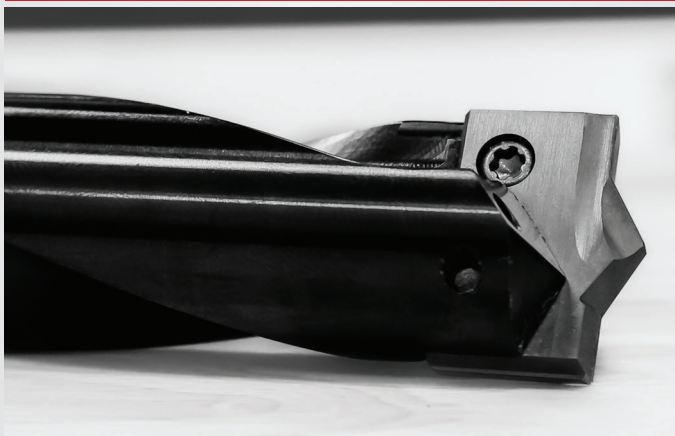


STRUCTURAL STEEL DRILLING PRODUCT CATALOG



ALLIED MACHINE
& ENGINEERING

www.alliedmachine.com

It's so much easier when you make **BETTER CHIPS**

Allied Machine specializes in developing innovative solutions designed to **pulverize** material. Our tools achieve the chip formation and chip evacuation you need to increase your production.



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, 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 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

SECTION

A91-SSD

Structural Steel Solutions

Structural Steel Drilling Solutions



Take on Tough Drilling

Allied Machine's structural steel drilling system is designed for maximum performance in structural steel materials and applications. These solutions utilize the T-A, GEN2 T-A, GEN3SYS XT Pro, and 4TEX drill designs and capabilities.

With multiple geometries and coatings, you're sure to find the solution that is right for you. Tough drilling is tough no more.

- ▶ T-A® and GEN2 T-A®
 - ▶ 14.00 mm - 47.82 mm (0.5512" - 1.8829")
- ▶ GEN3SYS® XT Pro
 - ▶ 12.00 mm - 35.00 mm (0.4724" - 1.3780")
- ▶ 4TEX® Drill
 - ▶ 12.00 mm - 39.67 mm (0.472" - 1.562")

Applicable Industries



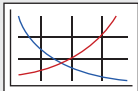
Structural Steel Fabricator

Reference Icons

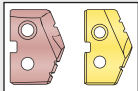
The following icons will appear throughout the catalog to help you navigate between products.



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



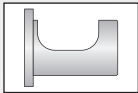
Recommended Cutting Data
Speed and feed recommendations for optimum and safe drilling.



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



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



Eccentric Sleeves
Refers to the corresponding eccentric sleeve for the holder.



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

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



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

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

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

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

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

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

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Structural Steel Drilling

Overview

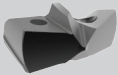
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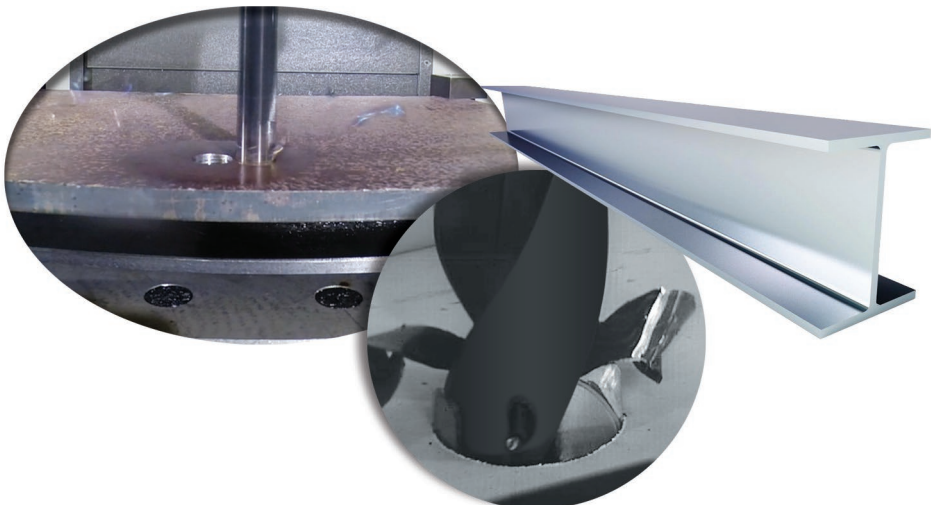
Achieving Optimal Results in Structural Steel

Drilling in structural steel materials can be a difficult process, and achieving optimal results becomes a major issue. Allied Machine's structural steel drilling solutions have been specifically designed to produce the best results in the toughest materials. With solutions in both the T-A® and GEN3SYS® XT Pro product lines, you have multiple options to solve your application problems.



Insert Style Comparison

	 GEN3SYS® XT Pro Structural Steel	 T-A® Thin Wall	 T-A® Notch Point®	 T-A®150° Structural Steel	 GEN2 T-A® High Efficiency
High penetration	☒				
Material less than 11.5 mm (7/16") thick		☒			
Material over 11.5 mm (7/16") thick	☒		☒	☒	☒
Reduced exit burr			☒	☒	
Includes Notch Point® geometry			☒	☒	☒
Available from carbide	☒				☒
Stocked in common sizes for the structural steel industry	☒	☒	☒	☒	☒

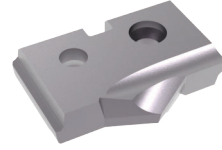




T-A® and GEN2 T-A® Structural Steel Drilling System

Case Study

CASE STUDY



A91

Project Profile: Structural Steel I-Beam Construction
Tooling Solution: T-A® Structural Steel Drilling System

The Problem:

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

- 650 RPM
- 0.25 mm/rev (0.010 IPR)
- 165.1 mm/min (6.5 IPM)

The tool drilled a 22.23 mm (0.875") diameter hole to a 11.11 mm (0.4375") depth. The drill had a tool life of **only 20 holes**.

The poor tool performance was brought to the attention of the technician, who was familiar with Allied Machine products. The following day, Allied Machine tooling was brought in for testing. The customer needed improvement in the tool life of the inserts.

The Solution:

Allied Machine recommended the T-A structural steel drilling system.

- **Insert** = 151A-0028-TW (#1 series T-A insert with TiAlN coating and thin wall geometry)
- **Holder** = 25010H-004IS052 (#1 series T-A holder with #4 Morse Taper shank and helical flute)

The tool ran at the following parameters:

- 440 RPM
- 0.25 mm/rev (0.010 IPR)
- 111.7 mm/min (4.4 IPM)

The tool achieved the desired diameter and depth. But most of all, the tool produced **1,500 holes**.

Summary:

The customer was able to take advantage of Allied Machine's vast experience in the structural steel drilling niche. Allied's wide variety of stocked solutions for specific customer problems allows for a remarkable increase in tool life.

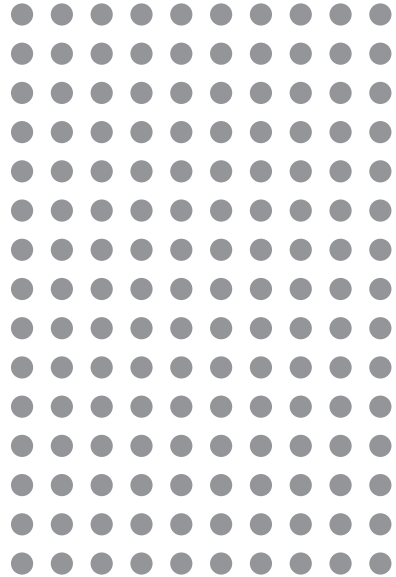
The T-A structural steel drilling system defeated the competition, resulting in a **cost per hole savings of 89%** for the customer.

The PROOF is in the NUMBERS

Competitor Insert Tool Life
(number of holes = 20)



T-A Structural Steel Insert Tool Life
(number of holes = 1,500)



Overall **SAVINGS** of
89%



PREMIUM SOLUTION





T-A® and GEN2 T-A® Structural Steel Drilling System

System Overview

A91

STRUCTURAL STEEL ENHANCEMENTS T-A® & GEN2 T-A®

GEN2 T-A Insert

Available in AM300® and AM200® Coating

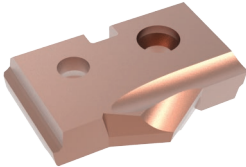


High Efficiency (-HE)

- Improves performance.
- Improves tool life.
- Improves chip formation in structural steel materials.

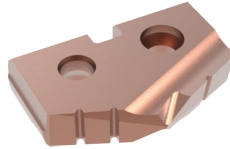
T-A Inserts

Available in AM200® and TiAlN Coatings



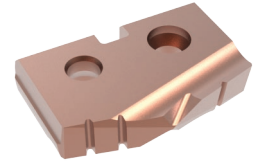
Thin Wall (-TW)

- Designed for drilling 11.5 mm (7/16") thick or less I-beam or structural materials.
- Increases hole diameter tolerance.
- Improves hole roundness.
- Decreases material deflection.



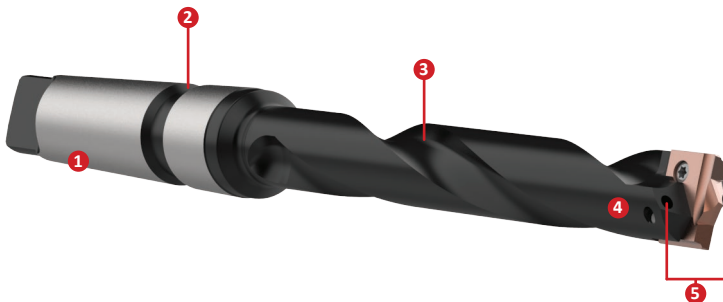
Notch Point® (-NP)

- Provides excellent self-centering characteristics.
- Reduces bellmouth and tool lead-off.
- Reduces axial thrust requirements.



Structural Steel (-SS)

- Designed for drilling 11.5 mm (7/16") thick or thicker I-beam or structural materials.
- Reduces exit burrs, increases stability, and lowers drilling forces.
- Includes Notch Point® web geometry.



Holder Anatomy

1. Morse taper shank
2. Coolant inlet
3. Flute (straight or helical)
4. Built-up body diameter
5. Coolant outlets



Straight Flute



Helical Flute



Product Nomenclature

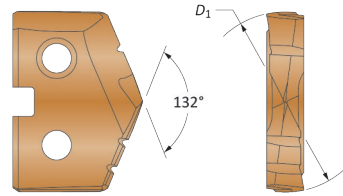
T-A Drill Inserts

4	5	3	H	—	0115	-HE
Insert	Material	Series	Coating		Diameter	Geometry
1 = T-A® 4 = GEN2 T-A®	5 = Super cobalt C1 = K35 (C1) carbide	0 1 2 3	P = AM300® H = AM200® A = TiAlN		13 = Metric (mm) .515 = Decimal (in) 0017 = Fractional (in)	TW = Thin Wall NP = Notch Point® SS = 150° Structural HE = High Efficiency

A91

Reference Key

Symbol	Attribute
D_1	Insert diameter

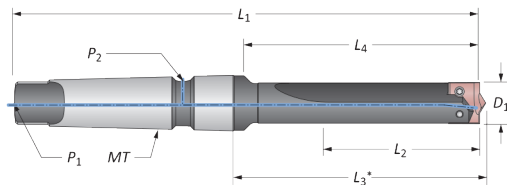


T-A Drill Holders

2	40	20	S	—	004	IS	060
	Drill Length	Series	Flute		Shank Designator	Shank Code	Minimum Insert Diameter
	20 = Short 40 = Standard 50 = Extended ⚠ 60 = Long ⚠	00 = 0 05 = 0.5 10 = 1 15 = 1.5 20 = 2 25 = 2.5 30 = 3	S = Straight H = Helical		Morse Taper 003 = 3MT 004 = 4MT	IS = Imperial Morse taper structural steel	In increments of 1/64 of an inch In increments of 0.0156"

Reference Key

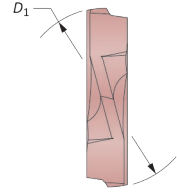
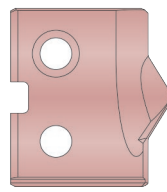
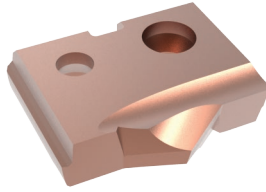
Symbol	Attribute
D_1	Drill insert range
L_1	Overall length
L_2	Drill depth
L_3	Holder reference length
L_4	Holder length
P_1	Rear pipe tap
P_2	Side pipe tap
MT	Morse taper size



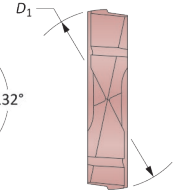
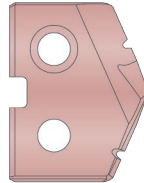
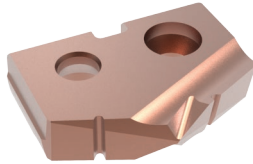
* L_3 is 1.60 mm (0.063") shorter if using a structural steel holder with Notch Point®, GEN2 T-A®, or 150° structural steel T-A® drill insert geometry.

**0 Series: 14.00 mm - 17.67 mm (0.5112" - 0.6959")****T-A® Structural Steel Drill Inserts****A91****Thin Wall**

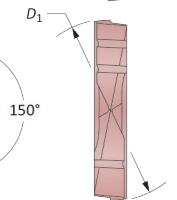
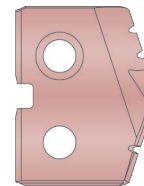
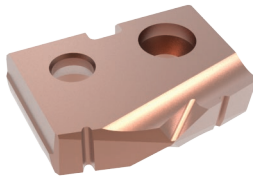
For material up to 11.5 mm (7/16") thick.

**Notch Point®**

For material over 11.5 mm (7/16") thick.

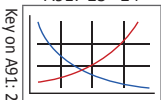
**150° Structural Steel**

For material over 11.5 mm (7/16") thick and for reduced exit burr.



Series	Insert			Geometry	HSS: Super Cobalt	
	D ₁ mm	D ₁ inch	Fractional Equivalent		AM200®	TiAIN
0	14.00	0.5512	—	Thin Wall	150H-14-TW	150A-14-TW
				Notch Point®	150H-14-NP	150A-14-NP
				150° Structural Steel	150H-14-SS	150A-14-SS
	14.29	0.5625	9/16	Thin Wall	150H-0018-TW	150A-0018-TW
				Notch Point®	150H-0018-NP	150A-0018-NP
				150° Structural Steel	150H-0018-SS	150A-0018-SS
0.5	15.88	0.6250	5/8	Thin Wall	150H-0020-TW	150A-0020-TW
				Notch Point®	150H-0020-NP	150A-0020-NP
				150° Structural Steel	150H-0020-SS	150A-0020-SS
	16.00	0.6299	—	Thin Wall	150H-16-TW	150A-16-TW
				Notch Point®	150H-16-NP	150A-16-NP
				150° Structural Steel	150H-16-SS	150A-16-SS
	17.46	0.6875	11/16	Thin Wall	150H-0022-TW	150A-0022-TW
				Notch Point®	150H-0022-NP	150A-0022-NP
				150° Structural Steel	150H-0022-SS	150A-0022-SS

A91: 23 - 24



A91: 9 - 10

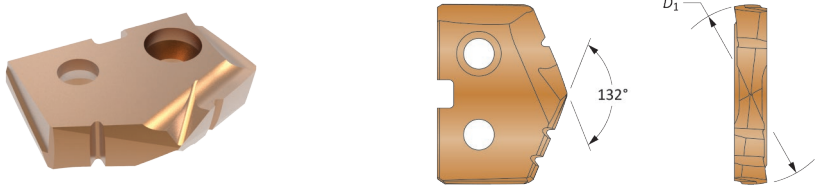


Inserts sold in quantities of 2.



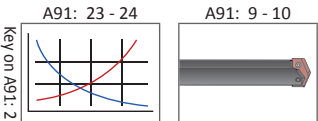
0 Series: 14.00 mm - 17.67 mm (0.5112" - 0.6959")

GEN2 T-A® Structural Steel Drill Inserts



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Series	D ₁ mm	Insert		HSS: Super Cobalt	Carbide: K35 (C1)
		D ₁ inch	Fractional Equivalent	AM200®	AM300®
0	14.00	0.5512	—	450H-14-HE	4C10P-14-HE
	14.29	0.5625	9/16	450H-0018-HE	4C10P-0018-HE
0.5	15.88	0.6250	5/8	450H-0020-HE	4C10P-0020-HE
	16.00	0.6299	—	450H-16-HE	4C10P-16-HE
	17.46	0.6875	11/16	450H-0022-HE	4C10P-0022-HE



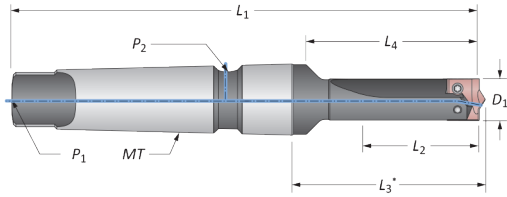
Inserts sold in quantities of 2.



0 Series: 14.00 mm - 17.67 mm (0.5112" - 0.6959")

T-A® Structural Steel Drill Insert Holders

A91



Metric #3 Taper Shank Holders

	Flute	Series	Length	Body					Shank			Part No.
				D ₁	L ₂	L ₄	L ₃ *	L ₁	MT	P ₁	P ₂	
m	Straight	0	Short	14.29	30.51	57.94	59.89	156.36	#3	TTC	TSC	22000S-003IS036
		0.5	Short	15.88	30.86	57.94	59.89	156.36	#3	TTC	TSC	22005S-003IS040
			Short	17.46	30.58	57.94	59.89	156.36	#3	TTC	TSC	22005S-003IS044
	Helical	0	Standard	14.29	76.23	86.51	88.47	184.94	#3	TTC	TSC	24000H-003IS036
			Extended	14.29	180.37	242.21	244.17	340.64	#3	TTC	TSC	25000H-003IS036
		0.5	Standard	15.88	76.58	86.51	88.47	184.94	#3	TTC	TSC	24005H-003IS040
			Standard	17.46	76.94	86.51	88.47	184.94	#3	TTC	TSC	24005H-003IS044
			Extended	17.46	181.08	242.21	244.17	340.64	#3	TTC	TSC	25005H-003IS044

*L₃ is 1.60 mm (0.063") shorter if using a structural steel holder with Notch Point®, GEN2 T-A®, or 150° structural steel T-A® drill insert geometry.

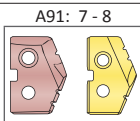
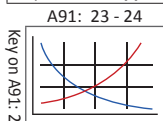
Connection Accessories

Series	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
0	72556-IP8-1	72556N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)
0.5	72567-IP8-1	72567N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)

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

⚠ WARNING

Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A91: 22 for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



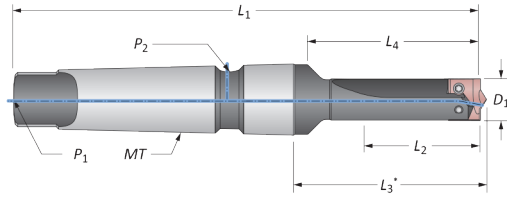
m = Metric (mm)
i = Imperial (in)

Screws sold in multiples of 10.



0 Series: 14.00 mm - 17.67 mm (0.5112" - 0.6959")

T-A® Structural Steel Drill Insert Holders



A91

Imperial #3 Taper Shank Holders

	Flute	Series	Length	Body					Shank			Part No.
				D_1	L_2	L_4	L_3^*	L_1	MT	P_1	P_2	
i	Straight	0	Short	0.5625	1.201	2.281	2.358	6.156	#3	TTC	TSC	22000S-003IS036
			Short	0.6250	1.215	2.281	2.358	6.156	#3	TTC	TSC	22005S-003IS040
			Short	0.6875	1.204	2.281	2.358	6.156	#3	TTC	TSC	22005S-003IS044
	Helical	0	Standard	0.5625	3.001	3.406	3.483	7.281	#3	TTC	TSC	24000H-003IS036
			Extended	0.5625	7.101	9.536	9.613	13.411	#3	TTC	TSC	25000H-003IS036
		0.5	Standard	0.6250	3.015	3.406	3.483	7.281	#3	TTC	TSC	24005H-003IS040
			Standard	0.6875	3.029	3.406	3.483	7.281	#3	TTC	TSC	24005H-003IS044
			Extended	0.6875	7.129	9.536	9.613	13.411	#3	TTC	TSC	25005H-003IS044

* L_3 is 1.60 mm (0.063") shorter if using a structural steel holder with Notch Point®, GEN2 T-A®, or 150° structural steel T-A® drill insert geometry.

Connection Accessories

Series	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
0	72556-IP8-1	72556N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)
0.5	72567-IP8-1	72567N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)

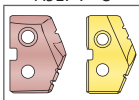
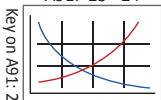
*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

WARNING

Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A91: 22 for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

A91: 23 - 24

A91: 7 - 8



m = Metric (mm)

i = Imperial (in)

Screws sold in multiples of 10.



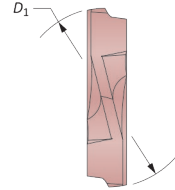
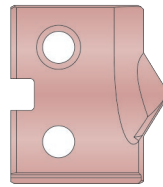
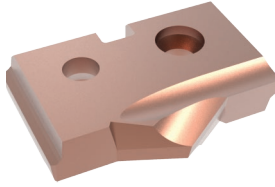
1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")

T-A® Structural Steel Drill Inserts

A91

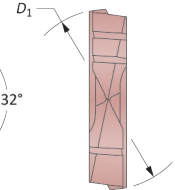
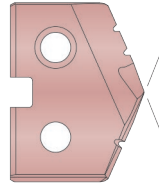
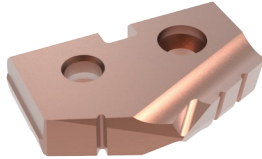
Thin Wall

For material up to 11.5 mm (7/16") thick.



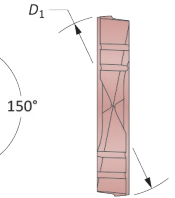
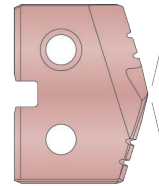
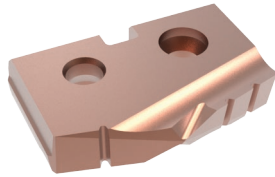
Notch Point®

For material over 11.5 mm (7/16") thick.

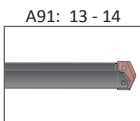
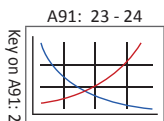


150° Structural Steel

For material over 11.5 mm (7/16") thick and for reduced exit burr.



Series	D ₁ mm	D ₁ inch	Fractional Equivalent	Geometry	HSS: Super Cobalt	
					AM200®	TiAIN
1	18.00	0.7087	—	Thin Wall	151H-18-TW	151A-18-TW
				Notch Point®	151H-18-NP	151A-18-NP
				150° Structural Steel	151H-18-SS	151A-18-SS
	20.64	0.8125	13/16	Thin Wall	151H-0026-TW	151A-0026-TW
				Notch Point®	151H-0026-NP	151A-0026-NP
				150° Structural Steel	151H-0026-SS	151A-0026-SS
	21.00	0.8268	—	Thin Wall	151H-21-TW	151A-21-TW
				Notch Point®	151H-21-NP	151A-21-NP
				150° Structural Steel	151H-21-SS	151A-21-SS
	22.00	0.8661	—	Thin Wall	151H-22-TW	151A-22-TW
				Notch Point®	151H-22-NP	151A-22-NP
				150° Structural Steel	151H-22-SS	151A-22-SS
1.5	22.23	0.8750	7/8	Thin Wall	151H-0028-TW	151A-0028-TW
				Notch Point®	151H-0028-NP	151A-0028-NP
				150° Structural Steel	151H-0028-SS	151A-0028-SS
	23.81	0.9375	15/16	Thin Wall	151H-0030-TW	151A-0030-TW
				Notch Point®	151H-0030-NP	151A-0030-NP
				150° Structural Steel	151H-0030-SS	151A-0030-SS
	24.00	0.9449	—	Thin Wall	151H-24-TW	151A-24-TW
				Notch Point®	151H-24-NP	151A-24-NP
				150° Structural Steel	151H-24-SS	151A-24-SS

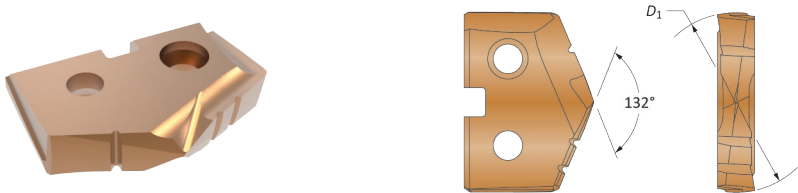


Inserts sold in quantities of 2.



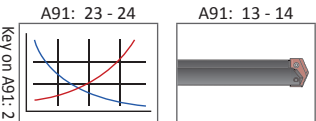
1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")

GEN2 T-A® Structural Steel Drill Inserts



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Series	D ₁ mm	Insert		HSS: Super Cobalt	Carbide: K35 (C1)
		D ₁ inch	Fractional Equivalent	AM200®	AM300®
1	18.00	0.7087	—	451H-18-HE	4C11P-18-HE
	20.64	0.8125	13/16	451H-0026-HE	4C11P-0026-HE
	21.00	0.8268	—	451H-21-HE	4C11P-21-HE
	22.00	0.8661	—	451H-22-HE	4C11P-22-HE
1.5	22.23	0.8750	7/8	451H-0028-HE	4C11P-0028-HE
	23.81	0.9375	15/16	451H-0030-HE	4C11P-0030-HE
	24.00	0.9449	—	451H-24-HE	4C11P-24-HE



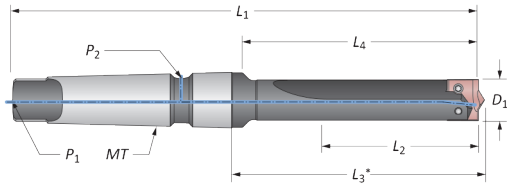
Inserts sold in quantities of 2.



1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")

T-A® Structural Steel Drill Insert Holders

A91



Metric #3 Taper Shank Holders

Flute	Series	Length	Body					Shank			Part No.
			D ₁	L ₂	L ₄	L ₃ *	L ₁	MT	P ₁	P ₂	
Straight	1	Short	17.86	64.97	100.43	103.58	198.86	#3	TTC	TSC	22010S-003IS045
		Short	20.64	64.97	100.43	103.58	198.86	#3	TTC	TSC	22010S-003IS052
	1.5	Short	22.23	65.33	100.43	103.58	198.86	#3	TTC	TSC	22015S-003IS056
		Short	23.81	65.68	100.43	103.58	198.86	#3	TTC	TSC	22015S-003IS060
Helical	1	Standard	17.86	137.74	151.23	154.38	249.66	#3	TTC	TSC	24010H-003IS045
		Standard	20.64	137.74	151.23	154.38	249.66	#3	TTC	TSC	24010H-003IS052
		Extended	17.86	180.54	239.34	242.49	337.77	#3	TTC	TSC	25010H-003IS045
		Extended	20.64	180.54	239.34	242.49	337.77	#3	TTC	TSC	25010H-003IS052
	1.5	Standard	22.23	140.18	151.23	154.38	249.66	#3	TTC	TSC	24015H-003IS056
		Standard	23.81	140.44	151.23	154.38	249.66	#3	TTC	TSC	24015H-003IS060
		Extended	23.81	181.25	239.34	242.49	337.77	#3	TTC	TSC	25015H-003IS060
		Extended	23.81	181.25	239.34	242.49	337.77	#3	TTC	TSC	25015H-003IS060

Metric #4 Taper Shank Holders

Flute	Series	Length	Body					Shank			Part No.
			D ₁	L ₂	L ₄	L ₃ *	L ₁	MT	P ₁	P ₂	
Straight	1	Short	17.86	64.97	100.43	103.58	224.26	#4	TTC	TSC	22010S-004IS045
		Short	20.64	64.97	100.43	103.58	224.26	#4	TTC	TSC	22010S-004IS052
	1.5	Short	22.23	65.33	100.43	103.58	224.26	#4	TTC	TSC	22015S-004IS056
		Short	23.81	65.68	100.43	103.58	224.26	#4	TTC	TSC	22015S-004IS060
Helical	1	Standard	17.86	134.57	151.23	154.38	275.06	#4	TTC	TSC	24010H-004IS045
		Standard	20.64	134.57	151.23	154.38	275.06	#4	TTC	TSC	24010H-004IS052
		Extended	20.64	169.88	237.74	240.89	361.57	#4	TTC	TSC	25010H-004IS052
		Long	20.64	166.7	402.77	405.92	526.59	#4	TTC	TSC	26010H-004IS052
	1.5	Standard	22.23	136.42	151.23	154.38	275.06	#4	TTC	TSC	24015H-004IS056
		Standard	23.81	137.44	151.23	154.38	275.06	#4	TTC	TSC	24015H-004IS060
		Extended	23.81	173.13	237.74	240.89	361.57	#4	TTC	TSC	25015H-004IS060
		Long	23.81	173.13	403.58	406.73	527.41	#4	TTC	TSC	26015H-004IS060

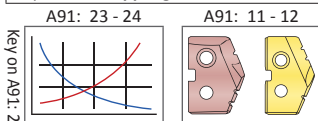
*L₃ is 1.60 mm (0.063") shorter if using a structural steel holder with Notch Point®, GEN2 T-A®, or 150° structural steel T-A® drill insert geometry.

Connection Accessories

Series	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
1	7375-IP9-1	7375N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)
1.5	739-IP9-1	739N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)

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

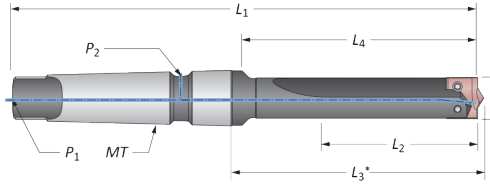
WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A91: 22 for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.





1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")

T-A® Structural Steel Drill Insert Holders



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Imperial #3 Taper Shank Holders

	Flute	Series	Length	Body					Shank			Part No.
				D ₁	L ₂	L ₄	L ₃ *	L ₁	MT	P ₁	P ₂	
	Straight	1	Short	0.7031	2.558	3.954	4.078	7.829	#3	TTC	TSC	22010S-003IS045
				0.8125	2.558	3.954	4.078	7.829	#3	TTC	TSC	22010S-003IS052
		1.5	Short	0.8750	2.572	3.954	4.078	7.829	#3	TTC	TSC	22015S-003IS056
				0.9375	2.586	3.954	4.078	7.829	#3	TTC	TSC	22015S-003IS060
i	Helical	1	Standard	0.7031	5.423	5.954	6.078	9.829	#3	TTC	TSC	24010H-003IS045
			Standard	0.8125	5.423	5.954	6.078	9.829	#3	TTC	TSC	24010H-003IS052
			Extended	0.7031	7.108	9.423	9.547	13.298	#3	TTC	TSC	⚠ 25010H-003IS045
			Extended	0.8125	7.108	9.423	9.547	13.298	#3	TTC	TSC	⚠ 25010H-003IS052
		1.5	Standard	0.8750	5.519	5.954	6.078	9.829	#3	TTC	TSC	24015H-003IS056
			Standard	0.9375	5.529	5.954	6.078	9.829	#3	TTC	TSC	24015H-003IS060
			Extended	0.9375	7.136	9.423	9.547	13.298	#3	TTC	TSC	⚠ 25015H-003IS060
			Extended	0.9375	7.136	9.423	9.547	13.298	#3	TTC	TSC	⚠ 25015H-003IS060

Imperial #4 Taper Shank Holders

	Flute	Series	Length	Body					Shank			Part No.
				D_1	L_2	L_4	L_3^*	L_1	MT	P_1	P_2	
	Straight	1	Short	0.7031	2.558	3.954	4.078	8.829	#4	TTC	TSC	22010S-004IS045
			Short	0.8125	2.558	3.954	4.078	8.829	#4	TTC	TSC	22010S-004IS052
		1.5	Short	0.8750	2.572	3.954	4.078	8.829	#4	TTC	TSC	22015S-004IS056
			Short	0.9375	2.586	3.954	4.078	8.829	#4	TTC	TSC	22015S-004IS060
i	Helical	1	Standard	17.86	134.57	151.23	154.38	275.06	#4	TTC	TSC	24010H-004IS045
			Standard	20.64	134.57	151.23	154.38	275.06	#4	TTC	TSC	24010H-004IS052
			Extended	20.64	169.88	237.74	240.89	361.57	#4	TTC	TSC	25010H-004IS052
			Long	20.64	166.7	402.77	405.92	526.59	#4	TTC	TSC	26010H-004IS052
		1.5	Standard	22.23	136.42	151.23	154.38	275.06	#4	TTC	TSC	24015H-004IS056
			Standard	23.81	137.44	151.23	154.38	275.06	#4	TTC	TSC	24015H-004IS060
			Extended	23.81	173.13	237.74	240.89	361.57	#4	TTC	TSC	25015H-004IS060
			Long	23.81	173.13	403.58	406.73	527.41	#4	TTC	TSC	26015H-004IS060

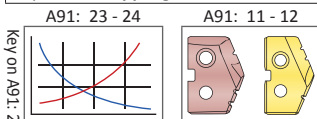
*L₃ is 1.60 mm (0.063") shorter if using a structural steel holder with Notch Point®, GEN2 T-A®, or 150° structural steel T-A® drill insert geometry.

Connection Accessories

Series	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
1	7375-IP9-1	7375N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)
1.5	739-IP9-1	739N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)

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

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A91: 22 for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

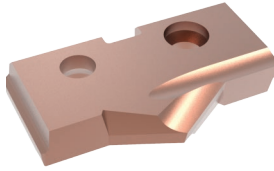


m = Metric (mm)
i = Imperial (in)

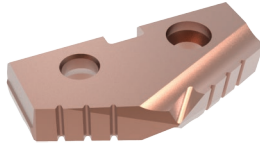
Screws sold in multiples of 10.

**2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")****T-A® Structural Steel Drill Inserts****A91****Thin Wall**

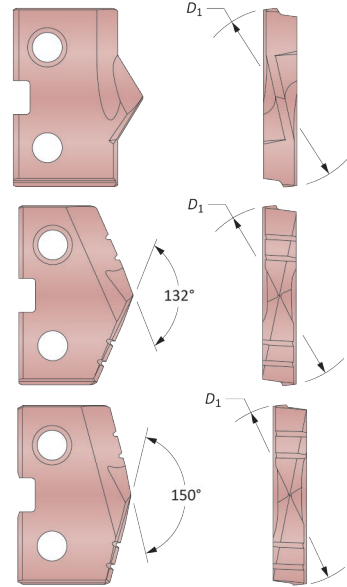
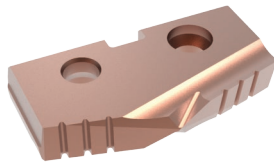
For material up to 11.5 mm (7/16") thick.

**Notch Point®**

For material over 11.5 mm (7/16") thick.

**150° Structural Steel**

For material over 11.5 mm (7/16") thick and for reduced exit burr.

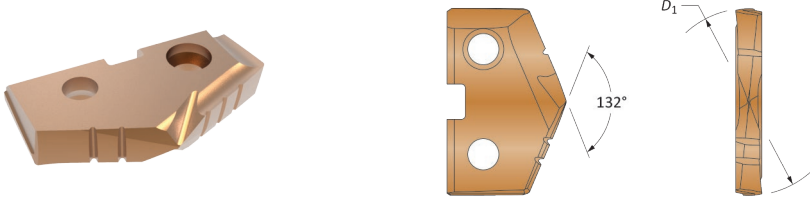


Series	D ₁ mm	D ₁ inch	Fractional Equivalent	Geometry	HSS: Super Cobalt	
					AM200®	TiAIN
2	25.40	1.0000	1	Thin Wall	152H-0100-TW	152A-0100-TW
				Notch Point®	152H-0100-NP	152A-0100-NP
				150° Structural Steel	152H-0100-SS	152A-0100-SS
	26.00	1.0236	—	Thin Wall	152H-26-TW	152A-26-TW
				Notch Point®	152H-26-NP	152A-26-NP
				150° Structural Steel	152H-26-SS	152A-26-SS
	26.99	1.0625	1-1/16	Thin Wall	152H-0102-TW	152A-0102-TW
				Notch Point®	152H-0102-NP	152A-0102-NP
				150° Structural Steel	152H-0102-SS	152A-0102-SS
	27.00	1.0630	—	Thin Wall	152H-27-TW	152A-27-TW
				Notch Point®	152H-27-NP	152A-27-NP
				150° Structural Steel	152H-27-SS	152A-27-SS
	28.58	1.1250	1-1/8	Thin Wall	152H-0104-TW	152A-0104-TW
				Notch Point®	152H-0104-NP	152A-0104-NP
				150° Structural Steel	152H-0104-SS	152A-0104-SS
2.5	30.16	1.1875	1-3/16	Thin Wall	152H-0106-TW	152A-0106-TW
				Notch Point®	152H-0106-NP	152A-0106-NP
				150° Structural Steel	152H-0106-SS	152A-0106-SS
	31.00	1.2205	—	Thin Wall	152H-31-TW	152A-31-TW
				Notch Point®	152H-31-NP	152A-31-NP
				150° Structural Steel	152H-31-SS	152A-31-SS
	31.75	1.2500	1-1/4	Thin Wall	152H-0108-TW	152A-0108-TW
				Notch Point®	152H-0108-NP	152A-0108-NP
				150° Structural Steel	152H-0108-SS	152A-0108-SS
	33.00	1.2992	—	Thin Wall	152H-33-TW	152A-33-TW
				Notch Point®	152H-33-NP	152A-33-NP
				150° Structural Steel	152H-33-SS	152A-33-SS
	33.34	1.3125	1-5/16	Thin Wall	152H-0110-TW	152A-0110-TW
				Notch Point®	152H-0110-NP	152A-0110-NP
				150° Structural Steel	152H-0110-SS	152A-0110-SS
	34.93	1.3750	1-3/8	Thin Wall	152H-0112-TW	152A-0112-TW
				Notch Point®	152H-0112-NP	152A-0112-NP
				150° Structural Steel	152H-0112-SS	152A-0112-SS



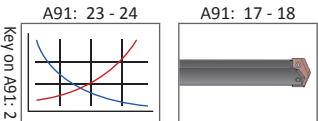
2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

GEN2 T-A® Structural Steel Drill Inserts



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Series	D ₁ mm	Insert		HSS: Super Cobalt	Carbide: K35 (C1)
		D ₁ inch	Fractional Equivalent	AM200®	AM300®
2	25.40	1.0000	1	452H-0100-HE	4C12P-0100-HE
	26.00	1.0236	—	452H-26-HE	4C12P-26-HE
	26.99	1.0625	1-1/16	452H-0102-HE	4C12P-0102-HE
	27.00	1.0630	—	452H-27-HE	4C12P-27-HE
	28.58	1.1250	1-1/8	452H-0104-HE	4C12P-0104-HE
2.5	30.16	1.1875	1-3/16	452H-0106-HE	4C12P-0106-HE
	31.00	1.2205	—	452H-31-HE	4C12P-31-HE
	31.75	1.2500	1-1/4	452H-0108-HE	4C12P-0108-HE
	33.00	1.2992	—	452H-33-HE	4C12P-33-HE
	33.34	1.3125	1-5/16	452H-0110-HE	4C12P-0110-HE
	34.93	1.3750	1-3/8	452H-0112-HE	4C12P-0112-HE



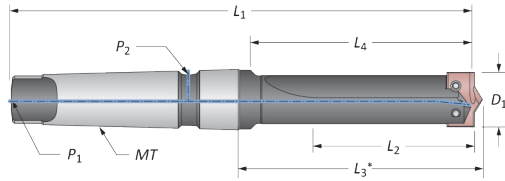
Inserts sold in quantities of 2.



2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

T-A® Structural Steel Drill Insert Holders

A91



Metric #3 Taper Shank Holders

	Flute	Series	Length	Body					Shank			Part No.
				D ₁	L ₂	L ₄	L ₃ *	L ₁	MT	P ₁	P ₂	
	Helical	2	Extended	25.40	181.41	239.06	242.9	337.49	#3	TTC	TSC	25020H-003IS100

Metric #4 Taper Shank Holders

	Flute	Series	Length	Body					Shank			Part No.
				D ₁	L ₂	L ₄	L ₃ *	L ₁	MT	P ₁	P ₂	
	Straight	2	Short	25.40	81.56	116.18	120.02	240.00	#4	TTC	TSC	22020S-004IS100
		2.5	Short	30.16	82.63	116.18	120.02	240.00	#4	TTC	TSC	22025S-004IS112
	Helical	2	Standard	25.40	148.72	166.98	170.82	290.80	#4	TTC	TSC	24020H-004IS100
			Extended	25.40	172.01	237.62	241.45	361.44	#4	TTC	TSC	25020H-004IS100
		2.5	Long	25.40	172.01	408.20	412.04	532.03	#4	TTC	TSC	26020H-004IS100
			Standard	30.16	148.72	166.98	170.82	290.80	#4	TTC	TSC	24025H-004IS112

*L₃ is 1.60 mm (0.063") shorter if using a structural steel holder with Notch Point®, GEN2 T-A®, or 150° structural steel T-A® drill insert geometry.

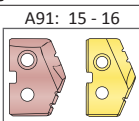
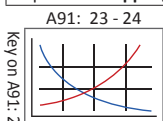
Connection Accessories

					Admissible Tightening Torque*
7495-IP15-1	7495N-IP15-1	8IP-15	8IP-15TL	8IP-15B	690 N-cm (61.0 in-lbs)

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

WARNING

Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A91: 22** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



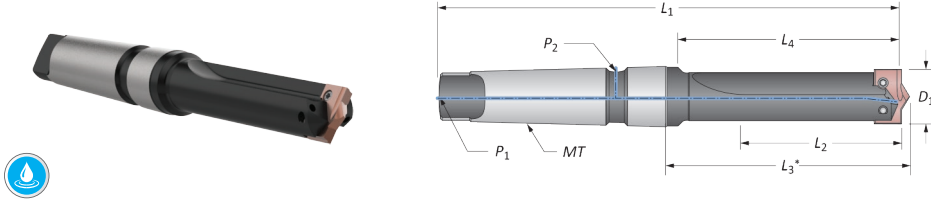
= Metric (mm)
 = Imperial (in)

Screws sold in multiples of 10.



2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

T-A® Structural Steel Drill Insert Holders



Imperial #3 Taper Shank Holders

	Flute	Series	Length	Body					Shank			Part No.
				D ₁	L ₂	L ₄	L ₃ *	L ₁	MT	P ₁	P ₂	
i	Helical	2	Extended	1.0000	7.142	9.412	9.563	13.287	#3	TTC	TSC	25020H-003IS100

Imperial #4 Taper Shank Holders

	Flute	Series	Length	Body					Shank			Part No.
				D ₁	L ₂	L ₄	L ₃ *	L ₁	MT	P ₁	P ₂	
i	Straight	2	Short	1.0000	3.211	4.574	4.725	9.449	#4	TTC	TSC	22020S-004IS100
		2.5	Short	1.1875	3.253	4.574	4.725	9.449	#4	TTC	TSC	22025S-004IS112
	Helical	2	Standard	1.0000	5.855	6.574	6.725	11.449	#4	TTC	TSC	24020H-004IS100
			Extended	1.0000	6.772	9.355	9.506	14.230	#4	TTC	TSC	25020H-004IS100
		2.5	Long	1.0000	6.772	16.071	16.222	20.946	#4	TTC	TSC	26020H-004IS100
			Standard	1.1875	5.855	6.574	6.725	11.449	#4	TTC	TSC	24025H-004IS112

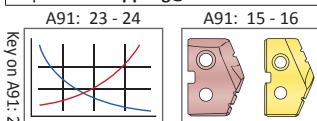
*L₃ is 1.60 mm (0.063") shorter if using a structural steel holder with Notch Point®, GEN2 T-A®, or 150° structural steel T-A® drill insert geometry.

Connection Accessories

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

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

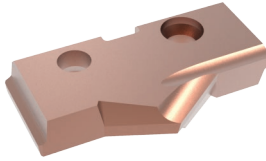
WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A91: 22** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



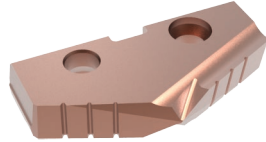
m = Metric (mm)
i = Imperial (in)
Screws sold in multiples of 10.

**3 Series: 34.37 mm - 47.82 mm (1.3530" - 1.8829")****T-A® Structural Steel Drill Inserts****A91****Thin Wall**

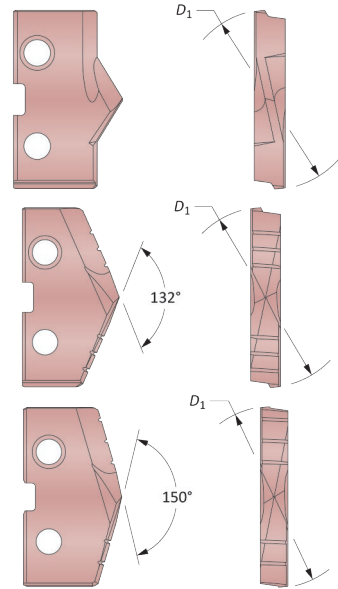
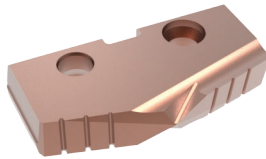
For material up to 11.5 mm (7/16") thick.

**Notch Point®**

For material over 11.5 mm (7/16") thick.

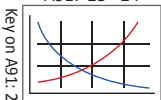
**150° Structural Steel**

For material over 11.5 mm (7/16") thick and for reduced exit burr.

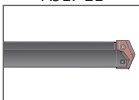


Insert		Fractional Equivalent	Geometry	HSS: Super Cobalt	
D_1 mm	D_1 inch			AM200®	TiAIN
36.51	1.4375	1-7/16	Thin Wall	153H-0114-TW	153A-0114-TW
			Notch Point®	153H-0114-NP	153A-0114-NP
			150° Structural Steel	153H-0114-SS	153A-0114-SS
38.10	1.5000	1-1/2	Thin Wall	153H-0116-TW	153A-0116-TW
			Notch Point®	153H-0116-NP	153A-0116-NP
			150° Structural Steel	153H-0116-SS	153A-0116-SS
39.00	1.5354	—	Thin Wall	153H-39-TW	153A-39-TW
			Notch Point®	153H-39-NP	153A-39-NP
			150° Structural Steel	153H-39-SS	153A-39-SS
39.69	1.5625	1-9/16	Thin Wall	153H-0118-TW	153A-0118-TW
			Notch Point®	153H-0118-NP	153A-0118-NP
			150° Structural Steel	153H-0118-SS	153A-0118-SS

A91: 23 - 24



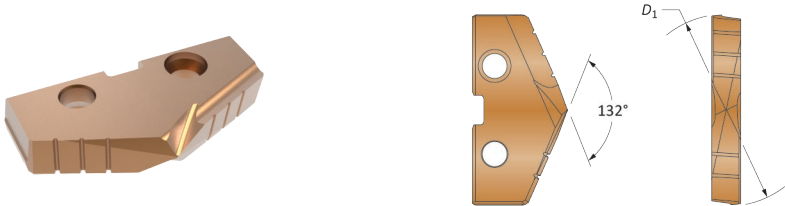
A91: 21





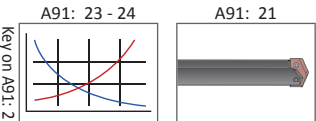
3 Series: 34.37 mm - 47.82 mm (1.3530" - 1.8829")

GEN2 T-A® Structural Steel Drill Inserts



A91

D ₁ mm	Insert		HSS: Super Cobalt AM200®
	D ₁ inch	Fractional Equivalent	
36.51	1.4375	1-7/16	453H-0114-HE
38.10	1.5000	1-1/2	453H-0116-HE
39.00	1.5354	—	453H-39-HE
39.69	1.5625	1-9/16	453H-0118-HE



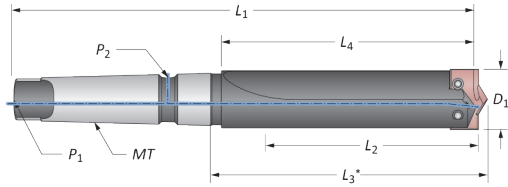
Inserts sold in quantities of 1.



3 Series: 34.37 mm - 47.82 mm (1.3530" - 1.8829")

T-A® Structural Steel Drill Insert Holders

A91



Imperial #4 Taper Shank Holders

i	Flute	Length	Body					Shank			Part No.
			D_1	L_2	L_4	L_3^*	L_1	MT	P_1	P_2	
	Straight	Short	1.4063	4.441	6.037	6.250	10.912	#4	TTC	TSC	22030S-004IS126
	Helical	Standard	1.4063	7.118	7.787	8.000	12.662	#4	TTC	TSC	24030H-004IS126

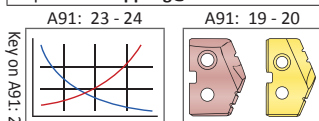
* L_3 is 1.60 mm (0.063") shorter if using a structural steel holder with Notch Point®, GEN2 T-A®, or 150° structural steel T-A® drill insert geometry.

Connection Accessories

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

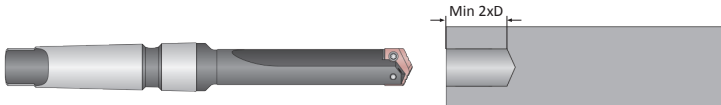
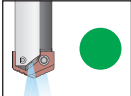
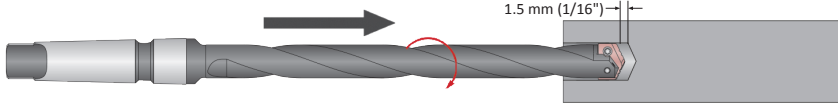
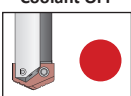
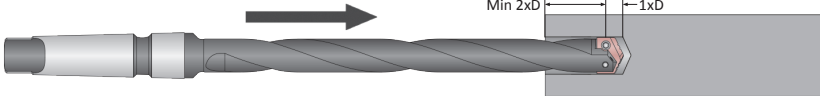
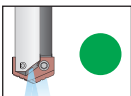
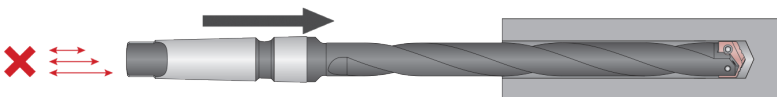
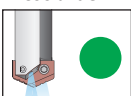
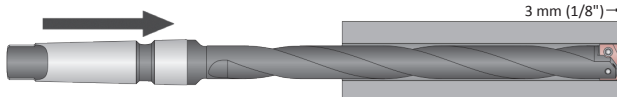
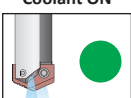
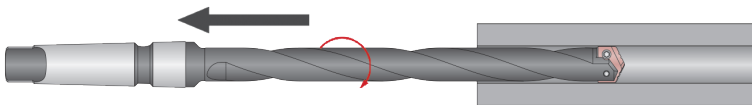
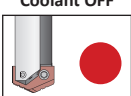
*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A91: 22 for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



Deep Hole Drilling Guidelines

For Lengths Greater Than 9xD (Standard Plus, Extended, Long, Long Plus, XL, 3XL, and Special Lengths)

1. Pilot Hole 100% RPM 100% mm/rev (IPR)	Establish the pilot hole using the same diameter short drill to a depth of 2xD minimum. Utilize a pilot drill with the same or larger included point angle. 	Coolant ON 
2. Feed-in ⚠️ 50 RPM max 300 mm/min (12 IPM)	Feed the longer drill within 1.5 mm (1/16") short of the established pilot hole bottom at a maximum of 50 RPM and 300 mm/min (12 IPM) feed rate. 	Coolant OFF 
3. Deep Hole Transition Drilling 50% RPM 75% mm/rev (IPR)	Drill additional 1xD past the bottom of the pilot hole at 50% reduction of recommended speed and 25% reduction of recommended feed. Minimum of one second dwell is required to meet full speed before feeding. 	Coolant ON 
4. Deep Hole Drilling - Blind 100% RPM 100% mm/rev (IPR)	Drill to full depth at recommended speed and feed for longer drill according to Allied speed and feed charts. No peck cycle recommended. 	Coolant ON 
5. Deep Hole Drilling - at Breakout 50% RPM 75% mm/rev (IPR)	For through holes only: Reduce speed by 50% and feed by 25% prior to breakout. Do not break out more than 3 mm (1/8") past the full diameter of the drill. 	Coolant ON 
6. Drill Retract ⚠️ 50 RPM max	Reduce speed to a maximum of 50 RPM before retracting from the hole. 	Coolant OFF 

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

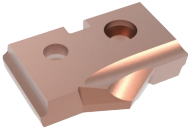
- When using holders without support bushing, use a short T-A holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

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



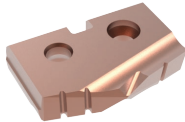
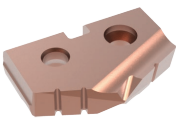
Recommended Drilling Data | Metric (mm)

A91



THIN WALL | SUPER COBALT

ISO	Material	Hardness (BHN)	Speed (m/min) - Mist Coolant		Feed Rate (mm/rev) by Diameter			
			AM200®	TiAlN	0 series	1 series	2 series	3 series
					12.98 mm - 17.67 mm	17.53 mm - 24.40 mm	24.41 mm - 35.06 mm	34.37 mm - 47.82 mm
P	Structural Steel A36, A285, A516, etc.	100 - 150	39	34	0.30	0.45	0.48	0.50
		150 - 250	35	31	0.28	0.40	0.43	0.48
		250 - 350	32	28	0.25	0.36	0.40	0.45



NOTCH POINT & 150° STRUCTURAL STEEL | SUPER COBALT

ISO	Material	Hardness (BHN)	Speed (m/min) - Mist Coolant		Feed Rate (mm/rev) by Diameter			
			AM200®	TiAlN	0 series	1 series	2 series	3 series
					12.98 mm - 17.67 mm	17.53 mm - 24.40 mm	24.41 mm - 35.06 mm	34.37 mm - 47.82 mm
P	Structural Steel A36, A285, A516, etc.	100 - 150	39	34	0.25	0.30	0.36	0.45
		150 - 250	35	31	0.23	0.28	0.30	0.40
		250 - 350	35	28	0.20	0.25	0.28	0.36



GEN2 T-A HIGH EFFICIENCY | SUPER COBALT

ISO	Material	Hardness (BHN)	Speed (m/min) - Mist Coolant		Feed Rate (mm/rev) by Diameter			
			AM200®		0 series	1 series	2 series	3 series
					12.98 mm - 17.67 mm	17.53 mm - 24.40 mm	24.41 mm - 35.06 mm	34.37 mm - 47.82 mm
P	Structural Steel A36, A285, A516, etc.	100 - 150	39		0.25	0.30	0.36	0.46
		150 - 250	35		0.23	0.28	0.30	0.40
		250 - 350	35		0.20	0.25	0.28	0.36

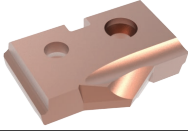
GEN2 T-A HIGH EFFICIENCY | CARBIDE K35 (C1)

ISO	Material	Hardness (BHN)	Speed (m/min) - Mist Coolant		Feed Rate (mm/rev) by Diameter			
			AM300®		0 series	1 series	2 series	3 series
					12.98 mm - 17.67 mm	17.53 mm - 24.40 mm	24.41 mm - 35.06 mm	34.37 mm - 47.82 mm
P	Structural Steel A36, A285, A516, etc.	100 - 150	50		0.20	0.28	0.38	0.43
		150 - 250	47		0.15	0.25	0.33	0.38
		250 - 350	43		0.13	0.23	0.30	0.33



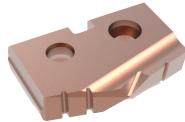
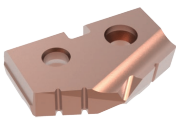
Recommended Drilling Data | Imperial (in)

A91



THIN WALL | SUPER COBALT

ISO	Material	Hardness (BHN)	Speed (SFM) - Mist Coolant		Feed Rate (IPR) by Diameter			
			AM200®	TiAlN	0 series	1 series	2 series	3 series
					0.5110" - 0.6959"	0.6900" - 0.9609"	0.9610" - 1.3809"	1.3530" - 1.8829"
P	Structural Steel A36, A285, A516, etc.	100 - 150	125	110	0.012	0.018	0.019	0.020
		150 - 250	115	100	0.011	0.016	0.017	0.019
		250 - 350	105	90	0.010	0.014	0.016	0.018



NOTCH POINT & 150° STRUCTURAL STEEL | SUPER COBALT

ISO	Material	Hardness (BHN)	Speed (SFM) - Mist Coolant		Feed Rate (IPR) by Diameter			
			AM200®	TiAlN	0 series	1 series	2 series	3 series
					0.5110" - 0.6959"	0.6900" - 0.9609"	0.9610" - 1.3809"	1.3530" - 1.8829"
P	Structural Steel A36, A285, A516, etc.	100 - 150	125	110	0.010	0.012	0.014	0.018
		150 - 250	115	100	0.009	0.011	0.012	0.016
		250 - 350	105	90	0.008	0.010	0.011	0.014



GEN2 T-A HIGH EFFICIENCY | SUPER COBALT

ISO	Material	Hardness (BHN)	Speed (SFM) - Mist Coolant		Feed Rate (IPR) by Diameter			
			AM200®		0 series	1 series	2 series	3 series
					0.5110" - 0.6959"	0.6900" - 0.9609"	0.9610" - 1.3809"	1.3530" - 1.8829"
P	Structural Steel A36, A285, A516, etc.	100 - 150	125		0.010	0.012	0.014	0.018
		150 - 250	115		0.009	0.011	0.012	0.016
		250 - 350	105		0.008	0.010	0.011	0.014

GEN2 T-A HIGH EFFICIENCY | CARBIDE K35 (C1)

ISO	Material	Hardness (BHN)	Speed (SFM) - Mist Coolant		Feed Rate (IPR) by Diameter			
			AM300®		0 series	1 series	2 series	3 series
					0.5110" - 0.6959"	0.6900" - 0.9609"	0.9610" - 1.3809"	1.3530" - 1.8829"
P	Structural Steel A36, A285, A516, etc.	100 - 150	165		0.008	0.011	0.015	0.017
		150 - 250	155		0.006	0.010	0.013	0.015
		250 - 350	140		0.005	0.009	0.012	0.013

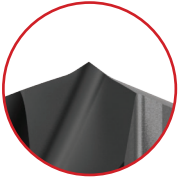
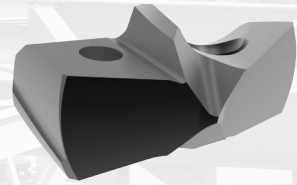


GEN3SYS® XT Pro Structural Steel Drilling System

System Overview

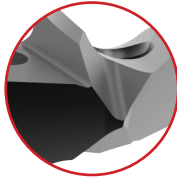
A91

GEN3SYS® XT Pro *ST* STRUCTURAL STEEL ENHANCEMENTS



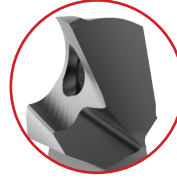
New Point Design

Increases stability without hindering penetration.



Redesigned Insert

Provides consistent performance and adds durability.



Improved Geometry

Extends tool life and increases insert strength without increasing horsepower consumption.



AM420

AM420 Coating

Increases heat threshold and extends tool life.

Get the Consistency You Need

The challenge of drilling structural steel materials is about to get easier. Developed through a rigorous and thorough testing process, the modified and improved XTST insert is a product of innovation.

Achieve the **consistent performance** you need while matching or even exceeding your current parameters.

Tough Drilling is Tough No More

Structural steel applications can prove to be difficult to machine, so you need a drill that's been put through the fire to ensure it can conquer those challenging applications.

Rigorous testing and countless hours of design and programming make the XT Pro structural steel insert the optimal drill for structural steel applications.

- Diameter range: 12.00 mm - 35.00 mm (0.4724" - 1.3780").
- Holders available in 1.5xD, 3xD, 5xD, and 7xD lengths.
- Flanged shank with flat.



1.5xD

3xD

5xD

7xD



NOTICE: Structural steel GEN3SYS holders are specifically designed to be used only with GEN3SYS XT Pro structural steel geometry inserts. Using other GEN3SYS XT or XT Pro insert geometries in these holders could lead to chip packing and tool failure. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



Product Nomenclature

GEN3SYS XT Pro Drill Inserts

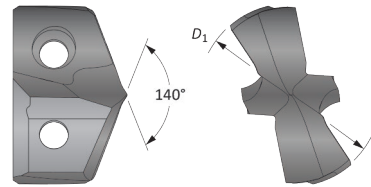
XT	ST	20			—	20.00
	ISO Material	Series				Diameter (mm)
	ST = Structural steel	12	17	26		To order nonstocked standard diameters, see table below.
		13	18	29		
		14	20	32		
		15	22			
		16	24			

*Available in 12-32 series only.

Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	20.10 mm, 20 series = use Part No. XTST20-20.10
Imperial:	0.7913", 20 series = use Part No. XTST20-20.10

Reference Key

Symbol	Attribute
D_1	Insert diameter

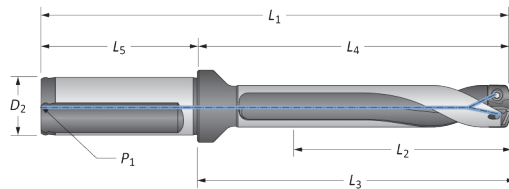


GEN3SYS XT and XT Pro Drill Holders

ST	03	12	0	—	20	FM
	Drill Length	Series	Flute		Shank Diameter	Shank Style
	01 = 1.5xD	12 20	0 = Standard		Metric (mm)	FM = Flanged metric (with flat)
	03 = 3xD	13 22	5 = Oversize		16 = 16 mm	063 = 0.625"
	05 = 5xD	14 24			20 = 20 mm	075 = 0.750"
	07 = 7xD	15 26			25 = 25 mm	100 = 1.000"
		16 29			32 = 32 mm	125 = 1.250"
		17 32			40 = 40 mm	150 = 1.500"
		18				
						CM = Cylindrical metric (no flat)
						F = Flanged (with flat)
						C = Cylindrical (no flat)

Reference Key

Symbol	Attribute
D_2	Shank diameter
L_1	Overall length
L_2	Drill depth
L_3	Holder reference length
L_4	Holder length
L_5	Shank length
P_1	Rear pipe tap

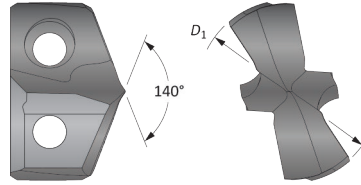
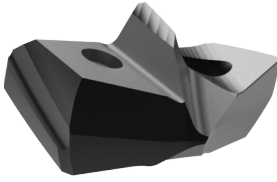




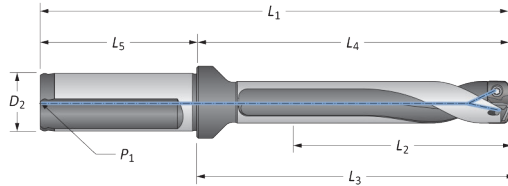
12 Series: 12.00 mm - 12.99 mm (0.4724" - 0.5117")

GEN3SYS® XT Pro Structural Steel Drilling System

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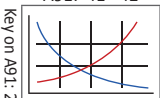


D_1 mm	Insert		Part No.
	D_1 inch	Fractional Equivalent	
12.00	0.4724	—	XTST 12-12.00



	Length	Body				Shank			Part No. With Flat
		L_2	L_4	L_3	L_1	L_5	D_2	P_1	
m	1.5xD	19.5	47.1	49.3	97.1	50.0	20	1/8 BSPT	ST01120-20FM
	3xD	39.0	66.6	68.8	116.6	50.0	20	1/8 BSPT	ST03120-20FM
	5xD	65.0	92.6	94.8	142.6	50.0	20	1/8 BSPT	ST05120-20FM
	7xD	90.9	118.5	120.8	168.6	50.0	20	1/8 BSPT	ST07120-20FM
i	1.5xD	0.766	1.859	1.938	3.891	2.031	3/4	1/8 NPT	ST01120-075F
	3xD	1.531	2.625	2.703	4.656	2.031	3/4	1/8 NPT	ST03120-075F
	5xD	2.563	3.641	3.734	5.672	2.031	3/4	1/8 NPT	ST05120-075F
	7xD	3.578	4.672	4.750	6.688	2.031	3/4	1/8 NPT	ST07120-075F

A91: 41 - 42



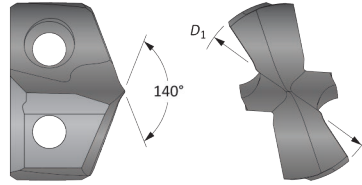
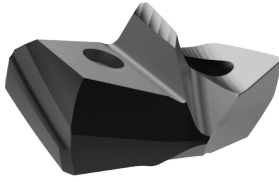
m = Metric (mm)
i = Imperial (in)

Inserts sold in multiples of 1. | Screws sold in multiples of 10.



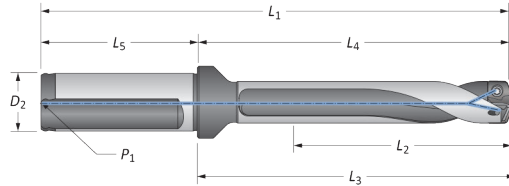
13 Series: 13.00 mm - 13.99 mm (0.5118" - 0.5511")

GEN3SYS® XT Pro Structural Steel Drilling System



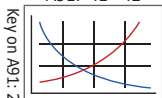
A91

Insert		Fractional Equivalent	Part No.
D_1 mm	D_1 inch		XTST
13.00	0.5118	—	XTST13-13.00



	Length	Body				Shank			Part No. With Flat
		L_2	L_4	L_3	L_1	L_5	D_2	P_1	
m	1.5xD	21.1	48.1	50.3	99.7	50.0	20	1/8 BSPT	ST01130-20FM
	3xD	42.1	69.1	71.3	120.7	50.0	20	1/8 BSPT	ST03130-20FM
	5xD	69.9	97.2	99.4	148.8	50.0	20	1/8 BSPT	ST05130-20FM
	7xD	97.9	125.4	127.6	177.0	50.0	20	1/8 BSPT	ST07130-20FM
i	1.5xD	0.828	1.891	1.984	3.922	2.031	3/4	1/8 NPT	ST01130-075F
	3xD	1.656	2.719	2.813	4.750	2.031	3/4	1/8 NPT	ST03130-075F
	5xD	2.750	3.828	3.906	5.859	2.031	3/4	1/8 NPT	ST05130-075F
	7xD	3.859	4.938	5.031	6.969	2.031	3/4	1/8 NPT	ST07130-075F

A91: 41 - 42



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

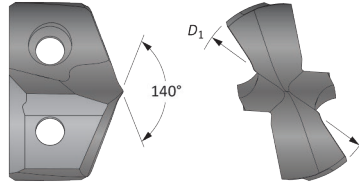
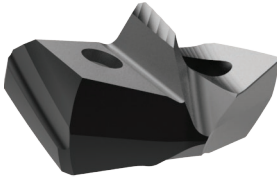
Inserts sold in multiples of 1. | Screws sold in multiples of 10.



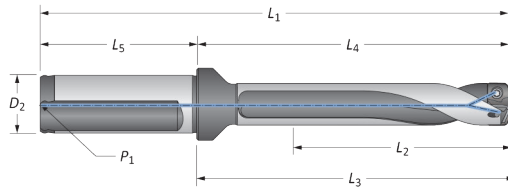
14 Series: 14.00 mm - 14.99 mm (0.5512" - 0.5905")

GEN3SYS® XT Pro Structural Steel Drilling System

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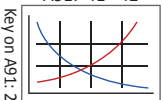


D ₁ mm	Insert		Part No.
	D ₁ inch	Fractional Equivalent	
14.00	0.5512	—	XTST14-14.00
14.29	0.5626	9/16	XTST14-14.29



	Body					Shank			Part No. With Flat
	Length	L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	P ₁	
m	1.5xD	22.5	49.9	52.5	99.9	50.0	20	1/8 BSPT	ST01140-20FM
	3xD	45.0	72.4	75.0	122.4	50.0	20	1/8 BSPT	ST03140-20FM
	5xD	75.0	102.4	104.9	152.4	50.0	20	1/8 BSPT	ST05140-20FM
	7xD	104.9	132.3	134.9	182.3	50.0	20	1/8 BSPT	ST07140-20FM
i	1.5xD	0.906	1.953	2.063	3.984	2.031	3/4	1/8 NPT	ST01140-075F
	3xD	1.781	2.844	2.953	4.875	2.031	3/4	1/8 NPT	ST03140-075F
	5xD	2.953	4.031	4.125	6.063	2.031	3/4	1/8 NPT	ST05140-075F
	7xD	4.141	5.203	5.313	7.234	2.031	3/4	1/8 NPT	ST07140-075F

A91: 41 - 42



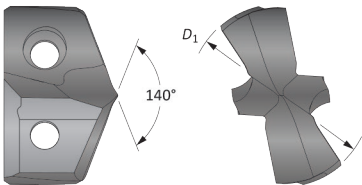
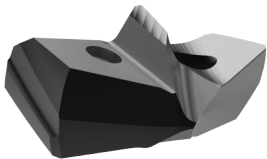
m = Metric (mm)
i = Imperial (in)

Inserts sold in multiples of 1. | Screws sold in multiples of 10.



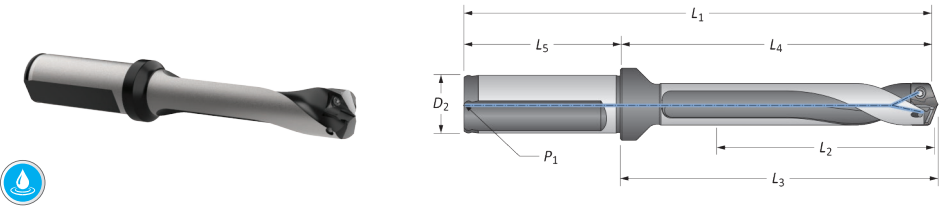
15 Series: 15.00 mm - 15.99 mm (0.5906" - 0.6298")

GEN3SYS® XT Pro Structural Steel Drilling System

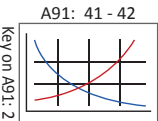


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Insert			Part No.
D_1 mm	D_1 inch	Fractional Equivalent	
15.00	0.5906	—	XTST15-15.00
15.88	0.6252	5/8	XTST15-15.88



	Body					Shank			Part No. With Flat
	Length	L_2	L_4	L_3	L_1	L_5	D_2	P_1	
m	1.5xD	24.0	51.1	53.6	101.1	50.0	20	1/8 BSPT	ST01150-20FM
	3xD	48.0	75.1	77.6	125.1	50.0	20	1/8 BSPT	ST03150-20FM
	5xD	80.0	107.0	109.6	157.0	50.0	20	1/8 BSPT	ST05150-20FM
	7xD	111.9	139.0	141.6	189.0	50.0	20	1/8 BSPT	ST07150-20FM
i	1.5xD	0.953	2.016	2.109	4.047	2.031	3/4	1/8 NPT	ST01150-075F
	3xD	1.891	2.953	3.047	4.984	2.031	3/4	1/8 NPT	ST03150-075F
	5xD	3.156	4.219	4.313	6.234	2.031	3/4	1/8 NPT	ST05150-075F
	7xD	4.422	5.469	5.578	7.500	2.031	3/4	1/8 NPT	ST07150-075F



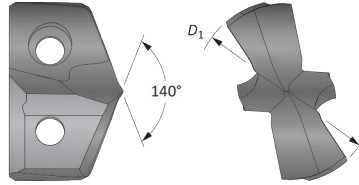
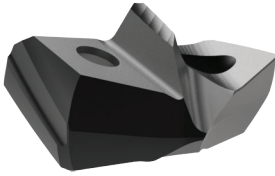
m = Metric (mm)
i = Imperial (in)

Inserts sold in multiples of 1. | Screws sold in multiples of 10.

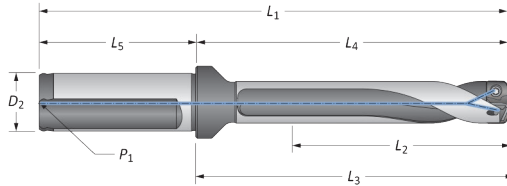
**16 Series: 16.00 mm - 16.99 mm (0.6299" - 0.6692")**

GEN3SYS® XT Pro Structural Steel Drilling System

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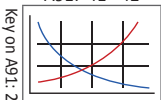


D_1 mm	Insert		Part No.
	D_1 inch	Fractional Equivalent	
16.00	0.6299	—	XTST XTST16-16.00



	Length	Body				Shank			Part No. With Flat
		L_2	L_4	L_3	L_1	L_5	D_2	P_1	
m	1.5xD	25.5	55.8	58.7	105.8	50.0	20	1/8 BSPT	ST01160-20FM
	3xD	51.0	81.3	84.2	131.3	50.0	20	1/8 BSPT	ST03160-20FM
	5xD	84.9	115.3	118.2	165.3	50.0	20	1/8 BSPT	ST05160-20FM
	7xD	118.9	149.3	152.2	199.3	50.0	20	1/8 BSPT	ST07160-20FM
i	1.5xD	1.016	2.203	2.313	4.234	2.031	3/4	1/8 NPT	ST01160-075F
	3xD	3.016	3.203	3.313	5.234	2.031	3/4	1/8 NPT	ST03160-075F
	5xD	3.359	4.531	4.656	6.563	2.031	3/4	1/8 NPT	ST05160-075F
	7xD	4.688	5.875	5.984	7.906	2.031	3/4	1/8 NPT	ST07160-075F

A91: 41 - 42

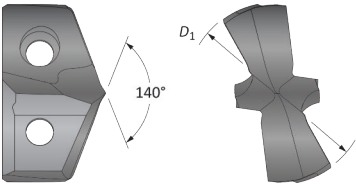
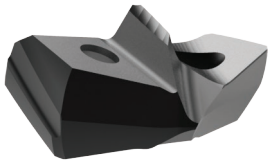
**m** = Metric (mm)
i = Imperial (in)

Inserts sold in multiples of 1. | Screws sold in multiples of 10.



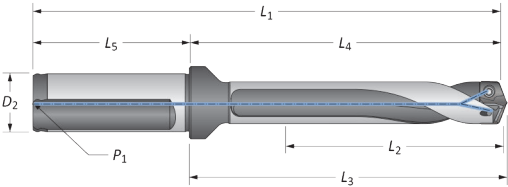
17 Series: 17.00 mm - 17.99 mm (0.6693" - 0.7086")

GEN3SYS® XT Pro Structural Steel Drilling System



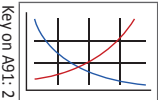
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D ₁ mm	Insert		Part No.
	D ₁ inch	Fractional Equivalent	
17.00	0.6693	—	XTST17-17.00
17.46	0.6876	11/16	XTST17-17.46



	Length	Body				Shank			Part No. With Flat
		L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	P ₁	
m	1.5xD	27.0	57.1	60.0	107.1	50.0	20	1/8 BSPT	ST01170-20FM
	3xD	54.0	84.1	87.0	134.1	50.0	20	1/8 BSPT	ST03170-20FM
	5xD	89.9	120.0	122.9	170.0	50.0	20	1/8 BSPT	ST05170-20FM
	7xD	125.9	156.0	158.9	206.0	50.0	20	1/8 BSPT	ST07170-20FM
i	1.5xD	1.063	2.250	2.359	4.281	2.031	3/4	1/8 NPT	ST01170-075F
	3xD	2.125	3.313	3.422	5.344	2.031	3/4	1/8 NPT	ST03170-075F
	5xD	3.547	4.719	4.844	6.750	2.031	3/4	1/8 NPT	ST05170-075F
	7xD	4.969	6.141	6.250	8.172	2.031	3/4	1/8 NPT	ST07170-075F

A91: 41 - 42



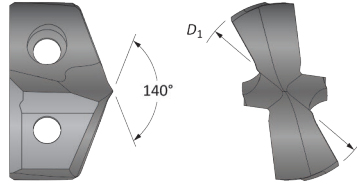
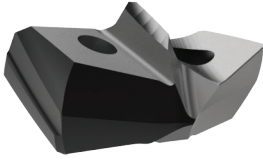
m = Metric (mm)
i = Imperial (in)

Inserts sold in multiples of 1. | Screws sold in multiples of 10.

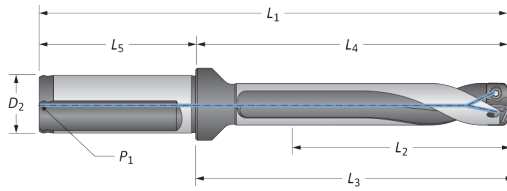
**18 Series: 18.00 mm - 19.99 mm (0.7087" - 0.7873")**

GEN3SYS® XT Pro Structural Steel Drilling System

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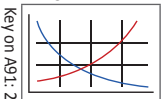


D_1 mm	Insert		Part No.
	D_1 inch	Fractional Equivalent	
18.00	0.7087	—	XTST18-18.00
19.00	0.7480	—	XTST18-19.00



	Body					Shank			Part No. With Flat
	Length	L_2	L_4	L_3	L_1	L_5	D_2	P_1	
m	1.5xD	30.0	64.0	67.1	114.0	50.0	20	1/8 BSPT	ST01180-20FM
	3xD	60.0	94.0	97.1	144.0	50.0	20	1/8 BSPT	ST03180-20FM
	5xD	99.9	134.0	137.1	184.0	50.0	20	1/8 BSPT	ST05180-20FM
	7xD	139.9	174.0	177.1	224.0	50.0	20	1/8 BSPT	ST07180-20FM
i	1.5xD	1.188	2.531	2.641	4.797	2.281	1	1/8 NPT	ST01180-100F
	3xD	2.375	3.703	3.828	5.984	2.281	1	1/8 NPT	ST03180-100F
	5xD	3.938	5.281	5.391	7.563	2.281	1	1/8 NPT	ST05180-100F
	7xD	5.516	6.844	6.969	9.125	2.281	1	1/8 NPT	ST07180-100F

A91: 41 - 42

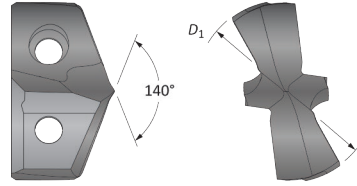
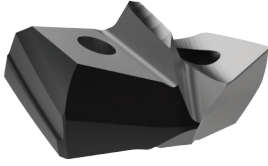
m = Metric (mm)
i = Imperial (in)

Inserts sold in multiples of 1. | Screws sold in multiples of 10.



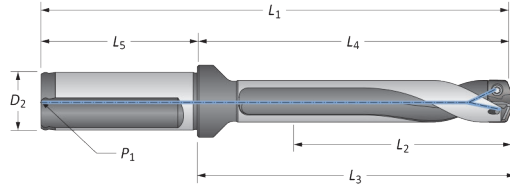
20 Series: 20.00 mm - 21.99 mm (0.7874" - 0.8660")

GEN3SYS® XT Pro Structural Steel Drilling System



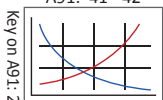
A91

Insert			Part No.
D_1 mm	D_1 inch	Fractional Equivalent	
20.00	0.7874	—	XTST20-20.00
20.64	0.8126	13/16	XTST20-20.64
21.00	0.8268	—	XTST20-21.00
21.82	0.8591	—	XTST20-21.82



	Body					Shank			Part No. With Flat
	Length	L_2	L_4	L_3	L_1	L_5	D_2	P_1	
m	1.5xD	33.0	67.1	70.3	123.1	56.0	25	1/8 BSPT	ST01200-25FM
	3xD	66.0	100.1	103.3	156.1	56.0	25	1/8 BSPT	ST03200-25FM
	5xD	110.0	144.1	147.2	200.1	56.0	25	1/8 BSPT	ST05200-25FM
	7xD	153.9	188.1	191.2	244.1	56.0	25	1/8 BSPT	ST07200-25FM
i	1.5xD	1.234	2.641	2.766	4.922	2.281	1	1/8 NPT	ST01200-100F
	3xD	2.531	3.938	4.063	6.219	2.281	1	1/8 NPT	ST03200-100F
	5xD	4.344	5.672	5.797	7.953	2.281	1	1/8 NPT	ST05200-100F
	7xD	6.063	7.406	7.531	9.688	2.281	1	1/8 NPT	ST07200-100F

A91: 41 - 42



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

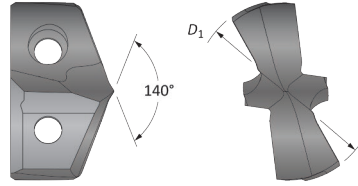
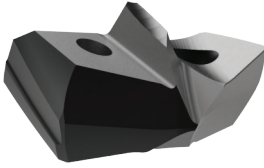
Inserts sold in multiples of 1. | Screws sold in multiples of 10.



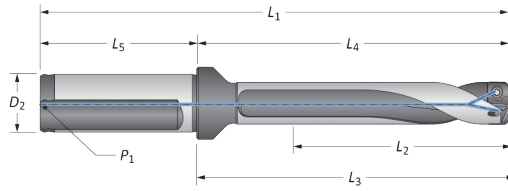
22 Series: 22.00 mm - 23.99 mm (0.8661" - 0.9448")

GEN3SYS® XT Pro Structural Steel Drilling System

A91



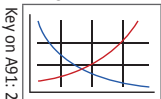
D_1 mm	D_1 inch	Fractional Equivalent	Part No.
			XTST
22.00	0.8661	—	XTST22-22.00
22.23	0.8752	7/8	XTST22-22.23
23.00	0.9055	—	XTST22-23.00
23.81	0.9374	15/16	XTST22-23.81



	Length	Body				Shank			Part No. With Flat
		L_2	L_4	L_3	L_1	L_5	D_2	P_1	
m	1.5xD	36.0	69.3	72.7	125.3	56.0	25	1/8 BSPT	ST01220-25FM
									ST01225-25FM*
	3xD	72.0	105.3	108.7	161.3	56.0	25	1/8 BSPT	ST03220-25FM
									ST03225-25FM*
	5xD	119.9	153.3	156.7	209.3	56.0	25	1/8 BSPT	ST05220-25FM
i									ST05225-25FM*
	7xD	167.9	201.3	204.7	257.3	56.0	25	1/8 BSPT	ST07220-25FM
									ST07225-25FM*
	1.5xD	1.406	2.719	2.859	5.000	2.281	1	1/8 NPT	ST01220-100F
									ST01225-100F*
i	3xD	2.828	4.141	4.281	6.422	2.281	1	1/8 NPT	ST03220-100F
									ST03225-100F*
	5xD	4.719	6.031	6.172	8.313	2.281	1	1/8 NPT	ST05220-100F
									ST05225-100F*
	7xD	6.609	7.922	8.063	10.203	2.281	1	1/8 NPT	ST07220-100F
									ST07225-100F*

*Oversized body holder (minimum drill diameter = 23.00 mm (0.9055")).

A91: 41 - 42



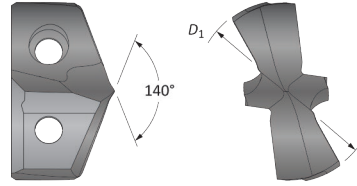
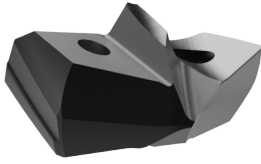
m = Metric (mm)
i = Imperial (in)

Inserts sold in multiples of 1. | Screws sold in multiples of 10.



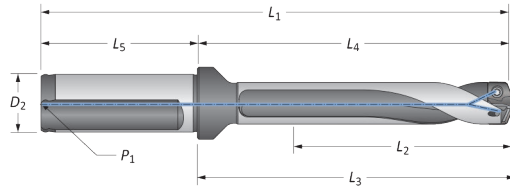
24 Series: 24.00 mm - 25.99 mm (0.9449" - 1.0235")

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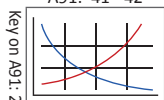
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Insert			Part No.
D_1 mm	D_1 inch	Fractional Equivalent	
24.00	0.9449	—	XTST24-24.00
24.60	0.9685	—	XTST24-24.60
25.40	1.0000	1	XTST24-25.40
25.78	1.0150	—	XTST24-25.78



	Body					Shank			Part No. With Flat
	Length	L_2	L_4	L_3	L_1	L_5	D_2	P_1	
m	1.5xD	39.0	74.8	78.3	130.8	56.0	25	1/8 BSPT	ST01240-25FM
	3xD	78.0	113.8	117.3	169.8	56.0	25	1/8 BSPT	ST03240-25FM
	5xD	129.9	165.8	169.2	221.8	56.0	25	1/8 BSPT	ST05240-25FM
	7xD	181.9	217.8	221.2	273.8	56.0	25	1/8 BSPT	ST07240-25FM
i	1.5xD	1.547	2.953	3.094	5.234	2.281	1	1/8 NPT	ST01240-100F
	3xD	3.078	4.484	4.625	6.766	2.281	1	1/8 NPT	ST03240-100F
	5xD	5.125	6.531	6.656	8.813	2.281	1	1/8 NPT	ST05240-100F
	7xD	7.172	8.578	8.703	10.859	2.281	1	1/8 NPT	ST07240-100F

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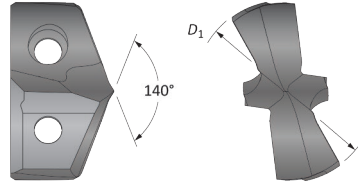
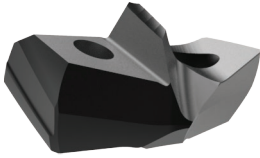
m = Metric (mm)
i = Imperial (in)

Inserts sold in multiples of 1. | Screws sold in multiples of 10.

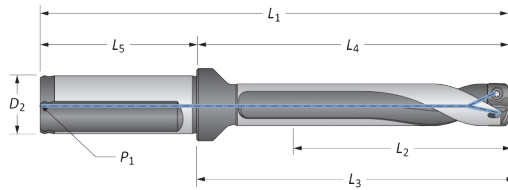
**26 Series: 26.00 mm - 28.99 mm (1.0236" - 1.1416")**

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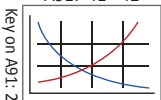


D_1 mm	Insert		Part No.
	D_1 inch	Fractional Equivalent	
26.00	1.0236	—	XTST26-26.00
26.99	1.0626	1-1/16	XTST26-26.99
27.00	1.0630	—	XTST26-27.00
28.00	1.1024	—	XTST26-28.00
28.58	1.1252	1-1/8	XTST26-28.58



	Length	Body				Shank			Part No. With Flat
		L_2	L_4	L_3	L_1	L_5	D_2	P_1	
m	1.5xD	43.5	84.6	87.9	144.6	60.0	32	1/4 BSPT	ST01260-32FM
	3xD	87.0	128.1	131.4	188.1	60.0	32	1/4 BSPT	ST03260-32FM
	5xD	145.0	186.1	189.4	246.1	60.0	32	1/4 BSPT	ST05260-32FM
	7xD	202.9	244.0	247.4	304.0	60.0	32	1/4 BSPT	ST07260-32FM
i	1.5xD	1.703	3.344	3.469	5.625	2.281	1-1/4	1/4 NPT	ST01260-125F
	3xD	3.422	5.063	5.188	7.344	2.281	1-1/4	1/4 NPT	ST03260-125F
	5xD	5.719	7.344	7.484	9.625	2.281	1-1/4	1/4 NPT	ST05260-125F
	7xD	7.984	9.625	9.766	11.906	2.281	1-1/4	1/4 NPT	ST07260-125F

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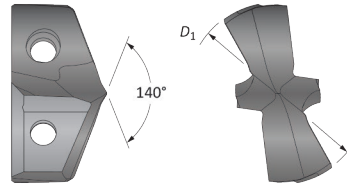
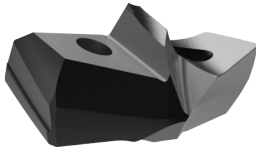
m = Metric (mm)
i = Imperial (in)

Inserts sold in multiples of 1. | Screws sold in multiples of 10.



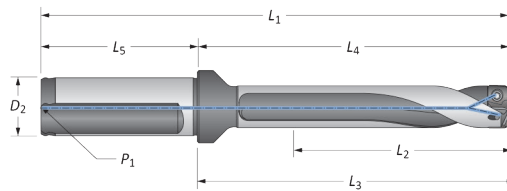
29 Series: 29.00 mm - 31.99 mm (1.1417" - 1.2597")

GEN3SYS® XT Pro Structural Steel Drilling System



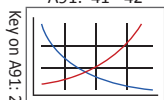
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Insert			Part No.
D_1 mm	D_1 inch	Fractional Equivalent	
29.00	1.1417	—	XTST29-29.00
30.00	1.1811	—	XTST29-30.00
30.16	1.1874	1-3/16	XTST29-30.16
31.00	1.2205	—	XTST29-31.00
31.75	1.2500	1-1/4	XTST29-31.75



	Length	Body				Shank			Part No. With Flat
		L_2	L_4	L_3	L_1	L_5	D_2	P_1	
m	1.5xD	48.0	88.2	91.7	148.2	60.0	32	1/4 BSPT	ST01290-32FM
	3xD	96.0	136.2	139.7	196.2	60.0	32	1/4 BSPT	ST03290-32FM
	5xD	159.9	200.1	203.7	260.1	60.0	32	1/4 BSPT	ST05290-32FM
	7xD	223.9	264.1	267.7	324.1	60.0	32	1/4 BSPT	ST07290-32FM
i	1.5xD	1.891	3.328	3.625	5.766	2.281	1-1/4	1/4 NPT	ST01290-125F
	3xD	3.781	5.375	5.516	7.656	2.281	1-1/4	1/4 NPT	ST03290-125F
	5xD	6.297	7.906	8.047	10.188	2.281	1-1/4	1/4 NPT	ST05290-125F
	7xD	8.813	10.422	10.563	12.703	2.281	1-1/4	1/4 NPT	ST07290-125F

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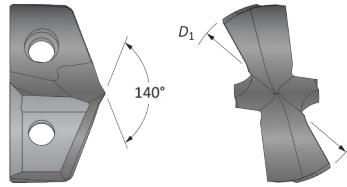
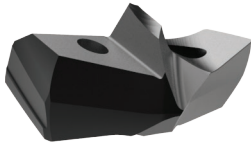
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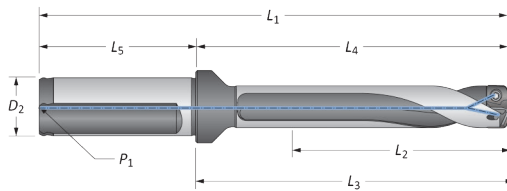
**32 Series: 32.00 mm - 35.00 mm (1.2598" -1.3780")**

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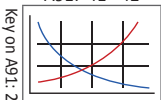


D_1 mm	D_1 inch	Fractional Equivalent	Part No.
			XTST
32.00	1.2598	—	XTST32-32.00
33.00	1.2992	—	XTST32-33.00
33.34	1.3126	1-5/16	XTST32-33.34
34.00	1.3386	—	XTST32-34.00
34.93	1.3752	1-3/8	XTST32-34.93



Body						Shank			Part No.
Length	L_2	L_4	L_3	L_1	L_5	D_2	P_1	With Flat	
m	1.5xD	52.5	105.2	109.5	165.2	60.0	32	1/4 BSPT	ST01320-32FM
					173.5	70.0	40	1/4 BSPT	ST01320-40FM
	3xD	105.0	157.7	162.0	217.7	60.0	32	1/4 BSPT	ST03320-32FM
					227.7	70.0	40	1/4 BSPT	ST03320-40FM
	5xD	175.0	227.7	232.0	287.7	60.0	32	1/4 BSPT	ST05320-32FM
					297.7	70.0	40	1/4 BSPT	ST05320-40FM
	7xD	244.9	297.7	302.2	357.7	60.0	32	1/4 BSPT	ST07320-32FM
					367.7	70.0	40	1/4 BSPT	ST07320-40FM
i	1.5xD	2.078	4.156	4.313	6.828	2.688	1-1/2	1/4 NPT	ST01320-150F
	3xD	4.141	6.219	6.375	8.891	2.688	1-1/2	1/4 NPT	ST03320-150F
	5xD	6.922	8.969	9.125	11.656	2.688	1-1/2	1/4 NPT	ST05320-150F
	7xD	9.641	11.719	11.891	14.406	2.688	1-1/2	1/4 NPT	ST07320-150F

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m = Metric (mm)

i = Imperial (in)

Inserts sold in multiples of 1. | Screws sold in multiples of 10.

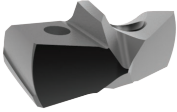


Notes

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Recommended Drilling Data | Metric (mm)



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METRIC (mm)

ISO	Material	Hardness (BHN)	Speed (m/min) - Mist Coolant AM420	Feed Rate (mm/rev) by Diameter			
				12 series	13 series	14 series	15 series
				12.00 mm - 12.99 mm	13.00 mm - 13.99 mm	14.00 mm - 14.99 mm	15.00 mm - 15.99 mm
P	Structural Steel A36, A285, A516, etc.	100 - 150	107	0.20	0.22	0.25	0.25
		150 - 250	91	0.18	0.20	0.23	0.23
		250 - 350	79	0.15	0.17	0.20	0.20

IMPERIAL (in)

ISO	Material	Hardness (BHN)	Speed (SFM) - Mist Coolant AM420	Feed Rate (IPR) by Diameter			
				12 series	13 series	14 series	15 series
				12.00 mm - 12.99 mm	13.00 mm - 13.99 mm	14.00 mm - 14.99 mm	15.00 mm - 15.99 mm
P	Structural Steel A36, A285, A516, etc.	100 - 150	350	0.008	0.009	0.010	0.010
		150 - 250	300	0.007	0.008	0.009	0.009
		250 - 350	260	0.006	0.007	0.008	0.008

Speed and Feed Multiplier

	Depth of Cut	
	$\leq 1.5xD$	$> 1.5xD$
Speed	See above chart	0.75
Feed	See above chart	0.90

NOTE:

- The speeds and feeds listed above are based on a rigid setup using air mist through-tool coolant. Speed may be increased up to 50% if using **high-pressure flood** or through coolant.
- If drilling dry without coolant, speed must be reduced significantly based on setup, drill depth, and material hardness. Up to 50% speed and feed reduction may be necessary in these types of applications.
- If drilling material thickness of 12.7 mm (0.500") or less, a minimum of 10% reduction in feed is required to minimize material deflection.

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



Recommended Drilling Data | Imperial (in)

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Feed Rate (mm/rev) by Diameter

16 series 16.00 mm - 16.99 mm	17 series 17.00 mm - 17.99 mm	18 series 18.00 mm - 19.99 mm	20 series 20.00 mm - 21.99 mm	22 series 22.00 mm - 23.99 mm	24 series 24.00 mm - 25.99 mm	26 series 26.00 mm - 28.99 mm	29 series 29.00 mm - 31.99 mm	32 series 32.00 mm - 35.00 mm
0.30	0.30	0.36	0.38	0.41	0.43	0.46	0.48	0.48
0.25	0.25	0.30	0.36	0.38	0.41	0.43	0.46	0.46
0.23	0.23	0.28	0.30	0.33	0.36	0.38	0.41	0.41

Feed Rate (IPR) by Diameter

16 series 16.00 mm - 16.99 mm	17 series 17.00 mm - 17.99 mm	18 series 18.00 mm - 19.99 mm	20 series 20.00 mm - 21.99 mm	22 series 22.00 mm - 23.99 mm	24 series 24.00 mm - 25.99 mm	26 series 26.00 mm - 28.99 mm	29 series 29.00 mm - 31.99 mm	32 series 32.00 mm - 35.00 mm
0.012	0.012	0.014	0.015	0.016	0.017	0.018	0.019	0.019
0.010	0.010	0.012	0.014	0.015	0.016	0.017	0.018	0.018
0.009	0.009	0.011	0.012	0.013	0.014	0.015	0.016	0.016

NOTE:

- The speeds and feeds listed above are based on a rigid setup using air mist through-tool coolant. Speed may be increased up to 50% if using **high-pressure flood** or through coolant.
- If drilling dry without coolant, speed must be reduced significantly based on setup, drill depth, and material hardness. Up to 50% speed and feed reduction may be necessary in these types of applications.
- If drilling material thickness of 12.7 mm (0.500") or less, a minimum of 10% reduction in feed is required to minimize material deflection.

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Safety Information

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Mechanical / Physical Hazards

Operating cutting tools may present both mechanical and physical hazards. These hazards can result in serious injury to workers or those near machines and damage to machines and the cutting tools. Cutting tools and/or assemblies may break or come loose when in operation causing projectile metal fragments. Metal chips produced by cutting tools have sharp edges and may be very hot. To minimize the risk of mechanical or physical hazards:

- Always secure all components of the cutting tool assembly before operating.
- Wear cut-resistant gloves when handling cutting tool components and assemblies.
- Do not touch metal chips produced by the cutting tools with your hands.
- Always wear appropriate personal protective equipment including safety goggles or glasses with side shields.
- Immediately discontinue use of damaged cutting tools.
- To avoid machine tool damage, make sure the machine has adequate power and torque for the cutting tool when operating. See catalog for power and torque requirements.
- Operating long cutting tools at high spindle speeds can result in a high risk of tool failure and serious injury.

Dust and Fume Hazards

Grinding, welding, cutting, or burning hard metals such as high-speed steel, cobalt, or carbides produces hazardous dust and/or fumes. Continued long-term exposure to hazardous dust and fumes can cause serious health issues. To minimize the risk of dust and fume hazards:

- Do not regrind or sharpen cutting tools without using adequate ventilation.
- Use appropriate personal protective equipment such as approved respirator to avoid inhalation, swallowing, or skin contact with the hazardous dust and/or fumes.
- Do not eat, drink, or smoke in the machine operation area. Always wash skin prior to eating, drinking, or smoking to avoid hazardous ingestion.

Sensitizing Hazards

Components of an assembled cutting tool are made from a variety of metal elements that may cause allergic skin reactions with prolonged skin contact. To minimize the risk of allergic skin reactions:

- Avoid skin contact with cutting tools.
- Wear appropriate gloves and protective clothing.
- Wash skin and launder clothing after handling cutting tools to reduce the risk of skin allergies.

Preventive Safety Measure Applicable to all Hazards

- Prior to using cutting tools, always read Allied Machine's Safety Data Sheets, product catalog, and product labels for additional warnings for the Allied Machine product being used.
- For machining safety, only operate equipment when all necessary guards, interlocks, and other safety devices are in place and functional. Use all appropriate safety guards or machine encapsulations to securely collect particles such as chips or cutting elements that may become projectiles.

Through Hole

- With through holes, a **sharp-edged disk** is created as tool breakout occurs.
- ⚠ Proper personal protective equipment must be used to prevent injury (e.g. wear cut-resistant gloves).

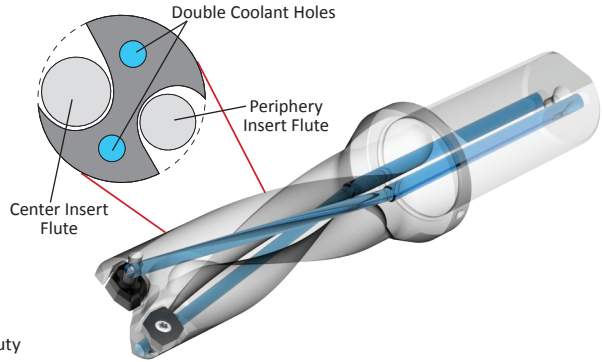




System Overview

4TEX Drill **Advantages**

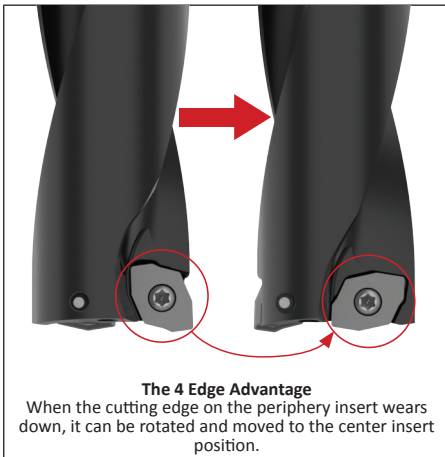
- ✓ **Superior chip evacuation**
provided by the two twisted coolant holes.
- ✓ **Improved hole size**
from the increased holder rigidity.
- ✓ **Longer tool life**
provided by the four-sided insert design.
- ✓ **Optimal chip formation**
with ISO-specific insert geometry/coating combinations.
- ✓ **Competitive cycle times**
due to single effective cutting when using light duty machines.



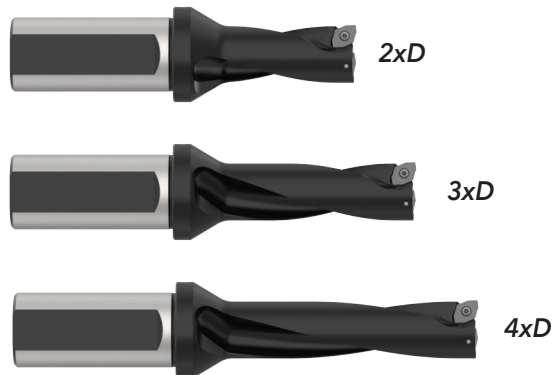
DESIGNED TO GIVE YOU **IMPROVED** HOLE SIZE AND STRAIGHTNESS

- The two twisted coolant holes allow the core to remain intact, making the core thicker and stronger for improved hole straightness even in uneven surfaces.
- The enlarged dual coolant outlets increase the coolant volume, which improves the chip evacuation resulting in improved hole size.
- The flute space of the internal cutting edge side (where chips get stuck most often) is 1.6x larger than typical IC drills, helping to mitigate catastrophic failures and improve hole size.

LONGER TOOL LIFE



AVAILABLE **LENGTHS**



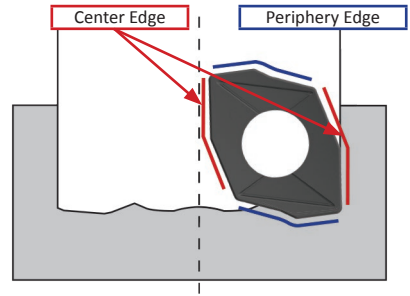


Insert Information

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4 CUTTING EDGES

- Each insert has two inner cutting edges and two outer cutting edges.
- Economical solution that increases tool life because of the rotation ability of the inserts.
- Available in ISO material-specific geometry/coating combinations.

**Periphery Insert**

Periphery edge chip formation:

**Center Insert**

Center edge chip formation:



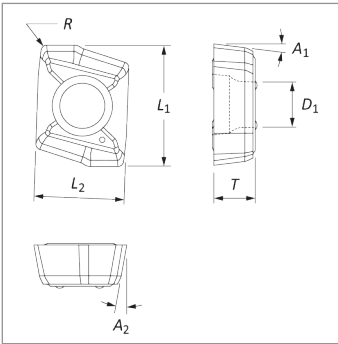
180°

ISO	Geometry	Coating	Description
P	General Rake	AM480	A general purpose geometry that provides excellent chip formation in most steels including free-machining, medium- and high-carbon steels. A P30 carbide substrate for improved toughness and AM480 coating, a proprietary wear-resistant multilayer PVD coating to improve tool life.
S M	High Rake	AM485	A higher rake geometry that provides excellent chip formation in both stainless steels and high-temperature alloys. A tough M25 carbide substrate coated with AM485, a high heat-resistant proprietary multilayer PVD coating.
K	General Rake	AM480	With a general purpose geometry, the K inserts can be used in grey cast irons as well as ductile irons. A high wear-resistant K10 carbide substrate to improve tool life and coated with AM480, a proprietary multilayer PVD coating to improve resistance against tool wear.
N	High Rake	TiCN	A higher rake cutting geometry provides excellent chip formation in nonferrous materials. An M15/K15 carbide substrate paired with TiCN coating for improved lubricity to resist built-up material, increasing tool life and maintaining chip formation.
H	Low Rake	AM480	A lower rake geometry to improve edge strength in both hardened tool steels and high-strength alloys. With a P30 carbide substrate for improved toughness and coated with AM480, a proprietary multilayer PVD coating to improve resistance against tool wear.

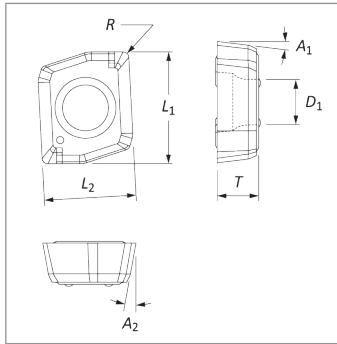
Insert Information

Series	Insert Prefix	Dimension (mm)					Angle		Shape
		L_1	L_2	T	D_1	R	A_1	A_2	
03	4T-030203C-x	5.60	4.80	2.30	2.40	0.30	7°	10°	 Style 1
	4T-030203P-x	6.38	4.77	2.30	2.40	0.30	7°	10°	 Style 2
04	4T-040203-x	6.21	5.06	2.60	2.45	0.30	13°	10°	 Style 3
05	4T-05T203-x	7.26	5.48	2.76	2.55	0.30	13°	7°	
06	4T-06T204-x	8.59	6.44	2.89	2.79	0.40	13°	7°	
07	4T-070305-x	10.21	8.02	3.24	3.00	0.50	13°	7°	
09	4T-09T306-x	12.18	9.55	4.03	3.64	0.60	13°	7°	
11	4T-11T306-x	14.50	11.61	4.06	4.62	0.60	13°	7°	
14	4T-140408-x	17.99	14.40	4.88	5.76	0.80	13°	7°	

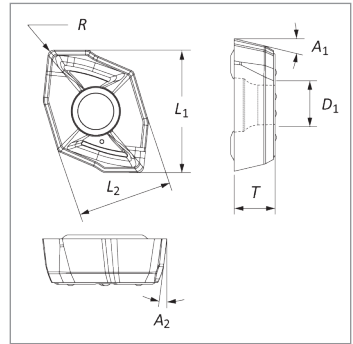
Style 1



Style 2



Style 3





Product Nomenclature

4TEX Drill Holders

D4	03		1200	M	—	075		F
Drill Length	Series		Diameter*	Diameter Style		Shank Diameter		Shank Style
D2 = 2xD	03	09	1200 = 12 mm	M = Metric		Metric	Imperial	FM = Metric flanged shank
D3 = 3xD	04	11	0750 = 0.075"	I = Imperial		20 = 20 mm	075 = 0.075"	F = Imperial flanged shank
D4 = 4xD	05	14				25 = 25 mm	100 = 1.000"	
	06					32 = 32 mm	125 = 1.250"	
	07					40 = 40 mm	150 = 1.500"	

*Ordering Nonstocked Diameters:

Nonstocked diameters are available upon request. Please refer to price list for applicable process fees.

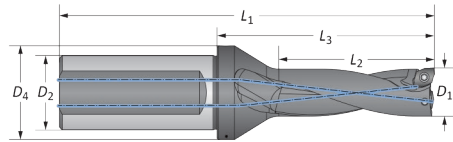
Ordering example:

Metric: 03 Series (12.65 mm) = D2031265M-20FM

Inch: 03 Series (Ø 0.480") = D2030480I-075F

Reference Key

Symbol	Attribute
D_1	Drill diameter
D_2	Shank diameter
D_4	Flange diameter
L_1	Assembled overall length
L_2	Drill depth
L_3	Reference length



Series Details

Series		3 Series	4 Series	5 Series	6 Series	7 Series	9 Series	11 Series	14 Series
Cutter	mm	12.00 - 13.49	13.50 - 15.49	15.50 - 18.49	18.50 - 21.99	22.00 - 26.49	26.50 - 31.99	32.00 - 38.99	39.00 - 47.00
	inch	0.472 - 0.531	0.532 - 0.610	0.611 - 0.728	0.728 - 0.866	0.867 - 1.043	1.044 - 1.259	1.260 - 1.535	1.536 - 1.850
Shank	mm	20.00	20.00	25.00	25.00	25.00	32.00	40.00	40.00
	inch	0.750	0.750	1.000	1.000	1.000	1.250	1.500	1.500
Insert Prefix		4T-030203C-x	4T-040203-x	4T-05T203-x	4T-06T204-x	4T-070305-x	4T-09T306-x	4T-11T306-x	4T-140408-x
		4T-030203P-x							
# of Inserts		2	2	2	2	2	2	2	2

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.

A91

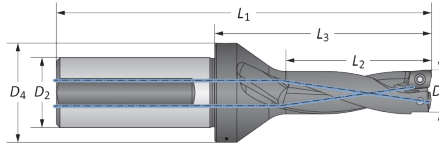


03 Series: 12.00 mm - 13.00 mm (0.472" - 0.512")

Holders

NOTE: For full diameter range offerings, see the 4TEX section of our drilling catalog.

A91



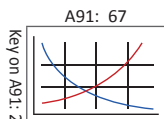
	Length	D ₁		Body			Shank		Max Offset	Part No.
		mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
m	2xD	12.00	0.472	24.00	45.40	88.40	20.00	27.00	0.50	D2031200M-20FM
		13.00	0.512	26.00	47.40	90.40	20.00	27.00	0.30	D2031300M-20FM
	3xD	12.00	0.472	36.00	57.40	100.40	20.00	27.00	0.50	D3031200M-20FM
		13.00	0.512	39.00	60.40	103.40	20.00	27.00	0.30	D3031300M-20FM
	4xD	12.00	0.472	48.00	69.40	112.40	20.00	27.00	0.50	D4031200M-20FM
		13.00	0.512	52.00	73.40	116.40	20.00	27.00	0.30	D4031300M-20FM
i	2xD	12.00	0.472	0.945	1.787	3.480	0.750	1.063	0.020	D2031200M-075F
		13.00	0.512	1.024	1.866	3.559	0.750	1.063	0.012	D2031300M-075F
	3xD	12.00	0.472	1.417	2.260	3.953	0.750	1.063	0.020	D3031200M-075F
		13.00	0.512	1.535	2.378	4.071	0.750	1.063	0.012	D3031300M-075F
	4xD	12.00	0.472	1.890	2.732	4.425	0.750	1.063	0.020	D4031200M-075F
		13.00	0.512	2.047	2.890	4.583	0.750	1.063	0.012	D4031300M-075F

IC Inserts

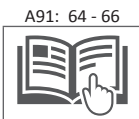
ISO	Style	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	Center	4T-030203C-P	7241-T6-1	8T-6	0.5 N-m (4.4 in-lbs)
	Periphery	4T-030203P-P			
S M	Center	4T-030203C-M			
	Periphery	4T-030203P-M			
K	Center	4T-030203C-K			
	Periphery	4T-030203P-K			
N	Center	4T-030203C-N			
	Periphery	4T-030203P-N			
H	Center	4T-030203C-H			
	Periphery	4T-030203P-H			

Expected Hole Tolerances

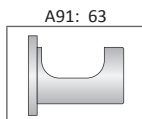
Length	mm	in
2xD	- 0.10 + 0.20	- 0.004 + 0.008
	- 0.10 + 0.20	- 0.004 + 0.008
3xD	- 0.10 + 0.20	- 0.004 + 0.008
	- 0.10 + 0.25	- 0.004 + 0.010



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A91: 64 - 66



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m = Metric (mm)

i = Imperial (in)

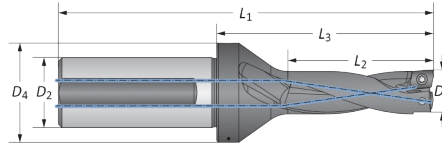
IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.



04 Series: 14.00 mm - 15.00 mm (0.551" - 0.591")

Holders

NOTE: For full diameter range offerings, see the 4TEX section of our drilling catalog.



A91

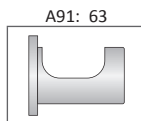
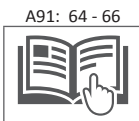
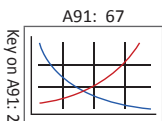
		D ₁		Body			Shank		Max Offset	Part No.
Length		mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
m	2xD	14.00	0.551	28.00	49.40	92.40	20.00	27.00	20.00	D2041400M-20FM
		14.29	0.563	28.55	49.40	92.40	20.00	27.00	20.00	D2040562I-20FM
		15.00	0.591	30.00	51.40	94.40	20.00	27.00	20.00	D2041500M-20FM
	3xD	14.00	0.551	42.00	63.40	106.40	20.00	27.00	20.00	D3041400M-20FM
		14.29	0.563	42.82	63.40	106.40	20.00	27.00	20.00	D3040562I-20FM
		15.00	0.591	45.00	66.40	109.40	20.00	27.00	20.00	D3041500M-20FM
	4xD	14.00	0.551	56.00	77.40	120.40	20.00	27.00	20.00	D4041400M-20FM
		14.29	0.563	57.10	77.40	120.40	20.00	27.00	20.00	D4040562I-20FM
		15.00	0.591	60.00	81.40	124.40	20.00	27.00	20.00	D4041500M-20FM
i	2xD	14.00	0.551	1.102	1.945	3.638	0.750	1.063	0.016	D2041400M-075F
		14.29	0.563	1.124	1.945	3.638	0.750	1.063	0.013	D2040562I-075F
		15.00	0.591	1.181	2.024	3.717	0.750	1.063	0.008	D2041500M-075F
	3xD	14.00	0.551	1.654	2.496	4.189	0.750	1.063	0.016	D3041400M-075F
		14.29	0.563	1.686	2.496	4.189	0.750	1.063	0.013	D3040562I-075F
		15.00	0.591	1.772	2.614	4.307	0.750	1.063	0.008	D3041500M-075F
	4xD	14.00	0.551	2.205	3.047	4.740	0.750	1.063	0.016	D4041400M-075F
		14.29	0.563	2.248	3.047	4.740	0.750	1.063	0.013	D4040562I-075F
		15.00	0.591	2.362	3.205	4.898	0.750	1.063	0.008	D4041500M-075F

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-040203-P	7241-T6-1	8T-6	0.5 N-m (4.4 in-lbs)
S M	4T-040203-M			
K	4T-040203-K			
N	4T-040203-N			
H	4T-040203-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.004 + 0.008	- 0.10 + 0.20
3xD	- 0.004 + 0.008	- 0.10 + 0.20
4xD	- 0.004 + 0.010	- 0.10 + 0.25



m = Metric (mm)

i = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

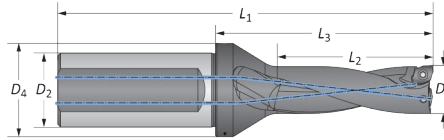


05 Series: 15.88 mm - 18.00 mm (0.625" - 0.709")

Holders

NOTE: For full diameter range offerings, see the 4TEX section of our drilling catalog.

A91



Metric Shank

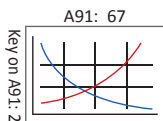
Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
2xD	15.88	0.625	31.75	54.50	108.50	25.00	32.00	0.70	D2050625I-25FM
	16.00	0.630	32.00	55.50	109.50	25.00	32.00	0.70	D2051600M-25FM
	17.00	0.669	34.00	57.50	111.50	25.00	32.00	0.40	D2051700M-25FM
	17.46	0.687	34.90	57.50	111.50	25.00	32.00	0.30	D2050687I-25FM
	18.00	0.709	36.00	59.50	113.50	25.00	32.00	0.20	D2051800M-25FM
3xD	15.88	0.625	47.63	70.00	124.00	25.00	32.00	0.70	D3050625I-25FM
	16.00	0.630	48.00	71.50	125.50	25.00	32.00	0.70	D3051600M-25FM
	17.00	0.669	51.00	74.50	128.50	25.00	32.00	0.40	D3051700M-25FM
	17.46	0.687	52.35	74.50	128.50	25.00	32.00	0.30	D3050687I-25FM
	18.00	0.709	54.00	77.50	131.50	25.00	32.00	0.20	D3051800M-25FM
4xD	15.88	0.625	63.50	85.50	139.50	25.00	32.00	0.70	D4050625I-25FM
	16.00	0.630	64.00	87.50	141.50	25.00	32.00	0.70	D4051600M-25FM
	17.00	0.669	68.00	91.50	145.50	25.00	32.00	0.40	D4051700M-25FM
	17.46	0.687	69.80	91.50	145.50	25.00	32.00	0.30	D4050687I-25FM
	18.00	0.709	72.00	95.50	149.50	25.00	32.00	0.20	D4051800M-25FM

IC Inserts

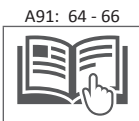
ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-05T203-P	7243-T6-1	8T-6	0.5 N-m (4.4 in-lbs)
S M	4T-05T203-M			
K	4T-05T203-K			
N	4T-05T203-N			
H	4T-05T203-H			

Expected Hole Tolerances

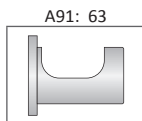
Length	mm	in
2xD	- 0.10 + 0.20	- 0.004 + 0.008
3xD	- 0.10 + 0.20	- 0.004 + 0.008
4xD	- 0.10 + 0.25	- 0.004 + 0.010



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M = Metric (mm)

I = Imperial (in)

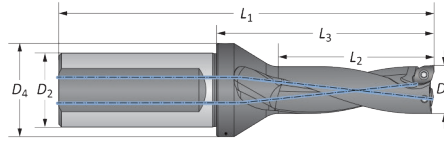
IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.



05 Series: 15.88 mm - 18.00 mm (0.625" - 0.709")

Holders

NOTE: For full diameter range offerings, see the 4TEX section of our drilling catalog.



A91

Imperial Shank

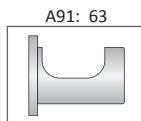
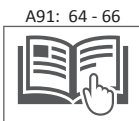
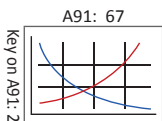
Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
2xD	15.88	0.625	1.250	2.146	4.272	1.000	1.260	0.029	D2050625I-100F
	16.00	0.630	1.260	2.185	4.311	1.000	1.260	0.028	D2051600M-100F
	17.00	0.669	1.339	2.264	4.390	1.000	1.260	0.016	D2051700M-100F
	17.46	0.687	1.374	2.264	4.390	1.000	1.260	0.012	D2050687I-100F
	18.00	0.709	1.417	2.343	4.469	1.000	1.260	0.008	D2051800M-100F
3xD	15.88	0.625	1.875	2.756	4.882	1.000	1.260	0.029	D3050625I-100F
	16.00	0.630	1.890	2.815	4.941	1.000	1.260	0.028	D3051600M-100F
	17.00	0.669	2.008	2.933	5.059	1.000	1.260	0.016	D3051700M-100F
	17.46	0.687	2.061	2.933	5.059	1.000	1.260	0.012	D3050687I-100F
	18.00	0.709	2.126	3.051	5.177	1.000	1.260	0.008	D3051800M-100F
4xD	15.88	0.625	2.500	3.366	5.492	1.000	1.260	0.029	D4050625I-100F
	16.00	0.630	2.520	3.445	5.571	1.000	1.260	0.028	D4051600M-100F
	17.00	0.669	2.677	3.602	5.728	1.000	1.260	0.016	D4051700M-100F
	17.46	0.687	2.748	3.602	5.728	1.000	1.260	0.012	D4050687I-100F
	18.00	0.709	2.835	3.760	5.886	1.000	1.260	0.008	D4051800M-100F

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-05T203-P	7243-T6-1	8T-6	0.5 N-m (4.4 in-lbs)
S M	4T-05T203-M			
K	4T-05T203-K			
N	4T-05T203-N			
H	4T-05T203-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.10 + 0.20	- 0.004 + 0.008
3xD	- 0.10 + 0.20	- 0.004 + 0.008
4xD	- 0.10 + 0.25	- 0.004 + 0.010



m = Metric (mm)

i = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

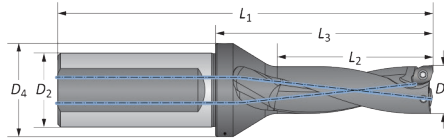


06 Series: 19.00 mm - 21.00 mm (0.748" - 0.827")

Holders

NOTE: For full diameter range offerings, see the 4TEX section of our drilling catalog.

A91



Metric Shank

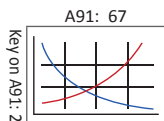
Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
2xD	19.00	0.748	38.00	59.40	113.40	25.00	32.00	0.80	D2061900M-25FM
	20.00	0.787	40.00	61.40	115.40	25.00	32.00	0.50	D2062000M-25FM
	20.64	0.813	41.25	62.40	116.40	25.00	32.00	0.40	D2060812I-25FM
	21.00	0.827	42.00	63.40	117.40	25.00	32.00	0.30	D2062100M-25FM
3xD	19.00	0.748	57.00	78.40	132.40	25.00	32.00	0.80	D3061900M-25FM
	20.00	0.787	60.00	81.40	135.40	25.00	32.00	0.50	D3062000M-25FM
	20.64	0.813	61.87	82.90	136.90	25.00	32.00	0.40	D3060812I-25FM
	21.00	0.827	63.00	84.40	138.40	25.00	32.00	0.30	D3062100M-25FM
4xD	19.00	0.748	76.00	97.40	151.40	25.00	32.00	0.80	D4061900M-25FM
	20.00	0.787	80.00	101.40	155.40	25.00	32.00	0.50	D4062000M-25FM
	20.64	0.813	82.49	103.40	157.40	25.00	32.00	0.40	D4060812I-25FM
	21.00	0.827	84.00	105.40	159.40	25.00	32.00	0.30	D4062100M-25FM

IC Inserts

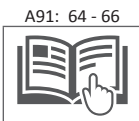
ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-06T204-P	72251-T7-1	8T-7	0.8 N-m (7.1 in-lbs)
S M	4T-06T204-M			
K	4T-06T204-K			
N	4T-06T204-N			
H	4T-06T204-H			

Expected Hole Tolerances

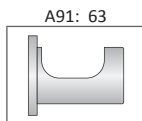
Length	mm	in
2xD	- 0.10	- 0.004
	+ 0.20	+ 0.008
3xD	- 0.10	- 0.004
	+ 0.20	+ 0.008
4xD	- 0.10	- 0.004
	+ 0.25	+ 0.010



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A91: 64 - 66



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M = Metric (mm)

I = Imperial (in)

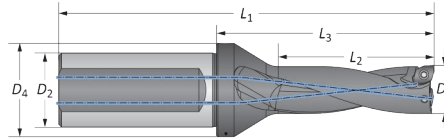
IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.



06 Series: 19.00 mm - 21.00 mm (0.748" - 0.827")

Holders

NOTE: For full diameter range offerings, see the 4TEX section of our drilling catalog.



A91

Imperial Shank

Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
2xD	19.00	0.748	1.496	2.339	4.465	1.000	1.260	0.031	D2061900M-100F
	20.00	0.787	1.575	2.417	4.543	1.000	1.260	0.020	D2062000M-100F
	20.64	0.813	1.624	2.457	4.583	1.000	1.260	0.015	D2060812I-100F
	21.00	0.827	1.654	2.496	4.622	1.000	1.260	0.012	D2062100M-100F
3xD	19.00	0.748	2.244	3.087	5.213	1.000	1.260	0.031	D3061900M-100F
	20.00	0.787	2.362	3.205	5.331	1.000	1.260	0.020	D3062000M-100F
	20.64	0.813	2.436	3.264	5.390	1.000	1.260	0.015	D3060812I-100F
	21.00	0.827	2.480	3.323	5.449	1.000	1.260	0.012	D3062100M-100F
4xD	19.00	0.748	2.992	3.835	5.961	1.000	1.260	0.031	D4061900M-100F
	20.00	0.787	3.150	3.992	6.118	1.000	1.260	0.020	D4062000M-100F
	20.64	0.813	3.248	4.071	6.197	1.000	1.260	0.015	D4060812I-100F
	21.00	0.827	3.307	4.150	6.276	1.000	1.260	0.012	D4062100M-100F

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-06T204-P	72251-T7-1	8T-7	0.8 N-m (7.1 in-lbs)
S M	4T-06T204-M			
K	4T-06T204-K			
N	4T-06T204-N			
H	4T-06T204-H			

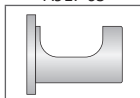
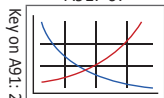
Expected Hole Tolerances

Length	mm	in
2xD	- 0.10 + 0.20	- 0.004 + 0.008
3xD	- 0.10 + 0.20	- 0.004 + 0.008
4xD	- 0.10 + 0.25	- 0.004 + 0.010

A91: 67

A91: 64 - 66

A91: 63



m = Metric (mm)

i = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

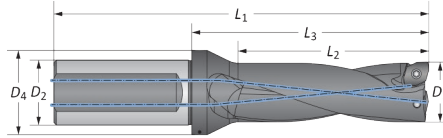


07 Series: 22.00 mm - 26.00 mm (0.866" - 1.024")

Holders

NOTE: For full diameter range offerings, see the 4TEX section of our drilling catalog.

A91



Metric Shank

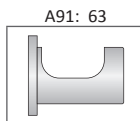
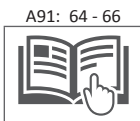
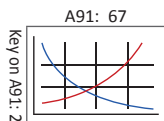
Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
2xD	22.00	0.866	44.00	64.90	118.90	25.00	33.00	1.20	D2072200M-25FM
	22.22	0.875	44.45	64.90	118.90	25.00	33.00	1.10	D2070875I-25FM
	23.00	0.906	46.00	66.90	120.90	25.00	33.00	0.90	D2072300M-25FM
	23.81	0.937	47.60	67.90	121.90	25.00	33.00	7.40	D2070937I-25FM
	24.00	0.945	48.00	68.90	122.90	25.00	33.00	0.70	D2072400M-25FM
	25.40	1.000	50.80	70.90	124.90	25.00	33.00	0.30	D2071000I-25FM
3xD	26.00	1.024	52.00	72.90	126.90	25.00	33.00	0.20	D2072600M-25FM
	22.00	0.866	66.00	86.90	140.90	25.00	33.00	1.20	D3072200M-25FM
	22.22	0.875	66.68	86.90	140.90	25.00	33.00	1.10	D3070875I-25FM
	23.00	0.906	69.00	89.90	143.90	25.00	33.00	0.90	D3072300M-25FM
	23.81	0.937	71.40	91.40	145.40	25.00	33.00	7.40	D3070937I-25FM
	24.00	0.945	72.00	92.90	146.90	25.00	33.00	0.70	D3072400M-25FM
4xD	25.40	1.000	76.20	95.90	149.90	25.00	33.00	0.30	D3071000I-25FM
	26.00	1.024	78.00	99.00	153.00	25.00	33.00	0.20	D3072600M-25FM
	22.00	0.866	88.00	109.00	163.00	25.00	33.00	1.20	D4072200M-25FM
	22.22	0.875	88.90	108.90	162.90	25.00	33.00	1.10	D4070875I-25FM
	23.00	0.906	92.00	113.00	167.00	25.00	33.00	0.90	D4072300M-25FM
	23.81	0.937	95.20	114.90	168.90	25.00	33.00	7.40	D4070937I-25FM
4xD	24.00	0.945	96.00	117.00	171.00	25.00	33.00	0.70	D4072400M-25FM
	25.40	1.000	101.60	120.90	174.90	25.00	33.00	0.30	D4071000I-25FM
	26.00	1.024	104.00	125.00	179.00	25.00	33.00	0.20	D4072600M-25FM

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-070305-P	72568-T8-1	8T-8	1.2 N-m (10.6 in-lbs)
S M	4T-070305-M			
K	4T-070305-K			
N	4T-070305-N			
H	4T-070305-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.10	- 0.004
	+ 0.20	+ 0.008
3xD	- 0.10	- 0.004
	+ 0.20	+ 0.008
4xD	- 0.10	- 0.004
	+ 0.25	+ 0.010



m = Metric (mm)

i = Imperial (in)

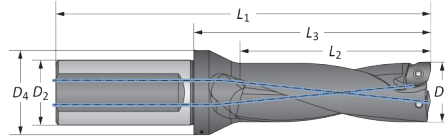
IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.



07 Series: 22.00 mm - 26.00 mm (0.866" - 1.024")

Holders

NOTE: For full diameter range offerings, see the 4TEX section of our drilling catalog.



A91



Imperial Shank

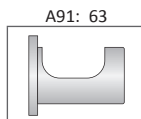
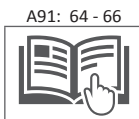
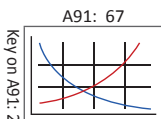
Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
2xD	22.00	0.866	1.732	2.555	4.681	1.000	1.299	0.047	D2072200M-100F
	22.22	0.875	1.750	2.555	4.681	1.000	1.299	0.043	D2070875I-100F
	23.00	0.906	1.811	2.634	4.760	1.000	1.299	0.035	D2072300M-100F
	23.81	0.937	1.874	2.673	4.799	1.000	1.299	0.292	D2070937I-100F
	24.00	0.945	1.890	2.713	4.839	1.000	1.299	0.028	D2072400M-100F
	25.40	1.000	2.000	2.791	4.917	1.000	1.299	0.013	D2071000I-100F
3xD	26.00	1.024	2.047	2.870	4.996	1.000	1.299	0.008	D2072600M-100F
	22.00	0.866	2.598	3.421	5.547	1.000	1.299	0.047	D3072200M-100F
	22.22	0.875	2.625	3.421	5.547	1.000	1.299	0.043	D3070875I-100F
	23.00	0.906	2.717	3.539	5.665	1.000	1.299	0.035	D3072300M-100F
	23.81	0.937	2.811	3.598	5.724	1.000	1.299	0.292	D3070937I-100F
	24.00	0.945	2.835	3.657	5.783	1.000	1.299	0.028	D3072400M-100F
4xD	25.40	1.000	3.000	3.776	5.902	1.000	1.299	0.013	D3071000I-100F
	26.00	1.024	3.071	3.894	6.020	1.000	1.299	0.008	D3072600M-100F
	22.00	0.866	3.465	4.287	6.413	1.000	1.299	0.047	D4072200M-100F
	22.22	0.875	3.500	4.287	6.413	1.000	1.299	0.043	D4070875I-100F
	23.00	0.906	3.622	4.445	6.571	1.000	1.299	0.035	D4072300M-100F
	23.81	0.937	3.748	4.524	6.650	1.000	1.299	0.292	D4070937I-100F
4xD	24.00	0.945	3.780	4.602	6.728	1.000	1.299	0.028	D4072400M-100F
	25.40	1.000	4.000	4.760	6.886	1.000	1.299	0.013	D4071000I-100F
	26.00	1.024	4.094	4.917	7.043	1.000	1.299	0.008	D4072600M-100F

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-070305-P	72568-T8-1	8T-8	1.2 N-m (10.6 in-lbs)
S M	4T-070305-M			
K	4T-070305-K			
N	4T-070305-N			
H	4T-070305-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.10 + 0.20	- 0.004 + 0.008
3xD	- 0.10 + 0.20	- 0.004 + 0.008
4xD	- 0.10 + 0.25	- 0.004 + 0.010



m = Metric (mm)

i = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

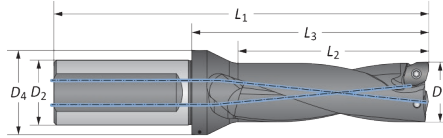


09 Series: 27.00 mm - 31.75 mm (1.063" - 1.250")

Holders

NOTE: For full diameter range offerings, see the 4TEX section of our drilling catalog.

A91



Metric Shank

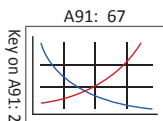
Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
2xD	27.00	1.063	54.00	76.70	135.70	32.00	41.00	1.60	D2092700M-32FM
	28.00	1.102	56.00	78.70	137.70	32.00	41.00	1.30	D2092800M-32FM
	28.58	1.125	57.15	79.70	138.70	32.00	41.00	1.20	D2091125I-32FM
	29.00	1.142	58.00	80.70	139.70	32.00	41.00	1.10	D2092900M-32FM
	30.00	1.181	60.00	82.70	141.70	32.00	41.00	0.80	D2093000M-32FM
	30.15	1.187	60.30	82.70	141.70	32.00	41.00	0.82	D2091187I-32FM
	31.00	1.220	62.00	84.70	143.70	32.00	41.00	0.60	D2093100M-32FM
3xD	31.75	1.250	63.50	85.70	144.70	32.00	41.00	0.50	D2091250I-32FM
	27.00	1.063	81.00	103.70	162.70	32.00	41.00	1.60	D3092700M-32FM
	28.00	1.102	84.00	106.70	165.70	32.00	41.00	1.30	D3092800M-32FM
	28.58	1.125	85.73	108.20	167.20	32.00	41.00	1.20	D3091125I-32FM
	29.00	1.142	87.00	109.70	168.70	32.00	41.00	1.10	D3092900M-32FM
	30.00	1.181	90.00	112.70	171.70	32.00	41.00	0.80	D3093000M-32FM
	30.15	1.187	90.45	112.70	171.70	32.00	41.00	0.82	D3091187I-32FM
4xD	31.00	1.220	93.00	115.70	174.70	32.00	41.00	0.60	D3093100M-32FM
	31.75	1.250	95.25	117.20	176.20	32.00	41.00	0.50	D3091250I-32FM
	27.00	1.063	108.00	130.70	189.70	32.00	41.00	1.60	D4092700M-32FM
	28.00	1.102	112.00	134.70	193.70	32.00	41.00	1.30	D4092800M-32FM
	28.58	1.125	114.30	136.70	195.70	32.00	41.00	1.20	D4091125I-32FM
	29.00	1.142	116.00	138.70	197.70	32.00	41.00	1.10	D4092900M-32FM
	30.00	1.181	120.00	142.70	201.70	32.00	41.00	0.80	D4093000M-32FM
	30.15	1.187	120.60	142.70	201.70	32.00	41.00	0.82	D4091187I-32FM
	31.00	1.220	124.00	146.70	205.70	32.00	41.00	0.60	D4093100M-32FM
	31.75	1.250	127.00	148.70	207.70	32.00	41.00	0.50	D4091250I-32FM

IC Inserts

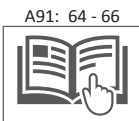
ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-09T306-P	738-T10-1	8T-10	2.0 N-m (17.7 in-lbs)
S M	4T-09T306-M			
K	4T-09T306-K			
N	4T-09T306-N			
H	4T-09T306-H			

Expected Hole Tolerances

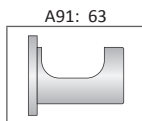
Length	mm	in
2xD	- 0.15	- 0.006
	+ 0.25	+ 0.010
3xD	- 0.15	- 0.006
	+ 0.25	+ 0.010
4xD	- 0.15	- 0.006
	+ 0.30	+ 0.012



A91: 67



A91: 64 - 66



A91: 63

m = Metric (mm)

i = Imperial (in)

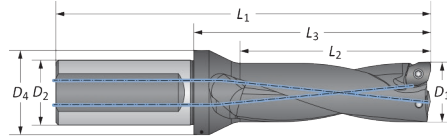
IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.



09 Series: 27.00 mm - 31.75 mm (1.063" - 1.250")

Holders

NOTE: For full diameter range offerings, see the 4TEX section of our drilling catalog.



A91

Imperial Shank

Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
2xD	27.00	1.063	2.126	3.020	5.343	1.250	1.614	0.063	D2092700M-125F
	28.00	1.102	2.205	3.098	5.421	1.250	1.614	0.051	D2092800M-125F
	28.58	1.125	2.250	3.138	5.461	1.250	1.614	0.046	D2091125I-125F
	29.00	1.142	2.283	3.177	5.500	1.250	1.614	0.043	D2092900M-125F
	30.00	1.181	2.362	3.256	5.579	1.250	1.614	0.031	D2093000M-125F
	30.15	1.187	2.374	3.256	5.579	1.250	1.614	0.032	D2091187I-125F
	31.00	1.220	2.441	3.335	5.657	1.250	1.614	0.024	D2093100M-125F
3xD	31.75	1.250	2.500	3.374	5.697	1.250	1.614	0.019	D2091250I-125F
	27.00	1.063	3.189	4.083	6.406	1.250	1.614	0.063	D3092700M-125F
	28.00	1.102	3.307	4.201	6.524	1.250	1.614	0.051	D3092800M-125F
	28.58	1.125	3.375	4.260	6.583	1.250	1.614	0.046	D3091125I-125F
	29.00	1.142	3.425	4.319	6.642	1.250	1.614	0.043	D3092900M-125F
	30.00	1.181	3.543	4.437	6.760	1.250	1.614	0.031	D3093000M-125F
	30.15	1.187	3.561	4.437	6.760	1.250	1.614	0.032	D3091187I-125F
4xD	31.00	1.220	3.661	4.555	6.878	1.250	1.614	0.024	D3093100M-125F
	31.75	1.250	3.750	4.614	6.937	1.250	1.614	0.019	D3091250I-125F
	27.00	1.063	4.252	5.146	7.469	1.250	1.614	0.063	D4092700M-125F
	28.00	1.102	4.409	5.303	7.626	1.250	1.614	0.051	D4092800M-125F
	28.58	1.125	4.500	5.382	7.705	1.250	1.614	0.046	D4091125I-125F
	29.00	1.142	4.567	5.461	7.783	1.250	1.614	0.043	D4092900M-125F
	30.00	1.181	4.724	5.618	7.941	1.250	1.614	0.031	D4093000M-125F
4xD	30.15	1.187	4.748	5.618	7.941	1.250	1.614	0.032	D4091187I-125F
	31.00	1.220	4.882	5.776	8.098	1.250	1.614	0.024	D4093100M-125F
	31.75	1.250	5.000	5.854	8.177	1.250	1.614	0.019	D4091250I-125F

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-09T306-P	738-T10-1	8T-10	2.0 N-m (17.7 in-lbs)
S M	4T-09T306-M			
K	4T-09T306-K			
N	4T-09T306-N			
H	4T-09T306-H			

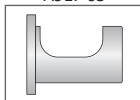
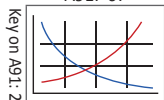
Expected Hole Tolerances

Length	mm	in
2xD	- 0.15 + 0.25	- 0.006 + 0.010
3xD	- 0.15 + 0.25	- 0.006 + 0.010
4xD	- 0.15 + 0.30	- 0.006 + 0.012

A91: 67

A91: 64 - 66

A91: 63



M = Metric (mm)

I = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

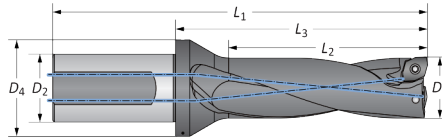


11 Series: 32.00 mm - 38.10 mm (1.260" - 1.500")

Holders

NOTE: For full diameter range offerings, see the 4TEX section of our drilling catalog.

A91



Metric Shank

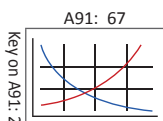
Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
2xD	32.00	1.260	64.00	100.40	169.40	40.00	54.00	2.20	D2113200M-40FM
	33.00	1.299	66.00	102.40	171.40	40.00	54.00	1.90	D2113300M-40FM
	33.32	1.312	66.65	102.40	171.40	40.00	54.00	1.84	D2111312I-40FM
	34.00	1.339	68.00	104.40	173.40	40.00	54.00	1.70	D2113400M-40FM
	34.92	1.375	69.85	104.40	173.40	40.00	54.00	1.42	D2111375I-40FM
3xD	38.10	1.500	76.20	112.40	181.40	40.00	54.00	0.69	D2111500I-40FM
	32.00	1.260	96.00	132.40	201.40	40.00	54.00	2.20	D3113200M-40FM
	33.00	1.299	99.00	135.40	204.40	40.00	54.00	1.90	D3113300M-40FM
	33.32	1.312	99.97	135.40	204.40	40.00	54.00	1.84	D3111312I-40FM
	34.00	1.339	102.00	138.40	207.40	40.00	54.00	1.70	D3113400M-40FM
4xD	34.92	1.375	104.78	138.40	207.40	40.00	54.00	1.42	D3111375I-40FM
	38.10	1.500	114.30	150.40	219.40	40.00	54.00	0.69	D3111500I-40FM
	32.00	1.260	128.00	154.40	223.40	40.00	54.00	2.20	D4113200M-40FM
	33.00	1.299	132.00	158.40	227.40	40.00	54.00	1.90	D4113300M-40FM
	33.32	1.312	133.30	158.40	227.40	40.00	54.00	1.84	D4111312I-40FM
4xD	34.00	1.339	136.00	162.40	231.40	40.00	54.00	1.70	D4113400M-40FM
	34.92	1.375	139.70	162.40	231.40	40.00	54.00	1.42	D4111375I-40FM
	38.10	1.500	152.40	178.40	247.40	40.00	54.00	0.69	D4111500I-40FM

IC Inserts

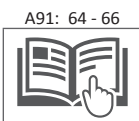
ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-11T306-P	7488-T15-1	8T-15	3.5 N-m (30.9 in-lbs)
S M	4T-11T306-M			
K	4T-11T306-K			
N	4T-11T306-N			
H	4T-11T306-H			

Expected Hole Tolerances

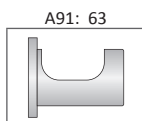
Length	mm	in
2xD	- 0.15 + 0.25	- 0.006 + 0.010
3xD	- 0.15 + 0.25	- 0.006 + 0.010
4xD	- 0.15 + 0.30	- 0.006 + 0.012



A91: 67



A91: 64 - 66



A91: 63

M = Metric (mm)

I = Imperial (in)

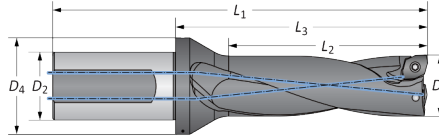
IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.



11 Series: 32.00 mm - 38.10 mm (1.260" - 1.500")

Holders

NOTE: For full diameter range offerings, see the 4TEX section of our drilling catalog.



A91

Imperial Shank

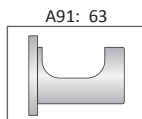
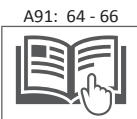
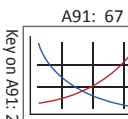
Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
2xD	32.00	1.260	2.520	3.953	6.669	1.500	2.126	0.087	D2113200M-150F
	33.00	1.299	2.598	4.031	6.748	1.500	2.126	0.075	D2113300M-150F
	33.32	1.312	2.624	4.031	6.748	1.500	2.126	0.073	D2111312I-150F
	34.00	1.339	2.677	4.110	6.827	1.500	2.126	0.067	D2113400M-150F
	34.92	1.375	2.750	4.110	6.827	1.500	2.126	0.056	D2111375I-150F
3xD	38.10	1.500	3.000	4.425	7.142	1.500	2.126	0.027	D2111500I-150F
	32.00	1.260	3.780	5.213	7.929	1.500	2.126	0.087	D3113200M-150F
	33.00	1.299	3.898	5.331	8.047	1.500	2.126	0.075	D3113300M-150F
	33.32	1.312	3.936	5.331	8.047	1.500	2.126	0.073	D3111312I-150F
	34.00	1.339	4.016	5.449	8.165	1.500	2.126	0.067	D3113400M-150F
4xD	34.92	1.375	4.125	5.449	8.165	1.500	2.126	0.056	D3111375I-150F
	38.10	1.500	4.500	5.921	8.638	1.500	2.126	0.027	D3111500I-150F
	32.00	1.260	5.039	6.079	8.795	1.500	2.126	0.087	D4113200M-150F
	33.00	1.299	5.197	6.236	8.953	1.500	2.126	0.075	D4113300M-150F
	33.32	1.312	5.248	6.236	8.953	1.500	2.126	0.073	D4111312I-150F
4xD	34.00	1.339	5.354	6.394	9.110	1.500	2.126	0.067	D4113400M-150F
	34.92	1.375	5.500	6.394	9.110	1.500	2.126	0.056	D4111375I-150F
	38.10	1.500	6.000	7.024	9.740	1.500	2.126	0.027	D4111500I-150F

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-11T306-P	7488-T15-1	8T-15	3.5 N-m (30.9 in-lbs)
S M	4T-11T306-M			
K	4T-11T306-K			
N	4T-11T306-N			
H	4T-11T306-H			

Expected Hole Tolerances

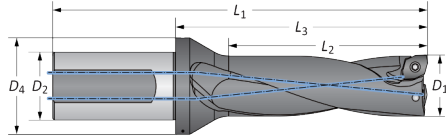
Length	mm	in
2xD	- 0.15 + 0.25	- 0.006 + 0.010
3xD	- 0.15 + 0.25	- 0.006 + 0.010
4xD	- 0.15 + 0.30	- 0.006 + 0.012



M = Metric (mm)

I = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

**14 Series: 39.00 mm - 39.67 mm (1.535" - 1.562")****Holders****NOTE:** For full diameter range offerings, see the 4TEX section of our drilling catalog.**A91****Metric Shank**

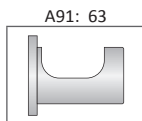
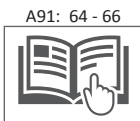
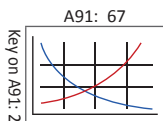
Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
2xD	39.00	1.535	78.00	110.40	179.40	40.00	54.00	2.80	D2143900M-40FM
	39.67	1.562	79.40	110.40	179.40	40.00	54.00	2.61	D2141562I-40FM
3xD	39.00	1.535	117.00	149.40	218.40	40.00	54.00	2.80	D3143900M-40FM
	39.67	1.562	119.02	149.40	218.40	40.00	54.00	2.61	D3141562I-40FM
4xD	39.00	1.535	156.00	188.40	257.40	40.00	54.00	2.80	D4143900M-40FM
	39.67	1.562	158.70	188.40	257.40	40.00	54.00	2.61	D4141562I-40FM

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-140408-P	7595-T20-1	8T-20	4.5 N-m (39.8 in-lbs)
S M	4T-140408-M			
K	4T-140408-K			
N	4T-140408-N			
H	4T-140408-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.20 + 0.30	- 0.008 + 0.012
3xD	- 0.20 + 0.30	- 0.008 + 0.012
4xD	- 0.20 + 0.35	- 0.008 + 0.014



M = Metric (mm)

I = Imperial (in)

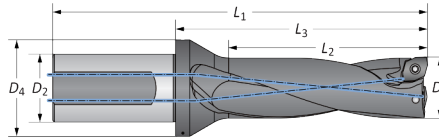
IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.



14 Series: 39.00 mm - 39.67 mm (1.535" - 1.562")

Holders

NOTE: For full diameter range offerings, see the 4TEX section of our drilling catalog.



A91

Imperial Shank

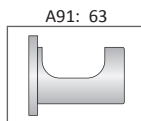
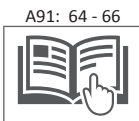
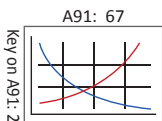
Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
2xD	39.00	1.535	3.071	4.346	7.063	1.500	2.126	0.110	D2143900M-150F
	39.67	1.562	3.124	4.346	7.063	1.500	2.126	0.103	D2141562I-150F
3xD	39.00	1.535	4.606	5.882	8.598	1.500	2.126	0.110	D3143900M-150F
	39.67	1.562	4.686	5.882	8.598	1.500	2.126	0.103	D3141562I-150F
4xD	39.00	1.535	6.142	7.417	10.134	1.500	2.126	0.110	D4143900M-150F
	39.67	1.562	6.248	7.417	10.134	1.500	2.126	0.103	D4141562I-150F

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-140408-P	7595-T20-1	8T-20	4.5 N-m (39.8 in-lbs)
S M	4T-140408-M			
K	4T-140408-K			
N	4T-140408-N			
H	4T-140408-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.20 + 0.30	- 0.008 + 0.012
3xD	- 0.20 + 0.30	- 0.008 + 0.012
4xD	- 0.20 + 0.35	- 0.008 + 0.014



M = Metric (mm)

I = Imperial (in)

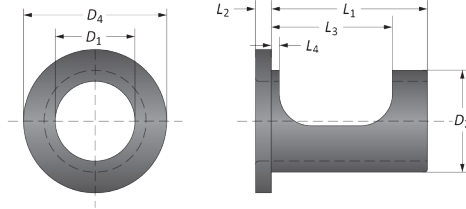
IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.



Accessories

Eccentric Sleeves

A91

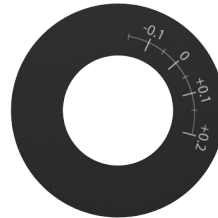


	Sleeve Dimensions							Part No.	Adjustment Range	
	D ₁	D ₂	D ₄	L ₂	L ₃	L ₄	L ₁		Diameter*	Center Height
m	25.00	32.00	49.00	6.00	39.00	2.50	54.00	SLEEVE-25FM	-0.20 to +0.40	-0.15 to +0.20
	32.00	40.00	58.00	6.00	43.00	2.50	59.00	SLEEVE-32FM	-0.20 to +0.40	-0.15 to +0.20
	40.00	50.00	74.00	6.00	49.00	3.00	69.00	SLEEVE-40FM	-0.20 to +0.40	-0.20 to +0.30
i	0.750	1.000	1.614	0.157	1.593	0.118	1.837	SLEEVE-075F	-0.008 to +0.016	-0.006 to +0.008
	1.000	1.250	1.929	0.236	1.593	0.098	1.995	SLEEVE-100F	-0.008 to +0.016	-0.006 to +0.008
	1.250	1.500	2.283	0.236	1.693	0.098	2.087	SLEEVE-125F	-0.008 to +0.016	-0.006 to +0.008
	1.500	2.000	2.913	0.236	1.929	0.118	2.481	SLEEVE-150F	-0.008 to +0.024	-0.008 to +0.012

*Diameter adjustment range refers to the cutting diameter.



Milling Applications
Peripheral Adjustment Position



Lathe Applications
Front Adjustment Position

Cutting Diameter and Center Height Adjustment

Milling and Lathe Diameter Adjustments

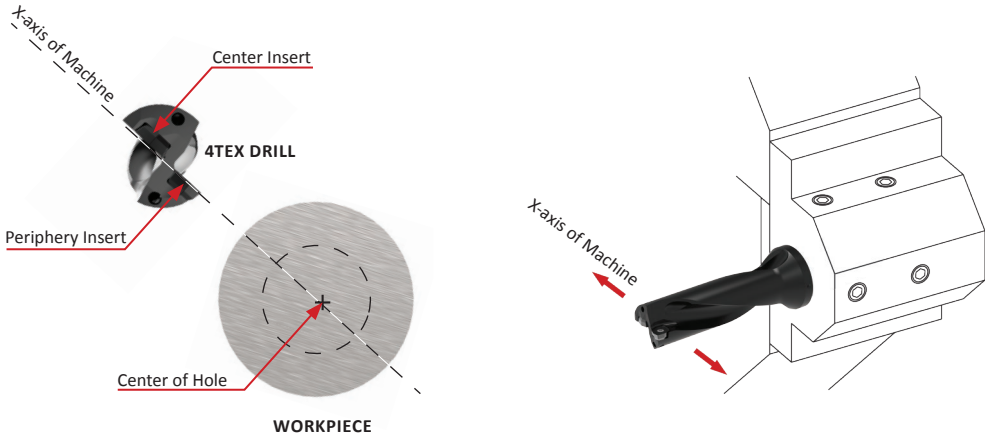


A91

For Milling Applications

1. Assemble the 4TEX drill, eccentric sleeve, and tool holder. Do not tighten the tool holder set screws.
2. Using the peripheral marks for milling machines, align the reference indentation on the holder with the 0 (zero) mark on the eccentric sleeve to have no offset.
3. Rotate the sleeve in the (+) or (-) direction to increase or decrease the nominal diameter.
4. Once the drill has arrived at the desired diameter, firmly tighten the top set screw first and then tighten the bottom set screw.

NOTICE: Eccentric sleeves are to be used with side-locking tool holders only. Damage may result with other styles of tool holders.



For Lathe Applications

1. Assemble the 4TEX drill into the lathe turret with the top face of the inserts parallel to the x-axis of the machine. This will allow for the diameter offsets to be made using the lathe's x-axis.
2. To increase the nominal diameter, offset the x-axis so the periphery insert moves away from the center of the hole.
3. To decrease the nominal diameter, offset the x-axis so the periphery insert moves toward the center of the hole.

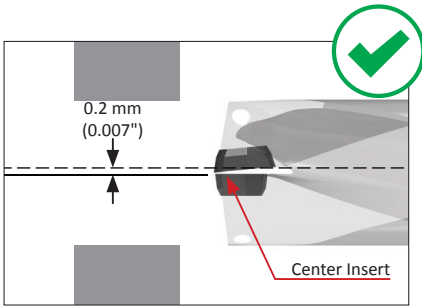
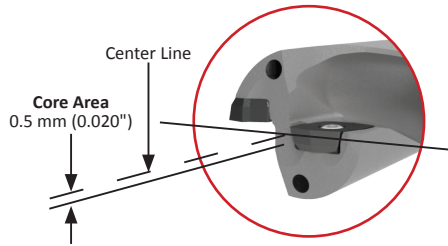
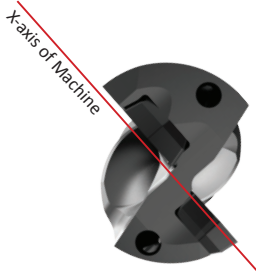
NOTE: Eccentric sleeve is not required when adjusting the diameter of the hole on a lathe.



Cutting Diameter and Center Height Adjustment

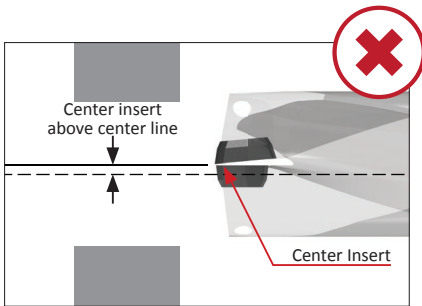
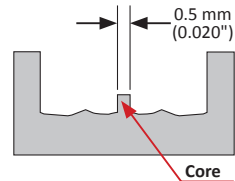
Center Height Alignment: Proper Center Line Position

A91



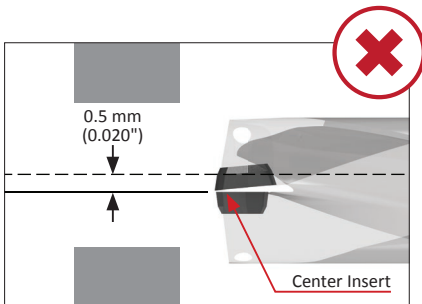
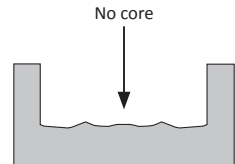
Proper Center Height Alignment

- The correct center height alignment will position the center insert 0.2 mm (0.007") below the center line.



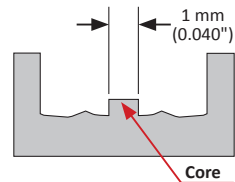
Center Insert Above the Center Line

- This will cause fracturing of the center insert.
- Requires center height adjustment.



Center Insert Too Far Below Center Line

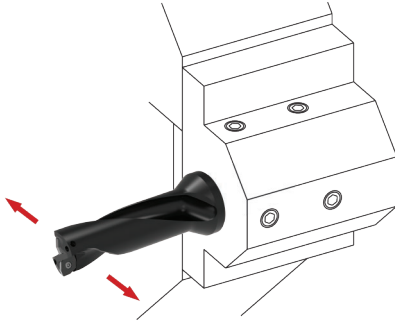
- This will cause the drill to interfere with the drilled hole.
- This will impede chip evacuation on the periphery insert.
- Requires center height adjustment.





Cutting Diameter and Center Height Adjustment

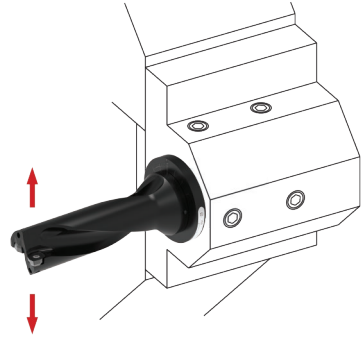
Center Height Alignment: How to Correct Issues



Method 1: Adjustment with X-Axis

1. Rotate the drill body so the position of the center line of the inserts is perpendicular to the lathe's x-axis.
2. Use the x-axis to offset the position of the center line in a (+) or (-) direction to increase or decrease the center core diameter at the bottom of the hole.

NOTE: This method does not allow diameter adjustments using the x-axis.



Method 2: Adjustment with Eccentric Sleeve

1. Assemble the drill to the turret using the eccentric sleeve, positioning the center line of the inserts parallel to the x-axis.
2. Align the reference indentation on the drill to the "0" setting on the flange face.
3. Rotate the sleeve (+) or (-) to increase or decrease the center height of the inserts in order to increase or decrease the core diameter at the bottom of the hole.

NOTE: This method still allows diameter adjustments using the x-axis.

NOTE (applies to both methods): Adjusting the center line of the inserts may affect the hole diameter produced. Method two is preferred to make center height adjustments and compensate for hole diameter with the x-axis.



Recommended Drilling Data

4TEX DRILL | METRIC (mm)

ISO	Material	Hardness (BHN)	Speed (m/min)	Feed Rate (mm/rev) by Diameter - 2xD, 3xD*			
				03, 04 series	05 series	06, 07 series	09, 11, 14 series
				12.00 mm - 15.49 mm	15.50 mm - 18.49 mm	18.50 mm - 26.49 mm	26.50 mm - 47.00 mm
P	Structural Steel A36, A285, A516, etc.	100 - 150	100 - 185	0.05 - 0.13	0.07 - 0.13	0.08 - 0.13	0.08 - 0.13
		150 - 250	100 - 185	0.05 - 0.13	0.07 - 0.13	0.08 - 0.13	0.08 - 0.13
		250 - 350	100 - 185	0.05 - 0.13	0.07 - 0.13	0.08 - 0.13	0.08 - 0.13

*For 4xD tools, begin at low end of feed recommendation.

4TEX DRILL | IMPERIAL (in)

ISO	Material	Hardness (BHN)	Speed (SFM)	Feed Rate (IPR) by Diameter - 2xD, 3xD*			
				03, 04 series	05 series	06, 07 series	09, 11, 14 series
				0.472" - 0.610"	0.611" - 0.728"	0.728" - 1.043"	1.044" - 1.850"
P	Structural Steel A36, A285, A516, etc.	100 - 150	330 - 600	0.0015 - 0.0055	0.0025 - 0.0065	0.0030 - 0.0080	0.0030 - 0.0080
		150 - 250	330 - 600	0.0015 - 0.0055	0.0025 - 0.0065	0.0030 - 0.0080	0.0030 - 0.0080
		250 - 350	330 - 600	0.0015 - 0.0055	0.0025 - 0.0065	0.0030 - 0.0080	0.0030 - 0.0080

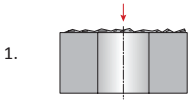
*For 4xD tools, begin at low end of feed recommendation.

INSERT GEOMETRY RECOMMENDATIONS

ISO	Material	Hardness (BHN)	Geometry				
			P	M	K	N	H
P	Structural Steel A36, A285, A516, etc.	100 - 150	○	●			
		150 - 250	○	●			
		250 - 350	●				○

● Best ○ Good

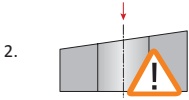
Troubleshooting



1.

Starting on Uneven Surfaces

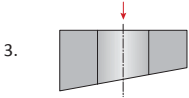
- Reduce entry feed by 50% if necessary.



2.

Starting on Angled Surfaces

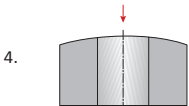
- Reduce entry feed by 20 - 50%.
- Use lower rake geometry if insert chipping occurs.



3.

Angled Bore Exit

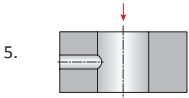
- Reduce entry feed by 50% on breakout.
- Use tough insert and stable corner radius.



4.

Starting on Convex Surfaces

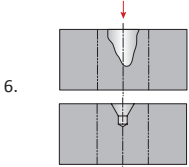
- Reduce entry feed by 50%.
- Use lower rake geometry if insert chipping occurs.



5.

Drilling Through a Cross Hole

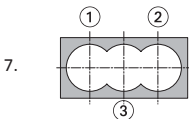
- Reduce feed rate 50% if necessary.
- Use good coolant flow and monitor chip packing.
- Use lower rake geometry if insert chipping occurs.



6.

Drilling on a Groove or Large Centering Box

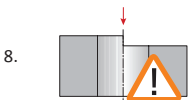
- Reduce entry feed.
- Use lower rake geometry for center insert.



7.

Chain Drilling

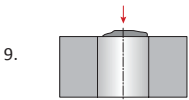
- Use good coolant flow.
- Reduce feed rate by 50% for interrupted cut.
- Use lower rake geometry if insert chipping occurs.



8.

Starting on an Edge

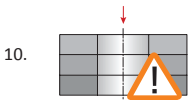
- Reduce entry feed rate by 50%.
- Use lower rake geometry if insert chipping occurs.



9.

Starting on a Welded Seam

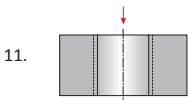
- Reduce entry feed rate by 50%.
- Use lower rake geometry if insert chipping occurs.



10.

Drilling Through Stacked Plates

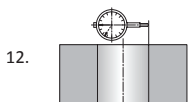
- Not recommended.



11.

Opening an Existing Hole

- Use flood coolant.



12.

Adjustable

- For mills, use eccentric sleeve with end mill holder.
- For lathes, use x-axis to adjust offset ϕ .

NOTE: Refer to maximum offset ϕ in data tables.

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: _____ ☐ Excellent ☐ Good ☐ Poor	Orientation: _____ ☐ Vertical ☐ Horizontal	Tool Rotating: _____ ☐ Yes ☐ No
		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



**ALLIED MACHINE
& ENGINEERING**

Allied Machine & Engineering
120 Deeds Drive
Dover, OH 44622

Telephone: (330) 343-4283
Toll Free USA & Canada: (800) 321-5537
Email: info@alliedmachine.com



ALLIED MACHINE & ENGINEERING

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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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United States

Allied Machine & Engineering
120 Deeds Drive
Dover OH 44622
United States

Allied Machine & Engineering

485 W Third Street
Dover OH 44622
United States

Phone:

+1.330.343.4283

Toll Free (US & CA):

800.321.5537

Toll Free (US & CA):

800.223.5140

Europe

Allied Machine & Engineering Co. (Europe) Ltd

93 Vantage Point, Pensnett Estate
Kingswinford, West Midlands
DY6 7FR England

Phone:

+44 (0) 1384 400 900

Wohlhaupter® GmbH

Maybachstrasse 4
72636 Frickenhausen
Germany

Phone:

+49 (0) 7022 408-0

Asia

Wohlhaupter® India Pvt. Ltd.

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

Phone:

+91 (0) 11.41827044

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