27NPSFCH**
	18	1/4 and 3/8	4	0.370	0.375	0.889	3.000	**TM18NPSFCH**
	14	1/2 and 3/4	4	0.490	0.500	1.288	3.500	**TM14NPSFCH**
	11.5	1	4	0.620	0.625	1.392	4.000	**TM11NPSFCH**

Key on E10: 2

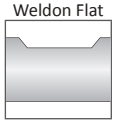
E10: 3



E10: 29 - 34



Weldon Flat



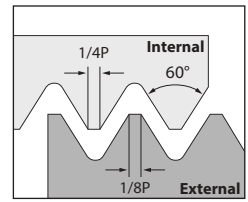
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(For shanks 6 mm (ⓜ) or 3/8" (ⓘ) and above.)
Ex: Cylindrical = **TM**NK0500-NPT | Weldon = **TW**NK0500-NPT
NOTE: Minimum order quantity is 2 pieces.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Solid Carbide Thread Mills

UN





Noncoolant

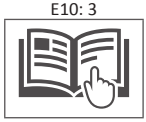
Metric (mm)

	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill D_1	Thread Mill D_2	Thread Mill L_6	Thread Mill L_1	Part No. ThreadMills USA®	Part No. AccuThread® 856
	64	#2	3*	1.65	3.00	3.20	39.00	TM08664M	TMUK0002-64M
	56	#2	3*	1.65	3.00	3.20	39.00	TM08656M	TMUK0002-56M
	48	#3	3*	1.80	3.00	3.75	39.00	TM09948M	TMUK0003-48M
	44	#5	3	2.40	3.00	4.65	39.00	TM12544M	TMUK0005-44M
	40	#4	3*	2.20	3.00	4.45	39.00	TM12540M	TMUK0004-40M
	36	#8	3	3.00	4.00	6.35	51.00	TM16436M	TMUK0008-36M
	32	#6	3	2.50	3.00	5.55	39.00	TM13832M	TMUK0006-32M
		#8	3	3.20	4.00	6.35	51.00	TM16432M	TMUK0008-32M
		#10	3	3.80	4.00	7.95	51.00	TM19032M	TMUK0010-32M
				3.80	4.00	7.95	51.00	HDTM19032M	—
		1/2	6	9.40	10.00	25.40	84.00	TM50032M	—
	28	#10	3	3.80	4.00	8.20	51.00	TM19028M	TMUK0010-28M
		1/4	3	4.75	6.00	12.70	58.00	TM25028M	TMUK0250-28M
		7/16	4	7.90	8.00	19.95	64.00	TM43828M	TMUK0438-28M
		1/2	6	9.40	10.00	25.40	84.00	TM50028M	—
	24	#10	3	3.70	4.00	8.50	51.00	TM19024M	TMUK0010-24M
			3	3.70	4.00	8.50	51.00	HDTM19024M	—
		5/16	3	5.95	6.00	16.00	58.00	TM31224M	TMUK0313-24M
		3/8	4	7.25	8.00	19.00	64.00	TM37524M	TMUK0375-24M
		1/2	6	9.40	10.00	25.40	84.00	TM50024M	—
ⓜ	20	1/4	3	4.75	6.00	12.70	58.00	TM25020M	TMUK0250-20M
				4.95	6.00	12.70	58.00	HDTM25020M	—
		7/16	4	8.75	10.00	22.85	73.00	TM43720M	TMUK0438-20M
		1/2	6	9.40	10.00	25.40	84.00	TM50020M	—
	18	5/16	3	5.95	6.00	17.00	58.00	TM31218M	TMUK0313-18M
				6.22	8.00	15.87	64.00	HDTM31218M	—
		9/16	4	9.90	10.00	22.65	73.00	TM56218M	TMUK0563-18M
	16	3/8	4	7.25	8.00	19.05	64.00	TM37516M	TMUK0375-16M
				7.62	10.00	19.05	84.00	HDTM37516M	—
		3/4	4	11.95	12.00	31.75	84.00	TM75016M	TMUK0750-16M
	14	7/16	4	7.75	8.00	20.00	64.00	TM43714M	TMUK0438-14M
		7/8	4	11.95	12.00	32.70	84.00	TM87514M	TMUK0875-14M
	13	1/2	4	9.40	10.00	23.50	73.00	TM50013M	TMUK0500-13M
				10.16	12.00	23.50	84.00	HDTM50013M	—
	12	9/16	4	9.90	10.00	23.35	73.00	TM56212M	TMUK0563-12M
		3/4	4	11.95	12.00	31.75	84.00	TM75012M	TMUK0750-12M
		1	6	18.92	20.00	38.10	105.00	TM10012M	—
	11	5/8	4	11.95	12.00	32.40	84.00	TM62511M	TMUK0625-11M
				11.95	12.00	37.00	100.00	TM62511M-XL	TMUK0625-11XLM
	10	3/4	4	11.95	12.00	33.00	84.00	TM75010M	TMUK0750-10M
				11.95	12.00	40.70	100.00	TM75010M-XL	TMUK0750-10XLM
	9	7/8	4	15.75	16.00	36.75	93.00	TM87509M	TMUK0875-9M
				15.75	16.00	45.20	100.00	TM87509M-XL	TMUK0875-9XLM
	8	1	4	15.75	16.00	35.00	93.00	TM10008M	TMUK1000-8M
			6	19.90	20.00	50.80	115.00	TM10008M-XL	TMUK1000-8XLM
	7	1-1/8	5	19.90	20.00	36.30	105.00	TM12507M	TMUK1125-7M
	6	1-3/8	5	19.90	20.00	38.10	105.00	TM13706M	TMUK1375-6M

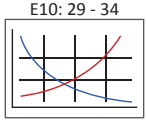
*Straight fluted.

Key on E10: 2

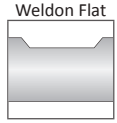
E10: 3



E10: 29 - 34



Weldon Flat



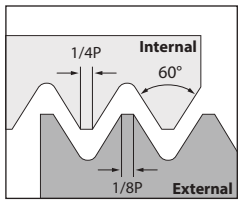
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Ex: Cylindrical = **TM**NK0500-NPT | Weldon = **TW**NK0500-NPT
NOTE: Minimum order quantity is 2 pieces.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Solid Carbide Thread Mills

UN





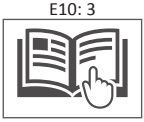
Coolant Through

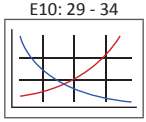
Metric (mm)

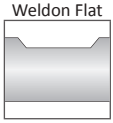
	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill D_1	Thread Mill D_2	Thread Mill L_6	Thread Mill L_1	Part No. ThreadMills USA®
ⓜ	64	#2	3*	1.65	3.00	3.20	39.00	**TM08664CHM**
	56	#2	3*	1.65	3.00	3.20	39.00	**TM08656CHM**
	48	#3	3*	1.80	3.00	3.75	39.00	**TM09948CHM**
	44	#5	3	2.40	3.00	4.65	39.00	**TM12544CHM**
	40	#4	3*	2.20	3.00	4.45	39.00	**TM12540CHM**
	36	#8	3	3.00	4.00	6.35	51.00	**TM16436CHM**
	32	#6	3	2.50	3.00	5.55	39.00	**TM13832CHM**
		#8	3	3.20	4.00	6.35	51.00	**TM16432CHM**
		#10	3	3.80	4.00	7.95	51.00	**TM19032CHM**
				3.80	4.00	7.95	51.00	**HDTM19032CHM**
		1/2	6	9.40	10.00	25.40	84.00	**TM50032CHM**
	28	#10	3	3.80	4.00	8.20	51.00	**TM19028CHM**
		1/4	3	4.75	6.00	12.70	58.00	**TM25028CHM**
		1/2	6	9.40	10.00	25.40	84.00	**TM50028CHM**
	24	#10	3	3.68	4.00	8.50	51.00	**TM19024CHM**
				3.70	4.00	8.50	51.00	**HDTM19024CHM**
		5/16	3	5.95	6.00	16.00	58.00	**TM31224CHM**
		3/8	4	7.25	8.00	19.00	64.00	**TM37524CHM**
		1/2	6	9.40	10.00	25.40	84.00	**TM50024CHM**
	20	1/4	3	4.75	6.00	12.70	58.00	**TM25020CHM**
				4.95	6.00	12.70	58.00	**HDTM25020CHM**
		7/16	4	8.75	10.00	22.85	84.00	**TM43720CHM**
		1/2	6	9.40	10.00	25.40	84.00	**TM50020CHM**
	18	5/16	3	5.95	6.00	17.00	58.00	**TM31218CHM**
				6.22	8.00	15.87	64.00	**HDTM31218CHM**
		9/16	4	9.90	10.00	22.65	84.00	**TM56218CHM**
	16	3/8	4	7.25	8.00	19.05	64.00	**TM37516CHM**
				7.62	10.00	19.05	84.00	**HDTM37516CHM**
		3/4	4	11.95	12.00	31.75	84.00	**TM75016CHM**
	14	7/16	4	7.75	8.00	20.00	64.00	**TM43714CHM**
		7/8	4	11.95	12.00	32.70	84.00	**TM87514CHM**
	13	1/2	4	9.40	10.00	23.50	84.00	**TM50013CHM**
				10.16	12.00	23.50	84.00	**HDTM50013CHM**
	12	9/16	4	9.90	10.00	23.35	84.00	**TM56212CHM**
		3/4	4	11.95	12.00	31.75	84.00	**TM75012CHM**
		1	6	18.92	20.00	38.10	105.00	**TM10012CHM**
	11	5/8	4	11.95	12.00	32.40	84.00	**TM62511CHM**
				11.95	12.00	37.00	100.00	**TM62511CHM-XL**
	10	3/4	4	11.95	12.00	33.00	84.00	**TM75010CHM**
				11.95	12.00	40.70	100.00	**TM75010CHM-XL**
	9	7/8	4	15.75	16.00	36.75	93.00	**TM87509CHM**
				15.75	16.00	45.20	100.00	**TM87509CHM-XL**
	8	1	4	15.75	16.00	35.00	93.00	**TM10008CHM**
			6	19.90	20.00	50.80	115.00	**TM10008CHM-XL**
	7	1-1/8	5	19.90	20.00	36.10	105.00	**TM12507CHM**
	6	1-3/8	5	19.90	20.00	38.10	105.00	**TM13706CHM**

*Straight fluted.

Key on E10: 2

E10: 3 

E10: 29 - 34 

Weldon Flat 

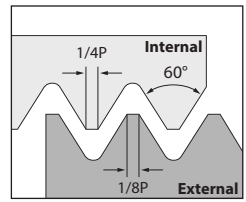
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Ex: Cylindrical = **TM**NK0500-NPT | Weldon = **TW**NK0500-NPT
NOTE: Minimum order quantity is 2 pieces.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Solid Carbide Thread Mills

UN





Noncoolant

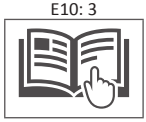
Imperial (in)

TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill D_1	Thread Mill D_2	Thread Mill L_6	Thread Mill L_1	Part No. ThreadMills USA®	Part No. AccuThread® 856
64	#2	3*	0.065	0.125	0.125	2.000	**TM08664**	—
56	#2	3*	0.065	0.125	0.125	2.000	**TM08656**	**TMUK0002-56**
48	#3	3*	0.075	0.125	0.167	2.000	**TM09948**	—
44	#5	3	0.095	0.125	0.228	2.000	**TM12544**	—
40	#4	3*	0.085	0.125	0.175	2.000	**TM12540**	**TMUK0004-40**
36	#8	3	0.115	0.125	0.250	2.000	**TM16436**	—
32	#6	3	0.100	0.125	0.218	2.000	**TM13832**	**TMUK0006-32**
	#8	3	0.115	0.125	0.250	2.000	**TM16432**	**TMUK0008-32**
	#10	3	0.120	0.125	0.312	2.000	**TM19032**	**TMUK0010-32**
			0.150	0.187	0.312	2.500	**HDTM19032**	—
	1/2	6	0.370	0.375	1.000	3.500	**TM50032**	—
28	#10	3	0.120	0.125	0.312	2.000	**TM19028**	**TMUK0010-28**
	1/4	3	0.180	0.187	0.500	2.500	**TM25028**	**TMUK0250-28**
	7/16	4	0.310	0.312	0.790	3.000	**TM43828**	**TMUK0438-28**
	1/2	6	0.370	0.375	1.000	3.500	**TM50028**	—
24	#10	3	0.120	0.125	0.312	2.000	**TM19024**	**TMUK0010-24**
		3	0.145	0.187	0.312	2.500	**HDTM19024**	—
	5/16	3	0.235	0.250	0.625	2.500	**TM31224**	**TMUK0313-24**
	3/8	4	0.285	0.312	0.750	3.000	**TM37524**	**TMUK0375-24**
	1/2	6	0.370	0.375	1.000	3.500	**TM50024**	—
20	1/4	3	0.180	0.187	0.500	2.500	**TM25020**	**TMUK0250-20**
			0.195	0.250	0.500	2.500	**HDTM25020**	—
	7/16	4	0.335	0.375	0.875	3.500	**TM43720**	**TMUK0438-20**
	1/2	6	0.370	0.375	1.000	3.500	**TM50020**	—
18	5/16	3	0.235	0.250	0.625	2.500	**TM31218**	**TMUK0313-18**
			0.245	0.312	0.625	3.000	**HDTM31218**	—
	9/16	4	0.370	0.375	0.875	3.500	**TM56218**	**TMUK0563-18**
16	3/8	4	0.285	0.312	0.750	3.000	**TM37516**	**TMUK0375-16**
			0.300	0.375	0.750	3.500	**HDTM37516**	—
	3/4	4	0.490	0.500	1.250	3.500	**TM75016**	**TMUK0750-16**
14	7/16	4	0.305	0.312	0.750	3.000	**TM43714**	**TMUK0438-14**
	7/8	4	0.490	0.500	1.250	3.500	**TM87514**	**TMUK0875-14**
13	1/2	4	0.350	0.375	0.875	3.500	**TM50013**	**TMUK0500-13**
			0.400	0.500	0.875	3.500	**HDTM50013**	—
12	9/16	4	0.370	0.375	0.875	3.500	**TM56212**	**TMUK0563-12**
	3/4	4	0.495	0.500	1.250	3.500	**TM75012**	**TMUK0750-12**
	1	6	0.745	0.750	1.500	4.000	**TM10012**	—
11	5/8	4	0.470	0.500	1.250	3.500	**TM62511**	**TMUK0625-11**
			0.470	0.500	1.455	3.500	**TM62511-XL**	**TMUK0625-11XL**
10	3/4	4	0.495	0.500	1.250	3.500	**TM75010**	**TMUK0750-10**
			0.495	0.500	1.600	4.000	**TM75010-XL**	**TMUK0750-10XL**
9	7/8	4	0.620	0.625	1.375	4.000	**TM87509**	**TMUK0875-9**
			0.620	0.625	1.778	4.000	**TM87509-XL**	**TMUK0875-9XL**
8	1	4	0.620	0.625	1.375	4.000	**TM10008**	**TMUK1000-8**
		6	0.745	0.750	2.000	4.500	**TM10008-XL**	**TMUK1000-8XL**
7	1-1/8	5	0.745	0.750	1.572	4.500	**TM12507**	—
6	1-3/8	5	0.745	0.750	1.500	4.500	**TM13706**	—

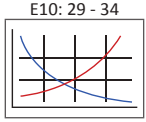
*Straight fluted.

Key on E10: 2

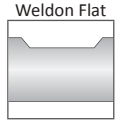
E10: 3



E10: 29 - 34



Weldon Flat



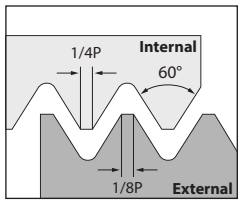
Replace the leading TM designator with TW.
(For shanks 6 mm (ⓜ) or 3/8" (ⓘ) and above.)
Ex: Cylindrical = **TM**NK0500-NPT | Weldon = **TW**NK0500-NPT
NOTE: Minimum order quantity is 2 pieces.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Solid Carbide Thread Mills

UN





Coolant Through

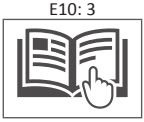
Imperial (in)

TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill D_1	Thread Mill D_2	Thread Mill L_6	Thread Mill L_1	Part No. ThreadMills USA®
64	#2	3*	0.065	0.125	0.125	1.500	**TM08664CH**
56	#2	3*	0.065	0.125	0.125	1.500	**TM08656CH**
48	#3	3*	0.075	0.125	0.167	1.500	**TM09948CH**
44	#5	3	0.095	0.125	0.228	1.500	**TM12544CH**
40	#4	3*	0.085	0.125	0.175	1.500	**TM12540CH**
36	#8	3	0.115	0.125	0.250	1.500	**TM16436CH**
32	#6	3	0.100	0.125	0.218	1.500	**TM13832CH**
	#8	3	0.115	0.125	0.250	1.500	**TM16432CH**
	#10	3	0.150	0.187	0.312	2.375	**TM19032CH**
			0.150	0.187	0.312	2.375	**HDTM19032CH**
	1/2	6	0.370	0.375	1.000	3.500	**TM50032CH**
28	#10	3	0.120	0.125	0.312	1.500	**TM19028CH**
	1/4	3	0.180	0.187	0.500	2.375	**TM25028CH**
	1/2	6	0.370	0.375	1.000	3.500	**TM50028CH**
24	#10	3	0.145	0.187	0.312	2.375	**TM19024CH**
			0.145	0.187	0.312	2.375	**HDTM19024CH**
	5/16	3	0.235	0.250	0.625	2.375	**TM31224CH**
	3/8	4	0.285	0.312	0.750	3.000	**TM37524CH**
	1/2	6	0.370	0.375	1.000	3.500	**TM50024CH**
20	1/4	3	0.180	0.187	0.500	2.375	**TM25020CH**
			0.195	0.250	0.500	2.375	**HDTM25020CH**
	7/16	4	0.335	0.375	0.875	3.000	**TM43720CH**
	1/2	6	0.370	0.375	1.000	3.500	**TM50020CH**
18	5/16	3	0.235	0.250	0.625	2.375	**TM31218CH**
			0.245	0.312	0.625	3.000	**HDTM31218CH**
	9/16	4	0.370	0.375	0.875	3.000	**TM56218CH**
16	3/8	4	0.285	0.312	0.750	3.000	**TM37516CH**
			0.300	0.375	0.750	3.000	**HDTM37516CH**
	3/4	4	0.490	0.500	1.250	3.500	**TM75016CH**
14	7/16	4	0.305	0.312	0.750	3.000	**TM43714CH**
	7/8	4	0.490	0.500	1.250	3.500	**TM87514CH**
13	1/2	4	0.350	0.375	0.875	3.000	**TM50013CH**
			0.400	0.500	0.875	3.500	**HDTM50013CH**
12	9/16	4	0.370	0.375	0.875	3.500	**TM56212CH**
	3/4	4	0.495	0.500	1.250	3.500	**TM75012CH**
	1	6	0.745	0.750	1.500	4.000	**TM10012CH**
11	5/8	4	0.470	0.500	1.250	3.500	**TM62511CH**
			0.470	0.500	1.455	3.500	**TM62511CH-XL**
10	3/4	4	0.495	0.500	1.250	3.500	**TM75010CH**
			0.495	0.500	1.600	4.000	**TM75010CH-XL**
9	7/8	4	0.620	0.625	1.375	4.000	**TM87509CH**
			0.620	0.625	1.778	4.000	**TM87509CH-XL**
8	1	4	0.620	0.625	1.375	4.000	**TM10008CH**
		6	0.745	0.750	2.000	4.500	**TM10008CH-XL**
7	1-1/8	5	0.745	0.750	1.572	4.500	**TM12507CH**
6	1-3/8	5	0.745	0.750	1.500	4.500	**TM13706CH**

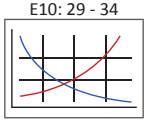
*Straight fluted.

Key on E10: 2

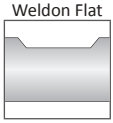
E10: 3



E10: 29 - 34



Weldon Flat



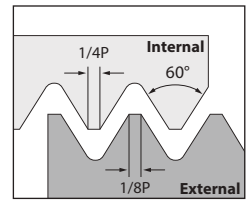
Replace the leading TM designator with TW.
(For shanks 6 mm (ⓜ) or 3/8" (ⓘ) and above.)
Ex: Cylindrical = **TM**NK0500-NPT | Weldon = **TW**NK0500-NPT
NOTE: Minimum order quantity is 2 pieces.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

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Noncoolant

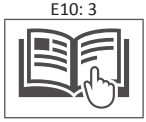
Metric (mm)

	Pitch	Min Thread Ø	Flutes	Thread Mill D_1	Thread Mill D_2	Thread Mill L_6	Thread Mill L_1	Part No. ThreadMills USA®	Part No. AccuThread® 856
	0.40	M2	3*	1.50	3.00	3.20	39.00	**TM20040M**	**TMMK0200-040M**
	0.45	M2.5	3*	1.50	3.00	3.60	39.00	**TM25045M**	**TMMK0250-045M**
	0.50	M3	3*	2.15	3.00	4.50	39.00	**TM30050M**	**TMMK0300-050M**
		M6	3	4.60	6.00	12.00	58.00	**TM60050M**	**TMMK0600-050M**
		M10	4	7.95	8.00	15.00	64.00	**TM10050M**	**TMMK1000-050M**
	0.70	M4	3	2.90	3.00	8.00	39.00	**TM40070M**	**TMMK0400-070M**
	0.75	M4.5	3	3.00	4.00	6.75	51.00	**TM45075M**	**TMMK0450-075M**
		M6	3	4.60	6.00	12.00	58.00	**TM60075M**	**TMMK0600-075M**
		M10	4	7.95	8.00	15.00	64.00	**TM10075M**	**TMMK1000-075M**
	0.80	M5	3	3.60	4.00	8.00	51.00	**TM50080M**	**TMMK0500-080M**
	1.00	M6	3	4.60	6.00	12.00	58.00	**TM60100M**	**TMMK0600-100M**
ⓜ		M12	4	9.40	10.00	20.00	73.00	**TM12100M**	**TMMK1200-100M**
	1.25	M8	3	5.90	6.00	16.25	58.00	**TM80125M**	**TMMK0800-125M**
	1.50	M10	4	7.40	8.00	19.50	64.00	**TM10150M**	**TMMK1000-150M**
		M14	4	10.90	12.00	27.00	84.00	**TM14150M**	**TMMK1400-150M**
		M18	4	11.90	12.00	31.50	84.00	**TM18150M**	**TMMK1800-150M**
		M20	5	15.75	16.00	36.00	93.00	**TM20150M**	—
	1.75	M12	4	9.40	10.00	22.71	73.00	**TM12175M**	**TMMK1200-175M**
	2.00	M14	4	10.90	12.00	28.00	84.00	**TM14200M**	**TMMK1400-200M**
		M16	4	11.95	12.00	30.00	84.00	**TM16200M**	—
	2.50	M20	4	11.90	12.00	30.00	84.00	**TM20250M**	**TMMK2000-250M**
	3.00	M24	4	15.90	16.00	36.00	93.00	**TM24300M**	**TMMK2400-300M**
	3.50	M30	4	15.75	16.00	38.50	100.00	**TM30350M**	**TMMK3000-350M**
	4.00	M36	5	19.90	20.00	40.00	105.00	**TM36400M**	**TMMK3600-400M**

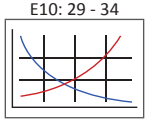
*Straight fluted.

Key on E10: 2

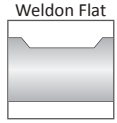
E10: 3



E10: 29 - 34



Weldon Flat



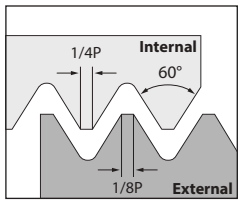
Replace the leading TM designator with TW.
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Ex: Cylindrical = **TM**NK0500-NPT | Weldon = **TW**NK0500-NPT
NOTE: Minimum order quantity is 2 pieces.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Solid Carbide Thread Mills

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Coolant Through

Metric (mm)

	Pitch	Min Thread Ø	Flutes	Thread Mill D_1	Thread Mill D_2	Thread Mill L_6	Thread Mill L_1	Part No. ThreadMills USA®
ⓜ	0.40	M2	3*	1.50	3.00	3.20	39.00	**TM20040CHM**
	0.45	M2.5	3*	1.50	3.00	3.60	39.00	**TM25045CHM**
	0.50	M3	3*	2.15	3.00	4.50	39.00	**TM30050CHM**
		M6	3	4.60	6.00	12.00	58.00	**TM60050CHM**
		M10	4	7.95	8.00	15.00	64.00	**TM10050CHM**
	0.70	M4	3	2.90	3.00	8.00	39.00	**TM40070CHM**
	0.75	M4.5	3	3.00	4.00	6.75	51.00	**TM45075CHM**
		M6	3	4.60	6.00	12.00	58.00	**TM60075CHM**
		M10	4	7.95	8.00	15.00	64.00	**TM10075CHM**
	0.80	M5	3	3.60	4.00	8.00	51.00	**TM50080CHM**
	1.00	M6	3	4.60	6.00	12.00	58.00	**TM60100CHM**
		M12	4	9.40	10.00	20.00	84.00	**TM12100CHM**
	1.25	M8	3	5.90	6.00	16.25	58.00	**TM80125CHM**
	1.50	M10	4	7.40	8.00	19.50	64.00	**TM10150CHM**
		M14	4	10.90	12.00	27.00	84.00	**TM14150CHM**
		M18	4	11.90	12.00	31.50	84.00	**TM18150CHM**
		M20	5	15.75	16.00	36.00	93.00	**TM20150CHM**
	1.75	M12	4	9.40	10.00	22.71	84.00	**TM12175CHM**
	2.00	M14	4	10.90	12.00	28.00	84.00	**TM14200CHM**
		M16	4	11.95	12.00	30.00	84.00	**TM16200CHM**
	2.50	M20	4	11.90	12.00	30.00	84.00	**TM20250CHM**
	3.00	M24	4	15.90	16.00	36.00	93.00	**TM24300CHM**
	3.50	M30	4	15.75	16.00	38.50	100.00	**TM30350CHM**
	4.00	M36	5	19.90	20.00	40.00	105.00	**TM36400CHM**

*Straight fluted.

Key on E10: 2

E10: 3

E10: 29 - 34

Weldon Flat

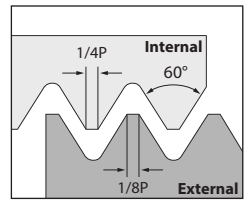
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(For shanks 6 mm (ⓜ) or 3/8" (ⓘ) and above.)
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Solid Carbide Thread Mills

ISO





Noncoolant

Imperial (in)

Pitch	Min Thread Ø	Flutes	Thread Mill D_1	Thread Mill D_2	Thread Mill L_6	Thread Mill L_1	Part No. ThreadMills USA®	Part No. AccuThread® 856
0.40	M2	3*	0.059	0.125	0.126	2.000	**TM20040**	—
0.45	M2.5	3*	0.059	0.125	0.142	2.000	**TM25045**	—
0.50	M3	3*	0.085	0.125	0.178	2.000	**TM30050**	—
	M6	3	0.181	0.187	0.473	2.500	**TM60050**	—
	M10	4	0.310	0.312	0.591	3.000	**TM10050**	—
0.70	M4	3	0.115	0.125	0.276	2.000	**TM40070**	—
0.75	M4.5	3	0.120	0.125	0.266	2.000	**TM45075**	**TMMK0450-075**
	M8	3	0.235	0.250	0.625	2.500	**TM80075**	**TMMK0800-075**
	M10	4	0.310	0.312	0.591	3.000	**TM10075**	—
0.80	M5	3	0.120	0.125	0.312	2.000	**TM50080**	**TMMK0500-080**
1.00	M6	3	0.170	0.187	0.500	2.500	**TM60100**	**TMMK0600-100**
	M12	4	0.360	0.375	0.875	3.500	**TM12100**	**TMMK1200-100**
1.25	M8	3	0.235	0.250	0.625	2.500	**TM80125**	**TMMK0800-125**
1.50	M10	4	0.300	0.312	0.750	3.000	**TM10150**	**TMMK1000-150**
	M14	4	0.370	0.375	0.875	3.500	**TM14150**	**TMMK1400-150**
	M18	4	0.490	0.500	1.250	3.500	**TM18150**	**TMMK1800-150**
	M20	5	0.620	0.625	1.418	4.000	**TM20150**	—
1.75	M12	4	0.360	0.375	0.875	3.500	**TM12175**	**TMMK1200-175**
2.00	M14	4	0.429	0.500	1.103	3.500	**TM14200**	—
	M16	4	0.470	0.500	1.250	3.500	**TM16200**	**TMMK1600-200**
2.50	M20	4	0.495	0.500	1.250	3.500	**TM20250**	**TMMK2000-250**
3.00	M24	4	0.620	0.625	1.375	4.000	**TM24300**	**TMMK2400-300**
3.50	M30	4	0.620	0.625	1.516	4.000	**TM30350**	—
4.00	M36	5	0.745	0.750	1.575	4.500	**TM36400**	—

*Straight fluted.

Key on E10: 2
E10: 3
E10: 29 - 34

Weldon Flat

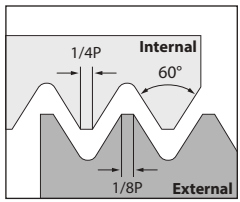
Replace the leading TM designator with TW.
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Solid Carbide Thread Mills

ISO





Coolant Through

Imperial (in)

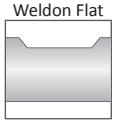
Pitch	Min Thread Ø	Flutes	Thread Mill D_1	Thread Mill D_2	Thread Mill L_6	Thread Mill L_1	Part No. ThreadMills USA®
0.40	M2	3*	0.059	0.125	0.126	1.500	**TM20040CH**
0.45	M2.5	3*	0.059	0.125	0.142	1.500	**TM25045CH**
0.50	M3	3*	0.085	0.125	0.178	1.500	**TM30050CH**
	M6	3	0.181	0.187	0.473	2.375	**TM60050CH**
	M10	4	0.310	0.312	0.591	3.000	**TM10050CH**
0.70	M4	3	0.115	0.125	0.276	1.500	**TM40070CH**
0.75	M4.5	3	0.120	0.125	0.266	1.500	**TM45075CH**
	M8	3	0.235	0.250	0.625	2.375	**TM80075CH**
	M10	4	0.310	0.312	0.591	3.000	**TM10075CH**
0.80	M5	3	0.120	0.125	0.312	1.500	**TM50080CH**
1.00	M6	3	0.170	0.187	0.500	2.375	**TM60100CH**
	M12	4	0.360	0.375	0.875	3.000	**TM12100CH**
1.25	M8	3	0.235	0.250	0.625	2.375	**TM80125CH**
1.50	M10	4	0.300	0.312	0.750	3.000	**TM10150CH**
	M14	4	0.370	0.375	0.875	3.000	**TM14150CH**
	M18	4	0.490	0.500	1.250	3.500	**TM18150CH**
	M20	5	0.620	0.625	1.418	4.000	**TM20150CH**
1.75	M12	4	0.360	0.375	0.875	3.000	**TM12175CH**
2.00	M14	4	0.429	0.500	1.103	3.500	**TM14200CH**
	M16	4	0.470	0.500	1.250	3.500	**TM16200CH**
2.50	M20	4	0.495	0.500	1.250	3.500	**TM20250CH**
3.00	M24	4	0.620	0.625	1.375	4.000	**TM24300CH**
3.50	M30	4	0.620	0.625	1.516	4.000	**TM30350CH**
4.00	M36	5	0.745	0.750	1.575	4.500	**TM36400CH**

*Straight fluted.

Key on E10: 2

E10: 3

E10: 29 - 34



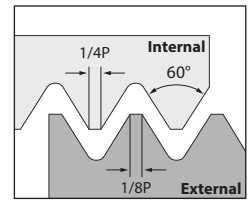
Replace the leading TM designator with TW.
(For shanks 6 mm (ⓜ) or 3/8" (ⓘ) and above.)
Ex: Cylindrical = **TM**NK0500-NPT | Weldon = **TW**NK0500-NPT
NOTE: Minimum order quantity is 2 pieces.

ⓜ = Metric (mm)
ⓘ = Imperial (in)

3-Tooth Solid Carbide Thread Mills

UN





Noncoolant

Metric (mm)

	Depth	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill D_1	D_3	D_2	L_6	L_1	Part No. AccuThread® T3
ⓜ	2xD	64	#1	3	1.40	0.89	6.00	3.81	63.00	**TM07364M-3T2X**
		56	#2	3	1.65	1.08	6.00	4.32	63.00	**TM08656M-3T2X**
		48	#3	3	1.91	1.24	6.00	5.08	63.00	**TM09948M-3T2X**
		40	#4	3	2.16	1.36	6.00	6.35	63.00	**TM11240M-3T2X**
		36	#8	3	3.30	2.42	6.00	8.89	63.00	**TM16436M-3T2X**
		32	#6	3	2.54	1.55	6.00	7.11	63.00	**TM13832M-3T2X**
			#8	3	3.20	2.21	6.00	9.40	63.00	**TM16432M-3T2X**
			#10	3	3.68	2.70	6.00	10.41	63.00	**TM19032M-3T2X**
		28	1/4	3	5.00	3.88	6.00	14.48	63.00	**TM25028M-3T2X**
		24	#10	3	3.51	2.20	6.00	10.67	63.00	**TM19024M-3T2X**
			5/16	3	6.60	5.30	8.00	17.02	64.00	**TM31224M-3T2X**
		20	1/4	3	4.75	3.18	6.00	13.97	63.00	**TM25020M-3T2X**
			7/16	4	7.92	6.36	8.00	24.89	64.00	**TM43720M-3T2X**
		18	5/16	3	5.94	4.26	6.00	17.02	63.00	**TM31218M-3T2X**
		16	3/8	3	6.71	4.76	8.00	22.10	64.00	**TM37516M-3T2X**
			3/4	4	11.94	9.88	12.00	38.10	88.90	**TM75016M-3T2X**
		14	7/16	4	7.62	5.39	8.00	24.89	64.00	**TM43714M-3T2X**
			7/8	4	15.75	13.42	16.00	44.45	100.00	**TM87514M-3T2X**
		13	1/2	4	9.14	6.76	10.00	27.43	88.90	**TM50013M-3T2X**
		12	9/16	4	10.41	7.82	12.00	31.50	88.90	**TM56212M-3T2X**
			3/4	4	11.94	9.24	12.00	38.10	88.90	**TM75012M-3T2X**
		11	5/8	4	11.94	9.01	12.00	31.75	88.90	**TM62511M-3T2X**
		10	3/4	4	11.94	8.73	12.00	38.10	88.90	**TM75010M-3T2X**
		9	7/8	4	15.75	12.20	16.00	44.45	100.00	**TM87509M-3T2X**
		8	1	4	15.75	11.77	16.00	50.80	100.00	**TM10008M-3T2X**
	3xD	40	#4	3	2.16	1.36	6.00	7.87	63.00	**TM11240M-3T3X**
		32	#6	3	2.54	1.55	6.00	10.41	63.00	**TM13832M-3T3X**
			#8	3	3.20	2.21	6.00	12.45	63.00	**TM16432M-3T3X**
			#10	3	3.68	2.70	6.00	14.99	63.00	**TM19032M-3T3X**
		28	1/4	3	5.00	3.88	6.00	19.05	63.00	**TM25028M-3T3X**
		24	#10	3	3.51	2.20	6.00	14.99	63.00	**TM19024M-3T3X**
			5/16	3	6.60	5.30	8.00	23.88	64.00	**TM31224M-3T3X**
		20	1/4	3	4.75	3.18	6.00	19.05	63.00	**TM25020M-3T3X**
			7/16	4	7.92	6.36	8.00	33.53	76.00	**TM43720M-3T3X**
		18	5/16	3	5.94	4.21	6.00	23.11	63.00	**TM31218M-3T3X**
		16	3/8	3	6.71	4.76	8.00	29.21	76.00	**TM37516M-3T3X**
			3/4	4	11.94	9.88	12.00	57.15	88.90	**TM75016M-3T3X**
		14	7/16	4	7.62	5.39	8.00	33.52	76.00	**TM43714M-3T3X**
			7/8	4	15.75	13.42	16.00	66.68	100.00	**TM87514M-3T3X**
		13	1/2	4	9.14	6.76	10.00	40.64	88.90	**TM50013M-3T3X**
		12	9/16	4	10.41	7.82	12.00	43.18	100.00	**TM56212M-3T3X**
			3/4	4	11.94	9.24	12.00	57.15	88.90	**TM75012M-3T3X**
		11	5/8	4	11.94	9.01	12.00	47.63	88.90	**TM62511M-3T3X**
		10	3/4	4	11.94	8.73	12.00	57.15	88.90	**TM75010M-3T3X**
		9	7/8	4	15.75	12.20	16.00	66.68	100.00	**TM87509M-3T3X**
		8	1	4	15.75	11.77	16.00	76.20	114.30	**TM10008M-3T3X**

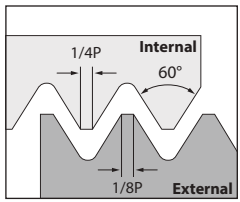
E10: 3
Key on E10: 2
E10: 29 - 34

ⓜ = Metric (mm)
ⓘ = Imperial (in)

3-Tooth Solid Carbide Thread Mills

UN





Noncoolant

Imperial (in)

Depth	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill D_1	Thread Mill D_3	Thread Mill D_2	Thread Mill L_6	Thread Mill L_1	Part No. AccuThread® T3
2xD	64	#1	3	0.055	0.035	0.250	0.150	2.500	**TM07364-3T2X**
	56	#2	3	0.065	0.042	0.250	0.170	2.500	**TM08656-3T2X**
	48	#3	3	0.075	0.049	0.250	0.200	2.500	**TM09948-3T2X**
	40	#4	3	0.085	0.054	0.250	0.250	2.500	**TM11240-3T2X**
	36	#8	3	0.130	0.095	0.250	0.350	2.500	**TM16436-3T2X**
	32	#6	3	0.100	0.061	0.250	0.280	2.500	**TM13832-3T2X**
		#8	3	0.126	0.087	0.250	0.370	2.500	**TM16432-3T2X**
		#10	3	0.145	0.106	0.250	0.410	2.500	**TM19032-3T2X**
	28	1/4	3	0.197	0.153	0.250	0.570	2.500	**TM25028-3T2X**
	24	#10	3	0.138	0.086	0.250	0.420	2.500	**TM19024-3T2X**
		5/16	3	0.260	0.208	0.312	0.670	2.500	**TM31224-3T2X**
	20	1/4	3	0.187	0.125	0.250	0.550	2.500	**TM25020-3T2X**
		7/16	4	0.312	0.250	0.312	0.980	2.500	**TM43720-3T2X**
	18	5/16	3	0.236	0.168	0.250	0.670	2.500	**TM31218-3T2X**
	16	3/8	3	0.264	0.187	0.312	0.870	2.500	**TM37516-3T2X**
		3/4	4	0.495	0.414	0.500	1.500	3.500	**TM75016-3T2X**
	14	7/16	4	0.300	0.212	0.312	0.980	2.500	**TM43714-3T2X**
		7/8	4	0.620	0.528	0.625	1.750	4.000	**TM87514-3T2X**
	13	1/2	4	0.360	0.266	0.375	1.080	3.000	**TM50013-3T2X**
	12	9/16	4	0.410	0.308	0.500	1.240	3.500	**TM56212-3T2X**
		3/4	4	0.495	0.389	0.500	1.500	3.500	**TM75012-3T2X**
	11	5/8	4	0.470	0.355	0.500	1.250	3.500	**TM62511-3T2X**
	10	3/4	4	0.495	0.369	0.500	1.500	3.500	**TM75010-3T2X**
	9	7/8	4	0.620	0.480	0.625	1.750	4.000	**TM87509-3T2X**
	8	1	4	0.620	0.463	0.625	2.000	4.000	**TM10008-3T2X**
3xD	40	#4	3	0.085	0.054	0.250	0.310	2.500	**TM11240-3T3X**
	32	#6	3	0.100	0.061	0.250	0.410	2.500	**TM13832-3T3X**
		#8	3	0.126	0.087	0.250	0.490	2.500	**TM16432-3T3X**
		#10	3	0.145	0.106	0.250	0.590	2.500	**TM19032-3T3X**
	28	1/4	3	0.197	0.153	0.250	0.750	2.500	**TM25028-3T3X**
	24	#10	3	0.138	0.086	0.250	0.590	2.500	**TM19024-3T3X**
		5/16	3	0.260	0.208	0.312	0.940	2.500	**TM31224-3T3X**
	20	1/4	3	0.187	0.125	0.250	0.750	2.500	**TM25020-3T3X**
		7/16	4	0.312	0.250	0.312	1.320	3.000	**TM43720-3T3X**
	18	5/16	3	0.236	0.168	0.250	0.910	2.500	**TM31218-3T3X**
	16	3/8	3	0.264	0.187	0.312	1.150	3.000	**TM37516-3T3X**
		3/4	4	0.495	0.414	0.500	2.250	4.000	**TM75016-3T3X**
	14	7/16	4	0.300	0.212	0.312	1.320	3.000	**TM43714-3T3X**
		7/8	4	0.620	0.528	0.625	2.625	4.000	**TM87514-3T3X**
	13	1/2	4	0.360	0.266	0.375	1.600	3.500	**TM50013-3T3X**
	12	9/16	4	0.410	0.308	0.500	1.700	4.000	**TM56212-3T3X**
		3/4	4	0.495	0.389	0.500	2.250	4.000	**TM75012-3T3X**
	11	5/8	4	0.470	0.355	0.500	1.875	4.000	**TM62511-3T3X**
	10	3/4	4	0.495	0.369	0.500	2.250	4.000	**TM75010-3T3X**
	9	7/8	4	0.620	0.480	0.625	2.625	4.000	**TM87509-3T3X**
	8	1	4	0.620	0.463	0.625	3.000	4.500	**TM10008-3T3X**

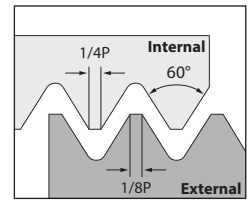
Key on E10: 2
E10: 3
E10: 29 - 34

ⓜ = Metric (mm)
ⓘ = Imperial (in)

3-Tooth Solid Carbide Thread Mills

ISO





Noncoolant

Metric (mm)

	Depth	Pitch	Min Thread Ø	Flutes	Thread Mill D_1	D_3	D_2	L_6	L_1	Part No. AccuThread® T3
m	2xD	0.35	M1.8	3	1.35	0.84	6.00	4.32	63.00	**TM18035M-3T2X**
		0.40	M2	3	1.55	1.04	6.00	4.60	63.00	**TM20040M-3T2X**
		0.45	M2.5	3	1.96	1.38	6.00	5.60	63.00	**TM25045M-3T2X**
		0.50	M3	3	2.36	1.73	6.00	6.60	63.00	**TM30050M-3T2X**
		0.60	M3.5	3	2.74	1.99	6.00	7.60	63.00	**TM35060M-3T2X**
		0.70	M4	3	3.10	2.22	6.00	8.90	63.00	**TM40070M-3T2X**
		0.75	M4.5	3	3.38	2.41	6.00	10.92	63.00	**TM45075M-3T2X**
		0.80	M5	3	3.81	2.81	6.00	12.40	63.00	**TM50080M-3T2X**
		1.00	M6	3	4.65	3.41	6.00	14.00	63.00	**TM60100M-3T2X**
		1.25	M8	3	5.94	4.40	6.00	18.00	63.00	**TM80125M-3T2X**
		1.50	M10	4	7.80	5.95	8.00	23.10	64.00	**TM10150M-3T2X**
			M14	4	9.40	7.45	10.00	27.94	88.90	**TM14150M-3T2X**
			M18	4	11.94	9.98	12.00	36.07	88.90	**TM18150M-3T2X**
		1.75	M12	4	7.92	5.78	8.00	24.00	64.00	**TM12175M-3T2X**
		2.00	M16	4	11.94	9.40	12.00	32.00	88.90	**TM16200M-3T2X**
		2.50	M20	4	14.99	11.83	16.00	39.88	100.00	**TM20250M-3T2X**
		3.00	M24	4	15.75	11.98	16.00	48.01	100.00	**TM24300M-3T2X**
	3xD	0.45	M2.5	3	1.96	1.38	6.00	7.60	63.00	**TM25045M-3T3X**
		0.50	M3	3	2.36	1.73	6.00	9.40	63.00	**TM30050M-3T3X**
		0.60	M3.5	3	2.74	1.99	6.00	11.40	63.00	**TM35060M-3T3X**
		0.70	M4	3	3.10	2.22	6.00	12.40	63.00	**TM40070M-3T3X**
		0.75	M4.5	3	3.38	2.41	6.00	13.97	63.00	**TM45075M-3T3X**
		0.80	M5	3	3.81	2.81	6.00	16.00	63.00	**TM50080M-3T3X**
		1.00	M6	3	4.65	3.41	6.00	20.10	63.00	**TM60100M-3T3X**
		1.25	M8	3	5.94	4.40	6.00	23.90	63.00	**TM80125M-3T3X**
		1.50	M10	4	7.80	5.95	8.00	28.40	64.00	**TM10150M-3T3X**
			M14	4	9.40	7.45	10.00	41.91	88.90	**TM14150M-3T3X**
			M18	4	11.94	9.98	12.00	53.85	88.90	**TM18150M-3T3X**
		1.75	M12	4	7.92	5.78	8.00	36.00	64.00	**TM12175M-3T3X**
		2.00	M16	4	11.94	9.40	12.00	49.53	88.90	**TM16200M-3T3X**
		2.50	M20	4	14.99	11.83	16.00	59.94	100.00	**TM20250M-3T3X**
		3.00	M24	4	15.75	11.98	16.00	71.88	100.00	**TM24300M-3T3X**

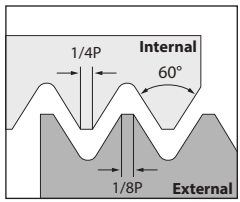
Key on E10: 2
E10: 3
E10: 29 - 34

m = Metric (mm)
i = Imperial (in)

3-Tooth Solid Carbide Thread Mills

ISO





Noncoolant

Imperial (in)

	Depth	Pitch	Min Thread Ø	Flutes	Thread Mill D_1	D_3	D_2	L_6	L_1	Part No. AccuThread® T3
	2xD	0.35	M1.8	3	0.053	0.033	0.250	0.170	2.500	**TM18035-3T2X**
		0.40	M2	3	0.061	0.041	0.250	0.180	2.500	**TM20040-3T2X**
		0.45	M2.5	3	0.077	0.055	0.250	0.220	2.500	**TM25045-3T2X**
		0.50	M3	3	0.093	0.068	0.250	0.260	2.500	**TM30050-3T2X**
		0.60	M3.5	3	0.108	0.078	0.250	0.300	2.500	**TM35060-3T2X**
		0.70	M4	3	0.122	0.088	0.250	0.350	2.500	**TM40070-3T2X**
		0.75	M4.5	3	0.133	0.095	0.250	0.430	2.500	**TM45075-3T2X**
		0.80	M5	3	0.150	0.111	0.250	0.490	2.500	**TM50080-3T2X**
		1.00	M6	3	0.183	0.134	0.250	0.550	2.500	**TM60100-3T2X**
		1.25	M8	3	0.234	0.173	0.250	0.710	2.500	**TM80125-3T2X**
		1.50	M10	4	0.307	0.234	0.312	0.910	2.500	**TM10150-3T2X**
			M14	4	0.370	0.293	0.375	1.100	3.500	**TM14150-3T2X**
			M18	4	0.495	0.418	0.500	1.420	3.500	**TM18150-3T2X**
		1.75	M12	4	0.310	0.225	0.312	0.945	2.500	**TM12175-3T2X**
		2.00	M16	4	0.470	0.370	0.500	1.260	3.500	**TM16200-3T2X**
ⓘ		2.50	M20	4	0.590	0.466	0.625	1.570	4.000	**TM20250-3T2X**
		3.00	M24	4	0.620	0.472	0.625	1.890	4.000	**TM24300-3T2X**
	3xD	0.45	M2.5	3	0.077	0.055	0.250	0.300	2.500	**TM25045-3T3X**
		0.50	M3	3	0.093	0.068	0.250	0.370	2.500	**TM30050-3T3X**
		0.60	M3.5	3	0.108	0.078	0.250	0.450	2.500	**TM35060-3T3X**
		0.70	M4	3	0.122	0.088	0.250	0.490	2.500	**TM40070-3T3X**
		0.75	M4.5	3	0.133	0.095	0.250	0.550	2.500	**TM45075-3T3X**
		0.80	M5	3	0.150	0.111	0.250	0.630	2.500	**TM50080-3T3X**
		1.00	M6	3	0.183	0.134	0.250	0.790	2.500	**TM60100-3T3X**
		1.25	M8	3	0.234	0.173	0.250	0.940	2.500	**TM80125-3T3X**
		1.50	M10	4	0.307	0.234	0.312	1.120	2.500	**TM10150-3T3X**
			M14	4	0.370	0.293	0.375	1.650	3.500	**TM14150-3T3X**
			M18	4	0.495	0.418	0.500	2.120	4.000	**TM18150-3T3X**
		1.75	M12	4	0.310	0.225	0.312	1.418	2.500	**TM12175-3T3X**
		2.00	M16	4	0.470	0.370	0.500	1.950	4.000	**TM16200-3T3X**
		2.50	M20	4	0.590	0.466	0.625	2.360	4.000	**TM20250-3T3X**
		3.00	M24	4	0.620	0.472	0.625	2.830	4.000	**TM24300-3T3X**

Key on E10: 2
E10: 3
E10: 29 - 34

ⓜ = Metric (mm)
ⓘ = Imperial (in)

Recommended Drilling Data | Metric (mm)

ACCUTHREAD® 856

ISO	Material	Hardness (BHN)	Machinability*	Speed (m/min)	Recommended Feed (mm/tooth) by Cutter Diameter							
					1.50 to 3.18	3.19 to 4.76	4.77 to 6.35	6.36 to 7.94	7.95 to 9.53	9.54 to 12.70	12.71 to 15.88	15.89 to 19.05
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 150	Easy	274	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
		150 - 200	Easy	213	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
		200 - 250	Easy	152	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	Average	274	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
		125 - 175	Average	213	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
		175 - 225	Average	183	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
		225 - 275	Average	152	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	Average	175	0.010	0.013	0.015	0.020	0.025	0.033	0.046	0.051
		175 - 225	Average	152	0.010	0.013	0.015	0.020	0.025	0.033	0.046	0.051
		225 - 275	Average	137	0.010	0.013	0.015	0.020	0.025	0.033	0.046	0.051
		275 - 325	Average	122	0.010	0.013	0.015	0.020	0.025	0.033	0.046	0.051
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	Average	175	0.010	0.013	0.015	0.020	0.025	0.033	0.046	0.051
		175 - 225	Average	152	0.010	0.013	0.015	0.020	0.025	0.033	0.046	0.051
		225 - 275	Average	137	0.010	0.013	0.015	0.020	0.025	0.033	0.046	0.051
		275 - 325	Difficult	122	0.010	0.013	0.015	0.020	0.025	0.033	0.046	0.051
		325 - 375	Difficult	114	0.010	0.013	0.015	0.020	0.025	0.033	0.046	0.051
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	Average	137	0.010	0.013	0.015	0.020	0.025	0.033	0.046	0.051
		300 - 350	Difficult	122	0.010	0.013	0.015	0.020	0.025	0.033	0.046	0.051
		350 - 400	Difficult	107	0.010	0.013	0.015	0.020	0.025	0.033	0.046	0.051
	Structural Steel A36, A285, A516, etc.	100 - 150	Average	183	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
		150 - 250	Average	152	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
		250 - 350	Difficult	137	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
M	**Stainless Steel** 303, 416, 420, etc.	135 - 185	Difficult	160	0.010	0.013	0.015	0.020	0.023	0.025	0.038	0.051
		185 - 275	Difficult	152	0.010	0.013	0.015	0.020	0.023	0.025	0.038	0.051
	Stainless Steel PH 17-4, etc.	185 - 275	Difficult	91	0.010	0.013	0.015	0.020	0.023	0.025	0.038	0.051
		275 - 325	Difficult	46	0.010	0.013	0.015	0.020	0.023	0.025	0.038	0.051
	Tool Steel H-13, H21, A-4, etc.	150 - 200	Difficult	175	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
		200 - 250	Difficult	152	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
K	**Cast Iron** Grey, Ductile, Nodular	120 - 150	Easy	206	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
		150 - 200	Easy	191	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
		200 - 220	Easy	175	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
		220 - 260	Average	152	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
		260 - 320	Average	145	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
N	**Wrought Aluminum** 6061 T6	30	Easy	335	0.013	0.015	0.023	0.025	0.038	0.051	0.064	0.076
		180	Easy	305	0.013	0.015	0.023	0.025	0.038	0.051	0.064	0.076
	Cast Aluminum** up to 10% silicon	120	Easy	191	0.013	0.015	0.023	0.025	0.038	0.051	0.064	0.076
	Brass	30 - 125	Easy	335	0.013	0.015	0.023	0.025	0.038	0.051	0.064	0.076
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 220	Difficult	37	0.008	0.010	0.015	0.020	0.023	0.025	0.030	0.038
		220 - 310	Difficult	27	0.008	0.010	0.015	0.020	0.023	0.025	0.030	0.038

NOTICE: Reduce feed and speed by 30% for tapered thread forms due to additional material removal.

*Refer to recommended pass chart on **page xiv** when referencing material machinability.

**Uncoated thread mills are recommended for cast aluminum applications.

Recommended Drilling Data | Imperial (in)

ACCUTHREAD® 856

ISO	Material	Hardness (BHN)	Machinability*	Speed (SFM)	Recommended Feed (inch/tooth) by Cutter Diameter							
					0.060" to 0.125"	0.126" to 0.188"	0.189" to 0.250"	0.251" to 0.312"	0.313" to 0.375"	0.376" to 0.500"	0.501" to 0.625"	0.626" to 0.750"
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 150	Easy	900	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		150 - 200	Easy	700	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		200 - 250	Easy	500	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	Average	900	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		125 - 175	Average	700	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		175 - 225	Average	600	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		225 - 275	Average	500	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	Average	575	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
		175 - 225	Average	500	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
		225 - 275	Average	450	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
		275 - 325	Average	400	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	Average	575	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
		175 - 225	Average	500	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
		225 - 275	Average	450	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
		275 - 325	Difficult	400	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
		325 - 375	Difficult	375	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	Average	450	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
		300 - 350	Difficult	400	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
		350 - 400	Difficult	350	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
	Structural Steel A36, A285, A516, etc.	100 - 150	Average	600	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		150 - 250	Average	500	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		250 - 350	Difficult	450	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
M	**Stainless Steel** 303, 416, 420, etc.	135 - 185	Difficult	525	0.0004	0.0005	0.0006	0.0008	0.0009	0.0010	0.0015	0.0020
		185 - 275	Difficult	500	0.0004	0.0005	0.0006	0.0008	0.0009	0.0010	0.0015	0.0020
	Stainless Steel PH 17-4, etc.	185 - 275	Difficult	300	0.0004	0.0005	0.0006	0.0008	0.0009	0.0010	0.0015	0.0020
		275 - 325	Difficult	150	0.0004	0.0005	0.0006	0.0008	0.0009	0.0010	0.0015	0.0020
	Tool Steel H-13, H21, A-4, etc.	150 - 200	Difficult	575	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		200 - 250	Difficult	500	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
K	**Cast Iron** Grey, Ductile, Nodular	120 - 150	Easy	675	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		150 - 200	Easy	625	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		200 - 220	Easy	575	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		220 - 260	Average	500	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		260 - 320	Average	475	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
N	**Wrought Aluminum** 6061 T6	30	Easy	1100	0.0005	0.0006	0.0009	0.0010	0.0015	0.0020	0.0025	0.0030
		180	Easy	1000	0.0005	0.0006	0.0009	0.0010	0.0015	0.0020	0.0025	0.0030
	Cast Aluminum** up to 10% silicon	120	Easy	625	0.0005	0.0006	0.0009	0.0010	0.0015	0.0020	0.0025	0.0030
	Brass	30 - 125	Easy	1100	0.0005	0.0006	0.0009	0.0010	0.0015	0.0020	0.0025	0.0030
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 220	Difficult	120	0.0003	0.0004	0.0006	0.0008	0.0009	0.0010	0.0012	0.0015
		220 - 310	Difficult	90	0.0003	0.0004	0.0006	0.0008	0.0009	0.0010	0.0012	0.0015

NOTICE: Reduce feed and speed by 30% for tapered thread forms due to additional material removal.

*Refer to recommended pass chart on **page xiv** when referencing material machinability.

**Uncoated thread mills are recommended for cast aluminum applications.

Recommended Drilling Data | Metric (mm)

THREADMILLS USA®

ISO	Material	Hardness (BHN)	Machinability*	Speed (m/min)	Recommended Feed (mm/tooth) by Cutter Diameter							
					1.50 to 3.18	3.19 to 4.76	4.77 to 6.35	6.36 to 7.94	7.95 to 9.53	9.54 to 12.70	12.71 to 15.88	15.89 to 19.05
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 150	Easy	221	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
		150 - 200	Easy	168	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
		200 - 250	Easy	137	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	Average	221	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
		125 - 175	Average	168	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
		175 - 225	Average	137	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
		225 - 275	Average	122	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	Average	137	0.010	0.013	0.015	0.020	0.025	0.038	0.046	0.051
		175 - 225	Average	122	0.010	0.013	0.015	0.020	0.025	0.038	0.046	0.051
		225 - 275	Average	107	0.010	0.013	0.015	0.020	0.025	0.038	0.046	0.051
		275 - 325	Average	91	0.010	0.013	0.015	0.020	0.025	0.038	0.046	0.051
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	Average	137	0.010	0.013	0.015	0.020	0.025	0.038	0.046	0.051
		175 - 225	Average	122	0.010	0.013	0.015	0.020	0.025	0.038	0.046	0.051
		225 - 275	Average	107	0.010	0.013	0.015	0.020	0.025	0.038	0.046	0.051
		275 - 325	Difficult	91	0.010	0.013	0.015	0.020	0.025	0.038	0.046	0.051
		325 - 375	Difficult	76	0.010	0.013	0.015	0.020	0.025	0.038	0.046	0.051
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	Average	107	0.010	0.013	0.015	0.020	0.025	0.038	0.046	0.051
		300 - 350	Difficult	91	0.010	0.013	0.015	0.020	0.025	0.038	0.046	0.051
		350 - 400	Difficult	76	0.010	0.013	0.015	0.020	0.025	0.038	0.046	0.051
	Structural Steel A36, A285, A516, etc.	100 - 150	Average	137	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
		150 - 250	Average	122	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
		250 - 350	Difficult	91	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
M	**Stainless Steel** 303, 416, 420, etc.	135 - 185	Difficult	130	0.010	0.013	0.015	0.020	0.023	0.025	0.038	0.051
		185 - 275	Difficult	122	0.010	0.013	0.015	0.020	0.023	0.025	0.038	0.051
	Stainless Steel PH 17-4, etc.	185 - 275	Difficult	76	0.010	0.013	0.015	0.020	0.023	0.025	0.038	0.051
		275 - 325	Difficult	38	0.010	0.013	0.015	0.020	0.023	0.025	0.038	0.051
	Tool Steel H-13, H21, A-4, etc.	150 - 200	Difficult	99	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
		200 - 250	Difficult	69	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
K	**Cast Iron** Grey, Ductile, Nodular	120 - 150	Easy	168	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
		150 - 200	Easy	152	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
		200 - 220	Easy	137	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
		220 - 260	Average	122	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
		260 - 320	Average	114	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
N	**Wrought Aluminum** 6061 T6	30	Easy	305	0.013	0.015	0.023	0.025	0.038	0.051	0.064	0.076
		180	Easy	274	0.013	0.015	0.023	0.025	0.038	0.051	0.064	0.076
	Cast Aluminum** up to 10% silicon	120	Easy	152	0.013	0.015	0.023	0.025	0.038	0.051	0.064	0.076
	Brass	30 - 125	Easy	305	0.013	0.015	0.023	0.025	0.038	0.051	0.064	0.076
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 220	Difficult	30	0.008	0.010	0.015	0.020	0.023	0.025	0.030	0.038
		220 - 310	Difficult	23	0.008	0.010	0.015	0.020	0.023	0.025	0.030	0.038

NOTICE: Reduce feed and speed by 30% for tapered thread forms due to additional material removal.

*Refer to recommended pass chart on **page xiv** when referencing material machinability.

**Uncoated thread mills are recommended for cast aluminum applications.

Recommended Drilling Data | Imperial (in)

THREADMILLS USA®

ISO	Material	Hardness (BHN)	Machinability*	Speed (SFM)	Recommended Feed (inch/tooth) by Cutter Diameter							
					0.060" to 0.125"	0.126" to 0.188"	0.189" to 0.250"	0.251" to 0.312"	0.313" to 0.375"	0.376" to 0.500"	0.501" to 0.625"	0.626" to 0.750"
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 150	Easy	725	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		150 - 200	Easy	550	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		200 - 250	Easy	450	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	Average	725	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		125 - 175	Average	550	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		175 - 225	Average	450	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		225 - 275	Average	400	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	Average	450	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
		175 - 225	Average	400	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
		225 - 275	Average	350	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
		275 - 325	Average	300	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	Average	450	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
		175 - 225	Average	400	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
		225 - 275	Average	350	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
		275 - 325	Difficult	300	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
		325 - 375	Difficult	250	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	Average	350	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
		300 - 350	Difficult	300	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
		350 - 400	Difficult	250	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
	Structural Steel A36, A285, A516, etc.	100 - 150	Average	450	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		150 - 250	Average	400	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		250 - 350	Difficult	300	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
M	**Stainless Steel** 303, 416, 420, etc.	135 - 185	Difficult	425	0.0004	0.0005	0.0006	0.0008	0.0009	0.0010	0.0015	0.0020
		185 - 275	Difficult	400	0.0004	0.0005	0.0006	0.0008	0.0009	0.0010	0.0015	0.0020
	Stainless Steel PH 17-4, etc.	185 - 275	Difficult	250	0.0004	0.0005	0.0006	0.0008	0.0009	0.0010	0.0015	0.0020
		275 - 325	Difficult	125	0.0004	0.0005	0.0006	0.0008	0.0009	0.0010	0.0015	0.0020
	Tool Steel H-13, H21, A-4, etc.	150 - 200	Difficult	325	0.0004	0.0005	0.0007	0.0008	0.0010	0.0015	0.0020	0.0025
		200 - 250	Difficult	225	0.0004	0.0005	0.0007	0.0008	0.0010	0.0015	0.0020	0.0025
K	**Cast Iron** Grey, Ductile, Nodular	120 - 150	Easy	550	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		150 - 200	Easy	500	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		200 - 220	Easy	450	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		220 - 260	Average	400	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		260 - 320	Average	375	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
N	**Wrought Aluminum** 6061 T6	30	Easy	1000	0.0005	0.0006	0.0009	0.0010	0.0015	0.0020	0.0025	0.0030
		180	Easy	900	0.0005	0.0006	0.0009	0.0010	0.0015	0.0020	0.0025	0.0030
	Cast Aluminum** up to 10% silicon	120	Easy	500	0.0005	0.0006	0.0009	0.0010	0.0015	0.0020	0.0025	0.0030
	Brass	30 - 125	Easy	1000	0.0005	0.0006	0.0009	0.0010	0.0015	0.0020	0.0025	0.0030
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 220	Difficult	100	0.0003	0.0004	0.0006	0.0008	0.0009	0.0010	0.0012	0.0015
		220 - 310	Difficult	75	0.0003	0.0004	0.0006	0.0008	0.0009	0.0010	0.0012	0.0015

NOTICE: Reduce feed and speed by 30% for tapered thread forms due to additional material removal.

*Refer to recommended pass chart on **page xiv** when referencing material machinability.

**Uncoated thread mills are recommended for cast aluminum applications.

Recommended Drilling Data | Metric (mm)

ACCUTHREAD® T3

ISO	Material	Hardness (BHN)	Speed (m/min)	Recommended Feed (mm/tooth) by Cutter Diameter						
				1.40 to 3.17	3.18 to 4.77	4.78 to 6.35	6.36 to 7.92	7.93 to 9.52	9.53 to 12.70	12.71 to 19.05
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 150	115	0.020	0.025	0.035	0.045	0.050	0.075	0.090
		150 - 200	85	0.020	0.025	0.035	0.045	0.050	0.075	0.090
		200 - 250	70	0.020	0.025	0.035	0.045	0.050	0.075	0.090
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	115	0.020	0.025	0.035	0.045	0.050	0.075	0.090
		125 - 175	85	0.020	0.025	0.035	0.045	0.050	0.075	0.090
		175 - 225	70	0.020	0.025	0.035	0.045	0.050	0.075	0.090
		225 - 275	60	0.020	0.025	0.035	0.045	0.050	0.075	0.090
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	70	0.020	0.025	0.030	0.040	0.050	0.065	0.080
		175 - 225	60	0.020	0.025	0.030	0.040	0.050	0.065	0.080
		225 - 275	50	0.020	0.025	0.030	0.040	0.050	0.065	0.080
		275 - 325	45	0.020	0.025	0.030	0.040	0.050	0.065	0.080
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	70	0.020	0.025	0.030	0.040	0.050	0.065	0.080
		175 - 225	60	0.020	0.025	0.030	0.040	0.050	0.065	0.080
		225 - 275	50	0.020	0.025	0.030	0.040	0.050	0.065	0.080
		275 - 325	45	0.020	0.025	0.030	0.040	0.050	0.065	0.080
		325 - 375	38	0.020	0.025	0.030	0.040	0.050	0.065	0.080
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	50	0.020	0.025	0.030	0.040	0.050	0.065	0.080
		300 - 350	45	0.020	0.025	0.030	0.040	0.050	0.065	0.080
		350 - 400	38	0.020	0.025	0.030	0.040	0.050	0.065	0.080
	Structural Steel A36, A285, A516, etc.	100 - 150	70	0.020	0.025	0.035	0.045	0.050	0.075	0.090
		150 - 250	60	0.020	0.025	0.035	0.045	0.050	0.075	0.090
		250 - 350	45	0.020	0.025	0.035	0.045	0.050	0.075	0.090
	Tool Steel H-13, H21, A-4, etc.	150 - 200	50	0.020	0.025	0.030	0.040	0.050	0.065	0.080
		200 - 250	38	0.020	0.025	0.030	0.040	0.050	0.065	0.080
M	**Stainless Steel** 416, 420, etc.	185 - 275	70	0.020	0.025	0.030	0.040	0.045	0.050	0.065
		275 - 350	60	0.020	0.025	0.030	0.040	0.045	0.050	0.065
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	38	0.020	0.025	0.030	0.040	0.045	0.050	0.065
		185 - 275	23	0.020	0.025	0.030	0.040	0.045	0.050	0.065
	Super Duplex Stainless Steel	135 - 185	38	0.015	0.020	0.030	0.040	0.045	0.050	0.065
		185 - 275	23	0.015	0.020	0.030	0.040	0.045	0.050	0.065
K	**Cast Iron** Grey, Ductile, Nodular	120 - 150	85	0.020	0.025	0.035	0.045	0.050	0.075	0.090
		150 - 200	75	0.020	0.025	0.035	0.045	0.050	0.075	0.090
		200 - 220	70	0.020	0.025	0.035	0.045	0.050	0.075	0.090
		220 - 260	60	0.020	0.025	0.035	0.045	0.050	0.075	0.090
		260 - 320	60	0.020	0.025	0.035	0.045	0.050	0.075	0.090
N	**Wrought Aluminum** 6061 T6	30	150	0.025	0.030	0.045	0.050	0.075	0.100	0.120
		180	135	0.025	0.030	0.045	0.050	0.075	0.100	0.120
	Cast Aluminum*	30 - 180	75	0.025	0.030	0.045	0.050	0.075	0.100	0.120
	Brass	30 - 100	150	0.025	0.030	0.045	0.050	0.075	0.100	0.120
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 220	30	0.015	0.020	0.030	0.040	0.045	0.050	0.065
		220 - 310	23	0.015	0.020	0.030	0.040	0.045	0.050	0.065
	Titanium Alloy	140 - 220	30	0.015	0.020	0.030	0.040	0.045	0.050	0.065
		220 - 310	23	0.015	0.020	0.030	0.040	0.045	0.050	0.065
	Aerospace Alloy S82	185 - 275	30	0.015	0.020	0.030	0.040	0.045	0.050	0.065
		275 - 350	23	0.015	0.020	0.030	0.040	0.045	0.050	0.065
H	**Hardened Steels**	450 - 500	50	0.015	0.020	0.030	0.040	0.045	0.050	0.065
		500 - 550	38	0.015	0.020	0.030	0.040	0.045	0.050	0.065

NOTICE: Reduce feed and speed by 30% for tapered thread forms due to additional material removal.
*Uncoated thread mills are recommended for cast aluminum applications.

Recommended Drilling Data | Imperial (in)

ACCUTHREAD® T3

ISO	Material	Hardness (BHN)	Speed (SFM)	Recommended Feed (inch/tooth) by Cutter Diameter						
				0.060" to 0.125"	0.126" to 0.188"	0.189" to 0.250"	0.251" to 0.312"	0.313" to 0.375"	0.376" to 0.500"	0.501" to 0.750"
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 150	375	0.0008	0.0010	0.0014	0.0018	0.0020	0.0030	0.0035
		150 - 200	275	0.0008	0.0010	0.0014	0.0018	0.0020	0.0030	0.0035
		200 - 250	225	0.0008	0.0010	0.0014	0.0018	0.0020	0.0030	0.0035
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	375	0.0008	0.0010	0.0014	0.0018	0.0020	0.0030	0.0035
		125 - 175	275	0.0008	0.0010	0.0014	0.0018	0.0020	0.0030	0.0035
		175 - 225	225	0.0008	0.0010	0.0014	0.0018	0.0020	0.0030	0.0035
		225 - 275	200	0.0008	0.0010	0.0014	0.0018	0.0020	0.0030	0.0035
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	225	0.0008	0.0010	0.0012	0.0016	0.0020	0.0026	0.0031
		175 - 225	200	0.0008	0.0010	0.0012	0.0016	0.0020	0.0026	0.0031
		225 - 275	175	0.0008	0.0010	0.0012	0.0016	0.0020	0.0026	0.0031
		275 - 325	150	0.0008	0.0010	0.0012	0.0016	0.0020	0.0026	0.0031
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	225	0.0008	0.0010	0.0012	0.0016	0.0020	0.0026	0.0031
		175 - 225	200	0.0008	0.0010	0.0012	0.0016	0.0020	0.0026	0.0031
		225 - 275	175	0.0008	0.0010	0.0012	0.0016	0.0020	0.0026	0.0031
		275 - 325	150	0.0008	0.0010	0.0012	0.0016	0.0020	0.0026	0.0031
		325 - 375	125	0.0008	0.0010	0.0012	0.0016	0.0020	0.0026	0.0031
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	175	0.0008	0.0010	0.0012	0.0016	0.0020	0.0026	0.0031
		300 - 350	150	0.0008	0.0010	0.0012	0.0016	0.0020	0.0026	0.0031
		350 - 400	125	0.0008	0.0010	0.0012	0.0016	0.0020	0.0026	0.0031
	Structural Steel A36, A285, A516, etc.	100 - 150	225	0.0008	0.0010	0.0014	0.0018	0.0020	0.0030	0.0035
		150 - 250	200	0.0008	0.0010	0.0014	0.0018	0.0020	0.0030	0.0035
		250 - 350	150	0.0008	0.0010	0.0014	0.0018	0.0020	0.0030	0.0035
	Tool Steel H-13, H21, A-4, etc.	150 - 200	175	0.0008	0.0010	0.0012	0.0016	0.0020	0.0026	0.0031
		200 - 250	125	0.0008	0.0010	0.0012	0.0016	0.0020	0.0026	0.0031
M	**Stainless Steel** 416, 420, etc.	185 - 275	225	0.0008	0.0010	0.0012	0.0016	0.0018	0.0020	0.0025
		275 - 350	200	0.0008	0.0010	0.0012	0.0016	0.0018	0.0020	0.0025
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	125	0.0008	0.0010	0.0012	0.0016	0.0018	0.0020	0.0025
		185 - 275	75	0.0008	0.0010	0.0012	0.0016	0.0018	0.0020	0.0025
	Super Duplex Stainless Steel	135 - 185	125	0.0006	0.0008	0.0012	0.0016	0.0018	0.0020	0.0025
		185 - 275	75	0.0006	0.0008	0.0012	0.0016	0.0018	0.0020	0.0025
K	**Cast Iron** Grey, Ductile, Nodular	120 - 150	275	0.0008	0.0010	0.0014	0.0018	0.0020	0.0030	0.0035
		150 - 200	250	0.0008	0.0010	0.0014	0.0018	0.0020	0.0030	0.0035
		200 - 220	225	0.0008	0.0010	0.0014	0.0018	0.0020	0.0030	0.0035
		220 - 260	200	0.0008	0.0010	0.0014	0.0018	0.0020	0.0030	0.0035
		260 - 320	200	0.0008	0.0010	0.0014	0.0018	0.0020	0.0030	0.0035
N	**Wrought Aluminum** 6061 T6	30	500	0.0010	0.0012	0.0018	0.0020	0.0030	0.0040	0.0048
		180	450	0.0010	0.0012	0.0018	0.0020	0.0030	0.0040	0.0048
	Cast Aluminum**	30 - 180	250	0.0010	0.0012	0.0018	0.0020	0.0030	0.0040	0.0048
	Brass	30 - 100	500	0.0010	0.0012	0.0018	0.0020	0.0030	0.0040	0.0048
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 220	100	0.0006	0.0008	0.0012	0.0016	0.0018	0.0020	0.0025
		220 - 310	75	0.0006	0.0008	0.0012	0.0016	0.0018	0.0020	0.0025
	Titanium Alloy	140 - 220	100	0.0006	0.0008	0.0012	0.0016	0.0018	0.0020	0.0025
		220 - 310	75	0.0006	0.0008	0.0012	0.0016	0.0018	0.0020	0.0025
	Aerospace Alloy S82	185 - 275	100	0.0006	0.0008	0.0012	0.0016	0.0018	0.0020	0.0025
		275 - 350	75	0.0006	0.0008	0.0012	0.0016	0.0018	0.0020	0.0025
H	**Hardened Steels**	450 - 500	175	0.0006	0.0008	0.0012	0.0016	0.0018	0.0020	0.0025
		500 - 550	125	0.0006	0.0008	0.0012	0.0016	0.0018	0.0020	0.0025

NOTICE: Reduce feed and speed by 30% for tapered thread forms due to additional material removal.

*Uncoated thread mills are recommended for cast aluminum applications.

SECTION

E20-ITM

Indexable Thread Mills



Indexable Thread Mills

Designed to change | Built to perform

With holders manufactured from stainless steel and engineered to dampen vibration, our indexable thread milling product line provides customers with a versatile and cost-effective range of solutions for demanding applications. Combining the flexibility of replaceable inserts with high-precision performance, these indexable thread mills deliver reduced tooling costs and consistent thread quality across an extensive range of thread forms.

- Bolt-in Style
- Pin Style

Applicable Industries

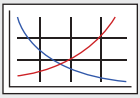
- Aerospace
- Agriculture
- Automotive
- Defense
- General Production
- Heavy Equipment
- Hydraulics
- Marine
- Medical
- Oil and Gas
- Renewable Energy/ Energy
- Tool, Mold, and Die

Reference Icons

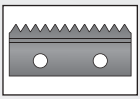
The following icons will appear throughout the catalog to help you navigate between products.



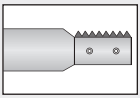
Setup / Assembly Information
Detailed instructions and information regarding the corresponding part(s).



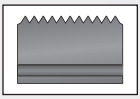
Recommended Cutting Data
Speed and feed recommendations for optimum and safe drilling.



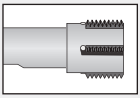
Bolt-in Style Inserts
Refers to the available bolt-in style thread mill insert options.



Bolt-in Style Insert Holders
Refers to the range of holder options available for bolt-in style inserts.



Pin Style Inserts
Refers to the available pin style thread mill insert options.



Pin Style Insert Holders
Refers to the range of holder options available for pin style inserts.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

WARNING means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

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Indexable Thread Mill Overview

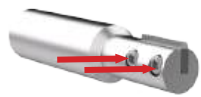
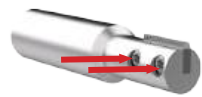
Styles and Thread Forms



Bolt-in Style

- Replaceable inserts allow for quick setups and tool changes to keep the production process moving smoothly.
- Inserts are available with AM210® coating, which increases tool life.
- Available with 1 flute only.
- Multiple thread form styles are available.
- Tapered thread forms: NPT, NPTF, BSPT.
- Straight thread forms: BSPP, UN, UNJ, ISO.

Bolt-in Style Indexable Thread Mill Assembly

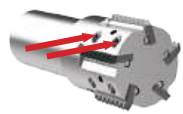
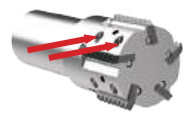
			
Step 1: Slide the thread mill insert into the insert holder slot.	**Step 2:** Hand tighten insert screws to hold insert in place.	**Step 3:** Tighten each screw to 1.5 N·m (1.1 ft-lbs).	**Step 4:** Tighten each screw to 3.5 N·m (2.6 ft-lbs).



Pin Style

- Replaceable inserts allow for quick setups and tool changes to keep the production process moving smoothly.
- Inserts are available with AM210® coating, which increases tool life.
- Holders available in 2 styles: Weldon shank and shell mill.
- Weldon shank holders available with 1, 2, 3, and 5 flutes.
- Shell mill holders available with 6, 7, and 8 flutes.
- Thread forms available: NPT, NPTF, BSPT, BSPP, API-ROUND, ACME, UN, UNJ, ISO.

Pin Style Indexable Thread Mill Assembly

				
Step 1: Slide the thread mill insert into the insert holder slot.	**Step 2:** Slide the pin into the pin holder slot to hold the insert in place.	**Step 3:** Hand tighten insert screws to hold insert in place. If there are three insert screws, start tightening the middle screw, then the two outer screws. Repeat for each insert.	**Step 4:** Following the order from step three, tighten each screw to 1.5 N·m (1.1 ft-lbs).	**Step 5:** Following the order from step three, tighten each screw to 3.5 N·m (2.6 ft-lbs).

Indexable Thread Mill Overview

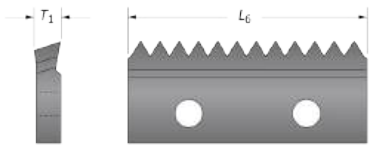
Product Nomenclature

AccuThread® 856 Indexable Inserts

TP	075	K	-	UN		32	I
Insert Style	**Insert Length**	**Coating**		**Thread Class**		**Thread Pitch**	**Thread Style**
TP = Bolt-in **TN** = Pin style	**075** = 0.75" **100** = 1.00" **150** = 1.50"	**K** = AM210® **A** = TiAlN **U** = Uncoated		**UN** = UN **UNJ** = UNJ **NPT** = NPT **NPTF** = NPTF **BSPP** = BSPP	**BSPT** = BSPT **M** = ISO **FA** = Full ACME **AP** = API Round	**20** = UN **1.0** = ISO	**I** = Internal **E** = External

Reference Key

Symbol	Attribute
T_1	Insert Thickness
L_6	Length of insert

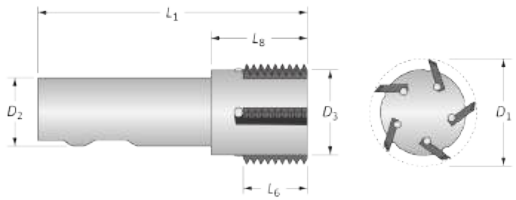


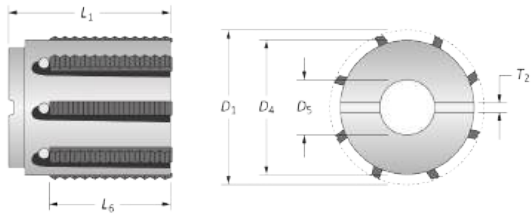
AccuThread® 856 Indexable Holders

THT		-	0400	-	1F	075	M
Holder Style			**Diameter**		**Flute Designation**	**Insert Length**	**Shank Designation**
Bolt-in Style	**Pin Style**						
THT = Tapered head **THN** = Straight head	**THP** = Weldon (positive) **TNR** = Weldon (neutral) **TSN** = Shell mill (positive) **TSR** = Shell mill (neutral)		**0400** = 0.400"		**1F** = 1 flute **2F** = 2 flutes **3F** = 3 flutes **5F** = 5 flutes **6F** = 6 flutes **7F** = 7 flutes **8F** = 8 flutes	**075** = 0.75" **100** = 1.00" **150** = 1.50"	**Blank** = Imperial **M** = Metric

Reference Key

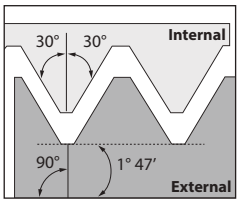
Symbol	Attribute
D_1	Maximum cutter diameter
D_1*	Oversized cutter diameter
D_2	Shank diameter
D_3	Pilot diameter
D_4	Body diameter (shell mill)
D_5	Bore diameter (shell mill)
L_1	Overall length
L_6	Length of insert
L_8	Flute Length
T_2	Slot width (shell mill)



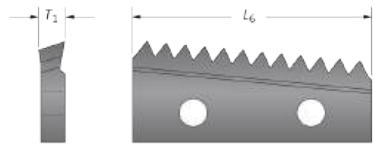


AccuThread® 856 Bolt-in Style

Inserts

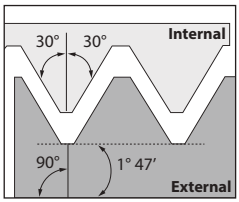




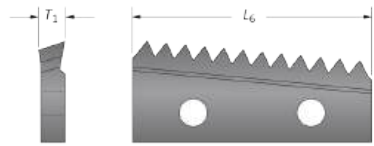


NPT
Internal/External

TPI (Pitch)	Insert L_6 Metric (mm)	Insert L_6 Imperial (in)	Insert T_1 Metric (mm)	Insert T_1 Imperial (in)	Part No. NPT Internal/External
18	19.05	0.750	2.03	0.080	**TP075K-NPT18**
14	25.40	1.000	3.56	0.140	**TP100K-NPT14**







NPTF
Internal/External

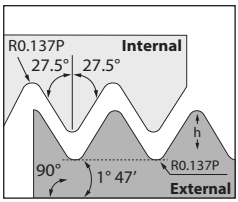
TPI (Pitch)	Insert L_6 Metric (mm)	Insert L_6 Imperial (in)	Insert T_1 Metric (mm)	Insert T_1 Imperial (in)	Part No. NPTF Internal/External
18	19.05	0.750	2.03	0.080	**TP075K-NPTF18**
14	25.40	1.000	3.56	0.140	**TP100K-NPTF14**

Key on E20: 2
E20: 3
E20: 19 - 22
E20: 10

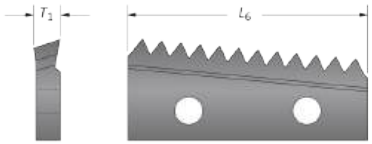
Inserts sold in quantities of 2.

AccuThread® 856 Bolt-in Style

Inserts



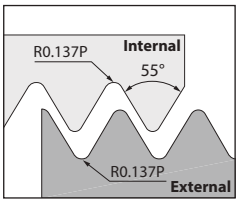




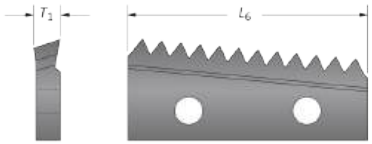
BSPT

Internal/External

TPI (Pitch)	Insert L_6 Metric (mm)	Insert L_6 Imperial (in)	Insert T_1 Metric (mm)	Insert T_1 Imperial (in)	Part No. BSPT Internal/External
19	19.05	0.750	2.03	0.080	**TP075K-BSPT19**
	25.40	1.000	3.56	0.140	**TP100K-BSPT19**
14	25.40	1.000	3.56	0.140	**TP100K-BSPT14**







BSPP

Internal/External

TPI (Pitch)	Insert L_6 Metric (mm)	Insert L_6 Imperial (in)	Insert T_1 Metric (mm)	Insert T_1 Imperial (in)	Part No. BSPP Internal/External
19	19.05	0.750	2.03	0.080	**TP075K-BSPP19**
	25.40	1.000	3.56	0.140	**TP100K-BSPP19**
14	25.40	1.000	3.56	0.140	**TP100K-BSPP14**

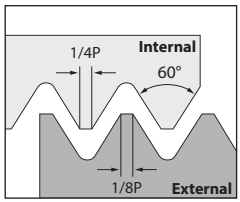
E20

Key on E20: 2
E20: 3
E20: 19 - 22
E20: 10

Inserts sold in quantities of 2.

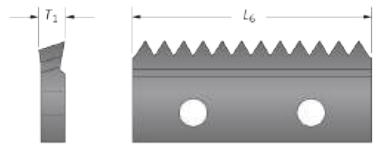
AccuThread® 856 Bolt-in Style

Inserts



UN
Internal & External





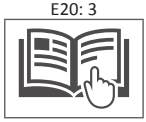
TPI (Pitch)	Insert L_6 Metric (mm)	Insert L_6 Imperial (in)	Insert T_1 Metric (mm)	Insert T_1 Imperial (in)	Part No. UN Internal
32	19.05	0.750	2.03	0.080	**TP075K-UN32I**
	25.40	1.000	3.56	0.140	**TP100K-UN32I**
24	19.05	0.750	2.03	0.080	**TP075K-UN24I**
	25.40	1.000	3.56	0.140	**TP100K-UN24I**
20	19.05	0.750	2.03	0.080	**TP075K-UN20I**
	25.40	1.000	3.56	0.140	**TP100K-UN20I**
18	19.05	0.750	2.03	0.080	**TP075K-UN18I**
	25.40	1.000	3.56	0.140	**TP100K-UN18I**
16	19.05	0.750	2.03	0.080	**TP075K-UN16I**
	25.40	1.000	3.56	0.140	**TP100K-UN16I**
14	25.40	1.000	3.56	0.140	**TP100K-UN14I**
13	25.40	1.000	3.56	0.140	**TP100K-UN13I**
12	25.40	1.000	3.56	0.140	**TP100K-UN12I**
10	25.40	1.000	3.56	0.140	**TP100K-UN10I***

TPI (Pitch)	Insert L_6 Metric (mm)	Insert L_6 Imperial (in)	Insert T_1 Metric (mm)	Insert T_1 Imperial (in)	Part No. NPT External
32	19.05	0.750	2.03	0.080	**TP075K-UN32E**
	25.40	1.000	3.56	0.140	**TP100K-UN32E**
24	19.05	0.750	2.03	0.080	**TP075K-UN24E**
	25.40	1.000	3.56	0.140	**TP100K-UN24E**
20	19.05	0.750	2.03	0.080	**TP075K-UN20E**
	25.40	1.000	3.56	0.140	**TP100K-UN20E**
18	19.05	0.750	2.03	0.080	**TP075K-UN18E**
	25.40	1.000	3.56	0.140	**TP100K-UN18E**
16	19.05	0.750	2.03	0.080	**TP075K-UN16E**
	25.40	1.000	3.56	0.140	**TP100K-UN16E**
14	25.40	1.000	3.56	0.140	**TP100K-UN14E**
13	25.40	1.000	3.56	0.140	**TP100K-UN13E**
12	25.40	1.000	3.56	0.140	**TP100K-UN12E**
10	1.000	25.40	3.56	0.140	**TP100K-UN10E***

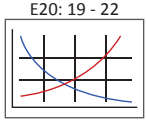
*This item is only used with THN-0611-1F100. The reduced body allows a 3/4"-10 UN/UNJ to be produced.

Key on E20: 2

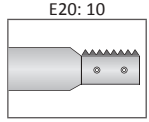
E20: 3



E20: 19 - 22



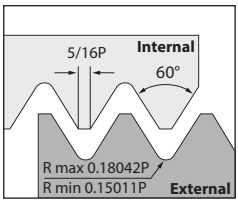
E20: 10



Inserts sold in quantities of 2.

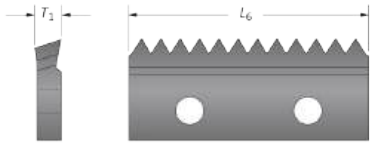
AccuThread® 856 Bolt-in Style

Inserts



UNJ
Internal & External





TPI (Pitch)	Insert L_6 Metric (mm)	Insert L_6 Imperial (in)	Insert T_1 Metric (mm)	Insert T_1 Imperial (in)	Part No. UNJ Internal
32	19.05	0.750	2.03	0.080	**TP075K-UNJ32I**
	25.40	1.000	3.56	0.140	**TP100K-UNJ32I**
24	19.05	0.750	2.03	0.080	**TP075K-UNJ24I**
	25.40	1.000	3.56	0.140	**TP100K-UNJ24I**
20	19.05	0.750	2.03	0.080	**TP075K-UNJ20I**
	25.40	1.000	3.56	0.140	**TP100K-UNJ20I**
18	19.05	0.750	2.03	0.080	**TP075K-UNJ18I**
	25.40	1.000	3.56	0.140	**TP100K-UNJ18I**
16	19.05	0.750	2.03	0.080	**TP075K-UNJ16I**
	25.40	1.000	3.56	0.140	**TP100K-UNJ16I**
14	25.40	1.000	3.56	0.140	**TP100K-UNJ14I**
12	25.40	1.000	3.56	0.140	**TP100K-UNJ12I**

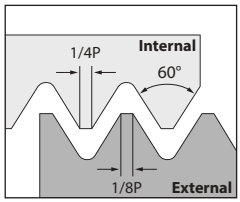
TPI (Pitch)	Insert L_6 Metric (mm)	Insert L_6 Imperial (in)	Insert T_1 Metric (mm)	Insert T_1 Imperial (in)	Part No. UNJ External
32	19.05	0.750	2.03	0.080	**TP075K-UNJ32E**
	25.40	1.000	3.56	0.140	**TP100K-UNJ32E**
24	19.05	0.750	2.03	0.080	**TP075K-UNJ24E**
	25.40	1.000	3.56	0.140	**TP100K-UNJ24E**
20	19.05	0.750	2.03	0.080	**TP075K-UNJ20E**
	25.40	1.000	3.56	0.140	**TP100K-UNJ20E**
18	19.05	0.750	2.03	0.080	**TP075K-UNJ18E**
	25.40	1.000	3.56	0.140	**TP100K-UNJ18E**
16	19.05	0.750	2.03	0.080	**TP075K-UNJ16E**
	25.40	1.000	3.56	0.140	**TP100K-UNJ16E**
12	25.40	1.000	3.56	0.140	**TP100K-UNJ12E**

E20: 3
Key on E20: 2
E20: 19 - 22
E20: 10

Inserts sold in quantities of 2.

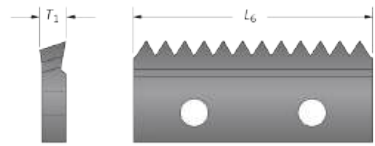
AccuThread® 856 Bolt-in Style

Inserts



ISO
Internal & External





Pitch	Insert L_6 Metric (mm)	Insert L_6 Imperial (in)	Insert T_1 Metric (mm)	Insert T_1 Imperial (in)	Part No. ISO Internal
0.5	19.05	0.750	2.03	0.080	**TP075K-M0.5I**
1.0	19.05	0.750	2.03	0.080	**TP075K-M1.0I**
	24.40	1.000	3.56	0.140	**TP100K-M1.0I**
1.25	19.05	0.750	2.03	0.080	**TP075K-M1.25I**
1.5	19.05	0.750	2.03	0.080	**TP075K-M1.5I**
	25.40	1.000	3.56	0.140	**TP100K-M1.5I**
2.0	25.40	1.000	3.56	0.140	**TP100K-M2.0I**

Pitch	Insert L_6 Metric (mm)	Insert L_6 Imperial (in)	Insert T_1 Metric (mm)	Insert T_1 Imperial (in)	Part No. ISO External
1.0	24.40	1.000	3.56	0.140	**TP100K-M1.0E**
1.5	25.40	1.000	3.56	0.140	**TP100K-M1.5E**
2.0	25.40	1.000	3.56	0.140	**TP100K-M2.0E**

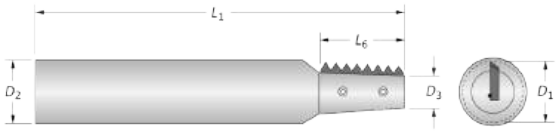
Key on E20: 2
E20: 3
E20: 19 - 22
E20: 10

Inserts sold in quantities of 2.

AccuThread® 856 Bolt-in Style

Insert Holders





Tapered Insert Holders | NPT / NPTF / BSPT

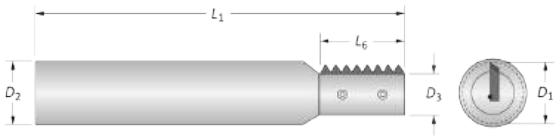
Metric (mm)

	Holder									
	D_1	D_3	D_2	L_6	L_1	Flutes	Part No.	Inserts	Screw	Wrench
m	10.16	5.82	13.00	19.05	76.20	1	**THT-0400-1F075M**	TP075K...	TMS-250	8T-8
	16.74	9.65	13.00	25.40	76.20	1	**THT-0659-1F100M**	TP100K...	TMS-45	8T-9

Imperial (in)

	Holder									
	D_1	D_3	D_2	L_6	L_1	Flutes	Part No.	Inserts	Screw	Wrench
i	0.400	0.229	0.500	0.750	3.000	1	**THT-0400-1F075**	TP075K...	TMS-250	8T-8
	0.659	0.379	0.500	1.000	3.000	1	**THT-0659-1F100**	TP100K...	TMS-45	8T-9





Straight Insert Holders | BSPP / UN / UNJ / ISO

Metric (mm)

	Holder									
	D_1	D_3	D_2	L_6	L_1	Flutes	Part No.	Inserts	Screw	Wrench
m	10.01	6.35	13.00	19.05	76.20	1	**THN-0394-1F075M**	TP075K...	TMS-250	8T-8
	15.88	11.58	20.00	25.40	88.90	1	**THN-0625-1F100M**	TP100K...	TMS-40	8T-9

Imperial (in)

	Holder									
	D_1	D_3	D_2	L_6	L_1	Flutes	Part No.	Inserts	Screw	Wrench
	0.394	0.250	0.500	0.750	3.000	1	**THN-0394-1F075**	TP075K...	TMS-250	8T-8
i	0.611	0.383	0.750	1.000	3.500	1	**THN-0611-1F100**	*	TMS-40	8T-9
	0.625	0.454	0.750	1.000	3.500	1	**THN-0625-1F100**	TP100K...	TMS-40	8T-9

*Only UN/UNJ 10 TPI inserts can be used in this holder. Please refer to inserts on page E20: 7.

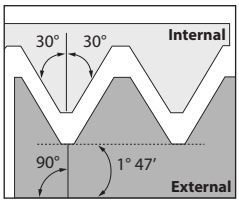
Key on E20: 2

E20: 3
E20: 19 - 22
E20: 5 - 9

m = Metric (mm)
i = Imperial (in)

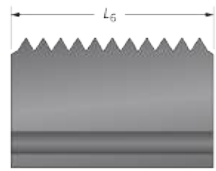
AccuThread® 856 Pin Style

Inserts



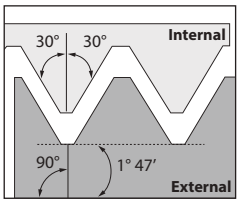






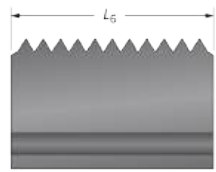
NPT
Internal/External

TPI (Pitch)	Insert L_6 Metric (mm)	Insert L_6 Imperial (in)	Insert T_1 Metric (mm)	Insert T_1 Imperial (in)	Part No. NPT Internal/External
11.5	38.10	1.500	3.56	0.140	**TN150K-NPT11.5**
8	38.10	1.500	3.56	0.140	**TN150K-NPT8**



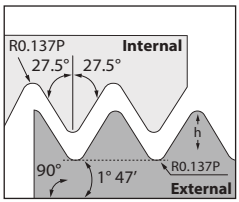






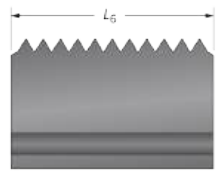
NPTF
Internal/External

TPI (Pitch)	Insert L_6 Metric (mm)	Insert L_6 Imperial (in)	Insert T_1 Metric (mm)	Insert T_1 Imperial (in)	Part No. NPTF Internal/External
11.5	38.10	1.500	3.56	0.140	**TN150K-NPTF11.5**
8	38.10	1.500	3.56	0.140	**TN150K-NPTF8**









BSPT
Internal/External

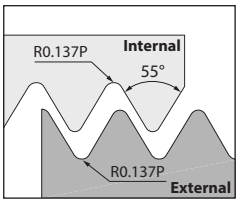
TPI (Pitch)	Insert L_6 Metric (mm)	Insert L_6 Imperial (in)	Insert T_1 Metric (mm)	Insert T_1 Imperial (in)	Part No. BSPT Internal/External
11	38.10	1.500	3.56	0.140	**TN150K-BSPT11**

E20: 3
Key on E20: 2
E20: 19 - 22
E20: 16 - 17

Inserts sold in quantities of 2.

AccuThread® 856 Pin Style

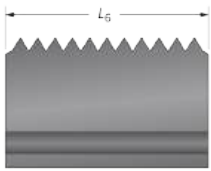
Inserts



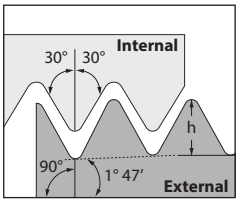
BSPP
Internal/External







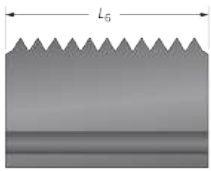
TPI (Pitch)	Insert L_6 Metric (mm)	Insert L_6 Imperial (in)	Insert T_1 Metric (mm)	Insert T_1 Imperial (in)	Part No. BSPP Internal/External
11	38.10	1.500	3.56	0.140	**TN150K-BSPP11**



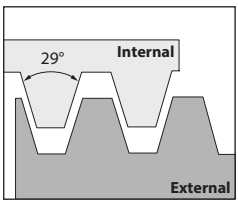
API-ROUND
Internal/External







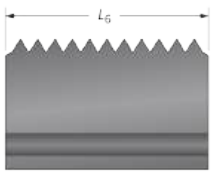
TPI (Pitch)	Insert L_6 Metric (mm)	Insert L_6 Imperial (in)	Insert T_1 Metric (mm)	Insert T_1 Imperial (in)	Part No. API-ROUND Internal/External
10	38.10	1.500	3.56	0.140	**TN150K-AP10**
8	38.10	1.500	3.56	0.140	**TN150K-AP8**



ACME
Full Profile

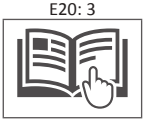






TPI (Pitch)	Insert L_6 Metric (mm)	Insert L_6 Imperial (in)	Insert T_1 Metric (mm)	Insert T_1 Imperial (in)	Part No. ACME Full Profile
12	25.40	1.000	3.56	0.140	**TN100K-FA12**
	38.10	1.500	3.56	0.140	**TN150K-FA12**
10	25.40	1.000	3.56	0.140	**TN100K-FA10**
	38.10	1.500	3.56	0.140	**TN150K-FA10**
8	25.40	1.000	3.56	0.140	**TN100K-FA8**
	38.10	1.500	3.56	0.140	**TN150K-FA8**
6	38.10	1.500	3.56	0.140	**TN150K-FA6**
5	38.10	1.500	3.56	0.140	**TN150K-FA5**

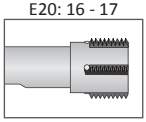
E20: 3
Key on E20: 2



E20: 19 - 22



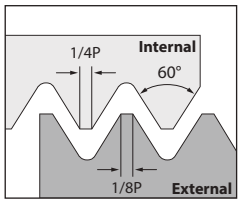
E20: 16 - 17



Inserts sold in quantities of 2.

AccuThread® 856 Pin Style

Inserts

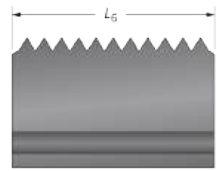


UN

Internal & External







TPI (Pitch)	Insert L_6 Metric (mm)	Insert L_6 Imperial (in)	Insert T_1 Metric (mm)	Insert T_1 Imperial (in)	Part No. UN Internal
32	25.40	1.000	3.56	0.140	**TN100K-UN32I**
24	25.40	1.000	3.56	0.140	**TN100K-UN24I**
	38.10	1.500	3.56	0.140	**TN150K-UN24I**
20	25.40	1.000	3.56	0.140	**TN100K-UN20I**
	38.10	1.500	3.56	0.140	**TN150K-UN20I**
18	25.40	1.000	3.56	0.140	**TN100K-UN18I**
	38.10	1.500	3.56	0.140	**TN150K-UN18I**
16	25.40	1.000	3.56	0.140	**TN100K-UN16I**
	38.10	1.500	3.56	0.140	**TN150K-UN16I**
14	38.10	1.500	3.56	0.140	**TN150K-UN14I**
12	25.40	1.000	3.56	0.140	**TN100K-UN12I**
	38.10	1.500	3.56	0.140	**TN150K-UN12I**
10	25.40	1.000	3.56	0.140	**TN100K-UN10I**
	38.10	1.500	3.56	0.140	**TN150K-UN10I**
8	25.40	1.000	3.56	0.140	**TN100K-UN8I**
	38.10	1.500	3.56	0.140	**TN150K-UN8I**
7	25.40	1.000	3.56	0.140	**TN100K-UN7I**
	38.10	1.500	3.56	0.140	**TN150K-UN7I**
6	38.10	1.500	3.56	0.140	**TN150K-UN6I**

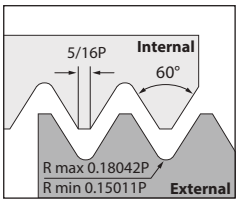
TPI (Pitch)	Insert L_6 Metric (mm)	Insert L_6 Imperial (in)	Insert T_1 Metric (mm)	Insert T_1 Imperial (in)	Part No. UN External
32	25.40	1.000	3.56	0.140	**TN100K-UN32E**
24	25.40	1.000	3.56	0.140	**TN100K-UN24E**
20	25.40	1.000	3.56	0.140	**TN100K-UN20E**
	38.10	1.500	3.56	0.140	**TN150K-UN20E**
18	25.40	1.000	3.56	0.140	**TN100K-UN18E**
	38.10	1.500	3.56	0.140	**TN150K-UN18E**
16	25.40	1.000	3.56	0.140	**TN100K-UN16E**
	38.10	1.500	3.56	0.140	**TN150K-UN16E**
12	25.40	1.000	3.56	0.140	**TN100K-UN12E**
	38.10	1.500	3.56	0.140	**TN150K-UN12E**
10	25.40	1.000	3.56	0.140	**TN100K-UN10E**
	38.10	1.500	3.56	0.140	**TN150K-UN10E**
8	25.40	1.000	3.56	0.140	**TN100K-UN8E**
	38.10	1.500	3.56	0.140	**TN150K-UN8E**
6	38.10	1.500	3.56	0.140	**TN150K-UN6E**

E20: 3
Key on E20: 2
E20: 19 - 22
E20: 16 - 17

Inserts sold in quantities of 2.

AccuThread® 856 Pin Style

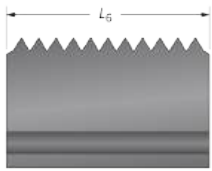
Inserts



UNJ
Internal & External







TPI (Pitch)	Insert L_6 Metric (mm)	Insert L_6 Imperial (in)	Insert T_1 Metric (mm)	Insert T_1 Imperial (in)	Part No. UNJ Internal
32	25.40	1.000	3.56	0.140	**TN100K-UNJ32I**
24	25.40	1.000	3.56	0.140	**TN100K-UNJ24I**
	38.10	1.500	3.56	0.140	**TN150K-UNJ24I**
20	25.40	1.000	3.56	0.140	**TN100K-UNJ20I**
	38.10	1.500	3.56	0.140	**TN150K-UNJ20I**
18	25.40	1.000	3.56	0.140	**TN100K-UNJ18I**
	38.10	1.500	3.56	0.140	**TN150K-UNJ18I**
16	25.40	1.000	3.56	0.140	**TN100K-UNJ16I**
	38.10	1.500	3.56	0.140	**TN150K-UNJ16I**
12	25.40	1.000	3.56	0.140	**TN100K-UNJ12I**
	38.10	1.500	3.56	0.140	**TN150K-UNJ12I**
8	38.10	1.500	3.56	0.140	**TN150K-UNJ8I**

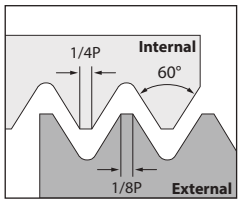
TPI (Pitch)	Insert L_6 Metric (mm)	Insert L_6 Imperial (in)	Insert T_1 Metric (mm)	Insert T_1 Imperial (in)	Part No. UNJ External
32	25.40	1.000	3.56	0.140	**TN100K-UNJ32E**
24	25.40	1.000	3.56	0.140	**TN100K-UNJ24E**
	38.10	1.500	3.56	0.140	**TN150K-UNJ24E**
20	25.40	1.000	3.56	0.140	**TN100K-UNJ20E**
	38.10	1.500	3.56	0.140	**TN150K-UNJ20E**
18	25.40	1.000	3.56	0.140	**TN100K-UNJ18E**
	38.10	1.500	3.56	0.140	**TN150K-UNJ18E**
16	25.40	1.000	3.56	0.140	**TN100K-UNJ16E**
	38.10	1.500	3.56	0.140	**TN150K-UNJ16E**
12	25.40	1.000	3.56	0.140	**TN100K-UNJ12E**
	38.10	1.500	3.56	0.140	**TN150K-UNJ12E**
8	38.10	1.500	3.56	0.140	**TN150K-UNJ8E**

E20: 3
Key on E20: 2
E20: 19 - 22
E20: 16 - 17

Inserts sold in quantities of 2.

AccuThread® 856 Pin Style

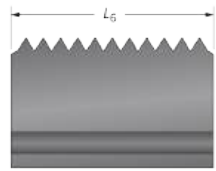
Inserts



ISO
Internal & External







Pitch	Insert L_6 Metric (mm)	Insert L_6 Imperial (in)	Insert T_1 Metric (mm)	Insert T_1 Imperial (in)	Part No. ISO Internal
1.5	38.10	1.500	3.56	0.140	**TN150K-M1.5I**
2.0	38.10	1.500	3.56	0.140	**TN150K-M2.0I**
2.5	38.10	1.500	3.56	0.140	**TN150K-M2.5I**
3.0	38.10	1.500	3.56	0.140	**TN150K-M3.0I**
3.5	38.10	1.500	3.56	0.140	**TN150K-M3.5I**
4.0	38.10	1.500	3.56	0.140	**TN150K-M4.0I**
4.5	38.10	1.500	3.56	0.140	**TN150K-M4.5I**
5.0	38.10	1.500	3.56	0.140	**TN150K-M5.0I**
6.0	38.10	1.500	3.56	0.140	**TN150K-M6.0I**

Pitch	Insert L_6 Metric (mm)	Insert L_6 Imperial (in)	Insert T_1 Metric (mm)	Insert T_1 Imperial (in)	Part No. ISO External
2.0	38.10	1.500	3.56	0.140	**TN150K-M2.0E**
4.0	38.10	1.500	3.56	0.140	**TN150K-M4.0E**
4.5	38.10	1.500	3.56	0.140	**TN150K-M4.5E**
5.0	38.10	1.500	3.56	0.140	**TN150K-M5.0E**
6.0	38.10	1.500	3.56	0.140	**TN150K-M6.0E**

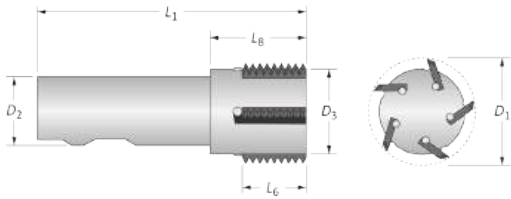
E20: 3
Key on E20: 2
E20: 19 - 22
E20: 16 - 17

Inserts sold in quantities of 2.

AccuThread® 856 Pin Style

Weldon Shank Holders





Positive Rake

Metric (mm)

D_1 Standard	D_1 Oversize*	Holder D_3	Holder L_8	Holder L_6	Holder L_1	Holder D_2	Coolant	Flutes	Part No.	Inserts	Screw	Key Size	Pin
24.61	—	19.05	35.05	25.40	114.30	25.00	N	2	**THP-0969-2F100M**	TN100K...	TMSS-3	3/32	TMP-1
44.58	—	38.10	57.15	25.40	101.60	32.00	Y	5	**THP-1755-5F100M**	TN100K...	TMSS-2	3/32	TMP-1
23.67	27.00	18.34	48.44	38.10	114.30	25.00	N	1	**THP-0932-1F150M**	TN150K...	TMSS-2	3/32	TMP-2
24.61	27.94	19.05	50.80	38.10	114.30	25.00	N	2	**THP-0969-2F150M**	TN150K...	TMSS-3	3/32	TMP-2
28.35	31.67	20.63	50.80	38.10	114.30	25.00	Y	3	**THP-1116-3F150M**	TN150K...	TMSS-3	3/32	TMP-2
44.58	47.93	38.10	57.15	38.10	114.30	32.00	Y	5	**THP-1755-5F150M**	TN150K...	TMSS-2	3/32	TMP-2

Imperial (in)

D_1 Standard	D_1 Oversize*	Holder D_3	Holder L_8	Holder L_6	Holder L_1	Holder D_2	Coolant	Flutes	Part No.	Inserts	Screw	Key Size	Pin
0.969	—	0.750	1.38	1.000	4.500	1.000	N	2	**THP-0969-2F100**	TN100K...	TMSS-3	3/32	TMP-1
1.755	—	1.500	2.25	1.000	4.000	1.250	Y	5	**THP-1755-5F100**	TN100K...	TMSS-2	3/32	TMP-1
0.932	1.063	0.722	1.90	1.500	4.500	1.000	N	1	**THP-0932-1F150**	TN150K...	TMSS-2	3/32	TMP-2
0.969	1.100	0.750	2.00	1.500	4.500	1.000	N	2	**THP-0969-2F150**	TN150K...	TMSS-3	3/32	TMP-2
1.116	1.247	0.812	2.00	1.500	4.500	1.000	Y	3	**THP-1116-3F150**	TN150K...	TMSS-3	3/32	TMP-2
1.755	1.887	1.500	2.25	1.500	4.500	1.250	Y	5	**THP-1755-5F150**	TN150K...	TMSS-2	3/32	TMP-2

*See note at bottom of page.

Neutral Rake

Metric (mm)

D_1 Standard	D_1 Oversize*	Holder D_3	Holder L_8	Holder L_6	Holder L_1	Holder D_2	Coolant	Flutes	Part No.	Inserts	Screw	Key Size	Pin
28.35	31.67	20.63	50.80	38.10	114.30	25.00	Y	3	**TNR-1116-3F150M**	TN150K...	TMSS-3	3/32	TMP-2
44.58	47.93	38.10	57.15	38.10	114.30	32.00	Y	5	**TNR-1755-5F150M**	TN150K...	TMSS-2	3/32	TMP-2

Imperial (in)

D_1 Standard	D_1 Oversize*	Holder D_3	Holder L_8	Holder L_6	Holder L_1	Holder D_2	Coolant	Flutes	Part No.	Inserts	Screw	Key Size	Pin
1.116	1.247	0.812	2.00	1.500	4.500	1.000	Y	3	**TNR-1116-3F150**	TN150K...	TMSS-3	3/32	TMP-2
1.755	1.887	1.500	2.25	1.500	4.531	1.250	Y	5	**TNR-1755-5F150**	TN150K...	TMSS-2	3/32	TMP-2

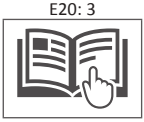
*See note at bottom of page.

*Oversized cutter diameter occurs when assembled with the following pin style inserts:

NPT 8 NPTF 11.5 NPTF 8	API 8	Metric 6.0 Metric 5.0 Metric 4.5	ACME 5 ACME 6

Key on E20: 2

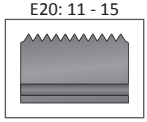
E20: 3



E20: 19 - 22



E20: 11 - 15

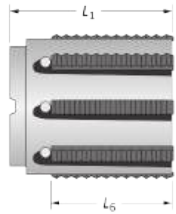


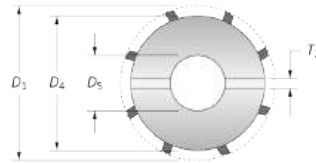
ⓜ = Metric (mm)
ⓘ = Imperial (in)

AccuThread® 856 Pin Style

Shell Mill Holders







Positive Rake

Metric (mm)

	D_1		Holder										
	Standard	Oversize*	D_4	D_5	L_6	L_1	T_2	Flutes	Part No.	Inserts	Screw	Key Size	Pin
m	68.94	72.26	63.50	27.00	38.10	57.15	12	7	**TSN-2846-7F150M**	TN150K...	TMSS-2	3/32	TMP-2
	81.48	84.84	76.20	32.00	38.10	57.15	14	8	**TSN-3341-8F150M**	TN150K...	TMSS-2	3/32	TMP-2

Imperial (in)

	D_1		Holder										
	Standard	Oversize*	D_4	D_5	L_6	L_1	T_2	Flutes	Part No.	Inserts	Screw	Key Size	Pin
i	2.714	2.845	2.500	1.000	1.500	2.250	0.375	7	**TSN-2846-7F150**	TN150K...	TMSS-2	3/32	TMP-2
	3.208	3.340	3.000	1.250	1.500	2.250	0.500	8	**TSN-3341-8F150**	TN150K...	TMSS-2	3/32	TMP-2

*See note at bottom of page.

Neutral Rake

Metric (mm)

	D_1		Holder										
	Standard	Oversize*	D_4	D_5	L_6	L_1	T_2	Flutes	Part No.	Inserts	Screw	Key Size	Pin
m	56.31	59.66	50.80	22.00	38.10	57.15	10.00	6	**TSR-2217-6F150M**	TN150K...	TMSS-2	3/32	TMP-2

Imperial (in)

	D_1		Holder										
	Standard	Oversize*	D_4	D_5	L_6	L_1	T_2	Flutes	Part No.	Inserts	Screw	Key Size	Pin
i	2.217	2.349	2.000	0.750	1.500	2.250	0.312	6	**TSR-2217-6F150**	TN150K...	TMSS-2	3/32	TMP-2

*See note at bottom of page.

*Oversized cutter diameter occurs when assembled with the following pin style inserts:

NPT 8 NPTF 11.5 NPTF 8	API 8	Metric 6.0 Metric 5.0 Metric 4.5	ACME 5 ACME 6

Key on E20: 2

E20: 3

E20: 19 - 22

E20: 11 - 15

m = Metric (mm)
i = Imperial (in)

Notes

Recommended Drilling Data | Metric (mm)

POSITIVE RAKE

ISO	Material	Hardness (BHN)	Machinability*	Speed (m/min)	Recommended Feed (mm/tooth) by Cutter Diameter						
					1 flute		1-2 flutes	3 flutes	5 flutes	7 flutes	8 flutes
					9.53 to 12.70	12.71 to 19.05	19.06 to 25.40	25.41 to 38.10	38.11 to 50.80	50.81 to 69.85	69.86 to 88.90
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 150	Easy	274	0.020	0.025	0.030	0.038	0.051	0.064	0.076
		150 - 200	Easy	213	0.020	0.025	0.030	0.038	0.051	0.064	0.076
		200 - 250	Easy	152	0.020	0.025	0.030	0.038	0.051	0.064	0.076
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	Average	274	0.020	0.025	0.030	0.038	0.051	0.064	0.076
		125 - 175	Average	213	0.020	0.025	0.030	0.038	0.051	0.064	0.076
		175 - 225	Average	183	0.020	0.025	0.030	0.038	0.051	0.064	0.076
		225 - 275	Average	152	0.020	0.025	0.030	0.038	0.051	0.064	0.076
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	Average	175	0.020	0.023	0.025	0.030	0.038	0.051	0.064
		175 - 225	Average	152	0.020	0.023	0.025	0.030	0.038	0.051	0.064
		225 - 275	Average	137	0.020	0.023	0.025	0.030	0.038	0.051	0.064
		275 - 325	Average	122	0.020	0.023	0.025	0.030	0.038	0.051	0.064
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	Average	175	0.020	0.023	0.025	0.030	0.038	0.051	0.064
		175 - 225	Average	152	0.020	0.023	0.025	0.030	0.038	0.051	0.064
		225 - 275	Average	137	0.020	0.023	0.025	0.030	0.038	0.051	0.064
		275 - 325	Difficult	122	0.020	0.023	0.025	0.030	0.038	0.051	0.064
		325 - 375	Difficult	114	0.020	0.023	0.025	0.030	0.038	0.051	0.064
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	Average	137	0.020	0.023	0.025	0.030	0.038	0.051	0.064
		300 - 350	Difficult	122	0.020	0.023	0.025	0.030	0.038	0.051	0.064
		350 - 400	Difficult	107	0.020	0.023	0.025	0.030	0.038	0.051	0.064
	Structural Steel A36, A285, A516, etc.	100 - 150	Average	183	0.020	0.025	0.030	0.038	0.051	0.064	0.076
		150 - 250	Average	152	0.020	0.025	0.030	0.038	0.051	0.064	0.076
		250 - 350	Difficult	137	0.020	0.025	0.030	0.038	0.051	0.064	0.076
M	**Stainless Steel** 303, 416, 420, etc.	135 - 185	Difficult	160	0.013	0.018	0.023	0.038	0.051	0.064	0.076
		185 - 275	Difficult	152	0.013	0.018	0.023	0.038	0.051	0.064	0.076
	Stainless Steel PH 17-4, etc.	185 - 275	Difficult	91	0.013	0.018	0.023	0.038	0.051	0.064	0.076
		275 - 325	Difficult	46	0.013	0.018	0.023	0.038	0.051	0.064	0.076
	Tool Steel H-13, H21, A-4, etc.	150 - 200	Difficult	175	0.020	0.025	0.030	0.038	0.051	0.064	0.076
		200 - 250	Difficult	152	0.020	0.025	0.030	0.038	0.051	0.064	0.076
K	**Cast Iron** Grey, Ductile, Nodular	120 - 150	Easy	206	0.020	0.030	0.038	0.051	0.076	0.102	0.127
		150 - 200	Easy	191	0.020	0.030	0.038	0.051	0.076	0.102	0.127
		200 - 220	Easy	175	0.020	0.030	0.038	0.051	0.076	0.102	0.127
		220 - 260	Average	152	0.020	0.030	0.038	0.051	0.076	0.102	0.127
		260 - 320	Average	145	0.020	0.030	0.038	0.051	0.076	0.102	0.127
N	**Wrought Aluminum** 6061 T6	30	Easy	335	0.038	0.051	0.064	0.076	0.102	0.127	0.152
		180	Easy	305	0.038	0.051	0.064	0.076	0.102	0.127	0.152
	Cast Aluminum** up to 10% silicon	120	Easy	191	0.038	0.051	0.064	0.076	0.102	0.127	0.152
	Brass	30 - 125	Easy	335	0.051	0.064	0.076	0.102	0.114	0.140	0.165
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 220	Difficult	37	0.013	0.015	0.020	0.025	0.038	0.051	0.064
		220 - 310	Difficult	27	0.013	0.015	0.020	0.025	0.038	0.051	0.064

NOTICE: Reduce feed and speed by 30% for tapered thread forms due to additional material removal.

*Refer to recommended pass chart on **page xiv** when referencing material machinability.

**Uncoated thread mills are recommended for cast aluminum applications.

Recommended Drilling Data | Metric (mm)

NEUTRAL RAKE

ISO	Material	Hardness (BHN)	Machinability*	Speed (m/min)	Recommended Feed (mm/tooth) by Cutter Diameter		
					3 flutes 25.41 to 38.09	5 flutes 38.10 to 50.77	6 flutes 50.78 to 69.85
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 150	Easy	274	0.051	0.064	0.076
		150 - 200	Easy	213	0.051	0.064	0.076
		200 - 250	Easy	152	0.051	0.064	0.076
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	Average	274	0.051	0.064	0.076
		125 - 175	Average	213	0.051	0.064	0.076
		175 - 225	Average	183	0.051	0.064	0.076
		225 - 275	Average	152	0.051	0.064	0.076
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	Average	175	0.038	0.051	0.064
		175 - 225	Average	152	0.038	0.051	0.064
		225 - 275	Average	137	0.038	0.051	0.064
		275 - 325	Average	122	0.038	0.051	0.064
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	Average	175	0.038	0.051	0.064
		175 - 225	Average	152	0.038	0.051	0.064
		225 - 275	Average	137	0.038	0.051	0.064
		275 - 325	Difficult	122	0.038	0.051	0.064
		325 - 375	Difficult	114	0.038	0.051	0.064
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	Average	137	0.038	0.051	0.064
		300 - 350	Difficult	122	0.038	0.051	0.064
		350 - 400	Difficult	107	0.038	0.051	0.064
	Structural Steel A36, A285, A516, etc.	100 - 150	Average	183	0.051	0.064	0.076
		150 - 250	Average	152	0.051	0.064	0.076
		250 - 350	Difficult	137	0.051	0.064	0.076
M	**Stainless Steel** 303, 416, 420, etc.	135 - 185	Difficult	160	0.051	0.064	0.076
		185 - 275	Difficult	152	0.051	0.064	0.076
	Stainless Steel PH 17-4, etc.	185 - 275	Difficult	91	0.051	0.064	0.076
		275 - 325	Difficult	46	0.051	0.064	0.076
	Tool Steel H-13, H21, A-4, etc.	150 - 200	Difficult	175	0.051	0.064	0.076
		200 - 250	Difficult	152	0.051	0.064	0.076
K	**Cast Iron** Grey, Ductile, Nodular	120 - 150	Easy	206	0.076	0.102	0.127
		150 - 200	Easy	191	0.076	0.102	0.127
		200 - 220	Easy	175	0.076	0.102	0.127
		220 - 260	Average	152	0.076	0.102	0.127
		260 - 320	Average	145	0.076	0.102	0.127
N	**Wrought Aluminum** 6061 T6	30	Easy	335	0.102	0.127	0.152
		180	Easy	305	0.102	0.127	0.152
	Cast Aluminum** up to 10% silicon	120	Easy	191	0.102	0.127	0.152
	Brass	30 - 125	Easy	335	0.114	0.140	0.165
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 220	Difficult	37	0.038	0.051	0.064
		220 - 310	Difficult	27	0.038	0.051	0.064

NOTICE: Reduce feed and speed by 30% for tapered thread forms due to additional material removal.
*Refer to recommended pass chart on **page xiv** when referencing material machinability.
**Uncoated thread mills are recommended for cast aluminum applications.

Recommended Drilling Data | Imperial (in)

POSITIVE RAKE

ISO	Material	Hardness (BHN)	Machinability*	Speed (SFM)	Recommended Feed (inch/tooth) by Cutter Diameter						
					1 flute		1-2 flutes	3 flutes	5 flutes	7 flutes	8 flutes
					0.375" to 0.500"	0.501" to 0.750"	0.751" to 1.000"	1.001" to 1.500"	1.501" to 2.000"	2.001" to 2.750"	2.751" to 3.500"
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 150	Easy	900	0.0008	0.0010	0.0012	0.0015	0.0020	0.0025	0.0030
		150 - 200	Easy	700	0.0008	0.0010	0.0012	0.0015	0.0020	0.0025	0.0030
		200 - 250	Easy	500	0.0008	0.0010	0.0012	0.0015	0.0020	0.0025	0.0030
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	Average	900	0.0008	0.0010	0.0012	0.0015	0.0020	0.0025	0.0030
		125 - 175	Average	700	0.0008	0.0010	0.0012	0.0015	0.0020	0.0025	0.0030
		175 - 225	Average	600	0.0008	0.0010	0.0012	0.0015	0.0020	0.0025	0.0030
		225 - 275	Average	500	0.0008	0.0010	0.0012	0.0015	0.0020	0.0025	0.0030
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	Average	575	0.0008	0.0009	0.0010	0.0012	0.0015	0.0020	0.0025
		175 - 225	Average	500	0.0008	0.0009	0.0010	0.0012	0.0015	0.0020	0.0025
		225 - 275	Average	450	0.0008	0.0009	0.0010	0.0012	0.0015	0.0020	0.0025
		275 - 325	Average	400	0.0008	0.0009	0.0010	0.0012	0.0015	0.0020	0.0025
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	Average	575	0.0008	0.0009	0.0010	0.0012	0.0015	0.0020	0.0025
		175 - 225	Average	500	0.0008	0.0009	0.0010	0.0012	0.0015	0.0020	0.0025
		225 - 275	Average	450	0.0008	0.0009	0.0010	0.0012	0.0015	0.0020	0.0025
		275 - 325	Difficult	400	0.0008	0.0009	0.0010	0.0012	0.0015	0.0020	0.0025
		325 - 375	Difficult	375	0.0008	0.0009	0.0010	0.0012	0.0015	0.0020	0.0025
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	Average	450	0.0008	0.0009	0.0010	0.0012	0.0015	0.0020	0.0025
		300 - 350	Difficult	400	0.0008	0.0009	0.0010	0.0012	0.0015	0.0020	0.0025
		350 - 400	Difficult	350	0.0008	0.0009	0.0010	0.0012	0.0015	0.0020	0.0025
	Structural Steel A36, A285, A516, etc.	100 - 150	Average	600	0.0008	0.0010	0.0012	0.0015	0.0020	0.0025	0.0030
		150 - 250	Average	500	0.0008	0.0010	0.0012	0.0015	0.0020	0.0025	0.0030
		250 - 350	Difficult	450	0.0008	0.0010	0.0012	0.0015	0.0020	0.0025	0.0030
M	**Stainless Steel** 303, 416, 420, etc.	135 - 185	Difficult	525	0.0005	0.0007	0.0009	0.0015	0.0020	0.0025	0.0030
		185 - 275	Difficult	500	0.0005	0.0007	0.0009	0.0015	0.0020	0.0025	0.0030
	Stainless Steel PH 17-4, etc.	185 - 275	Difficult	300	0.0005	0.0007	0.0009	0.0015	0.0020	0.0025	0.0030
		275 - 325	Difficult	150	0.0005	0.0007	0.0009	0.0015	0.0020	0.0025	0.0030
	Tool Steel H-13, H21, A-4, etc.	150 - 200	Difficult	575	0.0008	0.0010	0.0012	0.0015	0.0020	0.0025	0.0030
		200 - 250	Difficult	500	0.0008	0.0010	0.0012	0.0015	0.0020	0.0025	0.0030
K	**Cast Iron** Grey, Ductile, Nodular	120 - 150	Easy	675	0.0008	0.0012	0.0015	0.0020	0.0030	0.0040	0.0050
		150 - 200	Easy	625	0.0008	0.0012	0.0015	0.0020	0.0030	0.0040	0.0050
		200 - 220	Easy	575	0.0008	0.0012	0.0015	0.0020	0.0030	0.0040	0.0050
		220 - 260	Average	500	0.0008	0.0012	0.0015	0.0020	0.0030	0.0040	0.0050
		260 - 320	Average	475	0.0008	0.0012	0.0015	0.0020	0.0030	0.0040	0.0050
N	**Wrought Aluminum** 6061 T6	30	Easy	1100	0.0015	0.0020	0.0025	0.0030	0.0040	0.0050	0.0060
		180	Easy	1000	0.0015	0.0020	0.0025	0.0030	0.0040	0.0050	0.0060
	Cast Aluminum** up to 10% silicon	120	Easy	625	0.0015	0.0020	0.0025	0.0030	0.0040	0.0050	0.0060
	Brass	30 - 125	Easy	1100	0.0020	0.0025	0.0030	0.0040	0.0045	0.0055	0.0065
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 220	Difficult	120	0.0005	0.0006	0.0008	0.0010	0.0015	0.0020	0.0025
		220 - 310	Difficult	90	0.0005	0.0006	0.0008	0.0010	0.0015	0.0020	0.0025

NOTICE: Reduce feed and speed by 30% for tapered thread forms due to additional material removal.

*Refer to recommended pass chart on **page xiv** when referencing material machinability.

**Uncoated thread mills are recommended for cast aluminum applications.

Recommended Drilling Data | Imperial (in)

NEUTRAL RAKE

ISO	Material	Hardness (BHN)	Machinability*	Speed (SFM)	Recommended Feed (inch/tooth) by Cutter Diameter		
					3 flutes 1.000" to 1.499"	5 flutes 1.500" to 1.999"	6 flutes 2.000" to 2.750"
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 150	Easy	274	0.051	0.064	0.076
		150 - 200	Easy	213	0.051	0.064	0.076
		200 - 250	Easy	152	0.051	0.064	0.076
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	Average	274	0.051	0.064	0.076
		125 - 175	Average	213	0.051	0.064	0.076
		175 - 225	Average	183	0.051	0.064	0.076
		225 - 275	Average	152	0.051	0.064	0.076
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	Average	175	0.038	0.051	0.064
		175 - 225	Average	152	0.038	0.051	0.064
		225 - 275	Average	137	0.038	0.051	0.064
		275 - 325	Average	122	0.038	0.051	0.064
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	Average	175	0.038	0.051	0.064
		175 - 225	Average	152	0.038	0.051	0.064
		225 - 275	Average	137	0.038	0.051	0.064
		275 - 325	Difficult	122	0.038	0.051	0.064
		325 - 375	Difficult	114	0.038	0.051	0.064
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	Average	137	0.038	0.051	0.064
		300 - 350	Difficult	122	0.038	0.051	0.064
		350 - 400	Difficult	107	0.038	0.051	0.064
	Structural Steel A36, A285, A516, etc.	100 - 150	Average	183	0.051	0.064	0.076
		150 - 250	Average	152	0.051	0.064	0.076
		250 - 350	Difficult	137	0.051	0.064	0.076
M	**Stainless Steel** 303, 416, 420, etc.	135 - 185	Difficult	160	0.051	0.064	0.076
		185 - 275	Difficult	152	0.051	0.064	0.076
	Stainless Steel PH 17-4, etc.	185 - 275	Difficult	91	0.051	0.064	0.076
		275 - 325	Difficult	46	0.051	0.064	0.076
	Tool Steel H-13, H21, A-4, etc.	150 - 200	Difficult	175	0.051	0.064	0.076
		200 - 250	Difficult	152	0.051	0.064	0.076
K	**Cast Iron** Grey, Ductile, Nodular	120 - 150	Easy	206	0.076	0.102	0.127
		150 - 200	Easy	191	0.076	0.102	0.127
		200 - 220	Easy	175	0.076	0.102	0.127
		220 - 260	Average	152	0.076	0.102	0.127
		260 - 320	Average	145	0.076	0.102	0.127
N	**Wrought Aluminum** 6061 T6	30	Easy	335	0.102	0.127	0.152
		180	Easy	305	0.102	0.127	0.152
	Cast Aluminum** up to 10% silicon	120	Easy	191	0.102	0.127	0.152
	Brass	30 - 125	Easy	335	0.114	0.140	0.165
S	**High-Temp Alloy** Hastelloy® B, Inconel® 600, etc.	140 - 220	Difficult	37	0.038	0.051	0.064
		220 - 310	Difficult	27	0.038	0.051	0.064

NOTICE: Reduce feed and speed by 30% for tapered thread forms due to additional material removal.
*Refer to recommended pass chart on **page xiv** when referencing material machinability.
**Uncoated thread mills are recommended for cast aluminum applications.

Thread Mill Pre-Drill Information

Formula	Metric	Imperial
Velocity	m/min = RPM • 0.003 • Cutter Diameter	SFM = RPM • 0.262 • Cutter Diameter
Speed	$RPM = \frac{(m/min \bullet 318.47)}{Cutter\ Diameter}$	$RPM = \frac{(SFM \bullet 3.82)}{Cutter\ Diameter}$
Linear Feed Rate (LFR)	mm/min = RPM • (mm/tooth • Number of Flutes)	IPM = RPM • (IPT • Number of Flutes)
Adjusted Feed Rate (AFR) ***See Note Below***	$AFR = \left(\frac{(Major\ Diameter - Cutter\ Diameter)}{Major\ Diameter}\right) \bullet LFR$	

NOTE: The above formula on an internal thread program adjusts the linear feed rate to be applied to the outer diameter instead of the center of the cutting tool. If the feed rate is not adjusted, the excessive feed rate will cause the thread mill cutting edges to fail.

Example of an Internal Adjusted Feed Rate Calculation:

Free machining steel at 125 BHN with a M16x2 2B thread using ThreadMills USA® solid carbide thread mill (TM16200) running at 221 m/min and 0.038 mm/tooth

STEP 1:	$RPM = \frac{(m/min \bullet 318.47)}{Cutter\ Diameter}$	$RPM = \frac{(221 \bullet 318.47)}{11.94}$	RPM = 5895
STEP 2:	LFR = RPM • (mm/tooth • Number of flutes)	LFR = 5895 • (0.038 • 4)	LFR = 896.04 mm/min
STEP 3:	$AFR = \left(\frac{(Major\ Diameter - Cutter\ Diameter)}{Major\ Diameter}\right) \bullet LFR$	$AFR = \left(\frac{(16.00 - 11.94)}{16.00}\right) \bullet 896.04$	AFR = 227.37 mm/min

Unit Definitions

Velocity	**m/min** = meters per minute **SFM** = surface feet per minute
Speed	**RPM** = revolutions per minute
Feed	**mm/rev** = millimeters per revolution **mm/tooth** = millimeters per tooth *also known as* millimeters per flute **IPR** = inch per revolution **IPT** = inch per tooth *also known as* inch per flute **mm/min** = millimeters per minute **IPM** = inches per minute

Thread Mill Calculations and Recommended Passes

Thread Mill Drill Calculation

Based on nominal tap drill diameter. Based on 0.075 mm (0.003") probable mean oversize.

To calculate the percent of full thread for a given hole diameter:

IMPERIAL: $\%\ \text{of thread} = \#\ \text{of threads per inch} \bullet \frac{\text{Basic major diameter of thread} - \text{Drill hole size}}{0.0130}$

METRIC: $\%\ \text{of thread} = \frac{76.96}{\text{Pitch (mm)}} \bullet [\ \text{Basic major diameter of thread} - \text{Drill hole size}\ ]$

Major Thread Diameter for # Drills

Drill #	Thread Diameter
# 2	0.086
# 3	0.099
# 4	0.112
# 5	0.125
# 6	0.132
# 8	0.164
# 10	0.190
# 12	0.216

Recommended Passes

NPT / NPTF / BSPT / API			
Pitch Size	Machinability		
	Easy	Average	Difficult
28	1	1	2
27	1	1	2
19	1	1	2
18	1	1	2
14	1	2	3
11.5	1	2	3
11	1	2	3
10	1	2	3
8	2	3	4

1 Pass
2 Passes
3 Passes
4 Passes

ISO			
Pitch Size	Machinability		
	Easy	Average	Difficult
0.40	1	1	2
0.45	1	1	2
0.50	1	1	2
0.70	1	1	2
0.75	1	1	2
0.80	1	1	2
1.00	1	1	2
1.25	1	2	3
1.50	1	2	3
1.75	1	2	3
2.00	1	2	3
2.50	2	3	4
3.00	2	3	4
3.50	2	3	4
4.00	2	3	4
4.50	2	3	4
5.00	2	3	4
6.00	2	3	4

UN / UNJ / BSPP / BSW / NPS / NPSF			
Pitch Size	Machinability		
	Easy	Average	Difficult
64	1	1	2
56	1	1	2
48	1	1	2
44	1	1	2
40	1	1	2
36	1	1	2
32	1	1	2
28	1	1	2
24	1	1	2
20	1	2	3
19	1	2	3
18	1	2	3
16	1	2	3
14	1	2	3
13	1	2	3
12	1	2	3
11	2	2	4
10	2	3	4
9	2	3	4
8	2	3	4
7	2	3	4
6	2	3	4

Thread Mill Programming Guide

What you need to know

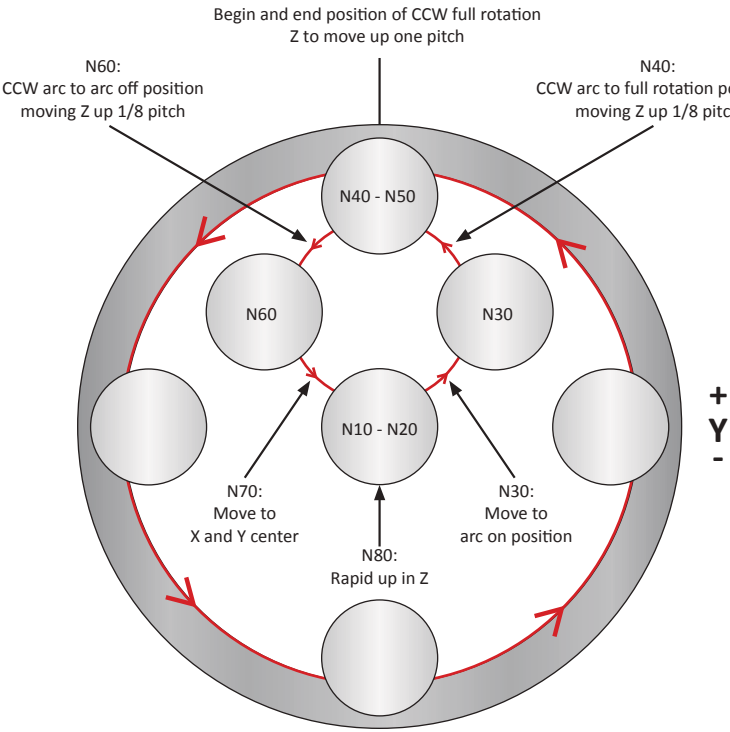
- Thread milling can be easily accomplished with simple G code programming.
- If your machine is capable of 3 axis (helical) interpolation, you can and **should** be thread milling.
- Basic programming of a one pass thread mill can be achieved in six basic steps.

AVAILABLE ONLINE 24/7
or download *INSTA-CODE*®
visit www.alliedmachine.com

Examples for how to calculate and program a M16x2 right-hand thread that will be 10 mm deep produced in one pass:

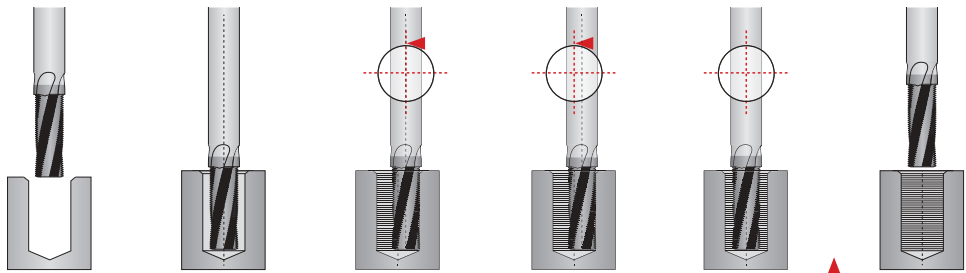
Major thread diameter	**16 mm**	Major diameter of thread
Threads per inch		(only applies to imperial threads)
Length of thread	**10 mm**	Desired length of cut
Velocity	**221 m/min**	Recommended velocity for material to be cut
Feed per flute	**0.038 mm/tooth**	Recommended feed rate per cutting edge
Number of flutes	**4**	Number of flutes on tool to be used
Cutter diameter	**11.94 mm**	Diameter of cutting tool
Using the information above, the values can be calculated:		
Pitch	**2.0 mm**	Use 1/ threads per inch for imperial
Speed	**5895 RPM**	(318.47 • m/min) / cutter diameter or (SFM • 3.82) / cutter diameter
Linear feed	**896.04 mm/min**	RPM • (Feed per flute • Number of flutes)
Feed rate for thread milling	**227.37 mm/min**	((Major thread diameter - cutter diameter) / Major thread diameter) • Linear feed
Z-axis travel on arc on	**0.25 mm**	(Pitch / 8)
Z-axis travel for full thread	**10.25 mm**	(Pitch / 8) + Length of cut
Arc on/off	**1.015 mm**	(Major thread diameter - cutter diameter) / 4
Full rotation value	**2.030 mm**	(Major thread diameter - cutter diameter) / 2

Major thread diameter	16 mm	**Feed rate for thread milling**	227.37 mm/min	**Arc on/off value**	1.015 mm
Cutter diameter	11.94 mm	**Z-axis depth for full thread**	10.25 mm	**Full rotation value**	2.030 mm
Length of thread	10.00 mm	**Z-axis for arc on/off**	0.25 mm	**Pitch value**	2.00 mm



Thread Mill Programming Guide

			5895	M03			
	S	Turn on spindle in the clockwise direction.					
1	N10						
		Lower tool the depth required plus an additional 1/8 pitch for the arc on. Tool remains in the center of the hole.					
2	N20	G91	G01		Z -10.250		F 1136.25
		Position the tool for the arc on motion and turn on the cutter compensation.					
	N30	G41	X 1.015	Y 1.015		D1	F 681.75
3		Arc on to engage the tool to the major thread diameter while moving the tool up in the Z-axis 1/8 pitch. **NOTE**: X and Y is the end point. I and J is the center point of the arc.					
	N40	G03	X -1.015	Y 1.015	Z 0.250	I -1.015	J0.000	F 227.37
		Full pass. Interpolate the thread mill inside the major thread diameter while moving the tool up 1 pitch in the Z-axis.					
4	N50	G03	X 0.000	Y 0.000	Z 2.000	I 0.000	J -2.030	
		Arc off to disengage the tool from the major thread diameter while moving the tool up in the Z-axis 1/8 pitch.					
	N60	G03	X -1.015	Y -1.015	Z 0.250	I 0.000	J -1.015	F 909.00
5		Return to center. Turn off cutter compensation and move the tool back to center.					
	N70	G40	G01	X 1.015	Y -1.015			F 1136.25
		Return to top. Rapid the tool back to the top of the threaded hole.					
	N80	G00			Z 7.750			
6		Switch back to absolute positioning and rapid to a safe point in Z above part level (assumed to be 1 pitch above part level for demonstration purposes below).					
	N90	G90					



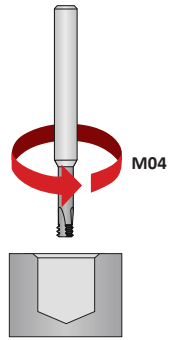
Step 1 N10	**Step 2** N20	**Step 3** N30 - N40	**Step 4** N50	**Step 5** N60 - N70	**Step 6** N80 - N90
• Preparatory commands. • Positioning above hole center and at hole level in Z. • In absolute position mode.	• Change to incremental. • Feed to bottom of hole. • Z-axis depth for full thread.	• Activate left cutter comp. • Feed to arc on position. • Arc to full rotation value while moving Z up 1/8 pitch. • Z-axis move for arc on.	• One complete CCW rotation at full arc rotation value while moving Z up 1 pitch value.	• CCW arc from full rotation value to the arc on/ off value while moving Z up 1/8 pitch (Z-axis move for arc off).	• Rapid up in Z.

Technical Information

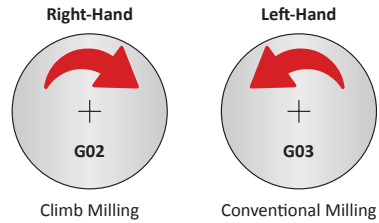
AccuThread® T3

Spindle Rotation

Tools are left-hand cutting. The left-hand cut allows the tool to climb mill when creating a right-hand thread with an AccuThread T3. Climb milling reduces deflection and heat generated during the cut.



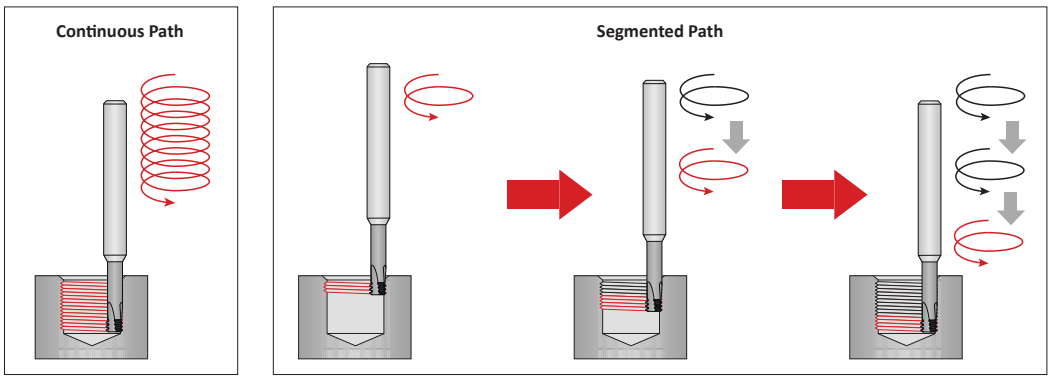
Direction of Helical Interpolation

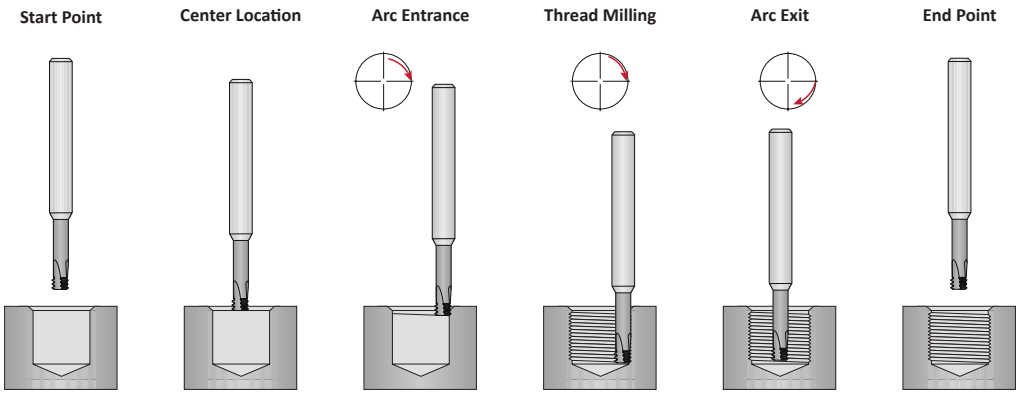


Climb Milling

Conventional Milling

Programming Z-Axis Cutting Path





Notes

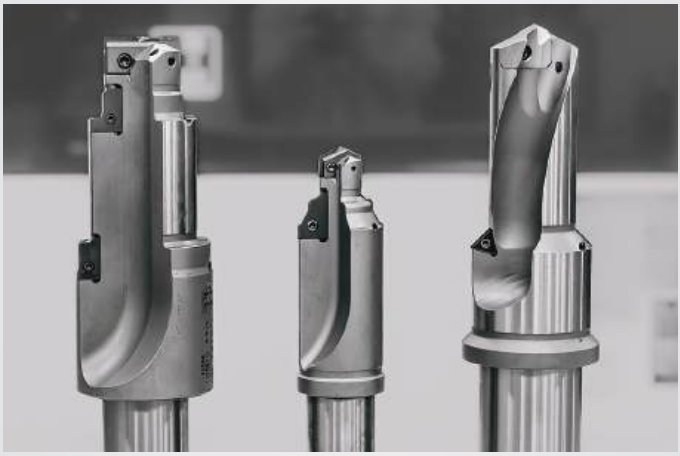
Thread Mill Troubleshooting Guide

	Causes	Problem: Thread mill is showing accelerated or excessive wear	Cutting edges are chipping	Thread mill is breaking in the first hole of part	Thread mill is creating excessive chatter	Out of round thread is produced	Bell-mouthed thread form (small at bottom, big at top)	Part rejection because of rough flank finish	Steps in thread profile	Gauge difference from part to part	Machine not making correct paths to create thread profile	Control not accepting the program
Catalog	Incorrect tool selection			1	1							
	Incorrect speed and feed selection	2, 3	2, 3		2, 3			2, 3				
Speed and Feed	RPM too high	5										
	RPM too low				4		4	4				
	Machine tool specifications restrict RPMs			5, 19								
	Feed rate too high		7	7			7	7	7			
	Feed rate too low	6										
	Incorrect adjusted feed rate adjustment ratio			12								
	Machine tool specification restricts feed rate					7, 19						
	Ramp-in is programmed as an axial move			20					20			
Tool	Thread mill moved or slipped in its holding device	13	13	13	13			13	13			
	Tool is sticking out of the holder too far	15	15	15	15			15	15	15		
	Runout between thread mill and holder				10			10				
	Incorrect coating creating built-up edge	8, 17								8, 17		
	Helix angle too low				9			9				
	Excessive thread mill wear								11	11		
	Excessive tool pressure	7, 11, 14					7, 11, 14					
Machine	Workpiece moving in its fixturing	16	16	16	16			16		16		
	Insufficient coolant pressure or flow	17	17									
	Lack of machine rigidity	16	16		16		16	16				
Programming	Incorrect number of passes			22			22					
	Incorrect program variables			18, 26							18, 26	
	Did not account for X/Y radial moves for tapered threads										24, 26	
	Incorrect cutter compensation variables			23, 26								23, 26
	Helical interpolation option not on machine or turned off										21, 26	21, 26
	Machine tool control is not formatted to standard EIA/ASCII/ISO Code											25, 26

Thread Mill Troubleshooting Guide

Troubleshooting Solutions
1. Refer to catalog to ensure proper tool selection.
2. Verify the correct speed was selected from the catalog speed and feed chart.
3. Verify the correct feed rate was selected from the catalog speed and feed chart.
4. Increase the spindle speed (RPM).
5. Decrease the spindle speed (RPM).
6. Increase feed per tooth.
7. Decrease feed per tooth.
8. Investigate other coatings.
9. Increase the tool helix.
10. Gauge runout between thread mill and tool holder.
11. Perform tool change at quicker intervals.
12. Adjust the feed rate ratio properly to the correct actual penetration rate for internal threads. Refer to speed and feed pages for formula.
13. Use hydraulic clamping chuck.
14. Check the tool for excessive wear. Beginning threads will wear the fastest.
15. Make the amount of overhang in the holding device as short as possible.
16. Verify the workpiece is properly clamped. Retighten or increase stability if necessary.
17. Increase the coolant flow and volume.
18. Check the milling program variables, especially the positive or negative value associated with I and J values.
19. Make sure the machine has the appropriate axis and path speed capabilities.
20. Make sure the thread mill is arcing in the major diameter instead of making a radial move.
21. Make sure the machine tool has a helical interpolation option that is on.
22. Increase the number of thread mill passes.
23. Make sure the cutter compensation variables are input into the G41 program line.
24. Adjust the program for pipe tap threads to taper out on diameter in X/Y directions to create proper form.
25. Request information from the machine tool builder regarding its programming formats.
26. Scan and email a copy of your program to the Application Engineering department at **appeng@alliedmachine.com**.

SPECIAL
TOOLING CATALOG









ALLIED MACHINE & ENGINEERING®

www.alliedmachine.com

SECTION

X10-SUP

Superion® Solid Carbide and PCD Tools

Superion® Solid Carbide and PCD Tools





Out of the Box Solutions

Superion became a subsidiary of Allied Machine and Engineering in 2016. We share a common mission to provide product excellence, expert technical support, and innovative holemaking solutions to our metal-cutting partners. We have strengthened these roots while growing to serve the unique cutting tool needs of new industries such as aerospace, defense, equipment testing, material processing, and more.

With significant investment in technology, Superion has opened the door for our team to manufacture new solutions including several carbide and PCD configurations. We focus on providing solutions that reduce our customers' costs, increase throughput and assist in developing processes that allow for consistent and repeatable performance.

- Material-specific coatings / geometries.
- Reduce setup times.
- Decrease cost per hole.

Applicable Industries

- Aerospace
- Agriculture
- Automotive
- Defense
- General Production
- Heavy Equipment
- Hydraulics
- Marine
- Medical
- Oil and Gas
- Renewable Energy/ Energy
- Tool, Mold, and Die

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Coolant Recommendations 17
Deep Hole Drilling Guidelines 18
Troubleshooting Guide 19
Tooling Quote Form 21

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

WARNING means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

WHAT IS SUPERION?

Superion capabilities provide cutting-edge solutions in both solid carbide and PCD tooling.

WHY SHOULD YOU USE SUPERION?

- State-of-the-art manufacturing automation allows for high repeatability and consistency, regardless of the quantity you need.
- Superion provides application-specific solutions tailored to meet your toughest demands.
- Superion tooling excels in difficult and unique material applications.
- Our goal is to provide you a quality solution to exceed your need on a schedule that satisfies.

WHEN SHOULD YOU USE SUPERION?

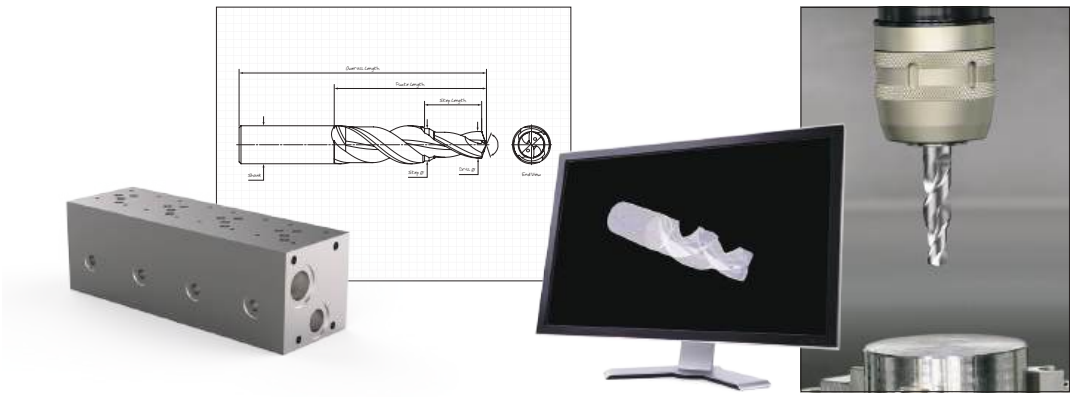
- When finish is critical and dimensions are tight, Superion will deliver a tool to maintain your tolerances.
- When your tooling budget requires regrinds and the ability to remanufacture, Superion tackles your needs.
- If you're dealing with CFRP or other unique materials, Superion tooling is the right solution.



Tough Applications Solved

FROM CONCEPT TO REALITY

Allied's team of engineers is ready to assist you with your application. We'll gather all the information we need about your application and turn your concept into reality. Give us a call today to collaborate with you. We'll listen to your needs, formulate a concept, develop the model, and build the solution.



AEROSPACE / Landing Gear Components



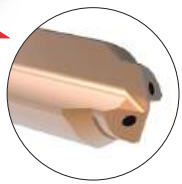


DRILL BURNISH TOOLS

Reduce cycle time, increase throughput, and increase profitability by combining roughing and finishing operations using our burnishing geometry for applications in which surface finish and hole tolerance are critical.

AUTOMOTIVE / Crankshafts





COMBINATION TOOLS

Combine multiple steps and various profile features to improve throughput. Combination tools reduce cost per hole and increase profit potential.

HEAVY EQUIPMENT / Manifolds





SOLID CARBIDE TOOLS WITH COOLANT

Solid carbide solutions optimize the manufacturing of manifolds. Most port specs call for at least 3 steps, and combining these features can reduce costs and increase throughput.

AUTOMOTIVE / Transmission Components





SOLID CARBIDE STEP TOOLS

You can rely on Superion's state-of-the-art manufacturing facility, built specifically to satisfy the customer's need whether it's 10 drills or 1,000 drills. Superion will provide consistent and effective solutions to your production needs.

Case Study

If you need to hold a tight tolerance, we have the solution.



When an application requires you to hold a tight tolerance, it quickly eliminates many tooling options because those options aren't capable of holding the strict tolerance. Our customer was using a solid carbide drill to machine cylinder heads for the automotive industry. The cylinder blocks were made from A356 aluminum.

When the end user raised concerns over the hole tolerance created by our customer's previous tooling, our customer changed the required tolerance from ± 0.013 mm (0.0005") to ± 0.009 mm (0.0003"). However, the previous tooling couldn't achieve the new tolerance requirements.

The customer tested the **Superion Solid Carbide Step Burnishing Drill** in this application. The Superion drill did exactly what the customer needed and successfully held the new tolerance of ± 0.009 mm (0.0003"). It also held the new tolerance with a 1.66 CPK, which was higher than the previous tool's CPK even at the initial ± 0.013 mm (0.0005") tolerance.

Don't tolerate tolerance issues. ***Call us to help you find the right tool for the job.***

Product: Superion® Step Burnishing Drill
Objectives: Achieve required tolerance
Industry: Automotive
Part: Cylinder head
Material: A356 aluminum
Hole Ø: 14.70 mm (0.579")
Hole Depth: 30.00 mm (1.181")

Measure	Superion® Step Burnishing Drill
RPM	3490
Speed	160.1 m/min (528 SFM)
Feed	0.29 mm/rev (0.0115 IPR)
Penetration Rate	1100 mm/min (43 IPM)
Cycle Time	4 sec
Tool Life	3000 parts
Tolerance	±0.009 mm (±0.0003")

Superion
Superion Step Burnishing Drill





The Step Burnishing Drill provided:

- ✓ Required tolerance
- ✓ Increased CPK

Case Study: CS0503

Case Study

Old adage, modern innovation: the right tool for the job.



Reduce costs and eliminate headaches by calling us to help solve your challenges. If your current process doesn't seem to be providing the results you want, you might be using the wrong tooling. Our customer was using a diamond-coated end mill to machine guide pads on frac pocket plugs used in down-hole oil drilling. The guide pads were made from fiberglass and glass wound filament material, which is very abrasive and shortens the life of cutting tools.

When the diamond coating wore off the end mill, the carbide substrate was exposed directly to the abrasive material, and the tool would quickly fail. The customer needed an optimized tool to extend tool life in this abrasive material and to solidify the repeatability of the process.

The customer tested the **Superion® PCD Flat Bottom Drill** in this application. The PCD substrate is more wear-resistant in the fiberglass material and provided more even wear of the tool throughout the process. Much to the customer's delight, the Superion drill ran at a higher penetration rate, which shortened cycle time. Most importantly, the Superion drill increased the customer's tool life from 7,500 holes to 50,000 holes (a 567% increase).

A costly application became effective and worry-free by finding the right tooling. The Superion drill didn't just increase the customer's tool life; it provided a repeatable, reliable process so the customer could "set it and forget it."

Don't tolerate unnecessary hassle and stress in your production. ***Call us to help you find the right tool for the job.***

Product: Superion® PCD Flat Bottom Drill
Objectives: Increase tool life
Industry: Oil & gas/petrochemical
Part: Frac pocket plug guide pads
Material: Fiberglass and glass wound filament
Hole Ø: 9.652 mm (0.380")
Hole Depth: 6.985 mm (0.275")

Measure	Diamond Coated End Mill	Superion® PCD Flat Bottom Drill
RPM	4500	7500
Speed	136.55 m/min (448 SFM)	227.381 m/min (746 SFM)
Feed Rate	0.203 mm/rev (0.008 IPR)	0.203 mm/rev (0.008 IPR)
Penetration Rate	914.4 mm/min (36 IPM)	1524 mm/min (60 IPM)
Cycle Time	0.46 sec	0.28 sec
Tool Life	7,500 holes	50,000 holes

‣ Superion
PCD solid carbide flat bottom drill





The PCD substrate for wear resistance in abrasive materials provided:

- Increased tool life
- Increased penetration rate
- Repeatable/reliable machining process

Case Study: CS0502

Superion Geometries

There's a Geometry for That

Allied Machine knows there isn't a one-size-fits-all solution when it comes to holemaking. To better accommodate the countless holes our customers drill, we offer multiple options in material-specific geometries and material-specific coatings.

Superion geometries feature a unique edge prep tailored to specific material groups to optimize tool life and edge strength. Some geometries also offer solutions for rough and finish burnishing.

If you're unsure which geometry would be best for your application, give our Application Engineers a call. They're standing by, ready to help.

1.330.343.4283 ext: 7611

1.800.321.5537 (toll free United States and Canada)

appeng@alliedmachine.com

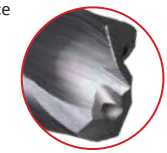


HPM



- Linear cutting edge aids in corner strength and improves chip formation in softer materials.
- Free cutting primary and secondary clearance.
- Ideal for drilling softer carbon, alloy and tool steel materials.
- AM420 coating for enhanced heat thresholds and tool life.
- TiCN coating for use in aluminum bronze.

HPM2M



- HPM geometry with a double margin.
- Recommended for improved hole tolerance and hole finish.
- Recommended for interrupted cuts and drill depths greater than 8xD.
- Double margins are optimized with a unique web for full engagement of all four margins at entry, leading to better stability.
- AM420 coating for enhanced heat thresholds and tool life.

HPS



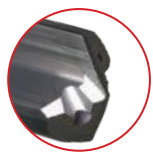
- Radius cutting edge for improved chip formation.
- Cam ground clearance for added point strength and stability.
- Reduced bell mouth for longer drill depths.
- OD flute edge prep for added corner strength.
- Ideal for drilling harder steels, high-temp alloys, and stainless.
- AM420 coating for enhanced heat thresholds and tool life in steels.
- AM460 coating provides industry leading tool life in stainless and HRSA materials with our highest heat threshold coating available.

HPS2M



- HPS geometry with a double margin.
- Recommended for improved hole tolerance and hole finish.
- Recommended for interrupted cuts and drill depths greater than 8xD.
- Double margins are optimized with a unique web for full engagement of all four margins at entry, leading to better stability.
- Ideal for drilling gray/white and SG/nodular cast iron.
- AM420 coating for enhanced heat thresholds and tool life in steels.
- AM440 coating for reduced flank wear in cast irons.
- AM460 coating provides industry leading tool life in stainless and HRSA materials with our highest heat threshold coating available.

HP106



- Optimized core, point, and web features for increased strength.
- Utilizes a single margin design with straight flutes.
- Ideal for drilling hardened steels and wear plates.
- AM420 coating for enhanced heat thresholds and tool life.

HPF



- Unique open geometry for high penetration rates specifically tailored for aluminum.
- Double margins are optimized with a unique web for full engagement of all four margins at entry, leading to better stability.
- Reduced helix angle for increased chip evacuation.
- Enhanced surface finish on tool to improve chip flow and reduce built-up edge.
- High lubricity TiCN coating for use in cast/wrought aluminum.

Superion Geometries

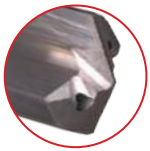
CIB (cast iron burnishing drill)

- Unique point, web, and cutting edge designed to significantly improve hole finish and hole tolerance.
- Double margins designed for enhanced stability.
- Minimized back taper to enhance straightness.
- Ideal pre-drill when using carbide taps.
- Straight flute design ideal for use on lathes.
- Enhanced surface finish on tool to improve chip flow and reduce built-up edge.
- AM440 coating for reduced flank wear in cast irons.



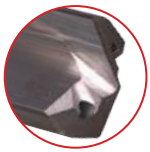
CAB (cast aluminum burnishing drill)

- Unique point, web, and cutting edge designed to significantly improve hole finish and hole tolerance.
- Straight flute design ideal for use on lathes.
- Double margins designed for enhanced stability.
- Minimized back taper to enhance straightness.
- Enhanced surface finish on tool to improve chip flow and reduce built-up edge.
- TiCN coating to enhance lubricity when drilling in aluminum.



WAB (wrought aluminum burnishing drill)

- Unique point, web, and cutting edge designed to significantly improve hole finish and hole tolerance.
- Straight flute design ideal for use on lathes.
- Double margins designed for enhanced stability.
- Minimized back taper to enhance straightness.
- Geometry enhancements for drilling wrought aluminum.
- Enhanced surface finish on tool to improve chip flow and reduce built-up edge.
- TiCN coating to enhance lubricity when drilling in aluminum.



BCB (brass copper burnishing drill)

- Straight flute design ideal for use on lathes.
- Double margins designed for enhanced stability.
- Minimized back taper to enhance straightness.
- Geometry enhancements for drilling brass and copper.
- Enhanced surface finish on tool to improve chip flow and reduce built-up edge.
- TiN coating.



FEATURES THAT WORK

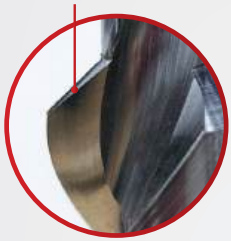
STEP DRILL **DUB OFF**

We have the solution when you have:

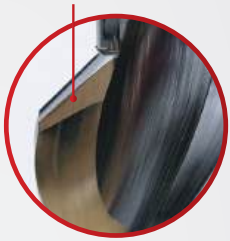
- Difficulties with chip formation on step tools.
- Chips wrapping around the tool even with peck cycles.
- To use multiple diameter drills.

Superion solid carbide step drills *now include* dub off.

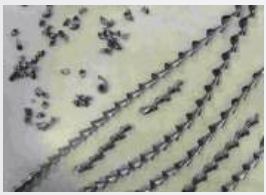
without dub off



with dub off



Hardened 4150



without dub off



with dub off

Ductile Iron



without dub off



with dub off

Soft 1018



without dub off



with dub off

Recommended Drilling Data | Metric (mm)

SUPERION SOLID CARBIDE

ISO	Material	Hardness (BHN)	General Application Geometry	Special Geometry*	Coating	Speed (m/min)	Feed Rate (mm/rev) by Diameter 3.00 - 4.00	4.00 - 5.00
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100-150	HPM	● HPM2M	AM420	152	0.15	0.18
		150-200	HPM	● HPM2M	AM420	145	0.13	0.17
		200-250	HPS	▲ HPS2M	AM420	137	0.10	0.15
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85-125	HPM	● HPM2M	AM420	139	0.15	0.18
		125-175	HPM	● HPM2M	AM420	134	0.15	0.17
		175-225	HPM	● HPM2M	AM420	130	0.13	0.15
		225-275	HPS	▲ HPS2M	AM420	125	0.11	0.15
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125-175	HPM	● HPM2M	AM420	134	0.14	0.15
		175-225	HPM	● HPM2M	AM420	131	0.13	0.14
		225-275	HPS	▲ HPS2M	AM420	122	0.11	0.13
		275-325	HPS	▲ HPS2M	AM420	114	0.10	0.13
	Alloy Steel 4140, 5140, 8640, etc.	125-175	HPM	● HPM2M	AM420	123	0.14	0.15
		175-225	HPM	● HPM2M	AM420	116	0.13	0.14
		225-275	HPS	▲ HPS2M	AM420	111	0.10	0.13
		275-325	HPS	▲ HPS2M	AM420	104	0.10	0.13
		325-375	HP106	—	AM420	99	0.09	0.11
	High-Strength Alloy 4340, 4330V, 300M, etc.	225-300	HPS	▲ HPS2M	AM420	104	0.10	0.13
		300-350	HPS	▲ HPS2M	AM420	98	0.10	0.13
		350-400	HP106	—	AM420	76	0.09	0.10
	Structural Steel A36, A285, A516, etc.	100-150	HPS	▲ HPS2M	AM420	137	0.14	0.17
		150-250	HPS	▲ HPS2M	AM420	130	0.11	0.14
		250-350	HPS	▲ HPS2M	AM420	119	0.10	0.13
	Tool Steel H-13, H-21, A-4, S-3, etc.	150-200	HPM	● HPM2M	AM420	82	0.11	0.11
		200-250	HPS	▲ HPS2M	AM420	76	0.10	0.10
M	**Stainless Steel 400 Series** 416, 420, etc.	185-275	HPS	▲ HPS2M	AM460	76	0.10	0.11
		275-350	HPS	▲ HPS2M	AM460	59	0.09	0.10
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135-185	HPS	▲ HPS2M	AM460	61	0.09	0.10
		185-275	HPS	▲ HPS2M	AM460	53	0.08	0.09
	Super Duplex Stainless Steel	135-185	HPS	▲ HPS2M	AM460	46	0.09	0.10
		185-275	HPS	▲ HPS2M	AM460	41	0.08	0.09

NOTE: The speeds and feeds listed above are for solid carbide tooling only. These are not recommendations for any polycrystalline diamond tools.

*Special Geometry

● Use HPM2M for greater drill depths over 8xD. HPM2M is used for any interruptions and produces a better hole tolerance and finish in comparison to HPM.

▲ Use HPS2M for greater drill depths over 8xD. HPS2M is used for any interruptions and produces a better hole tolerance and finish in comparison to HPS.

Parameter Reductions for Length to Diameter Relationships

6xD	0.90 reduction for speed and feed adjustment
9xD	0.80 reduction for speed and feed adjustment
12xD	0.70 reduction for speed and feed adjustment
15xD - 20xD	0.60 reduction for speed and feed adjustment

Flood Coolant Applications

Recommend if diameter to depth is less than or equal to three times the diameter. Reduce speed by 20%, and if needed, drop feed by 10% to maintain optimal chip formation.

Parameter Recommendations for Step Drills

- Feed rate is based off the pilot diameter.
- Speed rate is based off the largest step diameter.

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is also available through our Application Engineering team.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **X10: 18** for Deep Hole Drilling Guidelines in this section of the catalog. Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

Recommended Drilling Data | Metric (mm)

SUPERION SOLID CARBIDE

Feed Rate (mm/rev) by Diameter								
5.00 - 6.00	6.00 - 7.00	7.00 - 8.00	8.00 - 10.00	10.00 - 12.00	12.00- 14.00	14.00 - 16.00	16.00 - 18.00	18.00 - 20.00
0.20	0.23	0.25	0.30	0.33	0.38	0.43	0.46	0.51
0.19	0.22	0.24	0.28	0.30	0.36	0.41	0.43	0.48
0.18	0.20	0.23	0.25	0.28	0.33	0.38	0.41	0.46
0.20	0.23	0.25	0.30	0.34	0.37	0.42	0.44	0.50
0.19	0.22	0.24	0.29	0.33	0.36	0.41	0.43	0.48
0.18	0.20	0.23	0.28	0.32	0.34	0.38	0.41	0.46
0.18	0.20	0.23	0.25	0.30	0.33	0.38	0.41	0.46
0.18	0.19	0.23	0.28	0.30	0.33	0.37	0.41	0.44
0.15	0.18	0.22	0.27	0.29	0.32	0.36	0.39	0.43
0.15	0.18	0.22	0.27	0.28	0.32	0.34	0.37	0.42
0.14	0.17	0.20	0.25	0.28	0.30	0.33	0.36	0.41
0.17	0.19	0.22	0.27	0.29	0.33	0.37	0.41	0.43
0.15	0.18	0.20	0.25	0.28	0.32	0.36	0.39	0.42
0.15	0.17	0.20	0.24	0.27	0.30	0.34	0.37	0.39
0.14	0.15	0.19	0.23	0.25	0.29	0.33	0.36	0.38
0.13	0.14	0.18	0.23	0.25	0.28	0.32	0.34	0.37
0.15	0.17	0.20	0.24	0.27	0.30	0.34	0.37	0.39
0.14	0.15	0.19	0.23	0.25	0.29	0.33	0.36	0.38
0.11	0.14	0.17	0.20	0.22	0.25	0.28	0.30	0.33
0.18	0.20	0.24	0.30	0.33	0.36	0.39	0.41	0.47
0.15	0.18	0.20	0.27	0.30	0.30	0.34	0.36	0.41
0.14	0.17	0.19	0.24	0.27	0.29	0.32	0.34	0.38
0.13	0.15	0.18	0.24	0.25	0.28	0.32	0.33	0.38
0.11	0.14	0.17	0.22	0.23	0.25	0.29	0.30	0.36
0.14	0.17	0.19	0.23	0.24	0.25	0.28	0.28	0.30
0.11	0.14	0.17	0.20	0.22	0.24	0.25	0.25	0.28
0.11	0.13	0.15	0.18	0.19	0.20	0.23	0.24	0.27
0.10	0.10	0.13	0.15	0.17	0.18	0.20	0.20	0.23
0.11	0.13	0.15	0.18	0.18	0.19	0.19	0.20	0.22
0.10	0.10	0.11	0.14	0.14	0.17	0.17	0.18	0.18

NOTE: The speeds and feeds listed above are for solid carbide tooling only. These are not recommendations for any polycrystalline diamond tools.

Recommended Drilling Data | Metric (mm)

SUPERION SOLID CARBIDE

ISO	Material	Hardness (BHN)	General Application Geometry	Special Geometry*	Coating	Speed (m/min)	Feed Rate (mm/rev) by Diameter 3.00 - 4.00	Feed Rate (mm/rev) by Diameter 4.00 - 5.00
K	SG / Nodular Cast Iron	120-150	HPS2M	◆ CIB	AM440	152	0.20	0.22
		150-200	HPS2M	◆ CIB	AM440	148	0.18	0.19
		200-220	HPS2M	◆ CIB	AM440	143	0.15	0.18
		220-260	HPS2M	◆ CIB	AM440	139	0.15	0.18
		260-320	HPS2M	◆ CIB	AM440	127	0.13	0.17
	Grey / White Iron	120-150	HPS2M	◆ CIB	AM440	166	0.23	0.24
		150-200	HPS2M	◆ CIB	AM440	162	0.20	0.22
		200-220	HPS2M	◆ CIB	AM440	157	0.18	0.20
		220-260	HPS2M	◆ CIB	AM440	145	0.18	0.20
		260-320	HPS2M	◆ CIB	AM440	137	0.15	0.19
N	Cast Aluminum	30	HPF	○ CAB	TiCN	290	0.19	0.22
		180	HPF	○ CAB	TiCN	230	0.17	0.19
	Wrought Aluminum	30	HPF	△ WAB	TiCN	335	0.19	0.22
		180	HPF	△ WAB	TiCN	290	0.17	0.19
	Aluminum Bronze	100-200	HPM	—	TiCN	113	0.10	0.13
		200-250	HPM	—	TiCN	95	0.09	0.11
	Brass	100	BCB	—	TIN	229	0.13	0.15
	Copper	60	BCB	—	TIN	155	0.05	0.06
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140-220	HPS	—	AM460	34	0.08	0.08
		220-310	HPS	—	AM460	30	0.05	0.05
	Titanium Alloy	140-220	HPS	—	AM460	46	0.06	0.08
		220-310	HPS	—	AM460	37	0.05	0.06
	Aerospace Alloy S82	185-275	HPS	—	AM460	49	0.08	0.08
		275-350	HPS	—	AM460	40	0.05	0.05
H	Wear Plate Hardox®, AR400, T-1, etc.	400	HP106	—	AM420	52	0.05	0.05
		500	HP106	—	AM420	43	0.05	0.05
		600	HP106	—	AM420	30	0.05	0.05
	Hardened Steel	300-400	HP106	—	AM420	52	0.05	0.05
		400-500	HP106	—	AM420	43	0.05	0.05

NOTE: The speeds and feeds listed above are for solid carbide tooling only. These are not recommendations for any polycrystalline diamond tools.

*Special Geometry

◆ CIB (Cast Iron Burnish): Unique point, web, and cutting edge designed to significantly improve hole finish and tolerance.
NOTE: Reduce speed and feed parameters above from 40% - 50% reduction.

○ CAB (Cast Aluminum Burnish): Unique point, web, and cutting edge designed to significantly improve hole finish and tolerance
NOTE: Reduce speed and feed parameters above from 40% - 50% reduction.

△ WAB (Wrought Aluminum Burnish): Unique point, web, and cutting edge designed to significantly improve hole finish and tolerance.
NOTE: Reduce speed and feed parameters above from 40% - 50% reduction.

Parameter Reductions for Length to Diameter Relationships

6xD	0.90 reduction for speed and feed adjustment
9xD	0.80 reduction for speed and feed adjustment
12xD	0.70 reduction for speed and feed adjustment
15xD - 20xD	0.60 reduction for speed and feed adjustment

Flood Coolant Applications

Recommend if diameter to depth is less than or equal to three times the diameter. Reduce speed by 20%, and if needed, drop feed by 10% to maintain optimal chip formation.

Parameter Recommendations for Step Drills

- Feed rate is based off the pilot diameter.
- Speed rate is based off the largest step diameter.

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is also available through our Application Engineering team.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **X10: 18** for Deep Hole Drilling Guidelines in this section of the catalog. Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

Recommended Drilling Data | Metric (mm)

SUPERION SOLID CARBIDE

Feed Rate (mm/rev) by Diameter								
5.00 - 6.00	6.00 - 7.00	7.00 - 8.00	8.00 - 10.00	10.00 - 12.00	12.00- 14.00	14.00 - 16.00	16.00 - 18.00	18.00 - 20.00
0.23	0.28	0.30	0.36	0.39	0.43	0.47	0.52	0.56
0.22	0.25	0.29	0.33	0.36	0.39	0.42	0.47	0.53
0.20	0.23	0.28	0.30	0.33	0.36	0.38	0.43	0.47
0.20	0.23	0.28	0.30	0.33	0.36	0.38	0.43	0.47
0.19	0.22	0.25	0.29	0.32	0.34	0.37	0.39	0.43
0.25	0.30	0.33	0.39	0.42	0.47	0.51	0.56	0.61
0.24	0.28	0.32	0.37	0.39	0.42	0.44	0.50	0.56
0.23	0.25	0.30	0.33	0.36	0.38	0.41	0.46	0.51
0.23	0.25	0.30	0.33	0.36	0.38	0.41	0.46	0.51
0.22	0.24	0.29	0.32	0.34	0.37	0.39	0.42	0.48
0.23	0.25	0.32	0.37	0.41	0.46	0.50	0.51	0.56
0.22	0.23	0.29	0.34	0.39	0.43	0.47	0.48	0.53
0.24	0.28	0.32	0.37	0.43	0.47	0.51	0.53	0.58
0.22	0.25	0.29	0.34	0.39	0.44	0.48	0.51	0.56
0.15	0.18	0.20	0.23	0.25	0.30	0.33	0.36	0.38
0.13	0.15	0.17	0.18	0.20	0.25	0.28	0.30	0.36
0.18	0.23	0.25	0.29	0.32	0.36	0.41	0.43	0.46
0.08	0.08	0.08	0.10	0.10	0.10	0.13	0.15	0.18
0.09	0.10	0.11	0.14	0.15	0.17	0.18	0.19	0.22
0.08	0.09	0.09	0.11	0.13	0.15	0.17	0.17	0.19
0.09	0.10	0.11	0.15	0.15	0.18	0.19	0.20	0.23
0.08	0.09	0.10	0.13	0.14	0.15	0.18	0.18	0.20
0.09	0.10	0.10	0.11	0.14	0.15	0.17	0.18	0.20
0.08	0.09	0.09	0.10	0.11	0.14	0.15	0.15	0.18
0.05	0.08	0.08	0.10	0.13	0.14	0.18	0.20	0.23
0.05	0.08	0.08	0.10	0.10	0.11	0.15	0.18	0.20
0.05	0.08	0.08	0.10	0.10	0.11	0.15	0.18	0.20
0.05	0.08	0.08	0.10	0.13	0.14	0.18	0.20	0.23
0.05	0.08	0.08	0.10	0.10	0.11	0.15	0.18	0.20

NOTE: The speeds and feeds listed above are for solid carbide tooling only. These are not recommendations for any polycrystalline diamond tools.

Recommended Drilling Data | Imperial (in)

SUPERION SOLID CARBIDE

ISO	Material	Hardness (BHN)	General Application Geometry	Special Geometry*	Coating	Speed (SFM)	Feed Rate (IPR) by Diameter 0.118 - 0.157	Feed Rate (IPR) by Diameter 0.157 - 0.197
P	**Free-Machining Steel** 1118, 1215, 12L14, etc.	100 - 150	HPM	● HPM2M	AM420	500	0.0060	0.0070
		150 - 200	HPM	● HPM2M	AM420	475	0.0050	0.0065
		200 - 250	HPS	▲ HPS2M	AM420	450	0.0040	0.0060
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	HPM	● HPM2M	AM420	455	0.0060	0.0070
		125 - 175	HPM	● HPM2M	AM420	440	0.0060	0.0065
		175 - 225	HPM	● HPM2M	AM420	425	0.0050	0.0060
		225 - 275	HPS	▲ HPS2M	AM420	410	0.0045	0.0060
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	HPM	● HPM2M	AM420	440	0.0055	0.0060
		175 - 225	HPM	● HPM2M	AM420	430	0.0050	0.0055
		225 - 275	HPS	▲ HPS2M	AM420	400	0.0045	0.0050
		275 - 325	HPS	▲ HPS2M	AM420	375	0.0040	0.0050
	Alloy Steel 4140, 5140, 8640, etc.	125-175	HPM	● HPM2M	AM420	405	0.0055	0.0060
		175-225	HPM	● HPM2M	AM420	380	0.0050	0.0055
		225-275	HPS	▲ HPS2M	AM420	365	0.0040	0.0050
		275-325	HPS	▲ HPS2M	AM420	340	0.0040	0.0050
		325-375	HP106	—	AM420	325	0.0035	0.0045
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	HPS	▲ HPS2M	AM420	340	0.0040	0.0050
		300 - 350	HPS	▲ HPS2M	AM420	320	0.0040	0.0050
		350 - 400	HP106	—	AM420	250	0.0035	0.0040
	Structural Steel A36, A285, A516, etc.	100 - 150	HPS	▲ HPS2M	AM420	450	0.0055	0.0065
		150 - 250	HPS	▲ HPS2M	AM420	425	0.0045	0.0055
		250 - 350	HPS	▲ HPS2M	AM420	390	0.0040	0.0050
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	HPM	● HPM2M	AM420	270	0.0045	0.0045
		200 -250	HPS	▲ HPS2M	AM420	250	0.0040	0.0040
M	**Stainless Steel 400 Series** 416, 420, etc.	185-275	HPS	▲ HPS2M	AM460	250	0.0040	0.0045
		275-350	HPS	▲ HPS2M	AM460	195	0.0035	0.0040
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135-185	HPS	▲ HPS2M	AM460	200	0.0035	0.0040
		185-275	HPS	▲ HPS2M	AM460	175	0.0030	0.0035
	Super Duplex Stainless Steel	135-185	HPS	▲ HPS2M	AM460	150	0.0035	0.0040
		185-275	HPS	▲ HPS2M	AM460	135	0.0030	0.0035

NOTE: The speeds and feeds listed above are for solid carbide tooling only. These are not recommendations for any polycrystalline diamond tools.

*Special Geometry

● Use HPM2M for greater drill depths over 8xD. HPM2M is used for any interruptions and produces a better hole tolerance and finish in comparison to HPM.

▲ Use HPS2M for greater drill depths over 8xD. HPS2M is used for any interruptions and produces a better hole tolerance and finish in comparison to HPS.

Parameter Reductions for Length to Diameter Relationships

6xD	0.90 reduction for speed and feed adjustment
9xD	0.80 reduction for speed and feed adjustment
12xD	0.70 reduction for speed and feed adjustment
15xD - 20xD	0.60 reduction for speed and feed adjustment

Flood Coolant Applications

Recommend if diameter to depth is less than or equal to three times the diameter. Reduce speed by 20%, and if needed, drop feed by 10% to maintain optimal chip formation.

Parameter Recommendations for Step Drills

- Feed rate is based off the pilot diameter.
- Speed rate is based off the largest step diameter.

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is also available through our Application Engineering team.

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Recommended Drilling Data | Imperial (in)

SUPERION SOLID CARBIDE

Feed Rate (IPR) by Diameter								
0.197 - 0.236	0.236 - 0.276	0.276 - 0.315	0.315 - 0.394	0.394 - 0.472	0.472 - 0.551	0.551 - 0.630	0.630 - 0.709	0.709 - 0.787
0.0080	0.0090	0.0100	0.0120	0.0130	0.0150	0.0170	0.0180	0.0200
0.0075	0.0085	0.0095	0.0110	0.0120	0.0140	0.0160	0.0170	0.0190
0.0070	0.0080	0.0090	0.0100	0.0110	0.0130	0.0150	0.0160	0.0180
0.0080	0.0090	0.0100	0.0120	0.0135	0.0145	0.0165	0.0175	0.0195
0.0075	0.0085	0.0095	0.0115	0.0130	0.0140	0.0160	0.0170	0.0190
0.0070	0.0080	0.0090	0.0110	0.0125	0.0135	0.0150	0.0160	0.0180
0.0070	0.0080	0.0090	0.0100	0.0120	0.0130	0.0150	0.0160	0.0180
0.0070	0.0075	0.0090	0.0110	0.0120	0.0130	0.0145	0.0160	0.0175
0.0060	0.0070	0.0085	0.0105	0.0115	0.0125	0.0140	0.0155	0.0170
0.0060	0.0070	0.0085	0.0105	0.0110	0.0125	0.0135	0.0145	0.0165
0.0055	0.0065	0.0080	0.0100	0.0110	0.0120	0.0130	0.0140	0.0160
0.0065	0.0075	0.0085	0.0105	0.0115	0.0130	0.0145	0.0160	0.0170
0.0060	0.0070	0.0080	0.0100	0.0110	0.0125	0.0140	0.0155	0.0165
0.0060	0.0065	0.0080	0.0095	0.0105	0.0120	0.0135	0.0145	0.0155
0.0055	0.0060	0.0075	0.0090	0.0100	0.0115	0.0130	0.0140	0.0150
0.0050	0.0055	0.0070	0.0090	0.0100	0.0110	0.0125	0.0135	0.0145
0.0060	0.0065	0.0080	0.0095	0.0105	0.0120	0.0135	0.0145	0.0155
0.0055	0.0060	0.0075	0.0090	0.0100	0.0115	0.0130	0.0140	0.0150
0.0045	0.0055	0.0065	0.0080	0.0085	0.0100	0.0110	0.0120	0.0130
0.0070	0.0080	0.0095	0.0120	0.0130	0.0140	0.0155	0.0160	0.0185
0.0060	0.0070	0.0080	0.0110	0.0120	0.0120	0.0135	0.0140	0.0160
0.0055	0.0065	0.0075	0.0095	0.0105	0.0115	0.0125	0.0135	0.0150
0.0050	0.0060	0.0070	0.0095	0.0100	0.0110	0.0125	0.0130	0.0150
0.0045	0.0055	0.0065	0.0085	0.0090	0.0100	0.0115	0.0120	0.0140
0.0055	0.0065	0.0075	0.0090	0.0095	0.0100	0.0110	0.0110	0.0120
0.0045	0.0055	0.0065	0.0080	0.0085	0.0095	0.0100	0.0100	0.0110
0.0045	0.0050	0.0060	0.0070	0.0075	0.0080	0.0090	0.0095	0.0105
0.0040	0.0040	0.0050	0.0060	0.0065	0.0070	0.0080	0.0080	0.0090
0.0045	0.0050	0.0060	0.0070	0.0070	0.0075	0.0075	0.0080	0.0085
0.0040	0.0040	0.0045	0.0055	0.0055	0.0065	0.0065	0.0070	0.0070

NOTE: The speeds and feeds listed above are for solid carbide tooling only. These are not recommendations for any polycrystalline diamond tools.

Recommended Drilling Data | Imperial (in)

SUPERION SOLID CARBIDE

ISO	Material	Hardness (BHN)	General Application Geometry	Special Geometry*	Coating	Speed (SFM)	Feed Rate (IPR) by Diameter 0.118 - 0.157	Feed Rate (IPR) by Diameter 0.157 - 0.197
K	SG / Nodular Cast Iron	120-150	HPS2M	◆ CIB	AM440	500	0.0080	0.0085
		150-200	HPS2M	◆ CIB	AM440	485	0.0070	0.0075
		200-220	HPS2M	◆ CIB	AM440	470	0.0060	0.0070
		220-260	HPS2M	◆ CIB	AM440	455	0.0060	0.0070
		260-320	HPS2M	◆ CIB	AM440	415	0.0050	0.0065
	Grey / White Iron	120-150	HPS2M	◆ CIB	AM440	545	0.0090	0.0095
		150-200	HPS2M	◆ CIB	AM440	530	0.0080	0.0085
		200-220	HPS2M	◆ CIB	AM440	515	0.0070	0.0080
		220-260	HPS2M	◆ CIB	AM440	475	0.0070	0.0080
		260-320	HPS2M	◆ CIB	AM440	450	0.0060	0.0075
N	Cast Aluminum	30	HPF	○ CAB	TiCN	950	0.0075	0.0085
		180	HPF	○ CAB	TiCN	755	0.0065	0.0075
	Wrought Aluminum	30	HPF	△ WAB	TiCN	1100	0.0075	0.0085
		180	HPF	△ WAB	TiCN	950	0.0065	0.0075
	Aluminum Bronze	100-200	HPM	—	TiCN	370	0.0040	0.0050
		200-250	HPM	—	TiCN	310	0.0035	0.0045
	Brass	100	BCB	—	TIN	750	0.0050	0.0060
	Copper	60	BCB	—	TIN	510	0.0020	0.0025
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140-220	HPS	—	AM460	110	0.0030	0.0030
		220-310	HPS	—	AM460	100	0.0020	0.0020
	Titanium Alloy	140-220	HPS	—	AM460	150	0.0025	0.0030
		220-310	HPS	—	AM460	120	0.0020	0.0025
	Aerospace Alloy S82	185-275	HPS	—	AM460	160	0.0030	0.0030
		275-350	HPS	—	AM460	130	0.0020	0.0020
H	Wear Plate Hardox®, AR400, T-1, etc.	400	HP106	—	AM420	170	0.0020	0.0020
		500	HP106	—	AM420	140	0.0020	0.0020
		600	HP106	—	AM420	100	0.0020	0.0020
	Hardened Steel	300-400	HP106	—	AM420	170	0.0020	0.0020
		400-500	HP106	—	AM420	140	0.0020	0.0020

NOTE: The speeds and feeds listed above are for solid carbide tooling only. These are not recommendations for any polycrystalline diamond tools.

*Special Geometry

◆ CIB (Cast Iron Burnish): Unique point, web, and cutting edge designed to significantly improve hole finish and tolerance.
NOTE: Reduce speed and feed parameters above from 40% - 50% reduction.

○ CAB (Cast Aluminum Burnish): Unique point, web, and cutting edge designed to significantly improve hole finish and tolerance
NOTE: Reduce speed and feed parameters above from 40% - 50% reduction.

△ WAB (Wrought Aluminum Burnish): Unique point, web, and cutting edge designed to significantly improve hole finish and tolerance.
NOTE: Reduce speed and feed parameters above from 40% - 50% reduction.

Parameter Reductions for Length to Diameter Relationships

6xD	0.90 reduction for speed and feed adjustment
⚠ 9xD	0.80 reduction for speed and feed adjustment
⚠ 12xD	0.70 reduction for speed and feed adjustment
⚠ 15xD - 20xD	0.60 reduction for speed and feed adjustment

Flood Coolant Applications

Recommend if diameter to depth is less than or equal to three times the diameter. Reduce speed by 20%, and if needed, drop feed by 10% to maintain optimal chip formation.

Parameter Recommendations for Step Drills

- Feed rate is based off the pilot diameter.
- Speed rate is based off the largest step diameter.

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is also available through our Application Engineering team.

⚠ **WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **X10: 18** for Deep Hole Drilling Guidelines in this section of the catalog. Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

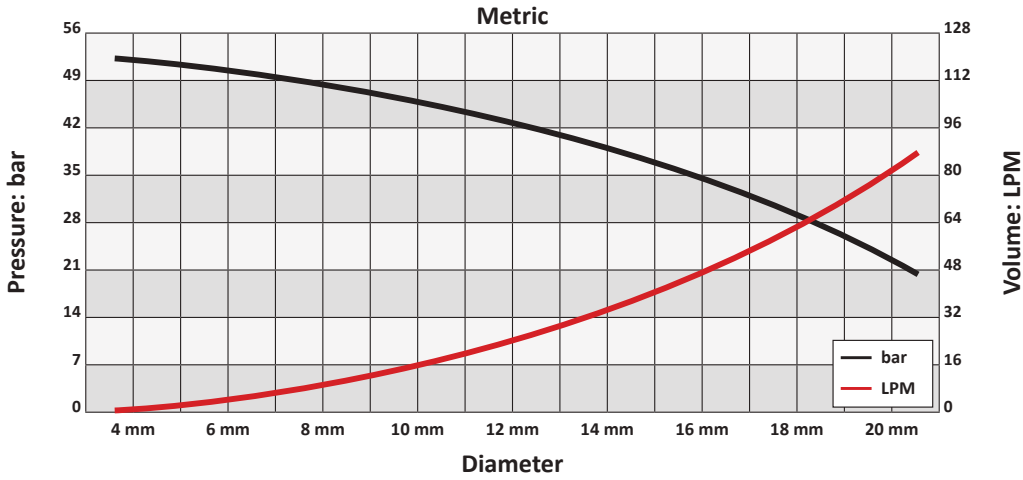
Recommended Drilling Data | Imperial (in)

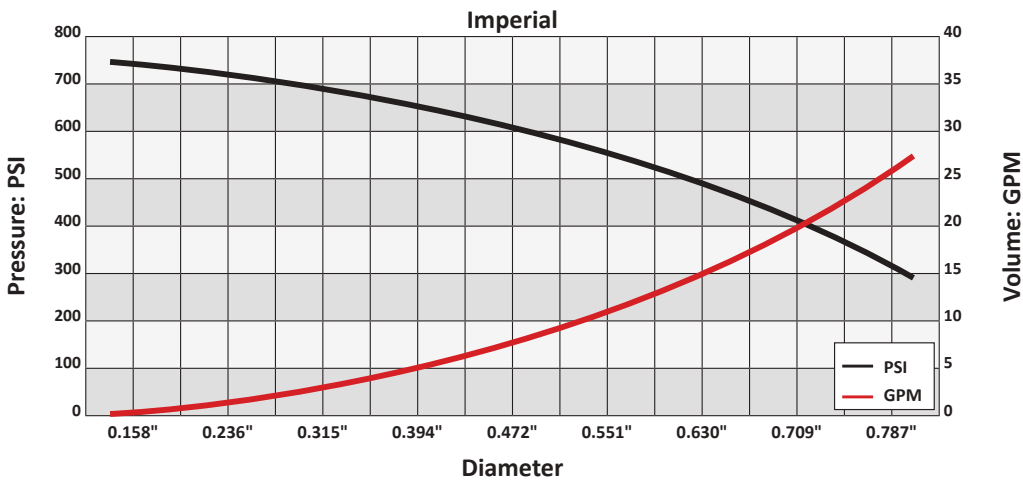
SUPERION SOLID CARBIDE

Feed Rate (IPR) by Diameter								
0.197 - 0.236	0.236 - 0.276	0.276 - 0.315	0.315 - 0.394	0.394 - 0.472	0.472 - 0.551	0.551 - 0.630	0.630 - 0.709	0.709 - 0.787
0.0090	0.0110	0.0120	0.0140	0.0155	0.0170	0.0190	0.0205	0.0220
0.0085	0.0100	0.0115	0.0130	0.0140	0.0155	0.0165	0.0185	0.0210
0.0080	0.0090	0.0110	0.0120	0.0130	0.0140	0.0150	0.0170	0.0190
0.0080	0.0090	0.0110	0.0120	0.0130	0.0140	0.0150	0.0170	0.0190
0.0075	0.0085	0.0100	0.0115	0.0125	0.0135	0.0145	0.0155	0.0170
0.0100	0.0120	0.0130	0.0155	0.0165	0.0185	0.0200	0.0220	0.0240
0.0095	0.0110	0.0125	0.0145	0.0155	0.0165	0.0175	0.0195	0.0220
0.0090	0.0100	0.0120	0.0130	0.0140	0.0150	0.0160	0.0180	0.0200
0.0090	0.0100	0.0120	0.0130	0.0140	0.0150	0.0160	0.0180	0.0200
0.0085	0.0095	0.0115	0.0125	0.0135	0.0145	0.0155	0.0165	0.0190
0.0090	0.0100	0.0125	0.0145	0.0160	0.0180	0.0195	0.0200	0.0220
0.0085	0.0090	0.0115	0.0135	0.0155	0.0170	0.0185	0.0190	0.0210
0.0095	0.0110	0.0125	0.0145	0.0170	0.0185	0.0200	0.0210	0.0230
0.0085	0.0100	0.0115	0.0135	0.0155	0.0175	0.0190	0.0200	0.0220
0.0060	0.0070	0.0080	0.0090	0.0100	0.0120	0.0130	0.0140	0.0150
0.0050	0.0060	0.0065	0.0070	0.0080	0.0100	0.0110	0.0120	0.0140
0.0070	0.0090	0.0100	0.0115	0.0125	0.0140	0.0160	0.0170	0.0180
0.0030	0.0030	0.0030	0.0040	0.0040	0.0040	0.0050	0.0060	0.0070
0.0035	0.0040	0.0045	0.0055	0.0060	0.0065	0.0070	0.0075	0.0085
0.0030	0.0035	0.0035	0.0045	0.0050	0.0060	0.0065	0.0065	0.0075
0.0035	0.0040	0.0045	0.0060	0.0060	0.0070	0.0075	0.0080	0.0090
0.0030	0.0035	0.0040	0.0050	0.0055	0.0060	0.0070	0.0070	0.0080
0.0035	0.0040	0.0040	0.0045	0.0055	0.0060	0.0065	0.0070	0.0080
0.0030	0.0035	0.0035	0.0040	0.0045	0.0055	0.0060	0.0060	0.0070
0.0020	0.0030	0.0030	0.0040	0.0050	0.0055	0.0070	0.0080	0.0090
0.0020	0.0030	0.0030	0.0040	0.0040	0.0045	0.0060	0.0070	0.0080
0.0020	0.0030	0.0030	0.0040	0.0040	0.0045	0.0060	0.0070	0.0080
0.0020	0.0030	0.0030	0.0040	0.0050	0.0055	0.0070	0.0080	0.0090
0.0020	0.0030	0.0030	0.0040	0.0040	0.0045	0.0060	0.0070	0.0080

NOTE: The speeds and feeds listed above are for solid carbide tooling only. These are not recommendations for any polycrystalline diamond tools.

Coolant Recommendations





NOTE: The coolant recommendations listed above are for solid carbide tooling only. These are not recommendations for any polycrystalline diamond tools.

Coolant Adjustment

Drill Length	Pressure and Flow Multiplier
Up to 6xD	See above chart
>6 - 9xD	1.2
⚠ >9 - 12xD	1.4
⚠ >12 - 15xD	1.6
⚠ >15 - 20xD	2

Coolant Recommendation Example | Metric

If the recommended coolant pressure and flow is 42 bar and 32 LPM for a 3xD tool, the adjusted pressure and flow for a 9xD tool would be:	
42 x 1.2 = 50.4 bar	32 x 1.2 = 38.4 LPM

Coolant Recommendation Example | Imperial

If the recommended coolant pressure and flow is 600 PSI and 12 GPM for a 3xD tool, the adjusted pressure and flow for a 9xD tool would be:	
600 x 1.2 = 720 PSI	12 x 1.2 = 14.4 GPM

NOTES:
- Coolant must have proper additives to prevent excessive foaming during drilling cycle.
- Positive displacement coolant pump is recommended to maintain coolant flow at recommended values.
- The coolant filter must be less than 5µm. Fine filtration is necessary to prevent blockage of the smaller coolant holes.

⚠ **WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **X10: 18** for Deep Hole Drilling Guidelines in this section of the catalog. Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

Deep Hole Drilling Guidelines

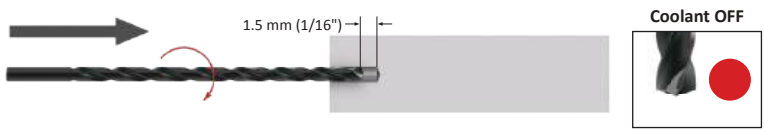
1. Pilot Hole
100% RPM
100% mm/rev (IPR)

Establish the pilot hole using the same diameter short drill to a depth of 2xD minimum.
Utilize a pilot drill with the same or larger included point angle.



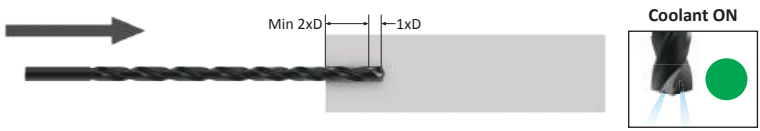
2. Feed-in
50 RPM max
300 mm/min (12 IPM)

Feed the longer drill within 1.5 mm (1/16") short of the established pilot hole bottom at a **maximum of 50 RPM** and 300 mm/min (12 IPM) feed rate.



3. Deep Hole Transition Drilling
50% RPM
75% mm/rev (IPR)

Drill additional 1xD past the bottom of the pilot hole at 50% reduction of recommended speed and 25% reduction of recommended feed.
Minimum of one second dwell is required to meet full speed before feeding.



4. Deep Hole Drilling - Blind
100% RPM
100% mm/rev (IPR)

Drill to full depth at recommended speed and feed for longer drill according to Allied speed and feed charts.
No peck cycle recommended.



5. Deep Hole Drilling - at Breakout
50% RPM
75% mm/rev (IPR)

For through holes only:
Reduce speed by 50% and feed by 25% prior to breakout.
Do not break out more than 3 mm (1/8") past the full diameter of the drill.



6. Drill Retract
50 RPM max

Reduce speed to a **maximum of 50 RPM** before retracting from the hole.



⚠ WARNING **Tool failure can cause serious injury. To prevent:**

- When using drills greater than 9xD without support bushing, use a short Superion drill to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate drills more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

Troubleshooting Guide

Problem	Condition	Shorten Flute Length	Increase Feed Rate[G]	Increase Speed[G]	Decrease Feed Rate[A G]	Decrease Speed[G]	Increase Coolant Pressure	Increase Coolant Flow	Use Through Tool Coolant[B]	Change Point Angle	Align / Repair Spindle
Decrease Tool Life	Lack of drill rigidity	○									
	Improper cutting parameters		●		●	●					
	Excessive margin wear					●	○	○	○		●
	Cutting edge chipping				●						●
	Chattering/vibration	○	●			○					●
	Built-up edge[D]					●	○	○	●		
	Chipping of point				●	●				○	●
Poor Chip Evacuation[C]	Long chips		●			●	○	○			
	Chip packing				●	●	●	○	●		
	Blue chips				●	●	●	●	●		
Hole Form	Workpiece deflection				●					○	
	Bell mouth	○	●			●				○	
	Oversized hole	○		●	●						●
	Undersized hole		●			●	●	●			
	Hole leadoff	○			●	○				○	●
Performance	Workpiece burning				●	●	●	●	●		
	Tool deflection	○			●	●				○	●
	Harder materials				●	●			●		
	Retract spiral	●			●	●					●
	Exit burr			●	●					○	

●: Primary solution
○: Secondary solution

A: Do not reduce feed rates below threshold of good chip form.
B: Run coolant through tool when drilling greater than 3xD.
C: Add peck cycle to help clear chips.
D: Ensure coolant quality with regular maintenance free of swarf.
G: Refer to speed and feed chart.

IMPORTANT: Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

Troubleshooting Guide

Problem	Condition	Different Coating	Different Geom.	Tool Clamping	Work-piece Fixturing	Regrind/ Recond.	Check Tool Diameter [E]	Entry Speed & Feed [F]	TIR Verification	Exit Speed & Feed
Decrease Tool Life	Lack of drill rigidity			●	●					
	Improper cutting parameters									
	Excessive margin wear	○		●	●	○				
	Cutting edge chipping		○	●	●	○				
	Chattering/vibration			●	●					
	Built-up edge[D]	○	○							
	Chipping of point		○	●	●	○				
Poor Chip Evacuation[C]	Long chips		○							
	Chip packing		○							
	Blue chips									
Hole Form	Workpiece deflection		○		●					
	Bell mouth			●	●			●		
	Oversized hole			●	●	○			●	
	Undersized hole					●	●		●	
	Hole leadoff		○	●	●	○		●	●	
Performance	Workpiece burning									
	Tool deflection		○	●	●			●	○	
	Harder materials	○	○							
	Retract spiral		○	●					●	●
	Exit burr		○							

●: Primary solution
○: Secondary solution

C: Add peck cycle to help clear chips.
D: Ensure coolant quality with regular maintenance free of swarf.
E: Reduce entry speed and feed parameters 20%.
F: TIR range of 0.000"-0.001" (prefer 0.0000"-0.0005").

Speed and Feed Reduction Table		
Interruptions:		
Condition	**Reduction Speed**	**Reduction Feed**
Small Cross Hole (C.H)	0.90	0.85
Large Cross Hole(C.H)	0.75	0.70
Incline Angle Entry(I.A)	0.80	0.75
I.A + C.H	0.70	0.65
Coolant Type:		
Condition	**Reduction Speed**	**Reduction Feed**
Flood**	See Note	See Note
Dry	0.50	0.50
Mist	0.70	0.85
Machine:		
Machine Type	**Reduction Speed**	**Reduction Feed**
Lathe	0.90	0.85
Depth Ratio:		
Condition	**Reduction Speed**	**Reduction Feed**
6xD	0.90	0.90
9xD	0.80	0.80
12xD	0.70	0.70
15-20xD	0.60	0.60
Example:		
Recommended speed and feed is 365 SFM and 0.010 IPR for a 0.276" - 0.315" diameter drill at 12xD.		
365 SFM x 0.70 = 255 SFM	0.010 IPR x 0.70 = 0.007 IPR	

**Flood coolant applications: Recommend if diameter to depth is less than or equal to 3xD. Reduce speed by 20%, and if needed, drop feed by 10% to maintain optimal chip formation.

IMPORTANT: Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

Tooling Quote Form

Please email the completed form to:
your local FSE (if applicable) or **appeng@alliedmachine.com**.

Please include any prints for the part (specify the feature) and/or tool for this project. More information will help ensure proper tooling for this quote.

LOGIN TO DOWNLOAD AND COMPLETE THIS FORM OFFLINE:
alliedmachine.com/SuperionQuoteForm

Name	
FSE (if applicable)	

Please fill in the fields below completely for a quote to be processed.

Distributor Information

Company Name: _____
Contact: _____
Account Number: _____
Phone: _____
Email: _____

End User Information

Company Name: _____
Contact: _____
Industry: _____
Phone: _____
Email: _____

Superion Objective What issue(s) are we solving? (i.e. penetration rate, finish, tool life, hole size, etc.)

_____

_____

Application Information

Hole Diameter: _____ in/mm Tolerance: _____ Material: _____ (4150/A36/Cast Iron/etc.)

Pre-existing Diameter: _____ in/mm Depth of Cut: _____ in/mm Hardness: _____ (BHN/Rc)

Required Finish: _____ RMS State: _____ (Casting/Hot rolled/Forging)

Machine Information

Machine Type: _____ (Lathe/Screw machine/Machine center/etc.) Builder: _____ (Haas, Mori Seiki, etc.) Model #: _____

Shank Required: _____ (Cylindrical/Whistle Notch/Tang/etc.) Power: _____ HP/KW

Rigidity:
- ☐ Excellent
- ☐ Good
- ☐ Poor

Orientation:
- ☐ Vertical
- ☐ Horizontal

Tool Rotating:
- ☐ Yes
- ☐ No

Thrust: _____ lbs/N

Max Spindle Speed: _____ RPM

Current Process Is this a new project? Yes___ No___ (If selected no, please fill the box out below)

Current Tooling: _____ (Manufacturer/Item Number) Current Tool Life: _____Holes _____Parts _____Inches

Current Speeds and Feeds: _____ Current Coating/Substrate: _____

Notes: _____

_____

_____

Notes

SECTION

X20-ESP

Special Tooling Solutions

Special Tooling Solutions





Specialty is Our Specialty

When it comes to designing and developing special solutions for customers, Allied Machine is the top choice. Our engineers see applications in ways many others don't, and that ability allows us to win situations that haven't been won before.

If you have a particularly unique or difficult application, give us a call. Most of our tooling can be tweaked as specials, and we can create entirely new concepts if alterations to standard product won't do the trick.

After all, everyone deserves some special attention.

Applicable Industries

- Aerospace
- Agriculture
- Automotive
- Defense
- General Production
- Heavy Equipment
- Hydraulics
- Marine
- Medical
- Oil and Gas
- Renewable Energy/ Energy
- Tool, Mold, and Die

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Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

WARNING means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

Special Tooling Solutions

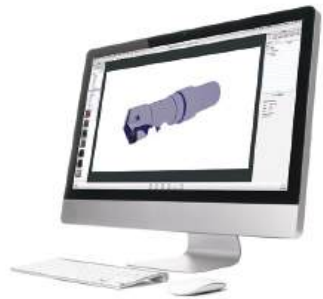
Options

Special Tooling is Our Specialty

We know standard tooling can't be the answer for everyone, and that's why we specialize in developing unique tooling to fit your needs.

Many of our products can be altered as specials. In fact, many of our standard items are results of frequently requested special features. Many times, one special design can end up solving problems for multiple customers across a variety of industries. Our specials capabilities truly set us apart from our competition.

Our Application Engineering team and Field Sales Engineers are trained and highly skilled to develop unique solutions that you won't find anywhere else. If you need special tooling, give us a call. Let us be the ones to tell you it can't be done. But don't expect us to.



Insta-Quote®

Insta-Quote is an online custom tool designer. The program is available 24/7 and guides you through the steps as you create a special tool designed to meet the requirements of your application.

Products Available:

- T-A® Inserts.
- T-A® Holders.
- GEN3SYS® XT Holders.
- ALVAN® Reamers.



See pages X20: 5 - 12.

Engineered Specials

When the requirements of your application fall outside the limitations of Insta-Quote, your special tooling becomes an Engineered Special. These are tool designs that our engineers create and develop specifically for you.

Reasons to Call:

- Many standard products can be specially engineered.
- Allied Machine specials can save you time and increase tool life.
- Our engineers have the skills and knowledge to create designs that meet the challenge.



See pages X20: 13 - 22.

Special Tooling Solutions

Industry Solutions

Every Industry Needs Some Special Attention

Many specific industry applications can be tricky, and processes can change drastically from one sector to the next. Allied's Field Sales Engineers and Application Engineers work together to develop breakthrough solutions that help customers master processes that before seemed impossible to improve.

You know your parts. You know your materials. You know what works and what doesn't. All you need to do is let us know what you're dealing with, and we'll take it from there. Whether you're machining the wings of an airplane or the engine block in a new car, we'll develop the right design to solve the problem you're facing.

For more industry examples, see Allied Machine's case studies at **www.alliedmachine.com/RealLifeResults**.





Automotive
Engine Block



Aerospace
Central Fuselage Wing Box



Heavy Machinery
Track Links



Oil and Gas
Heat Exchanger

COMPLEX SOLUTIONS





INNOVATIVE SOLUTIONS





LONG SOLUTIONS





EVERY PROBLEM
HAS A
SOLUTION

Insta-Quote

Design Your Custom Tooling

Insta-Quote®

Design your custom tooling and receive a drawing and quote...all within *minutes*.

iq.alliedmachine.com



Design Your Own Solutions

Insta-Quote is an online program that allows you to design and quote your own tooling in a matter of minutes. After you log in, Insta-Quote will guide you through the steps to gather all the necessary information and generate the solution you need. Within the system, you can choose from the following tools to design:

- T-A® Inserts.
- T-A® Holders.
- GEN3SYS® XT Holders.

Along with designing these products as specials, Insta-Quote can also help you create your item number for ALVAN® reamers. Because reamer item numbers do not follow the same method as Allied Machine's standard products, you must build your reamer item numbers. Insta-Quote can do that for you.

- Replaceable Head Style.
- Monobloc Style.
- Cutting Ring Style.



Design anytime from anywhere.
Available online 24/7.

Insta-Quote

User Guide



Where Do I Find Insta-Quote?

There are two ways to get to the Insta-Quote program. You can visit the Allied Machine homepage (www.alliedmachine.com) and find it under the Online Tools section of the upper navigation.

Or you can simply go to iq.alliedmachine.com to access Insta-Quote directly.

Insta-Quote®

OR **iq.alliedmachine.com**



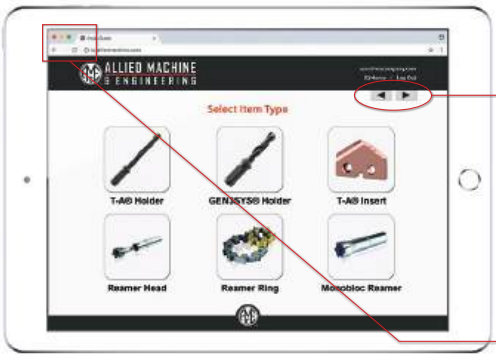
1 **Log In**

Fill in "User Name" and "Password" and click the login button. If you do not have a login, just click the "Registration Form" option beneath the login button and submit your registration.



2 **Select Activity**

On this screen, you can choose to create a new tool, edit a previous tool, update your quote, or copy a previous item.

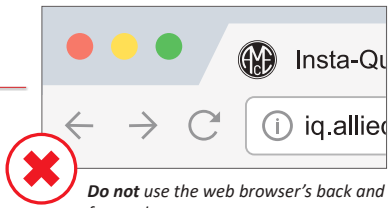


3 **Select Tool Type**

Choose the type of special tool you would like to create. The options include T-A® inserts, T-A® holders, GEN3SYS® holders, replaceable head reamers, monobloc reamers, and cutting ring reamers.



IMPORTANT:
The right and left arrows will navigate you through each step. **DO NOT** use the web browser's back and forward buttons; doing so may result in loss of progress.



***Do not** use the web browser's back and forward arrows*

Insta-Quote

User Guide

What Is My Item Number?

As soon as you select the type of product you want to design, Insta-Quote automatically generates the item number for your tool. The item number will appear at the top left-hand side of your screen.

170209–547

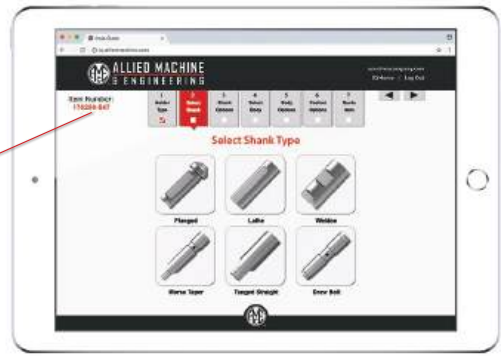
Year Month Day Reference No.

First Part of the Item Number:

This represents the date you began designing your tool (ex. 170209 = February 9, 2017).

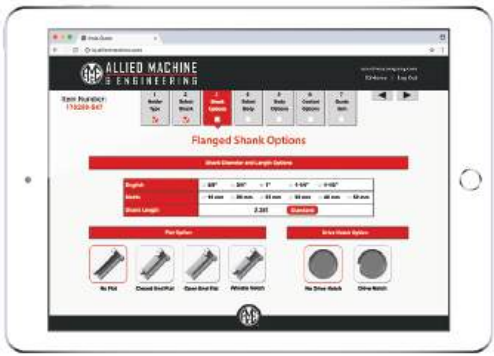
Second Part of the Item Number:

This is the reference number for that specific item. If you begin designing another tool on the same day, the first part of the new item number would be the same, but the reference number would be unique to that new item.



4 **Shank Selection**

Select the shank type you require and then click the right arrow button ▶ to proceed.



5 **Shank Options**

After choosing the shank type, you will be provided with additional shank options (if applicable). Once your selections are made, click the right arrow button ▶ to proceed.



6 **Select Body Style**

Choose the holder style you need, and then click the right arrow button ▶ to proceed.



7 **Body Options**

After choosing the holder style, you will be provided with additional holder options (if applicable). Once your selections are made, click the right arrow button ▶ to proceed.



8 **Coolant Options**

On this screen you will select your coolant options. When finished, click the right arrow button ▶ to proceed.

Insta-Quote

User Guide



9 **Contact Information**

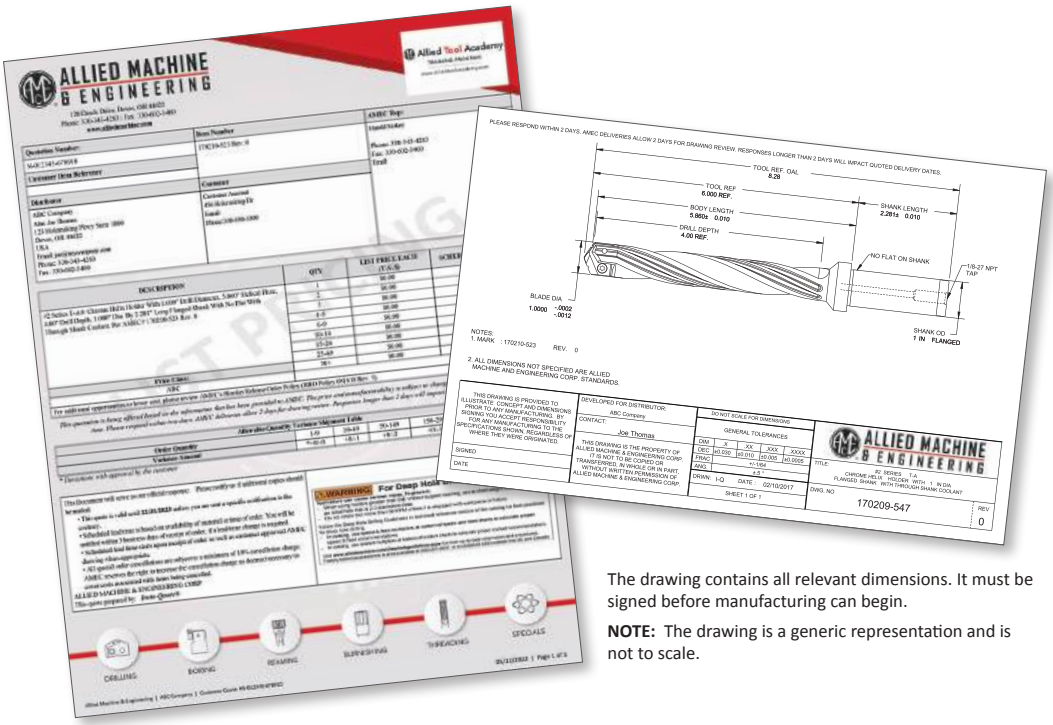
Complete the contact details and select a language for the drawing. Click the "Quote Item" button to proceed.



10 **Quote Your Item**

Once you have selected "Quote Item," a box will appear to let you know the estimated time remaining before your quote and drawing are created (typical wait time is less than 1 minute).

NOTE: Your pop-up blocker must be disabled in order to view the downloaded files.



The drawing contains all relevant dimensions. It must be signed before manufacturing can begin.

NOTE: The drawing is a generic representation and is not to scale.

Insta-Quote® | Design Your Custom Tooling

Insta-Quote

T-A® Inserts



Special Angle



Double Angle



Spur Point



Spot and Chamfer



Step Insert



Flat Bottom

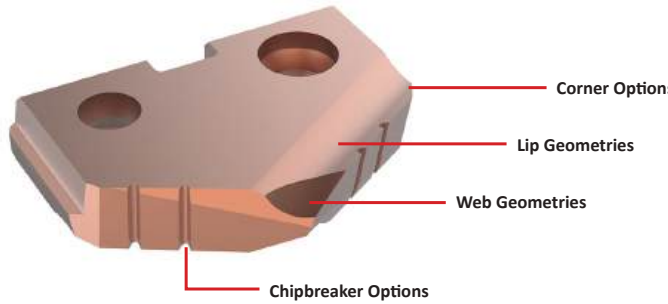


Ball Nose



Additional Features

Insta-Quote provides multiple options to enhance different areas of the insert. If you have questions about which options would most benefit your application, just give us a call. We'll be happy to provide in-depth explanations about how certain options can optimize your results.



Substrate Options
HSS: HSS, Super Cobalt, Premium Cobalt
Carbide: C1, C2, C3, C5

Coating Options			
AM200®	TiN	TiAlN	TiCN
			

Insta-Quote

T-A® Holders



Chrome Helix



Chrome Bushing



⚠ Guided Holder



One Step ICS



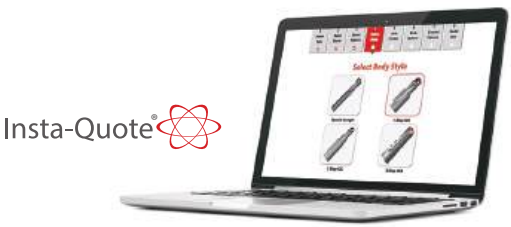
Two Step ICS



Three Step ICS



⚠ Special Length



Additional Features

Insta-Quote provides multiple options to enhance different parts of the holder. If you have questions about which options would most benefit your application, just give us a call. We'll be happy to provide in-depth explanations about how certain options can optimize your results.





⚠ **WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **X20: 25** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

Insta-Quote

GEN3SYS® XT Holders



Chrome Helix



Chrome Bushing



⚠ Special Length



One Step ICS



Two Step ICS

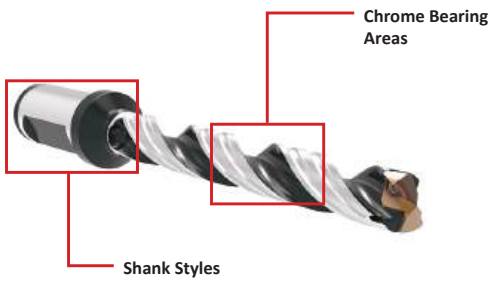


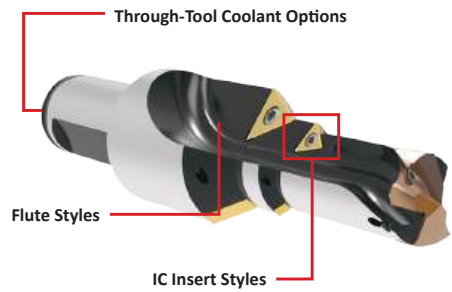
Three Step ICS



Additional Features

Insta-Quote provides multiple options to enhance different parts of the holder. If you have questions about which options would most benefit your application, just give us a call. We'll be happy to provide in-depth explanations about how certain options can optimize your results.





Where are the Inserts?

Though Insta-Quote incorporates special designs for GEN3SYS XT holders, it does not include options for designing special GEN-3SYS XT inserts. GEN3SYS XT holders utilize standard GEN3SYS XT inserts, which can be found in Section A20 of the product catalog.

If you need a special insert or would simply like to discuss options for designing one to fit your application, please contact us, and we can create a special design as an engineered special.



Engineered Special
GEN3SYS XT insert designed for specific aerospace application

⚠ **WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **X20: 25** for deep hole drilling guidelines in this section of the catalog. Visit ***www.alliedmachine.com/DeepHoleGuidelines*** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

Insta-Quote

ALVAN® Reamers by S.C.A.M.I.

Use Insta-Quote to Build Your Part Numbers

Insta-Quote can help you find or build the ALVAN® reamer item numbers you need along with the price and delivery of the items. It can also give you the recondition item and delivery. Just follow the steps, and Insta-Quote will guide you through the process.



Replaceable Head Style

Diameter/Series Options	Flute Options	Coating Options
Expandable Diameter 5000 Series 7000 Series **Fixed Diameter** 7000 Series 9000 Series	Straight Right-Hand Helical Left-Hand Helical	Uncoated TiN TiCN TiAlN Alcrona Hardcut R coating T coating

Monobloc Style

Flute Options	Coating Options
Straight Left-Hand Helical	Uncoated TiN TiCN TiAlN Alcrona Hardcut R coating T coating

Cutting Ring Style

Flute Options	Coating Options
Straight Left-Hand Helical	Uncoated TiN TiCN TiAlN Alcrona Hardcut R coating T coating

Engineered Specials

Insert Designs

OUR *SOLUTION*

T-A® PCD Drill Insert



- C3 carbide substrate increases tool life.
- PCD tip is specifically designed for carbon reinforced polymer (CFRP) material.
- Notch Point® geometry, special corner clip, and drill point angle help minimize delamination upon exiting the hole.

► YOUR *ADVANTAGE*

Take control of carbon fiber reinforced polymer applications. The T-A PCD drill insert can provide the hole quality you need to produce successful quality parts and reduce scrap.

Polycrystalline Diamond Insert

What allows the polycrystalline diamond (PCD) insert to generate such high success in aerospace carbon fiber is the sharp cutting edge that provides clearance cutting and reduces delamination. The PCD wafers improve the wear resistance.

While other tools encounter massive tearing when exiting the hole in carbon fiber, the PCD insert geometry, along with precise OD corner prep and Notch Point® technology, encounters minimal delamination. This produces a near-perfect, tight tolerance and smooth hole.



The Proof is in the Numbers

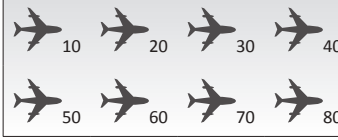
See the following results from a customer who was experiencing difficulty when drilling CFRP material:

INCREASED tool life by **700%**

Number of Holes Drilled: ONE Competing Insert



Number of Holes Drilled: ONE PCD Tipped T-A Insert



Infinite Solutions

Though Insta-Quote® and i-Form are incredible special tooling systems, some applications require a deeper level of engineering to accomplish the optimal results. No matter what the application may be, Allied Machine engineers have the knowledge, experience, and expertise to design and develop a special product to exceed your expectations.

Engineered Specials are not limited to T-A® or GEN3SYS® XT products. In fact, Engineered Specials can be created for most products offered by Allied Machine, including APX™ drill, Opening Drill®, AccuThread® 856, and many other product families.



Back Chamfer without Chip Breakers



Back Chamfer with Chip Breakers



Noncenter Cutting and Chamfer



Special Inverted Coring Geometry



Flat Bottom with Pilot, Corner Radius, and Chamfer



Multiple Step



Special Step



Special Point



Special Counterbore Step



Special Corner Radius

Engineered Specials

GEN3SYS® XT Vacuum Drill



The GEN3SYS XT® vacuum drill allows you to reap the productivity benefits of the GEN3SYS® XT outside of a fixed-position machine tool. The vacuum drill technology attaches to a hose to remove material that flows up through the internal flute of the drill. This versatile ability allows the drilling process to move from location to location, performing operations on large components.

The design of the GEN3SYS® XT insert increases penetration rates, which can lower your production time and decrease operation costs. Available in multiple material-specific geometries, the GEN3SYS® XT has a solution for most applications.

OUR *SOLUTION*

GEN3SYS® XT Vacuum Drill



- Spent coolant and chips are evacuated through an internal flute.
- Guided body diameter to run through a drill bushing.
- Replaceable tip for quick and easy insert change.

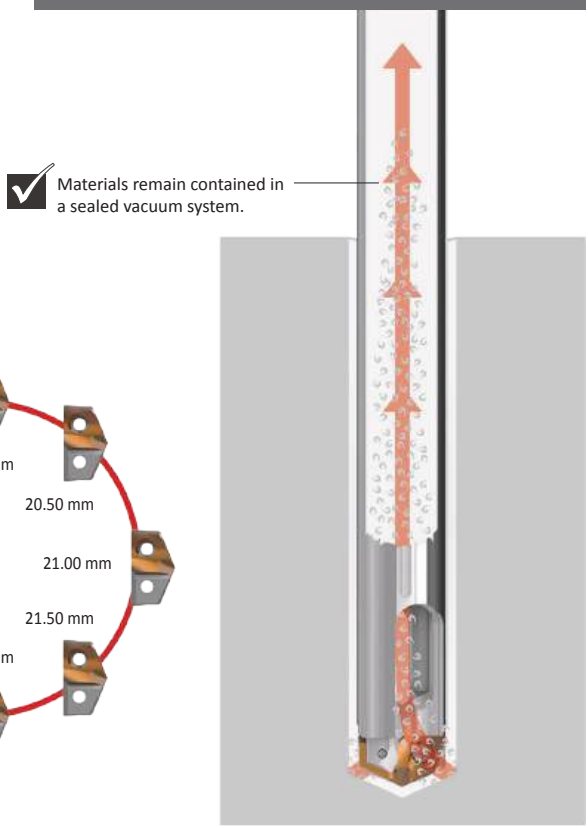
► YOUR *ADVANTAGE*

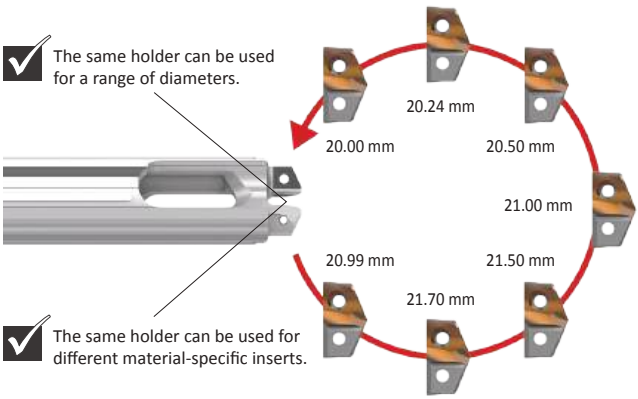
The sealed vacuum system lets you move your drilling operations outside the confines of a machine, allowing you to increase productivity on massive components.

MATERIAL **TIPS**

Drilling in CFRP (Carbon Fiber Reinforced Polymer)
- These applications are run with the vacuum only (no coolant).
- Can be run with or without a micro peck cycle.

Drilling in Metal
- These applications are run with the vacuum and coolant or mist.
- Recommended to be run with a micro peck cycle.





Engineered Specials

Guided T-A®



Guided T-A Highlights

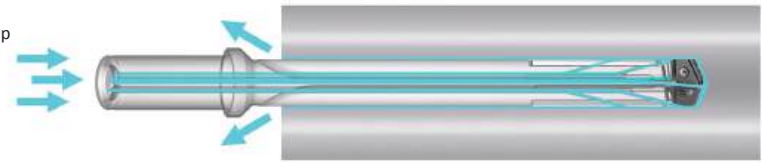
- Two adjustable Torx® PLUS screw pins allow for diameter adjustment to reduce TIR.
- Provides improved tool life and hole finish.
- Guided wear pads improve hole straightness.
- Coolant-through design with multiple coolant outlets along the drill holder provides stability in deep hole drilling applications and also improves chip evacuation.

Industry Application **Automotive**

Industry Application **Aerospace**

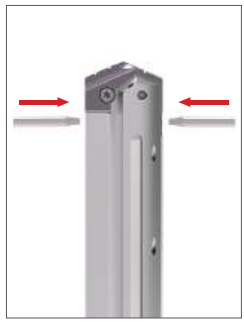
Triple Coolant Outlets

- Additional coolant outlets help keep the holder straight and precise.
- Longer holders experience and maintain increased stability in deeper holes.





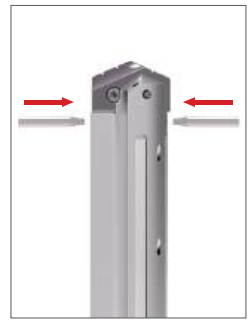
Locate the two adjustable Torx® PLUS screws (one on each side).



Loosen each screw.



Adjust insert position.



Tighten each screw.

The Proof is in the Numbers

The following results came from a real-life application that utilized the Guided T-A. The customer was experiencing a high scrap rate and needed to find a solution to eliminate the problem.



Number of Holes Drilled: ONE Competing Insert & Holder

80 | 160 | 240 | 320

In this application, Allied Machine:

- Eliminated **$240,000** in scrap per year.
- Optimized the chip formation.
- Enhanced the chip evacuation.
- Provided excellent surface finish.

INCREASED tool life by **280%**

Number of Holes Drilled: ONE Allied Machine Special Insert & Holder

80 | 160 | 240
320 | 400 | 480
560 | 640 | 720
800 | 880 | 960
1040 | 1120 | 1220

Engineered Specials

Success Stories

Real-Life Results

Below are five brief success stories. Each one provides an overview of specific situations when our special tooling achieved top-quality performance for our customers. For more in-depth case studies, go to **www.alliedmachine.com/RealLifeResults.**



Industry Application
Oil & Gas

Special AccuPort 432® Port Contour Cutter

Hydraulic Manifolds

- Eliminated multiple tools in the process.
- Eliminated regrinds.
- Improved performance in cross hole applications.





Industry Application
Heavy Equipment

Special T-A® Holder & Insert

Axle Shafts

- 100% increase in tool life.
- $7,500 reduction in setup costs.
- Eliminated scrap that was caused by setup issues.





Industry Application
Defense

i-Form Drill

Barrel Nut

- Eliminated three tools in the process.
- Reduced cycle time by 25%.
- Improved chip formation.





Industry Application
Automotive

T-A® Rim Drill

Aluminum Wheels

- 50% increase in penetration rates.
- 50% increase in tool life.
- Eliminated regrinds.





Industry Application
Aerospace

Special Carbide Clad T-A® Holder with Diamond Coated Insert

Carbon Fiber Landing Arm

- Eliminated delamination of carbon fiber.
- 7x more tool life.
- Special shank threads directly into drill unit for easy tool change.



Engineered Specials

i-Form Custom Indexable Drill / Form Tool System

Any Way You Want It

What if you could utilize complex forms that only seem to be available as brazed or solid carbide tools? Allied Machine's i-Form custom indexable drill/form tool system allows for complex designs with a replaceable cutting edge. This will reduce setup times and eliminate regrinds, allowing you to increase your productivity and reduce costs. Don't settle for being good when the possibility of being great is right in front of you.

This is just a small sample of what you can do.



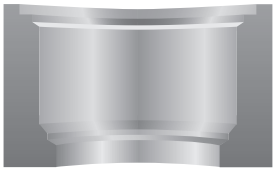
i-Form Holder with i-Form Inserts

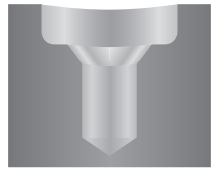


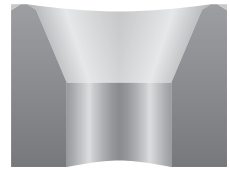
Lug Hole T-A® Drill with i-Form Inserts



i-Form Drill for Facing Operations with ID-OD Chamfer





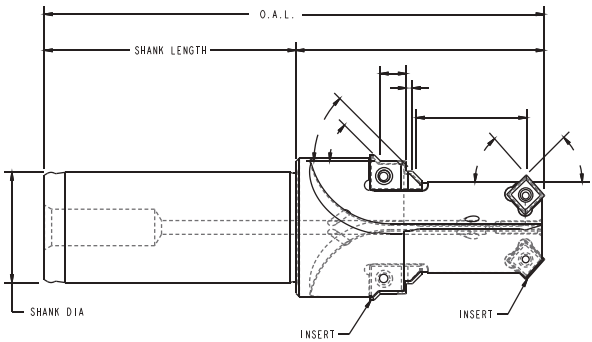


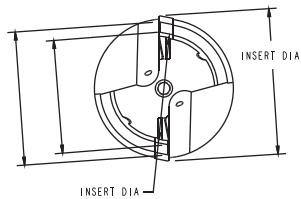
Design Complex Forms for ANY Hole Style

i-Form allows you to design complex forms for any style hole with increased productivity. The i-Form product line - both pilot inserts and form inserts - creates custom engineered forms that provide complex designs with replaceable cutting edges and improved consistency, all while outperforming brazed and solid carbide tooling. i-Form tools will increase your productivity, minimize setup times, and eliminate regrind tool float and inconsistency.

- Holders have coolant-through capabilities.
- Holders can utilize standard inserts, Insta-Quote® inserts, and/or special insert designs.







Engineered Specials

i-Form Custom Indexable Drill / Form Tool System



GEN3SYS® XT Pilot Insert with i-Form Inserts



GEN3SYS® XT Pilot Insert with i-Form Inserts



GEN3SYS® XT Back Chamfer Insert with ISO Inserts



T-A® Flat Bottom Form Drill with i-Form Inserts



T-A® ICS Drill with i-Form Inserts



T-A® Pilot Insert with i-Form Inserts



Square QDSI 34™ Inserts with i-Form Inserts



3-Flute IC Drill with i-Form Inserts



i-Form Holder with i-Form Inserts



AccuPort 432® Drill with Special T-A® Form Insert



T-A® 2-Step IC Drill with i-Form Inserts



Special Core Drill with i-Form Inserts

Engineered Specials

T-A® Products



T-A IC Drill with Back Chamfer Insert



T-A 1-Step Stub Length



T-A IC Drill



T-A 2-Step IC Drill



T-A Counter Bore Tool with Micro Adjustable Cartridge



T-A Form Drill with Adjustable Cartridge



T-A Multiple Step Drill with Adjustable Cartridge



T-A Large Diameter Multiple Step IC Drill



T-A Deburr Drill



T-A IC Drill with Customer Defined Shank



T-A Deep Hole Drill with Customer Defined Design



T-A Chrome Bearing Drill with Customer Defined Shank



T-A 1-Step IC Drill with Flat Bottom Insert



T-A Form Drill



T-A Drill with Special Holder and Insert Design

Engineered Specials

Other Products



Special BT-A Drill with Internal Thread



Special BT-A Drill



Special BT-A Drill



APX™ Drill with Carbide Clad Guides



APX™ Drill with 1-Step Design



APX™ Drill with HSK Shank



Opening Drill® with Special Diameter



Special Core Drill with 2-Step Design



ICS Drill with Adjustable Cartridge



Superion® Solid Carbide with AM200® Coating



AccuThread® 856 with Through Coolant



AccuPort 432® Special Length



ALVAN® Ring Style Reamer with Special Length



GEN3SYS® XT with Morse Taper Shank



GEN3SYS® XT with IC Inserts and Special Body

Engineered Specials

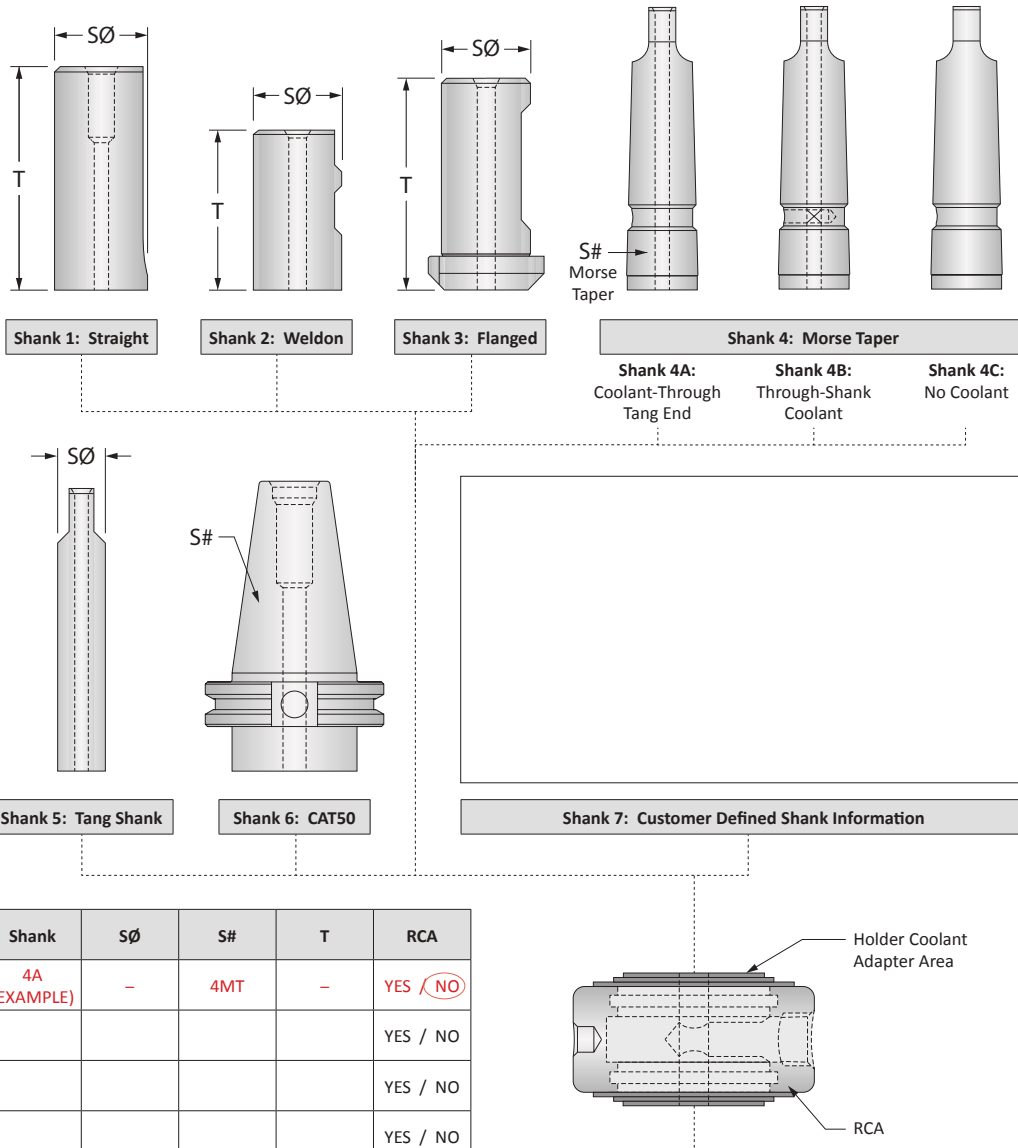
Design Form

Show Us What You Need

These pages have been included so you can assist us with defining your special tooling requirements.

- Select a shank (1 - 6), or define shank 7.
- Indicate if the shank will be used with or without a rotary coolant adapter (RCA).

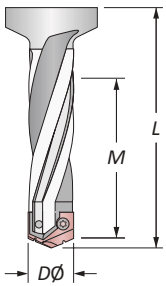
We ask that you define your hole profile and offer an example of a tool form to help us with the design process. Tools 1 - 5 cover only a small portion of our capabilities, so feel free to use your imagination. Please scan these pages, record your information in the boxes on the next page, and email the information for our quickest response.



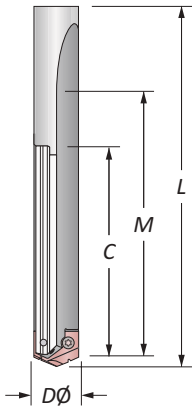
Shank	SØ	S#	T	RCA
4A (EXAMPLE)	–	4MT	–	YES / (NO)
				YES / NO
				YES / NO
				YES / NO

Engineered Specials

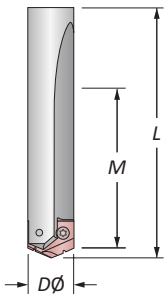
Tool 1
- ☐ Carbide Clad
- ☐ Chrome Plate
- ☐ Helical Flute
- ☐ Straight Flute



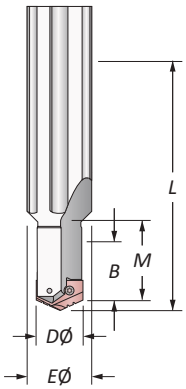
Tool 2
- ☐ Helical Pilot
- ☐ Chrome Pilot

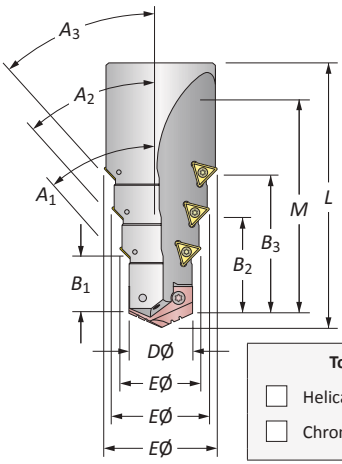


Tool 3
- ☐ Helical Flute
- ☐ Straight Flute



Tool 4
- ☐ Helical Pilot
- ☐ Chrome Pilot





Tool 5
- ☐ Helical Pilot
- ☐ Chrome Pilot

Hole Profile

Please email or fax your design to:
Application Engineering Department -
appeng@alliedmachine.com

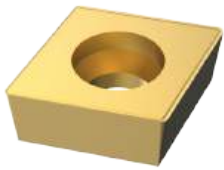
Item	Tool	A_1	A_2	A_3	B_1	B_2	B_3	C	D Ø	E Ø	F Ø	G	L	M
EXAMPLE	5	30°	–	–	1.00	–	–	0.25	0.620	1.25	–	–	4.50	3.00

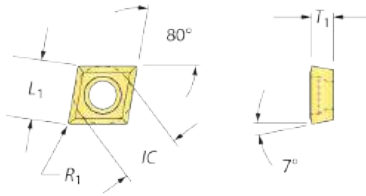
Name:		Company:	
Email:	Phone:	Distributor (if known):	
Customer Signature:			Date:

Please be sure to include shank and coolant information from the previous page when sending tool designs.

QDSI 34™ Inserts

80° Diamond | 55° Diamond

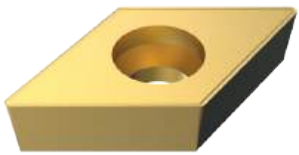


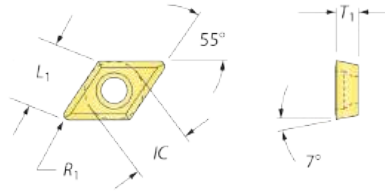


80° Diamond Inserts

IC		Metric (mm)			Imperial (in)			Part No.	ANSI Designation	Torx Screw	Torx® Driver
mm	in	L_1	T_1	R_1	L_1	T_1	R_1				
6.35	0.250	6.32	2.39	0.20	0.249	0.094	0.008	**CCGT-060202**	CCGT 2(1.5)0.5	7256-IP8-1	8IP-8
		6.28	2.39	0.40	0.247	0.094	0.016	**CCMT-060204**	CCMT 2(1.5)1		
		6.21	2.39	0.79	0.244	0.094	0.031	**CCMT-060208**	CCMT 2(1.5)2		
		6.21	3.96	0.79	0.244	0.156	0.031	**CCGT-06T308**	CCGT 2(2.5)2		
9.53	0.375	9.49	3.96	0.20	0.374	0.156	0.008	**CCGT-09T302**	CCGT 3(2.5)0.5	7359-IP15-1	8IP-15
		9.46	3.96	0.40	0.372	0.156	0.016	**CCMT-09T304**	CCMT 3(2.5)1		
		9.39	3.96	0.79	0.369	0.156	0.031	**CCMT-09T308**	CCMT 3(2.5)2		
12.70	0.500	12.63	4.76	0.40	0.497	0.188	0.016	**CCMT-120404**	CCMT 431	745105-IP20-1	8IP-20
		12.56	4.76	0.79	0.494	0.188	0.031	**CCMT-120408**	CCMT 432		

NOTE: QDSI 34 inserts are utilized only in special ICS holders. Speeds and feeds for QDSI 34 inserts are determined by drill insert.





55° Diamond Inserts

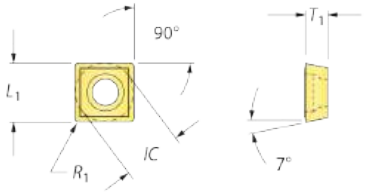
IC		Metric (mm)			Imperial (in)			Part No.	ANSI Designation	Torx Screw	Torx® Driver
mm	in	L_1	T_1	R_1	L_1	T_1	R_1				
6.35	0.250	6.18	2.39	0.008	0.243	0.094	0.008	**DCGT-070202**	DCGT 2(1.5)0.5	7256-IP8-1	8IP-8
		6.01	2.39	0.016	0.237	0.094	0.016	**DCMT-070204**	DCMT 2(1.5)1		
		5.67	2.39	0.031	0.223	0.094	0.031	**DCMT-070208**	DCMT 2(1.5)2		
9.53	0.375	9.19	3.96	0.016	0.362	0.156	0.016	**DCMT-11T304**	DCMT 3(2.5)1	7359-IP15-1	8IP-15
		8.85	3.96	0.031	0.348	0.156	0.031	**DCMT-11T308**	DCMT 3(2.5)2		

NOTE: QDSI 34 inserts are utilized only in special ICS holders. Speeds and feeds for QDSI 34 inserts are determined by drill insert.

QDSI 34™ Inserts

Square | 60° Triangle



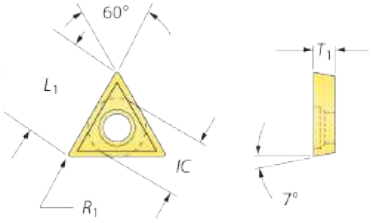


Square Inserts

IC		Metric (mm)			Imperial (in)			Part No.	ANSI Designation	Torx Screw	Torx® Driver
mm	in	L_1	T_1	R_1	L_1	T_1	R_1				
9.53	0.375	9.53	3.96	0.40	0.375	0.156	0.016	**SCMT-09T304**	SCMT 3(2.5)1	7359-IP15-1	8IP-15

NOTE: QDSI 34 inserts are utilized only in special ICS holders. Speeds and feeds for QDSI 34 inserts are determined by drill insert.





80° Diamond Inserts

IC		Metric (mm)			Imperial (in)			Part No.	ANSI Designation	Torx Screw	Torx® Driver
mm	in	L_1	T_1	R_1	L_1	T_1	R_1				
3.97	0.156	6.58	1.98	0.20	0.259	0.078	0.008	**TCGT-06T102**	TCGT 1.2(1.2)0.5	724-IP6-1	8IP-6
		6.29	1.98	0.40	0.248	0.078	0.016	**TCGT-06T104**	TCGT 1.2(1.2)1		
		5.71	1.98	0.79	0.225	0.078	0.031	**TCGT-06T108**	TCGT 1.2(1.2)2		
5.65	0.219	9.33	2.39	0.20	0.367	0.094	0.008	**TCGT-090202**	TCGT 1.8(1.5)0.5	7225-IP7-1	8IP-7
		9.04	2.39	0.40	0.356	0.094	0.016	**TCGT-090204**	TCGT 1.8(1.5)1		
		8.46	2.39	0.79	0.333	0.094	0.031	**TCGT-090208**	TCGT 1.8(1.5)2		
6.35	0.250	10.71	2.39	0.20	0.422	0.094	0.008	**TCGT-110202**	TCGT 2(1.5)0.5	7256-IP8-1	8IP-8
		10.42	2.39	0.40	0.410	0.094	0.016	**TCMT-110204**	TCMT 2(1.5)1		
		9.84	2.39	0.79	0.387	0.094	0.031	**TCMT-110208**	TCMT 2(1.5)2		
9.53	0.375	15.92	3.96	0.40	0.627	0.156	0.016	**TCMT-16T304**	TCMT 3(2.5)1	7359-IP15-1	8IP-15
		15.34	3.96	0.79	0.604	0.156	0.031	**TCMT-16T308**	TCMT 3(2.5)2		
12.70	0.500	20.83	4.76	0.79	0.820	0.188	0.031	**TCGT-220408**	TCGT 432	745105-IP20-1	8IP-20

NOTE: QDSI 34 inserts are utilized only in special ICS holders. Speeds and feeds for QDSI 34 inserts are determined by drill insert.

Deep Hole Drilling Guidelines

For Lengths Greater Than 9xD (Standard Plus, Extended, Long, Long Plus, XL, 3XL, and Special Lengths)

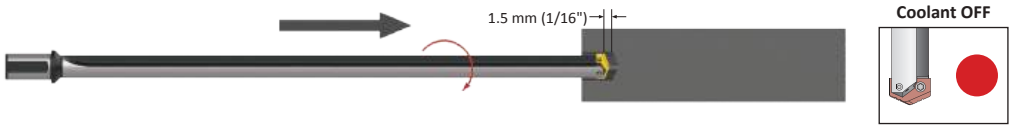
1. Pilot Hole
100% RPM
100% mm/rev (IPR)

Establish the pilot hole using the same diameter short drill to a depth of 2xD minimum.
Utilize a pilot drill with the same or larger included point angle.



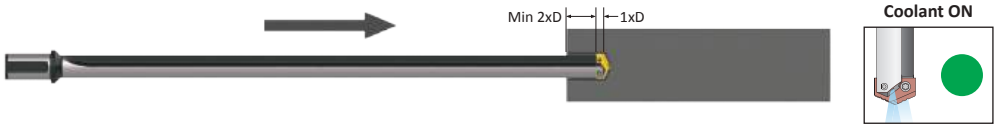
2. Feed-in
⚠ 50 RPM max
300 mm/min (12 IPM)

Feed the longer drill within 1.5 mm (1/16") short of the established pilot hole bottom at a **maximum of 50 RPM** and 300 mm/min (12 IPM) feed rate.



3. Deep Hole Transition Drilling
50% RPM
75% mm/rev (IPR)

Drill additional 1xD past the bottom of the pilot hole at 50% reduction of recommended speed and 25% reduction of recommended feed.
Minimum of one second dwell is required to meet full speed before feeding.



4. Deep Hole Drilling - Blind
100% RPM
100% mm/rev (IPR)

Drill to full depth at recommended speed and feed for longer drill according to Allied speed and feed charts.
No peck cycle recommended.



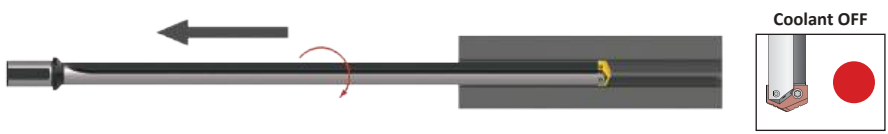
5. Deep Hole Drilling - at Breakout
50% RPM
75% mm/rev (IPR)

For through holes only:
Reduce speed by 50% and feed by 25% prior to breakout.
Do not break out more than 3 mm (1/8") past the full diameter of the drill.



6. Drill Retract
⚠ 50 RPM max

Reduce speed to a **maximum of 50 RPM** before retracting from the hole.



⚠ WARNING **Tool failure can cause serious injury. To prevent:**

- When using holders without support bushing, use a short T-A holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit **www.alliedmachine.com/DeepHoleGuidelines** for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: **appeng@alliedmachine.com.**

Notes

SECTION

X30-WBS

Wohlhaupter® Boring Specials

Wohlhaupter® Boring Specials





Special Design Tooling

When it comes to special solutions for customers, Wohlhaupter has unique capabilities to effectively design and develop special boring tools. Our special boring tools are designed for specific machines, processes, and materials to help save you time and money.

If you have a particularly unique or difficult application, reach out to our Application Engineering team: **appeng@alliedmachine.com.**

Applicable Industries

- Aerospace
- Agriculture
- Automotive
- Defense
- General Production
- Heavy Equipment
- Hydraulics
- Marine
- Medical
- Oil and Gas
- Renewable Energy/ Energy
- Tool, Mold, and Die

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EK Groover | Lay Down Cartridge 4
Anti-Vibration | Multistep Boring Tool 5
OD Turning | Padded Line Boring Tool 6
Multistep Boring Tool | Line Boring Tool. 7
DigiBore Special Boring Tools. 8
Combi-Line Special Boring Tool 9

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

WARNING means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

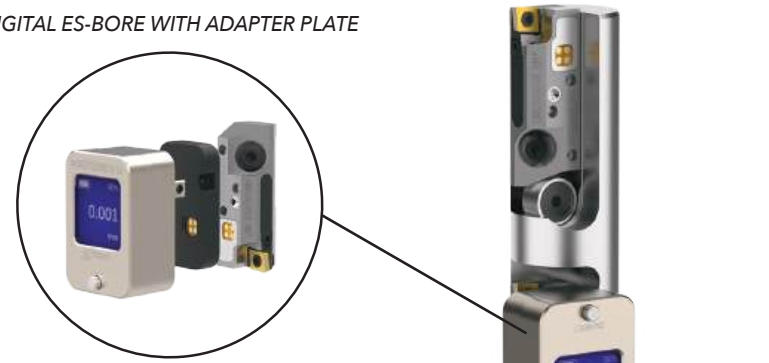
NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

Custom Boring Tools

ES-Bore Fine Boring Lay Down Cartridge

DIGITAL ES-BORE WITH ADAPTER PLATE



NOTE: ES-Bore digital fine boring cartridges must be used with the new **3E**$^{TECH+}$ and adapter plate. The ES-Bore cannot be used with 3E^{TECH}.

NOTE: 3E^{TECH+} adjustment accuracy of 0.001 mm (0.00005") on diameter.

ANALOG ES-BORE



LAY DOWN CARTRIDGES

ES-BORE

- Mounts to custom designed boring tools.
- Available with digital 3E^{TECH+} or analog adjustment.
- Accurate adjustments with easy-to-use settings.
- Versatility in many different application types over 28.00 mm (1.102") on diameter.

Custom Boring Tools

EK Groover | Lay Down Cartridge



GROOVING TOOLS

EK GROOVER

- Create complex grooves faster and deeper than ever before.
- Eliminate chatter in hard-to-reach internal forms.
- The electronically-controlled insert release can be adapted to most machine tools.
- Single or double grooving in one operation.

ROUGH BORING TOOLS

LAY DOWN CARTRIDGE

- Increase the productivity of your roughing tool while protecting your investment.
- If the tool is ever damaged, simply replace a cartridge and resume making chips.

Custom Boring Tools

Anti-Vibration | Multistep Boring Tool





SPECIAL BORING TOOLS

ANTI-VIBRATION

- Vibration dampening rings.
- Optimized tool weight.
- Used to reduce harmonic vibration in deeper boring applications.

SPECIAL BORING TOOLS

MULTISTEP BORING TOOL

- Fine adjustment tool for reverse machining.
- Combined with multidiameter fine adjustable cartridges for finish machining.

Custom Boring Tools

OD Turning | Padded Line Boring Tool



SPECIAL BORING TOOLS

OD TURNING TOOLS

- Multistep OD turning.
- Drastically reduce cycle time.
- Improve surface finish and feature concentricity.

SPECIAL BORING TOOLS

PADDED TOOLING

- Aids in stable part processing.
- Expands length-to-diameter capabilities.
- Improves surface finish.
- Pads are replaceable to extend tool life.

Custom Boring Tools

Multistep Boring Tool | Line Boring Tool



NOTE: 3E^{TECH+} adjustment accuracy of 0.001 mm (0.00005") on diameter.

3E^{TECH+} BORING TOOL

MULTISTEP BORING TOOL

- Easy diameter adjustments with 3E^{TECH+}.
- One digital readout module to use on all steps.

3E^{TECH+} BORING TOOL

LINE BORING TOOL

- One digital readout module used on all steps.
- Easy diameter adjustment at the machine spindle.

Custom Boring Tools

DigiBore Special Boring Tools





NOTE: Imperial items pictured.

NOTE: Digital adjustment accuracy of 0.0001" or 0.002 mm on diameter.

FINISH BORING TOOLS

DIGIBORE WITH 248 (249)

- Standard DigiBore head, standard 248 (249) head, and special slide for precise two-step bore.
- MVS connection.

FINISH BORING TOOLS

DIGIBORE SPECIAL

- Standard DigiBore boring head with OD turn and OD chamfer insert holder.
- MVS connection.



ROUGH, FINISH, and CHAMFER BORING TOOLS

COMBI-LINE

- Standard Combi-Line tooling with added chamfer cartridge.
- MVS connection.

Notes

Guaranteed Test / Demo Application Form

Distributor PO #	

The following must be filled out completely before your test will be considered.

IMPORTANT: For processing, send purchase order to your Allied Field Sales Engineer (FSE).
Please clearly mark the paperwork as "Test Order."

Distributor Information

Company Name: _____
Contact: _____
Account Number: _____
Phone: _____
Email: _____

End User Information

Company Name: _____
Contact: _____
Industry: _____
Phone: _____
Email: _____

Current Process List all tooling, coatings, substrates, speeds and feeds, tool life, and any problems you are experiencing.

_____

_____

Test Objective List what would make this a successful test (i.e. penetration rate, finish, tool life, hole size, etc.).

_____

_____

Application Information

Hole Diameter: _____ in/mm Tolerance: _____ Material: _____ (4150, A36, cast iron, etc.)

Preexisting Diameter: _____ in/mm Depth of Cut: _____ in/mm Hardness: _____ (BHN, Rc)

Required Finish: _____ RMS State: _____ (Casting, hot rolled, forging)

Machine Information

Machine Type: _____ (Lathe, screw machine, machine center, etc.) Builder: _____ (Haas, Mori Seiki, etc.) Model #: _____

Shank Required: _____ (CAT50, Morse taper, etc.) Power: _____ HP/KW

Thrust: _____ lbs/N

Rigidity:
- ☐ Excellent
- ☐ Good
- ☐ Poor

Orientation:
- ☐ Vertical
- ☐ Horizontal

Tool Rotating:
- ☐ Yes
- ☐ No

Coolant Information

Coolant Delivery: _____ (Through tool, flood) Coolant Pressure: _____ PSI / bar

Coolant Type: _____ (Air mist, oil, synthetic, water soluble, etc.) Coolant Volume: _____ GPM / LPM

Requested Tooling

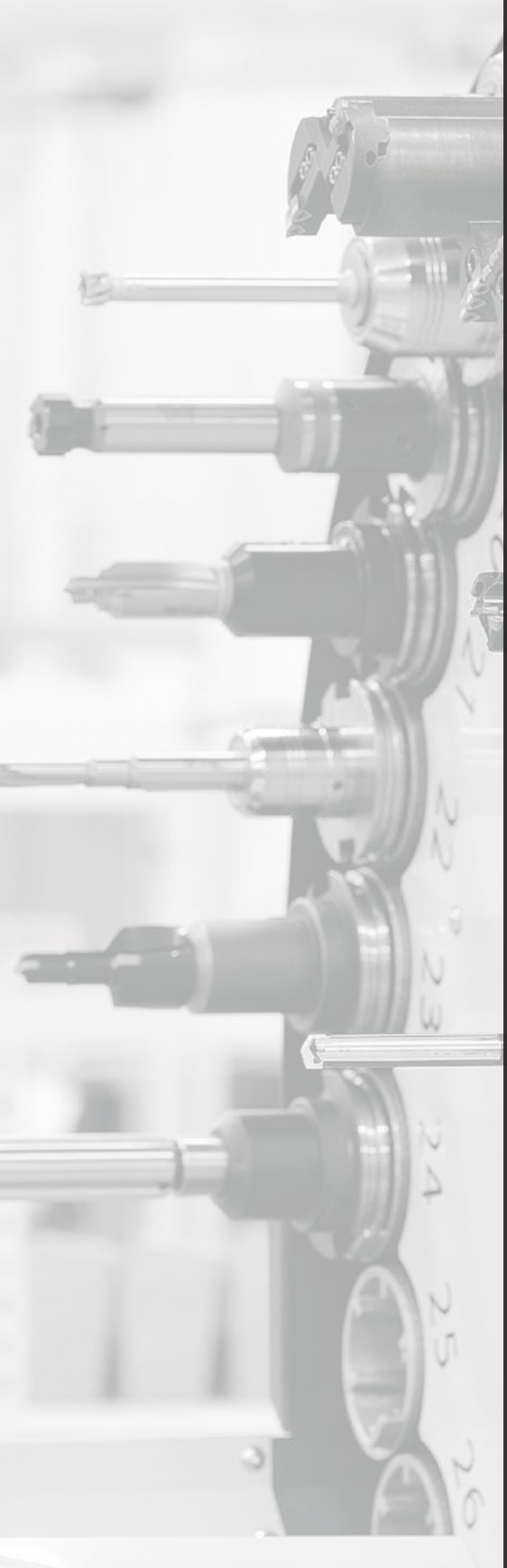
QTY	Item Number

QTY	Item Number

ALLIED MACHINE & ENGINEERING

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120 Deeds Drive
Dover, OH 44622

Telephone: (330) 343-4283
Toll Free USA & Canada: (800) 321-5537
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ALLIED MACHINE & ENGINEERING

Warranty Information

Allied Machine & Engineering ("Allied Machine") warrants to original equipment manufacturers, distributors, industrial and commercial users of its products for one year from the original date of sale that each new product manufactured or supplied by Allied Machine shall be free from defects in material and workmanship.

Allied Machine's sole and exclusive obligation under this warranty is limited to, at its option, without additional charge, replacing or repairing this product or issuing a credit. For this warranty to be applied, the product must be returned freight prepaid to the plant designated by an Allied Machine representative and which, upon inspection, is determined by Allied Machine to be defective in material and workmanship.

Complete information as to operating conditions, machine, setup, and the application of cutting fluid should accompany any product returned for inspection. This warranty shall not apply to any Allied Machine products which have been subjected to misuse, abuse, improper operating conditions, improper machine setup or improper application of cutting fluid or which have been repaired or altered if such repair or alteration, in the judgement of Allied Machine, would adversely affect the performance of the product.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Allied Machine shall have no liability or responsibility for any claim, whether in contract, tort or otherwise, for any loss or damage arising out of, connected with, or resulting from the manufacture, sale, delivery or use of any product sold hereunder, in excess of the cost of replacement or repair as provided herein.

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