

WOHLHAUPTER® BORING PRODUCT CATALOG



ALLIED MACHINE
& ENGINEERING

WOHLHAUPTER®

www.alliedmachine.com

It's so much easier when you achieve your
DESIRED PRECISION
right away.

Wohlhaupter specializes in developing innovative,
high-precision boring solutions. Our tools achieve the
bore quality you require with tight tolerances easily,
quickly and precisely.



Allied Machine &
Engineering is registered
to ISO 9001:2015 by DQS



Wohlhaupter GmbH is
registered to ISO
9001:2015 by QUACERT



Allied Machine &
Engineering Co. Europe
Ltd. is registered to
ISO 9001:2015 by bsi.

Our Commitment to **YOU**



Manufacturing is the DNA of success everywhere in the world. When you're manufacturing, you're building, creating, and developing something that physically didn't exist before.

At Allied Machine and Wohlhaupter, our core purpose is to provide practical and dependable solutions to improve your manufacturing processes. We know you face challenges and difficulties every day, so we're here to simplify your holmaking and hole finishing processes and improve your production.

However, many factors must be incorporated to truly improve production.

Some of those factors include increasing penetration rates while also improving chip formation and evacuation, reducing scrap rates by producing better parts, reducing setup times, and increasing tool life to get the most from your investment.

Not only does our tooling achieve these results, but our customer service is also an extension of our tooling advantages. Our Application Engineers and Field Sales Engineers are available to assist with any problems you encounter. Don't hesitate to put their skills and knowledge to the test. They won't disappoint.

This is our commitment to manufacturing, and it's our promise to you.



ALLIED MACHINE
& ENGINEERING

WOHLHAUPTER®



ALLIED MACHINE & ENGINEERING

WOHLHAUPTER®

North America

Allied Machine

120 Deeds Drive
Dover, OH 44622
United States

Allied Machine

485 West 3rd Street
Dover, OH 44622
United States

ThreadMills USA®

4185 Crosstowne Ct #B
Evans, GA 30809
United States

Superion®

1285 S Patton St.
Xenia, OH 45385
United States

Europe

Allied Machine Europe

93 Vantage Point
Pensnett Estate
Kingswinford
DY6 7FR, United Kingdom

Wohlhaupter® GmbH

Maybachstrasse 4
72636 Frickenhausen
Germany

Asia

Wohlhaupter® India

B-23, 3rd Floor
B Block Community Centre
Janakpuri, New Delhi - 110058
India



LEADING HOLEMAKING SOLUTIONS WORLDWIDE

Allied Machine & Engineering is a worldwide leader in holemaking and finishing solutions. We are committed to providing practical and dependable solutions to our customers through innovative designs and superior customer and technical support.

We continue to expand our product offering in order to provide new and different solutions. With Field Sales Engineers located around the world, we position ourselves to provide technical support on site, right at your spindle.

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.

Patent Information

Allied Machine & Engineering patent information can be found at www.alliedmachine.com/patents

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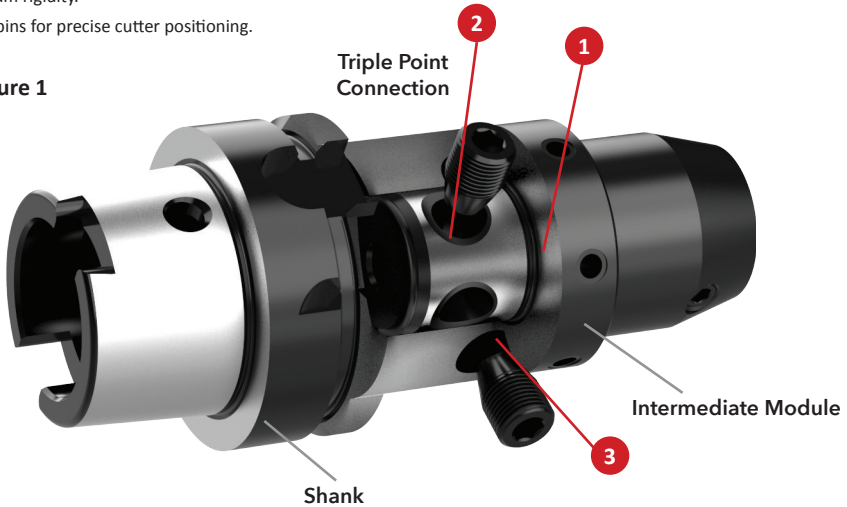


The MVS Connection

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.

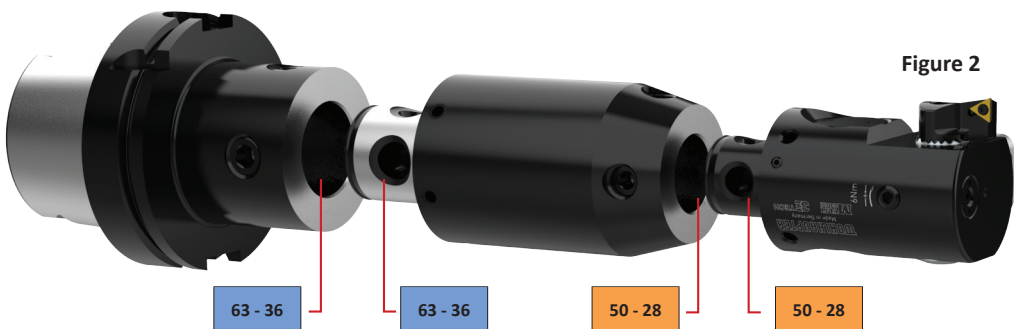
Figure 1



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
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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



50 - 28

1

WOLHAUPTER BORING | Fine Boring | HSK (MKS) Balance Head (MKS) Boring Head & Insert Holders

Quick Start | Boring Range | HSK (MKS) Balance Head (MKS) Boring Head & Insert Holders

WOLHAUPTER BORING | Fine Boring | HSK (MKS) Balance Head (MKS) Boring Head & Insert Holders

464 (465) Boring Heads & Inserts

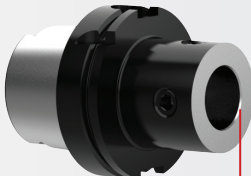
Head Size	MVS Connection	Boring Range	A	X ₁	X ₂	L ₁	D ₁	Weight (kg)	Part No.
40 - 22	50 - 28	65.00 - 83.00	75.00	39.00	72.50	—	0.60	0.60	464006
50 - 28	63 - 36	82.00 - 103.00	90.00	54.00	88.00	—	1.00	1.00	464007
63 - 36	80 - 36	100.00 - 130.00	90.00	54.00	88.00	—	1.50	1.50	464008
80 - 36	80 - 36	125.00 - 167.50	90.00	54.00	88.00	100.00	1.90	1.90	464009
100 - 50	80 - 36	162.50 - 205.00	90.00	54.00	88.00	135.00	2.50	2.50	464010

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



63 - 36

3

WOLHAUPTER BORING | Master Shanks with MVS Connection

HSK Master Shanks (DIN 69893)

WOLHAUPTER BORING | Master Shanks with MVS Connection

HSK Master Shanks (DIN 69893)

Head Size	MVS Connection	Shank	A	X ₁	X ₂	L ₁	D ₁	Weight (kg)	Part No.
40	50 - 28	50.00	—	—	—	—	0.40	0.40	246016
50	50 - 28	50.00	30.00	—	—	—	0.70	0.70	246017
63	50 - 28	50.00	30.00	—	—	—	0.80	0.80	246018
80	50 - 28	50.00	30.00	—	—	—	0.80	0.80	246019
100	50 - 28	50.00	30.00	—	—	—	0.80	0.80	246020
100	63 - 36	80.00	—	—	—	—	1.50	1.50	245015
100	63 - 36	80.00	—	—	—	—	1.50	1.50	245016
100	63 - 36	80.00	—	—	—	—	1.50	1.50	245017
100	63 - 36	80.00	—	—	—	—	1.50	1.50	245018
100	63 - 36	80.00	—	—	—	—	1.50	1.50	245019
100	63 - 36	80.00	—	—	—	—	1.50	1.50	245020
100	63 - 36	80.00	—	—	—	—	1.50	1.50	245021
100	63 - 36	80.00	—	—	—	—	1.50	1.50	245022
100	63 - 36	80.00	—	—	—	—	1.50	1.50	245023

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 (X₁): 75.00 mm (2.953")

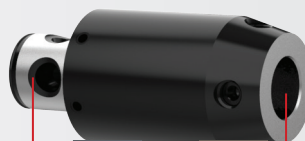
Master shank 245015 length (L₁): 51.00 mm (2.008")

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



63 - 36

50 - 28

5

WOLHAUPTER BORING | Intermediate Modules

Reducers

WOLHAUPTER BORING | Intermediate Modules

Reducers

MVS Connection	D ₁ D ₂	X ₁	L ₁	D ₁	Weight (kg)	Balancing Screw	Part No.
50 - 28	19.5 - 31	54.00	41.00	—	0.60	M8 x 1 x 10	219053
50 - 28	22 - 11	54.00	41.00	—	0.60	M8 x 1 x 10	219054
50 - 28	22 - 11	54.00	41.00	—	0.60	M8 x 1 x 10	219055
50 - 28	22 - 11	54.00	41.00	—	0.60	M8 x 1 x 10	219056
50 - 28	22 - 11	54.00	41.00	—	0.60	M8 x 1 x 10	219057
50 - 28	22 - 11	54.00	41.00	—	0.60	M8 x 1 x 10	219058
50 - 28	22 - 11	54.00	41.00	—	0.60	M8 x 1 x 10	219059
50 - 28	22 - 11	54.00	41.00	—	0.60	M8 x 1 x 10	219060
50 - 28	22 - 11	54.00	41.00	—	0.60	M8 x 1 x 10	219061
50 - 28	22 - 11	54.00	41.00	—	0.60	M8 x 1 x 10	219062
50 - 28	22 - 11	54.00	41.00	—	0.60	M8 x 1 x 10	219063
50 - 28	22 - 11	54.00	41.00	—	0.60	M8 x 1 x 10	219064
50 - 28	22 - 11	54.00	41.00	—	0.60	M8 x 1 x 10	219065
50 - 28	22 - 11	54.00	41.00	—	0.60	M8 x 1 x 10	219066
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50 - 28	22 - 11	54.00	41.00	—	0.60	M8 x 1 x 10	219082
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50 - 28	22 - 11	54.00	41.00	—	0.60	M8 x 1 x 10	219093
50 - 28	22 - 11	54.00	41.00	—	0.60	M8 x 1 x 10	219094
50 - 28	22 - 11	54.00	41.00	—	0.60	M8 x 1 x 10	219095
50 - 28	22 - 11	54.00	41.00	—	0.60	M8 x 1 x 10	219096
50 - 28	22 - 11	54.00	41.00	—	0.60	M8 x 1 x 10	219097
50 - 28	22 - 11	54.00	41.00	—	0.60	M8 x 1 x 10	219098
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50 - 28	22 - 11	54.00	41.00	—	0.60	M8 x 1 x 10	219102
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50 - 28	22 - 11	54.00	41.00	—	0.60	M8 x 1 x 10	219110
50 - 28	22 - 11	54.00	41.00	—	0.60	M8 x 1 x 10	219111
50 - 28	22 - 11	54.00	41.00	—	0.60	M8 x 1 x 10	219112
50 - 28	22 - 11	54.00	41.00	—	0.60	M8 x 1 x 10	219113
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50 - 28	22 - 11	54.00	41.00	—	0.60	M8 x 1 x 10	219116
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50 - 28	22 - 11	54.00	41.00	—	0.60	M8 x 1 x 10	219132
50 - 28	22 - 11	54.00	41.00	—	0.60	M8 x 1 x 10	219133
50 - 28	22 - 11	54.00	41.00	—	0.60	M8 x 1 x 10	

SECTION

B10-A

Master Shanks with MVS Connection

Master Shanks



Master Shanks with MVS Connection

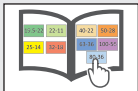
Wohlhaupter MVS connection shanks provide a high level of accuracy when building or replacing components. Our master shanks adapt to any machine tool spindle, making it easy to find the shank you need.

Applicable Industries

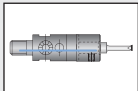
-  Aerospace
-  Agriculture
-  Automotive
-  Defense
-  General Production
-  Heavy Equipment
-  Hydraulics
-  Marine
-  Medical
-  Oil and Gas
-  Renewable Energy/ Energy
-  Tool, Mold, and Die

Reference Icons

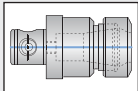
The following icons will appear throughout the catalog to help you navigate between products.



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.

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

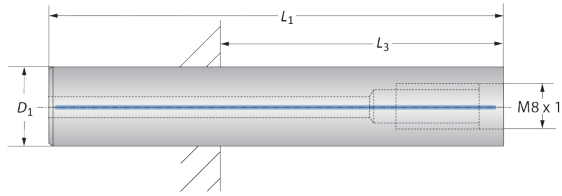
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Cylindrical Shanks

248 (249)



Metric (mm)

MVS Connection	Style	Shank			L ₃ min*				Weight (kg)	Part No.
		D ₁	L ₁	L ₃ max*	SK 40	SK 50	HSK-A 63	HSK-A 100		
m	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			L ₃ min*				Weight (lbs)	Part No.
		D ₁	L ₁	L ₃ max*	SK 40	SK 50	HSK-A 63	HSK-A 100		
i	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

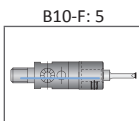
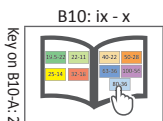
*L₃ dimensions apply to collet chucks.

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.

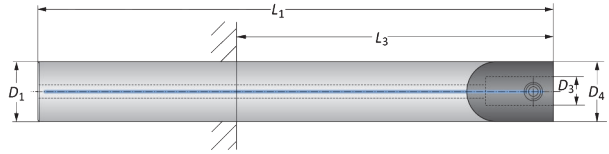
NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

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



Cylindrical Shanks

Carbide Straight



Metric (mm)

MVS Connection	Shank			L_3 min				Weight (kg)	Part No.
$D_4 D_3$	D_1	L_1	L_3 max	SK 40	SK 50	HSK-A 63	HSK-A 100		
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	Shank			L_3 min				Weight (lbs)	Part No.
$D_4 D_3$	D_1	L_1	L_3 max	SK 40	SK 50	HSK-A 63	HSK-A 100		
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:

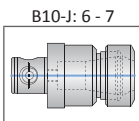
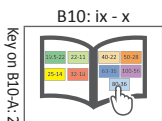
-Do not exceed the **allowable weight** for your machine tool.

-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/WohlschlagBoringGuidelines.

NOTE: Factory technical assistance is available through our Application Engineering department: **appeng@alliedmachine.com**.



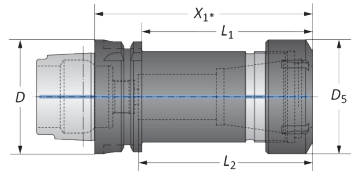
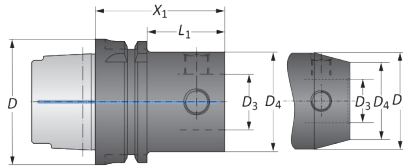
m = Metric (mm)

i = Imperial (in)



HSK Master Shanks (DIN 69893)

Balanced



*X₁: with one-piece clamping nut

Metric (mm)

HSK-A	MVS Connection	Shank				Weight (kg)	Part No.
D	D ₄ D ₃	X ₁	L ₁	L ₂	D ₅		
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.

*D₄ = 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.

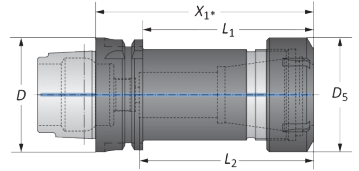
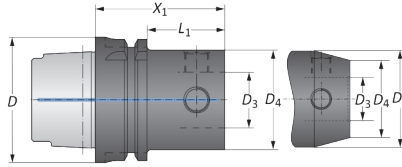
B10: ix - x





HSK Master Shanks (DIN 69893)

Balanced



X₁: with one-piece clamping nut



Imperial (in)

Taper Size	MVS Connection	Shank				Weight (lbs)	Part No.
D	D ₄ D ₃	X ₁	L ₁	L ₂	D ₅		
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
	50 - 28*	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
	80 - 36	8.071	6.929	—	—	17.190	246022
		3.150	2.007	—	—	8.157	245016
		10.03	8.897	—	3.543	27.770	246018
	100 - 56	10.03	8.897	—	—	22.920	246023
		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.

*D₄ = 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.
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B10: ix - x



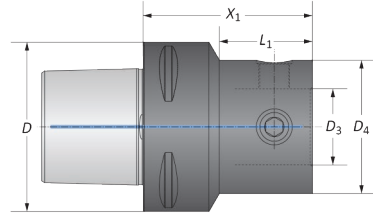
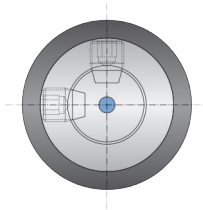
= Metric (mm)

= Imperial (in)



Polygon Shaft Master Shanks (PSC) (ISO 26623-1)

Balanced



Metric (mm)

PSC	MVS Connection	Shank		Weight (kg)	Part No.
D	D ₄ D ₃	X ₁	L ₁		
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.

WARNING

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- Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.

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www.alliedmachine.com/WohlhaupterBoringGuidelines.

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B10: ix - x



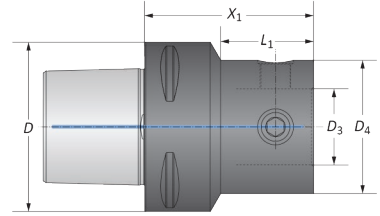
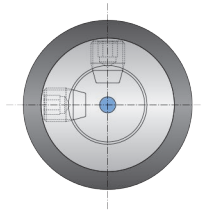
key on B10-A: 2

m = Metric (mm)

i = Imperial (in)

Polygon Shaft Master Shanks (PSC) (ISO 26623-1)

Balanced



Imperial (in)

PSC	MVS Connection	Shank		Weight (lbs)	Part No.
D	D ₄ D ₃	X ₁	L ₁		
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.

⚠ WARNING

Assembly of modular components may cause machine damage and/or serious injury. To prevent:

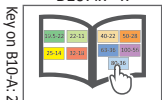
- Do not exceed the **allowable weight** for your machine tool.
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B10: ix - x

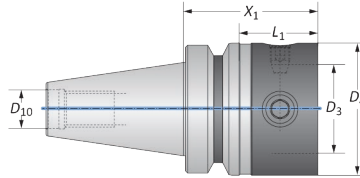


m = Metric (mm)

i = Imperial (in)



Dual Contact BT Master Shanks (JIS B 6339)



Metric (mm)

Taper Size	D_{10}	MVS Connection	Shank		Weight (kg)	Part No.
		D_4 D_3	X_1	L_1		
m	40	M16 x 2	50 - 28	54.00	1.20	353070
			63 - 36	64.00	1.50	353071
50	M24 x 3		50 - 28	65.00	4.00	353072
			63 - 36	75.00	4.20	353073
			80 - 36	75.00	4.80	353074
			100 - 56	90.00	5.50	353075

Imperial (in)

Taper Size	D_{10}	MVS Connection	Shank		Weight (lbs)	Part No.
		D_4 D_3	X_1	L_1		
i	40	M16 x 2	50 - 28	2.126	2.646	353070
			63 - 36	2.520	3.308	353071
50	M24 x 3		50 - 28	2.559	8.820	353072
			63 - 36	2.953	9.261	353073
			80 - 36	2.953	10.584	353074
			100 - 56	3.543	12.128	353075

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B10: ix - x



key on B10-A:2

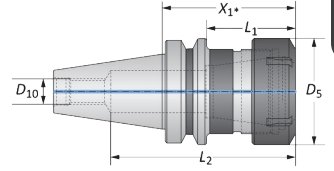
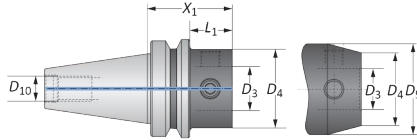
m = Metric (mm)

i = Imperial (in)



BT Master Shanks (JIS B 6339)

Balanced



* X_1 : with one-piece clamping nut



Metric (mm)

Taper Size	D_{10}	MVS Connection	Shank				Weight (kg)	Part No.
		D_4 D_3	X_1	L_1	L_2	D_5		
30	M12 x 1.75	40 - 22	40.00	18.00	—	—	0.50	327012
		50 - 28	46.00	—	—	—	0.60	327013
	M16 x 2	40 - 22	46.00	19.00	—	—	1.10	327016
		50 - 28	54.00	27.00	—	—	1.20	327019
40	M24 x 3	63 - 36	64.00	—	—	—	1.50	327020
		ER 40	70.00	43.00	104.00	63.00	1.20	259081*
		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**
	M24 x 3	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**
			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.

⚠ WARNING

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B10: ix - x



key on B10-A: 2

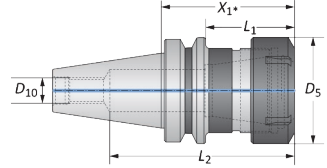
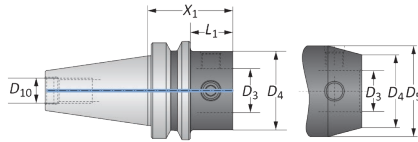
m = Metric (mm)

i = Imperial (in)



BT Master Shanks (JIS B 6339)

Balanced



X₁: with one-piece clamping nut

Imperial (in)

Taper Size	D ₁₀	MVS Connection	Shank				Weight (lbs)	Part No.
		D ₄ D ₃	X ₁	L ₁	L ₂	D ₅		
30	M12 x 1.75	40 - 22	1.575	0.710	—	—	1.102	327012
		50 - 28	1.811	—	—	—	1.323	327013
		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
40	M16 x 2	ER 40	2.755	1.692	4.094	2.480	2.645	259081*
		50 - 28	2.559	1.060	—	—	8.599	327021
		50 - 28	8.071	6.567	—	2.362	15.435	327029**
		50 - 28	8.071	6.567	—	1.949	13.010	327036**
		63 - 36	2.953	1.449	—	—	9.261	327022
50	M24 x 3	63 - 36	8.858	7.354	—	3.071	21.830	327030**
		63 - 36	8.858	7.354	—	—	17.199	327037**
		63 - 36	2.953	1.449	—	—	10.363	327023
		80 - 36	10.827	9.323	—	3.543	32.634	327031**
		80 - 36	10.827	9.323	—	—	32.634	327038**
		80 - 36	3.543	—	—	—	12.127	327024
		100 - 56	11.417	9.913	—	—	38.147	327032**
		100 - 56	3.149	1.645	5.314	2.480	8.377	259082*
		ER 40	3.149	1.645	5.314	2.480	8.377	259082*
		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/gk.

*Balanced without clamping nut.

**Available upon request.

WARNING

Assembly of modular components may cause machine damage and/or serious injury. To prevent:

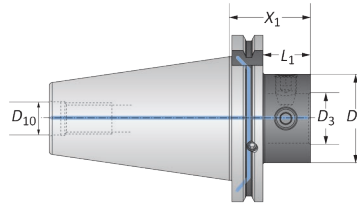
- Do not exceed the **allowable weight** for your machine tool.
 - Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
- For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12** or visit www.alliedmachine.com/WohlfahrtBoringGuidelines.

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B10: ix - x



Dual Contact SK Master Shanks (DIN 69871-AD / B -D)



Metric (mm)

	Taper Size	D_{10}	MVS Connection	Shank		Weight (kg)	Part No.
			$D_4 \mid D_3$	X_1	L_1		
m	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	Shank		Weight (lbs)	Part No.
			$D_4 \mid D_3$	X_1	L_1		
i	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

WARNING

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NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

B10: ix - x



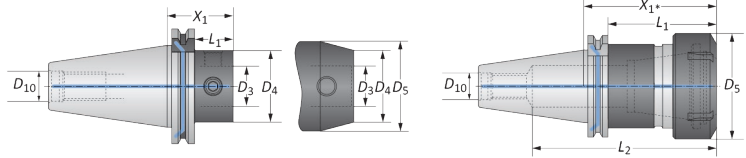
m = Metric (mm)

i = Imperial (in)



SK Master Shanks (DIN 69871-AD / B -D)

Balanced



* X_1 : with one-piece clamping nut

Metric (mm)

Taper Size	D_{10}	MVS Connection	Shank				Weight (kg)	Part No.
		D_4 D_3	X_1	L_1	L_2	D_5		
30	M12 x 1.75	40 - 22	46.00	26.90	—	—	0.50	327001
		50 - 28	58.00	—	—	—	0.80	327002
		32 - 18	55.00	35.90	—	40.00	1.10	327003
40	M16 x 2	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 - 28	46.00	26.90	—	—	2.90	327017
50	M24 x 3	50 - 28	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
		63 - 36	206.00	186.90	—	78.00	8.90	327026
		63 - 36	206.00	186.90	—	—	6.90	327034
		80 - 36	56.00	36.90	—	—	3.70	327010
		80 - 36	256.00	236.90	—	90.00	13.60	327027
		80 - 36	256.00	236.90	—	—	11.50	327035
		100 - 56	90.00	—	—	—	5.30	327011
		100 - 56	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.

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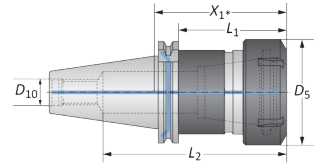
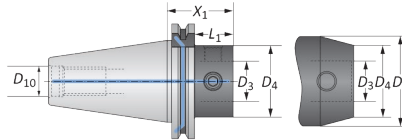
B10: ix - x





SK Master Shanks (DIN 69871-AD / B -D)

Balanced

*X₁*: with one-piece clamping nut

Imperial (in)

Taper Size	D ₁₀	MVS Connection	Shank				Weight (lbs)	Part No.
		D ₄ D ₃	X ₁	L ₁	L ₂	D ₅		
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
		50 - 28*	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
		63 - 36	8.110	7.358	—	3.071	19.625	327026
		80 - 36	8.110	7.358	—	—	15.215	327034
		80 - 36	2.205	1.453	—	—	8.159	327010
		80 - 36	10.079	9.327	—	3.543	29.988	327027
		80 - 36	10.079	9.327	—	—	25.353	327035
		100 - 56	3.543	—	—	—	11.687	327011
		100 - 56	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.

*D₄ = 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/WohlschlagBoringGuidelines.

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B10: ix - x

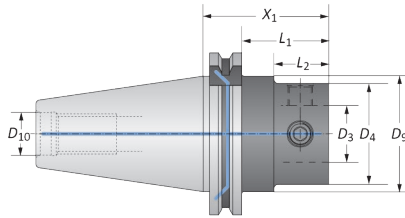


M = Metric (mm)

i = Imperial (in)



Dual Contact CAT Master Shanks with Imperial Threads



Metric (mm)

Taper Size	D_9	D_{10}	MVS Connection $D_4 D_3$	X_1	Shank L_1	L_2	Weight (kg)	Part No.
40	44.45	5/8 - 11	50 - 28	62.00	42.95	—	1.30	353062
			63 - 36	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
			63 - 36	222.00	202.95	187.00	7.10	353079
			80 - 36	72.00	52.95	—	4.10	353060
			80 - 36	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 $D_4 D_3$	X_1	Shank L_1	L_2	Weight (lbs)	Part No.
40	1.750	5/8 - 11	50 - 28	2.440	1.691	—	2.866	353062
			63 - 36	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
			63 - 36	8.740	7.990	7.362	15.656	353079
			80 - 36	2.834	2.085	—	9.039	353060
			80 - 36	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

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

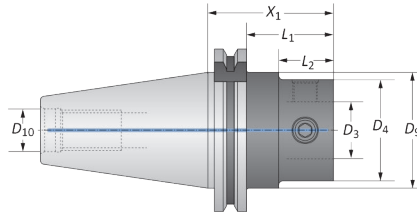


m = Metric (mm)

i = Imperial (in)



CAT Master Shanks with Metric Threads



Metric (mm)

	Taper Size	D_9	D_{10}	MVS Connection	Shank			Weight (kg)	Part No.
				D_4 D_3	X_1	L_1	L_2		
m	40	44.45	M16 x 2	50 - 28	62.00	42.90	—	1.30	132022T016960
				63 - 36	82.00	62.90	—	1.80	132066T016960
				50 - 28	62.00	42.90	27.00	3.40	132022T016962
	50	69.85	M24 x 3	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

WARNING Assembly of modular components may cause machine damage and/or serious injury. To prevent:

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B10: ix - x



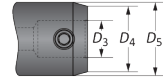
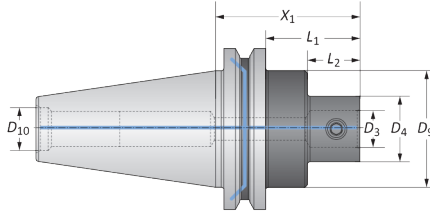
key on B10-A: 2

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	X ₁	L ₁	L ₂	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
			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	1.750	5/8 - 11	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
			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
				2.835	2.085	1.457	—	8.223	353008
			63 - 36	8.740	7.990	7.362	—	15.650	353023
				8.740	7.990	—	3.071	20.500	353020
				2.835	2.085	—	—	9.413	353009
			80 - 36	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

*D₄ = 49.50 mm

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

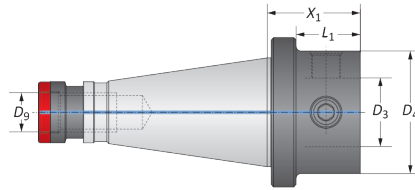
www.alliedmachine.com/WohlhaupterBoringGuidelines.NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

B10: ix - x





NMTB Master Shanks



Metric (mm)

			MVS Connection	Shank			
Taper Size		D_9	$D_4 \mid D_3$	X_1	L_1	Weight (kg)	Part No.
m	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)

			MVS Connection	Shank			
Taper Size		D_9	$D_4 \mid D_3$	X_1	L_1	Weight (lbs)	Part No.
i	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

⚠ WARNING

Assembly of modular components may cause machine damage and/or serious injury. To prevent:

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B10: ix - x

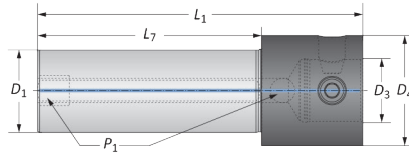


m = Metric (mm)

i = Imperial (in)



Straight Master Shanks



Imperial (in)

i	MVS Connection	Shank				Weight (lbs)	Part No.
	D_4 D_3	L_7	D_1	P_1	L_1		
	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

WARNING

Assembly of modular components may cause machine damage and/or serious injury. To prevent:

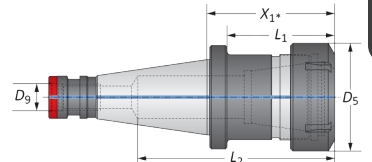
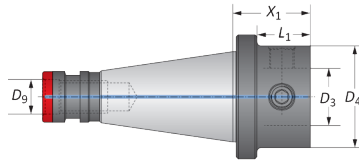
- Do not exceed the **allowable weight** for your machine tool.
 - Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
- For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12** or visit www.alliedmachine.com/WohlhaupterBoringGuidelines.

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B10: ix - x



DIN 2080 Master Shanks



X₁: with one-piece clamping nut



Metric (mm)

	Taper Size	D ₁₀	MVS Connection	Shank				Weight (kg)	Part No.
			D ₄ D ₃	X ₁	L ₁	L ₂	D ₅		
m	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	Shank				Weight (lbs)	Part No.
			D ₄ D ₃	X ₁	L ₁	L ₂	D ₅		
i	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

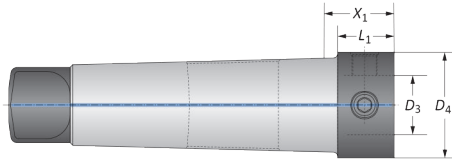


m = Metric (mm)

i = Imperial (in)



Morse Taper Master Shanks (DIN 1806)



Metric (mm)

	Morse Taper Size	MVS Connection	Shank		Weight (kg)	Part No.
		D_4 D_3	X_1	L_1		
m	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	Shank		Weight (lbs)	Part No.
		D_4 D_3	X_1	L_1		
i	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

WARNING

Assembly of modular components may cause machine damage and/or serious injury. To prevent:

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-Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.

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B10: ix - x



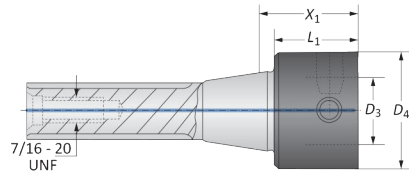
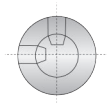
key on B10-A:2

m = Metric (mm)

i = Imperial (in)



R8 Master Shanks



Metric (mm)

	MVS Connection	Shank		Weight (kg)	Part No.
	D_4 D_3	X_1	L_1		
m	50 - 28	45.00	36.00	1.00	132022T007166
	63 - 36	60.00	51.00	1.30	132066T007166

Imperial (in)

	MVS Connection	Shank		Weight (lbs)	Part No.
	D_4 D_3	X_1	L_1		
i	50 - 28	1.770	1.417	2.204	132022T007166
	63 - 36	2.362	2.008	2.866	132066T007166

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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www.alliedmachine.com/WohlschlaegerBoringGuidelines.

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B10: ix - x



key on B10-A: 2

m = Metric (mm)

i = Imperial (in)



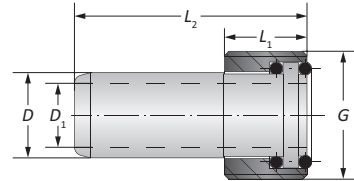
Accessories

Coolant Adapters | Service Keys | Clamping Nuts



Coolant Adapter Sets

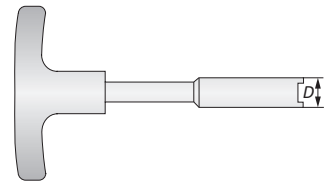
HSK	Thread G	D	D ₁	L ₁	L ₂	Part No.
32	M10 x 1.5 x 1.0	6.00	3.50	5.50	25.70	262002
40	M12 x 1.75 x 1.0	8.00	5.00	7.50	29.20	262003
50	M16 x 2 x 1.0	10.00	6.40	9.50	32.70	262004
63	M18 x 2.5 x 1.0	12.00	8.00	11.50	36.20	262005
80	M20 x 2.5 x 1.5	14.00	10.00	13.50	40.00	262006
100	M24 x 3 x 1.5	16.00	12.00	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

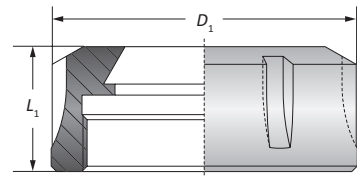
*Two piece



Type U (For use with coolant adapter set.)

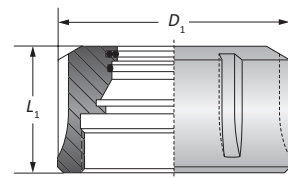
ISO 15488 (DIN 6499-B) One-piece Clamping Nut

	Nominal Size	Clamping Nut		Part No.
		L ₁	D ₁	
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		Part No.
		L ₁	D ₁	
m	ER 40	34.00	63.00	278001
i	ER 40	1.339	2.480	278001



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

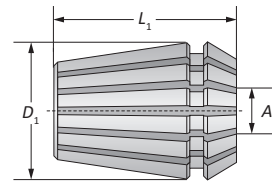


Accessories

ISO 15488 (DIN 6499-B) Collet Chuck Accessories

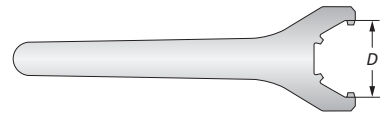
ISO 15488 (DIN6499-B) Collets

	Clamping Range	Collet		Part No.
	A	L_1	D_1	
m	15.00 - 14.00	46.00	40.00	071790
	18.00 - 17.00	46.00	40.00	071793
	20.00 - 19.00	46.00	40.00	071795
	23.00 - 22.00	46.00	40.00	071798
i	0.591 - 0.551	1.811	1.575	071790
	0.709 - 0.669	1.811	1.575	071793
	0.787 - 0.748	1.811	1.575	071795
	0.906 - 0.866	1.811	1.575	071798



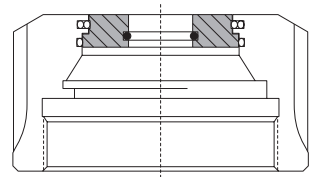
ISO 15488 (DIN 6499-B) Service Keys

	Nominal Size	Service Key D	Part No.
m	ER 40	63.00	215931

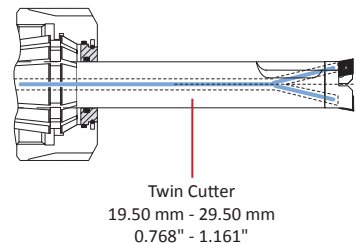
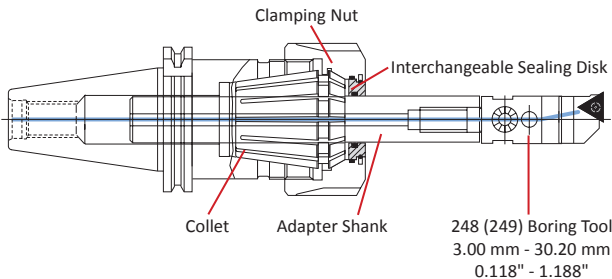


ISO 15488 (DIN6499-B) Collet Sealing Disk

	Clamping Range	Part No.
m	15.00 - 14.50	278029
	18.00 - 17.50	278035
	20.00 - 19.50	278039
	23.00 - 22.50	278045
i	0.591 - 0.551	278029
	0.709 - 0.669	278035
	0.787 - 0.748	278039
	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.

WARNING

Assembly of modular components may cause machine damage and/or serious injury. To prevent:

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 - 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.

= Metric (mm)
 = Imperial (in)

[illegible]

SECTION

B10-B

Intermediate Modules

Intermediate Modules



Increase Tool Stability with Intermediate Modules

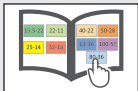
- ▶ Allow for expanded use of existing components.
- ▶ Add flexibility to setups.
- ▶ Reduce need for specials and their associated cost and lead time.
- ▶ Each component individually balanced.

Applicable Industries

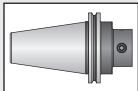
-  Aerospace
-  Agriculture
-  Automotive
-  Defense
-  General Production
-  Heavy Equipment
-  Hydraulics
-  Marine
-  Medical
-  Oil and Gas
-  Renewable Energy/ Energy
-  Tool, Mold, and Die

Reference Icons

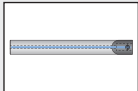
The following icons will appear throughout the catalog to help you navigate between products.



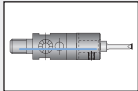
MVS Connection Color Guide
Detailed instructions and information regarding the MVS connection(s).



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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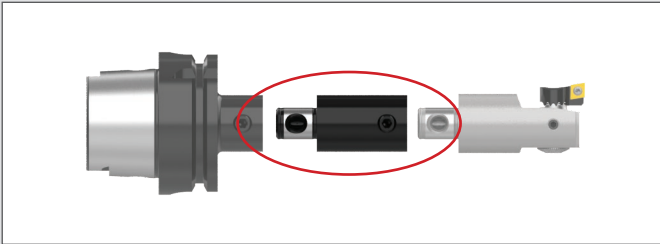
Vibration Damping Intermediate Modules 18

Intermediate Modules Product Overview



Intermediate MODULES

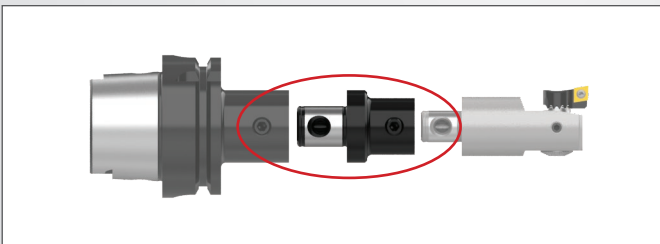
Extensions



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.**



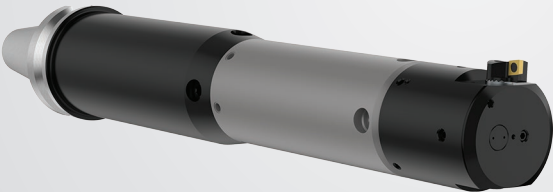
Product:	Wohlhaupter analog balanced fine boring head with NOVI ^{TECH}	Measure	Competitor Boring Head	Wohlhaupter Fine Boring Head with NOVI ^{TECH}
Objectives:	(1) Decrease cycle time (2) Improve process	RPM	106	372
Industry:	Renewable energy/energy	Speed Rate	40 m/min (131.234 SFM)	140 m/min (459.318 SFM)
Part:	Nuclear fueling machine head rotor	Feed Rate	0.076 mm/rev (0.003 IPR)	0.16 mm/rev (0.006 IPR)
Material:	ASTM A276-304L	Penetration Rate	8 mm/min (0.315 IPM)	60 mm/min (2.362 IPM)
Hole Ø:	120 mm (4.7244")	Cycle Time	2 hr 10 min	17 min
Hole Depth:	1040 mm (40.9449")	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



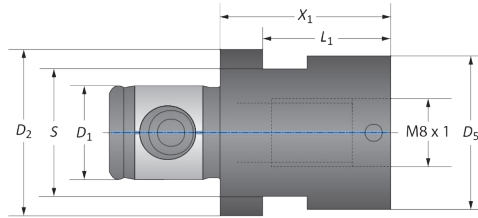
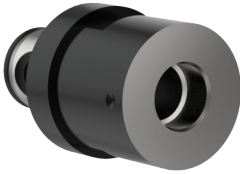
The Wohlhaupter boring head with the NOVI^{TECH} vibration damper module provided:

- ✓ Increased penetration rate
- ✓ Decreased cycle time
- ✓ Increased tool life
- ✓ Decreased cost per hole



248 (249) Adapters

Standard and Balanced Adapters

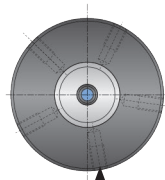


Metric (mm)

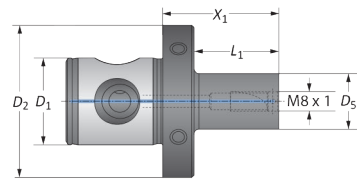
	MVS Connection	Connection	Adapter				Weight (kg)	Service Key	Part No.
	$D_2 D_1$		X_1	L_1	S	D_5			
m	19.5 - 11	M8 x 1	20.00	15.00	15/P	18.00	0.05	15 S / P	219168
	23 - 11	M8 x 1	20.00	—	19/P	23.00	0.07	19 S / P	219169

Imperial (in)

	MVS Connection	Connection	Adapter				Weight (lbs)	Service Key	Part No.
	$D_2 D_1$		X_1	L_1	S	D_5			
i	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



Threaded Hole for Balancing Screw



Metric (mm)

	MVS Connection	Connection	Adapter				Weight (kg)	Balancing Screw	Part No.
	$D_2 D_1$		X_1	L_1	D_5				
m	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	Connection	Adapter				Weight (lbs)	Balancing Screw	Part No.
	$D_2 D_1$		X_1	L_1	D_5				
i	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.

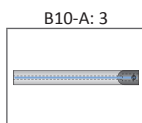
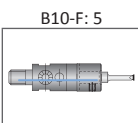
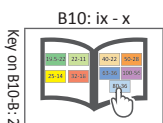
WARNING Assembly of modular components may cause machine damage and/or serious injury. To prevent:

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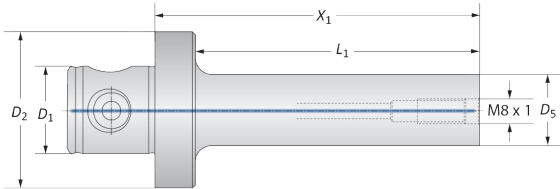
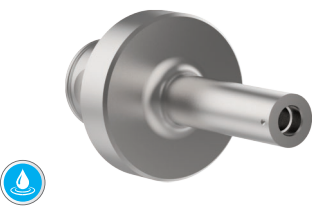


m = Metric (mm)

i = Imperial (in)

248 (249) Adapters

Vibration Reducing Heavy Metal Adapters



Metric (mm)

	MVS Connection	Connection	Adapter			Weight (kg)	Part No.
	$D_2 \mid D_1$		X_1	L_1	D_3		
	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	Connection	Adapter			Weight (lbs)	Part No.
	$D_2 \mid D_1$		X_1	L_1	D_3		
	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

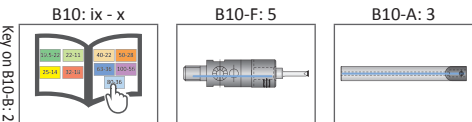
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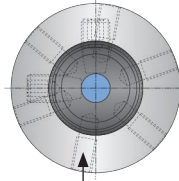


 = Metric (mm)
 = Imperial (in)

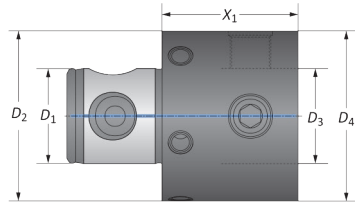


Extensions

Balanced



Balancing Screw



Metric (mm)

MVS Connection		Extension			
$D_2 \mid D_1$	$D_4 \mid D_3$	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
25 - 14	25 - 14	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
100 - 56	100 - 56	275.00	10.10	M8 x 1.25 x 21	119069
		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.

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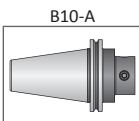
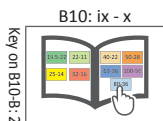
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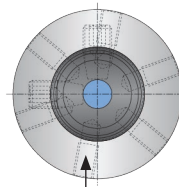
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i = Imperial (in)

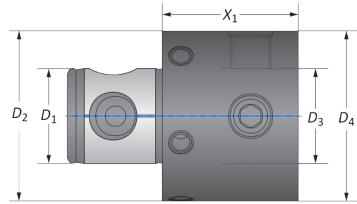


Extensions

Balanced



Balancing Screw



Imperial (in)

MVS Connection		Extension	Weight (lbs)	Balancing Screw	Part No.
$D_2 D_1$	$D_4 D_3$	X_1			
19.5 - 11	19.5 - 11	1.575	0.220	—	219043
22 - 11	22 - 11	1.575	0.220	—	219044
		0.984	0.220	—	219068
25 - 14	25 - 14	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
100 - 56	100 - 56	10.827	22.260	M8 x 1.25 x 21	119069
		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

* $D_2 / D_4 = 49.50 \text{ mm (1.949")}$ for boring $50.00 \text{ mm (1.969")}$ diameter applications.

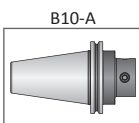
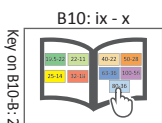
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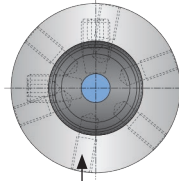
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i = Imperial (in)

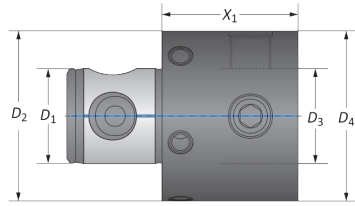


Extensions

Alu-Line® Balanced



Balancing Screw



Metric (mm)

MVS Connection		Extension	Weight (kg)	Balancing Screw	Part No.
$D_2 D_1$	$D_4 D_3$	X_1			
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
		50.00	0.70	M6 x 1 x 10	319004
80 - 36	80 - 36	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
		75.00	1.50	M8 x 1.25 x 20	319019
100 - 56	100 - 56	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

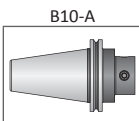
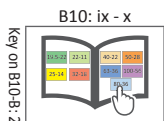
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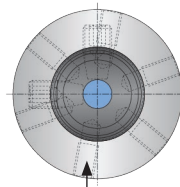


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i = Imperial (in)

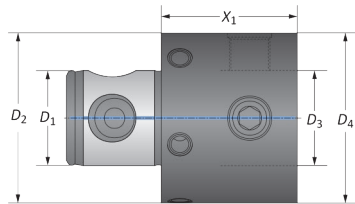


Extensions

Alu-Line® Balanced



Balancing Screw



Imperial (in)

MVS Connection		Extension	Weight (lbs)	Balancing Screw	Part No.
$D_2 D_1$	$D_4 D_3$	X_1			
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
		1.969	1.543	M6 x 1 x 10	319004
80 - 36	80 - 36	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
		2.953	3.306	M8 x 1.25 x 20	319019
100 - 56	100 - 56	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

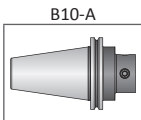
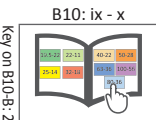
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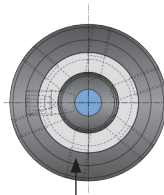


m = Metric (mm)
i = Imperial (in)

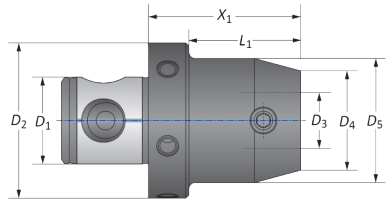


Reducers

Balanced



Balancing Screw



Metric (mm)

MVS Connection		Reducer			Weight (kg)	Balancing Screw	Part No.
$D_2 D_1$	$D_4 D_3$	X_1	L_1	D_5			
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
50 - 28	32 - 18	30.00	—	40.00	0.50	—	219040
	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*
		49.00	36.00	35.00	0.90	M6 x 1 x 10	219085
	32 - 18	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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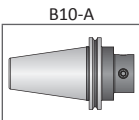
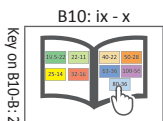
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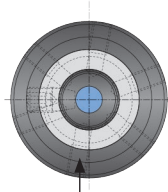
M = Metric (mm)

I = Imperial (in)

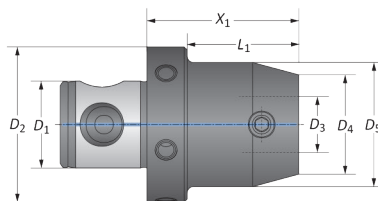


Reducers

Balanced



Balancing Screw



Metric (mm)

MVS Connection		Reducer					
$D_2 \mid D_1$	$D_4 \mid D_3$	X_1	L_1	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
		14.00	0.50	—	0.60	M6 x 1 x 10	119095
	25 - 14	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*
		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
	32 - 18	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*
		40.00	27.00	—	0.80	M6 x 1 x 10	219091
	40 - 22	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
		40.00	—	63.00	1.00	M6 x 1 x 10	119064
	50 - 28	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**
		80.00	—	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.

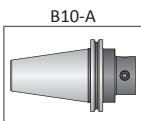
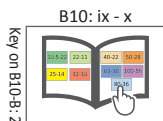
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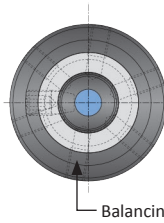
m = Metric (mm)

i = Imperial (in)

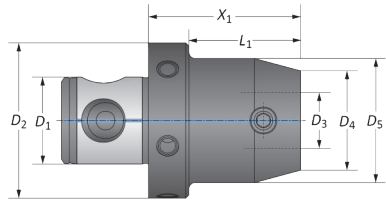


Reducers

Balanced



Balancing Screw



Imperial (in)

MVS Connection		Reducer			Weight (lbs)	Balancing Screw	Part No.
$D_2 D_1$	$D_4 D_3$	X_1	L_1	D_5			
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
50 - 28	32 - 18	1.181	—	1.575	1.102	—	219040
	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
	32 - 18	4.685	4.173	1.417	2.204	M6 x 1 x 10	219030*
		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
	40 - 22	4.291	3.780	1.811	2.866	M6 x 1 x 10	219032*
		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

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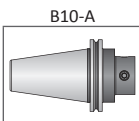
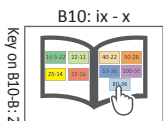
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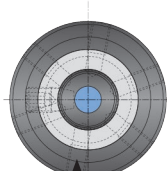
M = Metric (mm)

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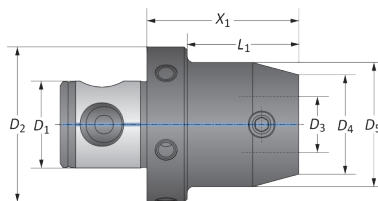


Reducers

Balanced



Balancing Screw



Imperial (in)

MVS Connection		Reducer			Weight (lbs)	Balancing Screw	Part No.
$D_2 D_1$	$D_4 D_3$	X_1	L_1	D_5			
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
	25 - 14	2.126	1.614	—	1.543	M6 x 1 x 10	219054
		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
		1.575	—	2.480	2.204	M6 x 1 x 10	119064
	50 - 28	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	1.969	—	3.150	3.527	M6 x 1 x 15	119098
	100 - 56	2.756	2.047	—	7.936	M8 x 1.25 x 20	219066

* Reinforced reducer.

**For milling applications.

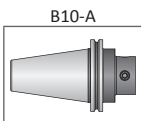
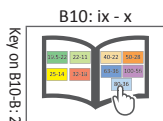
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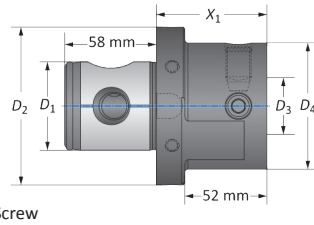
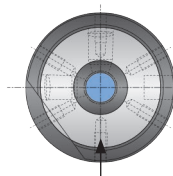
m = Metric (mm)

i = Imperial (in)



Reducers

Alu-Line® Balanced



Metric (mm)

MVS Connection		Reducer		Weight (kg)	Balancing Screw	Part No.
$D_2 D_1$	$D_4 D_3$	X_1	L_1			
100 - 56	80 - 36	70.00	52.00	1.30	M8 x 1.25 x 20	319013

Imperial (in)

MVS Connection		Reducer		Weight (lbs)	Balancing Screw	Part No.
$D_2 D_1$	$D_4 D_3$	X_1	L_1			
100 - 56	80 - 36	2.756	2.047	2.866	M8 x 1.25 x 20	319013

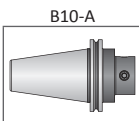
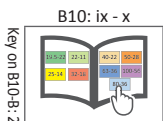
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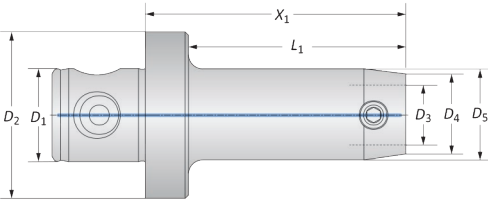


= Metric (mm)
 = Imperial (in)



Reducers

Vibration Reducing Heavy Metal Reducers



Metric (mm)

MVS Connection		Reducer			Weight (kg)	Part No.
$D_2 \mid D_1$	$D_4 \mid D_3$	X_1	L_1	D_5		
m	50 - 28	19.5 - 11	90.00	77.00	—	219055
		22 - 11	110.00	97.00	23.00	219056
		25 - 14	124.00	111.00	28.00	219057
			144.00	131.00	32.00	219058
			164.00	151.00	35.00	219059
		32 - 18	154.00	141.00	37.00	219093
			154.00	141.00	42.00	219060

Imperial (in)

MVS Connection		Reducer			Weight (lbs)	Part No.
$D_2 \mid D_1$	$D_4 \mid D_3$	X_1	L_1	D_5		
i	50 - 28	19.5 - 11	3.543	3.031	—	219055
		22 - 11	4.331	3.819	0.906	219056
		25 - 14	4.882	4.370	1.102	219057
			5.669	5.157	1.260	219058
			6.457	5.945	1.378	219059
		32 - 18	6.063	5.551	1.457	219093
			6.063	5.551	1.654	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.

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.

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/WohlschaeferBoringGuidelines.

NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

key on B10-B: 2

B10: ix - x

B10-A

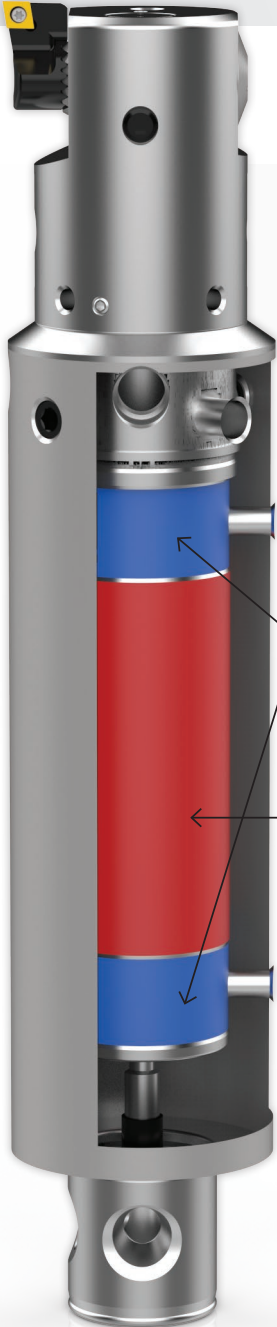
m = Metric (mm)
i = Imperial (in)



NOVI^{TECH}® Vibration Damping Intermediate Modules Overview



THE DEEP HOLE 10xD BORING SOLUTION YOU'VE BEEN LOOKING FOR



Damper module with
viscoelastic bearing

Absorber mass

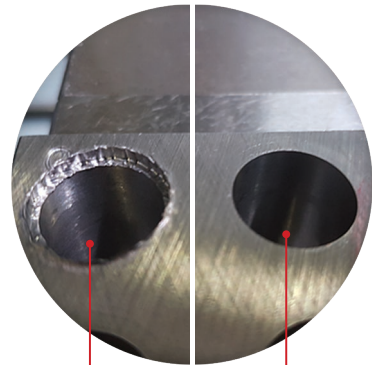
OUR **SOLUTION**

- ▶ 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 ($R_a = 32$).



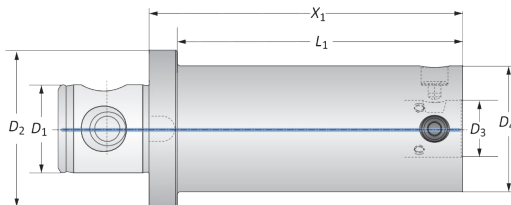
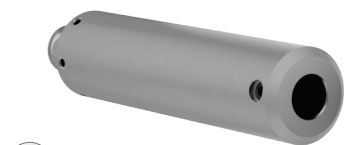
Standard tool
construction with
steel extension

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}		Weight (kg)	Part No.
$D_2 D_1$	$D_4 D_3$	X_1	L_1		
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}		Weight (lbs)	Part No.
$D_2 D_1$	$D_4 D_3$	X_1	L_1		
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

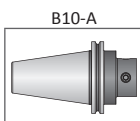
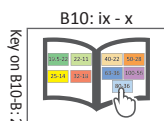
NOTE: The NOVI^{TECH} intermediate module should always be assembled as close as possible to the cutting edge (i.e. the next component behind the boring head).

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.

⚠ 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.



m = Metric (mm)

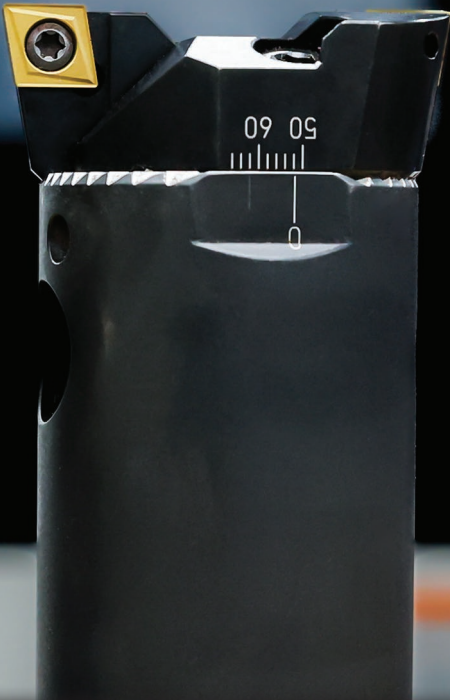
i = Imperial (in)

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.

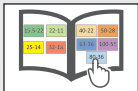
- ▶ Twin Cutters
 - ▶ 19.50 mm - 205.00 mm (0.768" - 8.071")
- ▶ Chamfering Tools
 - ▶ 19.00 mm - 216.00 mm (0.748" - 8.504")
- ▶ Reverse Machining
 - ▶ 29.00 mm - 245.00 mm (1.142" - 9.646")

Applicable Industries

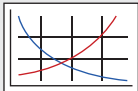
-  Aerospace
-  Agriculture
-  Automotive
-  Defense
-  General Production
-  Heavy Equipment
-  Hydraulics
-  Marine
-  Medical
-  Oil and Gas
-  Renewable Energy/ Energy
-  Tool, Mold, and Die

Reference Icons

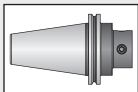
The following icons will appear throughout the catalog to help you navigate between products.



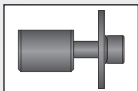
MVS Connection Color Guide
Detailed instructions and information regarding the MVS connection(s).



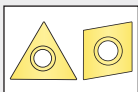
Recommended Cutting Data
Speed and feed recommendations for optimum and safe boring.



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

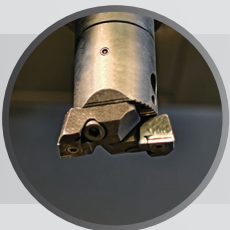
Versatile tools for a variety of applications.

- ▶ 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").

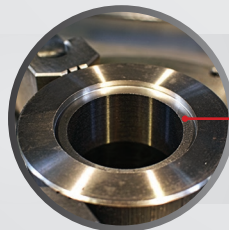
Roughing Applications



- ▶ **Twin Cutter Assembly:**
- (1) Reducer: 219087
 - (2) Serrated tool body: 148004
 - (3) Insert holders: 151004
 - (4) Inserts: 297241WHC79



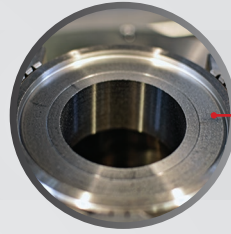
- ▶ **Tangential Cutter Assembly:**
- (1) Shank: 353007
 - (2) Serrated tool body: 148005
 - (3) Insert holders: 151043
 - (4) Inserts: 397594WHC198



First Tangential Cut



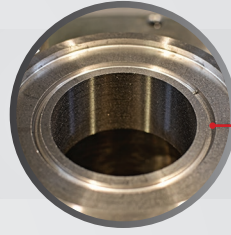
- **Tangential Cutter Assembly:**
 (1) Shank: 353008
 (2) Serrated tool body: 148006
 (3) Insert holders: 151035
 (4) Inserts: 397594WHC198



Second Tangential Cut



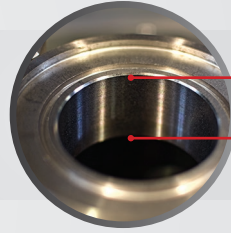
- **Axial Grooving Assembly:**
 (1) Shank: 353009
 (2) Serrated tool body: 148007
 (3) Support block: 226011
 (4) Insert holder: 226010
 (5) Insert: 297978WCH136



Axial Groove Cut

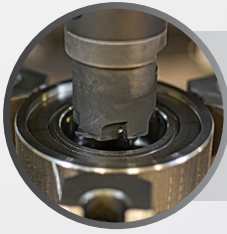


- **Chamfer Assembly:**
 (1) Shank: 353003
 (2) Serrated tool body: 148004
 (3) Insert holder: 201009
 (4) Inserts: 297497WHC79

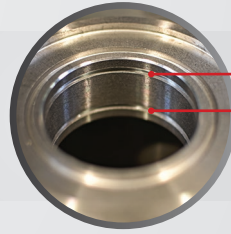


Top Chamfer

Bottom Chamfer



- **Radial Grooving Assembly:**
 (1) Shank: 353007
 (2) Grooving tool: 143055
 (3) Inserts: 097254WCH136



Grooves

Finished Application

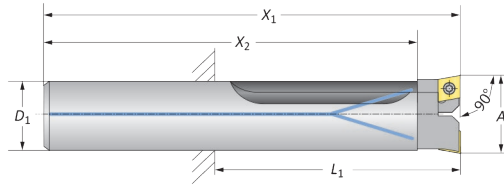




Twin Cutters Same Level

90° | Diameter Range: 19.50 mm - 30.00 mm (0.768" - 1.181")

Cylindrical Shank



Metric (mm)

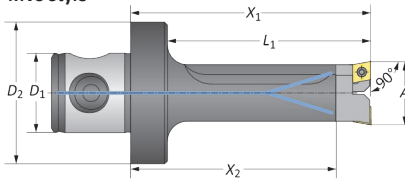
Connection	Boring Range	Twin Cutter			Weight (kg)	Serrated Body	Insert Holder	
D ₁	A	X ₁	X ₂	L ₁			Form	Part No.
18	19.50 - 23.00	150.00	138.00	80.00	0.25	235021	101	235031
20	22.50 - 26.00	150.00	138.00	90.00	0.31	235022	101	235032
23	25.50 - 30.00	160.00	148.00	100.00	0.44	235023	101	235033

Imperial (in)

Connection	Boring Range	Twin Cutter			Weight (lbs)	Serrated Body	Insert Holder	
D ₁	A	X ₁	X ₂	L ₁			Form	Part No.
18	0.768 - 0.906	5.910	5.433	3.149	0.551	235021	101	235031
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)

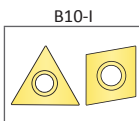
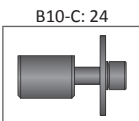
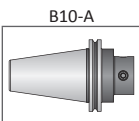
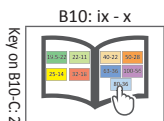
MVS Connection	Boring Range	Twin Cutter			Weight (kg)	Serrated Body	Insert Holder	
D ₂ D ₁	A	X ₁	X ₂	L ₁			Form	Part No.
50 - 28	19.50 - 23.00	85.00	73.00	72.00	0.40	235001	101	235031
	22.50 - 26.00	90.00	78.00	77.00	0.45	235002	101	235032
	25.50 - 30.00	95.00	83.00	82.00	0.50	235003	101	235033
63 - 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	Boring Range	Twin Cutter			Weight (lbs)	Serrated Body	Insert Holder	
D ₂ D ₁	A	X ₁	X ₂	L ₁			Form	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
	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.

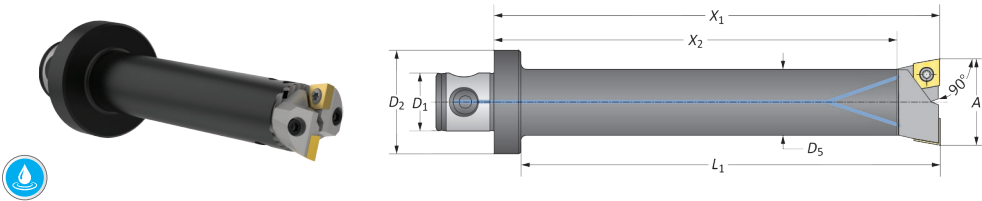
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.





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					Serrated Body	Insert Holder	
D ₂ D ₁	A	X ₁	X ₂	L ₁	D ₅	Weight (kg)		Form	Part No.
m 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

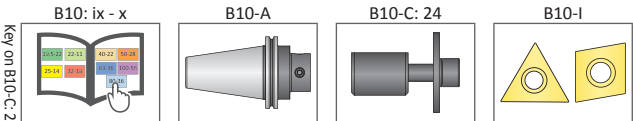
Imperial (in)

Connection	Boring Range	Twin Cutter					Serrated Body	Insert Holder	
D ₂ D ₁	A	X ₁	X ₂	L ₁	D ₅	Weight (lbs)		Form	Part No.
i 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.

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.



m = Metric (mm)

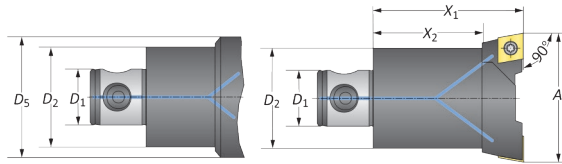
i = Imperial (in)

Inserts sold separately.



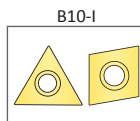
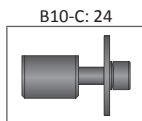
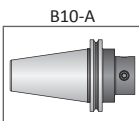
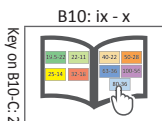
Twin Cutters Same Level

90° | Diameter Range: 29.00 mm - 205.00 mm (1.142" - 8.071")



Metric (mm)

Connection $D_2 D_1$	Boring Range A	Twin Cutter		D_5	Weight (kg)	Serrated Body	Insert Holder	
		X_1	X_2				Form	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
	36.00 - 44.00	56.00	42.00	30.00	0.40	148017	103	151002
32 - 18	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
50 - 28	65.00 - 83.00	75.00	55.00	—	1.10	148005	104	151004
							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

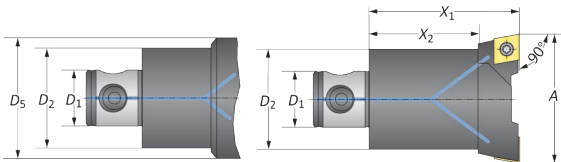
NOTE: Insert holders sold in quantities of 1, and inserts sold separately.**IMPORTANT:** Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

m = Metric (mm)
i = Imperial (in)
Inserts sold separately.



Twin Cutters Same Level

90° | Diameter Range: 29.00 mm - 205.00 mm (1.142" - 8.071")

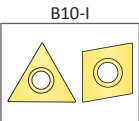
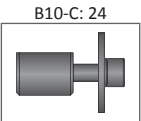
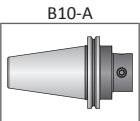
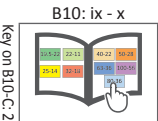


Imperial (in)

Connection $D_2 D_1$	Boring Range A	Twin Cutter			Weight (lbs)	Serrated Body	Insert Holder	
		X_1	X_2	D_5			Form	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
40 - 22	1.693 - 2.126	2.598	1.811	1.417	1.543	148018	104	151003
							103	151024
	2.087 - 2.598	2.953	2.165	—	1.543	148004	104	151004
							103	151025
50 - 28	2.559 - 3.268	2.953	2.165	—	2.425	148005	104	151005
							103	151026
63 - 36	3.228 - 4.055	3.543	2.362	—	4.188	148006	104	151086
							105	151006
							103	151027
80 - 36	3.937 - 5.118	3.543	2.362	—	6.613	148007	104	151087
							105	151007
							103	151028
	4.921 - 6.102	3.543	2.362	—	7.054	148007	104	151088
							105	151008
							103	151028
	5.906 - 8.071	3.543	2.362	4.921	8.818	148009	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.

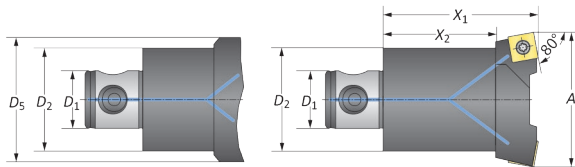


= Metric (mm)
 = Imperial (in)
Inserts sold separately.



Twin Cutters Same Level

80° | Diameter Range: 29.00 mm - 205.00 mm (1.142" - 8.071")



Metric (mm)

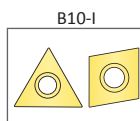
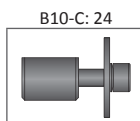
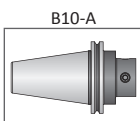
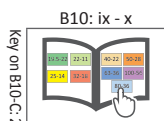
Connection $D_2 D_1$	Boring Range A	Twin Cutter			Weight (kg)	Serrated Body	Insert Holder	
		X_1	X_2	D_5			Form	Part No.
25 - 14	29.00 - 37.00	56.00	42.00	—	0.20	148001	112	151011
	36.00 - 44.00	56.00	42.00	30.00	0.20	148002	112	151012
32 - 18	36.00 - 44.00	62.00	42.00	30.00	0.40	148017	112	151012
	43.00 - 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
	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 $D_2 D_1$	Boring Range A	Twin Cutter			Weight (lbs)	Serrated Body	Insert Holder	
		X_1	X_2	D_5			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
	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.

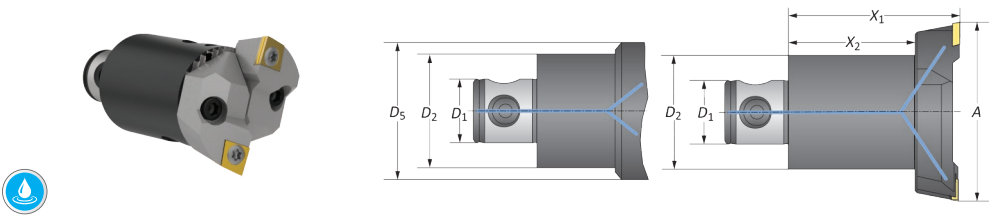
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



m = Metric (mm)
i = 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)

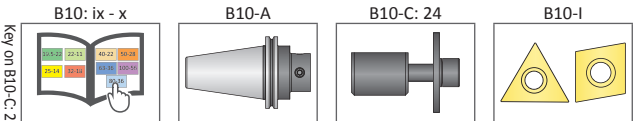
Connection $D_2 D_1$	Boring Range A	Twin Cutter			Weight (kg)	Serrated Body	Insert Holder	
		X_1	X_2	D_3			Form	Part No.
40 - 22	53.00 - 66.00	75.00	55.00	—	0.70	148004	04	151022
50 - 28	65.00 - 83.00	75.00	55.00	—	1.00	148005	04	151032
							05	151043
63 - 36	82.00 - 103.00	90.00	60.00	—	2.20	148006	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 $D_2 D_1$	Boring Range A	Twin Cutter			Weight (lbs)	Serrated Body	Insert Holder	
		X_1	X_2	D_3			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.

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.



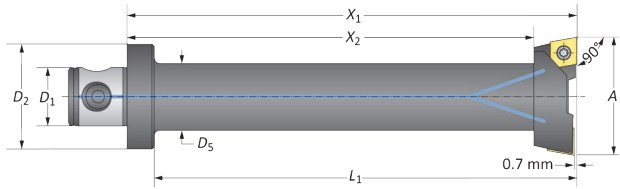
Key on B10-C: 2

 = 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")

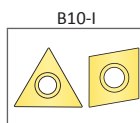
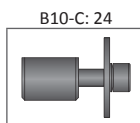
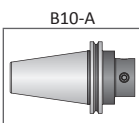
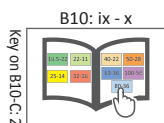


Metric (mm)

Connection $D_2 \mid D_1$	Boring Range A	Twin Cutter					Weight (kg)	Serrated Body	Form	Insert Holders	
		X_1	X_2	L_1	D_5					①	② (-0.7 mm)
m 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 $X_2 \mid X_1 \mid L_1 \mid D_5$				Weight (lbs)	Serrated Body	Form	Insert Holders $\textcircled{1} \mid \textcircled{2} \text{ (-0.0276")}$	
 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	

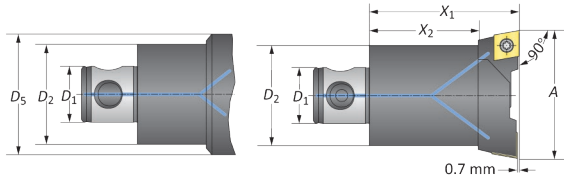
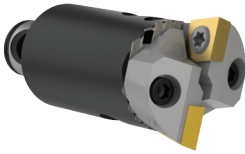
NOTE: Different lengths available upon request.**NOTE:** Insert holders sold in quantities of 1, and inserts sold separately.**IMPORTANT:** Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

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)

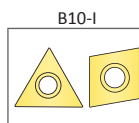
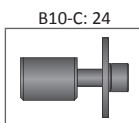
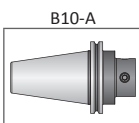
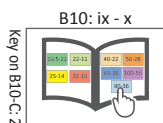
Connection $D_2 D_1$	Boring Range A	Twin Cutter			Weight (kg)	Serrated Body	Form	Insert Holders	
		X_1	X_2	D_5				①	② (-0.7 mm)
25 - 14	29.00 - 37.00	56.00	42.00	—	0.20	148001	103	151001	151061
	36.00 - 44.00	56.00	42.00	30.00	0.20	148002	103	151002	151062
32 - 18	36.00 - 44.00	56.00	42.00	30.00	0.40	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
							105	151086	151090
63 - 36	82.00 - 103.00	90.00	60.00	—	2.40	148006	105	151006	151096
							104	151087	151091
80 - 36	100.00 - 130.00	90.00	60.00	—	3.00	148007	105	151007	151097
							104	151088	151092
	125.00 - 155.00	90.00	60.00	—	3.20	148007	105	151008	151098
							104	151088	151092
	150.00 - 205.00	90.00	60.00	125.00	4.00	148009	105	151008	151098

Imperial (in)

Connection $D_2 D_1$	Boring Range A	Twin Cutter			Weight (lbs)	Serrated Body	Form	Insert Holders	
		X_1	X_2	D_5				①	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
							105	151086	151090
63 - 36	3.228 - 4.055	3.543	2.362	—	5.291	148006	105	151006	151096
							104	151087	151091
80 - 36	3.937 - 5.118	3.543	2.362	—	6.613	148007	105	151007	151097
							104	151088	151092
	4.921 - 6.102	3.543	2.362	—	7.054	148007	105	151008	151098
							104	151088	151092
	5.906 - 8.071	3.543	2.362	4.921	8.818	148009	105	151008	151098

NOTE: Insert holders sold in quantities of 1, and inserts sold separately.

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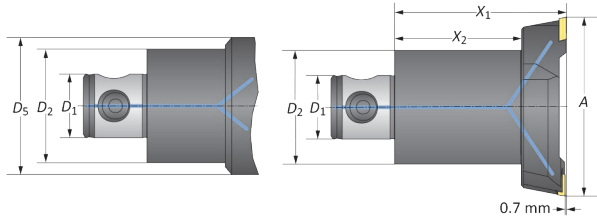


= Metric (mm)
 = Imperial (in)
 Inserts sold separately.



Twin Cutters Height Displaced

Tangential Inserts | Diameter Range: 53.00 mm - 205.00 mm (2.087" - 8.071")



Metric (mm)

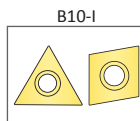
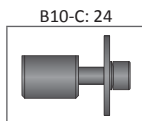
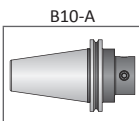
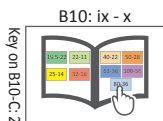
Connection $D_2 D_1$	Boring Range A	Twin Cutter			Weight (kg)	Serrated Body	Form	Insert Holders	
		X_1	X_2	D_5				①	② (-0.7 mm)
40 - 22	53.00 - 66.00	75.00	55.00	—	0.70	148004	04	151022	268009
50 - 28	65.00 - 83.00	75.00	55.00	—	1.00	148005	04	151032	268010
							05	151043	268019
63 - 36	82.00 - 103.00	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 $D_2 D_1$	Boring Range A	Twin Cutter			Weight (lbs)	Serrated Body	Form	Insert Holders	
		X_1	X_2	D_5				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.



= Metric (mm)
 = Imperial (in)
 Inserts sold separately.

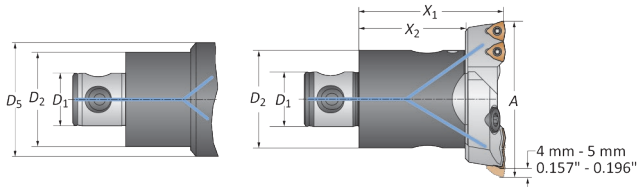
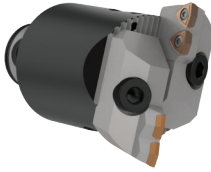
This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin black lines. There are 20 columns and 20 rows of squares, creating a total of 400 square units. The paper is otherwise completely blank, with no margins, text, or other markings.





VolCut Insert Holders

Diameter Range: 65.00 mm - 3255.00 mm (2.559" - 128.150")



Metric (mm)

Connection $D_2 D_1$	Boring Range		Serrated Body			Weight (kg)	Number of Inserts	Serrated Body	Insert Holder	
	A	A_{min}^{**}	X_1	X_2	D_5				Form	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		Serrated Body			Weight (lbs)	Number of Inserts	Serrated Body	Insert Holder	
	A	A_{min}^{**}	X_1	X_2	D_5				Form	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



VolCut Technical Information

Setup Instructions | Minimum Pilot Calculation



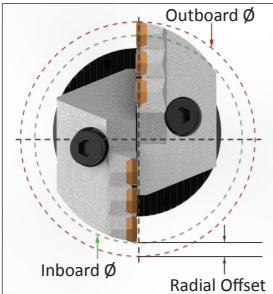
Step 1:
Loosen the mounting screws on both cartridges.



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.

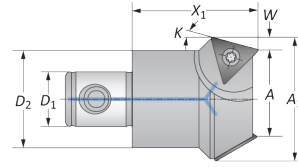
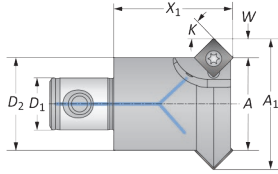
Minimum Pilot Calculation		
Calculation: Finish Diameter - Opening Range = Minimum Pilot Hole Diameter		
Insert Holder	Diameter Range	Opening Range
151019	65.00 mm - 70.00 mm (2.559" - 2.756")	15.24 mm (0.600")
	70.00 mm - 83.00 mm (2.756" - 3.268")	47.75 mm (1.880")
151039	82.00 mm - 87.00 mm (3.228" - 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 - 325.00 mm (7.874" - 12.815")	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")



Metric (mm)

Connection		Approach Angle	Boring Range	Cutter Diameter	Chamfering Tool		Weight (kg)	Insert Form	Number of Inserts	Part No.
$D_2 \mid D_1$		K	A	A_1	X_1	W				
m	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

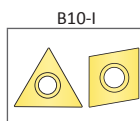
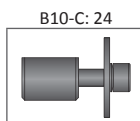
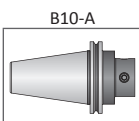
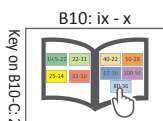
Imperial (in)

Connection		Approach Angle	Boring Range	Cutter Diameter	Chamfering Tool		Weight (lbs)	Insert Form	Number of Inserts	Part No.
$D_2 \mid D_1$		K	A	A_1	X_1	W				
</										

NOTE: K45° for front and reverse chamfering.

NOTE: 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.



key on B10-C:2

 = Metric (mm)
 = Imperial (in)
 Inserts sold separately.

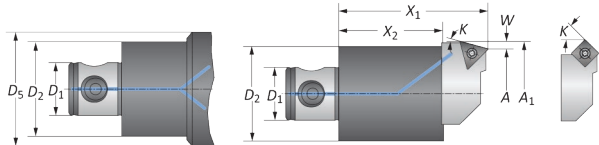
This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin black lines. There are 20 columns and 20 rows of squares, creating a total of 400 square units. The paper is otherwise completely blank, with no margins, text, or other markings.





Chamfering Tools

Insert Holders | Diameter Range: 19.00 mm - 216.00 mm (0.748" - 8.504")



Metric (mm)

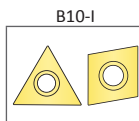
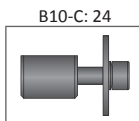
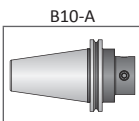
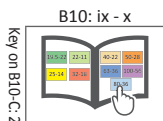
Connection $D_2 \mid D_1$		Approach Angle (K)	Boring Range (A)	Chamfering Range (A_1)	Chamfering Tool				Weight (kg)	Serrated Body	Insert Holder	
					X_1	X_2	D_5	W			Form	Part No.
25 - 14	15°	24.00 - 32.00	29.00 - 37.00	60.00	42.00	-	2.50	0.20	148001	161	201057	
		31.00 - 39.00	36.00 - 44.00	60.00	42.00	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	
	32 - 18	15°	31.00 - 39.00	43.00 - 51.00	60.00	42.00	30.00	6.00	0.20	148002	112	201007
			31.00 - 39.00	36.00 - 44.00	60.00	42.00	30.00	2.50	0.20	148017	161	201058
20°		35.00 - 46.00	43.00 - 54.00	71.00	46.00	36.00	4.00	0.40	148003	163	201059	
		29.00 - 37.00	36.00 - 44.00	60.00	42.00	30.00	3.50	0.20	148017	161	201018	
30°		33.00 - 44.00	43.00 - 54.00	71.00	46.00	36.00	5.00	0.40	148003	163	201019	
		27.00 - 35.00	36.00 - 44.00	60.00	42.00	30.00	4.50	0.20	148017	161	201068	
45°		28.00 - 39.00	43.00 - 54.00	71.00	46.00	36.00	7.50	0.40	148003	163	201069	
		31.00 - 39.00	43.00 - 51.00	60.00	42.00	30.00	6.00	0.20	148017	112	201007	
40 - 22		15°	35.00 - 46.00	50.00 - 61.00	66.00	46.00	36.00	7.50	0.40	148003	113	201008
			35.00 - 46.00	43.00 - 54.00	71.00	46.00	36.00	4.00	0.40	148018	163	201059
	20°	37.00 - 50.00	45.00 - 58.00	80.00	55.00	-	4.00	0.70	148004	163	201060	
		33.00 - 44.00	43.00 - 54.00	71.00	46.00	36.00	5.00	0.40	148018	163	201019	
	30°	37.00 - 50.00	47.00 - 60.00	80.00	55.00	-	5.00	0.70	148004	163	201020	
		28.00 - 39.00	43.00 - 54.00	71.00	46.00	36.00	7.50	0.40	148018	163	201069	
	45°	37.00 - 50.00	52.00 - 65.00	80.00	55.00	-	7.50	0.70	148004	163	201070	
		35.00 - 46.00	50.00 - 61.00	66.00	46.00	36.00	7.50	0.40	148018	113	201008	
	45°	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: K45° insert holders for reverse chamfering above $\varnothing 31.00$ 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.

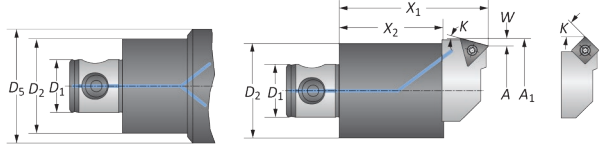


m = Metric (mm)
i = Imperial (in)
 Inserts sold separately.



Chamfering Tools

Insert Holders | Diameter Range: 19.00 mm - 216.00 mm (0.748" - 8.504")



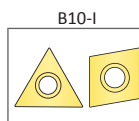
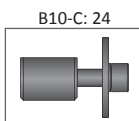
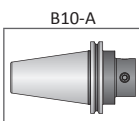
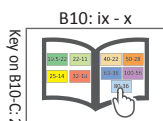
Metric (mm)

Connection $D_2 D_1$	Approach Angle (K)	Boring Range (A)	Chamfering Range (A_1)	Chamfering Tool				Weight (kg)	Serrated Body	Insert Holder	
				X_1	X_2	D_3	W			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: K45° 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.

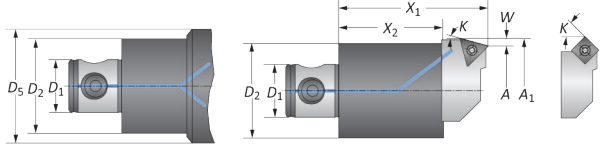


= Metric (mm)
 = Imperial (in)
 Inserts sold separately.



Chamfering Tools

Insert Holders | Diameter Range: 19.00 mm - 216.00 mm (0.748" - 8.504")



Imperial (in)

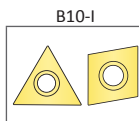
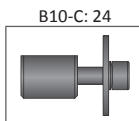
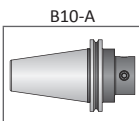
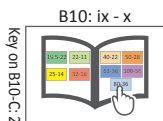
Connection $D_2 D_1$	Approach Angle (K)	Boring Range (A)	Chamfering Range (A_1)	Chamfering Tool				Weight (lbs)	Serrated Body	Insert Holder	
				X_1	X_2	D_5	W			Form	Part No.
25 - 14	15°	0.945 - 1.260	1.141 - 1.457	2.362	1.653	-	0.098	0.440	148001	161	201057
		1.220 - 1.535	1.417 - 1.732	2.362	1.653	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
32 - 18	15°	1.220 - 1.535	1.692 - 2.007	2.362	1.653	1.181	0.236	0.440	148002	112	201007
		1.378 - 1.811	1.692 - 2.125	2.795	1.811	1.417	0.157	0.881	148017	161	201058
	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: K45° for front and reverse chamfering above $\varnothing$ 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.



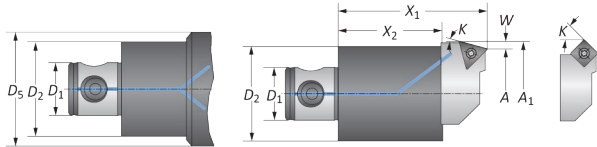
key on B10-C:2

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")



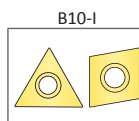
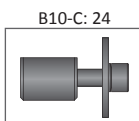
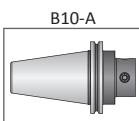
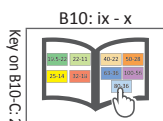
Imperial (in)

Connection $D_2 D_1$	Approach Angle (K)	Boring Range (A)	Chamfering Range (A_1)	Chamfering Tool				Weight (lbs)	Serrated Body	Insert Holder	
				X_1	X_2	D_5	W			Form	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 $\varnothing$ 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.

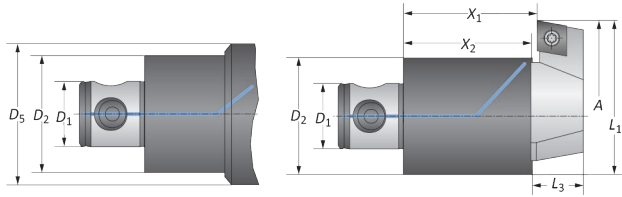


= Metric (mm)
 = Imperial (in)
 Inserts sold separately.



Reverse Machining Tools

Diameter Range: 29.00 mm - 245.00 mm (1.142" - 9.646")



$$L_1 = \frac{D_2}{2} + \frac{A}{2} + 0.5 \text{ mm}$$



Metric (mm)

Connection $D_2 D_1$	Boring Range A	Reverse Machining				D_5	Weight (kg)	Serrated Tool Body	Insert Holder	
		X_1	X_2	L_3					Form	Part No.
25 - 14	29.00 - 37.00	40.00	39.00	14.00	—	0.20	0.20	148011	103	251001
	34.00 - 42.00	40.00	39.00	14.00	—	0.20	0.20	148011	103	251002
	36.00 - 44.00	40.00	39.00	14.00	—	0.20	0.20	148012	103	251002
	44.00 - 52.00	40.00	39.00	18.00	—	0.20	0.20	148012	104	251003
32 - 18	43.00 - 54.00	40.00	39.00	18.00	—	0.30	0.30	148013	104	251003
	55.00 - 66.00	40.00	39.00	18.00	—	0.40	0.40	148013	104	251004
40 - 22	53.00 - 72.00	40.00	39.00	18.00	—	0.50	0.50	148014	104	251004
	66.00 - 85.00	40.00	39.00	18.00	—	0.50	0.50	148014	104	251005
50 - 28	70.00 - 95.00	56.00	55.00	22.00	—	1.10	1.10	148015	104	251006
	92.00 - 117.00	56.00	55.00	22.00	—	1.30	1.30	148015	104	251007
63 - 36	92.00 - 122.00	56.00	55.00	22.00	—	1.70	1.70	148016	104	251007
	120.00 - 150.00	62.00	60.00	26.00	—	2.70	2.70	148007	104	251008
	166.00 - 196.00	62.00	60.00	26.00	—	2.90	2.90	148007	104	251009
	145.00 - 200.00	62.00	60.00	26.00	125.00	3.60	3.60	148009	104	251008
80 - 36	190.00 - 245.00	62.00	60.00	26.00	125.00	3.70	3.70	148009	104	251009

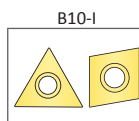
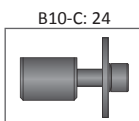
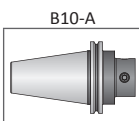
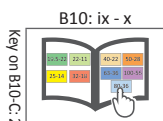
Imperial (in)

Connection $D_2 D_1$	Boring Range A	Reverse Machining				D_5	Weight (lbs)	Serrated Tool Body	Insert Holder	
		X_1	X_2	L_3					Form	Part No.
25 - 14	1.142 - 1.457	1.575	1.535	0.551	—	0.440	0.440	148011	103	251001
	1.339 - 1.654	1.575	1.535	0.551	—	0.440	0.440	148011	103	251002
	1.417 - 1.732	1.575	1.535	0.551	—	0.440	0.440	148012	103	251002
	1.732 - 2.047	1.575	1.535	0.708	—	0.440	0.440	148012	104	251003
32 - 18	1.693 - 2.126	1.575	1.535	0.708	—	0.661	0.661	148013	104	251003
	2.165 - 2.598	1.575	1.535	0.708	—	0.881	0.881	148013	104	251004
40 - 22	2.087 - 2.835	1.575	1.535	0.708	—	1.102	1.102	148014	104	251004
	2.598 - 3.346	1.575	1.535	0.708	—	1.102	1.102	148014	104	251005
50 - 28	2.756 - 3.740	2.205	2.165	0.866	—	2.425	2.425	148015	104	251006
	3.622 - 4.606	2.205	2.165	0.866	—	2.866	2.866	148015	104	251007
63 - 36	3.622 - 4.803	2.205	2.165	0.866	—	3.747	3.747	148016	104	251007
	4.724 - 5.906	2.441	2.362	1.023	—	5.952	5.952	148007	104	251008
	6.535 - 7.717	2.441	2.362	1.023	—	6.393	6.393	148007	104	251009
	5.709 - 7.874	2.441	2.362	1.023	4.921	7.936	7.936	148009	104	251008
80 - 36	7.480 - 9.646	2.441	2.362	1.023	4.921	8.157	8.157	148009	104	251009

NOTE: Only use inserts with chip grooves all around.

NOTE: Insert holders and inserts sold separately.

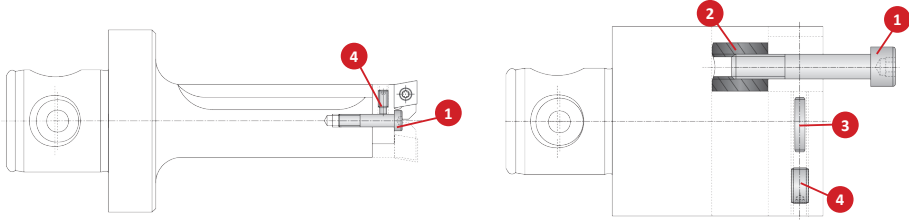
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



= Metric (mm)
 = Imperial (in)
 Inserts sold separately.

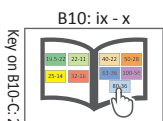


Clamping Elements



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
80 - 36	235013	415113	T25 / B	–	–	215346	s1.5 / A
	148007	115730	s6 / B	140119	–	116550	s2.5 / A
	148009	115730	s6 / B	140119	140120	115519	s2.5 / A



m = Metric (mm)

i = Imperial (in)

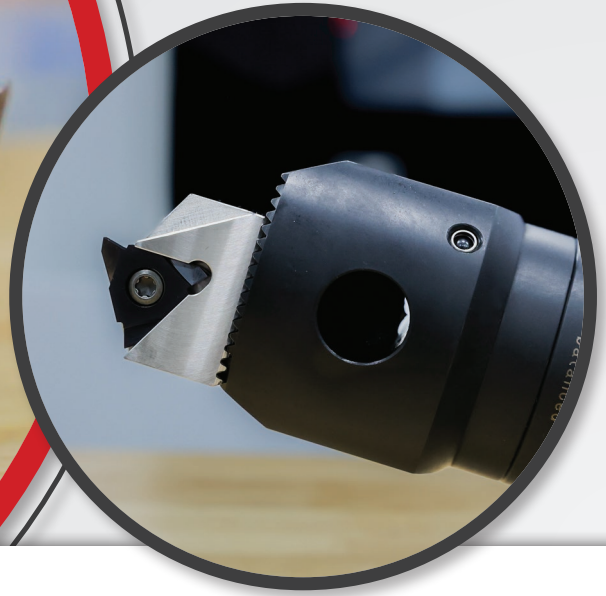
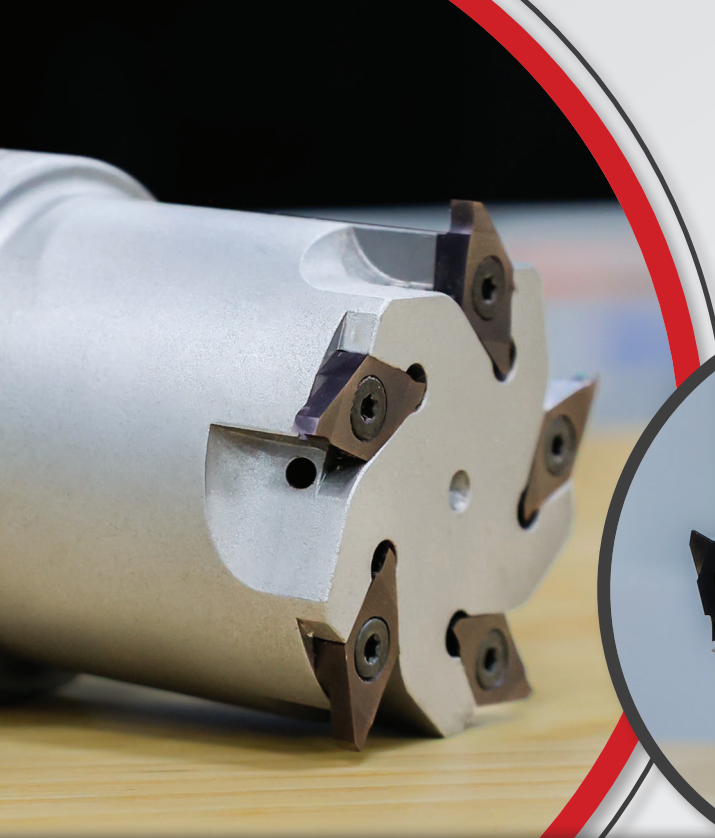
Inserts sold separately.

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.

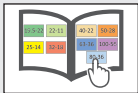
- ▶ Radial Groovers
 - ▶ 20.00 mm - 79.00 mm (0.787" - 3.110")
- ▶ Axial Groovers
 - ▶ 20.00 mm - 210.00 mm (0.787" - 8.268")

Applicable Industries

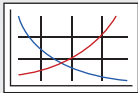
-  Aerospace
-  Agriculture
-  Automotive
-  Defense
-  General Production
-  Heavy Equipment
-  Hydraulics
-  Marine
-  Medical
-  Oil and Gas
-  Renewable Energy/ Energy
-  Tool, Mold, and Die

Reference Icons

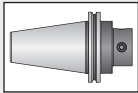
The following icons will appear throughout the catalog to help you navigate between products.



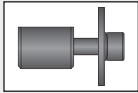
MVS Connection Color Guide
Detailed instructions and information regarding the MVS connection(s).



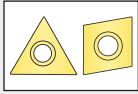
Recommended Cutting Data
Speed and feed recommendations for optimum and safe boring.



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:

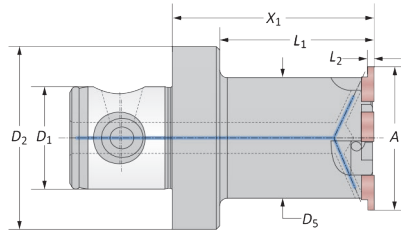
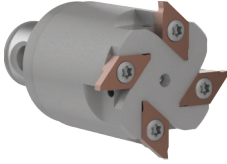
 WARNING	means that failure to follow the precautions in this message could result in tool failure and serious injury.
NOTICE	means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.
NOTE and IMPORTANT	are also used. 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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Accessories	
Cap and Adjustment Screws	5



Grooving Tools for Circular Milling

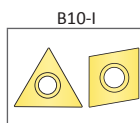
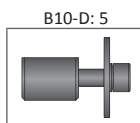
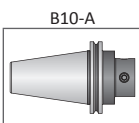
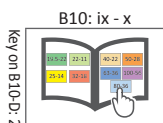
Diameter Range: $\varnothing > 20.00$ mm (0.787")

Metric (mm)

MVS	Cutter Diameter	Grooving Tool			Groove		Number of Inserts	Weight (kg)	Insert Form	Part No.
$D_2 D_1$	A	X_1	L_1	D_5	L_2 (min)	Depth (max)				
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 - 36	63.00	40.00	40.00	53.00	5.87	4.70	6	0.70	91	143057
	79.00	40.00	40.00	69.00	5.87	4.70	8	1.20	91	143058

Imperial (in)

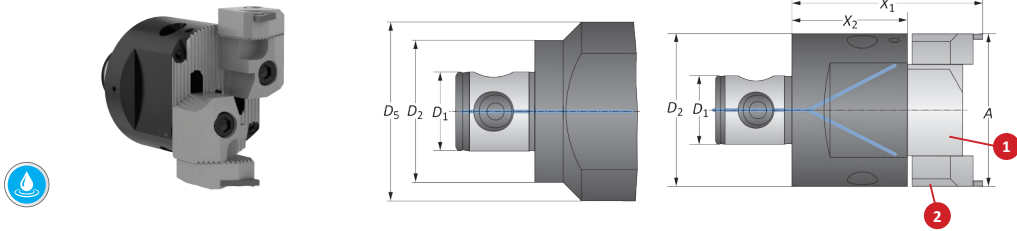
MVS	Cutter Diameter	Grooving Tool			Groove		Number of Inserts	Weight (lbs)	Insert Form	Part No.
$D_2 D_1$	A	X_1	L_1	D_5	L_2 (min)	Depth (max)				
32 - 18	1.535	1.575	1.575	1.299	0.133	0.098	4	0.661	90	143054
40 - 22	1.929	1.575	1.575	1.692	0.133	0.098	5	1.102	90	143056
50 - 28	0.787	2.165	1.575	0.669	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
63 - 36	2.480	1.575	1.575	2.086	0.231	0.185	6	1.543	91	143057
	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.

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	Cutter Diameter	Grooving Tool			Weight (kg)	Insert Form	Part No.		
	$D_2 \mid D_1$	A	X_1	X_2	D_5			Serrated Tool Body	1. Support Block	2. Insert Holder
m	50 - 28	20.00 - 65.00	83.00	55.00	63.00	1.30	304	148010	—	226030
		57.00 - 95.00	100.00	60.00	—	2.60	304	148007	226011	226031
	80 - 36	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	Cutter Diameter	Grooving Tool			Weight (lbs)	Insert Form	Part No.		
D ₂ D ₁	A	X ₁	X ₂	D ₅			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

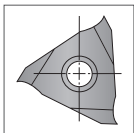
NOTE: Groove width is 1.00 mm - 7.00 mm (0.039" - 0.276"). (With Twin Cutter and diameter offset, up to 12.00 mm is possible.)

Groove depth is 1.00 mm - 6.00 mm (0.039" - 0.236").

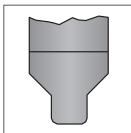
NOTE: Support block with machining diameters smaller than 123.00 mm (4.842") can only be secured with one screw.

NOTE: Insert holders, support blocks, and inserts sold separately.

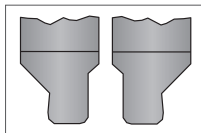
Examples of recessing replaceable inserts include:



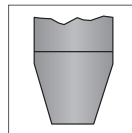
Other insert types available upon request.



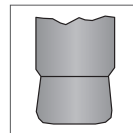
Two-sided cutting form.



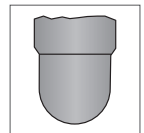
Single-sided cutting form (right / left).



Two-sided angle cutting.

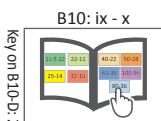


With corner radius.

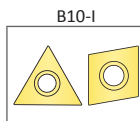
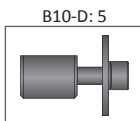
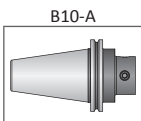


Full radius.

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.



key on B10-D: 2

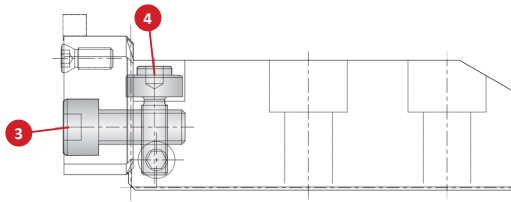


m = Metric (mm)
i = Imperial (in)
Inserts sold separately.



Accessories

Cap and Adjustment Screws

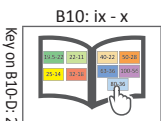


Axial Grooving Accessories

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



D



B10-D: 5

www.alliedmachine.com | 1.330.343.4283

m = Metric (mm)
i = Imperial (in)
Inserts sold separately.

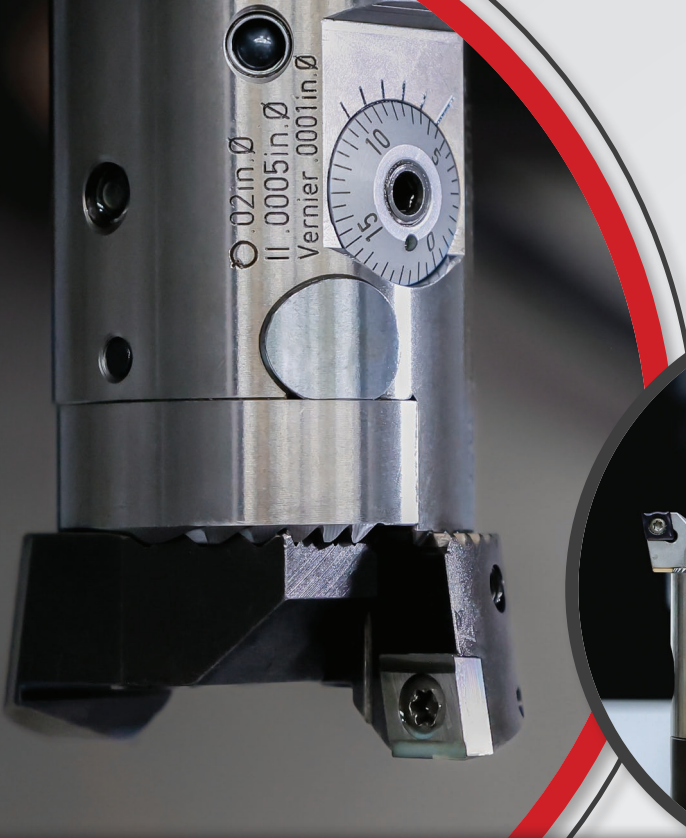
[illegible]

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.

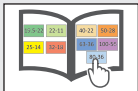
- ▶ 24.50 mm - 201.00 mm (0.965" - 7.913")

Applicable Industries

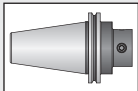
-  Aerospace
-  Agriculture
-  Automotive
-  Defense
-  General Production
-  Heavy Equipment
-  Hydraulics
-  Marine
-  Medical
-  Oil and Gas
-  Renewable Energy/ Energy
-  Tool, Mold, and Die

Reference Icons

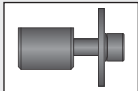
The following icons will appear throughout the catalog to help you navigate between products.



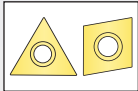
MVS Connection Color Guide
Detailed instructions and information regarding the MVS connection(s).



Shanks
A variety of shanks for different machines.



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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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"])

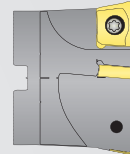
Pre-Hole Diameter: 45 mm (1.771")

Boring Depth: 209 mm (8.228")

Hole Finish: 0.8 Ra µm (32 Ra)



Measure	1st Process Option	
	Step 1 Rough 49 mm Competitor 1.5" High Feed Milling Tool	Step 2 Finish 50 mm 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	



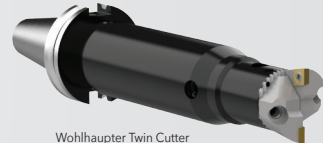
1.5" High Feed Milling Tool



Wohlhaupter 320 Boring Head



Measure	2nd Process Option	
	Step 1 Rough 49 mm Wohlhaupter Twin Cutter	Step 2 Finish 50 mm 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



- Combi-Line assembly:
 (1) Insert holders (x2): 402021
 (2) Serrated tool body: 404006
 (3) Shank: 353014

- Boring inserts
 ► Item No. 297653WHC19

*60 seconds of
total cycle time saved*

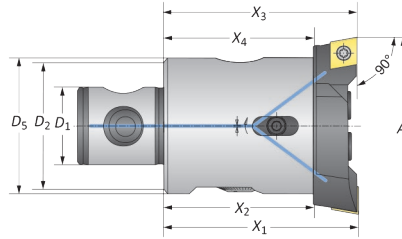


1 tool vs. 2 tools saves you time and money



Boring Heads and Insert Holders

Diameter Range: 24.50 mm - 201.00 mm (0.965" - 7.913")



Metric (mm)

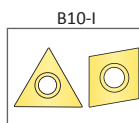
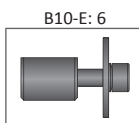
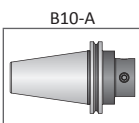
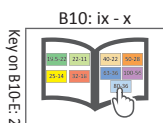
MVS	Boring Range	Boring Head							Insert Holder (x2)*		
		$D_2 \mid D_1$	A	X_1	X_3	X_2	X_4	D_5	Weight (kg)	Part No.	Insert Form
m	22 - 11	24.50 - 29.50	46.00	45.75	34.00	33.75	—	0.10	401003	101	402029
	25 - 14	29.00 - 37.00	56.00	55.75	41.00	40.75	26.00	0.20	401004	101	402009
										103	402011
		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
	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
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
		1.417 - 1.732	2.205	2.195	1.614	1.604	1.181	0.661	404005	103	402011
			1.417 - 1.732	2.205	2.195	1.614	1.604	1.181	0.661	404005	101
32 - 18	1.693 - 2.126	2.598	2.587	1.890	1.878	1.339	0.881	404006	103	402021	
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.

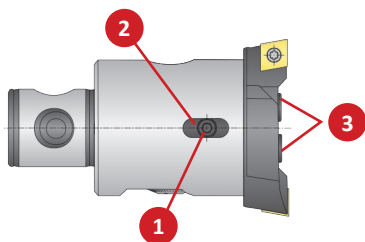


= Metric (mm)
 = Imperial (in)
 Inserts sold separately.



Accessories

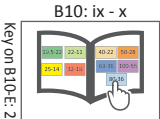
Screws | Clamping Elements



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.

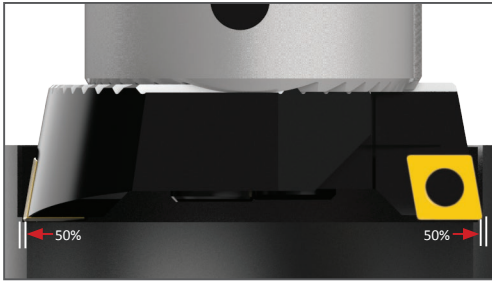


m = Metric (mm)
i = Imperial (in)

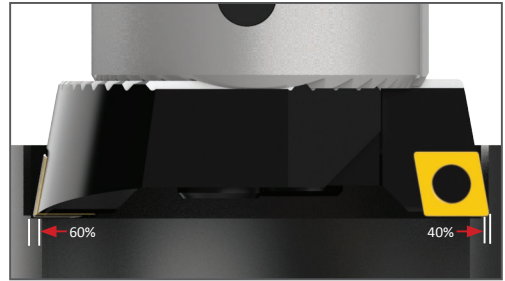


Technical Information

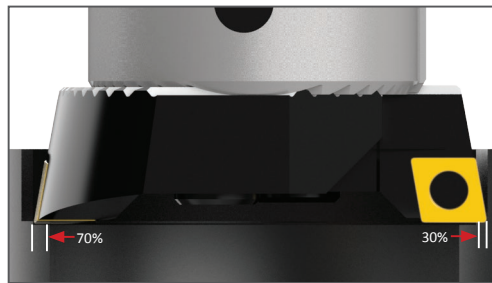
Material Removal Percentages



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**

- 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.

This image shows a full page of blank graph paper. The grid consists of small, uniform squares formed by thin gray lines. There are no margins, text, or other markings on the page.



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.

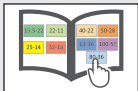
- ▶ 248 (249)
 - ▶ 3.00 mm - 30.20 mm (0.118" - 1.189")
- ▶ PrimeBore
 - ▶ 3.00 mm - 208.00 mm (0.118" - 8.189")
- ▶ VarioBore
 - ▶ 0.40 mm - 152.00 mm (0.016" - 5.984")
- ▶ Digital 510 (511)
 - ▶ 0.40 mm - 12.00 mm (0.016" - 1.339")
- ▶ DigiBore
 - ▶ 3.00 mm - 208.00 mm (0.118" - 8.189")

Applicable Industries

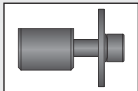
-  Aerospace
-  Agriculture
-  Automotive
-  Defense
-  General Production
-  Heavy Equipment
-  Hydraulics
-  Marine
-  Medical
-  Oil and Gas
-  Renewable Energy/ Energy
-  Tool, Mold, and Die

Reference Icons

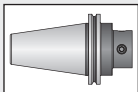
The following icons will appear throughout the catalog to help you navigate between products.



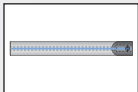
MVS Connection Color Guide
Detailed instructions and information regarding the MVS connection(s).



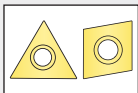
Clamping Elements
For use with insert holders and boring heads.



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.

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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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Outside Turning	70
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248 (249) VERSATILE FINE BORING

Compact design. Precision boring.

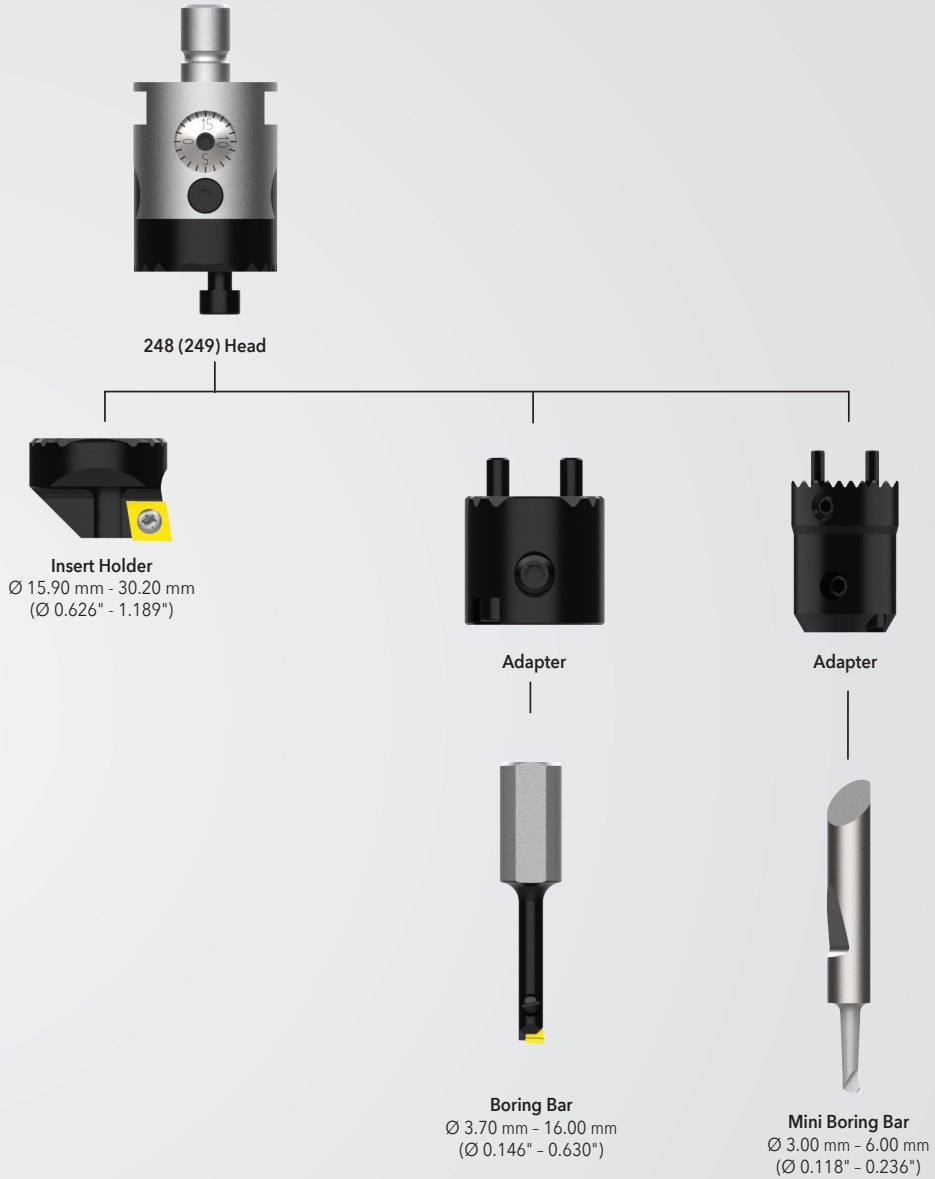
The Wohlhaupter® 248 (249) compact boring head allows for higher spindle speeds and achieves long-reach boring jobs. Its cylindrical shank provides variable length adjustments up to 10xD.

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

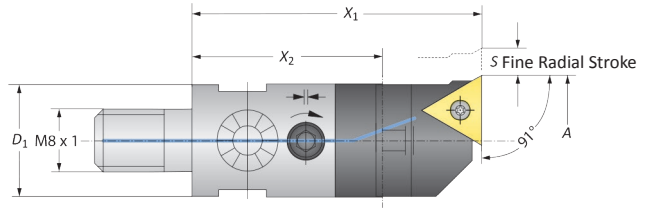


OPERATION **VERSATILITY**
from **3.00 mm** to **30.20 mm** (0.118" to 1.189")



Boring Heads

Diameter Range: 15.90 mm - 30.20 mm (0.626" - 1.189")



Metric (mm)

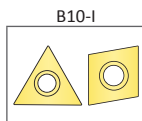
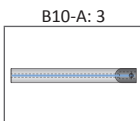
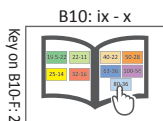
Boring Connection		Boring Range A	Boring Head						Insert Holder	
			X ₁	X ₂	D ₁	S	Weight (kg)	Part No.	Insert Form	Part No.
	M8 x 1	15.90 - 20.10	42.00	26.00	15.00	1.40	0.06	248001	20*	248051
									101	248054
		19.90 - 24.80	46.00	30.00	18.00	1.80	0.09	248002	20*	248052
									101	248055
		24.50 - 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					Insert Holder		
			X ₁	X ₂	D ₁	S	Weight (lbs)	Part No.	Insert Form	Part No.
i	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").

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.

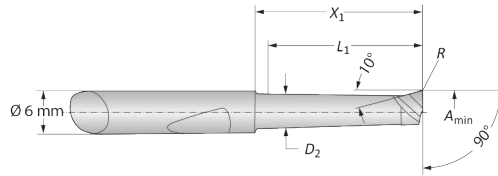


Inserts sold separately.

= Metric (mm)
 = Imperial (in)

Mini Boring Bars

Diameter Range: 3.00 mm - 6.00 mm (0.118" - 0.236")



Metric (mm)

	Boring Range A_{min}	Boring Bar					Part No.		
		D_1	D_2	X_1	L_1	R	Coated Carbide	Uncoated Carbide	CBN
m	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 A_{min}	Boring Bar					Part No.		
		D_1	D_2	X_1	L_1	R	Coated Carbide	Uncoated Carbide	CBN
i	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	—

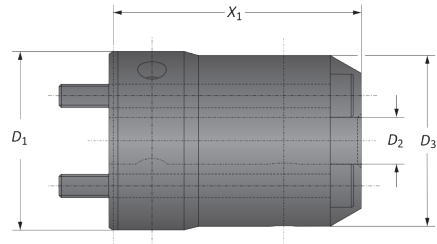
Adapter for Mini Boring Bars

Metric (mm)

Boring Head	Adapter				Part No.
	X_1	D_1	D_2	D_3	
m 248003	32.00	23.00	6.00	22.00	248071

Imperial (in)

Boring Head	Adapter				Part No.
	X_1	D_1	D_2	D_3	
i 249003	1.260	0.906	6.00 mm	0.866	248071



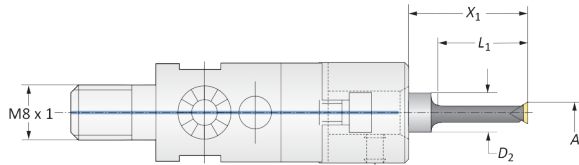
m = Metric (mm)

i = 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	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	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").

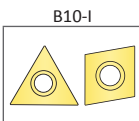
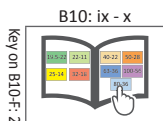
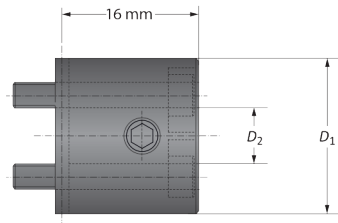
Adapter for Boring Bars

Metric (mm)

Boring Head		Adapter		Part No.
		D_1	D_2	
m	248002	18.00	8.00	248063
	248003	23.00	8.00	248064
	248003	23.00	10.00	248065

Imperial (in)

Boring Head		Adapter		Part No.
		D_1	D_2	
i	249002	0.709	8.00 mm	248063
	249003	0.906	8.00 mm	248064
	249003	0.906	10.00 mm	248065

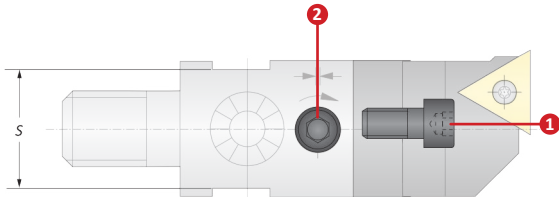


Inserts sold separately.

m = Metric (mm)

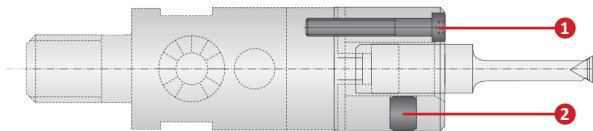
i = Imperial (in)

Accessories



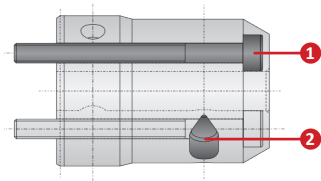
Clamping Elements for Boring Heads

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

Adapters	1. Cap Screw		2. Set Screw	
	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

Adapters	1. Cap Screw		2. Set Screw	
	Part No.	Service Key	Part No.	Service Key
248071	515166	S 2.5 / A	415244	S 3 / A

PrimeBore Product Overview

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

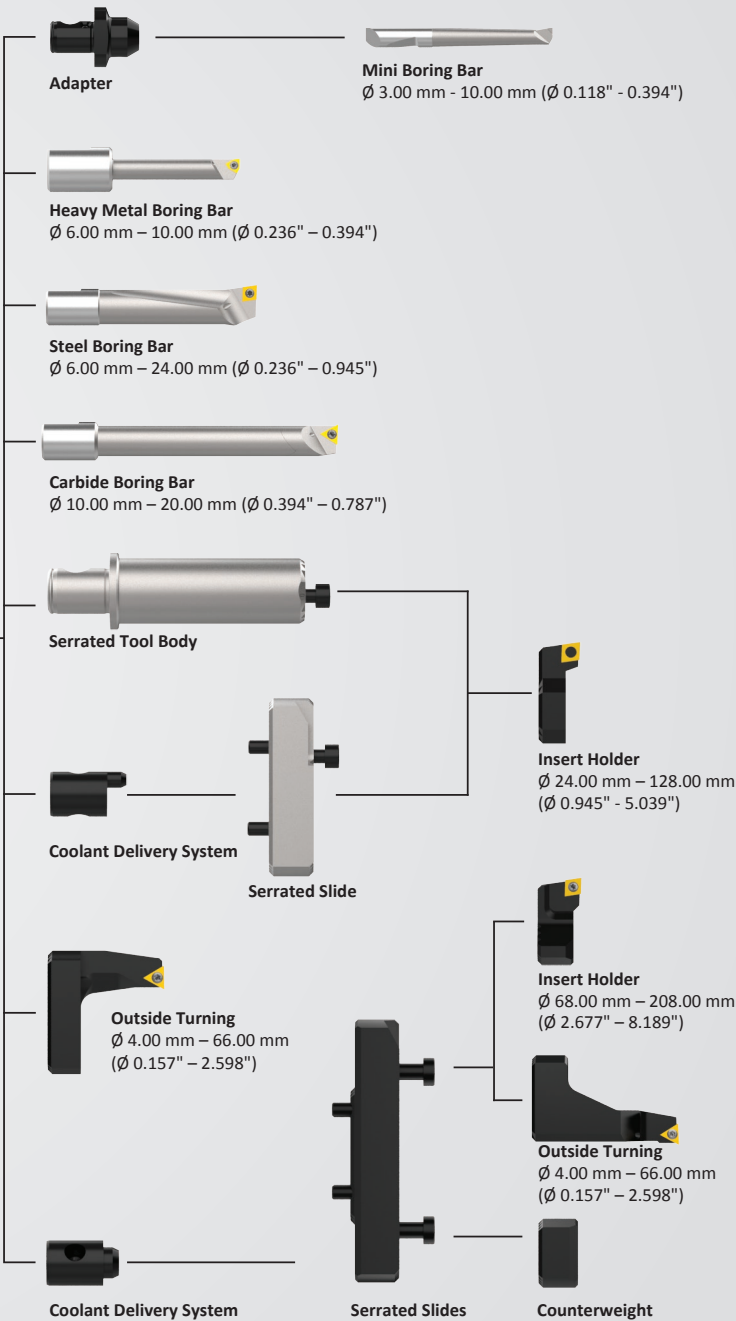
OPERATION VERSATILITY

from
3.00 mm to 208.00 mm
(0.118" to 8.189")
plus outside turning.



PrimeBore Head

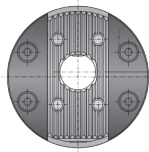
NOTE: Vernier adjustment
accuracy of 0.002 mm (0.0001")
on diameter.



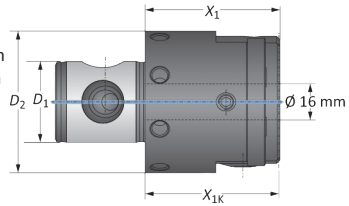


Boring Heads

Diameter Range: 15.90 mm - 30.20 mm (0.626" - 1.189")



+4.5 mm
-0.1 mm
Fine
Radial
Stroke



Metric (mm)

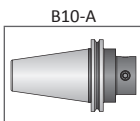
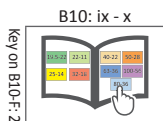
MVS Connection		Boring Head		Weight (kg)	Part No.
$D_2 \mid D_1$	Boring Range	X_1	X_{1K}		
 63 - 36	3.00 - 208.00	60.00	59.50	1.30	450001

Imperial (in)

MVS Connection		Boring Head		Weight (lbs)	Part No.
$D_2 \mid D_1$	Boring Range	X_1	X_{1K}		
 63 - 36	0.118 - 8.189	2.362	2.343	2.866	451001



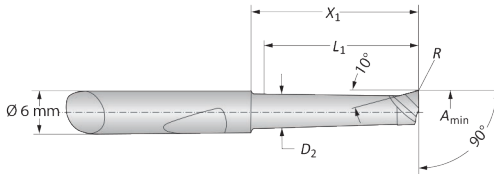
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.





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
m	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)

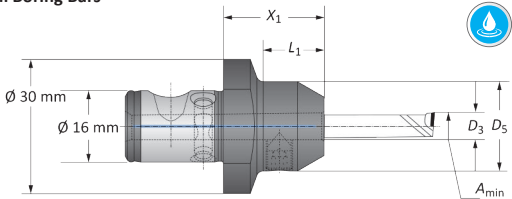
	Boring Range		Boring Bar				Part No.		
	A_{min}	D_1	D_2	X_1	L_1	R	Coated Carbide	Uncoated Carbide	CBN
i	0.118	0.236	0.102	0.452	0.393	0.003	081306WHC05	—	081322WBN150
				0.649	0.590	0.003	081307WHC05	081307WHW04	—
	0.157	0.236	0.141	0.472	0.393	0.007	081308WHC05	—	081317WBN150
				0.669	0.590	0.007	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				Part No.
	D_3	D_5	X_1	L_1	
m	6.00	20.00	22.50	14.00	319010
	8.00	22.00	22.50	14.00	236071

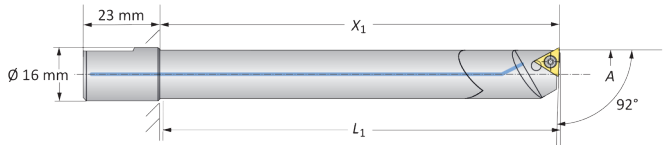


m = Metric (mm)
i = Imperial (in)



Boring Bars

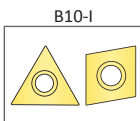
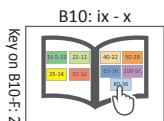
Diameter Range: 6.00 mm - 24.00 mm (0.236" - 0.945")



Metric (mm)

Substrate	Boring Range A	Boring Bar		Weight (kg)	Insert Form	Part No.
		X ₁	L ₁			
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").

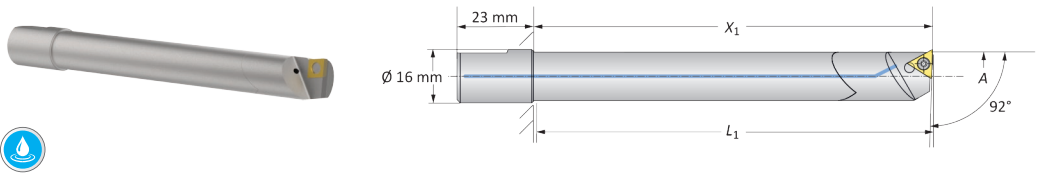


Inserts sold separately.

= Metric (mm)
 = Imperial (in)

Boring Bars

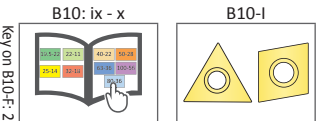
Diameter Range: 6.00 mm - 24.00 mm (0.236" - 0.945")



Imperial (in)

Substrate	Boring Range A	Boring Bar		Weight (lbs)	Insert Form	Part No.
		X ₁	L ₁			
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
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").

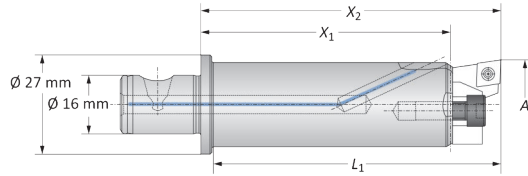


Inserts sold separately.
 = Metric (mm)
 = Imperial (in)
B10-F: 14



Serrated Tool Bodies

Diameter Range: 24.00 mm - 65.00 mm (0.945" - 2.559")



Metric (mm)

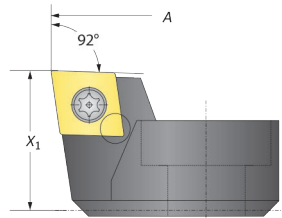
	Boring Range	Serrated Tool Body			Weight (kg)	Part No.
	A	X ₁	X ₂	L ₁		
m	24.00 - 65.00	68.00	82.00	79.00	0.20	450021

Imperial (in)

	Boring Range	Serrated Tool Body			Weight (lbs)	Part No.
	A	X ₁	X ₂	L ₁		
i	0.945 - 2.559	2.667	3.228	3.110	0.441	450021



Insert Holders



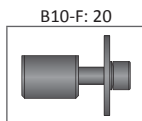
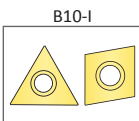
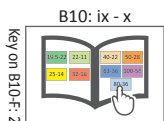
Metric (mm)

	Boring Range	Insert Holder	Weight (kg)	Insert Form	Part No.
	A	X ₁			
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	Insert Holder	Weight (lbs)	Insert Form	Part No.
	A	X ₁			
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").



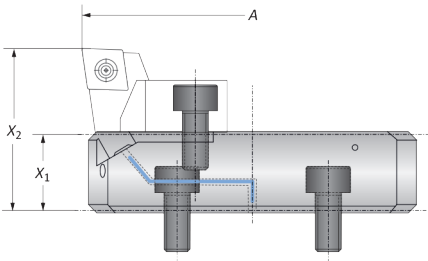
Inserts sold separately.

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



Serrated Slides

Diameter Range: 65.00 mm - 128.00 mm (2.559" - 5.039")



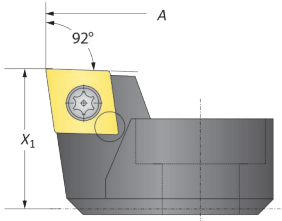
Metric (mm)

	Boring Range	Serrated Slide		Weight (kg)	Part No.
	A	X ₁	X ₂		
	65.00 - 128.00	14.50	29.50	0.08	450024

Imperial (in)

	Boring Range	Serrated Slide		Weight (lbs)	Part No.
	A	X ₁	X ₂		
	2.559 - 5.039	0.571	1.161	0.176	450024

Insert Holders



Metric (mm)

	Boring Range	Insert Holder	Weight (kg)	Insert Form	Part No.
	A	X ₁			
	65.00 - 128.00	14.00	0.03	20*	450041
				101	450023

Imperial (in)

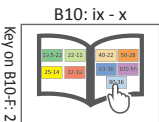
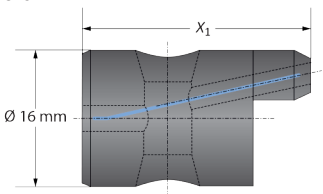
	Boring Range	Insert Holder	Weight (lbs)	Insert Form	Part No.
	A	X ₁			
	2.559 - 5.039	0.551	0.066	20*	450041
				101	450023

*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

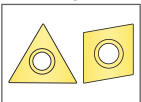
Alu-Line Coolant Delivery Sections

Metric (mm)

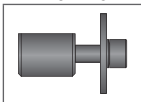
	X ₁	Weight (kg)	Part No.
	26.75	0.01	450125



B10: ix - x



B10-I



B10-F: 20

Inserts sold separately.

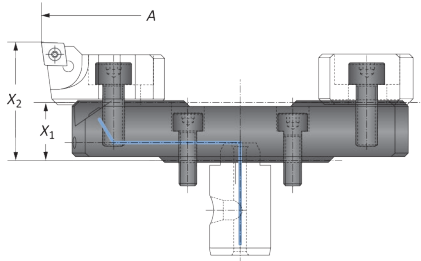
= Metric (mm)

= Imperial (in)



Alu-Line® Serrated Slides

Diameter Range: 68.00 mm - 208.00 mm (2.667" - 8.189")



Metric (mm)

m	Boring Range	Serrated Slide		Weight (kg)	Part No.
	A	X ₁	X ₂		
	68.00 - 96.00	16.00	32.50		501054
	96.00 - 124.00	16.00	32.50		501055
	124.00 - 152.00	16.00	32.50		501056
	152.00 - 180.00	22.00	38.50		501058
	180.00 - 208.00	22.00	38.50		501059

Imperial (in)

i	Boring Range	Serrated Slide		Weight (lbs)	Part No.
	A	X ₁	X ₂		
	2.667 - 3.780	0.630	1.280		501054
	3.780 - 4.882	0.630	1.280		501055
	4.882 - 5.984	0.630	1.280		501056
	5.984 - 7.087	0.866	1.516		501058
	7.087 - 8.189	0.866	1.516		501059



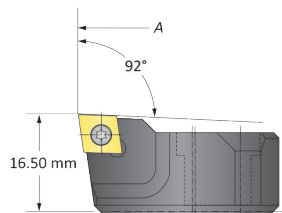
Insert Holders

Metric (mm)

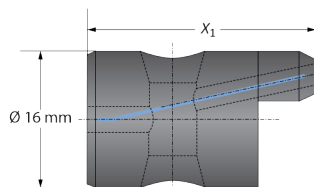
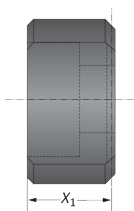
Boring Range		Weight (kg)	Insert Form	Part No.
	A			
m	68.00 - 208.00	0.05	20	502069
			101	502064

Imperial (in)

Boring Range		Weight (lbs)	Insert Form	Part No.
	A			
i	2.677 - 8.189	0.110	20	502069
			101	502064



NOTE: Other insert holders available upon request.

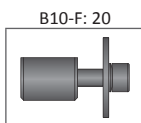
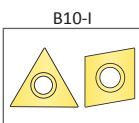
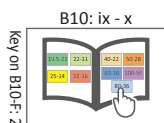


Counterweights

mm	X ₁	Weight		Part No.
		kg	lbs	
13.40	0.528	0.05	0.110	502165

Alu-Line® Coolant Delivery Sections

mm	X ₁	Weight		Part No.
		kg	lbs	
25.50	1.004	0.01	0.022	450137



Inserts sold separately.

m = Metric (mm)

i = Imperial (in)

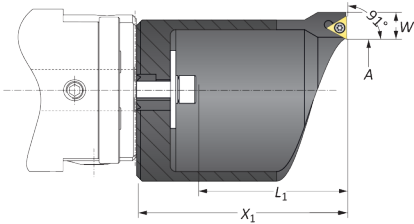
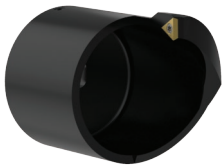
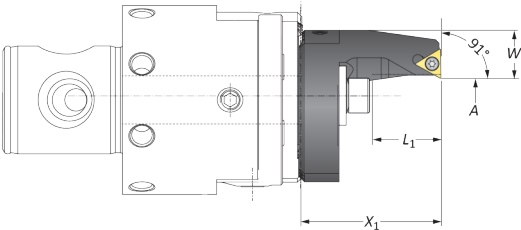
B10-F: 17

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Outside Turning Insert Holders for Boring Heads

Diameter Range: 4.00 mm - 66.00 mm (0.157" - 2.598")



Metric (mm)

Type	Boring Range	Insert Holder			Weight (kg)	Insert Form	Part No.
	A	X ₁	L ₁	W			
m	A	4.00 - 17.50	40.50	20.00	16.60	20*	236081
	A	16.50 - 30.00	50.50	30.00	11.10	20*	236082
B	B	29.00 - 44.00	75.50	54.00	9.60	20*	236083
	B	43.00 - 66.00	100.50	79.00	9.60	20*	236084

Imperial (in)

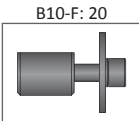
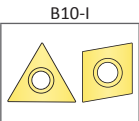
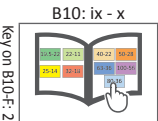
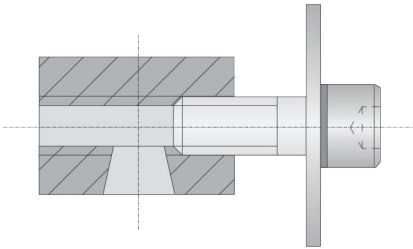
Type	Boring Range	Insert Holder			Weight (lbs)	Insert Form	Part No.
	A	X ₁	L ₁	W			
i	A	0.157 - 0.689	1.594	0.787	0.653	20*	236081
	A	0.650 - 1.181	1.988	1.181	0.437	20*	236082
B	B	1.142 - 1.732	2.952	2.126	0.377	20*	236083
	B	1.693 - 2.598	3.956	3.110	0.377	20*	236084

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



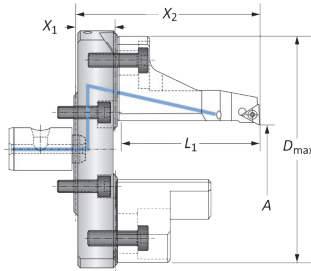
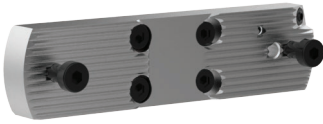
Inserts sold separately.

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



Outside Turning Serrated Slides

Diameter Range: 2.00 mm - 114.00 mm (0.078" - 4.488")

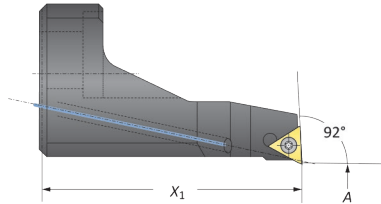


Metric (mm)

m	Boring Range		Serrated Slide				Weight (kg)	Part No.
	A		X ₁	X ₂	L ₁	D _{max}		
	2.00 - 30.00		16.00	73.00	55.00	101.00		
	30.00 - 58.00		16.00	73.00	55.00	129.00		
	58.00 - 86.00		22.00	79.00	55.00	157.00		
	86.00 - 114.00		22.00	79.00	55.00	185.00		

Imperial (in)

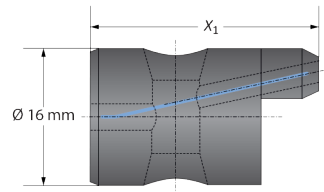
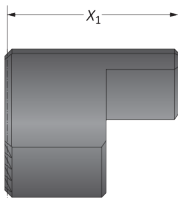
i	Boring Range		Serrated Slide				Weight (lbs)	Part No.
	A		X ₁	X ₂	L ₁	D _{max}		
	0.078 - 1.181		0.630	2.874	2.165	3.396		
	1.181 - 2.283		0.630	2.874	2.165	5.078		
	2.283 - 3.386		0.866	3.110	2.165	6.181		
	3.386 - 4.488		0.866	3.110	2.165	7.283		



Insert Holders

Outside Turning Range		Insert Holder		Weight (kg)		Insert Form	Part No.
mm	in	mm	in	kg	lbs		
2.00 - 114.00	0.079 - 4.488	57.00	2.244	0.15	0.331	20	502082

NOTE: Clockwise and neutral execution.

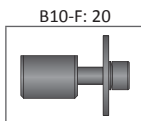
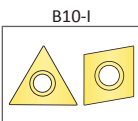
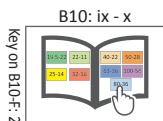


Counterweights

X ₁		Weight		Part No.
mm	in	kg	lbs	
37.75	1.486	0.16	0.350	502183

Alu-Line® Coolant Delivery Sections

X ₁		Weight		Part No.
mm	in	kg	lbs	
25.50	1.004	0.01	0.022	450137



key on B10-F: 2

Inserts sold separately.

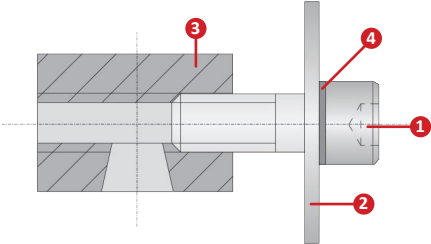
W = Metric (mm)

i = Imperial (in)

Accessories

Clamping Elements

Clamping Elements for Insert Holders

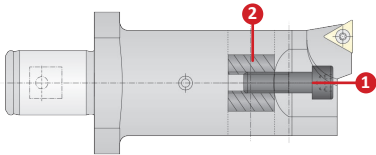


Metric (mm)

	1.	Hex Size	2.	3.	4.	Part No.
Boring Range	Cap Screw		Washer	Clamping Nut	Locking Washer	
 4.00 - 30.00	070153	s5	315155	236120	215254	236088
29.00 - 66.00	070153	s5	315156	236120	215254	236089

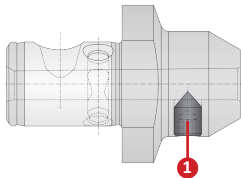
Clamping Elements for Serrated Tool Body

1.	Hex Size	2.
Cap Screw		Clamping Piece
027154	s4	145184



Thread Pin

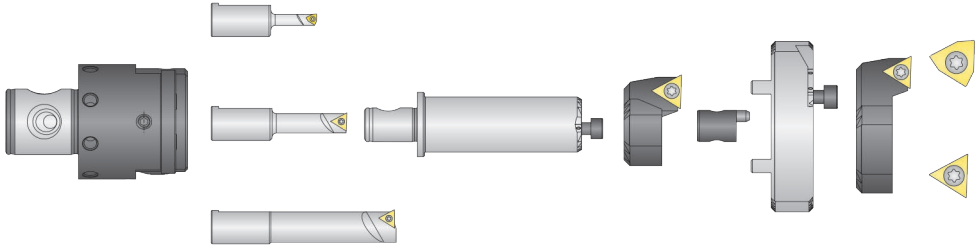
Service Key	1.
	Part No.
S3 / A	415244





PrimeBore Kit

Form 20 | Diameter Range: 6.00 mm - 128.00 mm (0.236" - 5.039")



Metric (mm)

Kit Part No.	
m	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)

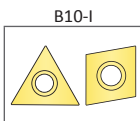
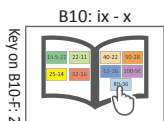
Imperial (in)

Kit Part No.	
i	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		Boring Bar	Serrated Tool Body	Coolant Delivery	Serrated Slide	Insert Holder	Insert
Metric (mm)	Imperial (in)						
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

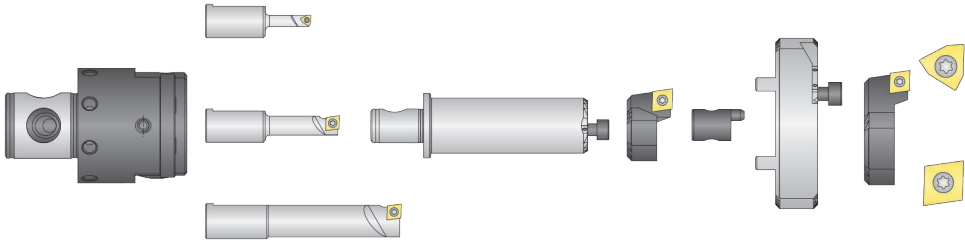


Inserts sold separately.

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
	450026 (Form 211)
	450027
(3) Boring Bars	450028
	450022
	450023
(2) Insert Holders	450021
(1) Serrated Tool Body	450024
(1) Serrated Slide	450125
(1) Coolant Delivery	003195 (s4)
(3) Service Keys	515451 (T6)
	515452 (T8)

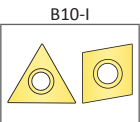
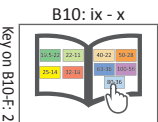
Imperial (in)

Kit Part No.	
	104088
Kit Components	Part No.
(1) Boring Head	451001
	450026 (Form 211)
	450027
(3) Boring Bars	450028
	450022
	450023
(2) Insert Holders	450021
(1) Serrated Tool Body	450024
(1) Serrated Slide	450125
(1) Coolant Delivery	003195 (s4)
(3) Service Keys	515451 (T6)
	515452 (T8)

NOTE: Inserts sold separately.

Component Assemblies

Boring Range		Boring Bar	Serrated Tool Body	Coolant Delivery	Serrated Slide	Insert Holder	Insert
Metric (mm)	Imperial (in)						
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



Inserts sold separately.

 = Metric (mm)
 = Imperial (in)

VarioBore Product Overview



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.

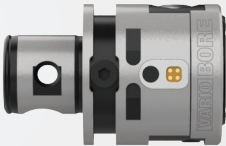
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

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: 3ETECH+ 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



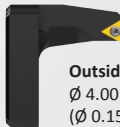
Insert Holder
Ø 20.00 mm - 32.00 mm
(Ø 0.787" - 1.260")



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")



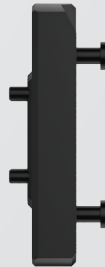
Insert Holder
Ø 52.00 mm - 102.00 mm
(Ø 2.047" - 4.016")



Outside Turning
Ø 2.00 mm - 58.00 mm
(Ø 0.079" - 2.283")



Coolant Delivery System



Serrated Slides



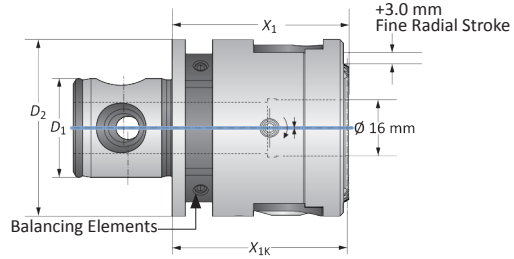
Counterweight





Analog Boring Heads

Diameter Range: 0.40 mm - 152.00 mm (0.016" - 5.984")



Metric (mm)

MVS Connection		Boring Head			Weight (kg)	Part No.*
$D_2 \mid D_1$	Boring Range	X_1	X_{1K}			
 50 - 28	0.40 - 152.00	50.00	49.50		0.70	536001

Imperial (in)

MVS Connection		Boring Head			Weight (lbs)	Part No.*
$D_2 \mid D_1$	Boring Range	X_1	X_{1K}			
 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.

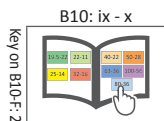
NOTE: VarioBore heads are compatible with Kaiser® connection.



Adjustment Accuracy

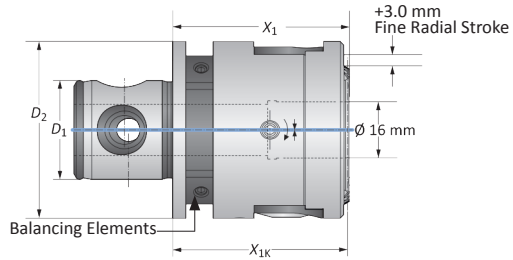
Vernier	0.002 mm	0.0001"
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IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



Digital 3E^{TECH+} Boring Heads

Diameter Range: 0.40 mm - 152.00 mm (0.016" - 5.984")



Metric (mm)

MVS Connection		Boring Head				
	$D_2 \mid D_1$	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		Boring Head				
$D_2 \mid D_1$		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

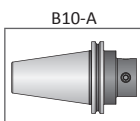
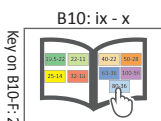
NOTE: WEEE-Reg.-Nr. DE 15820388

*Charging unit sold separately.



NOTE: 3E^{TECH+} digital adjustment accuracy of 0.001 mm (0.00005") on diameter.

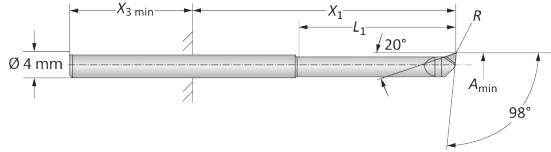
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.





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.
m	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.
i	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

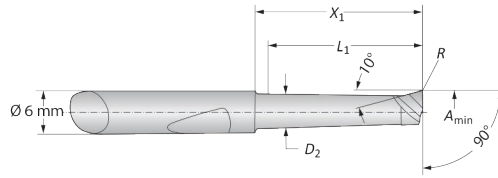
NOTE: Fixture-through reducing sleeve required (B10-F: 39).

= 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	—
	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	—
				22.00	20.00	0.20	081314WHC05	—	081320WBN150
	6.00	6.00	5.60	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	—	—

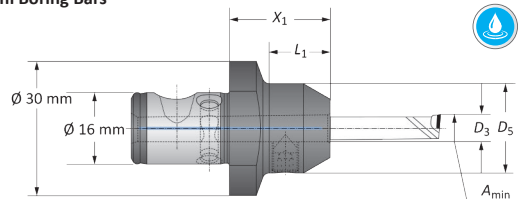
Imperial (in)

	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)

	Boring Range	Adapter				Part No.
	A_{min}	D_3	D_5	X_1	L_1	
	3.00	6.00	20.00	22.50	14.00	319010
	8.00	8.00	22.00	22.50	14.00	236071

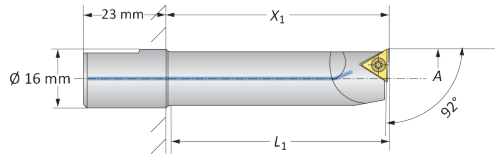


 = Metric (mm)
 = Imperial (in)



Boring Bars

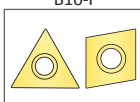
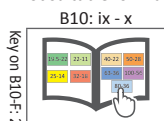
Diameter Range: 6.00 mm - 27.00 mm (0.236" - 1.063")



Metric (mm)

Substrate	Boring Range A	Boring Bar		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
	12.00 - 14.00				101	218048
		45.00	42.00	0.05	20*	081044
					101	218014
	14.00 - 16.00	30.00	27.00	0.05	101	218012
		45.00	42.00	0.06	20*	218060
					101	218049
	16.00 - 20.00	35.00	32.00	0.06	20*	218061
					101	218050
		50.00	47.00	0.08	20*	218062
	18.00 - 22.00				101	218051
		37.00	34.00	0.06	20*	081048
		60.00	57.00	0.08	20*	081045
	20.00 - 25.00				101	081041
					20*	218063
		40.00	37.00	0.08	101	218052
	22.00 - 27.00	60.00	57.00	0.09	20*	218064
					101	218053
		37.00	34.00	0.07	20*	081049
	24.00 - 30.00	70.00	67.00	0.11	20*	081046
					101	081042
		37.00	34.00	0.07	20*	081050
	26.00 - 32.00	70.00	67.00	0.11	20*	081047
					101	081043
					20*	218037
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
	12.00 - 14.00				101	218032
		70.00	67.00	0.10	20*	218038
					101	218043
	14.00 - 16.00	90.00	87.00	0.15	20*	218030
					101	218033
		75.00	72.00	0.16	20*	218039
	16.00 - 20.00				101	218044
		100.00	97.00	0.20	20*	218040
					101	218045
	20.00 - 25.00	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").



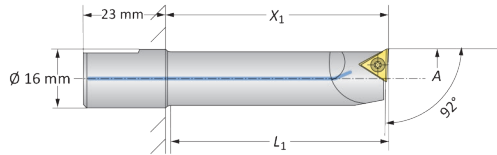
Inserts sold separately.

Ⓜ = Metric (mm)

Ⓢ = Imperial (in)

Boring Bars

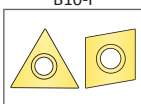
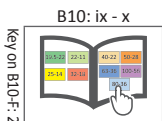
Diameter Range: 6.00 mm - 27.00 mm (0.236" - 1.063")



Imperial (in)

Substrate	Boring Range A	Boring Bar		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
					101	218048
	0.472 - 0.551	1.378	1.260	0.110	20*	218059
		1.772	1.654	0.110	20*	081044
					101	218012
	0.551 - 0.630	1.181	1.063	0.110	20*	218014
		1.772	1.654	0.130	101	218049
					20*	218060
	0.591 - 0.669	1.378	1.260	0.130	101	218050
		1.969	1.850	0.180	20*	218061
		1.457	1.339	0.130	101	218051
	0.630 - 0.786	2.362	2.244	0.180	20*	218062
					101	081048
					20*	081041
	0.787 - 0.984	1.575	1.457	0.180	101	218052
		2.362	2.244	0.200	20*	218063
		1.457	1.339	0.150	101	218053
	0.984 - 1.063	2.756	2.638	0.240	20*	218064
Heavy Metal	0.236 - 0.315	1.260	1.142	0.176	211*	081049
	0.315 - 0.394	1.772	1.654	0.198	211*	081042
Carbide	0.394 - 0.472	2.165	2.047	0.154	101	081046
					20*	081050
		2.953	2.835	0.198	101	081043
	0.472 - 0.551				20*	081047
		2.756	2.638	0.220	101	218042
		3.543	3.425	0.331	101	218037
	0.551 - 0.630				20*	218032
		2.953	2.835	0.353	101	218029
		3.937	3.819	0.441	101	218043
	0.630 - 0.787				20*	218038
		3.543	3.425	0.573	101	218033
		4.724	4.606	0.728	101	218030

*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").



Inserts sold separately.

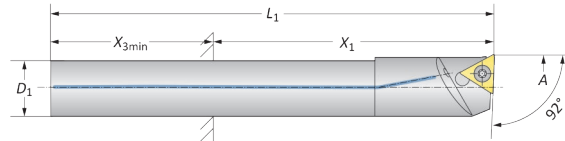
 = Metric (mm)

 = Imperial (in)



Boring Bars

Diameter Range: 6.00 mm - 20.00 mm (0.236" - 0.787")

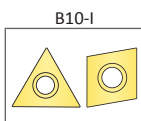
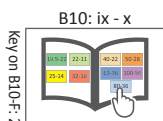


Metric (mm)

Substrate	Boring Range	Boring Bar				Weight (kg)	Insert Form	Part No.
	A	D ₁	X ₁	X _{3 min}	L ₁			
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
	12.00 - 14.00	10.00	25.00 - 50.00	25.00	100.00	0.05	101	514003
	14.00 - 16.00	12.00	30.00 - 60.00	30.00	114.00	0.09	20*	514006
	16.00 - 18.00	14.00	56.00 - 70.00	30.00	121.00	0.13	101	514005
	18.00 - 20.00	14.00	56.00 - 70.00	30.00	121.00	0.13	20*	514008
							101	514007
							20*	514010
							101	514009
Carbide	6.00 - 8.00	5.00	12.50 - 40.00	25.00	90.00	0.02	211*	514011
	8.00 - 10.00	7.00	21.00 - 56.00	25.00	109.00	0.05	20*	514012
	10.00 - 12.00	8.00	22.00 - 64.00	25.00	117.00	0.07	101	514034
	12.00 - 14.00	10.00	51.00 - 80.00	25.00	140.00	0.13	20*	514016
	14.00 - 16.00	12.00	68.00 - 96.00	30.00	162.00	0.22	101	514015
	16.00 - 18.00	14.00	112.00 - 147.00	30.00	177.00	0.33	20*	514018
			77.00 - 112.00	30.00	142.00	0.26	101	514017
	18.00 - 20.00	14.00	112.00 - 147.00	30.00	177.00	0.33	20*	514020
			77.00 - 112.00	30.00	142.00	0.26	101	514019
							20*	514022
							101	514021
							20*	514024
							101	514023
							20*	514026
							101	514025
							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").

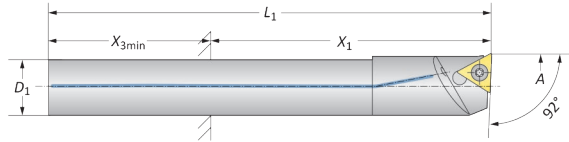


Inserts sold separately.

= Metric (mm)
 = Imperial (in)

Boring Bars

Diameter Range: 6.00 mm - 20.00 mm (0.236" - 0.787")

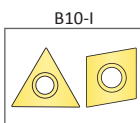
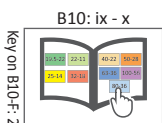


Imperial (in)

Substrate	Boring Range	Boring Bar				Weight (lbs)	Insert Form	Part No.
	A	D ₁ (mm)	X ₁	X _{3 min}	L ₁			
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
	0.472 - 0.551	10.00	0.984 - 1.969	0.984	3.937	0.110	101	514003
	0.551 - 0.630	12.00	1.181 - 2.362	1.181	4.488	0.198	20*	514006
	0.630 - 0.709	14.00	2.205 - 2.756	1.181	4.764	0.287	101	514005
	0.709 - 0.787	14.00	2.205 - 2.756	1.181	4.764	0.287	20*	514008
Carbide	0.236 - 0.315	5.00	0.492 - 1.575	0.984	3.543	0.044	211*	514007
	0.315 - 0.394	7.00	0.827 - 2.205	0.984	4.291	0.110	101	514009
	0.394 - 0.472	8.00	0.866 - 2.520	0.984	4.606	0.154	20*	514010
	0.472 - 0.551	10.00	2.008 - 3.150	0.984	5.512	0.287	101	514011
	0.551 - 0.630	12.00	2.677 - 3.780	1.181	6.378	0.485	20*	514012
	0.630 - 0.709	14.00	3.031 - 4.409	1.181	5.591	0.573	101	514013
	0.709 - 0.787	14.00	4.409 - 5.787	1.181	6.969	0.728	20*	514014
	0.236 - 0.315	5.00	0.492 - 1.575	0.984	3.543	0.044	211*	514015
	0.315 - 0.394	7.00	0.827 - 2.205	0.984	4.291	0.110	101	514016
	0.394 - 0.472	8.00	0.866 - 2.520	0.984	4.606	0.154	20*	514017
	0.472 - 0.551	10.00	2.008 - 3.150	0.984	5.512	0.287	101	514018
	0.551 - 0.630	12.00	2.677 - 3.780	1.181	6.378	0.485	20*	514019
	0.630 - 0.709	14.00	3.031 - 4.409	1.181	5.591	0.573	101	514020
	0.709 - 0.787	14.00	4.409 - 5.787	1.181	6.969	0.728	20*	514021

NOTE: Fixture-through reducing sleeve required (B10-F: 39).

*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").



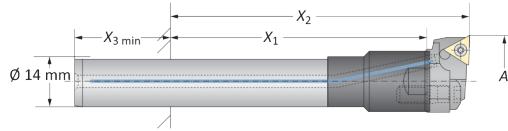
Inserts sold separately.

 = Metric (mm)
 = Imperial (in)



Serrated Tool Bodies

Diameter Range: 20.00 mm - 32.00 mm (0.787" - 1.260")



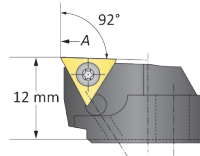
Metric (mm)

	Substrate	Boring Range A	Serrated Tool Body			Weight (kg)	Part No.
			X ₁	X ₂	X _{3 min}		
m	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			Weight (lbs)	Part No.
			X ₁	X ₂	X _{3 min}		
i	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

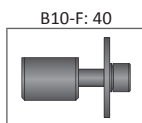
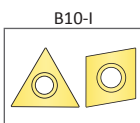
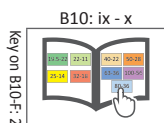
NOTE: Fixture-through reducing sleeve required (B10-F: 39).



Insert Holders

Boring Range (A)		Weight		Insert Holder	
mm	in	kg	lbs	Form	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").

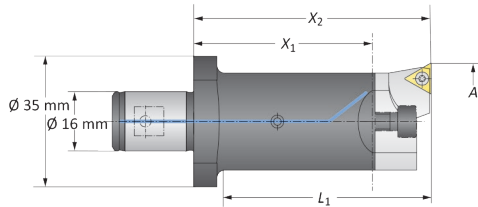


Inserts sold separately.

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

Serrated Tool Bodies

Diameter Range: 29.00 mm - 53.00 mm (1.142" - 2.087")

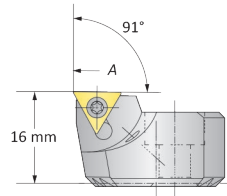
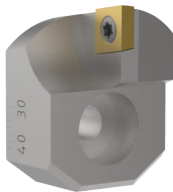


Metric (mm)

Boring Range		Serrated Tool Body			Weight (kg)	Part No.
A		X ₁	X ₂	L ₁		
	29.00 - 53.00	48.00	64.00	56.00	0.20	236021
		84.00	100.00	92.00	0.30	236031

Imperial (in)

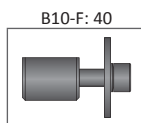
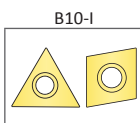
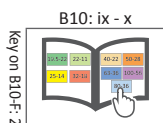
Boring Range		Serrated Tool Body			Weight (lbs)	Part No.
A		X ₁	X ₂	L ₁		
	1.142 - 2.087	1.890	2.520	2.205	0.441	236021
		3.307	3.937	3.622	0.661	236031



Insert Holders

Boring Range (A)		Weight		Insert Holder	
mm	in	kg	lbs	Form	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").



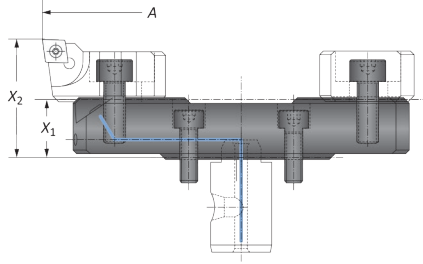
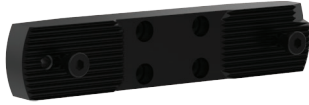
Inserts sold separately.

 = Metric (mm)
 = Imperial (in)



Alu-Line® Serrated Slides

Diameter Range: 68.00 mm - 152.00 mm (2.667" - 5.984")

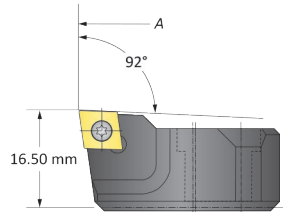
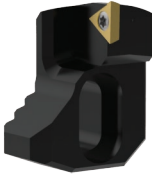


Metric (mm)

m	Boring Range	Serrated Slide		Weight (kg)	Part No.
	A	X ₁	X ₂		
	68.00 - 96.00	16.00	32.50		501054
	96.00 - 124.00	16.00	32.50		501055
	124.00 - 152.00	16.00	32.50	0.20	501056

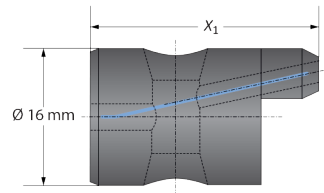
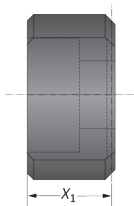
Imperial (in)

i	Boring Range	Serrated Slide		Weight (lbs)	Part No.
	A	X ₁	X ₂		
	2.677 - 3.780	0.630	1.279		501054
	3.780 - 4.882	0.630	1.279		501055
	4.882 - 5.984	0.630	1.279	0.440	501056



Insert Holders

Boring Range (A)		Weight		Insert Holder	
mm	in	kg	lbs	Form	Part No.
68.00 - 152.00	2.677 - 5.984	0.05	0.110	20	502069
				101	502064

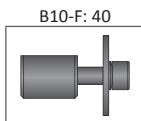
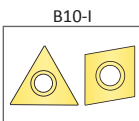
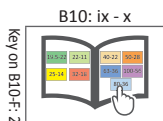


Counterweights

X ₁		Weight		Part No.
mm	in	kg	lbs	
13.40	0.528	0.05	0.110	502165

Alu-Line® Coolant Delivery Sections

X ₁		Weight		Part No.
mm	in	kg	lbs	
25.50	1.004	0.01	0.022	450137



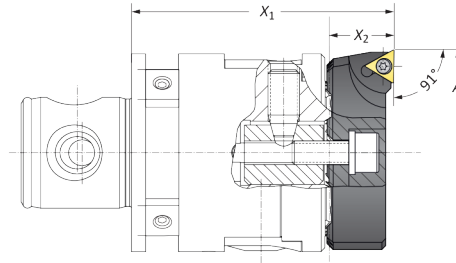
Inserts sold separately.

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)

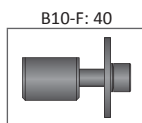
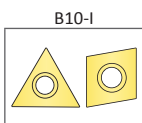
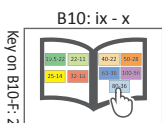
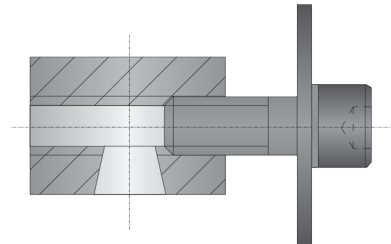
	Boring Range A	Serrated Slide		Weight (kg)	Insert Form	Part No.
		X ₁	X ₂			
	52.00 - 77.00	66.00	16.50	0.06	20	236026
					101	236027
	76.00 - 102.00	66.00	16.50	0.10	20	236028
					101	236029

Imperial (in)

	Boring Range A	Serrated Slide		Weight (kg)	Insert Form	Part No.
		X ₁	X ₂			
	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

Clamping Piece for Insert Holder

Boring Range A (mm)	Service Key	Part No.
52.00 - 102.00	s5	236020



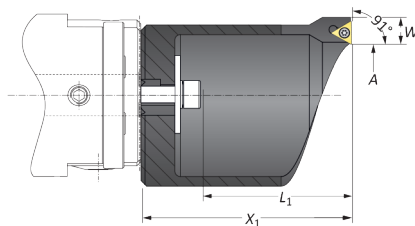
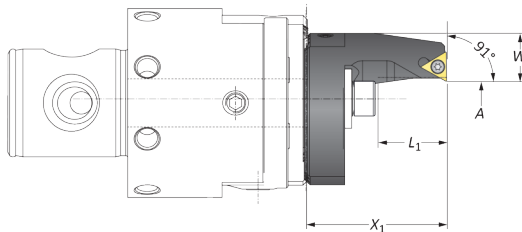
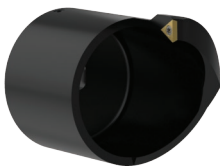
Inserts sold separately.

 = Metric (mm)
 = 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	Insert Holder			Weight (kg)	Insert Form	Part No.
	A	X ₁	L ₁	W			
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)

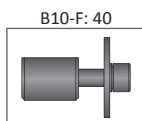
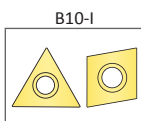
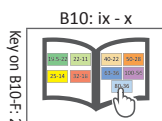
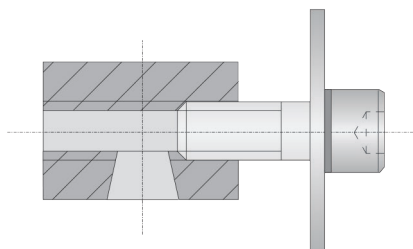
Type	Boring Range	Insert Holder			Weight (lbs)	Insert Form	Part No.
	A	X ₁	L ₁	W			
A	0.157 - 0.689	1.594	0.787	0.653	0.220	20*	236081
	0.650 - 1.181	1.988	1.181	0.437	0.220	20*	236082
B	1.142 - 1.732	2.952	2.126	0.377	0.661	20*	236083
	1.693 - 2.598	3.956	3.110	0.377	0.882	20*	236084

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



key on B10-F: 2

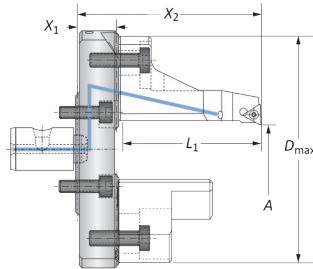
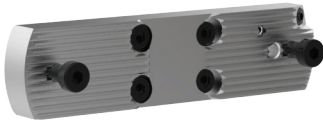
Inserts sold separately.

m = Metric (mm)

i = Imperial (in)

Outside Turning Serrated Slides

Diameter Range: 2.00 mm - 58.00 mm (0.078" - 2.283")

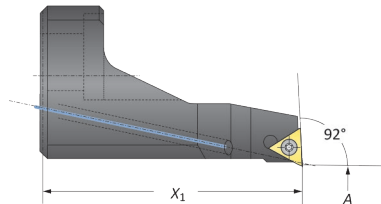


Metric (mm)

Boring Range		Serrated Slide				Weight (kg)	Part No.
A		X ₁	X ₂	L ₁	D _{max}		
	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)

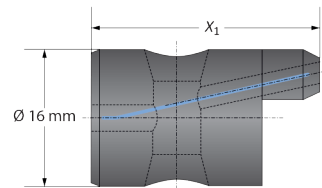
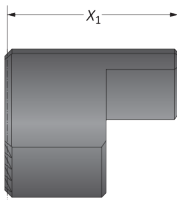
Boring Range		Serrated Slide				Weight (lbs)	Part No.
A		X ₁	X ₂	L ₁	D _{max}		
	0.078 - 1.181	0.630	2.874	2.165	3.396	0.771	501064
	1.181 - 2.283	0.630	2.874	2.165	5.078	0.970	501065



Insert Holders

Outside Turning Range		Insert Holder		Weight (kg)		Insert Form	Part No.
mm	A	mm	X ₁	kg	lbs		
	in	in	in				
2.00 - 114.00	0.079 - 4.488	57.00	2.244	0.15	0.331	20	502082

NOTE: Clockwise and neutral execution.

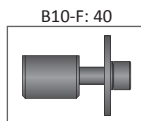
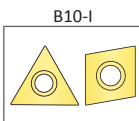
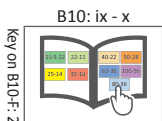


Counterweights

X ₁		Weight		Part No.
mm	in	kg	lbs	
37.75	1.486	0.16	0.350	502183

Alu-Line® Coolant Delivery Sections

X ₁		Weight		Part No.
mm	in	kg	lbs	
25.50	1.004	0.01	0.022	450137



Inserts sold separately.

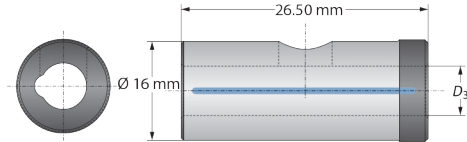
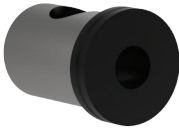
 = Metric (mm)

 = Imperial (in)



Accessories

Reducing Sleeves



Metric (mm)

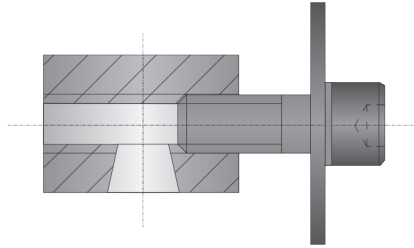
m	Reducing Sleeve	Weight (kg)	Part No.
	D_3		
	4.00	0.05	450129
	5.00	0.04	450130
	7.00	0.04	450132
	8.00	0.04	450133
	10.00	0.03	450134
	12.00	0.02	450135
	14.00	0.01	450136

Imperial (in)

i	Reducing Sleeve	Weight (lbs)	Part No.
	D_3		
	0.125	0.110	450142
	0.250	0.088	450143
	0.312	0.088	450144
	0.375	0.088	450145
	0.500	0.088	450146



Accessories

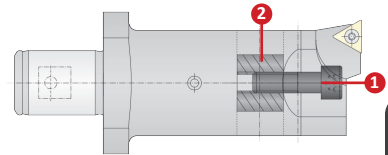


Clamping Elements for Insert Holders

	1.	Hex Size	2.	3.	4.	Complete Part No.
Boring Range	Cap Screw		Washer	Clamping Nut	Locking Washer	
 4.00 - 30.00	070153	s5	315155	236120	215254	236088
29.00 - 66.00	070153	s5	315156	236120	215254	236089
52.00 - 102.00	115147	s5	115725	236120	—	236020

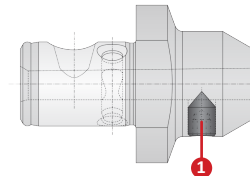
Clamping Elements for Serrated Tool Body

1.	2.
Cap Screw	Clamping Piece
027154	s4 145184



Thread Pin

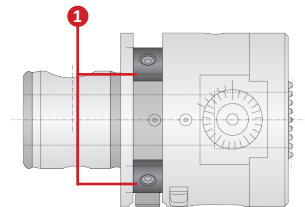
Service Key	1. Part No.
S3 / A	415244



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.

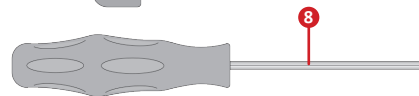
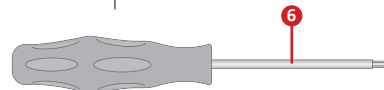
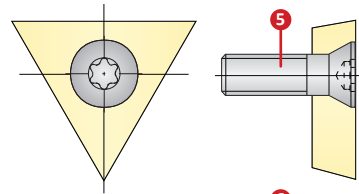
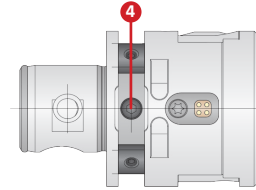
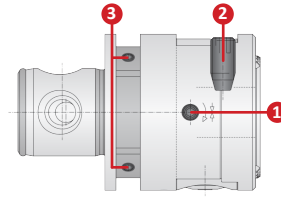


 = Metric (mm)
 = Imperial (in)



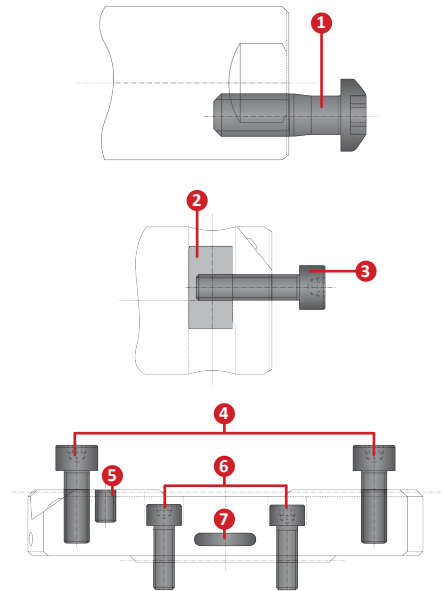
Accessories

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



Accessories

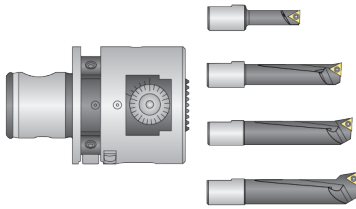
No.	Part	Size	Part No.
1	Screw for securing insert holder	T25	415112
2	Clamping piece	—	145184
3	Cap screw for securing insert holders	s4	027154
4	Cap screw for securing insert holder/ counterweight	s4	315248
5	Set screw - coolant	s1.5	114224
6	Cap screw for securing serrated slide	s3	116289
7	Sealing ring for coolant delivery	—	415386





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.
(1) Boring Head	536002
(4) Boring Bars	218059
	081045
	081046
	081047
(3) Service Keys	115575 (s2.5)
	215403 (s4)
	115591 (T7)

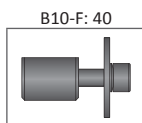
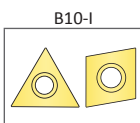
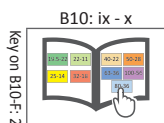
Imperial (in)

Kit Part No.	
i	104049
Kit Components	Part No.
(1) Boring Head	563002
(4) Boring Bars	218059
	081045
	081046
	081047
(3) Service Keys	115575 (s2.5)
	215403 (s4)
	115591 (T7)

Component Assemblies

Boring Range		Boring Bar	Insert
Metric (mm)	Imperial (in)		
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.

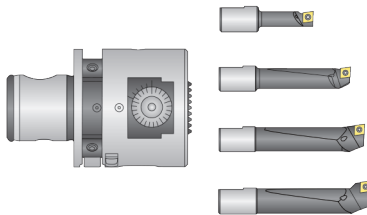


Inserts sold separately.

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)

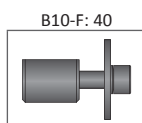
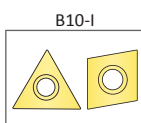
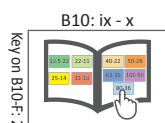
Kit Part No.	
	104050

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		Boring Bar	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

NOTE: Balancing elements and inserts sold separately.

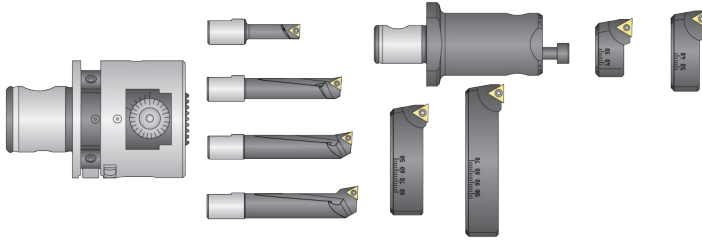


Inserts sold separately.

 = Metric (mm)
 = Imperial (in)

**VarioBore Kit | Analog**

Form 20 | Diameter Range: 10.00 mm - 102.00 mm (0.393" - 4.016")

**Metric (mm)**

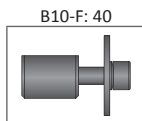
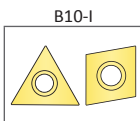
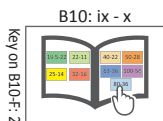
Kit Part No.	
m	103051
Kit Components	Part No.
(1) Boring Head	536001
(4) Boring Bars	218059
	081045
	081046
	081047
(1) Serrated Tool Body	236021
(4) Insert Holders	236022
	236024
	236026
	236028
(1) Clamping Piece	236020
(4) Service Keys	115575 (s2.5)
	215403 (s4)
	215521 (s5)
	115591 (T7)

Imperial (in)

Kit Part No.	
i	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		Boring Bar	Serrated Tool Body	Insert Holder	Clamping Piece	Insert
Metric (mm)	Imperial (in)					
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

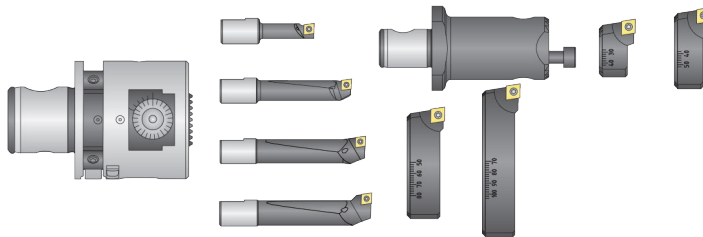
NOTE: Balancing elements and inserts sold separately.

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)

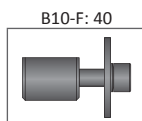
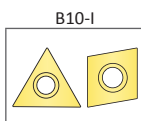
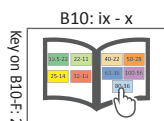
Imperial (in)

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)

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.



Inserts sold separately.

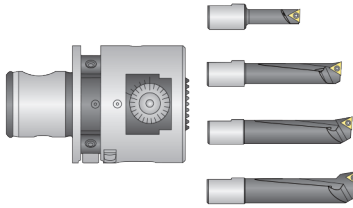
 = Metric (mm)

 = 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
Kit Components	Part No.
(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	104045
Kit Components	Part No.
(1) Boring Head	563002
(4) Boring Bars	218059
	081045
	081046
	081047
(3) Service Keys	115575 (s2.5)
	215403 (s4)
	115591 (T7)



Component Assemblies

Boring Range		Boring Bar	Insert
Metric (mm)	Imperial (in)		
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

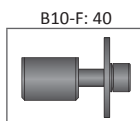
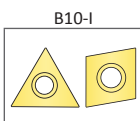
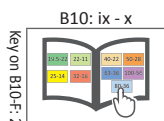
Part No.	Charging Unit*
536015	536016

NOTE: WEEE-Reg.-Nr. DE 15820388

*Charging unit sold separately.



NOTE: 3E^{TECH+} digital adjustment accuracy of 0.001 mm (0.00005") on diameter.

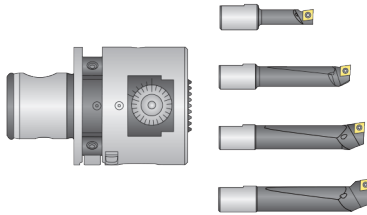


Inserts sold separately.

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		Boring Bar	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

NOTE: Balancing elements and inserts sold separately.

NOTE: 3E^{TECH+} digital readout module and charging station sold separately.

3E^{TECH+} Digital Readout Module

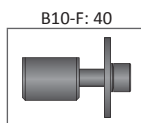
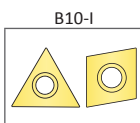
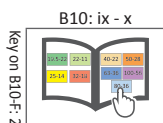
Part No.	Charging Unit*
536015	536016

NOTE: WEEE-Reg.-Nr. DE 15820388

*Charging unit sold separately.



NOTE: 3E^{TECH+} digital adjustment accuracy of 0.001 mm (0.00005") on diameter.



Inserts sold separately.

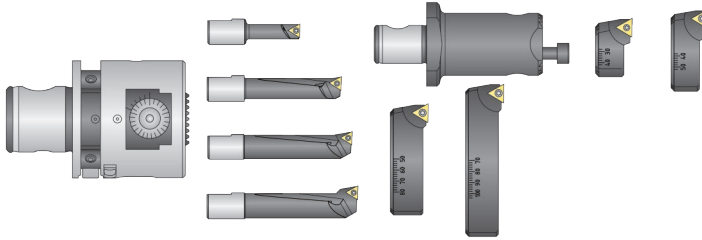
 = Metric (mm)

 = 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.
(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.
(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		Boring Bar	Serrated Tool Body	Insert Holder	Clamping Piece	Insert
Metric (mm)	Imperial (in)					
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

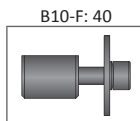
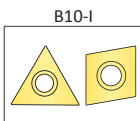
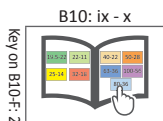
Part No.	Charging Unit*
536015	536016

NOTE: WEEE-Reg.-Nr. DE 15820388

*Charging unit sold separately.



NOTE: 3E^{TECH+} digital adjustment accuracy of 0.001 mm (0.00005") on diameter.

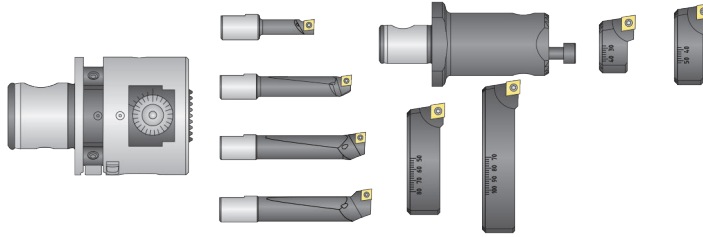


Inserts sold separately.

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.	
	103048
Kit Components	Part No.
(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.	
	104048
Kit Components	Part No.
(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		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.

NOTE: 3E^{TECH+} digital readout module and charging station sold separately.

3E^{TECH+} Digital Readout Module

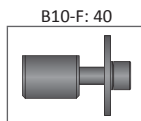
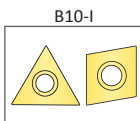
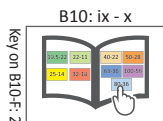
Part No.	Charging Unit*
536015	536016

NOTE: WEEE-Reg.-Nr. DE 15820388

*Charging unit sold separately.



NOTE: 3E^{TECH+} digital adjustment accuracy of 0.001 mm (0.00005") on diameter.



Inserts sold separately.

 = Metric (mm)

 = Imperial (in)

B10-F: 50

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



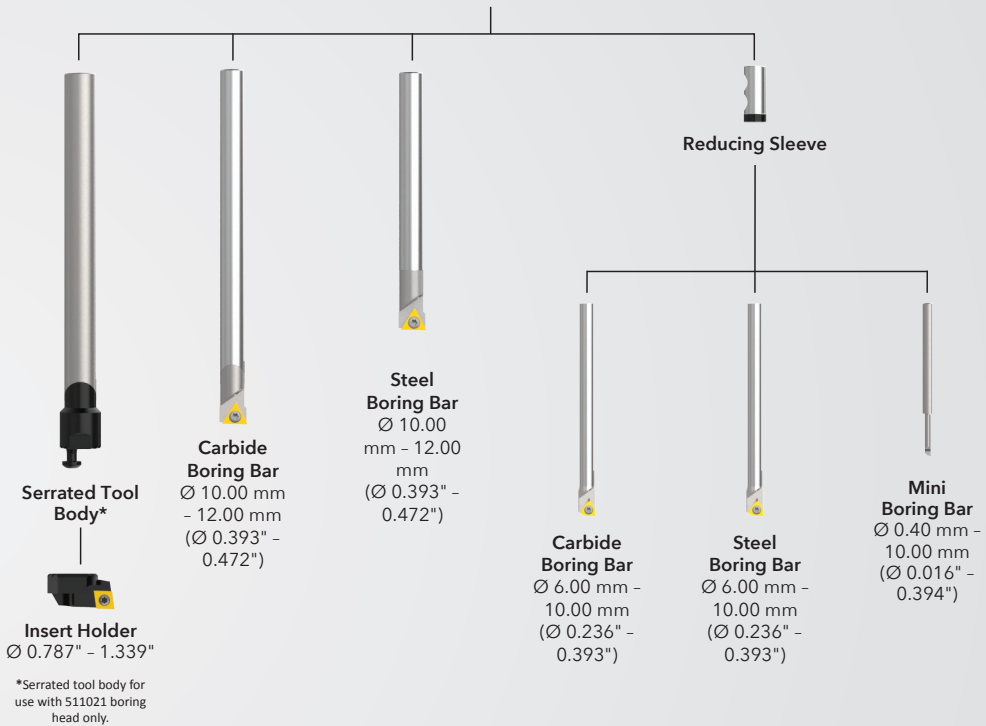
DIGITAL

Digital 511021 Boring Head
 $\varnothing$ 0.016" - 1.339"

Digital 511001 (510001) Boring Head
 $\varnothing$ 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.

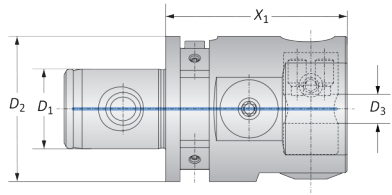
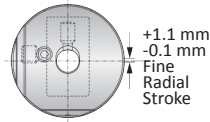


OPERATION **VERSATILITY**
 from **0.40 mm to 12.00 mm (0.016" to 1.339")**



Digital Boring Heads

Diameter Range: 0.40 mm - 12.00 mm (0.016" - 1.339")



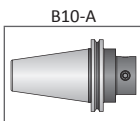
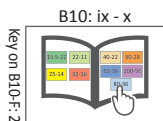
NOTE: Metric item pictured.
NOTE: Adjustment accuracy of 0.002 mm (0.0001") on diameter.

Metric (mm)

MVS Connection		Boring Head		Weight (kg)	Part No.
$D_2 D_1$	Boring Range	D_3	X_1		
m 40 - 22	0.40 - 12.00	8.00	50.00	0.42	510001

Imperial (in)

MVS Connection		Boring Head		Weight (lbs)	Part No.
$D_2 D_1$	Boring Range	D_3	X_1		
i 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



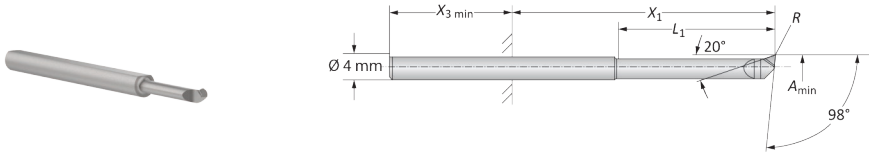
B10-F: 53

www.alliedmachine.com | 1.330.343.4283

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

Mini Boring Bars

Diameter Range: 0.40 mm - 3.00 mm (0.016" - 0.118")



Metric (mm)

Boring Head		Boring Range	Boring Bar				Part No.
		A_{min}	X_1	X_{3min}	L_1	R	
	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	Boring Bar				Part No.
		A_{min}	X_1	$X_{3\ min}$	L_1	R	
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

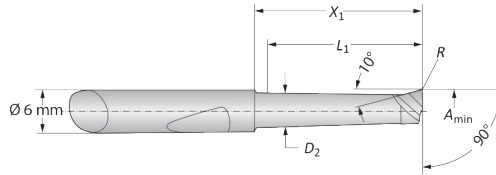
NOTE: Fixture-through reducing sleeve required (B10-F: 58).





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
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 (mm)	D_2	X_1	L_1	R	Coated Carbide	Uncoated Carbide
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).

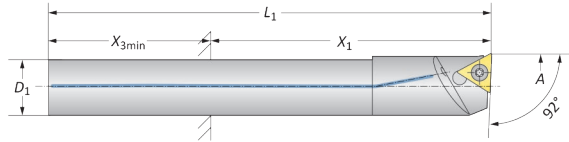
Inserts sold separately.

= 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	Boring Bar X ₁ X _{3 min} L ₁			Weight (kg)	Insert Form	Part No.
m	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
	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)	Boring Bar			Weight (lbs)	Insert Form	Part No.
i	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
	Steel	511021	0.236 - 0.315	5.00	0.492 - 0.984	0.984	2.756	0.022	101 514003
			0.315 - 0.394	7.00	0.689 - 1.378	0.984	3.189	0.044	211** 514032*
			0.394 - 0.472	8.00	0.787 - 1.575	0.984	3.346	0.066	211** 514033*
			0.472 - 0.551	10.00	0.984 - 1.969	0.984	3.937	0.110	20** 514004*
			0.551 - 0.630	12.00	1.181 - 2.362	1.181	4.488	0.198	101 514003*
			0.630 - 0.709	14.00	2.205 - 2.756	1.181	4.764	0.287	20** 514006*
			0.709 - 0.787	14.00	2.205 - 2.756	1.181	4.764	0.287	101 514005*
									20** 514008*
									101 514007*
									20** 514010
									101 514009
									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
		511021	0.236 - 0.315	5.00	0.492 - 1.575	0.984	3.543	0.044	101 514015
			0.315 - 0.394	7.00	0.827 - 2.205	0.984	4.291	0.110	20** 514018*
			0.394 - 0.472	8.00	0.866 - 2.520	0.984	4.606	0.154	101 514015*
			0.472 - 0.551	10.00	2.008 - 3.150	1.181	5.512	0.287	20** 514018*
			0.551 - 0.630	12.00	2.677 - 3.780	1.181	6.378	0.485	101 514017*
			0.630 - 0.709	14.00	3.031 - 4.409	1.181	5.591	0.573	20** 514020*
			0.709 - 0.787	14.00	4.409 - 5.787	1.181	6.969	0.728	101 514019*
									20** 514022
									101 514021
									20** 514024
									101 514023
									20** 514026
									101 514025
									20** 514028
									101 514027

*Fixture-through reducing sleeve required (B10-F: 58).

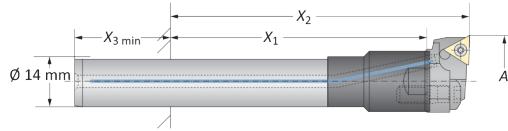
**Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

Inserts sold separately.



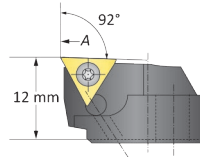
Serrated Tool Bodies

Diameter Range: 0.787" - 1.260"



Imperial (in)

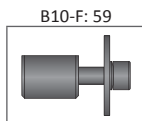
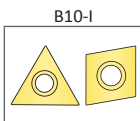
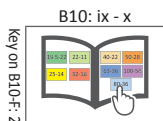
	Substrate	Boring Range A	Serrated Tool Body			Weight (lbs)	Part No.
			X ₁	X ₂	X _{3 min}		
i	Steel	0.787 - 1.260	1.457 - 2.835	1.929 - 3.307	1.181	0.287	514029
	Carbide	0.787 - 1.260	2.550 - 3.937	3.031 - 4.409	1.181	0.551	514030
			3.937 - 5.315	4.409 - 5.787	1.181	0.728	514031



Insert Holders

Boring Range (A)		Weight		Insert Holder	
mm	in	kg	lbs	Form	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").

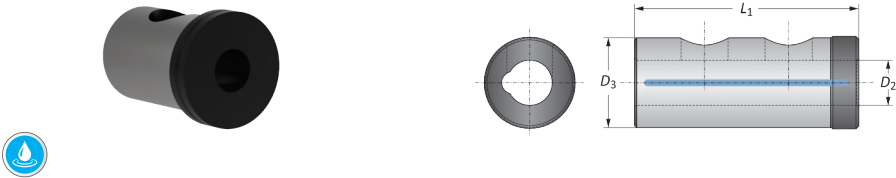


Inserts sold separately.

W = Metric (mm)
i = 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



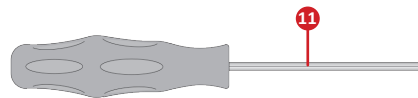
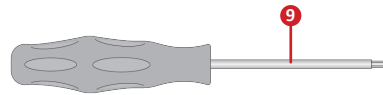
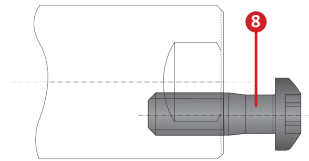
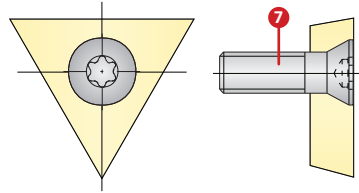
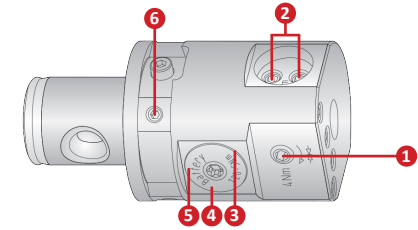


Accessories

No.	Part	Insert Form	Size	Part No.	
				510001/ 511001	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	T7	115535	115535
		Form 101	T8	115676	115676
		Form 211	T6	515286	515286
8	Clamping screw	—	T25	—	415112
9	Hex wrench	—	s2	215473	215473
10	Service Key	—	s2.5	415577	415577
			s3.0	415578	415578
			s4.0	115576	115576
11	TORX® driver	—	T6	115537	115537
		—	T7	115591	115591
		—	T8	115590	115590
		—	T20	215150	215150
		(0.6 N·m) Form 211	T6	415507	415507
		(0.9 N·m) Form 20	T7	415508	415508
		(1.2 N·m) Form 101	T8	415514	415514

*Always change two batteries.

NOTE: Please use VARTA batteries.



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

This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin gray lines. There are 20 columns and 20 rows of squares, creating a total of 400 square units. The background is white, and the grid lines are light gray.



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

DIGI BORE

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



Carbide Serrated Tool Body

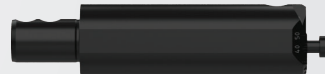


Insert Holder

Ø 20.00 mm - 32.00 mm
(Ø 0.787" - 1.260")



F



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")



Coolant Delivery System



Serrated Slides



Counterweight

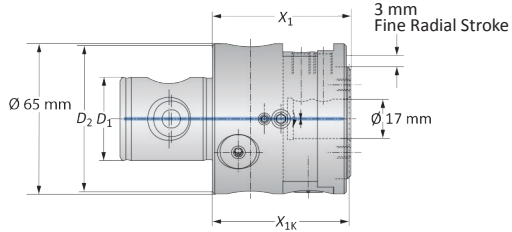


Digital Boring Heads

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)

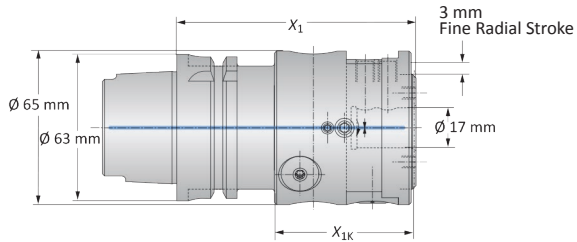
MVS Connection	Boring Range	Boring Head		Weight (kg)	Part No.
		X_1	X_{1K}		
$D_2 D_1$					
m 50 - 28	3.00 - 208.00	60.00	59.50	1.30	501005
63 - 36	3.00 - 208.00	60.00	59.50	1.50	501001

Imperial (in)

MVS Connection	Boring Range	Boring Head		Weight (lbs)	Part No.
		X_1	X_{1K}		
$D_2 D_1$					
i 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



NOTE: Metric item pictured.
NOTE: Adjustment accuracy of 0.002 mm (0.0001") on diameter.



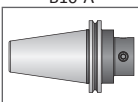
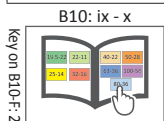
Metric (mm)

Connection	Boring Range	Boring Head		Weight (kg)	Part No.
		X_1	X_{1K}		
$D_2 D_1$					
m 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		Weight (lbs)	Part No.
		X_1	X_{1K}		
$D_2 D_1$					
i 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.



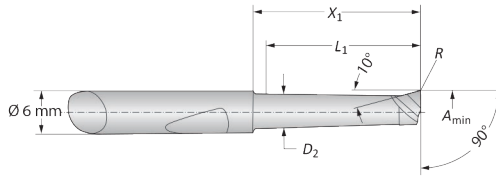
B10-F: 63

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m = Metric (mm)
i = 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	—	—

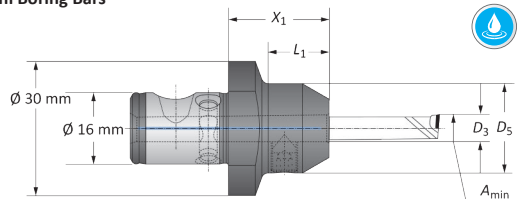
Imperial (in)

	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				Part No.
	D_3	D_5	X_1	L_1	
	6.00	20.00	22.50	14.00	319010
	8.00	22.00	22.50	14.00	236071

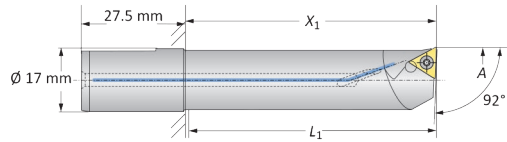


 = Metric (mm)
 = Imperial (in)



Boring Bars

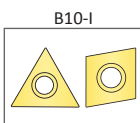
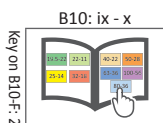
Diameter Range: 6.00 mm - 20.00 mm (0.236" - 0.787")



Metric (mm)

Substrate	Boring Range A	Boring Bar		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
Carbide	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
	10.00 - 12.00	55.00	52.00	0.12	20*	502088
		70.00	67.00	0.14	20*	502093
	12.00 - 14.00	65.00	62.00	0.13	20*	502023
		85.00	82.00	0.18	20*	502034
	14.00 - 16.00	75.00	72.00	0.17	20*	502089
		90.00	87.00	0.22	20*	502094
	16.00 - 18.00	85.00	82.00	0.26	20*	502091
		110.00	107.00	0.32	20*	502096
	18.00 - 20.00	95.00	92.00	0.28	20*	502024
		120.00	117.00	0.40	20*	502026
					101	502037
					101	502092
					101	502097
					101	502027
					101	502038

*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

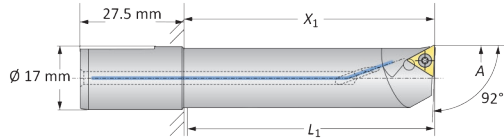


Inserts sold separately.

= Metric (mm)
 = Imperial (in)

Boring Bars

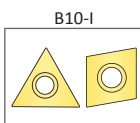
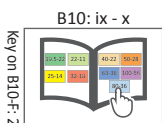
Diameter Range: 6.00 mm - 20.00 mm (0.236" - 0.787")



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
	0.433 - 0.472	1.181	1.063	0.132	101	502012
	0.472 - 0.512	1.772	1.654	0.154	20*	502070
	0.512 - 0.551	1.772	1.654	0.176	101	502075
	0.551 - 0.591	1.968	1.850	0.176	20*	502002
	0.591 - 0.630	1.968	1.850	0.198	101	502013
	0.630 - 0.669	2.362	2.244	0.220	20*	502071
	0.669 - 0.709	2.362	2.244	0.265	101	502076
	0.709 - 0.748	2.677	2.559	0.287	20*	502003
	0.748 - 0.787	2.677	2.559	0.309	101	502014
					20*	502072
					101	502077
Carbide	0.394 - 0.472	2.165	2.047	0.265	20*	502004
		2.756	2.638	0.309	101	502015
	0.472 - 0.551	2.559	2.441	0.287	20*	502073
		3.346	3.228	3.975	101	502078
	0.551 - 0.630	2.953	2.835	0.375	20*	502005
		3.543	3.425	0.485	101	502016
	0.630 - 0.709	3.346	3.228	0.573	20*	502074
		4.331	4.213	0.706	101	502079
	0.709 - 0.787	3.740	3.622	0.617	20*	502088
		4.724	4.606	0.882	101	502093
					20*	502023
					101	502034
					20*	502089
					101	502094
					20*	502024
					101	502035
					20*	502090
					101	502095
					20*	502025
					101	502036
					20*	502091
					101	502096
					20*	502026
					101	502037
					20*	502092
					101	502097
					20*	502027
					101	502038

*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").



Inserts sold separately.

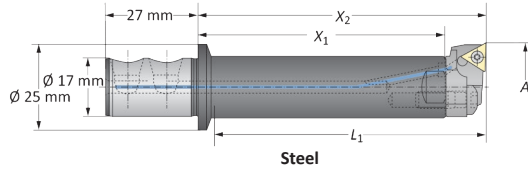
 = Metric (mm)

 = Imperial (in)

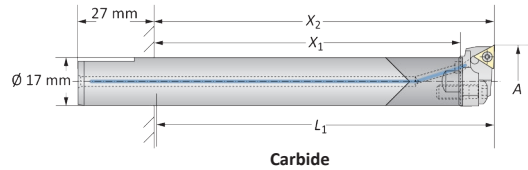


Serrated Tool Bodies

Diameter Range: 20.00 mm - 32.00 mm (0.787" - 1.260")



Steel



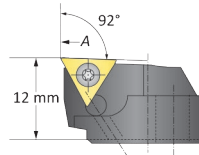
Carbide

Metric (mm)

m	Substrate	Boring Range A	Serrated Tool Body			Weight (kg)	Part No.
			X_1	X_2	L_1		
	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)

i	Substrate	Boring Range A	Serrated Tool Body			Weight (lbs)	Part No.
			X_1	X_2	L_1		
	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

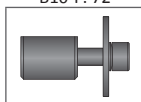
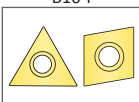
Boring Range (A)		Weight		Insert Holder	
mm	in	kg	lbs	Form	Part No.
20.00 - 22.00	0.787 - 0.866	0.01	0.022	20*	502046
				101	502052
22.00 - 24.00	0.866 - 0.945	0.01	0.022	20*	502047
				101	502053
24.00 - 26.00	0.945 - 1.024	0.01	0.022	20*	502048
				101	502054
26.00 - 28.00	1.024 - 1.102	0.01	0.022	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

B10-I

B10-F: 72



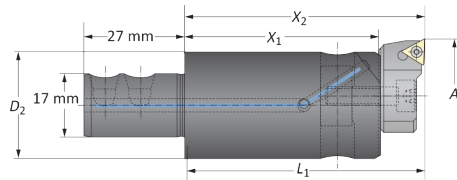
Inserts sold separately.

m = Metric (mm)

i = Imperial (in)

Serrated Tool Bodies

Alu-Line® | Diameter Range: 32.00 mm - 68.00 mm (1.260" - 2.677")

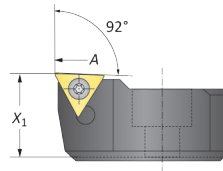


Metric (mm)

Boring Range A		Boring Bar				Weight (kg)	Part No.
		D ₂	X ₁	X ₂	L ₁		
	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)

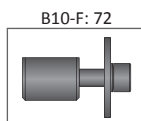
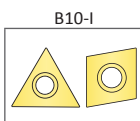
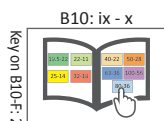
Boring Range A		Boring Bar				Weight (lbs)	Part No.
		D ₂	X ₁	X ₂	L ₁		
	1.260 - 1.968	1.122	2.047	2.598	2.480	0.220	501052
			3.465	4.016	3.898	0.441	501060
	1.968 - 2.677	1.811	2.402	2.953	2.835	0.441	501053
			4.173	4.724	4.606	0.661	501061



Insert Holders

Serrated Tool Body	Boring Range (A)		X ₁		Weight		Insert Form	Part No.
	mm	in	mm	in	kg	lbs		
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").



Inserts sold separately.

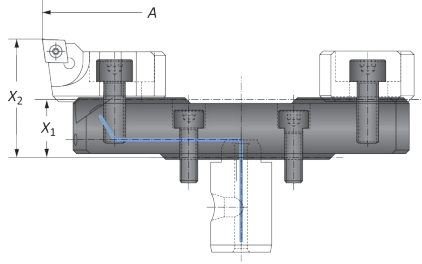
 = Metric (mm)
 = Imperial (in)

B10-F: 68



Alu-Line® Serrated Slides

Diameter Range: 68.00 mm - 208.00 mm (2.667" - 8.189")

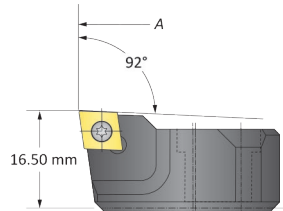
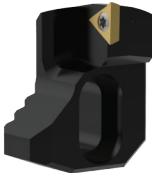


Metric (mm)

m	Boring Range	Serrated Slide		Weight (kg)	Part No.
	A	X ₁	X ₂		
	68.00 - 96.00	16.00	32.50		501054
	96.00 - 124.00	16.00	32.50		501055
	124.00 - 152.00	16.00	32.50		501056
	152.00 - 180.00	22.00	38.50		501058
	180.00 - 208.00	22.00	38.50		501059

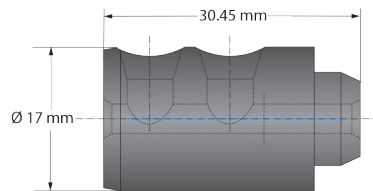
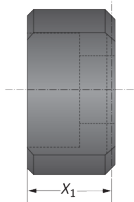
Imperial (in)

i	Boring Range	Serrated Slide		Weight (lbs)	Part No.
	A	X ₁	X ₂		
	2.667 - 3.780	0.630	1.280		501054
	3.780 - 4.881	0.630	1.280		501055
	4.881 - 5.984	0.630	1.280		501056
	5.984 - 7.088	0.866	1.516		501058
	7.088 - 8.189	0.866	1.516		501059



Insert Holders

Boring Range (A)		Weight		Insert Holder	
mm	in	kg	lbs	Form	Part No.
68.00 - 152.00	2.677 - 5.984	0.05	0.110	20	502069
				101	502064

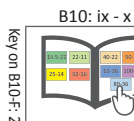


Counterweights

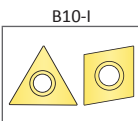
X ₁		Weight		Part No.
mm	in	kg	lbs	
13.40	0.528	0.05	0.110	502165

Alu-Line® Coolant Delivery Sections

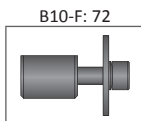
Weight		Part No.
kg	lbs	
0.02	0.044	501157



B10: ix - x



B10-I



B10-F: 72

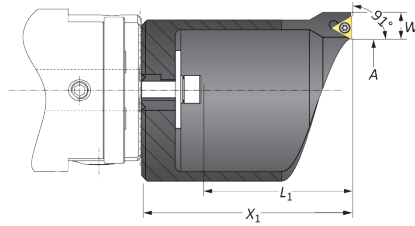
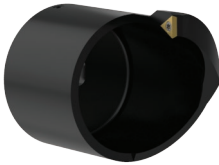
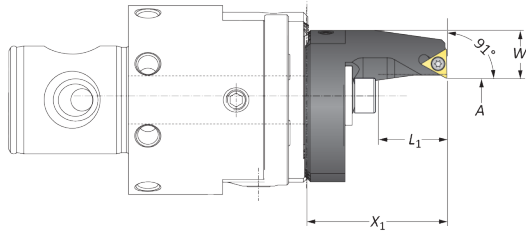
Inserts sold separately.

u = 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		Insert Holder			Weight (kg)	Insert Form	Part No.
	A	X ₁	L ₁	W				
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
m	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)

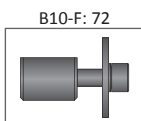
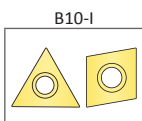
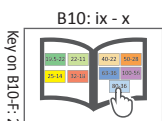
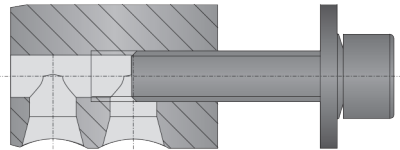
Type	Boring Range		Insert Holder			Weight (lbs)	Insert Form	Part No.
	A	X ₁	L ₁	W				
i	A	0.157 - 0.689	1.594	0.787	0.653	0.220	20*	236081
		0.650 - 1.181	1.988	1.181	0.437	0.220	20*	236082
i	B	1.142 - 1.732	2.952	2.126	0.377	0.661	20*	236083
		1.693 - 2.598	3.956	3.110	0.377	0.882	20*	236084

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)		Service Key	Part No.
	mm	in		
A	4.00 - 30.00	0.157 - 1.181	s5	502080
B	29.00 - 66.00	1.142 - 2.598	s5	502081



Inserts sold separately.

m = Metric (mm)

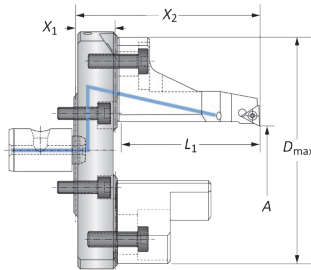
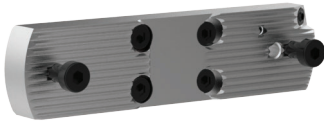
i = Imperial (in)

B10-F: 70



Outside Turning Serrated Slides

Diameter Range: 2.00 mm - 114.00 mm (0.078" - 4.488")

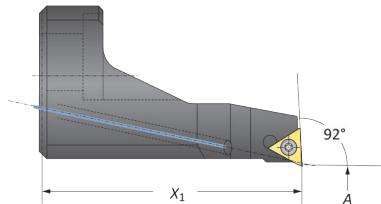


Metric (mm)

Boring Range		Serrated Slide				Weight (kg)	Part No.
A		X ₁	X ₂	L ₁	D _{max}		
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)

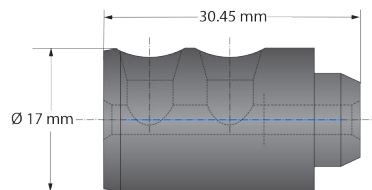
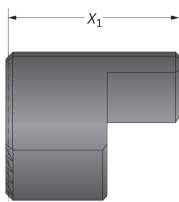
Boring Range		Serrated Slide				Weight (lbs)	Part No.
A		X ₁	X ₂	L ₁	D _{max}		
0.078 - 1.181		0.630	2.874	2.165	3.396	0.771	501064
1.181 - 2.283		0.630	2.874	2.165	5.078	0.970	501065
2.283 - 3.386		0.866	3.110	2.165	6.181	1.322	501066
3.386 - 4.488		0.866	3.110	2.165	7.283	1.609	501067



Insert Holders

Outside Turning Range		Insert Holder		Weight (kg)		Insert Form	Part No.
mm	in	mm	in	kg	lbs		
2.00 - 114.00	0.079 - 4.488	57.00	2.244	0.15	0.331	20	502082

NOTE: Clockwise and neutral execution.

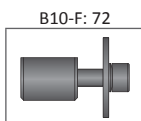
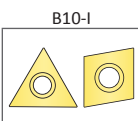
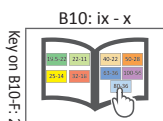


Counterweights

X ₁		Weight		Part No.
mm	in	kg	lbs	
37.75	1.486	0.16	0.350	502183

Alu-Line® Coolant Delivery Sections

X ₁		Weight		Part No.
mm	in	kg	lbs	
25.50	1.004	0.01	0.022	501157



Inserts sold separately.

W = Metric (mm)

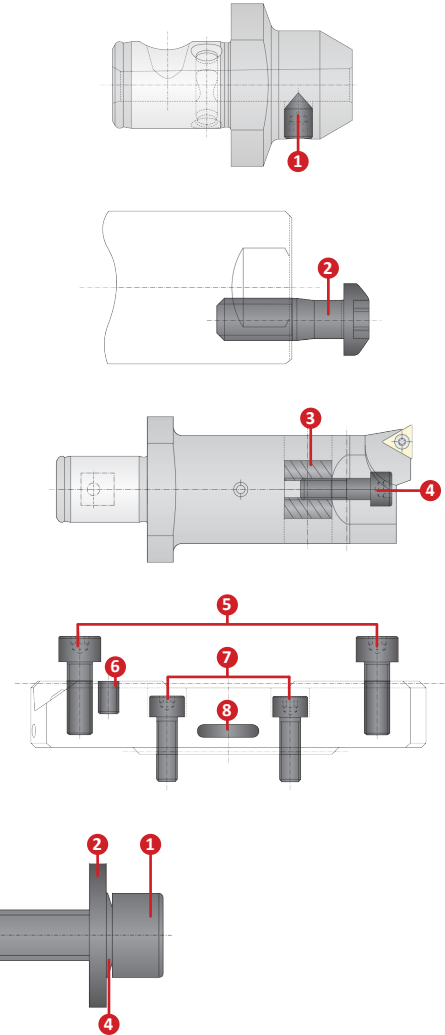
I = Imperial (in)

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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)

				Clamping Screw Parts				
Boring Range		Type	Hex Size	1. Cap Screw	2. Washer	3. Clamping Piece	4. Locking Washer	Complete Part No.
m	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				Complete Part No.
				1. Cap Screw	2. Washer	3. Clamping Piece	4. Locking Washer	
i	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)

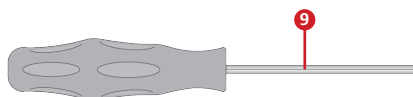
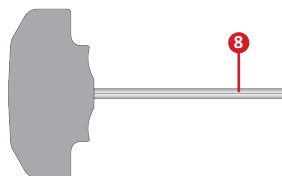
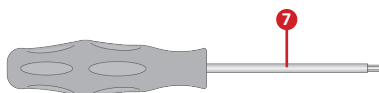
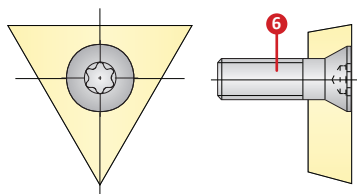
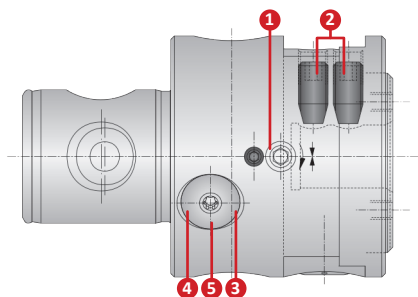


Accessories

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).



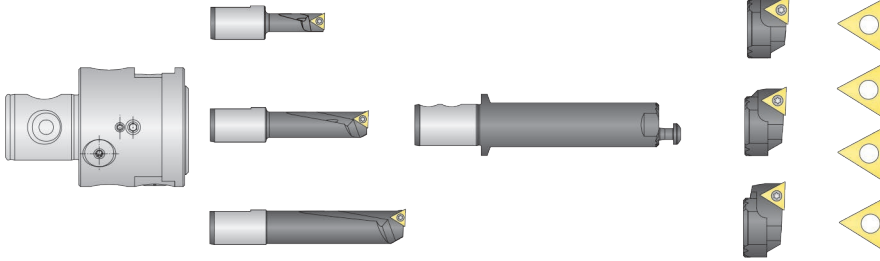
This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin black lines. There are 20 columns and 20 rows of squares, creating a total of 400 square units. The paper is otherwise completely blank, with no margins, text, or other markings.





DigiBore Kit

Form 20 | Diameter Range: 10.00 mm - 30.00 mm (0.394" - 1.181")



Metric (mm)

Kit Part No.	
m	103062

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)

Imperial (in)

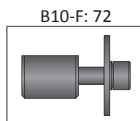
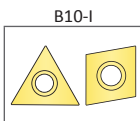
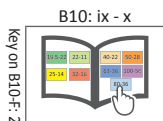
Kit Part No.	
i	104062

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		Boring Bar	Serrated Tool Body	Insert Holder	Insert
Metric (mm)	Imperial (in)				
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.

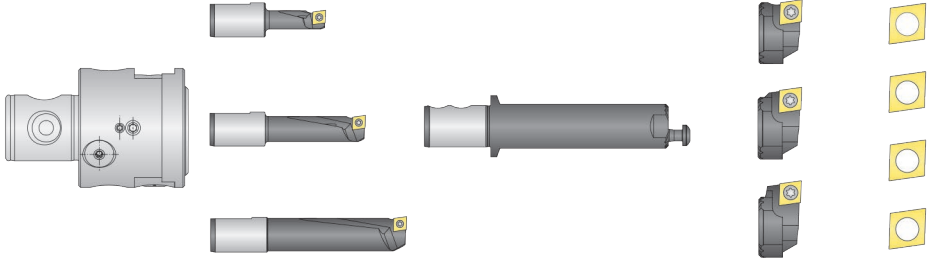


Inserts sold separately.

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.
(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)

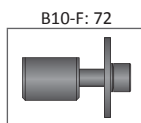
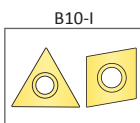
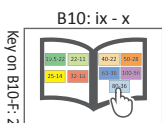
Kit Part No.	
i	104061

Kit Components	Part No.
(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		Boring Bar	Serrated Tool Body	Insert Holder	Insert
Metric (mm)	Imperial (in)				
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.



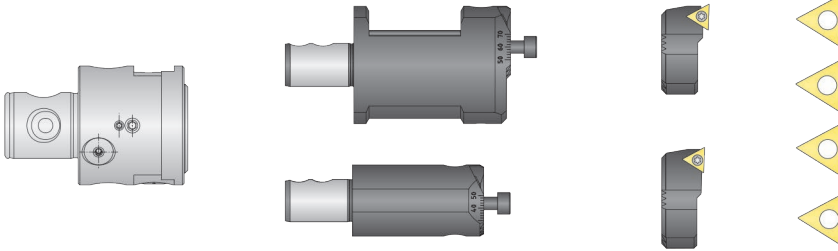
Inserts sold separately.

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.	
m	103064
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)

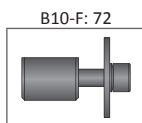
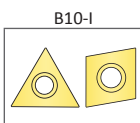
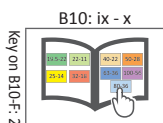
Imperial (in)

Kit Part No.	
i	104064
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		Serrated Tool Body	Insert Holder	Insert
Metric (mm)	Imperial (in)			
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.

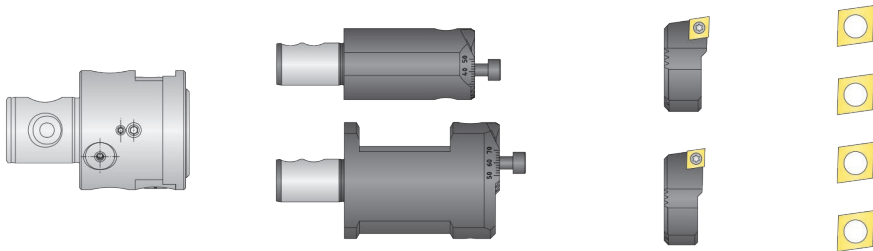


Inserts sold separately.

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

DigiBore Kit

Form 101 | Diameter Range: 32.00 mm - 68.00 mm (1.260" - 2.667")



Metric (mm)

Kit Part No.	
m	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)

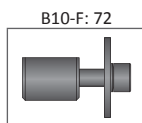
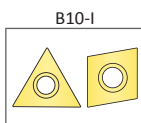
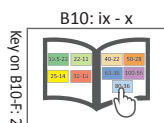
Kit Part No.	
i	104063

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		Serrated Tool Body	Insert Holder	Insert
Metric (mm)	Imperial (in)			
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.



Inserts sold separately.

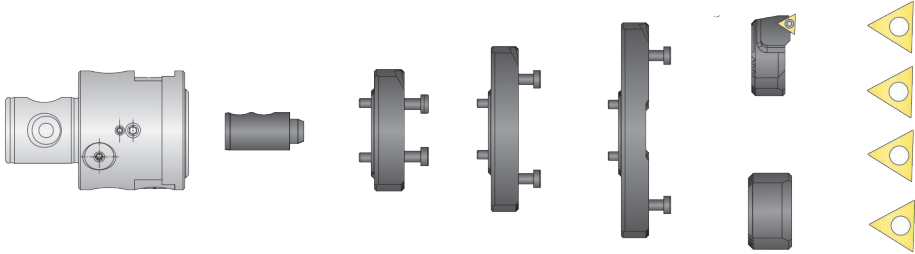
m = Metric (mm)
i = Imperial (in)

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DigiBore Kit

Form 20 | Diameter Range: 68.00 mm - 152.00 mm (2.667" - 5.984")



Metric (mm)

Kit Part No.	
m	103066

Kit Components	Part No.
(1) Boring Head	501001
(3) Serrated Slides	501054
	501055
	501056
m (1) Insert Holder	502069
(1) Counterweight	502165
(1) Coolant Delivery	501157
(2) Service Keys	115576 (s4)
	115591 (T7)

Imperial (in)

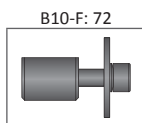
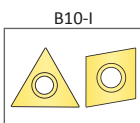
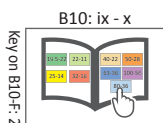
Kit Part No.	
i	104066

Kit Components	Part No.
(1) Boring Head	504001
(3) Serrated Slides	501054
	501055
	501056
i (1) Insert Holder	502069
(1) Counterweight	502165
(1) Coolant Delivery	501157
(2) Service Keys	115576 (s4)
	115591 (T7)

Component Assemblies

Boring Range		Coolant Delivery	Serrated Slide	Insert Holder	Counterweight	Insert
Metric (mm)	Imperial (in)					
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.



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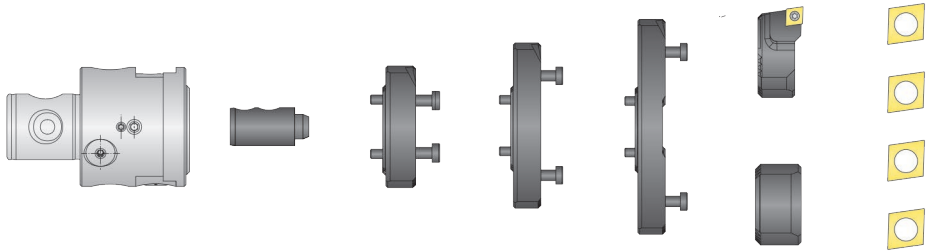
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Inserts sold separately.

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

DigiBore Kit

Form 101 | Diameter Range: 68.00 mm - 152.00 mm (2.667" - 5.984")



Metric (mm)

Kit Part No.	
m	103065

Kit Components	Part No.
(1) Boring Head	501001
(3) Serrated Slides	501054
	501055
	501056
m (1) Insert Holder	502064
(1) Counterweight	502165
(1) Coolant Delivery	501157
(2) Service Keys	115576 (s4)
	115590 (T8)

Imperial (in)

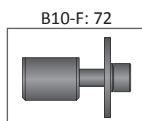
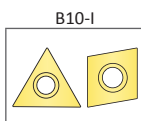
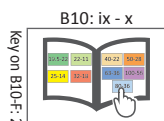
Kit Part No.	
i	104065

Kit Components	Part No.
(1) Boring Head	504001
(3) Serrated Slides	501054
	501055
	501056
i (1) Insert Holder	502064
(1) Counterweight	502165
(1) Coolant Delivery	501157
(2) Service Keys	115576 (s4)
	115590 (T8)

Component Assemblies

Boring Range		Coolant Delivery	Serrated Slide	Insert Holder	Counterweight	Insert
Metric (mm)	Imperial (in)					
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.



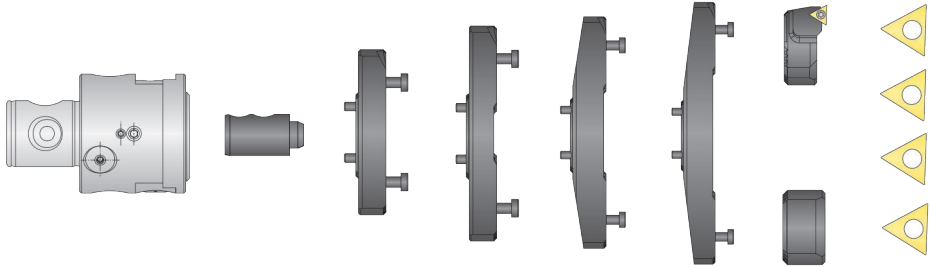
Inserts sold separately.

m = Metric (mm)
i = 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.
(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)

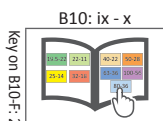
Kit Part No.	
i	104080

Kit Components	Part No.
(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)

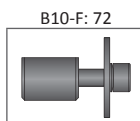
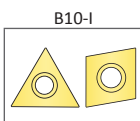
Component Assemblies

Boring Range		Coolant Delivery	Serrated Slide	Insert Holder	Counterweight	Insert
Metric (mm)	Imperial (in)					
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.



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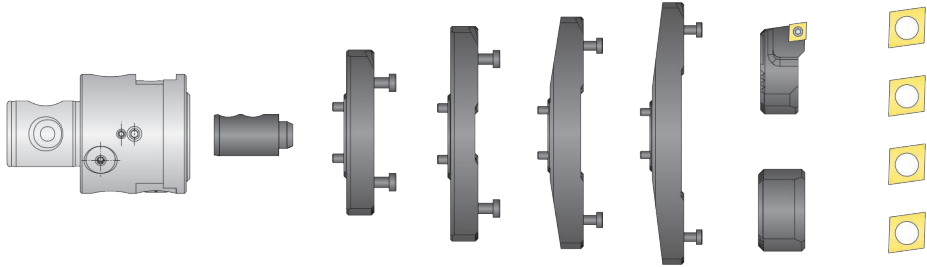
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Inserts sold separately.

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.	
m	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)

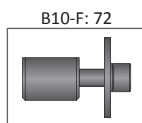
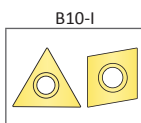
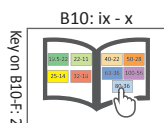
Kit Part No.	
i	104081

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		Coolant Delivery	Serrated Slide	Insert Holder	Counterweight	Insert
Metric (mm)	Imperial (in)					
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.



Inserts sold separately.

m = Metric (mm)
i = 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.

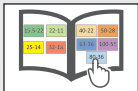
- ▶ 310 (320)
 - ▶ *Analog*: 20.00 mm - 205.00 mm (0.787" - 8.071")
- ▶ 410 (420)
 - ▶ *3E^{TECH+}*: 20.00 mm - 29.00 mm (0.787" - 1.142")
- ▶ 364 (365) Balance
 - ▶ *Analog*: 20.00 mm - 29.50 mm (0.787" - 1.161")
- ▶ 464 (465) Balance
 - ▶ *Analog & 3E^{TECH+}*: 29.00 mm - 205.00 mm (1.142" - 8.070")
- ▶ 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

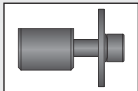
-  Aerospace
-  Agriculture
-  Automotive
-  Defense
-  General Production
-  Heavy Equipment
-  Hydraulics
-  Marine
-  Medical
-  Oil and Gas
-  Renewable Energy/ Energy
-  Tool, Mold, and Die

Reference Icons

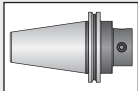
The following icons will appear throughout the catalog to help you navigate between products.



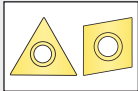
MVS Connection Color Guide
Detailed instructions and information regarding the MVS connection(s).



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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310 (320) FINE BORING

Engineered with wear and tear in mind.

310 (320) Wohlhaupter boring heads are made from steel for $\varnothing$ 20.00 mm - 103.00 mm (0.787" - 4.055") and coated Alu-Line material for $\varnothing$ 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 NOVI^{TECH}®

Time is money, so make it count.

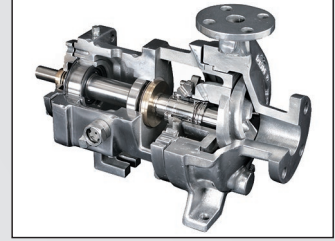
If you want to improve your machining processes, cycle time is a key factor to examine. After all, the longer it takes you to produce a part, the fewer parts you can produce in a given time. Our customer was experiencing lengthy cycle times while machining pumps from grey cast iron. The parts required 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 NOVI^{TECH} 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 NOVI ^{TECH}	Measure	Competitor Boring Head	320 Boring Head w/ NOVI ^{TECH}
Objectives:	(1) Decrease cycle time (2) Maintain 4.06 µm Ra (160 µin Ra) hole finish	RPM	39	469
Industry:	Oil and gas/petrochemical	Speed Rate	17.069 m/min (56 SFM)	205.74 m/min (675 SFM)
Part:	Pump	Feed Rate	0.305 mm/rev (0.012 IPR)	0.203 mm/rev (0.008 IPR)
Material:	Grey cast iron	Penetration Rate	11.938 mm/min (0.47 IPM)	92.25 mm/min (3.75 IPM)
Hole Ø:	139.7 mm (5.500")	Cycle Time (per hole)	27 min 54 sec	3 min 32 sec
Hole Depth:	304.8 mm (12.000")			

► Boring head
310 (320) series
Item No. 320008

► NOVI^{TECH}
vibration dampening
intermediate module
Item No. 519005



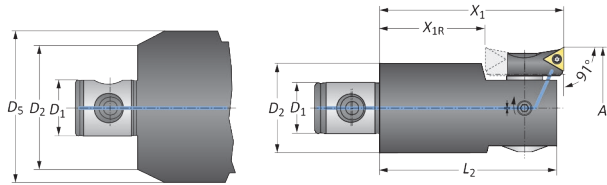
The Wohlhaupter 310 (320) boring head with the NOVI^{TECH} vibration dampening module provided:

- ✓ Increased penetration rate
- ✓ Decreased cycle time
- ✓ Excellent finish in deep hole application



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 $D_2 D_1$	Boring Range A	Boring Head						Insert Holder	
		X_1	X_{1R}	L_2	D_5	Weight (kg)	Part No.	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

m

Alu-Line Boring Heads

Metric (mm)

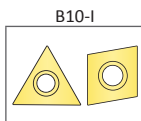
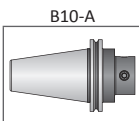
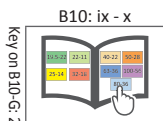
MVS Connection $D_2 D_1$	Boring Range A	Boring Head						Insert Holder	
		X_1	X_{1R}	L_2	D_5	Weight (kg)	Part No.	Form	Part No.
80 - 36	100.00 - 130.00	90.00	54.00	87.50	—	1.40	310007	20	210020
								101	210063
								103	210064
	125.00 - 167.50	90.00	54.00	87.50	100.00	1.80	310008	20	210020
								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.

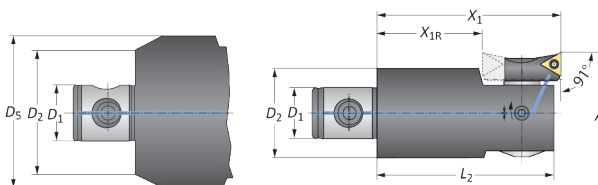


Inserts sold separately.

m = Metric (mm)
i = 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 $D_2 D_1$	Boring Range A	Boring Head						Insert Holder	
		X_1	X_{1R}	L_2	D_5	Weight (lbs)	Part No.	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
32 - 18	1.417 - 1.732	2.200	1.100	2.106	1.024	0.441	320001	20	210052
								101	210062
40 - 22	1.693 - 2.126	2.590	1.490	2.500	—	0.882	320003	20	210052
								101	210062
50 - 28	2.087 - 2.598	2.950	1.530	2.854	—	1.543	320004	20	210020
								101	210063
63 - 36	2.559 - 3.268	2.950	1.530	2.854	—	2.646	320005	103	210064
								20	210020
	3.228 - 4.055	3.540	2.120	3.445	—	4.850	320006	101	210063
								103	210064

Alu-Line Boring Heads

Imperial (in)

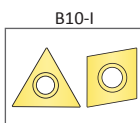
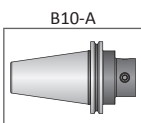
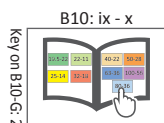
MVS Connection $D_2 D_1$	Boring Range A	Boring Head						Insert Holder	
		X_1	X_{1R}	L_2	D_5	Weight (lbs)	Part No.	Form	Part No.
80 - 36	3.937 - 5.118	3.543	2.126	3.445	—	3.086	320007	20	210020
								101	210063
								103	210064
	4.921 - 6.594	3.543	2.126	3.445	3.937	3.968	320008	20	210020
								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.

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.



Inserts sold separately.

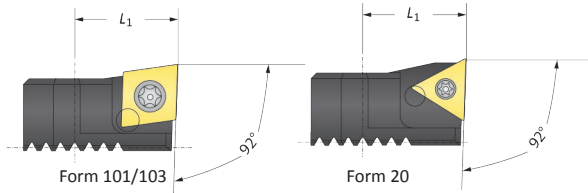
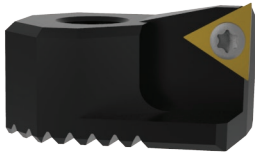
 = Metric (mm)

 = Imperial (in)



Insert Holders for Abrasive Materials

Diameter Range: 53.00 mm - 205.00 mm (2.087" - 8.071")



Metric (mm)

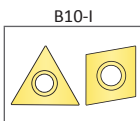
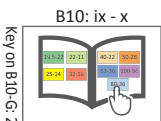
	Boring Range	L_1	Weight (kg)	Insert Holder	
				Insert Form	Part No.
m	53.00 - 205.00	18.00	0.03	20	211061
				101	211063
				103	211065

Imperial (in)

	Boring Range	L_1	Weight (lbs)	Insert Holder	
				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.



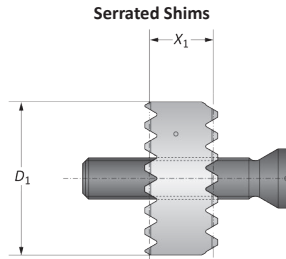
Inserts sold separately.

m = Metric (mm)

i = Imperial (in)

Accessories

Serrated Shims | Screws

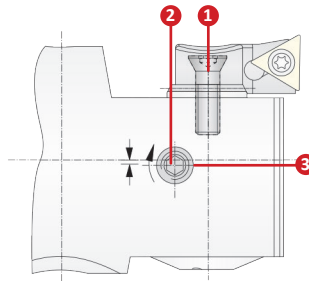


Metric (mm)

	Boring Range	Additional Boring Range	Serrated Shim			Part No.	
			X_1	D_1	Weight (kg)	Serrated Shim and Screw	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

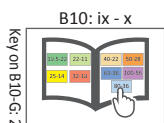
Imperial (in)

	Boring Range	Additional Boring Range	Serrated Shim			Part No.	
			X_1	D_1	Weight (lbs)	Serrated Shim and Screw	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		1 Countersunk Screw		2 Clamping Screw		3 Ball
Metric	Imperial	Part No.	Service Key	Part No.	Service Key	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	—



 = Metric (mm)
 = Imperial (in)

410 (420) Product Overview



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.



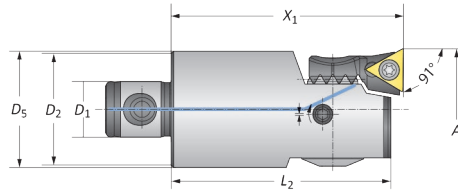
NOTE: 3E^{TECH+} digital adjustment accuracy of 0.001 mm (0.00005") on diameter.





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	Boring Range	Boring Head				Insert Holder	
	D ₂ D ₁	A	X ₁	L ₂	D ₅	Weight (kg)	Part No.	Form 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	Boring Range	Boring Head				Insert Holder	
	D ₂ D ₁	A	X ₁	L ₂	D ₅	Weight (lbs)	Part No.	Form 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.



3E^{TECH+} Digital Readout Module

Part No.	Charging Unit*
536015	536016

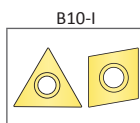
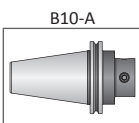
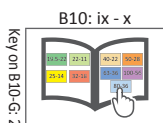
NOTE: WEEE-Reg.-Nr. DE 15820388

*Charging unit sold separately.



NOTE: 3E^{TECH+} digital adjustment accuracy of 0.001 mm (0.00005") on diameter.

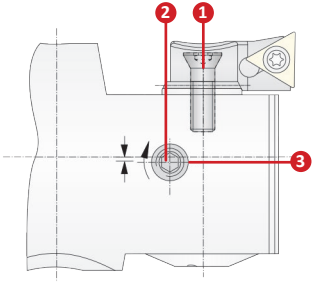
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



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.
410001	420001	215323	T15 / H	410151	s2.0 / A	364270
410002	420002	215338	T15 / H	410152	s2.0 / A	364270

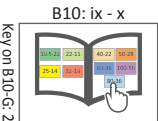
3ETECH⁺ Digital Readout Module

1. Module	2. Charging Unit*
536015	536016

NOTE: WEEE-Reg.-Nr. DE 15820388

*Charging unit sold separately.

NOTE: 3ETECH⁺ digital adjustment accuracy of 0.001 mm (0.00005") on diameter.

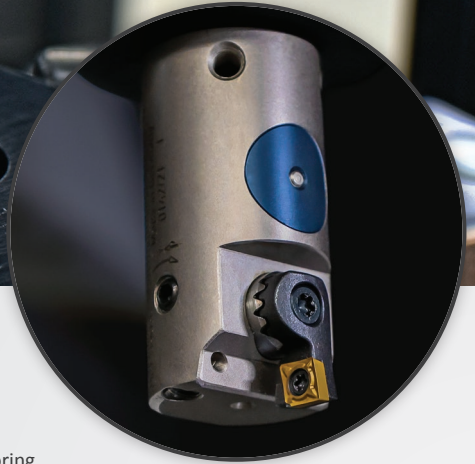


364 (365) Balance FINE BORING

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.

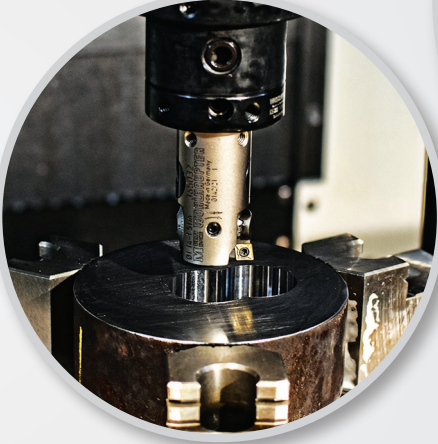
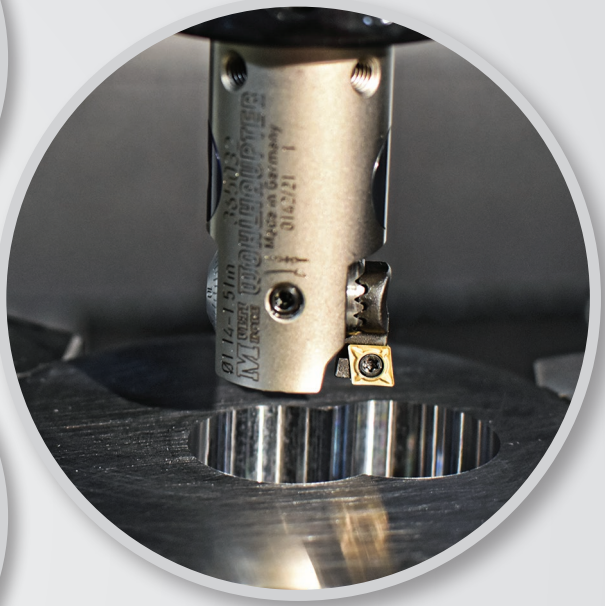
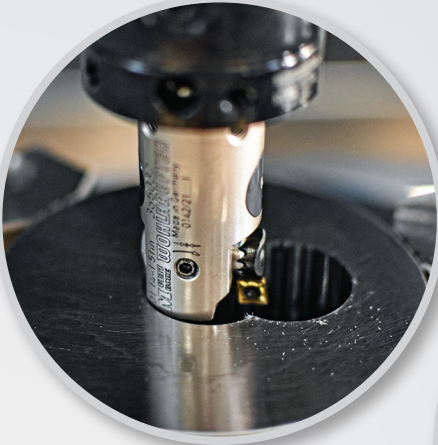
- ▶ Diameter range: 20.00 mm - 29.50 mm (0.787" - 1.161").
- ▶ Coolant through.
- ▶ Vernier diameter adjustment of 0.002 mm (0.0001").
- ▶ Internal balancing improves tool life and surface finish.
- ▶ Max cutting speed: 1,000 m/min (3,281 SFM).



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

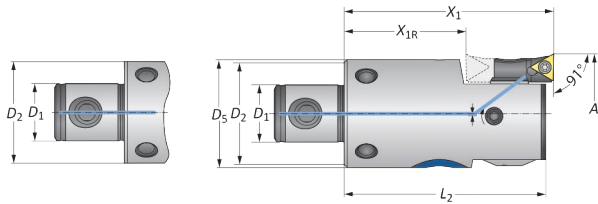
Finished "Figure 8" Boring Application





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	Boring Range	Boring Head				Insert Holder	
	$D_2 D_1$	A	X_1	L_2	D_5	Weight (kg)	Part No.	Form
m	19 - 11	20.00 - 24.50	46.00	43.00	—	0.09	364030	20*
	22 - 11	24.50 - 29.50	46.00	43.50	23.00	0.15	364031	20 101

Imperial (in)

	MVS Connection	Boring Range	Boring Head				Insert Holder	
	$D_2 D_1$	A	X_1	L_2	D_5	Weight (lbs)	Part No.	Form
i	19 - 11	0.787 - 0.965	1.811	1.693	—	0.198	365030	20*
	22 - 11	0.965 - 1.161	1.811	1.713	0.906	0.331	365031	20 101

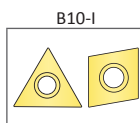
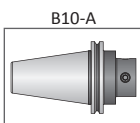
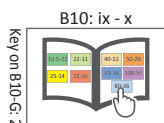
*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

NOTE: Insert holders and inserts sold separately.



G

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.

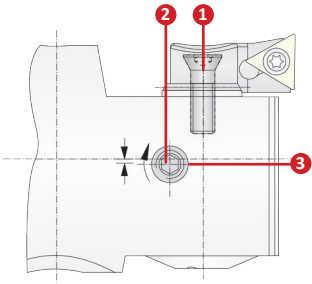


Inserts sold separately.

m = Metric (mm)

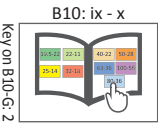
i = Imperial (in)

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



key on B10-G: 2

464 (465) Balance Product Overview



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.



EXPERIENCE PRECISION BORING TODAY

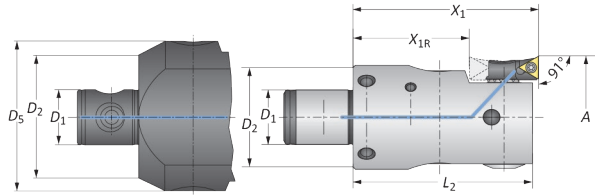


- ✓ **3E TECH+ digital readout compatibility**
- ✓ **High-production fine boring**
- ✓ **Easy digital diameter adjustment**



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 $D_2 D_1$	Boring Range A	Boring Head					Insert Holder	
			X_1	X_{1R}	L_2	D_5	Weight (kg)	Part No.	Form
m	25 - 14	29.00 - 38.00	56.00	—	53.50	27.00	0.20	464033	20
									101
									210059
	32 - 18	38.00 - 50.00	66.00	38.00	63.50	34.00	0.40	464034	20
									101
									264051
	40 - 22	50.00 - 65.50	75.00	47.00	72.50	42.00	0.80	464035	20
									101
									264077
									210052
									210062

Alu-Line Boring Heads

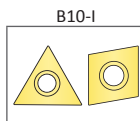
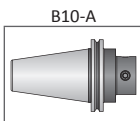
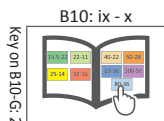
Metric (mm)

	MVS Connection $D_2 D_1$	Boring Range A	Boring Head					Insert Holder	
			X_1	X_{1R}	L_2	D_5	Weight (kg)	Part No.	Form
	50 - 28	65.00 - 83.00	75.00	39.00	72.50	—	0.60	464036	20
									101
									210020
	63 - 36	82.00 - 103.00	90.00	54.00	87.50	—	1.00	464037	101
									103
									210063
	80 - 36	100.00 - 130.00	90.00	54.00	87.50	—	1.50	464038	20
									101
									103
		125.00 - 167.50	90.00	54.00	87.50	100.00	1.90	464039	20
									101
									103
		162.50 - 205.00	90.00	54.00	87.50	135.00	2.50	464040	20
									101
									103

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.

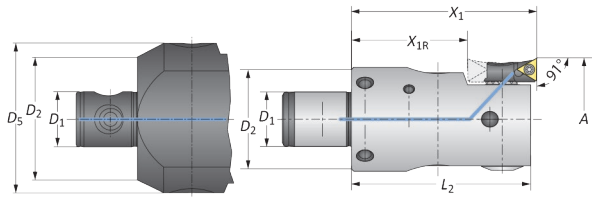
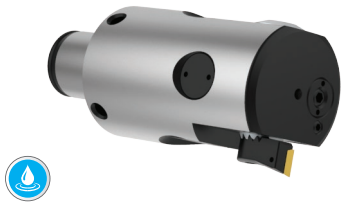


Inserts sold separately.

m = Metric (mm)
i = 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 $D_2 D_1$	Boring Range A	Boring Head					Insert Holder	
			X_1	X_{1R}	L_2	D_5	Weight (lbs)	Part No.	Form Part No.
i	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

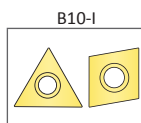
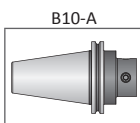
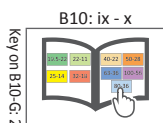
Imperial (in)

	MVS Connection $D_2 D_1$	Boring Range A	Boring Head					Insert Holder	
			X_1	X_{1R}	L_2	D_5	Weight (lbs)	Part No.	Form Part No.
i	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.



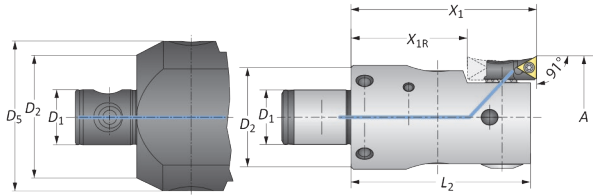
Inserts sold separately.

 = 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 $D_2 D_1$	Boring Range A	Boring Head					Insert Holder	
			X_1	X_{1R}	L_2	D_5	Weight (kg)	Part No.	Form
m	25 - 14	29.00 - 38.00	56.00	—	53.50	27.00	0.21	464003	20
									101
									210059
	32 - 18	38.00 - 50.00	66.00	38.00	63.50	34.00	0.41	464004	20
									101
									264051
	40 - 22	50.00 - 65.50	75.00	47.00	72.50	42.00	0.80	464005	20
									101
									264077
									210052
									210062

Alu-Line Boring Heads

Metric (mm)

	MVS Connection $D_2 D_1$	Boring Range A	Boring Head					Insert Holder	
			X_1	X_{1R}	L_2	D_5	Weight (kg)	Part No.	Form
m	50 - 28	65.00 - 83.00	75.00	39.00	72.50	—	0.60	464006	20
									101
									210020
	63 - 36	82.00 - 103.00	90.00	54.00	88.00	—	1.00	464007	101
									103
	80 - 36	100.00 - 130.00	90.00	54.00	88.00	—	1.50	464008	20
									101
									210063
		125.00 - 167.50	90.00	54.00	88.00	100.00	1.90	464009	101
									103
									210064
		162.50 - 205.00	90.00	54.00	88.00	135.00	2.50	464010	20
									101
									210063
									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

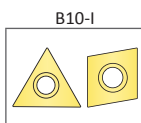
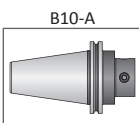
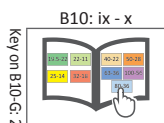
NOTE: WEEE-Reg.-Nr. DE 15820388

*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.

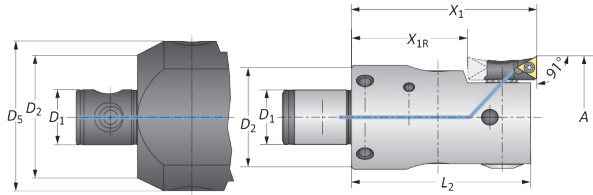


Inserts sold separately.

m = Metric (mm)
i = 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 $D_2 D_1$	Boring Range A	Boring Head					Insert Holder	
			X_1	X_{1R}	L_2	D_5	Weight (lbs)	Part No.	Form Part No.
i	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 $D_2 D_1$	Boring Range A	Boring Head					Insert Holder	
			X_1	X_{1R}	L_2	D_5	Weight (lbs)	Part No.	Form Part No.
i	50 - 28	2.559 - 3.268	2.953	1.535	2.874	—	1.323	465006	20 210020 101 210063 103 210064
									20 210020 101 210063 103 210064
									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
									20 210020 101 210063 103 210064
									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							20 210020 101 210063 103 210064
		6.398 - 8.071							20 210020 101 210063 103 210064
									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

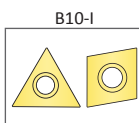
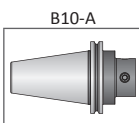
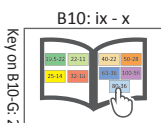
NOTE: WEEE-Reg.-Nr. DE 15820388

*Charging unit sold separately.



NOTE: 3E^{TECH+} digital adjustment accuracy of 0.001 mm (0.00005") on diameter.

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.



Inserts sold separately.

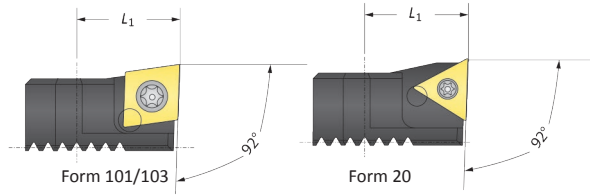
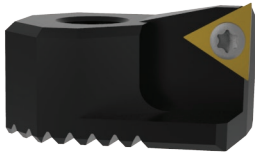
 = Metric (mm)

 = Imperial (in)



Insert Holders for Abrasive Materials

Diameter Range: 65.00 mm - 205.00 mm (2.559" - 8.071")



Metric (mm)

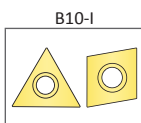
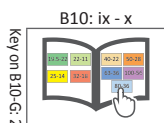
m	Boring Range	L ₁	Weight (kg)	Insert Holder	
				Insert Form	Part No.
				20	211061
				101	211063
	65.00 - 205.00	18.00	0.03	103	211065

Imperial (in)

i	Boring Range	L ₁	Weight (lbs)	Insert Holder	
				Insert Form	Part No.
				20	211061
				101	211063
	2.559 - 8.071	0.709	0.066	103	211065

NOTE: Insert holders used for abrasive materials to protect boring head against chip wash.

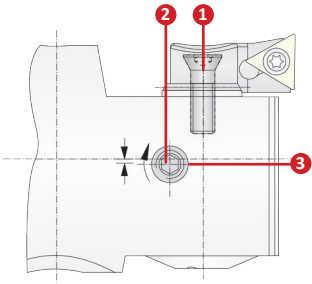
NOTE: When machining grey cast iron, we recommend using insert holders for abrasive materials with CBN inserts for optimized chip removal.



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.
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	—



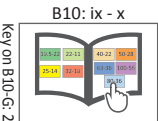
3ETECH⁺ Digital Readout Module

1. Module	2. Charging Unit*
536015	536016

NOTE: WEEE-Reg.-Nr. DE 15820388

*Charging unit sold separately.

NOTE: 3ETECH⁺ digital adjustment accuracy of 0.001 mm (0.00005") on diameter.

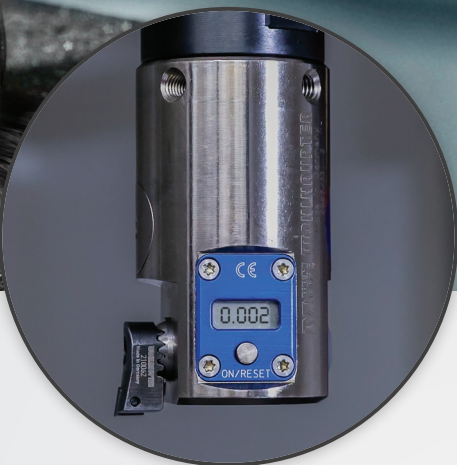


B10: ix - x

564 (565) Balance Product Overview



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}	Measure	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.	RPM	430
Material:	Cast iron	Speed	107.28 m/min (352 SFM)
Hole Ø:	79.38 mm (3.125")	Feed Rate	0.08 mm/rev (0.003 IPR)
Hole Depth:	469.9 mm (18.5")	Penetration Rate	33 mm/min (1.29 IPM)
Stock Removal:	0.80 mm (0.030") on diameter		

- ▶ 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.

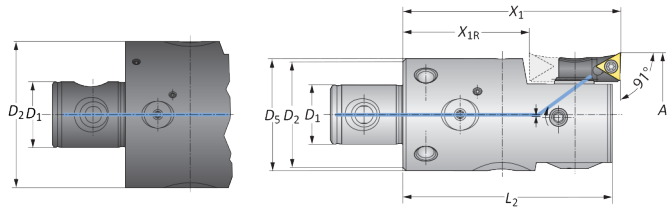
Aluminum Boring Head
65.00 mm - 205.00 mm
(2.559" - 8.071")

Steel Boring Head
50.00 mm - 65.50 mm
(1.969" - 2.579")



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 $D_2 D_1$	Boring Range A	Boring Head						Insert Holder	
		X_1	X_{1R}	L_2	D_5	Weight (kg)	Part No.	Form	Part No.
m 40 - 22	50.00 - 65.50	75.00	47.00	72.50	42.00	0.80	564034	20 101	210052 210062

Alu-Line Boring Heads

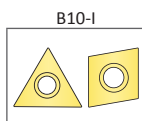
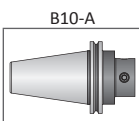
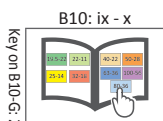
Metric (mm)

MVS Connection $D_2 D_1$	Boring Range A	Boring Head						Insert Holder	
		X_1	X_{1R}	L_2	D_5	Weight (kg)	Part No.	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
m 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.

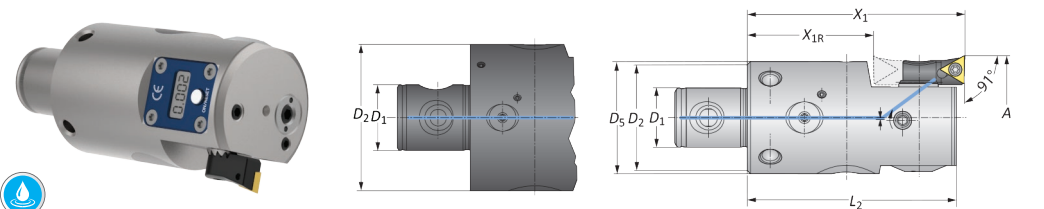


Inserts sold separately.

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

564 (565) Boring Heads and Insert Holders

Digital | Diameter Range: 50.00 mm - 205.000 mm (1.969" - 8.071")



Imperial (in)

NOTE: Metric item pictured.
Digital adjustment accuracy of 0.002 mm (0.0001") on diameter.

i	MVS Connection $D_2 \mid D_1$	Boring Range A	Boring Head					Part No.	Insert Holder	
			X_1	X_{1R}	L_2	D_5	Weight (lbs)		Form	Part No.
i	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

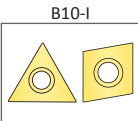
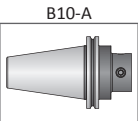
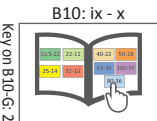
Imperial (in)

i	MVS Connection $D_2 \mid D_1$	Boring Range A	Boring Head					Part No.	Insert Holder	
			X_1	X_{1R}	L_2	D_5	Weight (lbs)		Form	Part No.
i	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.



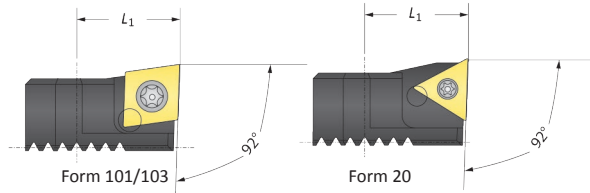
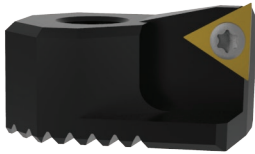
Inserts sold separately.

 = Metric (mm)
 = Imperial (in)



Insert Holders for Abrasive Materials

Diameter Range: 65.00 mm - 205.00 mm (2.559" - 8.071")



Metric (mm)

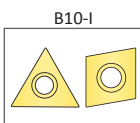
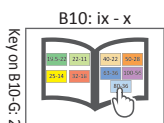
	Boring Range	L_1	Weight (kg)	Insert Holder	
				Insert Form	Part No.
m	65.00 - 205.00	18.00	0.03	20	211061
				101	211063
				103	211065

Imperial (in)

	Boring Range	L_1	Weight (lbs)	Insert Holder	
				Insert Form	Part No.
i	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.

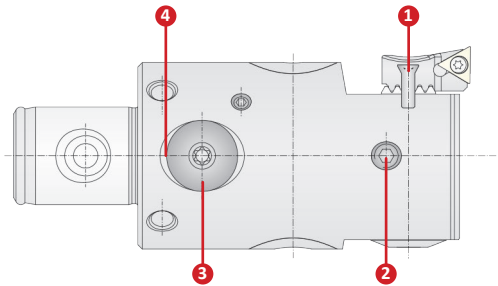


Inserts sold separately.

m = Metric (mm)

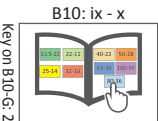
i = Imperial (in)

Accessories



Boring Head		1 Countersunk Screw		2 Clamping Screw		3 Battery Cover		4 Sealing Ring	Battery*
Metric	Imperial	Part No.	Service Key	Part No.	Service Key	Part No.	Service Key	Part No.	
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.



537 (538) Cassettes Product Overview



537 (538) Cassettes FINE BORING

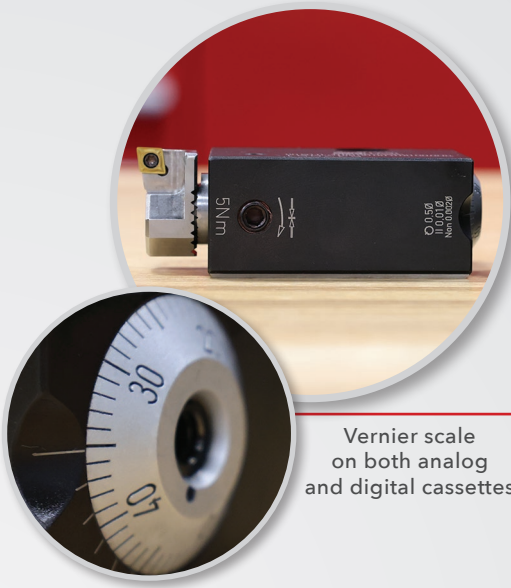
Experience digital precision boring for yourself.

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

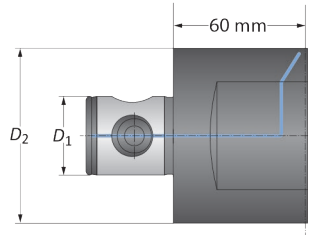
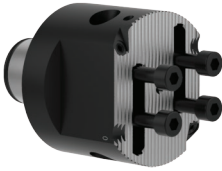
- ✓ Convenient tool handling
- ✓ Large range of applications
- ✓ Hardened steel bodies



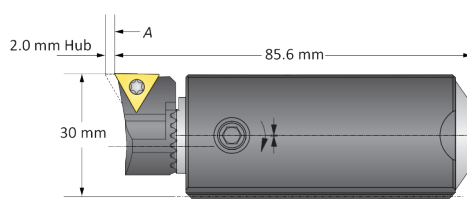
NOTE: Adjustment accuracy of 3E^{TECH+} is 0.001 mm (0.00005") and vernier is 0.002 mm (0.0001") on diameter.

**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		Part No.
	Metric (mm)	Imperial (in)	
80 - 36	100.00 - 155.00	3.937 - 6.102	148007
	150.00 - 205.00	5.906 - 8.071	148009

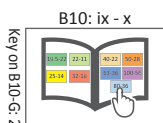
**NOTE:** Vernier adjustment accuracy of 0.002 mm (0.0001") on diameter.**Metric (mm)**

Boring Range (A)	Cassette*		Clamping Piece	Insert Holder	
	Weight (kg)	Part No.		Insert Form	Part No.
100.00 - 205.00	0.60	537051	137026	20	210020
				101	210063
				103	210064

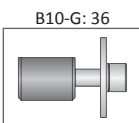
Imperial (in)

Boring Range (A)	Cassette*		Clamping Piece	Insert Holder	
	Weight (lbs)	Part No.		Insert Form	Part No.
3.937 - 8.071	1.323	538051	137026	20	210020
				101	210063
				103	210064

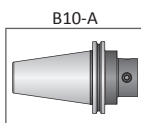
*Required serrated tool body sold separately.

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.

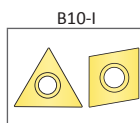
B10: ix - x



B10-G: 36



B10-A



B10-I

Inserts sold separately.

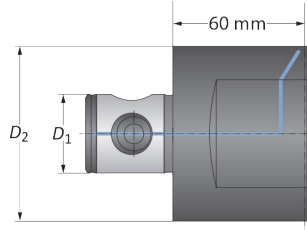
= Metric (mm)

= Imperial (in)



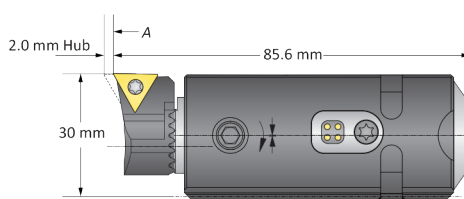
537 (538) Cassettes, Insert Holders and Serrated Tool Body

Digital 3E^{TECH+} | Diameter Range: 100.00 mm - 205.000 mm (3.937" - 8.071")



Serrated Tool Body

MVS Connection	Boring Range		Part No.
$D_2 D_1$	Metric (mm)	Imperial (in)	
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)

	Boring Range (A)	Cassette* Weight (kg)	Part No.	Clamping Piece	Insert Holder	
					Insert Form	Part No.
m	100.00 - 205.00	0.60	537052	137026	20	210020
					101	210063
					103	210064

Imperial (in)

	Boring Range (A)	Cassette* Weight (lbs)	Part No.	Clamping Piece	Insert Holder	
					Insert Form	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

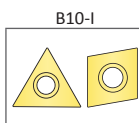
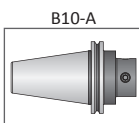
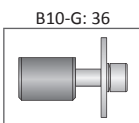
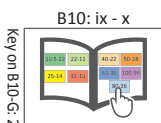
NOTE: WEEE-Reg.-Nr. DE 15820388

*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.



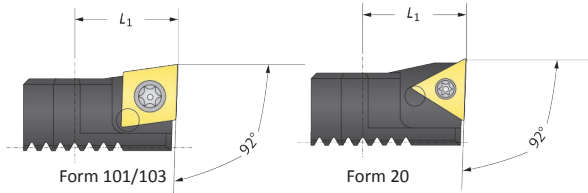
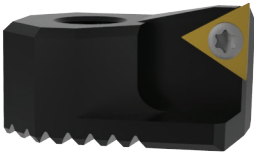
Inserts sold separately.

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



Insert Holders for Abrasive Materials

Diameter Range: 100.00 mm - 205.000 mm (3.937" - 8.071")



Metric (mm)

	Boring Range	L_1	Weight (kg)	Insert Holder	
				Insert Form	Part No.
	100.00 - 205.00	18.00	0.03	20	211061
				101	211063
				103	211065

Imperial (in)

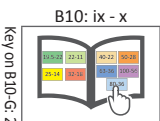
	Boring Range	L_1	Weight (lbs)	Insert Holder	
				Insert Form	Part No.
	3.937 - 8.071	0.709	0.066	20	211061
				101	211063
				103	211065

NOTE: Insert holders used for abrasive materials to protect boring head against chip wash.

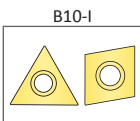
NOTE: When machining grey cast iron, we recommend using insert holders for abrasive materials with CBN inserts for optimized chip removal.



G



B10: ix - x



B10-I

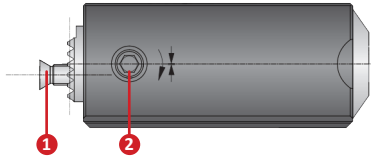
Inserts sold separately.

= Metric (mm)

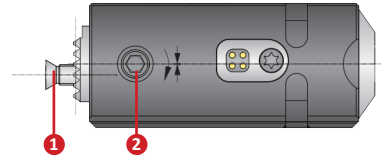
= Imperial (in)



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

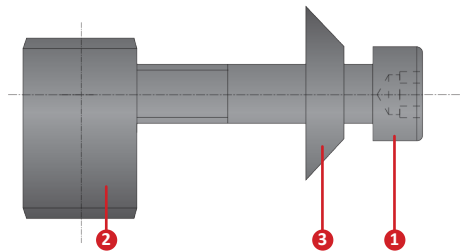
3E^{TECH+} Digital Readout Module

1. Module	2. Charging Unit*
536015	536016

NOTE: WEEE-Reg.-Nr. DE 15820388

*Charging unit sold separately.

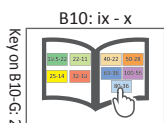
NOTE: 3E^{TECH+} digital adjustment accuracy of 0.001 mm (0.00005") on diameter.



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.



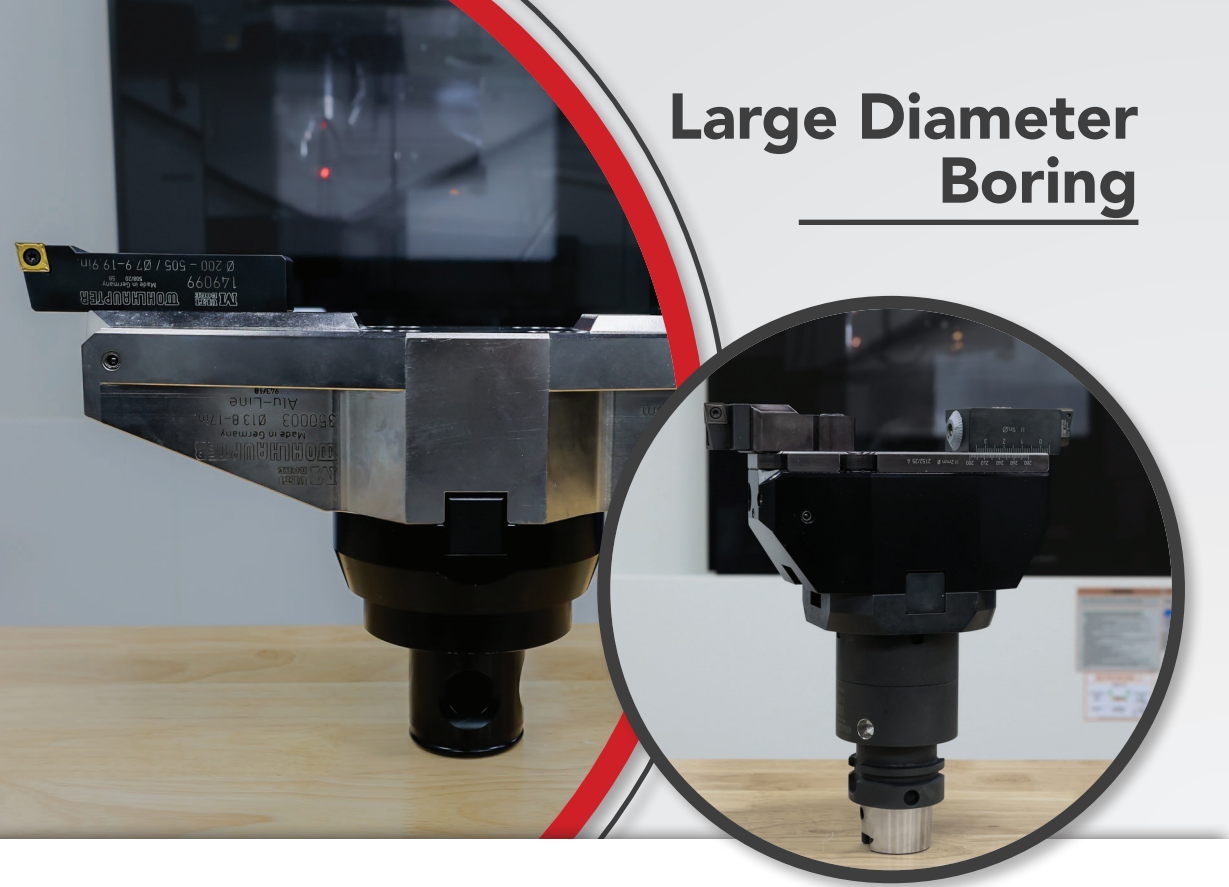
m = Metric (mm)
i = Imperial (in)

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.

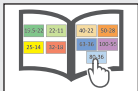
- ▶ Basic D 40 Slides
 - ▶ 200.00 mm - 520.00 mm (7.874" - 20.472")
- ▶ Basic D 60 Slides
 - ▶ 200.00 mm - 505.00 mm (7.874" - 19.882")
- ▶ Eco D 60 Slides
 - ▶ 465.00 mm - 1020.00 mm (18.307" - 40.157")
- ▶ Flex D 60 Slides
 - ▶ 500.00 mm - 3255.00 mm (19.685" - 128.150")

Applicable Industries

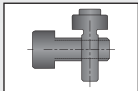
-  Aerospace
-  Agriculture
-  Automotive
-  Defense
-  General Production
-  Heavy Equipment
-  Hydraulics
-  Marine
-  Medical
-  Oil and Gas
-  Renewable Energy/ Energy
-  Tool, Mold, and Die

Reference Icons

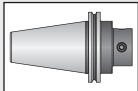
The following icons will appear throughout the catalog to help you navigate between products.



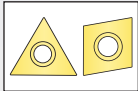
MVS Connection Color Guide
Detailed instructions and information regarding the MVS connection(s).



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 Product Overview



Large Diameter BORING

Boring big? We've got you covered.

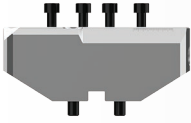
Our versatile tooling system can provide the power and precision your large diameter boring jobs demand. The large diameter boring system offers four different Alu-Line serrated slides, a wide range of rough and finish boring insert holders, vernier and digital cassettes, and combined rough and finish 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.

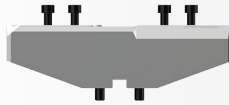


Large Diameter Boring Product Overview

► 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")

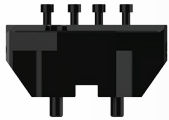


349023 (350023)
 Ø 360.00 mm - 440.00 mm
 (Ø 14.173" - 17.322")



349024 (350024)
 Ø 440.00 mm - 520.00 mm
 (Ø 17.322" - 20.472")

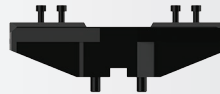
► Basic D 60 Serrated Slides for Rough and Finish Boring



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")

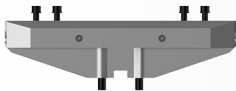


349053 (350053)
 Ø 350.00 mm - 430.00 mm
 (Ø 13.779" - 16.929")



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)



► 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")

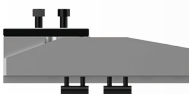


349033 (350033)
 Ø 1325.00 mm - 2430.00 mm
 (Ø 52.165" - 95.669")



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



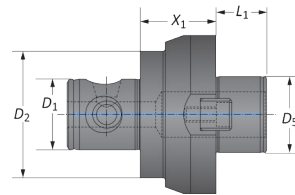
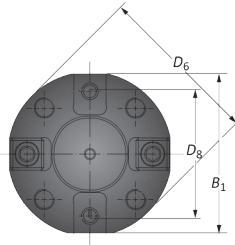
349037 (350037)
 For base slides: 349032,
 349033, 349034, 350032,
 350033, 350034



349038 (350038)
 For base slides: 349033,
 349034, 350033, 350034



MVS Holding Arbors



Metric (mm)

MVS Connection $D_2 D_1$	Holding Arbor Connection	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	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: $\varnothing$ 200.00 mm - 520.00 mm (7.874" - 20.472").

Basic D 60 Serrated Slides: 200.00 mm - 505.00 mm ($\varnothing$ 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.

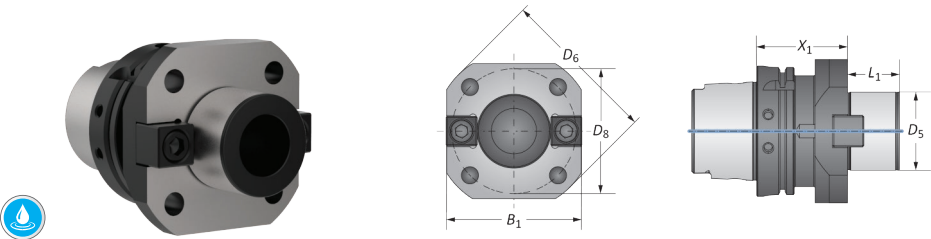
B10: ix - x





Master Shanks

HSK-A (DIN 69 893) Shanks



Metric (mm)

			Shank							
Taper Size		Connection	X ₁	L ₁	D ₅	D ₆	D ₈	B ₁	Weight (kg)	Part No.
m	63	D 40	60.00	30.00	40.00	89.00	66.70	80.00	1.90	358015
		D 40	60.00	30.00	40.00	89.00	66.70	80.00	3.60	258021
	100	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)

		Shank								
Taper Size		Connection	X_1	L_1	D_5	D_6	D_8	B_1	Weight (lbs)	Part No.
i	63	D 40	2.362	1.181	1.575	3.504	2.626	3.150	4.200	358015
		D 40	2.362	1.181	1.575	3.504	2.626	3.150	7.900	258021
	100	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



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B10: ix - x

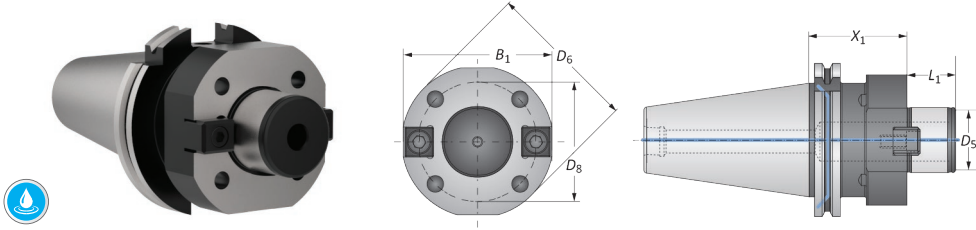
key on B10-H: 2

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



Master Shanks

CAT 40 / 50 Shanks



Metric Threads (mm)

Taper Size		Connection	Shank						Weight (kg)	Part No.
			X_1	L_1	D_5	D_6	D_8	B_1		
	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						Weight (lbs)	Part No.
			X_1	L_1	D_5	D_6	D_8	B_1		
i	40	D 40	1.970	1.181	1.575	3.504	2.626	3.150	4.000	357004
		D 40	1.970	1.181	1.575	3.504	2.626	3.150	8.400	357001
	50	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



WARNING Assembly of modular components may cause machine damage and/or serious injury. To prevent:

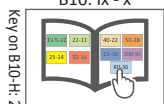
- Do not exceed the **allowable weight** for your machine tool.
- Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.

For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12** or visit

www.alliedmachine.com/WohlhaupterBoringGuidelines.

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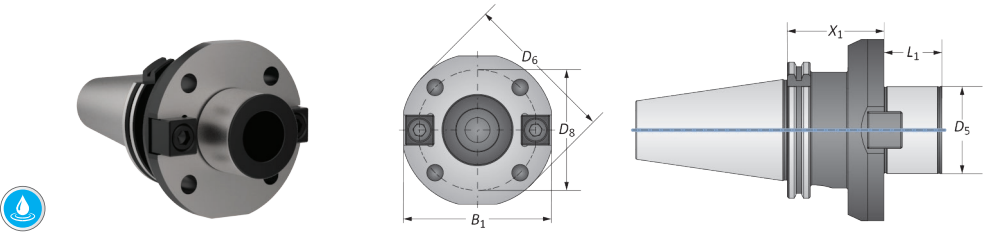
B10: ix - x





Master Shanks

SK (DIN 69 871-AD/B) Shanks



Metric (mm)

		Shank								
Taper Size		Connection	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	1.90	326080*
		D 40	50.00	30.00	40.00	89.00	66.70	80.00	4.10	326024
	50	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)

			Shank							
Taper Size		Connection	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	4.190	326080*
		D 40	1.969	1.181	1.575	3.504	2.626	3.150	9.040	326024
	50	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.



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.

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key on B10-H: 2

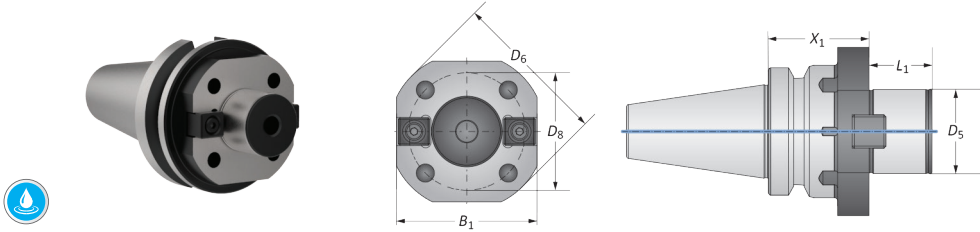
10-12	12-14	14-16	16-18	18-20	20-22	22-24	24-26	26-28	28-30
10-12	12-14	14-16	16-18	18-20	20-22	22-24	24-26	26-28	28-30

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



Master Shanks

BT / JIS B 6339 Shanks



Metric (mm)

	Taper Size	Connection	Shank						Weight (kg)	Part No.
			X_1	L_1	D_5	D_6	D_8	B_1		
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						Weight (lbs)	Part No.
			X_1	L_1	D_5	D_6	D_8	B_1		
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



WARNING Assembly of modular components may cause machine damage and/or serious injury. To prevent:

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 - 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.

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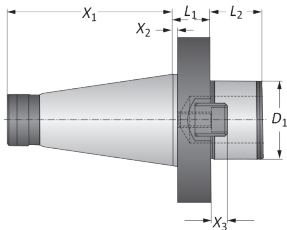
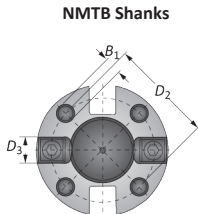
B10: ix - x





Master Shanks

NMTB Shanks | DIN 2080 Shanks



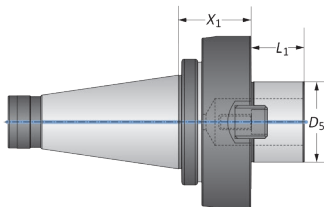
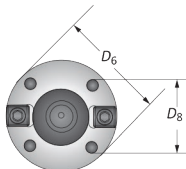
Metric (mm)

Taper Size	Connection	Shank									Weight (kg)	Part No.
		X_1	X_2	L_1	L_2	D_1	X_3	D_2	D_3	B_1		
m 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									Weight (lbs)	Part No.
		X_1	X_2	L_1	L_2	D_1	X_3	D_2	D_3	B_1		
i 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						Weight (kg)	Part No.
			X_1	L_1	D_5	D_6	D_8	B_1		
	50	D 60	55.00	40.00	60.00	128.00	101.60	—	6.80	326035

Imperial (in)

Taper Size		Connection	Shank						Weight (lbs)	Part No.
			X_1	L_1	D_5	D_6	D_8	B_1		
①	50	D 60	2.165	1.575	2.362	5.039	4.000	—	14.991	326035



⚠ WARNING

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-Do not exceed the recommended length-to-diameter ratio, which can impact tool stability and performance.
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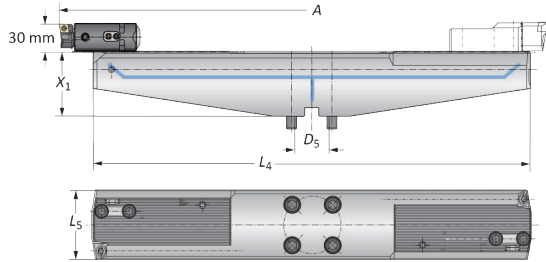
B10: ix - x

key on B10-H: 2



Alu-Line Basic D 40 Serrated Slides

Diameter Range: 200.00 mm - 520.00 mm (7.874" - 20.472")



Metric (mm)

Connection	Boring Range	Serrated Slide			Weight (kg)	Part No.
		D_s	A	X_1		
	D 40	200.00 - 280.00	75.00	190.00	2.80	349021
		280.00 - 360.00	75.00	270.00	3.80	349022
		360.00 - 440.00	75.00	350.00	5.00	349023
		440.00 - 520.00	75.00	430.00	6.00	349024

Imperial (in)

Connection	Boring Range	Serrated Slide			Weight (lbs)	Part No.
		D_s	A	X_1		
	D 40	7.874 - 11.024	2.953	7.480	6.173	350021
		11.024 - 14.173	2.953	10.620	8.377	350022
		14.173 - 17.323	2.953	13.770	11.023	350023
		17.323 - 20.472	2.953	16.320	13.228	350024



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.

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B10: ix - x

B10-H: 5 - 10

B10-H: 12

B10-I

key on B10-H: 2

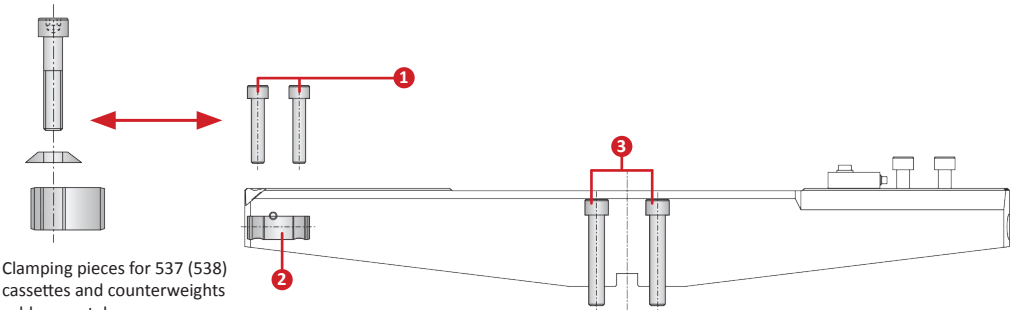
Inserts sold separately.

= 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

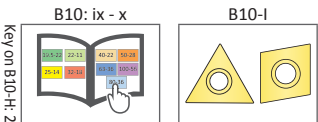
Connection	Serrated Slide	1 Cap Screw		2 Clamping Nut	3 Thread Pin		Cap Screw	
	Part No.	Part No.	Service Key	Part No.	Part No.	Service Key	Part No.	Service Key
D 40	349021/350021	115118	s8 / B	115669	349010	s4 / F	315186	s10 / C
	349022/350022	115118	s8 / B	115669	349011	s4 / F	315186	s10 / C
	349023/350023	115118	s8 / B	115669	349012	s4 / F	315186	s10 / C
	349024/350024	115118	s8 / B	115669	349013	s4 / F	315186	s10 / C



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- For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12 or visit www.alliedmachine.com/WohlschaeferBoringGuidelines.**

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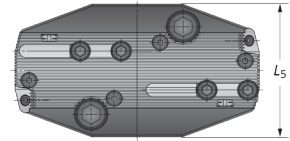
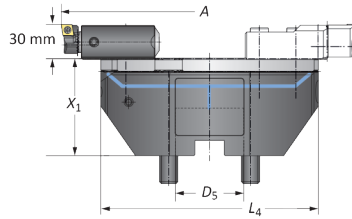


Inserts sold separately.



Alu-Line Basic D 60 Serrated Slides

Diameter Range: 200.00 mm - 505.00 mm (7.874" - 19.882")



Metric (mm)

	Connection D_s	Boring Range A	Serrated Slide			Weight (kg)	Part No.
			X_1	L_4	L_5		
	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)

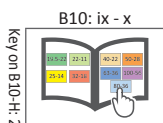
	Connection D_s	Boring Range A	Serrated Slide			Weight (lbs)	Part No.
			X_1	L_4	L_5		
	D 60	7.874 - 11.024	3.346	7.520	4.330	9.038	350051
		10.827 - 13.976	3.346	10.394	4.330	11.464	350052
		13.780 - 16.929	3.346	13.346	4.921	15.211	350053
		16.732 - 19.882	3.346	16.299	4.921	17.637	350054



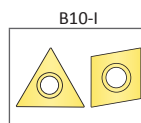
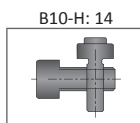
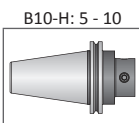
WARNING Assembly of modular components may cause machine damage and/or serious injury. To prevent:

- 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.



key on B10-H: 2



Inserts sold separately.

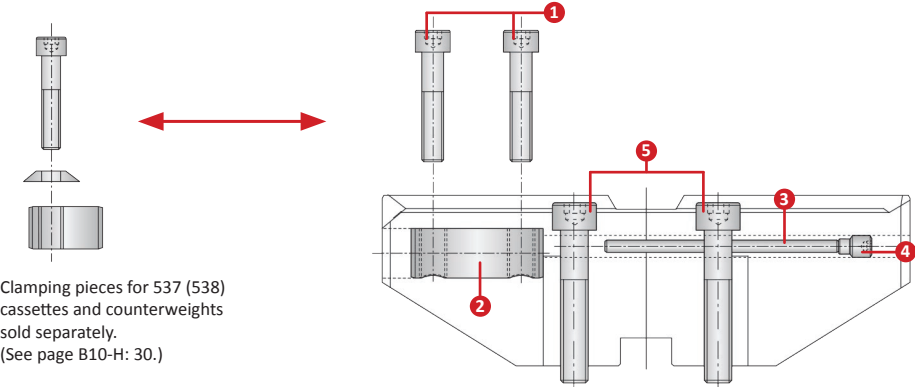
= Metric (mm)

= 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	1 Cap Screw		2 Clamping	3 Adjustment	4 Thread Pin		5 Cap Screw	
	Part No.	Part No.	Service Key	Nut	Pin	Part No.	Service Key	Part No.	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



⚠ WARNING

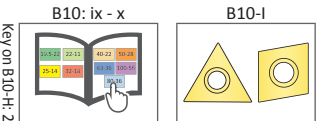
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-Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.

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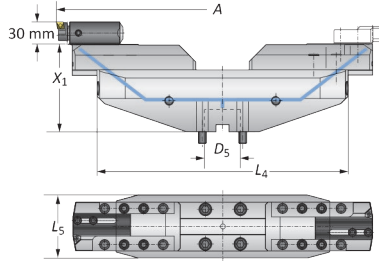


Inserts sold separately.



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			1 Base Slide		2 Serrated Slide		
			X_1	L_4	L_5	Weight (kg)	Part No.	Weight (kg)	Style*	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			1 Base Slide		2 Serrated Slide		
			X_1	L_4	L_5	Weight (lbs)	Part No.	Weight (lbs)	Style*	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

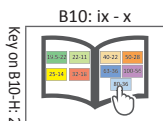
*Alu-Line serrated slides are for finish boring applications and steel serrated slides are for rough boring applications.



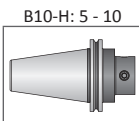
WARNING Assembly of modular components may cause machine damage and/or serious injury. To prevent:

- 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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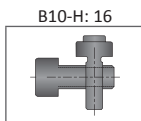
NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



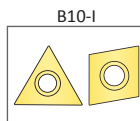
B10: ix - x



B10-H: 5 - 10



B10-H: 16



B10-I

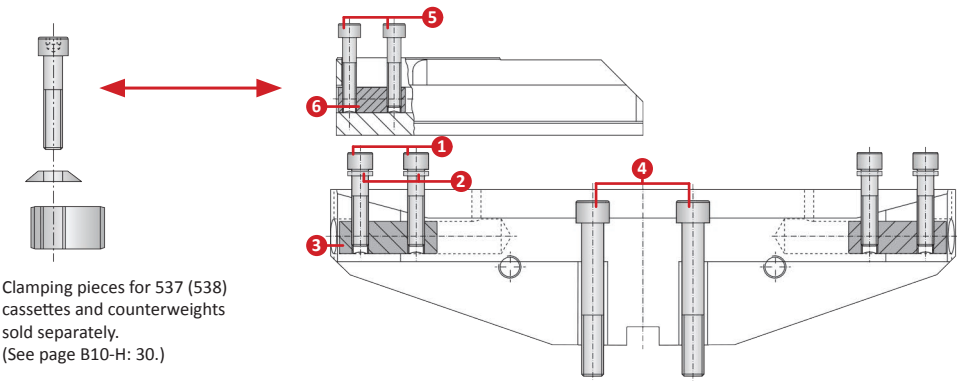
Inserts sold separately.

= 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	1 Cap Screw		2 Disc	3 Clamping Nut	4 Cap Screw	
	Part No.	Part No.	Service Key	Part No.	Part No.	Part No.	Service Key
D 60	349005/350005	115771	s10 / C	115737	415181	077128	s14 / C
	349006/350006						

Serrated Slide Clamping Pieces

Serrated Slide	5 Cap Screw		6 Clamping Nut
Part No.	Part No.	Service Key	Part No.
349014/350014	115118	s8 / B	115669
349015/350015			

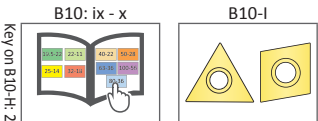


WARNING

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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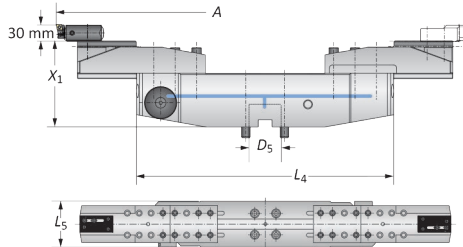


Inserts sold separately.



Alu-Line Flex D 60 Serrated Slides

Diameter Range: 500.00 mm - 3255.00 mm (19.685" - 128.150")



Metric (mm)

Connection		Boring Range	Serrated Slide			Weight	Part No.	
D_s		A	X_1	L_4	L_5	(1 + 2) (kg)	1 Base Slide	2 Serrated Slide
m	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		Boring Range	Serrated Slide			Weight	Part No.	
D_5		A	X_1	L_4	L_5	(1 + 2) (lbs)	1 Base Slide	2 Serrated Slide
i	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

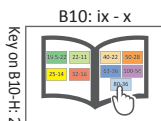
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- Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.

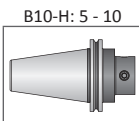
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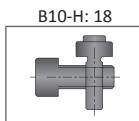
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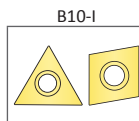
B10: ix - x



B10-H: 5 - 10



B10-H: 18



B10-I

Inserts sold separately.

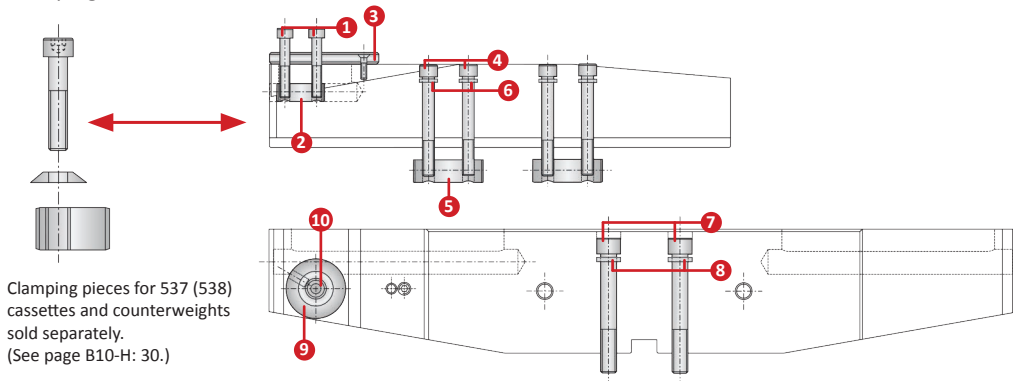
m = Metric (mm)

i = 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.	Service Key	Part No.	Service Key	Part No.	Service Key	Part No.	Part No.
349035/350035	115307	s8 / B	115669	s4 / B	349043	s4 / B	315186	s10 / C	349202	115737
349036/350036	115307	s8 / B	115669	s4 / B	349043	s4 / B	077110	s10 / C	415181	115737
349037/350037	115307	s8 / B	115669	s4 / B	349043	s4 / B	315403	s10 / C	415181	115737
349038/350038	115307	s8 / B	115669	s4 / B	349043	s4 / B	315415	s10 / C	415181	115737

Base Slide Clamping Pieces

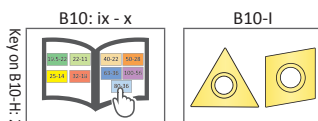
Connection	Base Slide	7 Cap Screw		8 Disk	9 Injector	10 Countersunk Screw	
	Part No.	Part No.	Service Key	Part No.	Part No.	Part No.	Service Key
D 60	349031/350031	115736	s14 / C	068168	349201	415898	s6 / B
	349032/350032	415913	s14 / C	068168	349201	415898	s6 / B
	349033/350033	215509	s14 / C	068168	349201	415898	s6 / B
	349034/350034	415636	s14 / C	068168	349201	415898	s6 / B



WARNING Assembly of modular components may cause machine damage and/or serious injury. To prevent:

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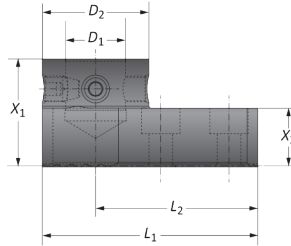
NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



Inserts sold separately.



Serrated Adapter with MVS Connection



Metric (mm)

MVS Connection		Mounting Adapters				Weight (kg)	Part No.
	$D_2 \mid D_1$	X_1	X_2	L_1	L_2		
	50 - 28	50.00	27.00	101.00	76.00	1.30	349046

Imperial (in)

MVS Connection		Mounting Adapters					
	$D_2 \mid D_1$	X_1	X_2	L_1	L_2	Weight (lbs)	Part No.
i	50 - 28	1.969	1.063	3.976	2.992	2.866	349046



WARNING Assembly of modular components may cause machine damage and/or serious injury. To prevent:

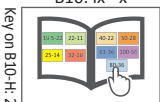
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B10: ix - x





Serrated Adapter with MVS Connection

Applications

	Style	Boring Heads	Slide	Bore Range	
				mm	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.

⚠ WARNING Assembly of modular components may cause machine damage and/or serious injury. To prevent:

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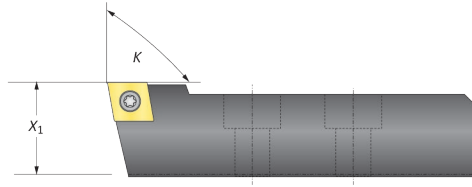
B10: ix - x



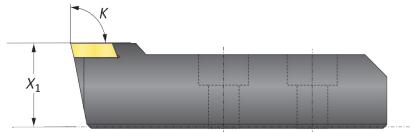
key on B10-H: 2



Insert Holders for Rough Machining

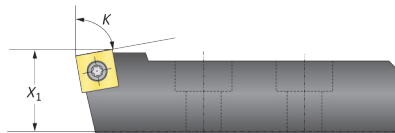


Insert Holder							
K	Form	ISO Code	X ₁		Weight		Part No.
			mm	in	kg	lbs	
90°	103	CC..09T3..	30.00	1.180	0.60	1.322	149090
	104	CC..1204..	30.00	1.180	0.60	1.322	149099
			29.30	1.150	0.60	1.322	149083
	105	CC..1605..	30.00	1.180	0.60	1.322	149093



90° Tangential

Insert Holder							
K	Form	ISO Code	X ₁		Weight		Part No.
			mm	in	kg	lbs	
90°	05	Tangential	30.00	1.180	0.60	1.322	149010
			29.30	1.150	0.60	1.322	149020



Insert Holder							
K	Form	ISO Code	X ₁		Weight		Part No.
			mm	in	kg	lbs	
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

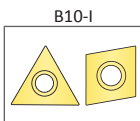
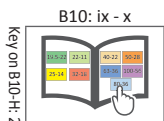
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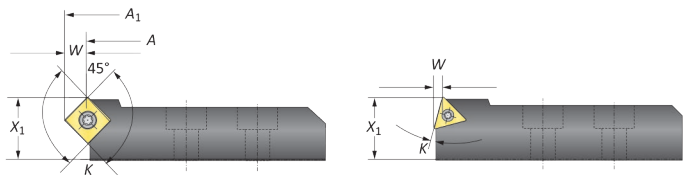
Inserts sold separately.

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



Insert Holders for Rough Machining

Chamfering



Metric (mm)

Insert Holder							Weight (kg)	Part No.
	K	Form	ISO Code	X ₁	A / A ₁	W		
m	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							Weight (lbs)	Part No.
	K	Form	ISO Code	X ₁	A / A ₁	W		
i	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		Total Bore Range
Part No.	Bore Range	Part No.	Modified Bore Range	
m 349051	200.00 - 280.00	201065	+7.00	207.00 - 287.00

Imperial (in)

Serrated Slide		Insert Holder		Total Bore Range
Part No.	Bore Range	Part No.	Modified Bore Range	
i 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.



⚠ WARNING

-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.

key on B10-H: 2

Inserts sold separately.

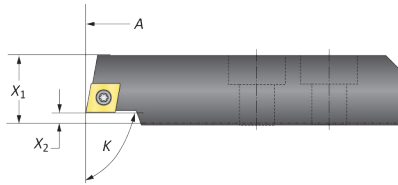
m = Metric (mm)
i = Imperial (in)

B10-H: 22



Insert Holders for Rough Machining

Back-Boring



Metric (mm)

Insert Holder								
	<i>K</i>	Form	ISO Code	<i>X</i> ₁	<i>X</i> ₂	<i>A</i>	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		Total Bore Range
Part No.	Bore Range		Part No.	Modified Bore Range	
m 349051	200.00 - 280.00		251010	+40.00	240.00 - 320.00

Imperial (in)

Serrated Slide			Insert Holder		Total Bore Range
Part No.	Bore Range		Part No.	Modified 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.

WARNING

Assembly of modular components may cause machine damage and/or serious injury. To prevent:

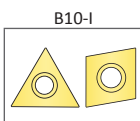
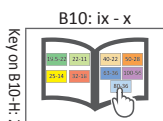
-Do not exceed the **allowable weight** for your machine tool.

-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.



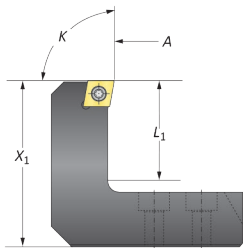
Inserts sold separately.

m = Metric (mm)

i = Imperial (in)

Insert Holders for Rough Machining

OD Turning



Metric (mm)

Insert Holder							Weight (kg)	Part No.
	K	Form	ISO Code	X ₁	L ₁	A		
	90°	104	CC..1204..	90.00	62.00	-50.00	1.00	149040

Imperial (in)

Insert Holder							Weight (lbs)	Part No.
	K	Form	ISO Code	X ₁	L ₁	A		
	90°	104	CC..1204..	3.543	2.440	-1.968	2.204	149040

Boring Range Example

Metric (mm)

Serrated Slide			Insert Holder		Total Bore Range
Part No.	Bore Range	Part No.	Modified Bore Range		
	349051	200.00 - 280.00	149040	-50.00	150.00 - 230.00

Imperial (in)

Serrated Slide			Insert Holder		Total Bore Range
Part No.	Bore Range	Part No.	Modified Bore Range		
	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.

 **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.

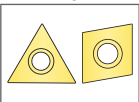
NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

key on B10-H: 2

B10: ix - x



B10-I



Inserts sold separately.

 = Metric (mm)

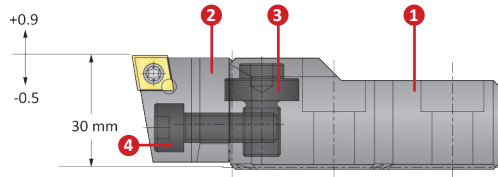
 = Imperial (in)

B10-H: 24



Insert Holders for Rough Machining

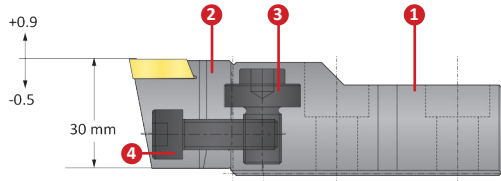
Height Adjustments



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

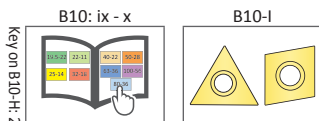
NOTE: Adjusting and fixing screws will be received with support block.



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.

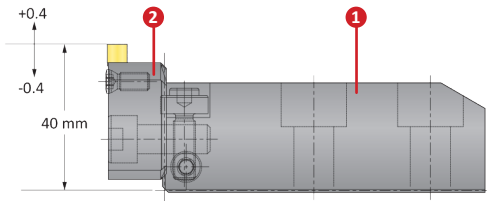


Inserts sold separately.

M = Metric (mm)
I = 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



 **WARNING**

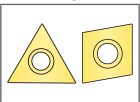
Assembly of modular components may cause machine damage and/or serious injury. To prevent:
-Do not exceed the **allowable weight** for your machine tool.
-Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
For detailed guidelines on safe configurations, **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



B10-I



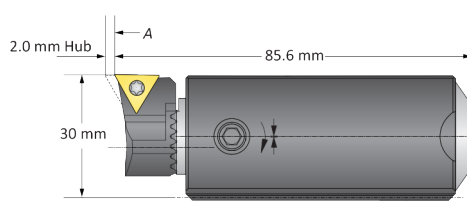
Inserts sold separately.

-  = 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		Weight (kg)	Insert Holder		
	Type	Boring Range (A)		Form	Part No.	Clamping Piece
m 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

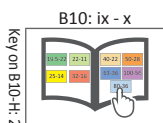
Imperial (in)

Cassette Part No.	Slide		Weight (lbs)	Insert Holder		
	Type	Boring Range (A)		Form	Part No.	Clamping Piece
i 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

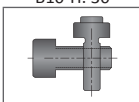
*Required serrated tool body sold separately.

NOTE: Cassette and insert holder can be used on large diameter serrated slides.**NOTE:** Insert holders, inserts, and clamping pieces sold separately.**WARNING**

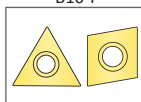
Assembly of modular components may cause machine damage and/or serious injury. To prevent:

-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 visitwww.alliedmachine.com/WohlhaupterBoringGuidelines.**NOTE:** Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

B10: ix - x



B10-H: 30



B10-I

Inserts sold separately.

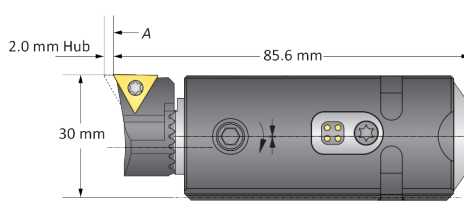
m = Metric (mm)

i = 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	Slide		Insert Holder			
		Boring Range (A)	Weight (kg)	Form	Part No.	Clamping Piece	
m	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		Insert Holder			
		Boring Range (A)	Weight (lbs)	Form	Part No.	Clamping Piece	
i	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.



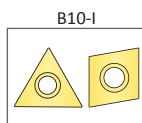
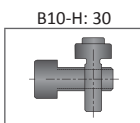
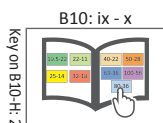
NOTE: 3E^{TECH} digital adjustment accuracy of 0.001 mm (0.00005") on diameter.

⚠ 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/WohlschaeferBoringGuidelines.

NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



Inserts sold separately.

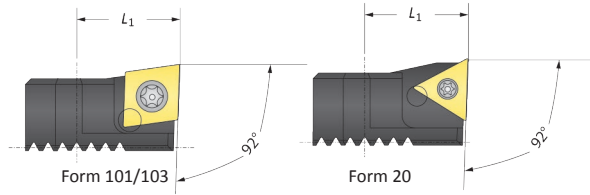
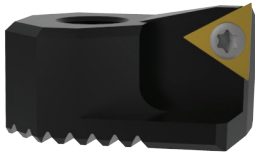
m = Metric (mm)

i = Imperial (in)



537 (538) Cassettes

Accessories



Metric (mm)

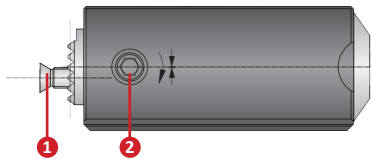
	Boring Range	L_1	Weight (kg)	Insert Holder	
				Insert Form	Part No.
m	100.00 - 3255.00	18.00	0.03	20	211061
				101	211063
				103	211065

Imperial (in)

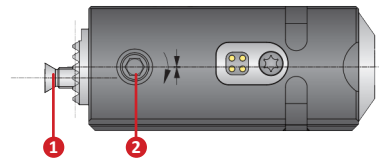
	Boring Range	L_1	Weight (lbs)	Insert Holder	
				Insert Form	Part No.
i	3.937 - 128.150	0.709	0.066	20	211061
				101	211063
				103	211065

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.



537 (538) Analog Cassette



537 (538) 3ETECH+ Cassette

Screws

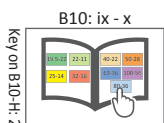
Cassette Part No.		1 Countersunk Screw		2 Clamping Screw	
Metric	Imperial	Part No.	Service Key	Part No.	Service Key
537051	538051	215462	T20 / H	115249	s4 / F
537052	538052	215462	T20 / H	315789	s4 / F

WARNING

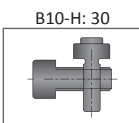
Assembly of modular components may cause machine damage and/or serious injury. To prevent:

- 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.

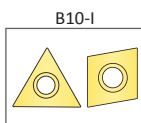
NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



B10: ix - x



B10-H: 30



B10-I

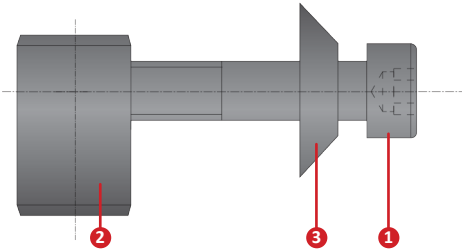
Inserts sold separately.

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.
 100.00 - 3255.00	537055

Imperial (in)

Boring Range	Part No.
 3.937 - 128.15	538055



NOTE: Clamping pieces 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.



 **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.

key on B10-H: 2



Inserts sold separately.

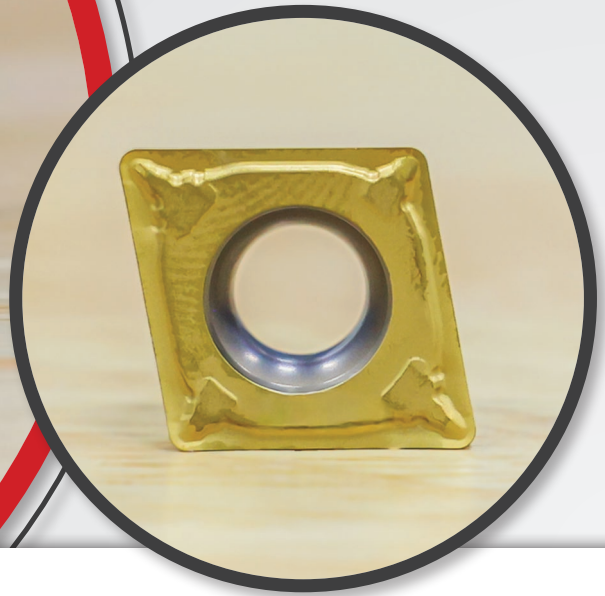
-  = Metric (mm)
-  = Imperial (in)

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.

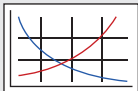
www.alliedmachine.com/bis

Applicable Industries

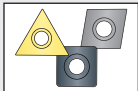
-  Aerospace
-  Agriculture
-  Automotive
-  Defense
-  General Production
-  Heavy Equipment
-  Hydraulics
-  Marine
-  Medical
-  Oil and Gas
-  Renewable Energy/ Energy
-  Tool, Mold, and Die

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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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. D = Double Tipped T = Triple Tipped		See the full list of insert grades on pg. 43 - 46
F020 = 20	01	M	L = Left				
F161 = 161 Triangle	02	F	R = Right				
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
M	Thickness	± 0.13	± 0.005
	Length of edge	± 0.08 - 0.15*	± 0.003 - 0.006*
F	IC	± 0.05 - 0.10*	± 0.002 - 0.004*
	Thickness	± 0.13	± 0.005
C	Length of edge	± 0.013	± 0.001
	IC	± 0.005	± 0.0002
	Thickness	± 0.025	± 0.001
	Length of edge	± 0.13	± 0.005
	IC	± 0.025	± 0.001
	Thickness	± 0.025	± 0.001

*Varies upon insert size.

Wohlschlag Insert Grades

Code	Wohlschlag 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

 **WOHLHAUPTER** BORING | Inserts

Notes



Trigon Replaceable Inserts

Recommended Insert Application

FINISH MACHINING | FORM 211

ISO Material		Machining Conditions	Insert			Cutting Speed*	
			Substrate	Geometry	Grade	m/min	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



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:

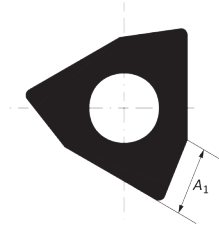
- Do not exceed the **allowable weight** for your machine tool.
 - Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
- For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12** or visit www.alliedmachine.com/WohlhaupterBoringGuidelines.

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

Geometry	Insert		ISO Description	Radius		Description	Part No.	Application					
	Grade	Form		mm	in			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						
				0.20	0.008	F211 02GL650 WHW01	097454WHW01						

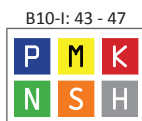
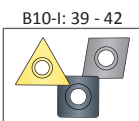
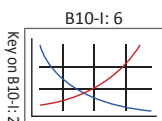
Cermet

Insert			ISO Description	Radius		Description	Part No.	Application					
Geometry	Grade	Form		mm	in			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						



I

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

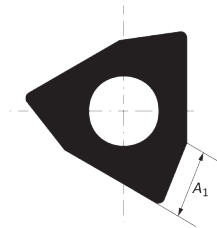
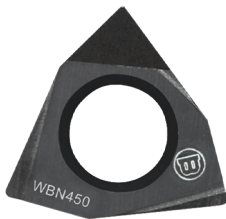


B10-I: 7

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Trigon Replaceable Inserts

Form 211



Insert Form	A ₁
211	6.9 mm

CBN - Cubic Boron Nitride

Geometry	Insert		ISO	Radius		Description	Part No.	Application						
	Grade	Form	Description	mm	in			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							

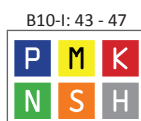
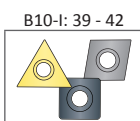
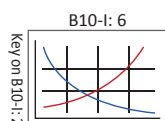
PCD - Polycrystalline Diamond

Insert			ISO Description	Radius		Description	Part No.	Application						
Geometry	Grade	Form		mm	in			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							



I

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



 **WOHLHAUPTER** BORING | Inserts

Notes



1

Triangle Replaceable Inserts

Recommended Insert Application

FINISH MACHINING | FORM 20

ISO Material	Machining Conditions	Insert			Cutting Speed	
		Substrate	Geometry	Grade	m/min	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.

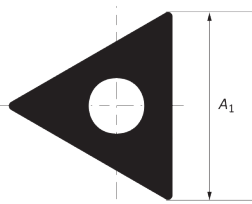
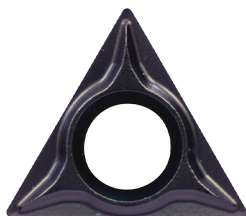
⚠ WARNING Assembly of modular components may cause machine damage and/or serious injury. To prevent:

- 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

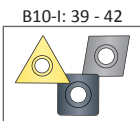
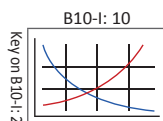


Insert Form	A_1
20	8.5 mm

Carbide

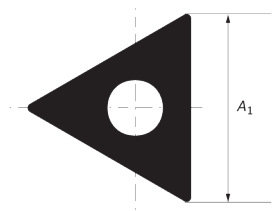
Insert			ISO Description	Radius		Description	Part No.	Application							
Geometry	Grade	Form		mm	in			P	M	K	N	S	H		
 121	WHC111	20	TOGX0802	0.10	0.004	F020 01GN121 WHC111	397672WHC111								
				0.20	0.008	F020 02GN121 WHC111	397673WHC111								
				0.40	0.016	F020 04GN121 WHC111	397674WHC111								
	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								
				0.10	0.004	F020 01GN128 WHW16	297473WHW16								
	WHW16	20	TOGX0802	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								
	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									
 840	WHC05	20	TOGX0802	0.20	0.008	F020 02GR840 WHC05	097701WHC05								
				0.40	0.016	F020 04GX121W WHC111	397916WHC111								
 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



Triangle Replaceable Inserts

Form 20



Insert Form	A ₁
20	8.5 mm

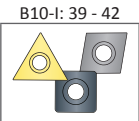
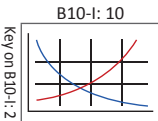
Cermet

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							



I

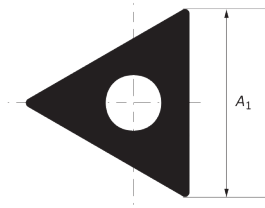
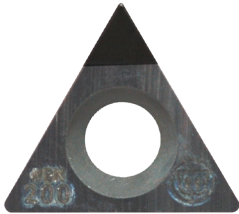
Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
20	115535	M2 x 0.4 x 5	415508	115591	0.9 N·m	T7





Triangle Replaceable Inserts

Form 20



Insert Form	A ₁
20	8.5 mm

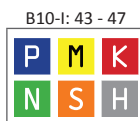
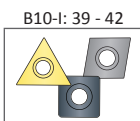
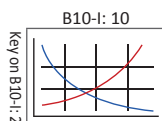
CBN - Cubic Boron Nitride

Insert			ISO	Radius		Description	Part No.	Application						
Geometry	Grade	Form		Description	mm			in	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							
 742T	WBN448	20	TOGX0802	0.20	0.008	F020 02GN742T WBN448	397961WBN448							
				0.40	0.016	F020 04GN742T WBN448	397551WBN448							

PCD - Polycrystalline Diamond

Insert			ISO	Radius		Description	Part No.	Application						
Geometry	Grade	Form		Description	mm			in	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							
	PKDD50	20	TOGX0802	0.80	0.031	F020 08GN730 PKDD30	097877PKDD30							
				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



B10-I: 13

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Notes

This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin, dark gray lines. There are 20 columns and 20 rows of squares, creating a total of 400 square units. The background is white, and the grid lines are evenly spaced both horizontally and vertically.



80° Rhomboid Replaceable Inserts

Recommended Insert Application

ROUGH MACHINING | FORMS 101, 103, 104 AND 105

ISO Material		Machining Conditions	Insert			Cutting Speed*	
			Substrate	Geometry	Grade	m/min	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		Imperial Feed Rate	
Nose Radius (mm)	mm/rev	Nose Radius (in)	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			Cutting Speed*	
		Substrate	Geometry	Grade	m/min	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.

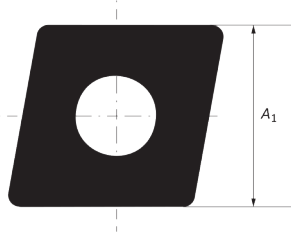
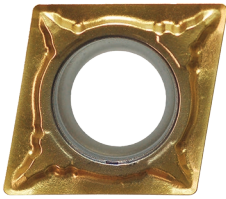
⚠ WARNING Assembly of modular components may cause machine damage and/or serious injury. To prevent:

- 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

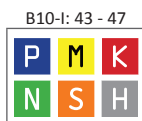
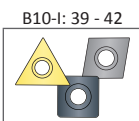
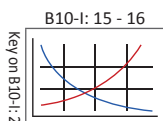


Insert Form	A ₁
101	6.3 mm
103	9.5 mm
104	12.7 mm
105	15.8 mm

Carbide

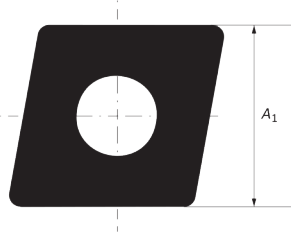
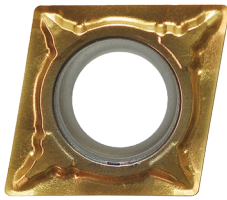
Geometry	Insert		ISO Description	Radius		Description	Part No.	Application					
	Grade	Form		mm	in			P	M	K	N	S	H
	WHC98	101	CCMT0602	0.20	0.008	F101 02MN108 WHC98	297833WHC98	●	▼	▼	▼		
				0.40	0.016	F101 04MN108 WHC98	297537WHC98						
		103	CCMT09T3	0.40	0.016	F103 04MN108 WHC98	297891WHC98						
				0.80	0.031	F103 08MN108 WHC98	397118WHC98						
		104	CCMT1204	0.40	0.016	F104 04MN108 WHC98	297725WHC98						
	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						
	WHC136	105	CCMT1605	0.80	0.031	F105 08MN126 WHC136	297557WHC136	●	▼	▼	▼		▼
				1.20	0.047	F105 12MN126 WHC136	297558WHC136						
	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						
	WHW16	104	CCGT1204	0.40	0.016	F104 04GN127 WHC18	097496WHC18	●			▼	▼	▼
		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



80° Rhomboid Replaceable Inserts

Forms 101, 103, 104 and 105

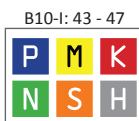
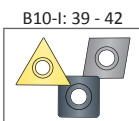
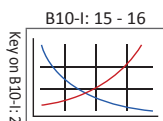


Insert Form	A ₁
101	6.3 mm
103	9.5 mm
104	12.7 mm
105	15.8 mm

Carbide

Geometry	Insert		ISO Description	Radius		Description	Part No.	Application					
	Grade	Form		mm	in			P	M	K	N	S	H
 129	WHC05	101	CCGT0602	0.05	0.002	F101 005GN129 WHC05	397738WHC05						
				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						
	WHC18	101	CCGT0602	0.20	0.008	F101 02GN129 WHC18	297545WHC18						
				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						
				0.10	0.004	F101 01GN129 WHW16	397737WHW16						
				0.20	0.008	F101 02GN129 WHW16	297545WHW16						
				0.40	0.016	F101 04GN129 WHW16	297546WHW16						
 145	WHC111	101	CCGT0602	0.40	0.016	F101 04GN145 WHC111	297980WHC111						
				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						
		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						
				0.80	0.031	F103 08MN146 WHC88	397946WHC88						
		103	CCMT09T3	0.40	0.016	F103 04MN146 WHC88	397142WHC88						
				0.80	0.031	F103 08MN146 WHC88	397946WHC88						
	WHC88	104	CCMT1204	0.40	0.016	F104 04MN146 WHC88	397469WHC88						
				0.80	0.031	F104 08MN146 WHC88	397143WHC88						
		104	CCMT1204	0.80	0.031	F104 08MN146 WHC88	397143WHC88						
				1.20	0.047	F104 12MN146 WHC88	397939WHC88						

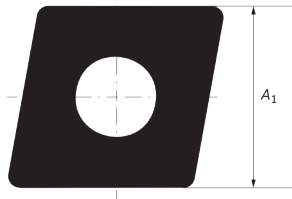
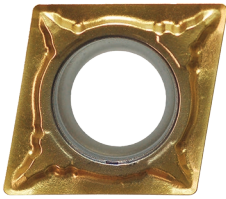
Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
101	115676	M2.5 x 0.45 x 5	415514	115590	1.2 N·m	T8
103	115672 (<ø37 mm)	M3.5 x 0.6 x 7.5	415510	115664	3.0 N·m	T15
	115673 (>ø36 mm)	M3.5 x 0.6 x 9				
104	215149	M4.5 x 0.75 x 11.5	415543	215150	5.0 N·m	T20
105	215149	M4.5 x 0.75 x 11.5	415543	215150	5.0 N·m	T20





80° Rhomboid Replaceable Inserts

Forms 101, 103, 104 and 105

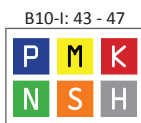
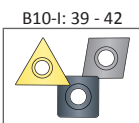
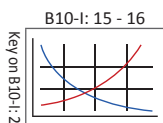


Insert Form	A ₁
101	6.3 mm
103	9.5 mm
104	12.7 mm
105	15.8 mm

Carbide

Geometry	Insert		ISO Description	Radius		Description	Part No.		Application					
	Grade	Form		mm	in				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							
 174W	WHC19	101	CCMT0602	0.40	0.016	F101 04MN174W WHC19	397766WHC19	●	▽	▽	▽	▽	▽	
	WHC164	103	CCMT09T3	0.40	0.016	F103 04MN174W WHC164	397767WHC19							
		101	CCMT0602	0.40	0.016	F101 04MN174W WHC164	397766WHC164							
				0.80	0.031	F103 08MN174W WHC164	397768WHC164							
		WHC19	101	CCMT0602	0.20	0.008	F101 02MN192 WHC19							297531WHC19
	0.40				0.016	F101 04MN192 WHC19	297658WHC19							
	103		CCMT09T3	0.40	0.016	F103 02MN192 WHC19	297958WHC19							
				0.80	0.031	F103 04MN192 WHC19	297653WHC19							
	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								
	103	CCMT09T3	0.40	0.016	F103 04MN192 WHC164	297588WHC164								
			0.80	0.031	F103 08MN192 WHC164	297653WHC164								
	104	CCMT1204	0.40	0.016	F104 04MN192 WHC164	397666WHC164								
			0.80	0.031	F104 08MN192 WHC164	297878WHC164								

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



80° Rhomboid Replaceable Inserts

Forms 101, 103, 104 and 105

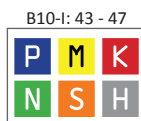
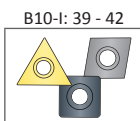
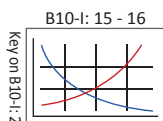


Insert Form	A ₁
101	6.3 mm
103	9.5 mm
104	12.7 mm
105	15.8 mm

Carbide

Insert			ISO	Radius				Application															
Geometry	Grade	Form	Description	mm	in	Description	Part No.		P	M	K	N	S	H									
 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																
		104	CCMT1204	0.80	0.031	F103 08MN199 WHC114	397167WHC114																
				0.40	0.016	F104 04MN199 WHC114	397191WHC114																
 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																
				0.80	0.031	F104 08MN199 WHC114	397168WHC114																
 711	WHC77	101	CCMW0602	0.40	0.016	F101 04MN711 WHC77	097637WHC77																
				0.80	0.031	F103 08MN711 WHC77	297910WHC77																
		103	CCMW09T3	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																
				0.80	0.031	F104 08GL860 WHC05	097247WHC05																
 860	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																
				0.80	0.031	F104 08GL860 WHC136	097247WHC136																
 860	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																
				0.80	0.031	F104 04GL860 WHW01	097738WHW01																
104	CCGT1204	0.40	0.016	F104 04GL860 WHW01	097738WHW01																		
		0.80	0.031	F104 08GL860 WHW01	097247WHW01																		
		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





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

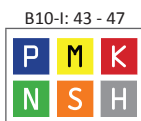
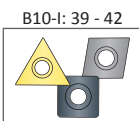
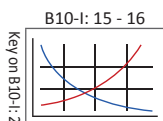
Cermet

Geometry	Insert		ISO Description	Radius		Description	Part No.	Application					
	Grade	Form		mm	in			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						
				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

Geometry	Insert		ISO Description	Radius		Description	Part No.	Application					
	Grade	Form		mm	in			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						

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



80° Rhomboid Replaceable Inserts

Forms 101, 103, 104 and 105



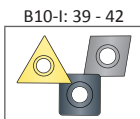
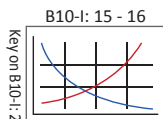
Insert Form	A ₁
101	6.3 mm
103	9.5 mm
104	12.7 mm
105	15.8 mm

CBN - Cubic Boron Nitride

Insert			ISO	Radius		Description	Part No.	Application							
Geometry	Grade	Form	Description	mm	in			P	M	K	N	S	H		
 741	WBN200	101	CCGW0602	0.20	0.008	F101 02GN741 WBN200	297290WBN200								
		103	CCGW09T3	0.40	0.016	F103 04GN741 WBN200	297303WBN200								
 742	WBN300	101	CCGW0602	0.20	0.008	F101 02GN742 WBN300	297293WBN300								
		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								
				103	CCGW0902	0.40	0.016								
		0.80	0.031			F103 08GN742D WBC300	397958WBC300								
		WBN448	101	CCGW0602	0.20	0.008	F101 02GN742D WBN448								
	103				CCGW0902	0.40	0.016	F103 04GN742D WBN448	397931WBN448						
			0.80	0.031		F103 08GN742D WBN448	397958WBN448								



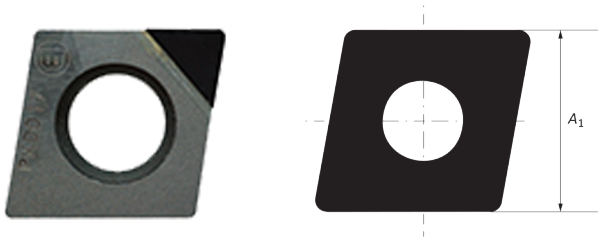
Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
101	115676	M2.5 x 0.45 x 5	415514	115590	1.2 N·m	T8
103	115672 (<ø37 mm)	M3.5 x 0.6 x 7.5	415510	115664	3.0 N·m	T15
	115673 (>ø36 mm)	M3.5 x 0.6 x 9				
104	215149	M4.5 x 0.75 x 11.5	415543	215150	5.0 N·m	T20
105	215149	M4.5 x 0.75 x 11.5	415543	215150	5.0 N·m	T20





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

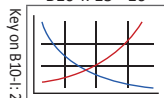
Insert			ISO	Radius		Description	Part No.	Application						
Geometry	Grade	Form		Description	mm			in	P	M	K	N	S	H
 720	PKDD30	101	CCGT0602	0.20	0.008	F101 02GN720 PKDD30	297501PKDD30							
				0.40	0.016	F101 04GN720 PKDD30	297502PKDD30							
		103	CCGT09T3	0.20	0.008	F103 02GN720 PKDD30	297578PKDD30							
				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							
		103	CCGW09T3	0.80	0.031	F101 08GN730 PKDD30	297165PKDD30							
				0.20	0.008	F103 02GN730 PKDD30	397251PKDD30							
	PKDD50	103	CCGW09T3	0.40	0.016	F103 04GN730 PKDD30	297533PKDD30							
				0.40	0.016	F104 04GN730 PKDD30	397257PKDD30							
		104	CCGW1204	0.80	0.031	F104 08GN730 PKDD30	297871PKDD30							
				0.20	0.008	F101 02GN730 PKDD50	097462PKDD50							
PKDD50	101	CCGW0602	0.40	0.016	F101 04GN730 PKDD50	297164PKDD50								
			0.20	0.008	F103 02GN730 PKDD50	397251PKDD50								
	103	CCGW09T3	0.40	0.016	F103 04GN730 PKDD50	297533PKDD50								
			0.40	0.016	F104 04GN730 PKDD50	397257PKDD50								
 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							



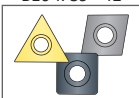
I

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

[illegible]



Tangential Replaceable Inserts

Recommended Insert Application

ROUGH MACHINING | FORMS 04 AND 05

ISO Material		Metric Cutting Recommendations			Imperial Cutting Recommendations		
		m/min	mm/rev		SFM	IPR	
		F04, F05	F04	F05	F04, F05	F04	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
	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
	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
	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
	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.

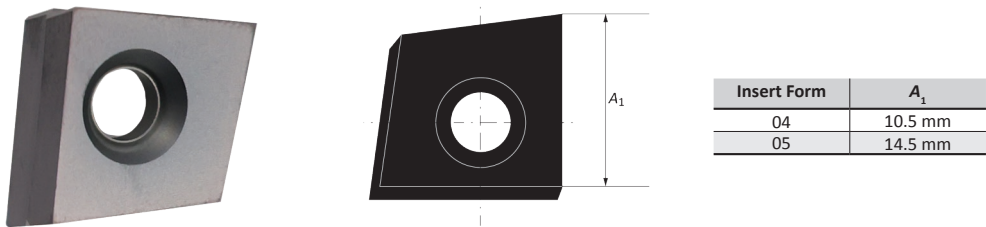
⚠ WARNING Assembly of modular components may cause machine damage and/or serious injury. To prevent:

- 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



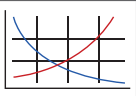
Carbide

Geometry	Insert		ISO Description	Radius		Description	Part No.	Application							
	Grade	Form		mm	in			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	05	—	0.40	0.016	F004 04ML880 WHC198	397595WHC198								
				0.40	0.016	F005 04ML880 WHC198	397593WHC198								
				0.80	0.031	F005 08ML880 WHC198	397594WHC198								

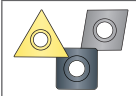


Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
04	415977	M4 x 0.7 x 7.9	415510	115664	3.0 N·m	T15
05	415949	M4 x 0.7 x 11	415543	215150	5.0 N·m	T20

B10-I: 25



B10-I: 39 - 42

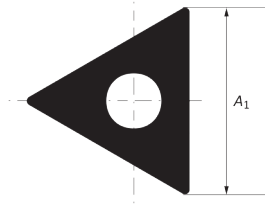


B10-I: 43 - 47





Forms 161 and 163



Insert Form	A ₁
161	11.0 mm
163	16.5 mm

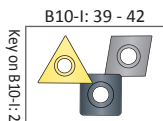
Carbide

Insert			ISO	Radius				Application						
Geometry	Grade	Form	Description	mm	in	Description	Part No.		P	M	K	N	S	H
 129	WHC05	161	TCGT1102	0.20	0.008	F161 02GN129 WHC05	397769WHC05	●	▼	▼	▼		▼	
		163	TCGT16T3	0.40	0.016	F161 04GN129 WHC05	397770WHC05							
	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	⚙	▼	▼	▼	▼		▼
				0.40	0.016	F163 04MN192 WHC19	397654WHC19							
		163	TCMT16T3	0.80	0.031	F163 08MN192 WHC19	397772WHC19							

Cermet

Insert			ISO	Radius		Description	Part No.	Application						
Geometry	Grade	Form	Description	mm	in			P	M	K	N	S	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

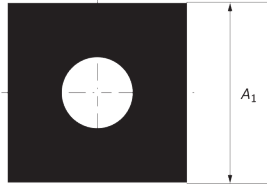


B10-I: 39 - 42



B10-I: 43 - 47

Forms 112, 113 and 114



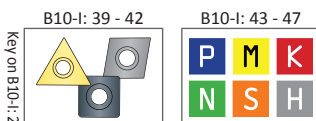
Insert Form	A ₁
112	9.5 mm
113	12.7 mm
114	15.8 mm

Carbide

Geometry	Insert		ISO Description	Radius		Description	Part No.	Application					
	Grade	Form		mm	in			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	●	▽				▽
		113	SCMT1204	0.80	0.031	F113 08MN146 WHC81	397992WHC81						▽
	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	●	▽				▽
		113	SCMT1204	0.80	0.031	F113 08MN192 WHC164	397640WHC164						
	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	●	▽	▽	▽		
		113	SCMT1204	0.80	0.031	F113 08MN199 WHC114	397705WHC114						
 711	WHC77	113	SCMT1204	0.80	0.031	F113 08MN711 WHC77	297212WHC77	●	▽		▽		▽

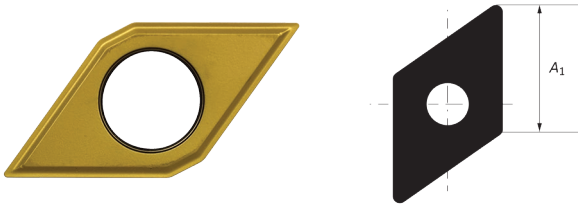
Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
112	115672 (<∅37 mm)	M3.5 x 0.6 x 7.5	415510	115664	3.0 N·m	T15
	115673 (>∅36 mm)	M3.5 x 0.6 x 9				
113	215149	M4.5 x 0.75 x 11.5	415543	215150	5.0 N·m	T20
114	215149	M4.5 x 0.75 x 11.5	415543	215150	5.0 N·m	T20

NOTE: For insert recommendations and technical assistance reference the geometry and insert guides (B10-I: 39 - 47) or contact our Application Engineering department: appeng@alliedmachine.com.





Forms 37 and 39



Insert Form	A ₁
37	7.7 mm
39	11.6 mm

Carbide

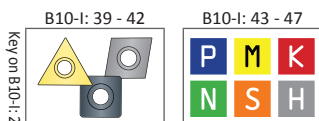
Geometry	Insert		ISO Description	Radius		Description	Part No.	Application					
	Grade	Form		mm	in			P	M	K	N	S	H
 121	WHC19	39	DCMT11T3	0.20	0.008	F039 02MN121 WHC19	397787WHC19	✖	▼	▼	▼	▼	▼
				0.40	0.016	F039 04MN121 WHC19	397788WHC19						
 127	WHW16	37	DCGT0702	0.20	0.008	F037 02GN127 WHW16	397234WHW16						
				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						
				0.40	0.016	F039 04GN129 WHW16	397817WHW16	●			▼	▼	▼
		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	●	▼	▼	▼	▼	▼
				0.40	0.016	F039 04MN146 WHC81	397591WHC81	●					▼
		39	DCMT11T3	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						
 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

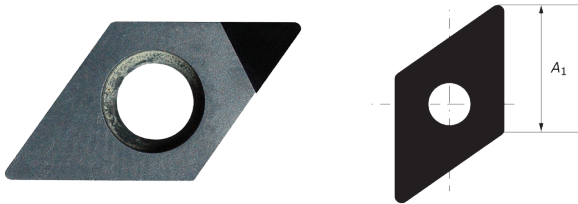
Geometry	Insert		ISO Description	Radius		Description	Part No.	Application					
	Grade	Form		mm	in			P	M	K	N	S	H
 155	WTC15	39	DCMT11T3	0.20	0.008	F039 02MN155 WTC15	397809WTC15	●	▼	▼	▼	▼	▼
				0.40	0.016	F039 04MN155 WTC15	397810WTC15						

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 recommendations and technical assistance reference the geometry and insert guides (B10-I: 39 - 47) or contact our Application Engineering department: appeng@alliedmachine.com.



Forms 37 and 39



Insert Form	A ₁
37	7.7 mm
39	11.6 mm

CBN - Cubic Boron Nitride

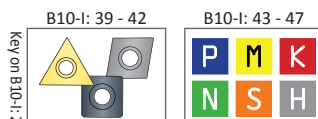
Geometry	Insert		ISO Description	Radius		Description	Part No.	Application					
	Grade	Form		mm	in			P	M	K	N	S	H
	WBN150	39	DCGW11T3	0.20	0.008	F039 02GN747 WBN150	397273WBN150						
				0.40	0.016	F039 04GN747 WBN150	397274WBN150						
	WBN450	39	DCGW11T3	0.20	0.008	F039 02GN747 WBN450	397273WBN450						
				0.40	0.016	F039 04GN747 WBN450	397274WBN450						

PCD - Polycrystalline Diamond

Geometry	Insert		ISO Description	Radius		Description	Part No.	Application					
	Grade	Form		mm	in			P	M	K	N	S	H
	PKDD30	39	DCGW11T3	0.20	0.008	F039 02GN730 PKDD30	397269PKDD30						
				0.40	0.016	F039 04GN730 PKDD30	397270PKDD30						
	PKDD30	39	DCGT11T3	0.20	0.008	F039 02GN735 PKDD30	397271PKDD30						
				0.40	0.016	F039 04GN735 PKDD30	397272PKDD30						

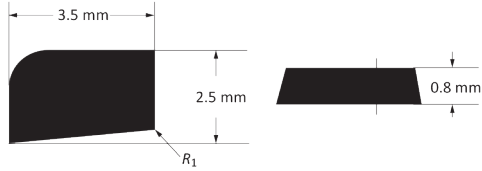
Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
39	115673	M3.5 x 0.6 x 9	414510	115664	3.0 N·m	T15
37	115676	M2.5 x 0.45 x 5	415514	115590	1.2 N·m	T8

NOTE: For insert recommendations and technical assistance reference the geometry and insert guides (B10-I: 39 - 47) or contact our Application Engineering department: appeng@alliedmachine.com.



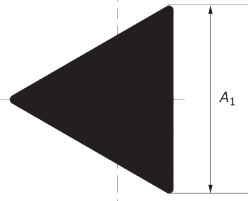


Forms 47 & 325: 248 (249) Boring Bar Inserts



Carbide

Geometry	Insert		Radius (R_1)		Description	Part No.	Application					
	Grade	Form	mm	in			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						

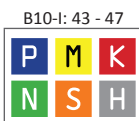
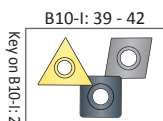


Insert Form	A_1
47	4.2 mm

Carbide

Geometry	Insert		Radius		Description	Part No.	Application					
	Grade	Form	mm	in			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

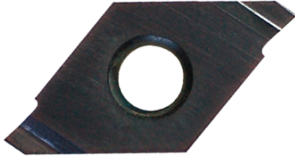


Notes

This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin gray lines. There are 20 columns and 20 rows of squares, creating a total of 400 square units. The margins are consistent on all sides, and there are no markings or text on the paper.



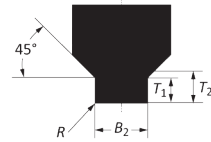
Radial Grooving: Forms 89, 90 and 91



Circular Grooving



Snap Ring Grooving



Circular Grooving | Metric (mm)

Insert		B ₂	T ₁	Ring Width	Part No.	Application					
Grade	Form					P	M	K	N	S	H
m	89	1.24	1.30	1.00	097257WHC136	m	m	m	m	m	m
		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						
	91	3.29	2.40	3.00	097255WHC136						
		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	1.24	1.30	1.00	097257WHW20						
		1.44	1.30	1.20	097258WHW20						
		1.74	1.50	1.50	097259WHW20						
		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						
		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)

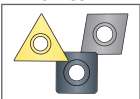
Insert		R	Boring Ø	B ₂	T ₂	T ₁	Ring Width	Part No.	Application					
Grade	Form								P	M	K	N	S	H
m	89	0.10	24.00 - 26.00	1.44	0.65	0.54	1.20	297937WHC136	m	m	m	m	m	m
			28.00 - 30.00	1.44	0.75	0.64	1.20	297938WHC136						
			31.00 - 32.00	1.44	0.91	0.78	1.20	297939WHC136						
			34.00	1.74	0.91	0.78	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						
			65.00 - 78.00	2.79	1.58	1.43	2.50	297944WHC136						
	91	0.20	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

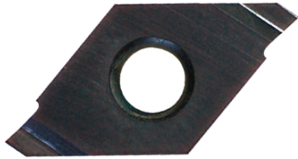
B10-I: 39 - 42

B10-I: 43 - 47

Key on B10-I: 2

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

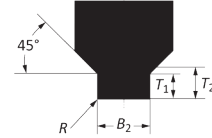
Radial Grooving: Forms 89, 90 and 91



Circular Grooving



Snap Ring Grooving



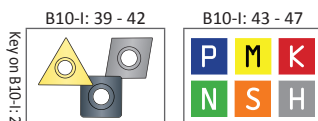
Circular Grooving | Imperial (in)

Insert		B_2	T_1	Ring Width	Part No.	Application					
Grade	Form					P	M	K	N	S	H
i	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					
		91	0.129	0.094	0.118	097255WHC136					
			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					
			0.078	0.094	0.068	097256WHW20					
		90	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		R	Boring $\varnothing$	B_2	T_2	T_1	Ring Width	Part No.	Application					
Grade	Form								P	M	K	N	S	H
i	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					
		90	0.006	1.377 - 1.496	0.068	0.041	0.036	0.059	297941WHC136					
				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					
				2.559 - 3.070	0.109	0.062	0.056	0.098	297944WHC136					
		91	0.008	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					

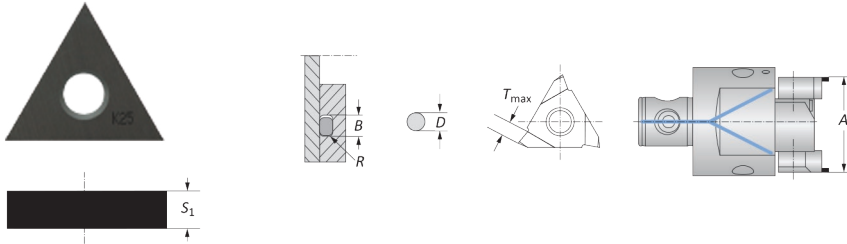
Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
89	115676	M2.5 x 0.45 x 5	415514	115590	1.2 N·m	T8
90	115531	M3 x 0.5 x 7.5	415514	115590	1.2 N·m	T8
91	115802	M3 x 0.5 x 12	415514	115590	1.2 N·m	T8



 = 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							

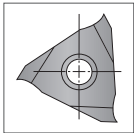
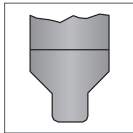
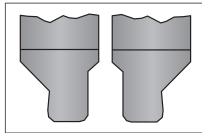
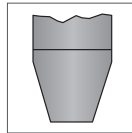
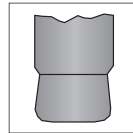
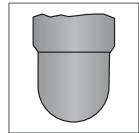
Inserts for Twin Cutter Tools | Metric (mm)

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)

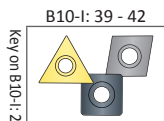
Geometry	Grade	S ₁	Part No.	Application					
				P	M	K	N	S	H
	WHW20	3.50	297150WHW20						
		4.30	297151WHW20						
		5.30	297152WHW20						
		6.50	297154WHW20						
		7.50	297493WHW20						
	WHW20	3.50	397850WHW20						
		4.30	397851WHW20						
		5.30	397852WHW20						
		6.50	397853WHW20						
		7.50	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

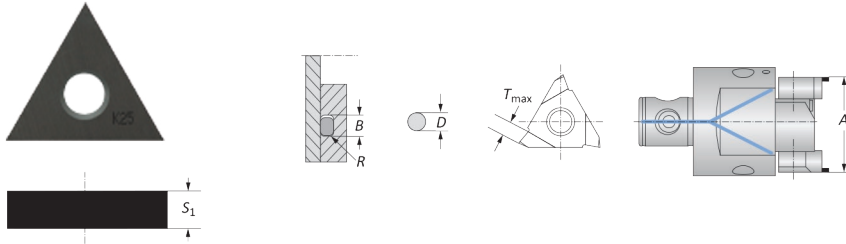


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 = Metric (mm)
 = Imperial (in)

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						

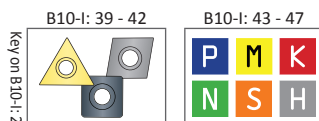
Inserts for Twin Cutter Tools | Imperial (in)

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						
		0.137	397850WHW20						
	WHW20	0.169	397851WHW20						
		0.208	397852WHW20						
		0.255	397853WHW20						
		0.295	397854WHW20						
		0.295	397854WHW20						

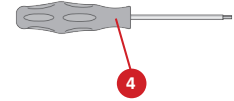
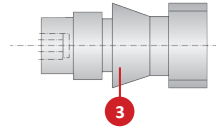
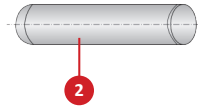
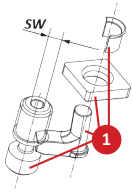
Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
304	215392	M5 x 0.8 x 12.9	415543	215150	5.0 N·m	T20



 = Metric (mm)
 = Imperial (in)



Insert Accessories

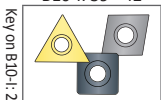


Insert Form	1. Clamping Set		2. Mounting Arbor for Sleeve	3. Clamping Bolt		4. Service Key	
	Part No.	Key Size	Part No.	Part No.	Key Size	Part No.	Key Size
75	315004	s3	415642	—	—	415578	s3
123	315003	s3	415642	115775	s2.5	415578	s3
						115575	s2.5
124	315054	s3	415644	115776	s3	415578	s3
						115630	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
	20	115535	M2 x 0.4 x 5	—	415508	115591	0.9 N·m	T7
Triangle	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
	101	115676	M2.5 x 0.45 x 5	—	415514	115590	1.2 N·m	T8
80° Rhomboid	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
	04	415977	M4 x 0.7 x 7.9	—	415510	115664	3.0 N·m	T15
Tangential	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
	89	115676	M2.5 x 0.45 x 5	—	415514	115590	1.2 N·m	T8
Grooving	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

B10-I: 43 - 47



Notes

This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin, dark gray lines. There are 20 columns and 20 rows of squares, creating a total of 400 square units. The background is white, and the grid covers the entire area of the page without any margins or additional markings.



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.



I

Wohlschlag 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								



I

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 Al₂O₃. - 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								



I

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								



I

Boring Insert Wear Patterns

Built-up Edge

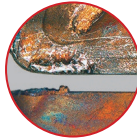
Potential Problem

- 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

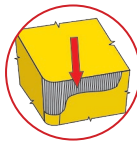
- Increase temperature by increasing speed or feed.
- Use an insert with higher lubricity coating.
- Choose a freer cutting insert geometry.



Flank Wear

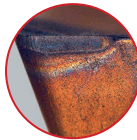
Potential Problem

- Caused by friction between the insert and machined material. It cannot be fully eliminated, but it can be reduced.



Possible Solution

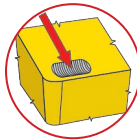
- Use a more wear-resistant grade.
- Reduce cutting speed.
- Use coolant or increase coolant flow to the cutting edge.



Cratering

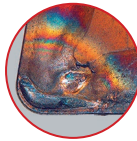
Potential Problem

- Appears when the geometry is too neutral or material is too hard for the substrate.



Possible Solution

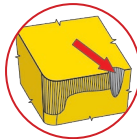
- Use a more wear-resistant grade.
- Reduce cutting speed or feed.
- Use coolant or increase coolant flow to the cutting edge.



Notch Wear

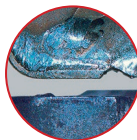
Potential Problem

- 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

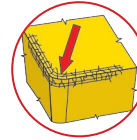
- Use a more wear-resistant grade (Al_2O_3).
- Select a tool with a smaller approach angle.
- Vary the radial depth of cut.
- Use coolant or increase coolant flow to the cutting edge.



Comb Cracks

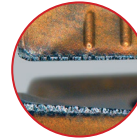
Potential Problem

- 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

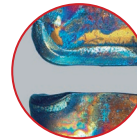
Potential Problem

- Caused by high thermal stress on the cutting edge from excessive feed rate and cutting speed.



Possible Solution

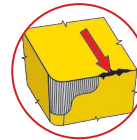
- Use a more wear-resistant grade.
- Reduce cutting speed.
- Reduce feed rate.
- Use coolant or increase coolant flow to the cutting edge.



Chipping of Cutting Edge (Out of Cut)

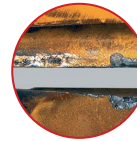
Potential Problem

- Caused by poor chip control.
- Can damage the portion of the cutting edge that might not be engaged in the cut.



Possible Solution

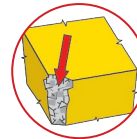
- Change feed rate to gain chip control.
- Select a tool with a different approach angle.
- Use an insert with a different geometry.
- Use a tougher grade of carbide.



Insert Fracture

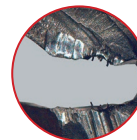
Potential Problem

- 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.



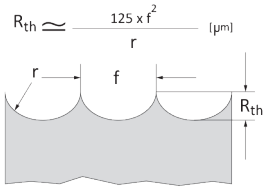
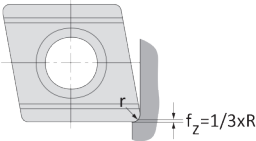


Corner Radius

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.

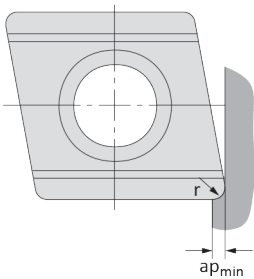
The expected surface quality can be estimated by using the function of corner radius and feed rate formula.

	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 $\varnothing$ (mm)	D
Feed (mm/rev)	f
Cutting Speed (m/min)	V_c
RPM (min^{-1})	n

Wiper Geometry

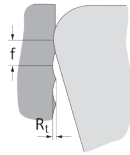
Replaceable Inserts with Wiper Geometry

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.

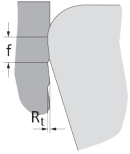
Other advantages include:

- Higher stability, resulting in high process reliability even for highly interrupted cuts.
- Vibrations are reduced.

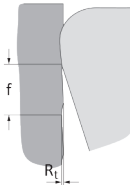
Insert with conventional corner radius with feed (f)



Insert with wiper geometry radius with same feed (f)



Insert with wiper geometry with increased feed (f)

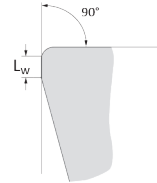


Wiper Geometry for 90° Approach Angle

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

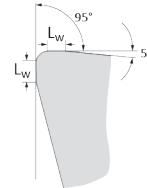


Wiper Geometry for 95° Approach Angle

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

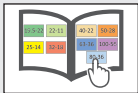
Wohlhaupter offers a complete range of tool holders that incorporates the MVS connection. Our clamping tools allow for smaller MVS tools to connect and provide a quick and inexpensive alternative to special tooling. The clamping tools also feature coolant-through capabilities.

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.	

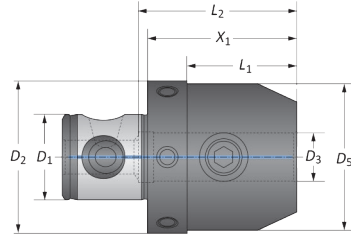
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Adapter Sleeves for Cylindrical Shanks

DIN 1835B



Metric (mm)

MVS Connection $D_2 D_1$	Clamping Range D_3	Adapter Sleeve				Weight (kg)	Balancing Screw	Part No.
		X_1	L_1	L_2	D_5			
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

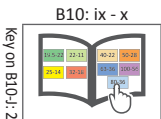
Imperial (in)

MVS Connection $D_2 D_1$	Clamping Range D_3	Adapter Sleeve				Weight (lbs)	Balancing Screw	Part No.
		X_1	L_1	L_2	D_5			
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.

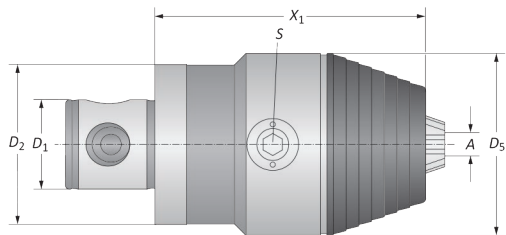
See ball pressure screws on page B10-J: 12.





Drill Chucks

Clamping Diameter Range: 0.50 mm - 16.00 mm (0.019" - 0.629")



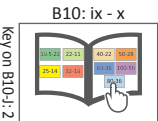
Metric (mm)

MVS Connection	Clamping Range	Drill Chuck			Weight (kg)	Part No.
$D_2 \mid D_1$	A	X_1	D_5	S		
m 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	Clamping Range	Drill Chuck			Weight (lbs)	Part No.
$D_2 \mid D_1$	A	X_1	D_5	S		
i 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.



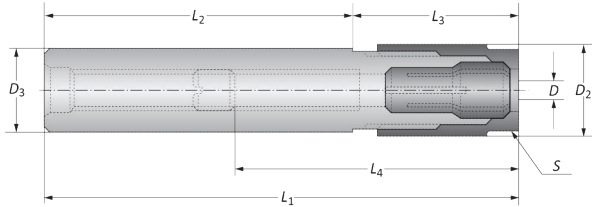
m = Metric (mm)
i = Imperial (in)



Collet Chucks

Erickson System | Cylindrical (ISO 15488 (DIN 6499))

Collet Chucks for Erickson System



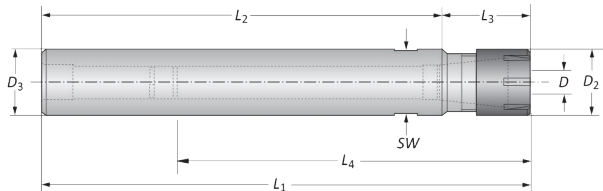
Metric (mm)

	Nominal Size	Clamping Range <i>D</i>	Collet Chuck							Service Key <i>S</i>	Weight (kg)	Part No.
			<i>D</i> ₂	<i>D</i> ₃	<i>L</i> ₁	<i>L</i> ₂	<i>L</i> ₃	<i>L</i> ₄ Min	<i>L</i> ₄ Max			
m	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 <i>D</i>	Collet Chuck							Service Key <i>S</i>	Weight (lbs)	Part No.
			<i>D</i> ₂	<i>D</i> ₃	<i>L</i> ₁	<i>L</i> ₂	<i>L</i> ₃	<i>L</i> ₄ Min	<i>L</i> ₄ Max			
i	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	<i>D</i>	Collet Chuck							Weight (kg)	Hex Size <i>SW</i>	Part No.
			<i>D</i> ₂	<i>D</i> ₃	<i>L</i> ₁	<i>L</i> ₂	<i>L</i> ₃	<i>L</i> ₄ Min	<i>L</i> ₄ Max			
m	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	<i>D</i>	Collet Chuck							Weight (lbs)	Hex Size <i>SW</i>	Part No.
			<i>D</i> ₂	<i>D</i> ₃	<i>L</i> ₁	<i>L</i> ₂	<i>L</i> ₃	<i>L</i> ₄ Min	<i>L</i> ₄ Max			
i	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

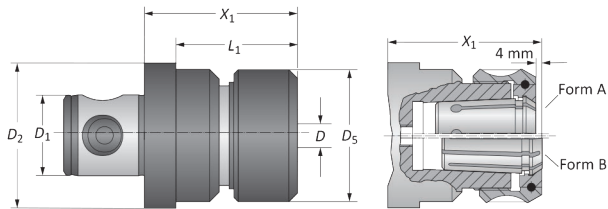
m = Metric (mm)

i = Imperial (in)



Collet Chucks

ISO 10897 (DIN 6388)



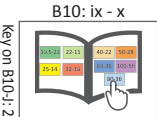
Metric (mm)

MVS Connection	Clamping Range	Nominal Size	Collet Chuck			Weight (kg)	Part No.
			X_1^*	L_1	D_5		
$D_2 \mid D_1$	D						
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
63 - 36	2.00 - 25.00	25	74.00	—	60.00	1.00	209083
	2.00 - 25.00	25	74.00	—	60.00	1.40	161016
63 - 36	4.00 - 32.00	32	89.00	—	72.00	1.80	161098

Imperial (in)

MVS Connection	Clamping Range	Nominal Size	Collet Chuck			Weight (lbs)	Part No.
			X_1^*	L_1	D_5		
$D_2 \mid D_1$	D						
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
63 - 36	0.078 - 0.984	25	2.913	—	2.362	2.205	209083
	0.078 - 0.984	25	2.913	—	2.362	3.087	161016
63 - 36	0.157 - 1.259	32	3.504	—	2.835	3.969	161098

* X_1 Clamping nut with ball-bearing.

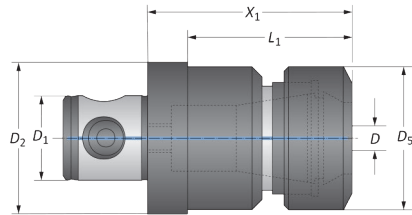


m = Metric (mm)
i = Imperial (in)



Collet Chucks

ISO 15488 (DIN 6499)

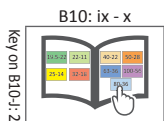


Metric (mm)

MVS Connection	Clamping Range	Nominal Size	Collet Chuck			Weight (kg)	Part No.
			X_1^*	L_1	D_5		
$D_2 D_1$	D						
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
m 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	Clamping Range	Nominal Size	Collet Chuck			Weight (lbs)	Part No.
			X_1^*	L_1	D_5		
$D_2 D_1$	D						
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
i 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.

B10-J: 7

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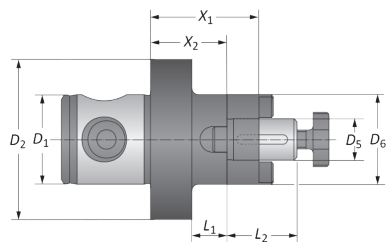
m = Metric (mm)
i = Imperial (in)



Milling Machine Arbors

Adapter Range: 13.00 mm - 40.00 mm (0.512" - 1.575")

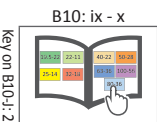
For Milling Cutters with Longitudinal or Transverse Drive



Metric (mm)		Adapter Range	Milling Arbor					Weight (kg)	Part No.
MVS Connection	$D_2 \mid D_1$		X_1	X_2	L_1	L_2	D_6		
m	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)		Adapter Range	Milling Arbor					Weight (lbs)	Part No.
MVS Connection	$D_2 \mid D_1$		X_1	X_2	L_1	L_2	D_6		
i	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.



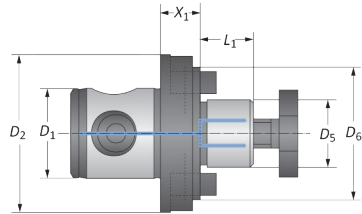
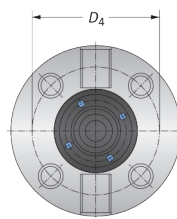
m = Metric (mm)
i = Imperial (in)



Holding Arbors for Milling Cutters

Adapter Range: 16.00 mm - 40.00 mm (0.630" - 1.575")

Central Coolant Feed

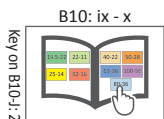


Metric (mm)

MVS Connection		Adapter Range	Holding Arbor					
$D_2 \mid D_1$		D_5	X_1	L_1	D_4	D_6	Weight (kg)	Part No.
m	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)

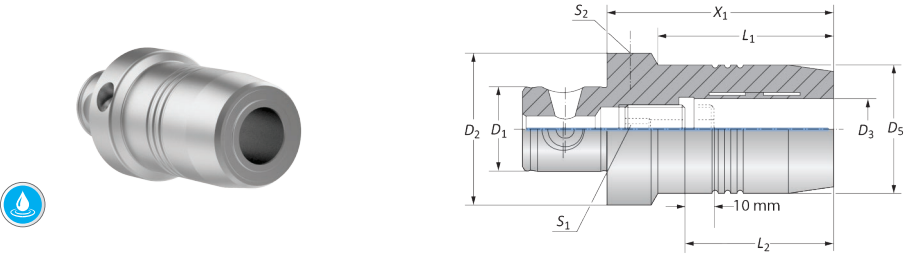
MVS Connection		Adapter Range	Holding Arbor					
$D_2 \mid D_1$		D_5	X_1	L_1	D_4	D_6	Weight (lbs)	Part No.
i	50 - 28	0.630	0.630	0.669	—	1.575	0.882	162032
		0.866	0.630	0.748	—	1.969	1.102	162033
	63 - 36	1.063	0.630	0.827	—	2.362	1.764	161082
	80 - 36	1.260	0.630	0.945	—	3.071	2.425	209080
		1.575	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.

B10: ix - x

Clamping Chucks | Tapping Chucks

Coolant-Through Hydraulic Clamping Chucks



Metric (mm)

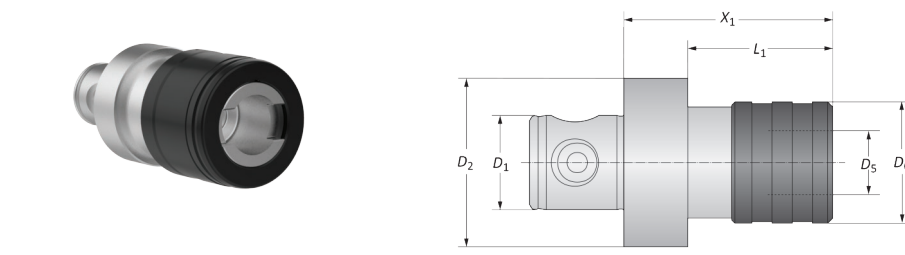
MVS Connection	Clamping Range	Clamping Chuck							Weight (kg)	Part No.
$D_2 D_1$	D_3	X_1	D_5	L_1	L_2	S_1	S_2			
m 50 - 28	20.00	75.00	42.00	58.00	51.00	s6	s5	0.80	209044	
63 - 36	20.00	75.00	42.00	53.00	51.00	s5	s5	1.10	209045	

Imperial (in)

MVS Connection	Clamping Range	Clamping Chuck							Weight (lbs)	Part No.
$D_2 D_1$	D_3	X_1	D_5	L_1	L_2	S_1	S_2			
i 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)

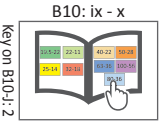


Metric (mm)

MVS Connection	Quick-Change Adapters		Tapping Chucks				Length Compensation		Weight (kg)	Part No.
$D_2 D_1$	For Taps	Nominal Size	X_1	L_1	D_5	D_6	Pressure	Tension		
m 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

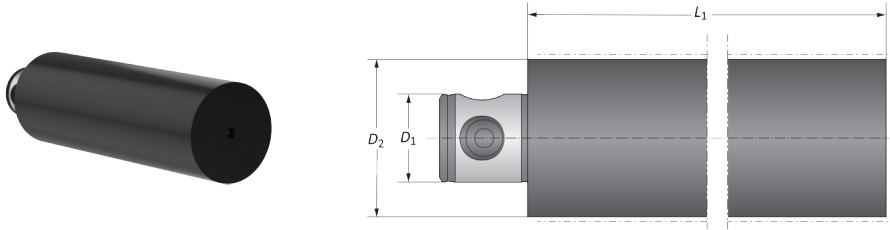
Imperial (in)

MVS Connection	Quick-Change Adapters		Tapping Chucks				Length Compensation		Weight (lbs)	Part No.
$D_2 D_1$	For Taps	Nominal Size	X_1	L_1	D_5	D_6	Pressure	Tension		
i 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





Boring Bar Blanks



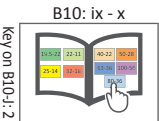
Metric (mm)

	MVS Connection $D_2 \mid D_1$	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)

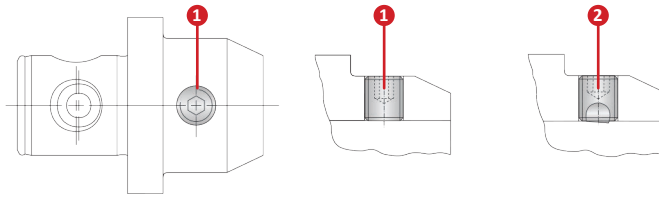
	MVS Connection $D_2 \mid D_1$	Boring Bar Blanks L_1	Weight (lbs)	Part No.
i	50 - 28	6.299	5.733	166103
	63 - 36	6.299	9.261	166104
	80 - 36	6.299	14.550	166105

NOTE: The blanks are unhardened and unground in areas marked.





Accessories for Adapter Sleeves



Metric (mm)

Clamping Diameter	1. Thread Pin		2. Ball Pressure Screw		
	Part No.	Service Key	Part No.	Service Key	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		2. Ball Pressure Screw		
	Part No.	Service Key	Part No.	Service Key	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)

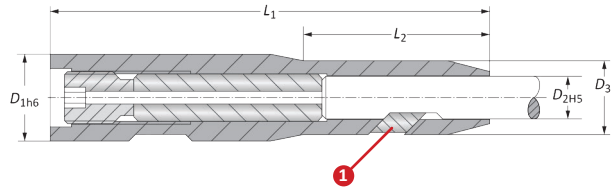
*Without axial adjustment.





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.
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.
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).

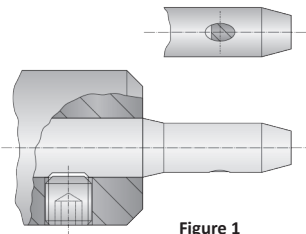


Figure 1

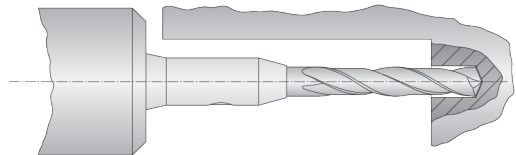


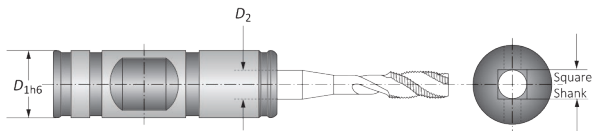
Figure 2





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
	14.00 x 11.00	271202
25.00	16.00 x 12.00	271203
	18.00 x 14.50	271204
32.00	20.00 x 16.00	271205
	22.00 x 18.00	271206
	25.00 x 20.00	271207
40.00	28.00 x 22.00	271208
	32.00 x 24.00	271209
50.00	36.00 x 29.00	271210
	40.00 x 32.00	271211

m

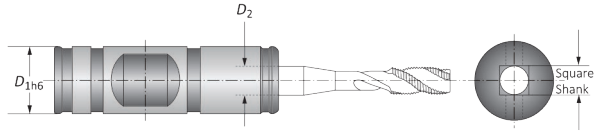


m = Metric (mm)
i = Imperial (in)



Accessories for Adapter Sleeves

Adapter Sleeve for Tap Shanks Suitable for Reduction Sleeves with Shanks to DIN 1835-B



Imperial (in)

Adapter Sleeves		
D_{1h6}	$D_2 \times \text{Square Shank}$	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
	0.472 x 0.354	271201
0.787	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

i



J

m = Metric (mm)

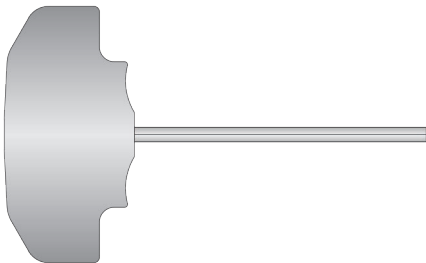
i = Imperial (in)



Accessories for Drill Chucks

Service Keys for Drill Chucks

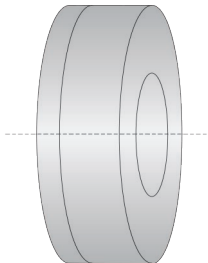
Service Key		Tightening Torque N·m	Part No.
Service Key	Type		
2.50	B	15	415577
6.00	B	15	115578



Gaskets for Drill Chucks

Metric (mm)

m	Gasket		Part No.
	Gasket Diameter	Clamping Diameter	
	3.00 - 6.00	0.50 - 13.00	
	6.00 - 13.00	0.50 - 13.00	
	3.00 - 6.00	2.50 - 16.00	
	6.00 - 16.00	2.50 - 16.00	387116



Imperial (in)

i	Gasket		Part No.
	Gasket Diameter	Clamping Diameter	
	0.118 - 0.236	0.019 - 0.511	
	0.236 - 0.511	0.019 - 0.511	
	0.118 - 0.236	0.098 - 0.629	
	0.236 - 0.629	0.098 - 0.629	387116

Assembly Tool for Gasket

Part No.
387112

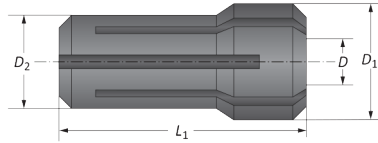




Accessories for Collet Chucks

Erickson System

Collet Sets for Erickson System



Metric (mm)

	Nominal Size	Standard-No.	Set				Part No.
			D_1	D_2	L_1	D	
	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				Part No.
			D_1	D_2	L_1	D	
	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
10	5.50 - 6.00	071365
	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
10	0.217 - 0.236	071365
	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)

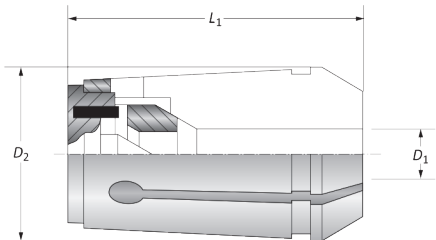


Accessories for Collet Chucks

ISO 10897-A (DIN 6388-A)



Collet Sets for Clarkson System



Metric (mm)

	Nominal Size	Standard-No.	Set			Part No.
			D_2	L_1	D_1	
m	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			Part No.
			D_2	L_1	D_1	
i	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		Diameter Range	Part No.
Nominal Size		D	
m	A 16	6.00	071304
		8.00	071305
		10.00	071306
		12.00	071307
m	A 25	6.00	071308
		8.00	071309
		10.00	071310
		12.00	071311
		16.00	071312
		20.00	071313
m	A 32	25.00	071684
		6.00	071427
		8.00	071428
		10.00	071429
		12.00	071430
		16.00	071431
m	A 32	20.00	071432
		25.00	071433
m	A 32	32.00	071685

Imperial (in)

Collet		Diameter Range	Part No.
Nominal Size		D	
i	A 16	0.236	071304
		0.315	071305
		0.394	071306
		0.472	071307
i	A 25	0.236	071308
		0.315	071309
		0.394	071310
		0.472	071311
		0.630	071312
		0.787	071313
i	A 32	0.984	071684
		0.236	071427
		0.315	071428
		0.394	071429
		0.472	071430
		0.630	071431
i	A 32	0.787	071432
		0.984	071433
i	A 32	1.260	071685



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

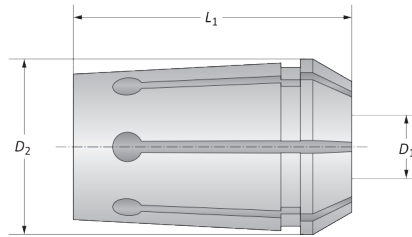


Accessories for Collet Chucks

ISO 10897-A (DIN 6388-A)



Collet Sets



Metric (mm)

	Nominal Size	Standard-No.	Set			Part No.
			D_2	L_1	D_1	
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			Part No.
			D_2	L_1	D_1	
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

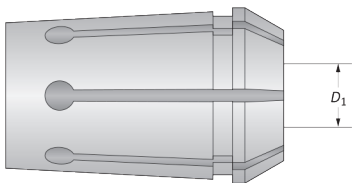




Accessories for Collet Chucks

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
A 25	13.50	071163
	14.00	071164
	14.50	071165
	15.00	071166
	15.50	071167
	16.00	071168
	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



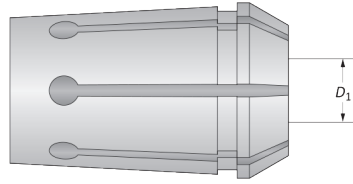
= Metric (mm)
 = Imperial (in)



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
A 25	0.531	071163
	0.551	071164
	0.571	071165
	0.591	071166
	0.610	071167
	0.630	071168
	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)

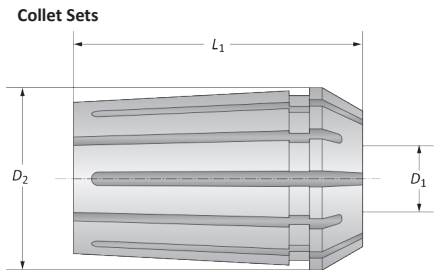
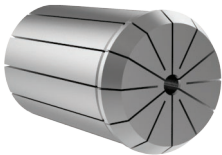
Nominal Size	Diameter D_1	Part No.
A 25	0.551	071181
	0.590	071182
	0.629	071183
	0.669	071184
	0.708	071185
	0.748	071186
	0.787	071187
	0.826	071188
	0.866	071189
	0.905	071190
	0.944	071191
	0.984	071192
A 32	0.157	071612
	0.196	071419
	0.236	071420
	0.275	071613
	0.315	071421
	0.354	071614
	0.393	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





Accessories for Collet Chucks

ISO 10897-B (DIN 6388-B)



Metric (mm)

	Nominal Size	Standard-No.	Set			Part No.
			D_2	L_1	D_1	
m	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			Part No.
			D_2	L_1	D_1	
i	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

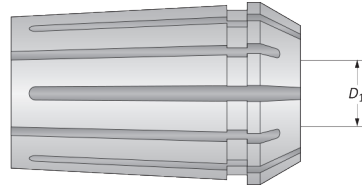
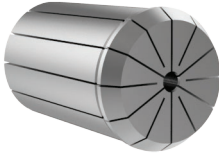




Accessories for Collet Chucks

ISO 10897-B (DIN 6388-B)

Collets



Metric (mm)

Nominal Size	Diameter D_1	Part No.
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
B 25	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
	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
B 25	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)

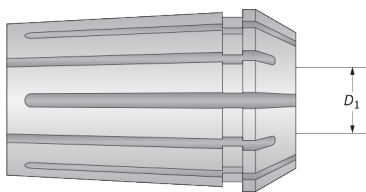
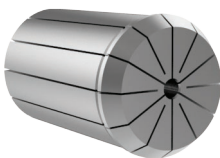
Nominal Size	Diameter D_1	Part No.
B 25	11.50 - 12.00	071232
	12.00 - 12.50	071233
	12.50 - 13.00	071234
	13.00 - 13.50	071235
	13.50 - 14.00	071236
	14.00 - 14.50	071237
	14.50 - 15.00	071238
	15.00 - 15.50	071239
	15.50 - 16.00	071240
	16.00 - 16.50	071241
	16.50 - 17.00	071242
	17.00 - 17.50	071243
	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
B 32	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
	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
B 32	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



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



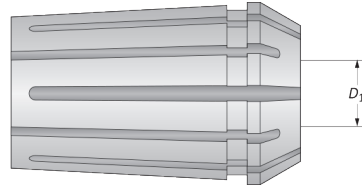
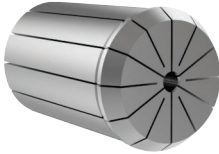
 = Metric (mm)
 = Imperial (in)



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
B 32	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
	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)

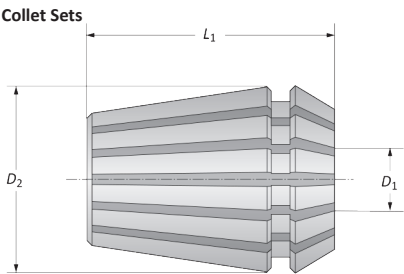
Nominal Size	Diameter D_1	Part No.
B 32	0.571 - 0.591	071552
	0.591 - 0.610	071553
	0.610 - 0.630	071554
	0.630 - 0.650	071555
	0.650 - 0.669	071556
	0.669 - 0.689	071557
	0.689 - 0.709	071558
	0.709 - 0.728	071559
	0.728 - 0.748	071560
	0.748 - 0.768	071561
	0.768 - 0.787	071562
	0.787 - 0.807	071563
	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





Accessories for Collet Chucks

ISO 15488-B (DIN 6499-B)



Metric (mm)

	Nominal Size	Standard-No.	Diameter D_1	Set		Part No.
				D_2	L_1	
m	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		Part No.
				D_2	L_1	
i	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

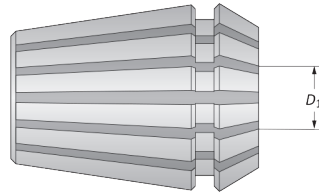




Accessories for Collet Chucks

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
ER 11	4.60 - 5.00	071994
	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
	0.50 - 1.00	071713
	1.00 - 1.50	071714*
ER 16	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
ER 32	14.00 - 15.00	071757
	15.00 - 16.00	071758
	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
ER 40	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
	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.

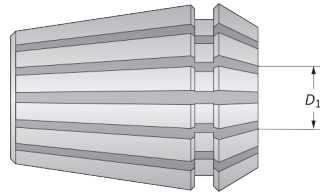
= Metric (mm)
 = Imperial (in)



Accessories for Collet Chucks

ISO 15488-B (DIN 6499-B)

Collets



Metric (mm)

Nominal Size	Diameter D_1	Part No.
m 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
	0.020 - 0.039	071713
	0.039 - 0.059	071714*
	0.039 - 0.079	071715
ER 16	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.



m = Metric (mm)

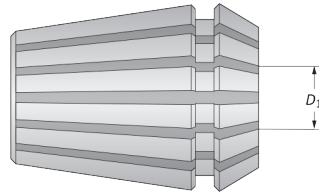
i = Imperial (in)



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
ER 32	0.551 - 0.591	071757
	0.591 - 0.630	071758
	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
ER 40	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
	0.118 - 0.157	071779
	0.157 - 0.197	071780
ER 40	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
ER 40	0.945 - 0.984	071800
	0.984 - 1.024	071801

i

i



*Items not contained in set.

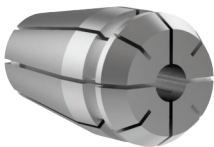
m = Metric (mm)

i = Imperial (in)

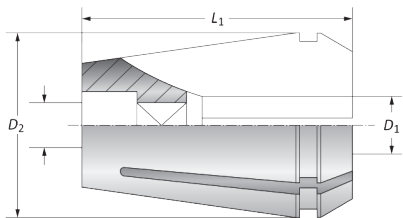


Collet Sets for Taps DIN 371/374/376

ISO 15488-B (DIN 6499-B)



Collet Sets



Metric (mm)

	Nominal Size	Standard-No.	Clamping Range	Collet Set		Part No.
			D_1	D_2	L_1	
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	Collet Set		Part No.
			D_1	D_2	L_1	
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.

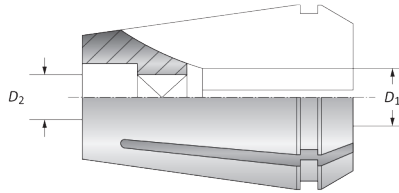
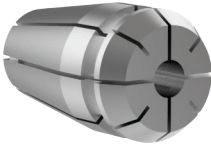




Collet Sets for Taps DIN 371/374/376

ISO 15488-B (DIN 6499-B)

Taps



Metric (mm)

	Shank		Tap		
	D_1	Square Shank	DIN 371	DIN 374	DIN 376
m	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
i	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



J

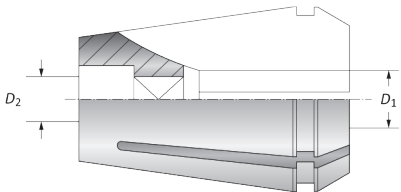
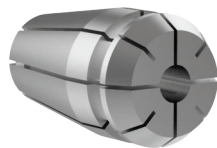
m = Metric (mm)

i = Imperial (in)



Collet Set Accessories for Taps DIN 371/374/376

ISO 15488-B (DIN 6499-B)



Metric (mm)

Nominal Size	Suitable Taps		Part No.
	D ₁	Square Shank	
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
ER 32	12.00	9.00	071920
	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
ER 40	11.00	9.00	071928
	12.00	9.00	071929
	14.00	11.00	071930
	16.00	12.00	071931
	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		Part No.
	D ₁	Square Shank	
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
ER 32	0.472	0.354	071920
	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
ER 40	0.433	0.354	071928
	0.472	0.354	071929
	0.551	0.433	071930
	0.630	0.472	071931
	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

m

i

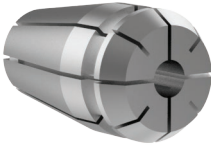


m = Metric (mm)
i = Imperial (in)

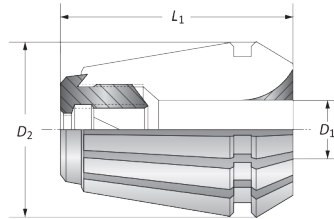


Collets for Mill Cutters with Pull Thread System

ISO 15488-B (DIN 6499-B)



Collet Sets



Metric (mm)

	Nominal Size	Standard-No.	Clamping Range	Collet		Part No.
			D_2	L_1	D_1	
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	Collet		Part No.
			D_2	L_1	D_1	
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)

	Collet		Part No.
	Nominal Size	D_1	
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)

	Collet		Part No.
	Nominal Size	D_1	
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)

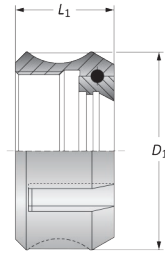
Clamping Nuts: DIN 6388 / ISO 10897 - 1:10

Metric (mm)

	Nominal Size	Clamping Nut			Torque	Part No.
		D_1	L_1	Clamping Range		
m	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			Torque	Part No.
		D_1	L_1	Clamping Range		
i	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

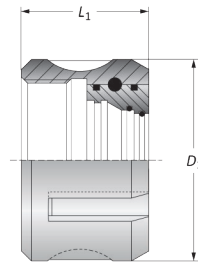
Metric (mm)

	Nominal Size	Clamping Nut			Torque	Part No.
		D_1	L_1	Clamping Range		
m	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			Torque	Part No.
		D_1	L_1	Clamping Range		
i	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.



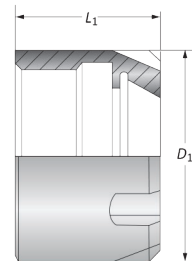
Mini Clamping Nuts

Metric (mm)

	Nominal Size	Clamping Nut			Torque	Part No.
		D_1	L_1	Clamping Range		
m	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			Torque	Part No.
		D_1	L_1	Clamping Range		
i	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



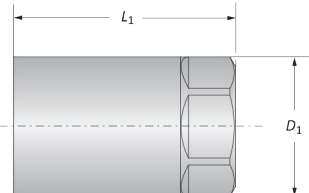
Clamping Nuts for Erickson Collet Chuck System

Metric (mm)

	Nominal Size	Clamping Nut			Part No.
		D_1	L_1	Clamping Range	
m	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			Part No.
		D_1	L_1	Clamping Range	
i	6	0.551	1.102	0.039 - 0.256	162095
	10	0.827	1.417	0.039 - 0.394	162093



m = Metric (mm)

i = Imperial (in)



Accessories for Collet Chucks

ISO 15488 (DIN 6499)

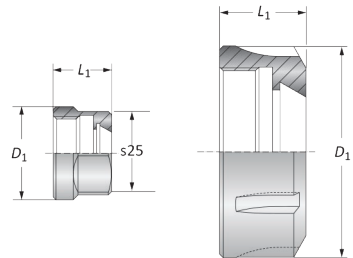
One Piece Clamping Nuts: DIN 6499 / ISO 15488 - 8°

Metric (mm)

	Nominal Size	D_1	L_1	Clamping Nut		Part No.
				Clamping Range	Torque	
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	D_1	L_1	Clamping Nut		Part No.
				Clamping Range	Torque	
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



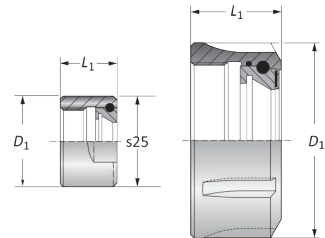
Clamping Nuts with Sliding Ring: DIN 6499 / ISO 15488 - 8°

Metric (mm)

	Nominal Size	D_1	L_1	Clamping Nut		Part No.
				Clamping Range	Torque	
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	D_1	L_1	Clamping Nut		Part No.
				Clamping Range	Torque	
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



Accessories for Collet Chucks

ISO 15488 (DIN 6499)

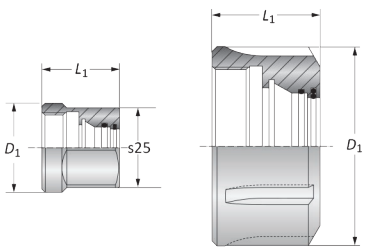
One Piece Clamping Nuts for use with Sealing Disks: DIN 6499 / ISO 15488 - 8°

Metric (mm)

	Nominal Size	Clamping Nut				Part No.
		D ₁	L ₁	Clamping Range	Torque	
m	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				Part No.
		D ₁	L ₁	Clamping Range	Torque	
i	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



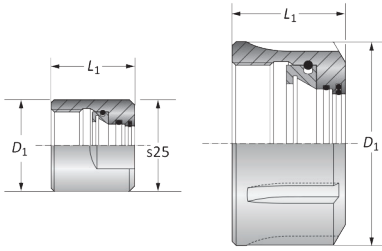
Clamping Nuts with Sliding Ring for use with Sealing Disks: DIN 6499 / ISO 15488 - 8°

Metric (mm)

	Nominal Size	Clamping Nut				Part No.
		D ₁	L ₁	Clamping Range	Torque	
m	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				Part No.
		D ₁	L ₁	Clamping Range	Torque	
i	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

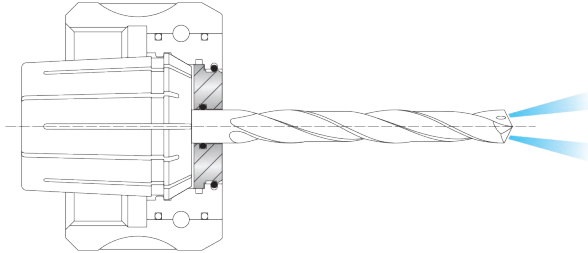


m = Metric (mm)
i = Imperial (in)



Sealing Disks for Collet Chucks

ISO 10897 (DIN 6388)



Metric (mm)

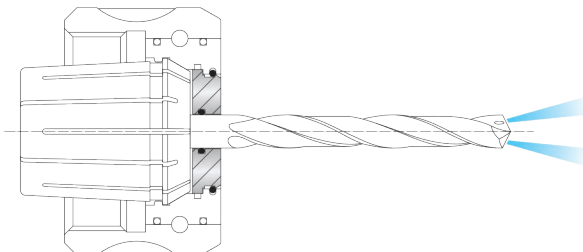
Nominal Size	Sealing Disk		Nominal Size	Sealing Disk		Nominal Size	Sealing Disk	
	Diameter	Part No.		Diameter	Part No.		Diameter	Part No.
16	2.50 - 3.00	275010	25	11.50 - 12.00	275058	32	12.50 - 13.00	276023
	3.00 - 3.50	275011		12.00 - 12.50	275059		13.00 - 13.50	276024
	3.50 - 4.00	275012		12.50 - 13.00	275060		13.50 - 14.00	276025
	4.00 - 4.50	275013		13.00 - 13.50	275061		14.00 - 14.50	276026
	4.50 - 5.00	275014		13.50 - 14.00	275062		14.50 - 15.00	276027
	5.00 - 5.50	275015		14.00 - 14.50	275063		15.00 - 15.50	276028
	5.50 - 6.00	275016		14.50 - 15.00	275064		15.50 - 16.00	276029
	6.00 - 6.50	275017		15.00 - 15.50	275065		16.00 - 16.50	276030
	6.50 - 7.00	275018		15.50 - 16.00	275066		16.50 - 17.00	276031
	7.00 - 7.50	275019		16.00 - 16.50	275067		17.00 - 17.50	276032
	7.50 - 8.00	275020		16.50 - 17.00	275068		17.50 - 18.00	276033
	8.00 - 8.50	275021		17.00 - 17.50	275069		18.00 - 18.50	276034
	8.50 - 9.00	275022		17.50 - 18.00	275070		18.50 - 19.00	276035
	9.00 - 9.50	275023		18.00 - 18.50	275071		19.00 - 19.50	276036
	9.50 - 10.00	275024		18.50 - 19.00	275072		19.50 - 20.00	276037
	10.00 - 10.50	275025		19.00 - 19.50	275073		20.00 - 20.50	276038
	10.50 - 11.00	275026		19.50 - 20.00	275074		20.50 - 21.00	276039
	11.00 - 11.50	275027		20.00 - 20.50	275075		21.00 - 21.50	276040
	11.50 - 12.00	275028		20.50 - 21.00	275076		21.50 - 22.00	276041
	12.00 - 12.50	275029		21.00 - 21.50	275077		22.00 - 22.50	276042
25	12.50 - 13.00	275030		21.50 - 22.00	275078		22.50 - 23.00	276043
	13.00 - 13.50	275031		22.00 - 22.50	275079		23.00 - 23.50	276044
	13.50 - 14.00	275032		22.50 - 23.00	275080		23.50 - 24.00	276045
	14.00 - 14.50	275033		23.00 - 23.50	275081		24.00 - 24.50	276046
	14.50 - 15.00	275034		23.50 - 24.00	275082		24.50 - 25.00	276047
	15.00 - 15.50	275035		24.00 - 24.50	275083		25.00 - 25.50	276048
	15.50 - 16.00	275036		24.50 - 25.00	275084		25.50 - 26.00	276049
	2.50 - 3.00	275040		3.50 - 4.00	276005		26.00 - 26.50	276050
	3.00 - 3.50	275041		4.00 - 4.50	276006		26.50 - 27.00	276051
	3.50 - 4.00	275042		4.50 - 5.00	276007		27.50 - 28.00	276052
	4.00 - 4.50	275043		5.00 - 5.50	276008		27.50 - 28.00	276053
	4.50 - 5.00	275044		5.50 - 6.00	276009		28.00 - 28.50	276054
	5.00 - 5.50	275045		6.00 - 6.50	276010		28.50 - 29.00	276055
	5.50 - 6.00	275046		6.50 - 7.00	276011		29.00 - 29.50	276056
	6.00 - 6.50	275047		7.00 - 7.50	276012		29.50 - 30.00	276057
	6.50 - 7.00	275048		7.50 - 8.00	276013		30.00 - 30.50	276058
	7.00 - 7.50	275049		8.00 - 8.50	276014		30.50 - 31.00	276059
	7.50 - 8.00	275050		8.50 - 9.00	276015		31.00 - 31.50	276060
	8.00 - 8.50	275051		9.00 - 9.50	276016		31.50 - 32.00	276061
	8.50 - 9.00	275052		9.50 - 10.00	276017			
32	9.00 - 9.50	275053		10.00 - 10.50	276018			
	9.50 - 10.00	275054		10.50 - 11.00	276019			
	10.00 - 10.50	275055		11.00 - 11.50	276020			
	10.50 - 11.00	275056		11.50 - 12.00	276021			
	11.00 - 11.50	275057		12.00 - 12.50	276022			

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



Sealing Disks for Collet Chucks

ISO 10897 (DIN 6388)



Imperial (in)

Nominal Size	Sealing Disk		Nominal Size	Sealing Disk		Nominal Size	Sealing Disk	
	Diameter	Part No.		Diameter	Part No.		Diameter	Part No.
16	0.098 - 0.118	275010	25	0.453 - 0.472	275058	32	0.492 - 0.512	276023
	0.118 - 0.138	275011		0.472 - 0.492	275059		0.512 - 0.531	276024
	0.138 - 0.157	275012		0.492 - 0.512	275060		0.531 - 0.551	276025
	0.157 - 0.177	275013		0.512 - 0.531	275061		0.551 - 0.571	276026
	0.177 - 0.197	275014		0.531 - 0.551	275062		0.571 - 0.591	276027
	0.197 - 0.217	275015		0.551 - 0.571	275063		0.591 - 0.610	276028
	0.217 - 0.236	275016		0.571 - 0.591	275064		0.610 - 0.630	276029
	0.236 - 0.256	275017		0.591 - 0.610	275065		0.630 - 0.650	276030
	0.256 - 0.276	275018		0.610 - 0.630	275066		0.650 - 0.669	276031
	0.276 - 0.295	275019		0.630 - 0.650	275067		0.669 - 0.689	276032
	0.295 - 0.315	275020		0.650 - 0.669	275068		0.669 - 0.709	276033
	0.315 - 0.335	275021		0.669 - 0.689	275069		0.709 - 0.728	276034
	0.335 - 0.354	275022		0.689 - 0.709	275070		0.728 - 0.748	276035
	0.354 - 0.374	275023		0.709 - 0.728	275071		0.748 - 0.768	276036
	0.374 - 0.394	275024		0.728 - 0.748	275072		0.768 - 0.787	276037
	0.394 - 0.413	275025		0.748 - 0.768	275073		0.787 - 0.807	276038
	0.413 - 0.433	275026		0.768 - 0.787	275074		0.807 - 0.827	276039
	0.433 - 0.453	275027		0.787 - 0.807	275075		0.827 - 0.846	276040
	0.453 - 0.472	275028		0.807 - 0.827	275076		0.846 - 0.866	276041
	0.472 - 0.492	275029		0.807 - 0.846	275077		0.866 - 0.886	276042
25	0.492 - 0.512	275030		0.846 - 0.866	275078		0.886 - 0.906	276043
	0.512 - 0.531	275031		0.866 - 0.886	275079		0.906 - 0.925	276044
	0.531 - 0.551	275032		0.886 - 0.906	275080		0.925 - 0.945	276045
	0.551 - 0.571	275033		0.906 - 0.925	275081		0.945 - 0.965	276046
	0.571 - 0.591	275034		0.925 - 0.945	275082		0.965 - 0.984	276047
	0.591 - 0.610	275035		0.945 - 0.965	275083		0.984 - 1.004	276048
	0.610 - 0.630	275036		0.965 - 0.984	275084		1.004 - 1.024	276049
	0.098 - 0.118	275040		0.138 - 0.157	276005		1.024 - 1.043	276050
	0.118 - 0.138	275041		0.157 - 0.177	276006		1.043 - 1.063	276051
	0.138 - 0.157	275042		0.177 - 0.197	276007		1.063 - 1.102	276052
	0.157 - 0.177	275043		0.197 - 0.217	276008		1.063 - 1.102	276053
	0.177 - 0.197	275044		0.217 - 0.236	276009		1.102 - 1.102	276054
	0.197 - 0.217	275045		0.236 - 0.256	276010		1.122 - 1.142	276055
	0.217 - 0.236	275046		0.256 - 0.276	276011		1.142 - 1.161	276056
	0.236 - 0.256	275047		0.276 - 0.295	276012		1.161 - 1.181	276057
	0.256 - 0.276	275048		0.295 - 0.315	276013		1.181 - 1.201	276058
	0.276 - 0.295	275049		0.315 - 0.335	276014		1.201 - 1.220	276059
	0.295 - 0.315	275050		0.335 - 0.354	276015		1.220 - 1.240	276060
	0.315 - 0.335	275051		0.354 - 0.374	276016		1.240 - 1.260	276061
	0.335 - 0.354	275052		0.374 - 0.394	276017			
	0.354 - 0.374	275053		0.394 - 0.413	276018			
	0.374 - 0.394	275054		0.413 - 0.433	276019			
	0.394 - 0.413	275055		0.433 - 0.453	276020			
	0.413 - 0.433	275056		0.453 - 0.472	276021			
	0.433 - 0.453	275057		0.472 - 0.492	276022			



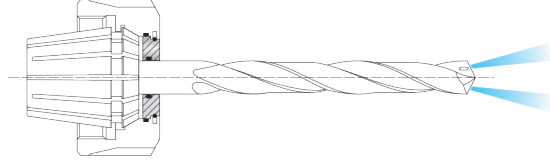
m = Metric (mm)

i = Imperial (in)



Sealing Disks for Collet Chucks

ISO 15488 (DIN 6499)



Metric (mm)

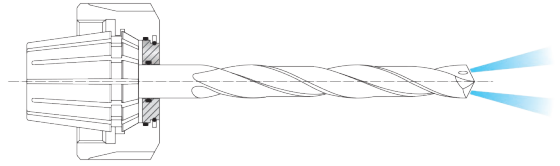
Nominal Size		Sealing Disk		Nominal Size		Sealing Disk		Nominal Size		Sealing Disk	
		Diameter	Part No.			Diameter	Part No.			Diameter	Part No.
m	ER 16	2.50 - 3.00	277010	m	ER 32	m	ER 40	9.00 - 9.50	278018		
		3.00 - 3.50	277011					9.50 - 10.00	278019		
		3.50 - 4.00	277012					10.00 - 10.50	278020		
		4.00 - 4.50	277013					10.50 - 11.00	278021		
		4.50 - 5.00	277014					11.00 - 11.50	278022		
		5.00 - 5.50	277015					11.50 - 12.00	278023		
		5.50 - 6.00	277016					12.00 - 12.50	278024		
		6.00 - 6.50	277017					12.50 - 13.00	278025		
		6.50 - 7.00	277018					13.00 - 13.50	278026		
		7.00 - 7.50	277019					13.50 - 14.00	278027		
		7.50 - 8.00	277020					14.00 - 14.50	278028		
		8.00 - 8.50	277021					14.50 - 15.00	278029		
		8.50 - 9.00	277022					15.00 - 15.50	278030		
		9.00 - 9.50	277023					15.50 - 16.00	278031		
		9.50 - 10.00	277024					16.00 - 16.50	278032		
m	ER 25	2.50 - 3.00	277025					16.50 - 17.00	278033		
		3.00 - 3.50	277026					17.00 - 17.50	278034		
		3.50 - 4.00	277027					17.50 - 18.00	278035		
		4.00 - 4.50	277028					18.00 - 18.50	278036		
		4.50 - 5.00	277029					18.50 - 19.00	278037		
		5.00 - 5.50	277030					19.00 - 19.50	278038		
		5.50 - 6.00	277031					19.50 - 20.00	278039		
		6.00 - 6.50	277032					20.00 - 20.50	278040		
		6.50 - 7.00	277033					20.50 - 21.00	278041		
		7.00 - 7.50	277034					21.00 - 21.50	278042		
		7.50 - 8.00	277035					21.50 - 22.00	278043		
		8.00 - 8.50	277036					22.00 - 22.50	278044		
		8.50 - 9.00	277037					22.50 - 23.00	278045		
		9.00 - 9.50	277038					23.00 - 23.50	278046		
		9.50 - 10.00	277039					23.50 - 24.00	278047		
	ER 32	10.00 - 10.50	277040		ER 40			24.00 - 24.50	278048		
		10.50 - 11.00	277041					24.50 - 25.00	278049		
		11.00 - 11.50	277042					25.00 - 25.50	278050		
		11.50 - 12.00	277043					25.50 - 26.00	278051		
		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									

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



Sealing Disks for Collet Chucks

ISO 15488 (DIN 6499)



Imperial (in)

Nominal Size	Sealing Disk		Nominal Size	Sealing Disk		Nominal Size	Sealing Disk	
	Diameter	Part No.		Diameter	Part No.		Diameter	Part No.
ER 16	0.098 - 0.118	277010	ER 32	0.157 - 0.177	277058	ER 40	0.354 - 0.374	278018
	0.117 - 0.138	277011		0.177 - 0.197	277059		0.374 - 0.394	278019
	0.138 - 0.157	277012		0.197 - 0.217	277060		0.394 - 0.413	278020
	0.157 - 0.177	277013		0.217 - 0.236	277061		0.413 - 0.433	278021
	0.177 - 0.197	277014		0.236 - 0.256	277062		0.433 - 0.453	278022
	0.197 - 0.217	277015		0.256 - 0.276	277063		0.453 - 0.472	278023
	0.217 - 0.236	277016		0.276 - 0.295	277064		0.472 - 0.492	278024
	0.236 - 0.256	277017		0.295 - 0.315	277065		0.492 - 0.512	278025
	0.256 - 0.276	277018		0.315 - 0.335	277066		0.512 - 0.531	278026
	0.276 - 0.295	277019		0.335 - 0.354	277067		0.531 - 0.551	278027
	0.295 - 0.315	277020		0.354 - 0.374	277068		0.551 - 0.571	278028
	0.315 - 0.335	277021		0.374 - 0.394	277069		0.571 - 0.591	278029
	0.335 - 0.354	277022		0.394 - 0.413	277070		0.591 - 0.610	278030
	0.354 - 0.374	277023		0.413 - 0.433	277071		0.610 - 0.630	278031
	0.374 - 0.394	277024		0.433 - 0.453	277072		0.630 - 0.650	278032
ER 25	0.098 - 0.118	277025		0.453 - 0.472	277073		0.650 - 0.669	278033
	0.118 - 0.138	277026		0.472 - 0.492	277074		0.669 - 0.689	278034
	0.138 - 0.157	277027		0.492 - 0.512	277075		0.689 - 0.709	278035
	0.157 - 0.177	277028		0.512 - 0.531	277076		0.709 - 0.728	278036
	0.177 - 0.197	277029		0.531 - 0.551	277077		0.728 - 0.748	278037
	0.197 - 0.217	277030		0.551 - 0.571	277078		0.748 - 0.768	278038
	0.217 - 0.236	277031		0.571 - 0.591	277079		0.768 - 0.787	278039
	0.236 - 0.256	277032		0.591 - 0.610	277080		0.787 - 0.807	278040
	0.256 - 0.276	277033		0.610 - 0.630	277081		0.807 - 0.827	278041
	0.276 - 0.295	277034		0.630 - 0.650	277082		0.827 - 0.846	278042
	0.295 - 0.315	277035		0.650 - 0.669	277083		0.846 - 0.866	278043
	0.315 - 0.335	277036		0.669 - 0.689	277084		0.866 - 0.886	278044
	0.335 - 0.354	277037		0.689 - 0.709	277085		0.866 - 0.906	278045
	0.354 - 0.374	277038		0.709 - 0.728	277086		0.906 - 0.925	278046
	0.374 - 0.394	277039		0.728 - 0.748	277087		0.925 - 0.945	278047
	0.394 - 0.413	277040		0.748 - 0.768	277088		0.945 - 0.965	278048
	0.413 - 0.433	277041		0.768 - 0.787	277089		0.965 - 0.984	278049
	0.433 - 0.453	277042		0.098 - 0.118	278005		0.984 - 1.004	278050
	0.453 - 0.472	277043		0.118 - 0.138	278006		1.004 - 1.024	278051
	0.472 - 0.492	277044		0.138 - 0.157	278007			
	0.492 - 0.512	277045		0.157 - 0.177	278008			
	0.512 - 0.531	277046		0.177 - 0.197	278009			
	0.531 - 0.551	277047		0.197 - 0.217	278010			
	0.551 - 0.571	277048	ER 40	0.217 - 0.236	278011			
	0.571 - 0.591	277049		0.236 - 0.256	278012			
	0.591 - 0.610	277050		0.256 - 0.276	278013			
	0.610 - 0.630	277051		0.276 - 0.295	278014			
	0.098 - 0.118	277055		0.295 - 0.315	278015			
	0.118 - 0.138	277056		0.315 - 0.335	278016			
ER 32	0.138 - 0.157	277057		0.335 - 0.354	278017			



= Metric (mm)

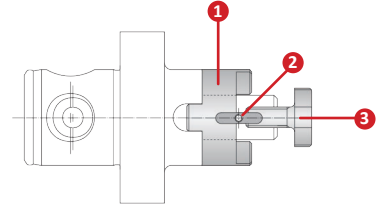
= Imperial (in)



Accessories for Milling Machine Arbors

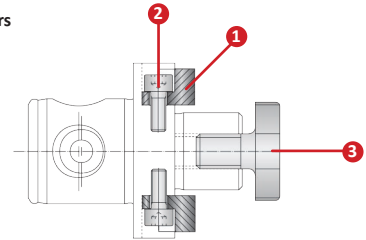
Accessories for Milling Machine Arbors

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



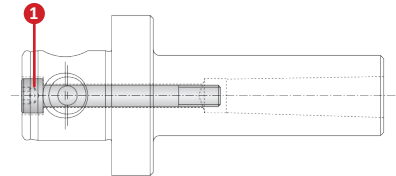
Accessories for Milling Machine Arbors

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	—



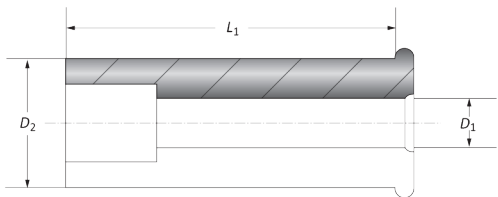
Accessories for Holding Arbors

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





Reducing Sleeves for Hydraulic Clamping Chucks



Metric (mm)

Nominal Size		Reducing Sleeve		Part No.
D_2	L_1	D_1		
m	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)

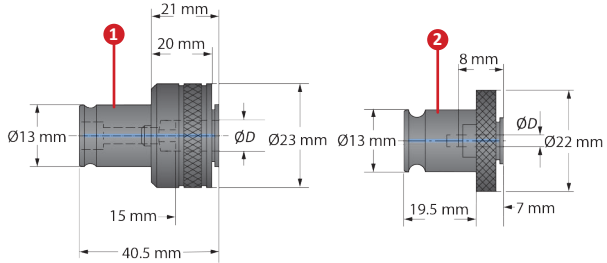
Nominal Size		Reducing Sleeve		Part No.
D_2	L_1	D_1		
i	0.787	1.988	0.118	271045
			0.157	271046
			0.197	271047
			0.236	271003
			0.276	271049
			0.315	271004
			0.354	271050
			0.394	271005
			0.433	271051
			0.472	271006
			0.512	271052
			0.551	271007
			0.591	271018
			0.630	271008

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.





Quick-Change Adapters



Metric (mm)

Shank Dimensions		Quick Change Adapter								Part No.		
Nominal Size	Dx Square Shank	DIN 352	DIN 353	DIN 371	DIN 374	DIN 376	DIN 2182	DIN 2183	Torque Setting	1.	2.	
m	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

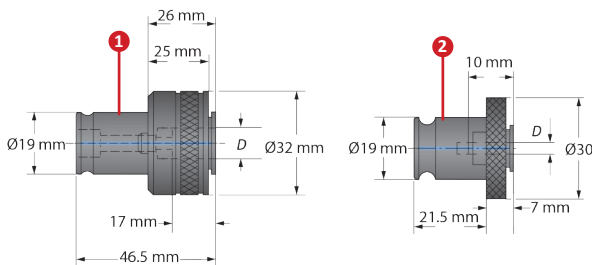
Imperial (in)

Shank Dimensions		Quick Change Adapter								Part No.		
Nominal Size	Dx Square Shank	DIN 352	DIN 353	DIN 371	DIN 374	DIN 376	DIN 2182	DIN 2183	Torque Setting	1.	2.	
i	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	





Quick-Change Adapters

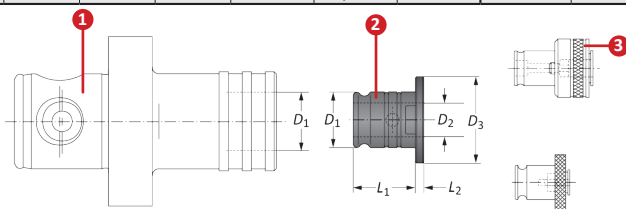


Metric (mm)

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.
	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.
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					Weight (kg)	Part No.
Nominal Size	D ₁	Nominal Size	D ₁	D ₁	D ₂	D ₃	L ₁	L ₂		
m	1	19.00	0	13.00	19.00	13.00	30.00	21.50	0.12	161038
	2	31.00	1	19.00	31.00	19.00	48.00	35.00	0.48	162094

Imperial (in)

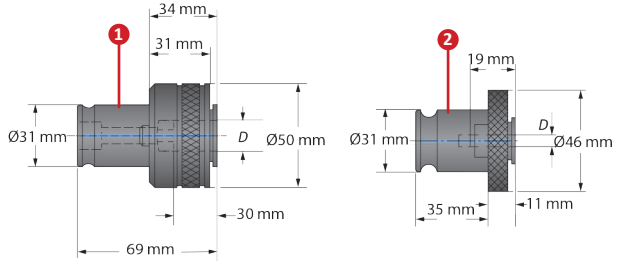
1. Tapping Chuck			2. Quick Change Adapter		3. Reducer						
Nominal Size	D ₁		Nominal Size	D ₁	D ₁	D ₂	D ₃	L ₁	L ₂	Weight (lbs)	Part No.
①	1	0.748	0	0.512	0.748	0.512	1.181	0.846	0.157	0.264	161038
	2	1.220	1	0.748	1.220	0.748	1.890	1.378	0.197	1.058	162094

m = Metric (mm)

i = Imperial (in)



Quick-Change Adapters

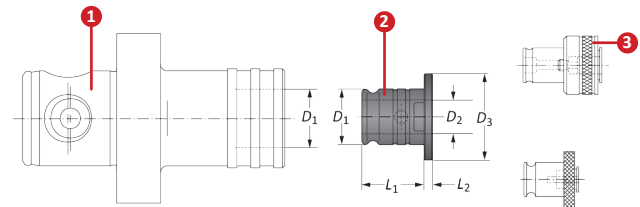


Metric (mm)

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	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
	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.
i	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
	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



Metric (mm)

1. Tapping Chuck		2. Quick Change Adapter		3. Reducer					Weight (kg)	Part No.
Nominal Size	D ₁	Nominal Size	D ₁	D ₁	D ₂	D ₃	L ₁	L ₂		
m	1	19.00	0	13.00	19.00	13.00	30.00	21.50	0.12	161038
	2	31.00	1	19.00	31.00	19.00	48.00	35.00	0.48	162094

Imperial (in)

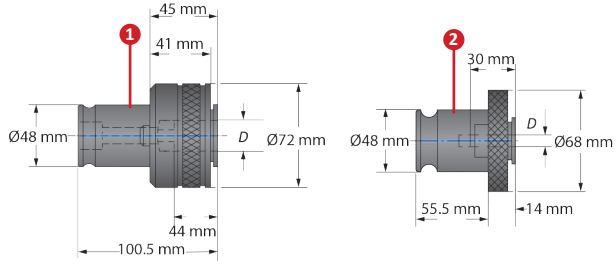
1. Tapping Chuck		2. Quick Change Adapter		3. Reducer					Weight (lbs)	Part No.
Nominal Size	D ₁	Nominal Size	D ₁	D ₁	D ₂	D ₃	L ₁	L ₂		
i	1	0.748	0	0.512	0.748	0.512	1.181	0.846	0.264	161038
	2	1.220	1	0.748	1.220	0.748	1.890	1.378	1.058	162094

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)

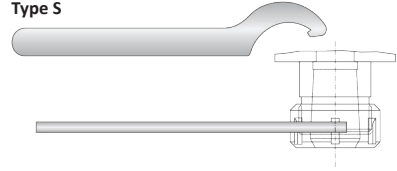


Service Keys for Collet Systems

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

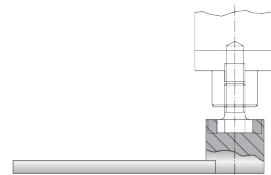
Service Keys		
Service Key	Type	Part No.
13	P	315689
19	P	315691

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





Notes

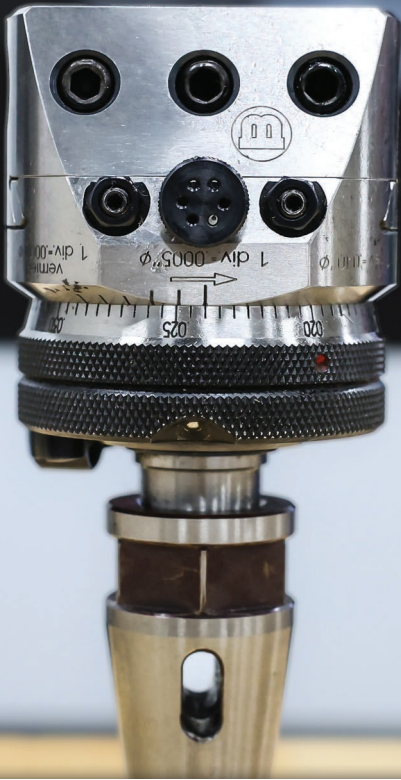
This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin black lines. There are 20 columns and 20 rows of squares, creating a total of 400 square units. The paper is otherwise completely blank, with no margins, text, or other markings.

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

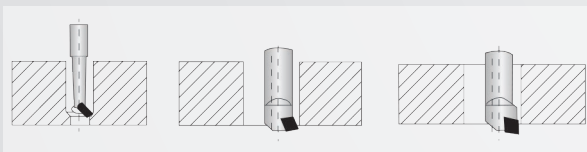
Universal Facing and Boring Heads.

The versatile Wohlhaupter UPA boring heads can be used for facing, boring, and taper turning. They are available in right- or left-handed types.

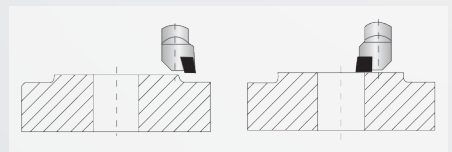
Precise and **versatile** boring heads.

- ▶ 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.

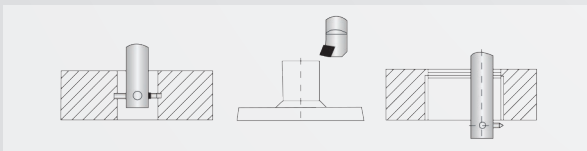
UNIVERSAL FACING and BORING Applications



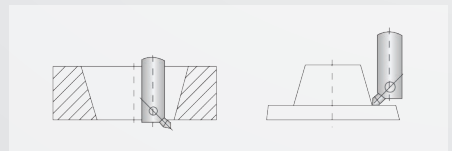
Boring with different tools



From inside outward Facing From outside inward



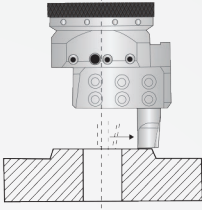
Recessing Outside turning Thread cutting



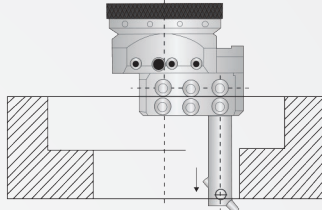
Taper turning

UNIVERSAL

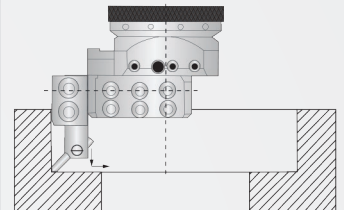
FACING and BORING Application Examples



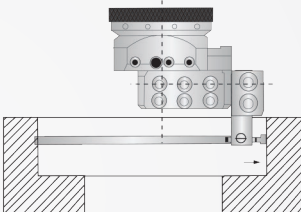
Facing with boring bar directly in slide.



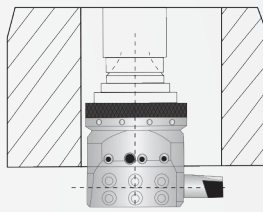
Boring with long boring bar.



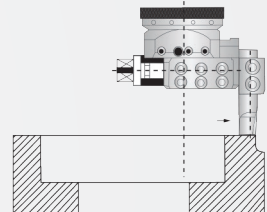
Boring and facing with short boring bar holder and a boring bar.



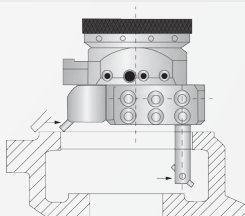
Recessing with short boring bar holder and a boring bar.



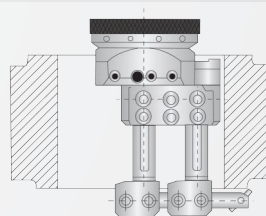
Deep hole boring with boring bar directly in slide.



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.

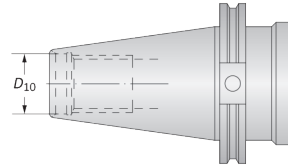


UPA 3

Master Shanks

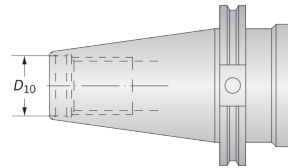
CAT Shanks

	Style	D_{10}	Weight (lbs)	Part No.
i	CAT 40	5/8 - 11	2.336	130001T013939
	CAT 50	1 - 8	7.054	130001T011624



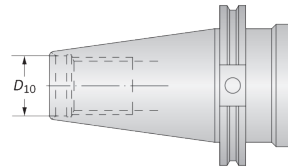
SK (DIN 69871)

	Style	D_{10}	Weight (kg)	Part No.
m	ISO 40	M16	1.00	130001T013815



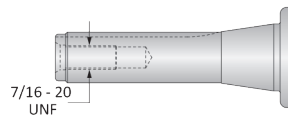
DIN 2080

	Style	D_{10}	Weight (kg)	Part No.
m	ISO 30	M12	0.40	130001T003673
	ISO 40	M16 (chucking groove)	0.80	130001T010229
	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

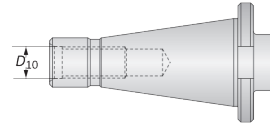


UPA 3

Master Shanks

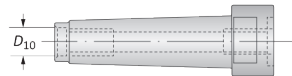
NMTB Shanks

	Style	D_{10}	Weight (lbs)	Part No.
	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
	MT 4	DIN 2207	M16	0.70	130001T004256
	MT 4	—	M14 SIP	1.00	130001T004255

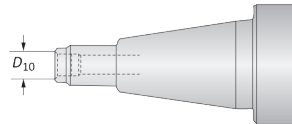


Morse Taper Shanks (Imperial (in))

	Style	Type	D_{10}	Weight (lbs)	Part No.
	MT 3	DIN 1806	—	0.661	130001T004509
	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.
	40xS 20x2 with bolts DECKEL	M12 x 1	1.00	130001T005070



Differential Screw

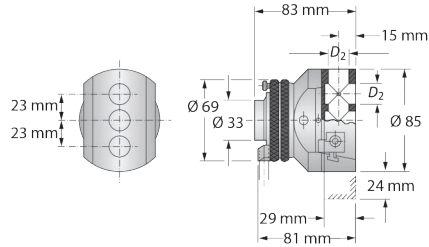
Thread	Weight	Part No.
M16 x 2	0.03 kg (0.066 lbs)	KW9208





UPA 3

Boring Heads



Metric (mm)

	Boring Range	Boring Head		Part No.
		D ₂	Weight (kg)	
	0.00 - 260.00	18.00	2.10	005020

Imperial (in)

	Boring Range	Boring Head		Part No.
		D ₂	Weight (lbs)	
	0.000 - 10.234	0.750	4.629	006020

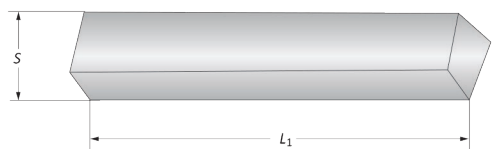
Metric (mm)

	Square Turning Bit		Weight (g)	Part No.
	S	L ₁		
	6.00	40.00	11	089001

Imperial (in)

	Square Turning Bit		Weight (oz)	Part No.
	S	L ₁		
	0.236	1.574	0.035	089001

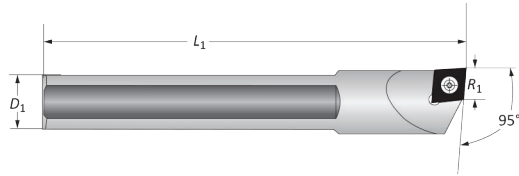
Square Turning Bit





UPA 3

Boring Bars

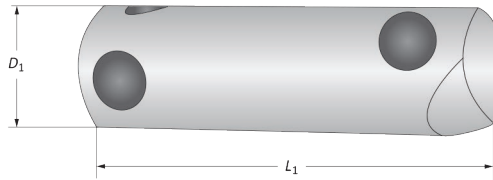


Metric (mm)

Boring Bar				Type	Insert Form	Part No.
D_1	L_1	R_1	Weight (kg)			
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				Type	Insert Form	Part No.
D_1	L_1	R_1	Weight (lbs)			
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		Boring Depth	Part No.
D_1	L_1		
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		Boring Depth	Part No.
D_1	L_1		
0.750	2.362	1.181	074003
0.750	3.543	2.362	074004
0.750	4.724	3.543	074005

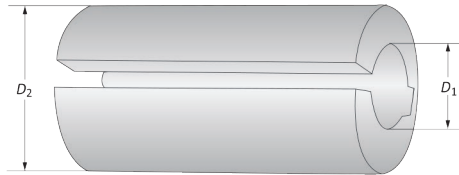




UPA 3

Accessories

Reducing Sleeves



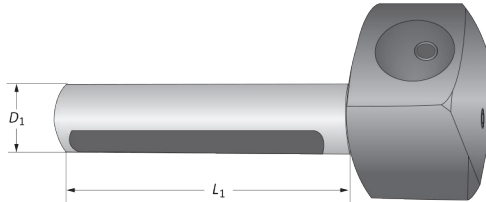
Metric (mm)

m	Reducing Sleeve		Weight (kg)	Part No.
	D_2	D_1		
	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)

i	Reducing Sleeve		Weight (lbs)	Part No.
	D_2	D_1		
	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)

m	Boring Bar Holder		Working Diameter Range	Part No.
	D_1	L_1		
	18.00	82.00	85.00 - 190.00	075001
i	18.00	120.00	160.00 - 260.00	075002

Imperial (in)

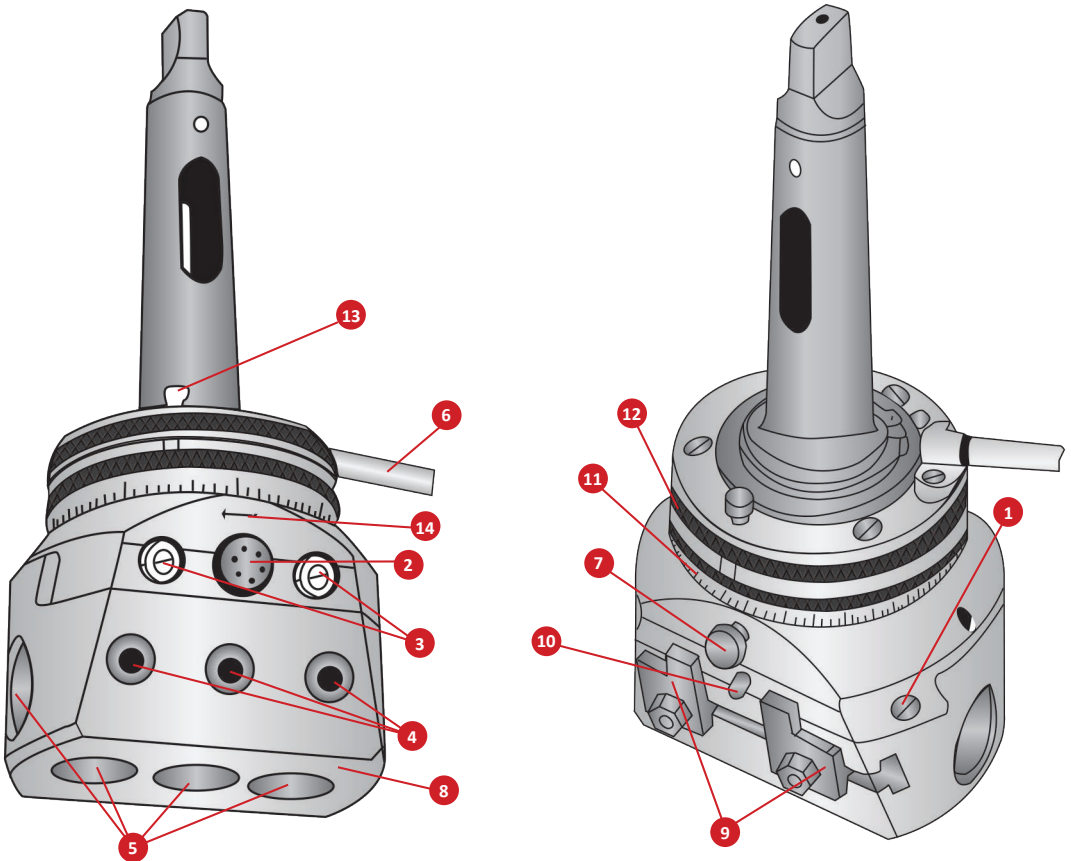
i	Boring Bar Holder		Working Diameter Range	Part No.
	D_1	L_1		
	0.750	3.228	3.346 - 7.480	076001
K	0.750	4.724	6.299 - 10.236	076002





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



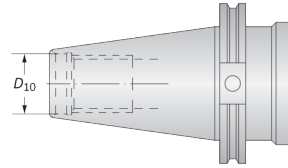


UPA 4 and 5-S 6

Master Shanks

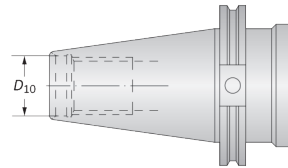
CAT Shanks

	Style	D_{10}	Weight (lbs)	Part No.
i	CAT 40	5/8 - 11	3.196	130005T013939
	CAT 50	1 - 8	7.054	130005T011624



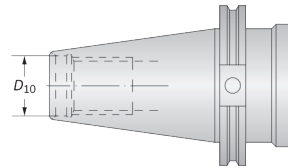
SK (DIN 69871)

	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

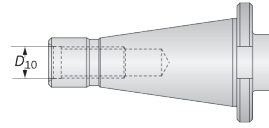


UPA 4 and 5-S 6

Master Shanks

NMTB Shanks

	Style	D_{10}	Weight (lbs)	Part No.
	NMTB 40	5/8 - 11	2.866	130005T004498
	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.
	MT 4	0.86	130005T003590*
	MT 5	1.65	130005T003920

Morse Taper Shanks (Imperial (in))

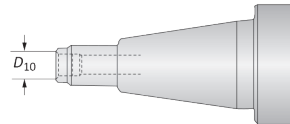
	Style	Weight (lbs)	Part No.
	MT 4	1.895	130005T003590*
	MT 5	3.639	130005T003920

*Shank can only be used with UPA 4 boring heads.



Norm Taper

	Style	D_{10}	Weight (kg)	Part No.
	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

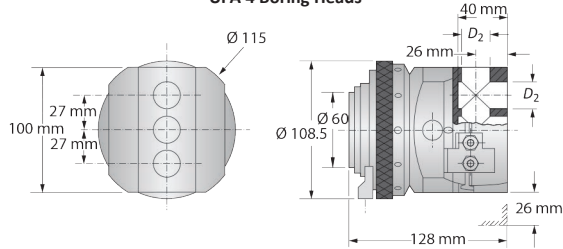




UPA 4 and 5-S 6

Boring Heads

UPA 4 Boring Heads



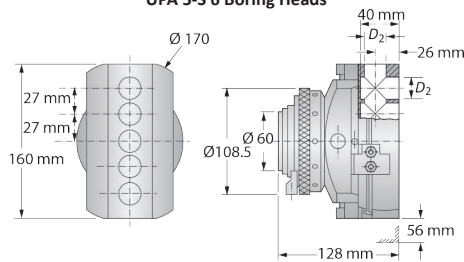
Metric (mm)

	Boring Range	Boring Head		Part No.
		D_2	Weight (kg)	
	0.00 - 400.00	22.00	6.50	007020

Imperial (in)

	Boring Range	Boring Head		Part No.
		D_2	Weight (lbs)	
	0.000 - 15.748	0.875	14.330	008020

UPA 5-S 6 Boring Heads



Metric (mm)

	Boring Range	Boring Head		Part No.
		D_2	Weight (kg)	
	0.00 - 620.00	22.00	7.90	013020

Imperial (in)

	Boring Range	Boring Head		Part No.
		D_2	Weight (lbs)	
	0.000 - 24.409	0.875	17.416	014020

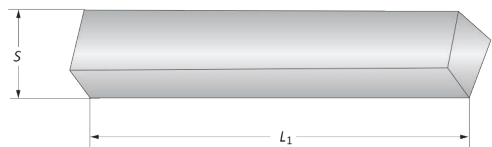
Metric (mm)

	Square Turning Bit		Weight (g)	Part No.
	S	L_1		
	6.00	40.00	11	089001

Imperial (in)

	Square Turning Bit		Weight (oz)	Part No.
	S	L_1		
	0.236	1.574	0.035	089001

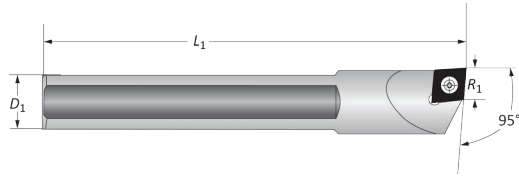
Square Turning Bit





UPA 4 and 5-S 6

Boring Bars

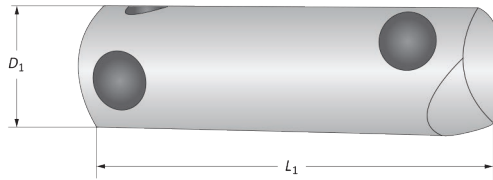


Metric (mm)

Boring Bar				Type	Insert Form	Part No.
D_1	L_1	R_1	Weight (kg)			
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)			
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		
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		
0.875	3.346	1.771	074006
0.875	4.921	3.346	074007
0.875	6.496	4.921	074008

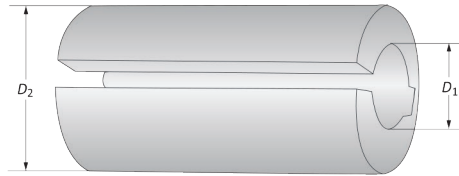




UPA 4 and 5-S 6

Accessories

Reducing Sleeves



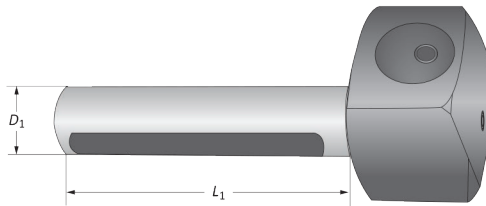
Metric (mm)

m	Reducing Sleeve		Weight (kg)	Part No.
	D_2	D_1		
	22.00	8.00		
	22.00	10.00		
	22.00	12.00		
	22.00	14.00		
	22.00	18.00		

Imperial (in)

i	Reducing Sleeve		Weight (lbs)	Part No.
	D_2	D_1		
	0.875	0.312		
	0.875	0.375		
	0.875	0.500		
	0.875	0.625		
	0.875	0.750		

Boring Bar Holder



Metric (mm)

m	Boring Bar Holder		Working Diameter Range		Part No.
	D_1	L_1	UPA 4	UPA 5-S 6	
	22.00	98.00	115.00 - 240.00	120.00 - 400.00	
	22.00	180.00	220.00 - 400.00	270.00 - 620.00	

Imperial (in)

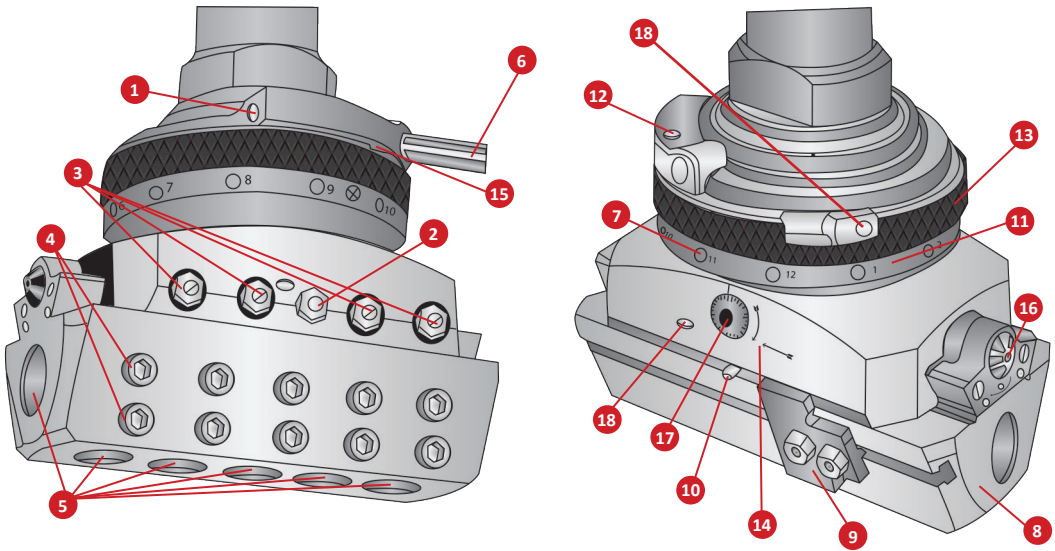
i	Boring Bar Holder		Working Diameter Range		Part No.
	D_1	L_1	UPA 4	UPA 5-S 6	
	0.875	3.858	4.527 - 9.448	4.724 - 15.748	
	0.875	7.087	8.661 - 15.748	10.630 - 24.408	





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

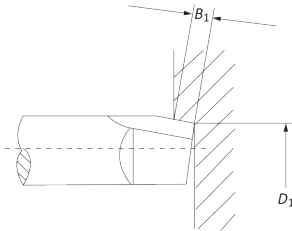




Technical Information

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%.



This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin black lines. There are 20 columns and 20 rows of squares, creating a total of 400 square units. The paper is otherwise completely blank, with no margins, text, or other markings.



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.

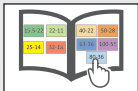
From premachining holes with heavy stock removal to finish machining with tight tolerances and excellent surface finish, Wohlhaupter's extensive range of lay down cartridges can help you achieve specific boring solutions. Wohlhaupter's lay down cartridges bring innovative concepts designed to improve productivity, reduce scrap, and reduce the cost per part.

Applicable Industries

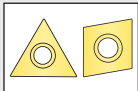
-  Aerospace
-  Agriculture
-  Automotive
-  Defense
-  General Production
-  Heavy Equipment
-  Hydraulics
-  Marine
-  Medical
-  Oil and Gas
-  Renewable Energy/ Energy
-  Tool, Mold, and Die

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.	

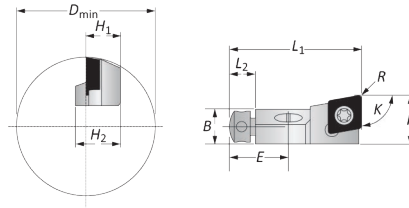
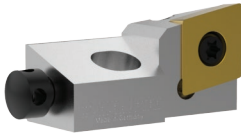
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Compact Lay Down Cartridges

80° Rhomboid



Metric (mm)

				Insert Holder										
K	Insert Form	ISO	$D_{\min}$ Boring Range	Designation	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	SCOCR08CK-06	28.00	6.00	6.50	8.00	10.00	9.00	0.40	13.00	345014	
	103	CC..09T3..	40.00	SCOCR10CK-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	

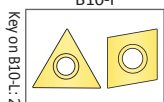
Imperial (in)

				Insert Holder										
K	Insert Form	ISO	D_{min} Boring Range	Designation	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	SCOCR08CK-06	1.102	0.236	0.255	0.314	0.393	0.354	0.015	0.511	345014	
	103	CC..09T3..	1.574	SCOCR10CK-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



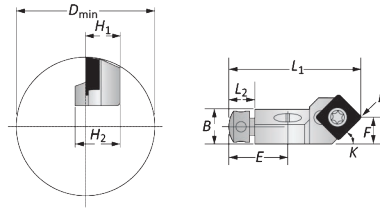
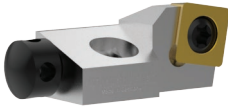
m = Metric (mm)

i = Imperial (in)



Compact Lay Down Cartridges

Square

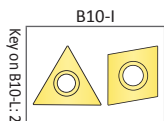


Metric (mm)

	K	Insert Form	ISO	D _{min} Boring Range	Designation	Insert Holder								Part No.
						L ₁	L ₂	B	H ₁	H ₂	F	R Radius	E	
m	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	SSOCR10CK-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								Part No.
						L ₁	L ₂	B	H ₁	H ₂	F	R Radius	E	
i	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	SSOCR10CK-09	1.496	0.295	0.393	0.393	0.511	0.472	0.031	0.669	345019



B10-I



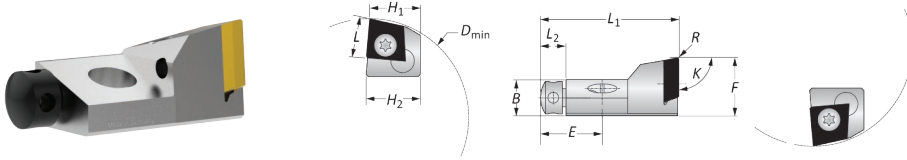
L

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



Compact Lay Down Cartridges

Tangential



Metric (mm)

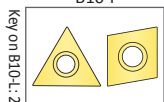
K		Insert Form	Type	D _{min} Boring Range	Insert Holder									Part No.
					L ₁	L ₂	B	H ₁	H ₂	F	R Radius	E	L	
m	90°	04	Right	54.00	38.00	7.50	10.00	14.00	15.00	16.00	0.50	17.00	10.50	345023
			Left	54.00	38.00	7.50	10.00	14.00	15.00	16.00	0.50	17.00	10.50	345025
		05	Right	70.00	45.00	8.00	14.00	19.00	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	Part No.
					L ₁	L ₂	B	H ₁	H ₂	F	R Radius	E		
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

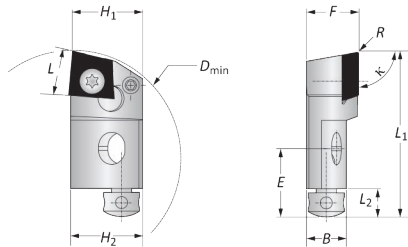
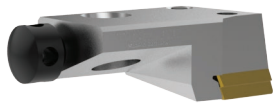
B10-I



B10-L: 5

Compact Lay Down Cartridges

Tangential - Radial Cutting

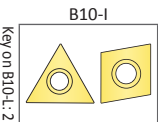


Metric (mm)

				Insert Holder										
K	Insert Form	Type	$D_{\min}$ Boring Range	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)

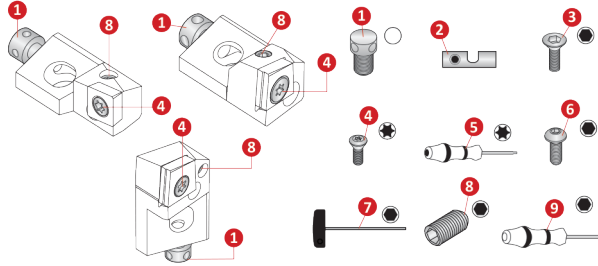
				Insert Holder										
K	Insert Form	Type	$D_{\min}$ Boring Range	L_1	L_2	B	H_1	H_2	F	R Radius	E	L	Part No.	
	90°	04	Right	2.125	1.614	0.295	0.393	0.669	0.708	0.511	0.019	0.669	0.413	345024
		05	Right	2.755	1.968	0.314	0.551	0.826	0.866	0.669	0.019	0.787	0.570	345021





Compact Lay Down Cartridges

Accessories

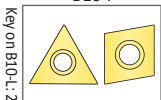


Insert Holder Part No.	1. Axial Barrel Screw	2. Shim	3. Insert Screw	4. Insert Screw	5. Torx® Driver	6. Holder Fixing Screw	7. Hex Driver	8. Radial Set Screw	9. Hex Driver
345001	215742	345201	215461	115676	115590	215343	415577	114224	215472
345002	415299	345202	116433	115673	115664	215634	415164	070161	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



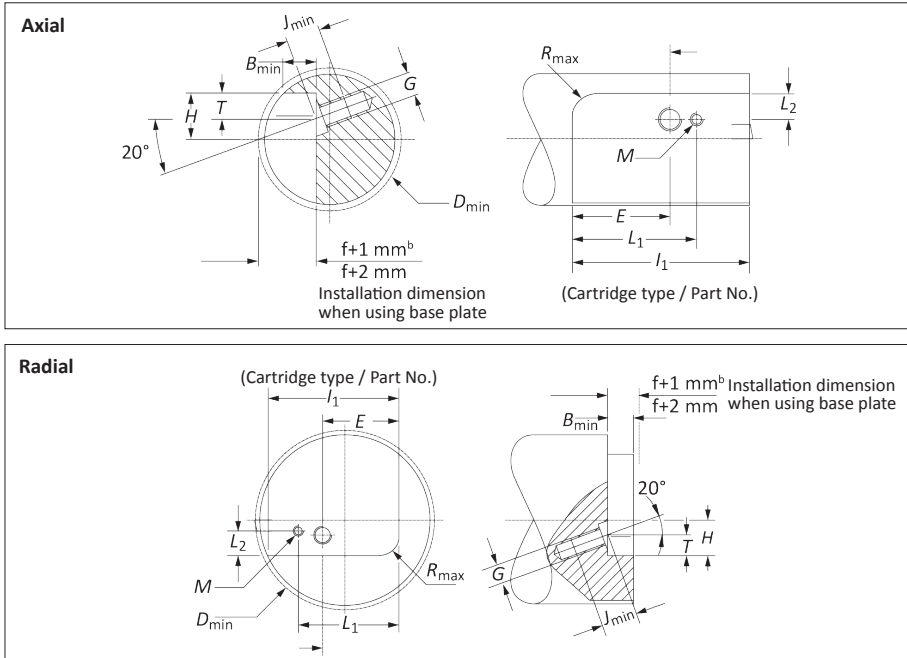
B10-L: 7

= Metric (mm)
 = Imperial (in)



Compact Lay Down Cartridges

Mounting Dimensions



Metric (mm)

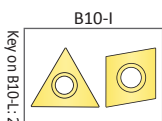
	Installation Dimensions				Mounting Thread and Base Plate							Cartridge Type
	D_{min}	H	R_{max}	B_{min}	E	L_1	T	L_2	G	M	J_{min}	
③	25.00	8.00	2.00	6.50	13.00	18.50	4.50	4.20	M4	M2	8.00	XXXXX 08CK ^{1,2}
	40.00	10.00	2.50	10.00	17.00	24.50	5.00	4.70	M6	M3	11.00	XXXXX 10CK
	50.00	12.00	5.50	14.00	20.00	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)

		Installation Dimensions				Mounting Thread and Base Plate						
	D_{min}	H	R_{max}	B_{min}	E	L_1	T	L_2	G	M	J_{min}	Cartridge Type
i	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

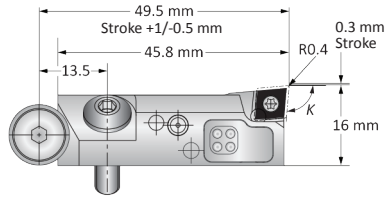
- From D_{min} 25 mm - 32 mm, the short clamp holder is 0.5 mm from the middle.
- Installation with base plate.





ES-Bore Fine Boring Cartridges: ≥ 28.00 mm (1.102")

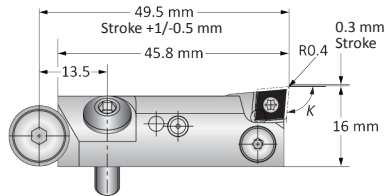
Fine Boring Cartridges



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.

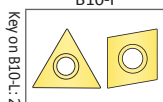


Analog Cartridges

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



B10-I

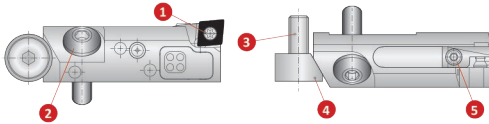




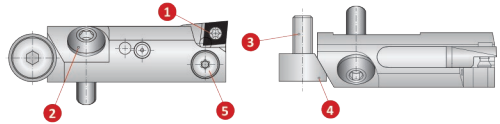
ES-Bore Fine Boring Cartridges: ≥ 28.00 mm (1.102")

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

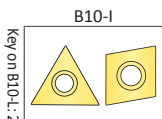
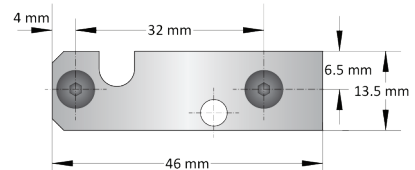
NOTE: Adapter sold separately.



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.



B10-I

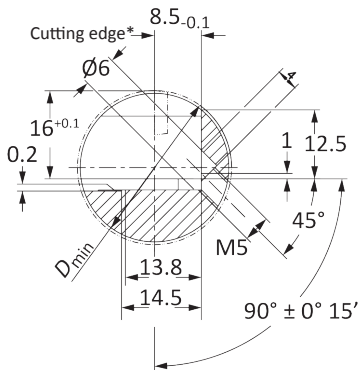
Key on B10-L: 2

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

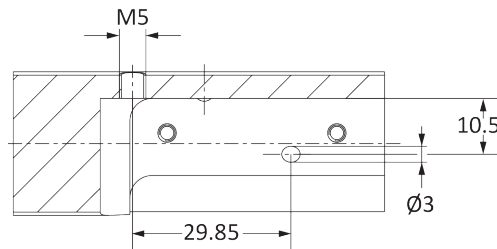
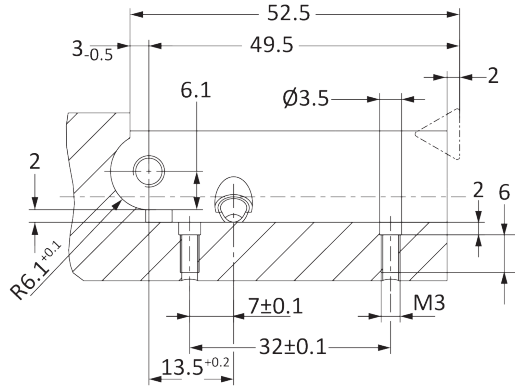


ES-Bore Fine Boring Cartridges: ≥ 28.00 mm (1.102")

Mounting Dimensions

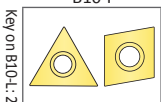


*For $D \leq 32$ mm cutting edge 1 mm before center.



L

B10-L





Notes

This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin black lines. There are 20 columns and 20 rows of squares, creating a total of 400 square units. The paper is otherwise completely blank, with no margins, text, or other markings.

SECTION

B10-M

Accessories / Technical Information

Accessories/ Technical Information



WOHLHAUPTER®

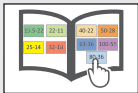
MultiBore® Boring Tools

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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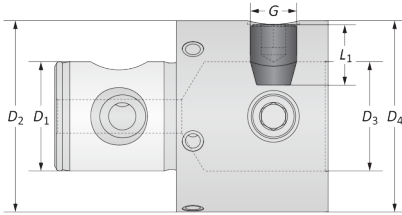
Accessories	
Threaded Taper Pins	3
Clamping Pieces	4
Heavy Metal Balancing Screws	5
Wrenches/Drivers	6
Drivers	7
Driver and Wrench Sets	8
Boring Guidelines	
Recommended Length-to-Diameter	9
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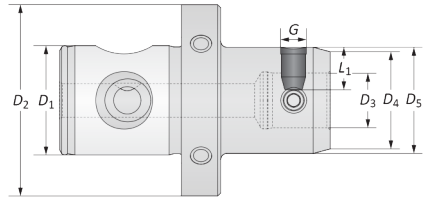
Accessories

Threaded Taper Pins

Extensions



Reducers



Threaded Taper Pins for Extensions

Connection		Taper Pin			Part No.		Service Key	
$D_2 D_1$	$D_4 D_3$	Metric (mm) L	Imperial (in) L	G	Steel	Titanium	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	
$D_2 \mid D_1$	$D_4 \mid D_3$	Metric (mm)		Imperial (in)						
		D_5	L	D_5	L	G	Steel	Titanium	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
	40 - 22	46.00	14.50	1.811	0.571	M8 x 1.0	132143	—	s4 / B	12.0 N·m
		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

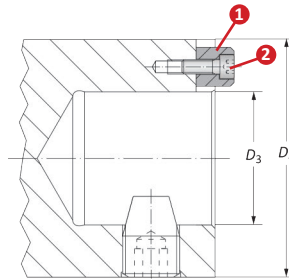
NOTE: Steel or titanium taper pins are used in balancing the Alu-Line tooling.

B10: ix - x



Accessories

Clamping Pieces



Clamping Pieces for MVS 100 - 56

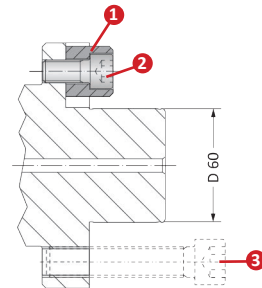
Connection	Service Key	1.Torque		Service Key	2.Cap Screw	
		D x L	Part No.		D x L	Part No.
100 - 56	–	–	115641	S5 / B	M6 x 1 x 16	115147

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	Service Key	2. Cap Screw 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



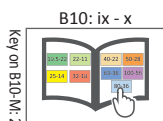
Clamping Pieces for D 60 / D 40

Connection	Service Key	3. Cap Screw 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.

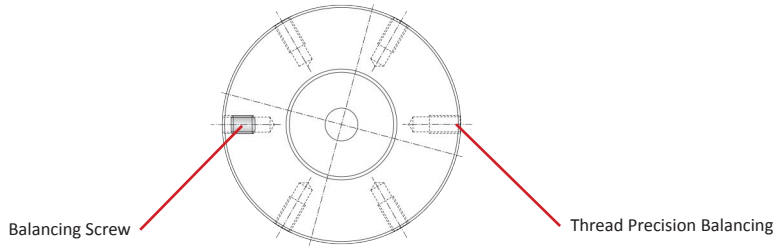
⁽³⁾ Ø 200.00 mm - 520.00 mm (7.874" - 20.472").





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

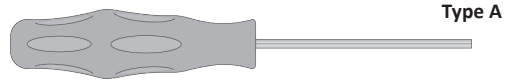


Accessories

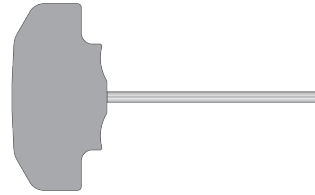
Wrenches/Drivers

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



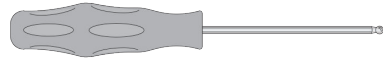
Type A



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



Torque Driver (Type H)

Service Key	Part No.
T6 / H	415507
T7 / H	415508
T8 / H	415514
T15 / H	415510
T20 / H	415543



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





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	

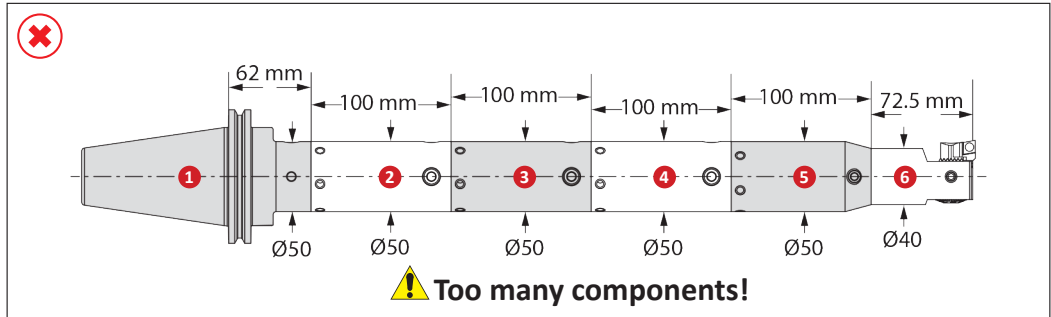
25 Piece Wrench Set

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	



Guidelines for Not Exceeding Recommended Length-to-Diameter Ratio

To calculate, see graphics below:



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).

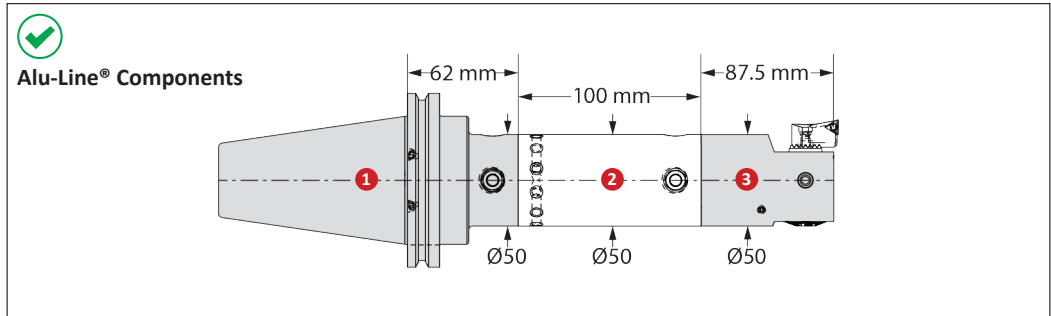
Step 1: Find L : D by component.

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!



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.

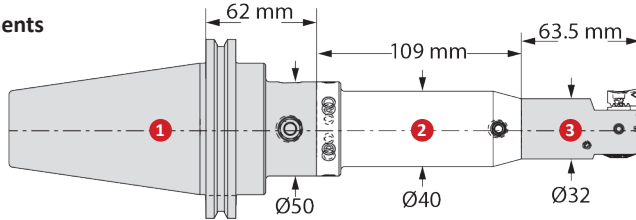


Guidelines for Not Exceeding Recommended Length-to-Diameter Ratio

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.

$$1.2$$

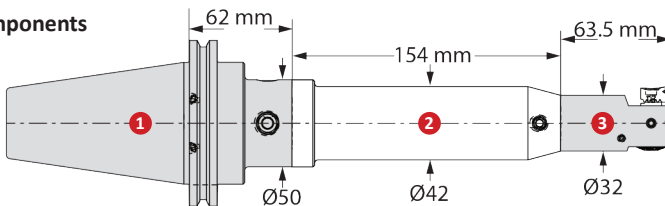
$$2.7$$

$$+2.0$$

$$5.9 = L : D \text{ ratio}$$



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.

$$1.2$$

$$3.6$$

$$+2.0$$

$$6.8 = L : D \text{ ratio}$$

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.

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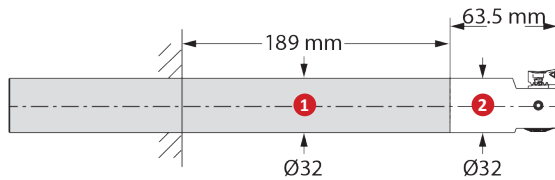


Guidelines for Not Exceeding Recommended Length-to-Diameter Ratio

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.

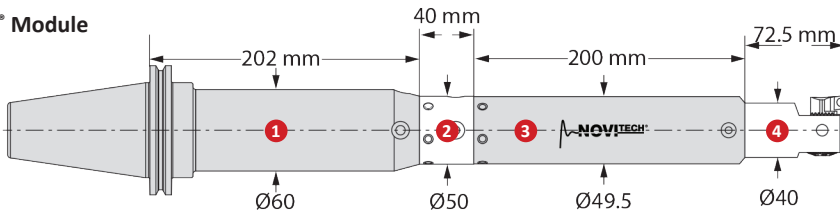
5.9

+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:

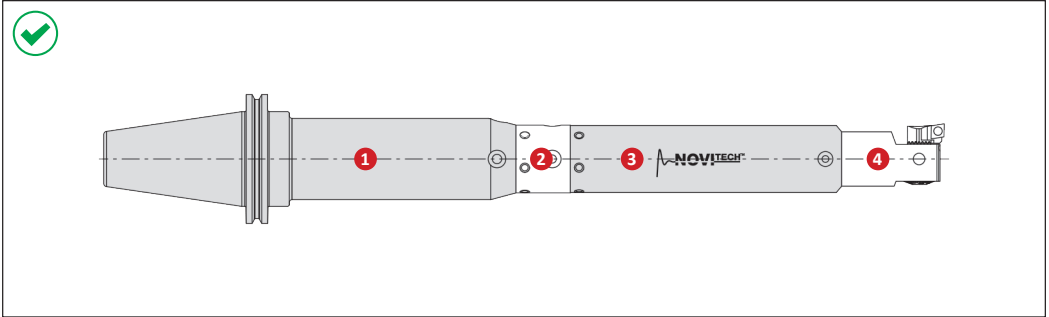
- Do not exceed recommended 10xD length-to-diameter ratio or exceed four total components (including shank).
- When using Alu-Line® components, do not exceed recommended 5xD length-to-diameter ratio.
- When using tool steel components, do not exceed recommended 6xD length-to-diameter ratio.
- When using 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.

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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				Weight	Part No.
$D_1 D_2$	A	X_1	X_2	L_2	D_5		
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.

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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	
Rigidity: _____	Orientation: _____	Tool Rotating: _____
☐ Excellent	☐ Vertical	☐ Yes
☐ Good	☐ Horizontal	☐ No
☐ Poor	Thrust: _____ lbs/N	

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



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ALLIED MACHINE & ENGINEERING

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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.

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