



Holemaking

Holemaking Introduction	Q2-Q8
Solid Carbide Drills.....	R1-R139
Modular Drills.....	S1-S51
Indexable Drills	T1-T60
Hole Finishing	U1-U95

HOLEMAKING PRODUCTS

Holemaking Made Easy and Economical

From sturdy, general-purpose solid carbide drills to high-precision fine boring systems, we offer the most comprehensive line of holemaking products available on the market today. If you need unmatched performance and reliability, look no further than our wide range of solid carbide, modular, and indexable drills, and hole finishing products.

Solid Carbide Drills

- VariDrill™
- TOP DRILL S™ for Steel
- TOP DRILL S™ for Cast Iron
- TOP DRILL S+™
- TOP DRILL S+ 12 x D
- TOP DRILL Deep-Hole Drill
- TOP DRILL G™



Modular Drills

- TOP DRILL M1™
- Spade Blades





Indexable Drills

- Top Cut 4™



Hole Finishing

- Reaming Tools
- ROTAFLEX™ Boring System
- Countersinking Tools



Added Value for Your Performance

Increase of Productivity and Efficiency

- Material and application-specific solutions.
- Maximum metal removal rates and repeatability.
- Standardized design platforms for special tools based on “proven solutions” for individual optimizations and combination tools.

Optimized Purchase

- Broad selection of holemaking tools.
- Integrated into a full range of cutting tools and service offers.
- Onsite service for an efficient development and implementation of machining solutions.

Control of Total Tooling Costs

- High tool utilization through material and application-specific solutions.
- Process-safe regrinding service.
- Reduction of stocks through efficient modular concepts.
- Multiple platforms per application to achieve the most cost-efficient solution.

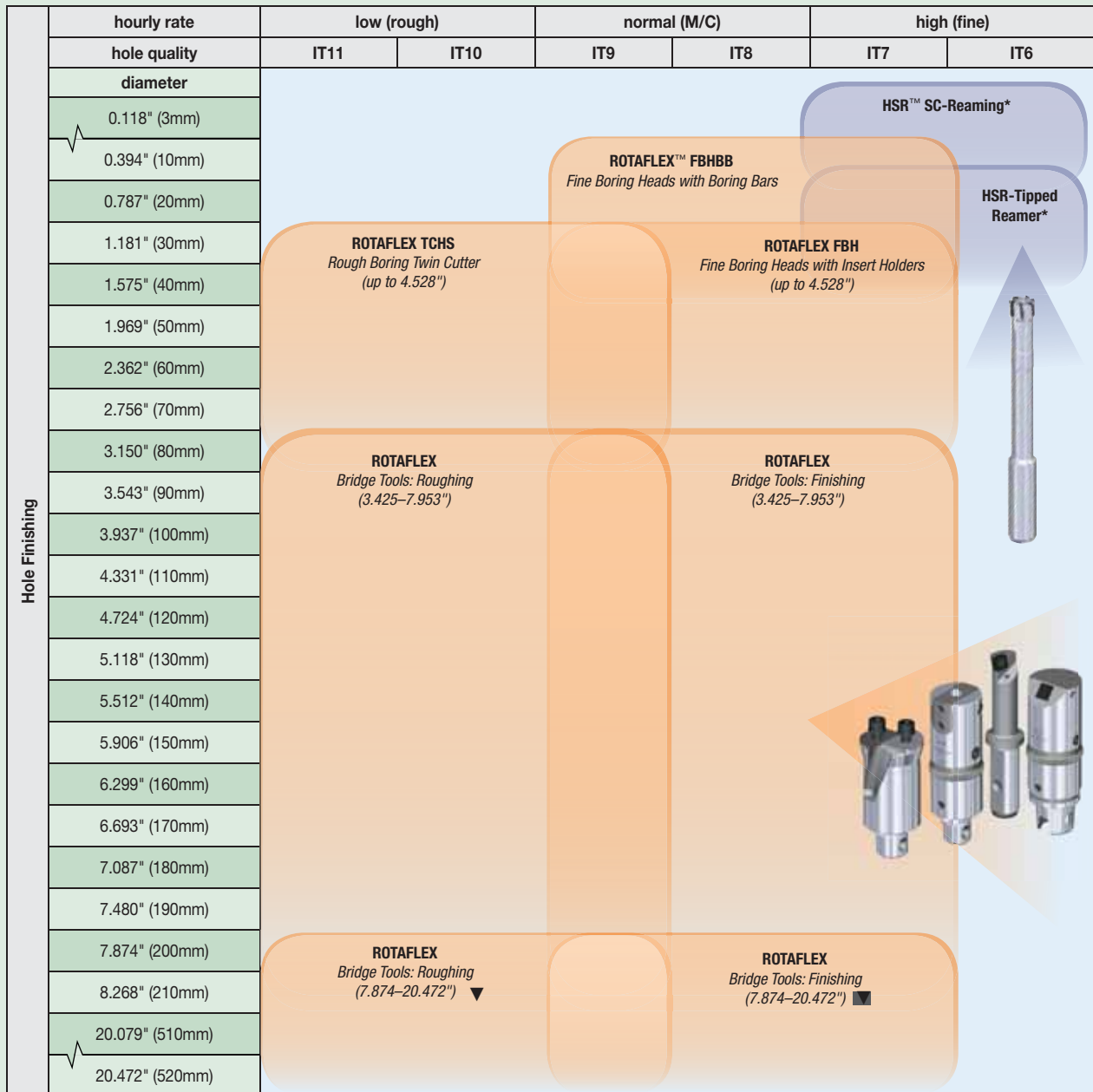
Select the Correct Holemaking Product Platform for Your Application

	hourly rate	low (rough)		normal (M/C)		high (fine)		
	hole quality	IT11	IT10	IT9	IT8	IT7	IT6	
Solid Drilling	diameter							
	0.118" (3mm)							
	0.236" (6mm)							
	0.354" (9mm)							
	0.472" (12mm)							
	0.591" (15mm)							
	0.709" (18mm)							
	0.827" (21mm)							
	0.945" (24mm)							
	1.063" (27mm)							
	1.181" (30mm)							
	1.299" (33mm)							
	1.417" (36mm)							
	1.535" (39mm)							
	1.654" (42mm)							
	1.772" (45mm)							
	2.283" (58mm)							
	2.008" (51mm)							
	2.126" (54mm)							
	2.244" (57mm)							
2.362" (60mm)								
4.331" (110mm)								

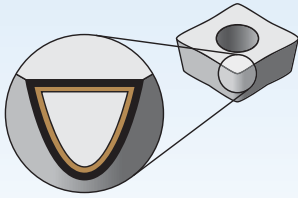
Determine the hole quality and diameter to show the available options and then decide the platform that will best fulfill your requirements.

- Solid Carbide Drills
- Modular Drills
- Indexable Drills
- Precision Hole Finishing
- Reaming

Select the Correct Holemaking Product Platform for Your Application



*IT6 is possible above 0.394" (10mm) for both HSR SC-reaming and HSR-tipped reamer in custom solutions.

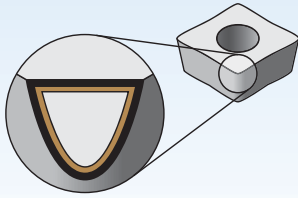


Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

wear resistance ← → toughness

Coating		Grade Description		05	10	15	20	25	30	35	40	45		
WU25PD		<p>Composition: With a multilayered PVD TiN-TiAlN coating and a high-quality submicron carbide substrate, this grade gives a high level of wear resistance at medium to high cutting speeds.</p> <p>Application: First choice for high reliability in all materials. This grade should be used at medium to high speeds and feeds. It is a general purpose grade that performs very well for alloyed and high-alloy steel and cast iron, but can also be used with excellent performance in all other material groups.</p>	P											
			M											
			K											
			N											
			S											
WP20PD		<p>Composition: With a multilayered PVD TiN-TiAlN coating, a high-quality submicron carbide substrate and a state-of-the-art surface condition, this grade gives the highest level of wear resistance at high cutting speeds.</p> <p>Application: A high productivity grade for high speeds and feeds. First choice for high productivity with excellent reliability in alloyed and high-alloyed steels and cast irons.</p>	P											
			M											
			K											
			N											
			S											
WK15PD		<p>Composition: With a newly developed unique multilayered PVD AlCrN coating and a high-quality submicron carbide substrate, this grade gives the highest level of wear resistance at high cutting speeds.</p> <p>Application: This grade offers extraordinary wear resistance in drilling of cast iron materials. With its high hot hardness it allows for high speed machining.</p>	P											
			M											
			K											
			N											
			S											
WU20PD		<p>Composition: With a multilayered PVD TiN-TiAlN coating, a high-quality submicron carbide substrate and a state-of-the-art surface condition, this grade gives the highest level of wear resistance at high cutting speeds.</p> <p>Application: First choice for alloyed and high-alloyed steels and cast irons. A state-of-the-art surface condition enables superior chip evacuation even when MQL is applied.</p>	P											
			M											
			K											
			N											
			S											
WN10HD		<p>Composition: This uncoated fine-grain carbide with high hardness offers excellent abrasive wear resistance.</p> <p>Application: First choice for precision drilling of non-ferrous materials.</p>	P											
			M											
			K											
			N											
			S											

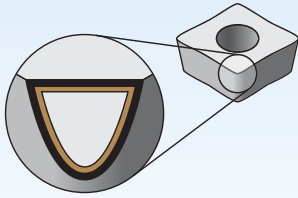


Coatings provide high-speed capability and are engineered for finishing to light roughing.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

wear resistance ← → toughness

Coating		Grade Description		05	10	15	20	25	30	35	40	45		
Grade	WU25PD	<p>Composition: With a multilayered PVD TiN-TiAlN coating and a high-quality submicron carbide substrate, this grade gives a high level of wear resistance at medium to high cutting speeds.</p> <p>Application: First choice for high reliability in most materials. This grade should be used at medium to high speeds and feeds. It is a general purpose grade that performs very well for alloyed and high-alloy steel and cast iron, but can also be used with excellent performance in stainless steels.</p> <p>NOTE: Previously named K20FTiAlN.</p>	P											
			M											
			K											
Grade	WPK10CH	<p>Composition: With an advanced CVD TiCN-Al₂O₃ coating combined with a cobalt-enriched carbide substrate, this grade offers a balanced combination of deformation resistance and edge toughness.</p> <p>Application: Offers outstanding abrasion and crater wear resistance for high-speed machining of steels and cast irons. Use for very high cutting speeds with low to medium feed rates.</p>	P											
			M											
			K											
Grade	WU25CH	<p>Composition: Advanced CVD TiCN-Al₂O₃ coating together with a newly engineered tough carbide substrate. Ensures adequate deformation resistance and excellent edge strength and offers very good wear resistance over a wide range of machining conditions.</p> <p>Application: A high productivity grade with high speeds and feeds. First choice for high productivity with excellent reliability in steels, stainless steels, and cast iron rates.</p>	P											
			M											
			K											
Grade	WU40PH	<p>Composition: With a multilayered PVD TiN-TiAlN coating and a tough substrate, this grade withstands interruptions and provides high wear resistance for long tool life.</p> <p>Application: First choice for high reliability in most materials. This grade should be used at medium speeds and high feeds due to sharper edges and as a grade for high-toughness applications. It covers steel, stainless steel, cast iron, and high-temp alloys under certain conditions.</p>	P											
			M											
			K											



Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

wear resistance ← → toughness

Coating		Grade Description		05	10	15	20	25	30	35	40	45	
K10F		<p>Composition: This uncoated fine-grain carbide with high hardness offers excellent abrasive wear resistance paired with excellent toughness for fine-finishing applications.</p> <p>Application: First choice for precision reaming of non-ferrous materials.</p>	P										
			M										
			K										
			N										
			S										
			H										
K10F-DCFD		<p>Composition: With a PVD TiAlN coating and a fine-grain carbide substrate, this grade offers excellent wear resistance paired with excellent toughness for medium-speed fine-finishing applications.</p> <p>Application: First choice for precision reaming of steels, stainless steel, and cast irons.</p>	P										
			M										
			K										
			N										
			S										
			H										
CERMETDCFD		<p>Composition: With a PVD TiAlN coating and a cermet substrate, this grade offers exceptional wear resistance for high-speed fine-finishing applications.</p> <p>Application: First choice for precision reaming of steels and cast irons.</p>	P										
			M										
			K										
			N										
			S										
			H										

NOVO KNOWS SEARCH

Searching for a tool by using the outdated method of a catalog has been replaced with the Advise and Select functions from NOVO™ — saving you time and money.

ADVISE

Uses a rules-based approach to provide cutting tool recommendations:

- Define Machining Feature (face milling, slotting, blind hole, etc.)
- Apply Constraint Requirements (geometric, material, tolerance, etc.)
- Set Machining Sequence (single or multi-step operations, rough then finish, etc.)
- Receive Ranked Results

SELECT

A method of selecting cutting tools from a tree structure via a hierarchy or parametric search:

- If you know which product you are looking for, a quick search can be performed by just the catalog number or product description.
- Smart filters significantly reduce the amount of potential tooling solutions.
- After the tool is selected, NOVO also provides cutting and adaptive item options that fit with your solution.

NOVO can ensure you have the right tools on your machines, in the right sequence. Resulting in flawless execution that accelerates every job, and maximizes every shift. widia.com/novo



High-Performance Solid Carbide Drills

Introduction.....	R2-R4
VariDrill.....	R6-R32
TOP DRILL S.....	R34-R63
TOP DRILL S+.....	R64-R86
TOP DRILL S+ 12 x D.....	R88-R93
TOP DRILL Deep-Hole Drills.....	R94-R107
TOP DRILL G.....	R108-R129
Technical Information.....	R132-R139



solid carbide drills for external coolant or dry machining		series	grade	standard						hole tolerance	standard range		
				● first choice ○ alternate choice							diameter range		drilling depth L/D1
				P	M	K	N	S	H		min-max	min-max	
	VariDrill™ multiple-material drilling	VDS20	WU25PD	●	●	●	●	●		IT9-IT10	1,0-20,0	.0394-.7874	3 x-5 x
	TOP DRILL S™ for steel application-specific drilling	TDS202	WP20PD	●	○	○				IT9-IT10	3,0-20,0	.1181-.7874	5 x D
	TOP DRILL S for cast iron application-specific drilling	TDS212	WK15PD	○		●				IT9-IT10	3,0-20,0	.1181-.7874	5 x D
	TOP DRILL S+™ multiple-application drilling	TDS301	WU25PD	●	○	●	○	○		IT9-IT10	3,0-20,0	.1181-.7874	3 x D

solid carbide drills with internal coolant channel		series	grade	standard						hole tolerance	standard range		
				● first choice ○ alternate choice							diameter range		drilling depth L/D1
				P	M	K	N	S	H		min-max	min-max	
	VariDrill multiple-material drilling	VDS40	WU25PD	●	●	●	●	●	○	IT9-IT10	1,0-20,0	.0394-.7874	3 x-8 x
	TOP DRILL S for steel application-specific drilling	TDS40	WP20PD	●	○	○				IT9-IT10	3,0-20,0	.1181-.7874	3 x-8 x
	TOP DRILL S for cast iron application-specific drilling	TDS41	WK15PD	○		●				IT9-IT10	3,0-20,0	.1181-.7874	3 x-8 x
	TOP DRILL S+ multiple-application drilling	TDS50	WU25PD	●	○	●	○	○		IT9-IT10	3,0-20,0	.1181-.7874	3 x-8 x
	TOP DRILL S+ 12 x D deep-hole drilling without piloting	TDS504	WU20PD	●	●	●		○		IT9-IT10	3,0-20,0	.1181-.7874	3 x-8 x
	TOP DRILL Deep superior deep-hole drilling	TDD10	WU20PD	●	○	●				IT9-IT10	3,0-20,0	.1181-.5118	15 x- 30 x
	TOP DRILL G™ difficult drilling applications	TDG53	WN10HD				●			IT8-IT9	3,0-20,0	.1181-.7874	5 x-12 x
	TOP DRILL Flat-Bottom for flat-bottom applications	TDF51	WU20PD	●	○	●				IT9-IT10	-	-	-
			WN15HD				●			IT9-IT10	-	-	-

Solid Carbide Drills • Recommendation Chart

		Versatile				Application-Specific			
		General Purpose	General Purpose	Multipurpose	Multipurpose	High-Performance	High-Performance	Deep-Hole Drilling	
		VariDrill™	VariDrill™	Top Drill S+™	Top Drill S+	Top Drill S/G	Top Drill S/G	WIDIA TDS+ WIDIA TDD	
P	Steel	3 x D - VDS201A 3 x D - VDS201F 5 x D - VDS202A 5 x D - VDS202F	3 x D - VDS401A 3 x D - VDS401F 5 x D - VDS402A 5 x D - VDS402F 8 x D - VDS403A 8 x D - VDS403F	3 x D - TDS301A	3 x D - TDS501A 5 x D - TDS502A 8 x D - TDS503A	5 x D - TDS202A	3 x D - TDS401A 5 x D - TDS402A 8 x D - TDS403A	12 x D - TDS504A 15 x D - TDD105Z 20 x D - TDD106Z 25 x D - TDD107Z 30 x D - TDD108Z	
M	Stainless Steel	3 x D - VDS201A 3 x D - VDS201F 5 x D - VDS202A 5 x D - VDS202F	3 x D - VDS401A 3 x D - VDS401F 5 x D - VDS402A 5 x D - VDS402F 8 x D - VDS403A 8 x D - VDS403F	3 x D - TDS301A	3 x D - TDS501A 5 x D - TDS502A 8 x D - TDS503A	-	WIDIA-Rübig™ Series Type WD	12 x D - TDS504A 15 x D - TDD105Z 20 x D - TDD106Z 25 x D - TDD107Z 30 x D - TDD108Z	
K	Cast Iron	3 x D - VDS201A 3 x D - VDS201F 5 x D - VDS202A 5 x D - VDS202F	3 x D - VDS401A 3 x D - VDS401F 5 x D - VDS402A 5 x D - VDS402F 8 x D - VDS403A 8 x D - VDS403F	3 x D - TDS301A	3 x D - TDS501A 5 x D - TDS502A 8 x D - TDS503A	5 x D - TDS212A	3 x D - TDS411A 5 x D - TDS412A 8 x D - TDS413A	12 x D - TDS504A 15 x D - TDD105Z 20 x D - TDD106Z 25 x D - TDD107Z 30 x D - TDD108Z	
N	Non-Ferrous	3 x D - VDS201A 3 x D - VDS201F 5 x D - VDS202A 5 x D - VDS202F	3 x D - VDS401A 3 x D - VDS401F 5 x D - VDS402A 5 x D - VDS402F 8 x D - VDS403A 8 x D - VDS403F	3 x D - TDS301A	3 x D - TDS501A 5 x D - TDS502A 8 x D - TDS503A		5 x D - TDG531A 8 x D - TDG532A 12 x D - TDG533A	TDD* uncoated, sharp	
S	Heat-Resistant Alloys, Titanium Alloys	3 x D - VDS201A 3 x D - VDS201F 5 x D - VDS202A 5 x D - VDS202F	3 x D - VDS401A 3 x D - VDS401F 5 x D - VDS402A 5 x D - VDS402F 8 x D - VDS403A 8 x D - VDS403F	3 x D - TDS301A	3 x D - TDS501A 5 x D - TDS502A 8 x D - TDS503A	-	WIDIA-Rübig Series Type WD	12 x D - TDS504A 15 x D - TDD105Z 20 x D - TDD106Z 25 x D - TDD107Z 30 x D - TDD108Z	
H	Hard Materials	VDS 3 x D - M155	VDS		TDS+				

standard first choice
alternate choice
simple special

Application-Specific Drilling for Steel and Cast Iron



EXTREME **CHALLENGES.**
EXTREME **RESULTS.**

Top Drill S™

Top Drill S is the WIDIA line of solid carbide drills engineered to provide maximum performance and superior finish to application-specific tasks in steel and cast iron.

- Victory grades WP20PD™ for steel and WK15PD™ for cast iron are specially designed to resist high heat and wear.
- Lower cost-per-hole and greater productivity due to high MRR and long tool life.
- One of the broadest ranges in the market for diameter selection, length series, and coolant options.

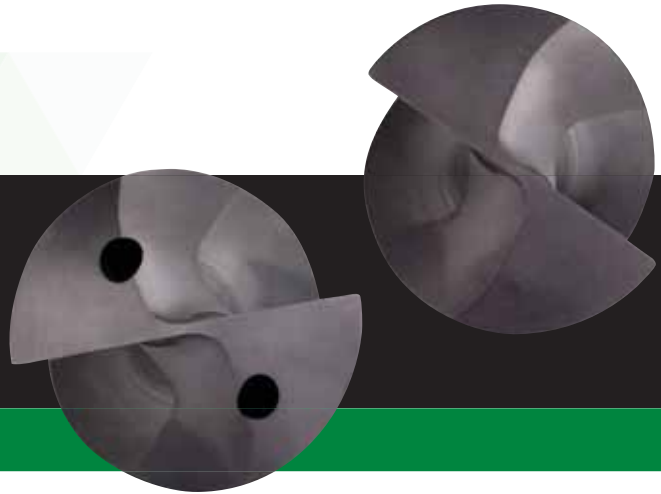
To learn more about the benefits of WIDIA™ Top Drill S, contact your local distributor.

WIDIA 

Multiple-Material Drilling •

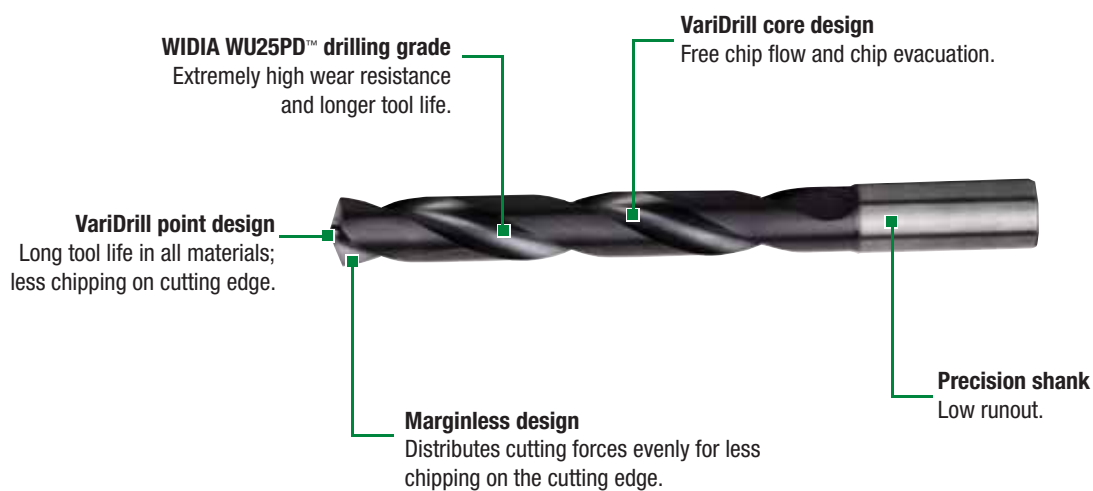
WIDIA™ VariDrill™

VariDrill



The VariDrill advanced-point geometry design offers the ultimate solution for multipurpose drilling operations. It offers dependable tool life in all materials due to less chipping on the cutting edge.

- Reduced chipping on cutting edge means longer tool life.
- Geometry design offers strength and versatility.
- Delivers proper surface finish across multiple materials: steel, stainless steel, cast iron, aluminum, and high-temp alloys.



Innovative Technology

VariDrill™ is a technologically advanced holemaking solution. These high-performance solid carbide drills were designed in Germany to provide the transportation, aerospace, general engineering, and energy industries with a tool that performs on multiple materials.

Elegance, Strength, and Versatility

The engineers at WIDIA™ developed an innovative new design to deliver drilling performance. These solid carbide drills have a distinctive geometry and marginless design. The VariDrill point is versatile enough to work through steel, stainless steel, cast iron, aluminum, and a range of high-temp alloys.

Optimum Hole Quality

The unique marginless design reduces chipping on the tool's edge and stabilizes cutting forces. This unique tool geometry enables chips to roll smoothly and evacuate easily, resulting in noticeably less friction, heat, jamming, and scratching. By minimizing these drilling issues, VariDrill delivers an optimum surface finish with every hole — no matter the material.

More Options and Longer Tool Life

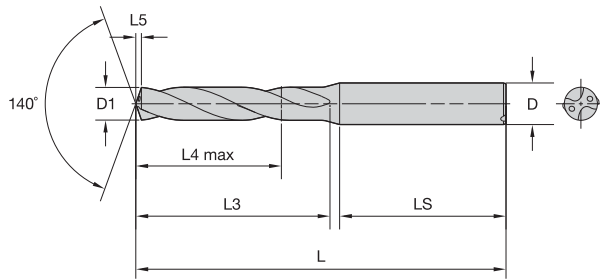
Aside from its uniquely engineered design, VariDrill also offers a broad portfolio of drilling options. With more than 2,200 items, VariDrill offers more choices than any other drill for general engineering operations. And because most drills can be reconditioned, your tools will gain extended life.

*VariDrill — Innovatively designed and technologically advanced.
Make VariDrill your go-to drill for hole after hole...after hole.*

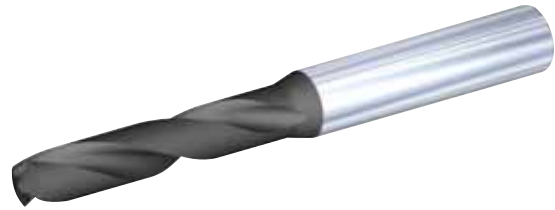


Solid Carbide Drills

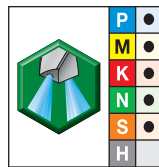
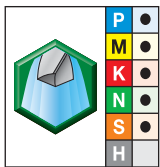
VariDrill™ • Steel, Stainless Steel, Cast Iron, Aluminum, and High-Temp Alloys • 3 x D



For information on L, L3, and L4 max, see page R133.



■ VDS201A • VDS401A • 3 x D



● first choice
○ alternate choice

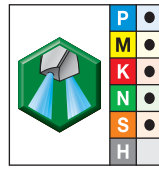
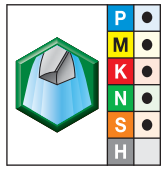
D1 diameter

grade WU25PD TiAlN		grade WU25PD TiAlN		D1 diameter				L4 max	L3	L5	L	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4144195	VDS201A01000	-	-	1,000	.0394	-	-	5	7	0,1	58	28	4
4144196	VDS201A01016	-	-	1,016	.0400	-	-	5	7	0,1	58	28	4
4144197	VDS201A01041	-	-	1,041	.0410	-	-	5	7	0,2	58	28	4
4144198	VDS201A01067	-	-	1,067	.0420	-	-	5	7	0,2	58	28	4
4144199	VDS201A01092	-	-	1,092	.0430	-	-	5	7	0,2	58	28	4
4144200	VDS201A01100	-	-	1,100	.0433	-	-	5	7	0,2	58	28	4
4144201	VDS201A01181	-	-	1,181	.0465	-	-	5	7	0,2	58	28	4
4144202	VDS201A01191	-	-	1,191	.0469	-	-	5	7	0,2	58	28	4
4144523	VDS201A01200	-	-	1,200	.0472	-	-	5	7	0,2	58	28	4
4144524	VDS201A01300	-	-	1,300	.0512	-	-	5	7	0,2	58	28	4
4144525	VDS201A01321	-	-	1,321	.0520	-	-	5	7	0,2	58	28	4
4144526	VDS201A01397	-	-	1,397	.0550	-	-	5	7	0,2	58	28	4
4144527	VDS201A01400	-	-	1,400	.0551	-	-	5	7	0,2	58	28	4
4144528	VDS201A01500	4140270	VDS401A01500	1,500	.0591	-	-	6	9	0,2	58	28	4
4144529	VDS201A01600	4140271	VDS401A01600	1,600	.0630	-	-	6	9	0,2	58	28	4
4144530	VDS201A01700	4140272	VDS401A01700	1,700	.0669	-	-	6	9	0,3	58	28	4
4144531	VDS201A01800	4140423	VDS401A01800	1,800	.0709	-	-	6	9	0,3	58	28	4
4144532	VDS201A01900	4140424	VDS401A01900	1,900	.0748	-	-	6	9	0,3	58	28	4
4144533	VDS201A01984	4140425	VDS401A01984	1,984	.0781	-	-	10	13	0,3	58	28	4
4144534	VDS201A02000	4140426	VDS401A02000	2,000	.0787	-	-	10	13	0,3	58	28	4
4144535	VDS201A02100	4140427	VDS401A02100	2,100	.0827	-	-	10	13	0,3	58	28	4
4144536	VDS201A02200	4140428	VDS401A02200	2,200	.0866	-	-	10	13	0,3	58	28	4
4144537	VDS201A02300	4140429	VDS401A02300	2,300	.0906	-	-	10	13	0,4	58	28	4
4144538	VDS201A02383	4140430	VDS401A02383	2,383	.0938	3/32	-	12	17	0,4	58	28	4

(continued)

Solid Carbide Drills

(VDS201A • VDS401A • 3 x D — continued)



● first choice
○ alternate choice

grade WU25PD TiAlN		grade WU25PD TiAlN		D1 diameter									
order #	catalog #	order #	catalog #	mm	in	fraction	wire size	L4 max	L3	L5	L	LS	D
4144539	VDS201A02400	4140431	VDS401A02400	2,400	.0945	—	—	12	17	0,4	58	28	4
4144540	VDS201A02439	4140432	VDS401A02439	2,439	.0960	—	41	12	17	0,4	58	28	4
4144541	VDS201A02489	4140433	VDS401A02489	2,489	.0980	—	40	12	17	0,4	58	28	4
4144542	VDS201A02500	4140434	VDS401A02500	2,500	.0984	—	—	12	17	0,4	58	28	4
4144543	VDS201A02578	4140435	VDS401A02578	2,578	.1015	—	38	12	17	0,4	58	28	4
4144544	VDS201A02600	4140436	VDS401A02600	2,600	.1024	—	—	12	17	0,4	58	28	4
4144545	VDS201A02642	4140437	VDS401A02642	2,642	.1040	—	37	12	17	0,4	58	28	4
4144546	VDS201A02700	4140438	VDS401A02700	2,700	.1063	—	—	12	17	0,4	58	28	4
4144547	VDS201A02705	4140439	VDS401A02705	2,705	.1065	—	36	12	17	0,4	58	28	4
4144548	VDS201A02779	4140440	VDS401A02779	2,779	.1094	7/64	—	12	17	0,4	58	28	4
4144549	VDS201A02800	4140441	VDS401A02800	2,800	.1102	—	—	12	17	0,5	58	28	4
4144550	VDS201A02820	4140442	VDS401A02820	2,820	.1110	—	34	12	17	0,5	58	28	4
4144551	VDS201A02870	4140443	VDS401A02870	2,870	.1130	—	33	12	17	0,5	58	28	4
4144552	VDS201A02900	4140444	VDS401A02900	2,900	.1142	—	—	12	17	0,5	58	28	4
4144553	VDS201A02947	4140445	VDS401A02947	2,947	.1160	—	32	12	17	0,5	58	28	4
4143907	VDS201A03000	4140299	VDS401A03000	3,000	.1181	—	—	14	20	0,5	62	36	6
4143908	VDS201A03048	4140300	VDS401A03048	3,048	.1200	—	31	14	20	0,5	62	36	6
4143909	VDS201A03100	4140301	VDS401A03100	3,100	.1220	—	—	14	20	0,5	62	36	6
4143910	VDS201A03175	4140302	VDS401A03175	3,175	.1250	1/8	—	14	20	0,5	62	36	6
4143911	VDS201A03200	4140303	VDS401A03200	3,200	.1260	—	—	14	20	0,5	62	36	6
4143912	VDS201A03264	4140304	VDS401A03264	3,264	.1285	—	30	14	20	0,5	62	36	6
4143913	VDS201A03300	4140305	VDS401A03300	3,300	.1299	—	—	14	20	0,5	62	36	6
4143914	VDS201A03400	4140306	VDS401A03400	3,400	.1339	—	—	14	20	0,6	62	36	6
4143915	VDS201A03455	4140307	VDS401A03455	3,455	.1360	—	29	14	20	0,6	62	36	6
4143916	VDS201A03500	4140308	VDS401A03500	3,500	.1378	—	—	14	20	0,6	62	36	6
4143917	VDS201A03571	4140309	VDS401A03571	3,571	.1406	9/64	—	14	20	0,6	62	36	6
4143918	VDS201A03600	4140310	VDS401A03600	3,600	.1417	—	—	14	20	0,6	62	36	6
4143919	VDS201A03658	4140311	VDS401A03658	3,658	.1440	—	27	14	20	0,6	62	36	6
4143920	VDS201A03700	4140312	VDS401A03700	3,700	.1457	—	—	14	20	0,6	62	36	6
4143921	VDS201A03734	4140313	VDS401A03734	3,734	.1470	—	26	14	20	0,6	62	36	6
4143922	VDS201A03800	4140314	VDS401A03800	3,800	.1496	—	—	17	24	0,6	66	36	6
4143923	VDS201A03900	4140315	VDS401A03900	3,900	.1535	—	—	17	24	0,6	66	36	6
4143924	VDS201A03970	4140316	VDS401A03970	3,970	.1563	5/32	—	17	24	0,7	66	36	6
4143925	VDS201A04000	4140317	VDS401A04000	4,000	.1575	—	—	17	24	0,7	66	36	6
4143926	VDS201A04039	4140318	VDS401A04039	4,039	.1590	—	21	17	24	0,7	66	36	6
4143927	VDS201A04090	4140319	VDS401A04090	4,090	.1610	—	20	17	24	0,7	66	36	6
4143928	VDS201A04100	4140320	VDS401A04100	4,100	.1614	—	—	17	24	0,7	66	36	6
4143929	VDS201A04200	4140321	VDS401A04200	4,200	.1654	—	—	17	24	0,7	66	36	6
4143930	VDS201A04217	4140322	VDS401A04217	4,217	.1660	—	19	17	24	0,7	66	36	6
4143931	VDS201A04300	4140323	VDS401A04300	4,300	.1693	—	—	17	24	0,7	66	36	6

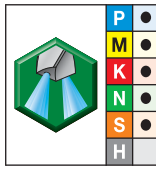
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● first choice
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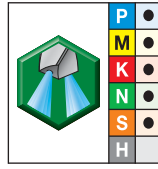
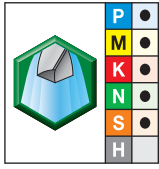
D1 diameter

grade WU25PD TiAlN		grade WU25PD TiAlN		D1 diameter				L4 max	L3	L5	L	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4143932	VDS201A04366	4140324	VDS401A04366	4,366	.1719	11/64	—	17	24	0,7	66	36	6
4143933	VDS201A04400	4140325	VDS401A04400	4,400	.1732	—	—	17	24	0,7	66	36	6
4143934	VDS201A04500	4140326	VDS401A04500	4,500	.1772	—	—	17	24	0,7	66	36	6
4143935	VDS201A04600	4140328	VDS401A04600	4,600	.1811	—	—	17	24	0,8	66	36	6
4143936	VDS201A04623	4140329	VDS401A04623	4,623	.1820	—	14	17	24	0,8	66	36	6
4143937	VDS201A04700	4140330	VDS401A04700	4,700	.1850	—	13	17	24	0,8	66	36	6
4143938	VDS201A04763	4140331	VDS401A04763	4,763	.1875	3/16	—	20	28	0,8	66	36	6
4143939	VDS201A04800	4140332	VDS401A04800	4,800	.1890	—	12	20	28	0,8	66	36	6
4143940	VDS201A04852	4140333	VDS401A04852	4,852	.1910	—	11	20	28	0,8	66	36	6
4143941	VDS201A04900	4140334	VDS401A04900	4,900	.1929	—	—	20	28	0,8	66	36	6
4143942	VDS201A05000	4140335	VDS401A05000	5,000	.1969	—	—	20	28	0,8	66	36	6
4143943	VDS201A05100	4140336	VDS401A05100	5,100	.2008	—	—	20	28	0,8	66	36	6
4143944	VDS201A05106	4140337	VDS401A05106	5,106	.2010	—	7	20	28	0,8	66	36	6
4143945	VDS201A05159	4140338	VDS401A05159	5,159	.2031	13/64	—	20	28	0,9	66	36	6
4143946	VDS201A05200	4140339	VDS401A05200	5,200	.2047	—	—	20	28	0,9	66	36	6
4143947	VDS201A05300	4140340	VDS401A05300	5,300	.2087	—	—	20	28	0,9	66	36	6
4143948	VDS201A05400	4140341	VDS401A05400	5,400	.2126	—	—	20	28	0,9	66	36	6
4143949	VDS201A05410	4140342	VDS401A05410	5,410	.2130	—	3	20	28	0,9	66	36	6
4143950	VDS201A05500	4140343	VDS401A05500	5,500	.2165	—	—	20	28	0,9	66	36	6
4143951	VDS201A05558	4140344	VDS401A05558	5,558	.2188	7/32	—	20	28	0,9	66	36	6
4143952	VDS201A05600	4140345	VDS401A05600	5,600	.2205	—	—	20	28	0,9	66	36	6
4143953	VDS201A05616	4140346	VDS401A05616	5,616	.2211	—	2	20	28	0,9	66	36	6
4143954	VDS201A05700	4140347	VDS401A05700	5,700	.2244	—	—	20	28	1,0	66	36	6
4143955	VDS201A05800	4140348	VDS401A05800	5,800	.2283	—	—	20	28	1,0	66	36	6
4143956	VDS201A05900	4140349	VDS401A05900	5,900	.2323	—	—	20	28	1,0	66	36	6
4143957	VDS201A05954	4140350	VDS401A05954	5,954	.2344	15/64	—	20	28	1,0	66	36	6
4143958	VDS201A06000	4140351	VDS401A06000	6,000	.2362	—	—	20	28	1,0	66	36	6
4143959	VDS201A06100	4140352	VDS401A06100	6,100	.2402	—	—	24	34	1,0	79	36	8
4143960	VDS201A06200	4140353	VDS401A06200	6,200	.2441	—	—	24	34	1,0	79	36	8
4143961	VDS201A06300	4140354	VDS401A06300	6,300	.2480	—	—	24	34	1,1	79	36	8
4143962	VDS201A06350	4140355	VDS401A06350	6,350	.2500	1/4	E	24	34	1,1	79	36	8
4143963	VDS201A06400	4140356	VDS401A06400	6,400	.2520	—	—	24	34	1,1	79	36	8
4143964	VDS201A06500	4140357	VDS401A06500	6,500	.2559	—	—	24	34	1,1	79	36	8
4143965	VDS201A06528	4140358	VDS401A06528	6,528	.2570	—	F	24	34	1,1	79	36	8
4143966	VDS201A06600	4140359	VDS401A06600	6,600	.2598	—	—	24	34	1,1	79	36	8
4143967	VDS201A06630	4140360	VDS401A06630	6,630	.2610	—	G	24	34	1,1	79	36	8
4143968	VDS201A06700	4140361	VDS401A06700	6,700	.2638	—	—	24	34	1,1	79	36	8
4143969	VDS201A06746	4140362	VDS401A06746	6,746	.2656	17/64	—	24	34	1,1	79	36	8
4143970	VDS201A06800	4140363	VDS401A06800	6,800	.2677	—	—	24	34	1,1	79	36	8
4143971	VDS201A06900	4140364	VDS401A06900	6,900	.2717	—	—	24	34	1,2	79	36	8

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Solid Carbide Drills

(VDS201A • VDS401A • 3 x D — continued)



● first choice
○ alternate choice

grade WU25PD TiAlN		grade WU25PD TiAlN		D1 diameter									
order #	catalog #	order #	catalog #	mm	in	fraction	wire size	L4 max	L3	L5	L	LS	D
4143972	VDS201A07000	4140365	VDS401A07000	7,000	.2756	—	—	24	34	1,2	79	36	8
4143973	VDS201A07100	4140366	VDS401A07100	7,100	.2795	—	—	29	41	1,2	79	36	8
4143974	VDS201A07145	4140367	VDS401A07145	7,145	.2813	9/32	—	29	41	1,2	79	36	8
4143975	VDS201A07200	4140368	VDS401A07200	7,200	.2835	—	—	29	41	1,2	79	36	8
4143976	VDS201A07300	4140369	VDS401A07300	7,300	.2874	—	—	29	41	1,2	79	36	8
4143977	VDS201A07400	4140370	VDS401A07400	7,400	.2913	—	—	29	41	1,3	79	36	8
4143978	VDS201A07500	4140371	VDS401A07500	7,500	.2953	—	—	29	41	1,3	79	36	8
4143979	VDS201A07541	4140372	VDS401A07541	7,541	.2969	19/64	—	29	41	1,3	79	36	8
4143980	VDS201A07600	4140373	VDS401A07600	7,600	.2992	—	—	29	41	1,3	79	36	8
4143981	VDS201A07700	4140374	VDS401A07700	7,700	.3031	—	—	29	41	1,3	79	36	8
4143982	VDS201A07800	4140375	VDS401A07800	7,800	.3071	—	—	29	41	1,3	79	36	8
4143983	VDS201A07900	4140376	VDS401A07900	7,900	.3110	—	—	29	41	1,3	79	36	8
4143984	VDS201A07938	4140377	VDS401A07938	7,938	.3125	5/16	—	29	41	1,3	79	36	8
4143985	VDS201A08000	4140378	VDS401A08000	8,000	.3150	—	—	29	41	1,4	79	36	8
4143986	VDS201A08100	4140379	VDS401A08100	8,100	.3189	—	—	35	47	1,4	89	40	10
4143987	VDS201A08200	4140380	VDS401A08200	8,200	.3228	—	—	35	47	1,4	89	40	10
4143988	VDS201A08300	4140381	VDS401A08300	8,300	.3268	—	—	35	47	1,4	89	40	10
4143989	VDS201A08334	4140382	VDS401A08334	8,334	.3281	21/64	—	35	47	1,4	89	40	10
4143990	VDS201A08400	4140383	VDS401A08400	8,400	.3307	—	—	35	47	1,4	89	40	10
4143991	VDS201A08433	4140384	VDS401A08433	8,433	.3320	—	Q	35	47	1,4	89	40	10
4143992	VDS201A08500	4140385	VDS401A08500	8,500	.3346	—	—	35	47	1,4	89	40	10
4143993	VDS201A08600	4140386	VDS401A08600	8,600	.3386	—	—	35	47	1,5	89	40	10
4143994	VDS201A08700	4140387	VDS401A08700	8,700	.3425	—	—	35	47	1,5	89	40	10
4143995	VDS201A08733	4140388	VDS401A08733	8,733	.3438	11/32	—	35	47	1,5	89	40	10
4143996	VDS201A08800	4140389	VDS401A08800	8,800	.3465	—	—	35	47	1,5	89	40	10
4143997	VDS201A08900	4140390	VDS401A08900	8,900	.3504	—	—	35	47	1,5	89	40	10
4143998	VDS201A09000	4140391	VDS401A09000	9,000	.3543	—	—	35	47	1,5	89	40	10
4143999	VDS201A09100	4140392	VDS401A09100	9,100	.3583	—	—	35	47	1,5	89	40	10
4144000	VDS201A09129	4140393	VDS401A09129	9,129	.3594	23/64	—	35	47	1,6	89	40	10
4144001	VDS201A09200	4140394	VDS401A09200	9,200	.3622	—	—	35	47	1,6	89	40	10
4144002	VDS201A09300	4140395	VDS401A09300	9,300	.3661	—	—	35	47	1,6	89	40	10
4144003	VDS201A09347	4140396	VDS401A09347	9,347	.3680	—	U	35	47	1,6	89	40	10
4144004	VDS201A09400	4140397	VDS401A09400	9,400	.3701	—	—	35	47	1,6	89	40	10
4144005	VDS201A09500	4140398	VDS401A09500	9,500	.3740	—	—	35	47	1,6	89	40	10
4144006	VDS201A09525	4140399	VDS401A09525	9,525	.3750	3/8	—	35	47	1,6	89	40	10
4144007	VDS201A09600	4140400	VDS401A09600	9,600	.3780	—	—	35	47	1,6	89	40	10
4144008	VDS201A09700	4140401	VDS401A09700	9,700	.3819	—	—	35	47	1,7	89	40	10
4144009	VDS201A09800	4140402	VDS401A09800	9,800	.3858	—	—	35	47	1,7	89	40	10
4144010	VDS201A09900	4140403	VDS401A09900	9,900	.3898	—	—	35	47	1,7	89	40	10
4144011	VDS201A09921	4140404	VDS401A09921	9,921	.3906	25/64	—	35	47	1,7	89	40	10

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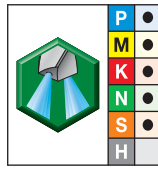
Solid Carbide Drills

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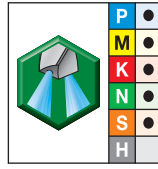
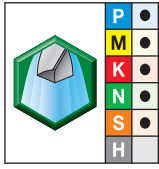
● first choice
○ alternate choice

grade WU25PD TiAlN		grade WU25PD TiAlN		D1 diameter				L4 max	L3	L5	L	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4144172	VDS201A10000	4140001	VDS401A10000	10,000	.3937	—	—	35	47	1,7	89	40	10
4144423	VDS201A10100	4140002	VDS401A10100	10,100	.3976	—	—	40	55	1,7	102	45	12
4144424	VDS201A10200	4140163	VDS401A10200	10,200	.4016	—	—	40	55	1,7	102	45	12
4144425	VDS201A10300	4140164	VDS401A10300	10,300	.4055	—	—	40	55	1,8	102	45	12
4144426	VDS201A10320	4140165	VDS401A10320	10,320	.4063	13/32	—	40	55	1,8	102	45	12
4144427	VDS201A10400	4140166	VDS401A10400	10,400	.4094	—	—	40	55	1,8	102	45	12
4144428	VDS201A10500	4140167	VDS401A10500	10,500	.4134	—	—	40	55	1,8	102	45	12
4144429	VDS201A10600	4140168	VDS401A10600	10,600	.4173	—	—	40	55	1,8	102	45	12
4144430	VDS201A10700	4140169	VDS401A10700	10,700	.4213	—	—	40	55	1,8	102	45	12
4144431	VDS201A10716	4140170	VDS401A10716	10,716	.4219	27/64	—	40	55	1,8	102	45	12
4144432	VDS201A10800	4140171	VDS401A10800	10,800	.4252	—	—	40	55	1,8	102	45	12
4144433	VDS201A10900	4140172	VDS401A10900	10,900	.4291	—	—	40	55	1,9	102	45	12
4144434	VDS201A11000	4140173	VDS401A11000	11,000	.4331	—	—	40	55	1,9	102	45	12
4144435	VDS201A11100	4140174	VDS401A11100	11,100	.4370	—	—	40	55	1,9	102	45	12
4144436	VDS201A11113	4140175	VDS401A11113	11,113	.4375	7/16	—	40	55	1,9	102	45	12
4144437	VDS201A11200	4140176	VDS401A11200	11,200	.4409	—	—	40	55	1,9	102	45	12
4144438	VDS201A11300	4140177	VDS401A11300	11,300	.4449	—	—	40	55	1,9	102	45	12
4144439	VDS201A11400	4140178	VDS401A11400	11,400	.4488	—	—	40	55	2,0	102	45	12
4144440	VDS201A11500	4140179	VDS401A11500	11,500	.4528	—	—	40	55	2,0	102	45	12
4144441	VDS201A11509	4140180	VDS401A11509	11,509	.4531	29/64	—	40	55	2,0	102	45	12
4144442	VDS201A11600	4140181	VDS401A11600	11,600	.4567	—	—	40	55	2,0	102	45	12
4144443	VDS201A11700	4140182	VDS401A11700	11,700	.4606	—	—	40	55	2,0	102	45	12
4144444	VDS201A11800	4140183	VDS401A11800	11,800	.4646	—	—	40	55	2,0	102	45	12
4144445	VDS201A11900	4140184	VDS401A11900	11,900	.4685	—	—	40	55	2,0	102	45	12
4144446	VDS201A11908	4140185	VDS401A11908	11,908	.4688	15/32	—	40	55	2,0	102	45	12
4144447	VDS201A12000	4140186	VDS401A12000	12,000	.4724	—	—	40	55	2,1	102	45	12
4144448	VDS201A12100	4140187	VDS401A12100	12,100	.4764	—	—	43	60	2,1	107	45	14
4144449	VDS201A12200	4140188	VDS401A12200	12,200	.4803	—	—	43	60	2,1	107	45	14
4144450	VDS201A12300	4140189	VDS401A12300	12,300	.4843	—	—	43	60	2,1	107	45	14
4144451	VDS201A12304	4140190	VDS401A12304	12,304	.4844	31/64	—	43	60	2,1	107	45	14
4144452	VDS201A12400	4140191	VDS401A12400	12,400	.4882	—	—	43	60	2,1	107	45	14
4144453	VDS201A12500	4140192	VDS401A12500	12,500	.4921	—	—	43	60	2,1	107	45	14
4144454	VDS201A12600	4140194	VDS401A12600	12,600	.4961	—	—	43	60	2,2	107	45	14
4144455	VDS201A12700	4140195	VDS401A12700	12,700	.5000	1/2	—	43	60	2,2	107	45	14
4144456	VDS201A12800	4140196	VDS401A12800	12,800	.5039	—	—	43	60	2,2	107	45	14
4144457	VDS201A12900	4140197	VDS401A12900	12,900	.5079	—	—	43	60	2,2	107	45	14
4144458	VDS201A13000	4140198	VDS401A13000	13,000	.5118	—	—	43	60	2,2	107	45	14
4144459	VDS201A13096	4140199	VDS401A13096	13,096	.5156	33/64	—	43	60	2,3	107	45	14
4144460	VDS201A13100	4140200	VDS401A13100	13,100	.5157	—	—	43	60	2,3	107	45	14
4144461	VDS201A13200	4140201	VDS401A13200	13,200	.5197	—	—	43	60	2,3	107	45	14

(continued)

Solid Carbide Drills

(VDS201A • VDS401A • 3 x D — continued)



● first choice
○ alternate choice

grade WU25PD TiAlN		grade WU25PD TiAlN		D1 diameter									
order #	catalog #	order #	catalog #	mm	in	fraction	wire size	L4 max	L3	L5	L	LS	D
4144462	VDS201A13300	4140202	VDS401A13300	13,300	.5236	—	—	43	60	2,3	107	45	14
4144463	VDS201A13400	4140203	VDS401A13400	13,400	.5276	—	—	43	60	2,3	107	45	14
4144464	VDS201A13500	4140204	VDS401A13500	13,500	.5315	—	—	43	60	2,3	107	45	14
4144465	VDS201A13600	4140205	VDS401A13600	13,600	.5354	—	—	43	60	2,3	107	45	14
4144466	VDS201A13700	4140206	VDS401A13700	13,700	.5394	—	—	43	60	2,4	107	45	14
4144467	VDS201A13800	4140207	VDS401A13800	13,800	.5433	—	—	43	60	2,4	107	45	14
4144468	VDS201A13891	4140208	VDS401A13891	13,891	.5469	35/64	—	43	60	2,4	107	45	14
4144469	VDS201A13900	4140209	VDS401A13900	13,900	.5472	—	—	43	60	2,4	107	45	14
4144470	VDS201A14000	4140210	VDS401A14000	14,000	.5512	—	—	43	60	2,4	107	45	14
4144471	VDS201A14100	4140211	VDS401A14100	14,100	.5551	—	—	45	65	2,4	115	48	16
4144472	VDS201A14200	4140212	VDS401A14200	14,200	.5591	—	—	45	65	2,5	115	48	16
4144473	VDS201A14288	4140213	VDS401A14288	14,288	.5625	9/16	—	45	65	2,5	115	48	16
4144474	VDS201A14300	4140214	VDS401A14300	14,300	.5630	—	—	45	65	2,5	115	48	16
4144475	VDS201A14400	4140215	VDS401A14400	14,400	.5669	—	—	45	65	2,5	115	48	16
4144476	VDS201A14500	4140216	VDS401A14500	14,500	.5709	—	—	45	65	2,5	115	48	16
4144477	VDS201A14600	4140217	VDS401A14600	14,600	.5748	—	—	45	65	2,5	115	48	16
4144478	VDS201A14684	4140218	VDS401A14684	14,684	.5781	37/64	—	45	65	2,5	115	48	16
4144479	VDS201A14700	4140219	VDS401A14700	14,700	.5787	—	—	45	65	2,5	115	48	16
4144480	VDS201A14800	4140220	VDS401A14800	14,800	.5827	—	—	45	65	2,6	115	48	16
4144481	VDS201A14900	4140221	VDS401A14900	14,900	.5866	—	—	45	65	2,6	115	48	16
4144482	VDS201A15000	4140222	VDS401A15000	15,000	.5906	—	—	45	65	2,6	115	48	16
4144483	VDS201A15083	4140223	VDS401A15083	15,083	.5938	19/32	—	45	65	2,6	115	48	16
4144484	VDS201A15100	4140224	VDS401A15100	15,100	.5945	—	—	45	65	2,6	115	48	16
4144485	VDS201A15200	4140225	VDS401A15200	15,200	.5984	—	—	45	65	2,6	115	48	16
4144486	VDS201A15300	4140226	VDS401A15300	15,300	.6024	—	—	45	65	2,6	115	48	16
4144487	VDS201A15400	4140227	VDS401A15400	15,400	.6063	—	—	45	65	2,7	115	48	16
4144488	VDS201A15479	4140228	VDS401A15479	15,479	.6094	39/64	—	45	65	2,7	115	48	16
4144489	VDS201A15500	4140229	VDS401A15500	15,500	.6102	—	—	45	65	2,7	115	48	16
4144490	VDS201A15600	4140230	VDS401A15600	15,600	.6142	—	—	45	65	2,7	115	48	16
4144491	VDS201A15700	4140231	VDS401A15700	15,700	.6181	—	—	45	65	2,7	115	48	16
4144492	VDS201A15800	4140232	VDS401A15800	15,800	.6220	—	—	45	65	2,7	115	48	16
4144493	VDS201A15875	4140233	VDS401A15875	15,875	.6250	5/8	—	45	65	2,7	115	48	16
4144494	VDS201A15900	4140234	VDS401A15900	15,900	.6260	—	—	45	65	2,8	115	48	16
4144495	VDS201A16000	4140235	VDS401A16000	16,000	.6299	—	—	45	65	2,8	115	48	16
4144496	VDS201A16100	4140236	VDS401A16100	16,100	.6339	—	—	51	73	2,8	123	48	18
4144497	VDS201A16200	4140237	VDS401A16200	16,200	.6378	—	—	51	73	2,8	123	48	18
4144498	VDS201A16271	4140238	VDS401A16271	16,271	.6406	41/64	—	51	73	2,8	123	48	18
4144499	VDS201A16300	4140239	VDS401A16300	16,300	.6417	—	—	51	73	2,8	123	48	18
4144500	VDS201A16400	4140241	VDS401A16400	16,400	.6457	—	—	51	73	2,8	123	48	18
4144501	VDS201A16500	4140242	VDS401A16500	16,500	.6496	—	—	51	73	2,9	123	48	18

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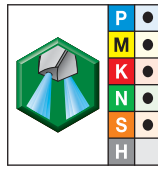
Solid Carbide Drills

Solid Carbide Drills

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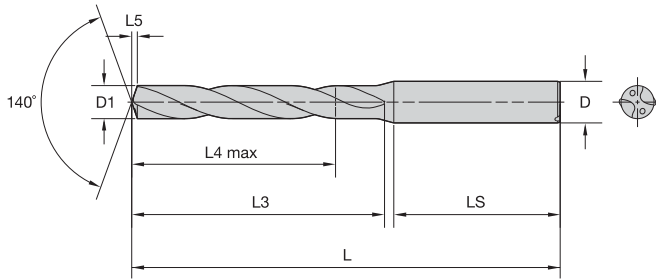
(VDS201A • VDS401A • 3 x D — continued)



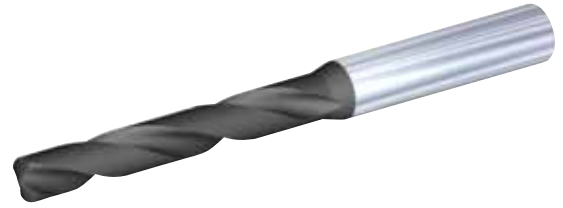
● first choice
○ alternate choice

grade WU25PD TiAlN		grade WU25PD TiAlN		D1 diameter				L4 max	L3	L5	L	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4144503	VDS201A16600	4140243	VDS401A16600	16,600	.6535	—	—	51	73	2,9	123	48	18
4144504	VDS201A16670	4140244	VDS401A16670	16,670	.6563	21/32	—	51	73	2,9	123	48	18
4144505	VDS201A16700	4140245	VDS401A16700	16,700	.6575	—	—	51	73	2,9	123	48	18
4144506	VDS201A16800	4140246	VDS401A16800	16,800	.6614	—	—	51	73	2,9	123	48	18
4144507	VDS201A16900	4140247	VDS401A16900	16,900	.6654	—	—	51	73	2,9	123	48	18
4144508	VDS201A17000	4140248	VDS401A17000	17,000	.6693	—	—	51	73	2,9	123	48	18
4144509	VDS201A17100	4140249	VDS401A17100	17,100	.6732	—	—	51	73	3,0	123	48	18
4144510	VDS201A17200	4140250	VDS401A17200	17,200	.6772	—	—	51	73	3,0	123	48	18
4144511	VDS201A17300	4140251	VDS401A17300	17,300	.6811	—	—	51	73	3,0	123	48	18
4144512	VDS201A17400	4140252	VDS401A17400	17,400	.6850	—	—	51	73	3,0	123	48	18
4144513	VDS201A17463	4140253	VDS401A17463	17,463	.6875	11/16	—	51	73	3,0	123	48	18
4144514	VDS201A17500	4140254	VDS401A17500	17,500	.6890	—	—	51	73	3,0	123	48	18
4144515	VDS201A17600	4140255	VDS401A17600	17,600	.6929	—	—	51	73	3,1	123	48	18
4144516	VDS201A17700	4140256	VDS401A17700	17,700	.6969	—	—	51	73	3,1	123	48	18
4144517	VDS201A17800	4140257	VDS401A17800	17,800	.7008	—	—	51	73	3,1	123	48	18
4144518	VDS201A17859	4140258	VDS401A17859	17,859	.7031	45/64	—	51	73	3,1	123	48	18
4144519	VDS201A17900	4140259	VDS401A17900	17,900	.7047	—	—	51	73	3,1	123	48	18
4144590	VDS201A18000	4140449	VDS401A18000	18,000	.7087	—	—	51	73	3,1	123	48	18
4144591	VDS201A18100	4140450	VDS401A18100	18,100	.7126	—	—	55	79	3,1	131	50	20
4144592	VDS201A18200	4140451	VDS401A18200	18,200	.7165	—	—	55	79	3,2	131	50	20
4144593	VDS201A18258	4140452	VDS401A18258	18,258	.7188	23/32	—	55	79	3,2	131	50	20
4144594	VDS201A18300	4140463	VDS401A18300	18,300	.7205	—	—	55	79	3,2	131	50	20
4144595	VDS201A18400	4140464	VDS401A18400	18,400	.7244	—	—	55	79	3,2	131	50	20
4144596	VDS201A18500	4140465	VDS401A18500	18,500	.7283	—	—	55	79	3,2	131	50	20
4144597	VDS201A18600	4140466	VDS401A18600	18,600	.7323	—	—	55	79	3,2	131	50	20
4144598	VDS201A18654	4140467	VDS401A18654	18,654	.7344	47/64	—	55	79	3,2	131	50	20
4144599	VDS201A18700	4140468	VDS401A18700	18,700	.7362	—	—	55	79	3,2	131	50	20
4144600	VDS201A18800	4140469	VDS401A18800	18,800	.7402	—	—	55	79	3,3	131	50	20
4144601	VDS201A18900	4140470	VDS401A18900	18,900	.7441	—	—	55	79	3,3	131	50	20
4144602	VDS201A19000	4140471	VDS401A19000	19,000	.7480	—	—	55	79	3,3	131	50	20
4144603	VDS201A19050	4140472	VDS401A19050	19,050	.7500	3/4	—	55	79	3,3	131	50	20
4144604	VDS201A19100	4140473	VDS401A19100	19,100	.7520	—	—	55	79	3,3	131	50	20
4144605	VDS201A19200	4140474	VDS401A19200	19,200	.7559	—	—	55	79	3,3	131	50	20
4144606	VDS201A19300	4140475	VDS401A19300	19,300	.7598	—	—	55	79	3,4	131	50	20
4144607	VDS201A19400	4140476	VDS401A19400	19,400	.7638	—	—	55	79	3,4	131	50	20
4144608	VDS201A19500	4140477	VDS401A19500	19,500	.7677	—	—	55	79	3,4	131	50	20
4144609	VDS201A19600	4140478	VDS401A19600	19,600	.7717	—	—	55	79	3,4	131	50	20
4144610	VDS201A19700	4140479	VDS401A19700	19,700	.7756	—	—	55	79	3,4	131	50	20
4144611	VDS201A19800	4140480	VDS401A19800	19,800	.7795	—	—	55	79	3,4	131	50	20
4144612	VDS201A19900	4140481	VDS401A19900	19,900	.7835	—	—	55	79	3,5	131	50	20
4144613	VDS201A20000	4140482	VDS401A20000	20,000	.7874	—	—	55	79	3,5	131	50	20

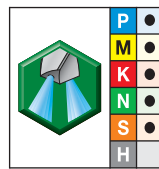
Solid Carbide Drills



For information on L, L3, and L4 max, see page R133.



■ VDS202A • VDS402A • 5 x D



● first choice
○ alternate choice

grade WU25PD TiAlN		grade WU25PD TiAlN		D1 diameter				L4 max	L3	L5	L	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4148000	VDS202A01000	-	-	1,000	.0394	-	-	6	9	0,1	58	28	4
4148001	VDS202A01016	-	-	1,016	.0400	-	-	6	9	0,1	58	28	4
4148002	VDS202A01041	-	-	1,041	.0410	-	-	6	9	0,2	58	28	4
4148003	VDS202A01067	-	-	1,067	.0420	-	-	6	9	0,2	58	28	4
4148004	VDS202A01092	-	-	1,092	.0430	-	-	6	9	0,2	58	28	4
4148005	VDS202A01100	-	-	1,100	.0433	-	-	6	9	0,2	58	28	4
4148006	VDS202A01181	-	-	1,181	.0465	-	-	6	9	0,2	58	28	4
4148007	VDS202A01191	-	-	1,191	.0469	-	-	6	9	0,2	58	28	4
4148008	VDS202A01200	-	-	1,200	.0472	-	-	6	9	0,2	58	28	4
4148009	VDS202A01300	-	-	1,300	.0512	-	-	6	9	0,2	58	28	4
4148010	VDS202A01321	-	-	1,321	.0520	-	-	6	9	0,2	58	28	4
4148011	VDS202A01397	-	-	1,397	.0550	-	-	6	9	0,2	58	28	4
4148012	VDS202A01400	-	-	1,400	.0551	-	-	6	9	0,2	58	28	4
4148013	VDS202A01500	4142871	VDS402A01500	1,500	.0591	-	-	9	12	0,2	58	40	4
4148014	VDS202A01600	4142884	VDS402A01600	1,600	.0630	-	-	9	12	0,2	58	28	4
4148015	VDS202A01700	4142887	VDS402A01700	1,700	.0669	-	-	9	12	0,3	58	28	4
4148016	VDS202A01800	4142890	VDS402A01800	1,800	.0709	-	-	9	12	0,3	58	28	4
4148017	VDS202A01900	4142893	VDS402A01900	1,900	.0748	-	-	9	12	0,3	58	28	4
4148018	VDS202A01984	4142896	VDS402A01984	1,984	.0781	-	-	14	18	0,3	58	28	4
4148019	VDS202A02000	4142899	VDS402A02000	2,000	.0787	-	-	14	18	0,3	58	28	4
4148020	VDS202A02100	4142902	VDS402A02100	2,100	.0827	-	-	14	18	0,3	58	28	4
4148021	VDS202A02200	4142905	VDS402A02200	2,200	.0866	-	-	14	18	0,3	58	28	4
4148022	VDS202A02300	4142908	VDS402A02300	2,300	.0906	-	-	14	18	0,4	58	28	4
4148023	VDS202A02383	4142911	VDS402A02383	2,383	.0938	3/32	-	17	22	0,4	58	28	4

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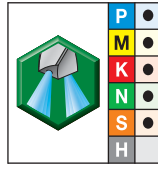
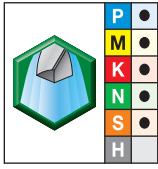
Solid Carbide Drills

Solid Carbide Drills

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(VDS202A • VDS402A • 5 x D — continued)



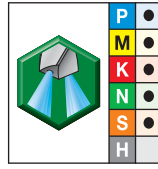
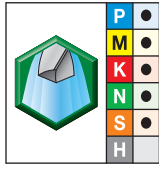
● first choice
○ alternate choice

grade WU25PD TiAlN		grade WU25PD TiAlN		D1 diameter				L4 max	L3	L5	L	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4148024	VDS202A02400	4142924	VDS402A02400	2,400	.0945	—	—	17	22	0,4	58	28	4
4148025	VDS202A02439	4142927	VDS402A02439	2,439	.0960	—	41	17	22	0,4	58	28	4
4148026	VDS202A02489	4142930	VDS402A02489	2,489	.0980	—	40	17	22	0,4	58	28	4
4148027	VDS202A02500	4142933	VDS402A02500	2,500	.0984	—	—	17	22	0,4	58	28	4
4148028	VDS202A02578	4142936	VDS402A02578	2,578	.1015	—	38	17	22	0,4	58	28	4
4148029	VDS202A02600	4142939	VDS402A02600	2,600	.1024	—	—	17	22	0,4	58	28	4
4148030	VDS202A02642	4142942	VDS402A02642	2,642	.1040	—	37	17	22	0,4	58	28	4
4148031	VDS202A02700	4142945	VDS402A02700	2,700	.1063	—	—	17	22	0,4	58	28	4
4148032	VDS202A02705	4142948	VDS402A02705	2,705	.1065	—	36	17	22	0,4	58	28	4
4148033	VDS202A02779	4142951	VDS402A02779	2,779	.1094	7/64	—	17	22	0,4	58	28	4
4148034	VDS202A02800	4142964	VDS402A02800	2,800	.1102	—	—	17	22	0,5	58	28	4
4148035	VDS202A02820	4142967	VDS402A02820	2,820	.1110	—	34	17	22	0,5	58	28	4
4148036	VDS202A02870	4142970	VDS402A02870	2,870	.1130	—	33	17	22	0,5	58	28	4
4148037	VDS202A02900	4142973	VDS402A02900	2,900	.1142	—	—	17	22	0,5	58	28	4
4148038	VDS202A02947	4142976	VDS402A02947	2,947	.1160	—	32	17	22	0,5	58	28	4
4148142	VDS202A03000	4142844	VDS402A03000	3,000	.1181	—	—	23	28	0,5	66	36	6
4148143	VDS202A03048	4142846	VDS402A03048	3,048	.1200	—	31	23	28	0,5	66	36	6
4148144	VDS202A03100	4142847	VDS402A03100	3,100	.1220	—	—	23	28	0,5	66	36	6
4148145	VDS202A03175	4142849	VDS402A03175	3,175	.1250	1/8	—	23	28	0,5	66	36	6
4148146	VDS202A03200	4142851	VDS402A03200	3,200	.1260	—	—	23	28	0,5	66	36	6
4148147	VDS202A03264	4142864	VDS402A03264	3,264	.1285	—	30	23	28	0,5	66	36	6
4148148	VDS202A03300	4142865	VDS402A03300	3,300	.1299	—	—	23	28	0,5	66	36	6
4148149	VDS202A03400	4142867	VDS402A03400	3,400	.1339	—	—	23	28	0,6	66	36	6
4148150	VDS202A03455	4142869	VDS402A03455	3,455	.1360	—	29	23	28	0,6	66	36	6
4148151	VDS202A03500	4142872	VDS402A03500	3,500	.1378	—	—	23	28	0,6	66	36	6
4148152	VDS202A03571	4142885	VDS402A03571	3,571	.1406	9/64	—	23	28	0,6	66	36	6
4148153	VDS202A03600	4142888	VDS402A03600	3,600	.1417	—	—	23	28	0,6	66	36	6
4148154	VDS202A03658	4142891	VDS402A03658	3,658	.1440	—	27	23	28	0,6	66	36	6
4148155	VDS202A03700	4142894	VDS402A03700	3,700	.1457	—	—	23	28	0,6	66	36	6
4148156	VDS202A03734	4142897	VDS402A03734	3,734	.1470	—	26	23	28	0,6	66	36	6
4148157	VDS202A03800	4142900	VDS402A03800	3,800	.1496	—	—	29	36	0,6	74	36	6
4148158	VDS202A03900	4142903	VDS402A03900	3,900	.1535	—	—	29	36	0,6	74	36	6
4148159	VDS202A03970	4142906	VDS402A03970	3,970	.1563	5/32	—	29	36	0,7	74	36	6
4148160	VDS202A04000	4142909	VDS402A04000	4,000	.1575	—	—	29	36	0,7	74	36	6
4148161	VDS202A04039	4142912	VDS402A04039	4,039	.1590	—	21	29	36	0,7	74	36	6
4148162	VDS202A04090	4142925	VDS402A04090	4,090	.1610	—	20	29	36	0,7	74	36	6
4148163	VDS202A04100	4142928	VDS402A04100	4,100	.1614	—	—	29	36	0,7	74	36	6
4148164	VDS202A04200	4142931	VDS402A04200	4,200	.1654	—	—	29	36	0,7	74	36	6
4148165	VDS202A04217	4142934	VDS402A04217	4,217	.1660	—	19	29	36	0,7	74	36	6
4148166	VDS202A04300	4142937	VDS402A04300	4,300	.1693	—	—	29	36	0,7	74	36	6

(continued)

Solid Carbide Drills

(VDS202A • VDS402A • 5 x D — continued)



● first choice
○ alternate choice

D1 diameter

grade WU25PD TiAlN		grade WU25PD TiAlN		D1 diameter				L4 max	L3	L5	L	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4148167	VDS202A04366	4142940	VDS402A04366	4,366	.1719	11/64	—	29	36	0,7	74	36	6
4148168	VDS202A04400	4142943	VDS402A04400	4,400	.1732	—	—	29	36	0,7	74	36	6
4148169	VDS202A04500	4142946	VDS402A04500	4,500	.1772	—	—	29	36	0,7	74	36	6
4148170	VDS202A04600	4142949	VDS402A04600	4,600	.1811	—	—	29	36	0,8	74	36	6
4148171	VDS202A04623	4142952	VDS402A04623	4,623	.1820	—	14	29	36	0,8	74	36	6
4148172	VDS202A04700	4142965	VDS402A04700	4,700	.1850	—	13	29	36	0,8	74	36	6
4148173	VDS202A04763	4142968	VDS402A04763	4,763	.1875	3/16	—	35	44	0,8	82	36	6
4148174	VDS202A04800	4142971	VDS402A04800	4,800	.1890	—	12	35	44	0,8	82	36	6
4148175	VDS202A04852	4142974	VDS402A04852	4,852	.1910	—	11	35	44	0,8	82	36	6
4148176	VDS202A04900	4142977	VDS402A04900	4,900	.1929	—	—	35	44	0,8	82	36	6
4148177	VDS202A05000	4142979	VDS402A05000	5,000	.1969	—	—	35	44	0,8	82	36	6
4148178	VDS202A05100	4142981	VDS402A05100	5,100	.2008	—	—	35	44	0,8	82	36	6
4148179	VDS202A05106	4142994	VDS402A05106	5,106	.2010	—	7	35	44	0,8	82	36	6
4148180	VDS202A05159	4142996	VDS402A05159	5,159	.2031	13/64	—	35	44	0,9	82	36	6
4148181	VDS202A05200	4142997	VDS402A05200	5,200	.2047	—	—	35	44	0,9	82	36	6
4148182	VDS202A05300	4142999	VDS402A05300	5,300	.2087	—	—	35	44	0,9	82	36	6
4148183	VDS202A05400	4143000	VDS402A05400	5,400	.2126	—	—	35	44	0,9	82	36	6
4148184	VDS202A05410	4143001	VDS402A05410	5,410	.2130	—	3	35	44	0,9	82	36	6
4148185	VDS202A05500	4143002	VDS402A05500	5,500	.2165	—	—	35	44	0,9	82	36	6
4148186	VDS202A05558	4143003	VDS402A05558	5,558	.2188	7/32	—	35	44	0,9	82	36	6
4148187	VDS202A05600	4143004	VDS402A05600	5,600	.2205	—	—	35	44	0,9	82	36	6
4148188	VDS202A05616	4143005	VDS402A05616	5,616	.2211	—	2	35	44	0,9	82	36	6
4148189	VDS202A05700	4143006	VDS402A05700	5,700	.2244	—	—	35	44	1,0	82	36	6
4148190	VDS202A05800	4143007	VDS402A05800	5,800	.2283	—	—	35	44	1,0	82	36	6
4148191	VDS202A05900	4143008	VDS402A05900	5,900	.2323	—	—	35	44	1,0	82	36	6
4148192	VDS202A05954	4143009	VDS402A05954	5,954	.2344	15/64	—	35	44	1,0	82	36	6
4148193	VDS202A06000	4143010	VDS402A06000	6,000	.2362	—	—	35	44	1,0	82	36	6
4148194	VDS202A06100	4143011	VDS402A06100	6,100	.2402	—	—	43	53	1,0	91	36	8
4148195	VDS202A06200	4143012	VDS402A06200	6,200	.2441	—	—	43	53	1,0	91	36	8
4148196	VDS202A06300	4143023	VDS402A06300	6,300	.2480	—	—	43	53	1,1	91	36	8
4148197	VDS202A06350	4143024	VDS402A06350	6,350	.2500	1/4	E	43	53	1,1	91	36	8
4148198	VDS202A06400	4143025	VDS402A06400	6,400	.2520	—	—	43	53	1,1	91	36	8
4148199	VDS202A06500	4143026	VDS402A06500	6,500	.2559	—	—	43	53	1,1	91	36	8
4148200	VDS202A06528	4143027	VDS402A06528	6,528	.2570	—	F	43	53	1,1	91	36	8
4148201	VDS202A06600	4143028	VDS402A06600	6,600	.2598	—	—	43	53	1,1	91	36	8
4148202	VDS202A06630	4143029	VDS402A06630	6,630	.2610	—	G	43	53	1,1	91	36	8
4148203	VDS202A06700	4143030	VDS402A06700	6,700	.2638	—	—	43	53	1,1	91	36	8
4148204	VDS202A06746	4143031	VDS402A06746	6,746	.2656	17/64	—	43	53	1,1	91	36	8
4148205	VDS202A06800	4143032	VDS402A06800	6,800	.2677	—	—	43	53	1,1	91	36	8
4148206	VDS202A06900	4143043	VDS402A06900	6,900	.2717	—	—	43	53	1,2	91	36	8

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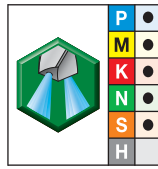
Solid Carbide Drills

Solid Carbide Drills

VariDrill™ • Steel, Stainless Steel, Cast Iron, Aluminum, and High-Temp Alloys • 5 x D



(VDS202A • VDS402A • 5 x D — continued)



● first choice
○ alternate choice

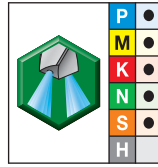
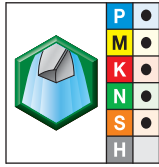
D1 diameter

grade WU25PD TiAlN		grade WU25PD TiAlN		D1 diameter				L4 max	L3	L5	L	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4148207	VDS202A07000	4143044	VDS402A07000	7,000	.2756	—	—	43	53	1,2	91	36	8
4148208	VDS202A07100	4143045	VDS402A07100	7,100	.2795	—	—	43	53	1,2	91	36	8
4148209	VDS202A07145	4143046	VDS402A07145	7,145	.2813	9/32	—	43	53	1,2	91	36	8
4148210	VDS202A07200	4143047	VDS402A07200	7,200	.2835	—	—	43	53	1,2	91	36	8
4148211	VDS202A07300	4143048	VDS402A07300	7,300	.2874	—	—	43	53	1,2	91	36	8
4148212	VDS202A07400	4143049	VDS402A07400	7,400	.2913	—	—	43	53	1,3	91	36	8
4148213	VDS202A07500	4143050	VDS402A07500	7,500	.2953	—	—	43	53	1,3	91	36	8
4148214	VDS202A07541	4143051	VDS402A07541	7,541	.2969	19/64	—	43	53	1,3	91	36	8
4148215	VDS202A07600	4143052	VDS402A07600	7,600	.2992	—	—	43	53	1,3	91	36	8
4148216	VDS202A07700	4143063	VDS402A07700	7,700	.3031	—	—	43	53	1,3	91	36	8
4148217	VDS202A07800	4143064	VDS402A07800	7,800	.3071	—	—	43	53	1,3	91	36	8
4148218	VDS202A07900	4143065	VDS402A07900	7,900	.3110	—	—	43	53	1,3	91	36	8
4148219	VDS202A07938	4143066	VDS402A07938	7,938	.3125	5/16	—	43	53	1,3	91	36	8
4148220	VDS202A08000	4143067	VDS402A08000	8,000	.3150	—	—	43	53	1,4	91	36	8
4148221	VDS202A08100	4143068	VDS402A08100	8,100	.3189	—	—	49	61	1,4	103	40	10
4148222	VDS202A08200	4143069	VDS402A08200	8,200	.3228	—	—	49	61	1,4	103	40	10
4148223	VDS202A08300	4143070	VDS402A08300	8,300	.3268	—	—	49	61	1,4	103	40	10
4148224	VDS202A08334	4143071	VDS402A08334	8,334	.3281	21/64	—	49	61	1,4	103	40	10
4148225	VDS202A08400	4143072	VDS402A08400	8,400	.3307	—	—	49	61	1,4	103	40	10
4148226	VDS202A08433	4143083	VDS402A08433	8,433	.3320	—	Q	49	61	1,4	103	40	10
4148227	VDS202A08500	4143084	VDS402A08500	8,500	.3346	—	—	49	61	1,4	103	40	10
4148228	VDS202A08600	4143085	VDS402A08600	8,600	.3386	—	—	49	61	1,5	103	40	10
4148229	VDS202A08700	4143086	VDS402A08700	8,700	.3425	—	—	49	61	1,5	103	40	10
4148230	VDS202A08733	4143087	VDS402A08733	8,733	.3438	11/32	—	49	61	1,5	103	40	10
4148231	VDS202A08800	4143088	VDS402A08800	8,800	.3465	—	—	49	61	1,5	103	40	10
4148232	VDS202A08900	4143089	VDS402A08900	8,900	.3504	—	—	49	61	1,5	103	40	10
4148233	VDS202A09000	4143090	VDS402A09000	9,000	.3543	—	—	49	61	1,5	103	40	10
4148234	VDS202A09100	4143091	VDS402A09100	9,100	.3583	—	—	49	61	1,5	103	40	10
4148235	VDS202A09129	4143092	VDS402A09129	9,129	.3594	23/64	—	49	61	1,6	103	40	10
4148236	VDS202A09200	4143103	VDS402A09200	9,200	.3622	—	—	49	61	1,6	103	40	10
4148237	VDS202A09300	4143104	VDS402A09300	9,300	.3661	—	—	49	61	1,6	103	40	10
4148238	VDS202A09347	4143105	VDS402A09347	9,347	.3680	—	U	49	61	1,6	103	40	10
4148239	VDS202A09400	4143106	VDS402A09400	9,400	.3701	—	—	49	61	1,6	103	40	10
4148240	VDS202A09500	4143107	VDS402A09500	9,500	.3740	—	—	49	61	1,6	103	40	10
4148241	VDS202A09525	4143108	VDS402A09525	9,525	.3750	3/8	—	49	61	1,6	103	40	10
4148242	VDS202A09600	4143109	VDS402A09600	9,600	.3780	—	—	49	61	1,6	103	40	10
4148243	VDS202A09700	4143110	VDS402A09700	9,700	.3819	—	—	49	61	1,7	103	40	10
4148244	VDS202A09800	4143111	VDS402A09800	9,800	.3858	—	—	49	61	1,7	103	40	10
4148245	VDS202A09900	4143112	VDS402A09900	9,900	.3898	—	—	49	61	1,7	103	40	10
4148246	VDS202A09921	4143113	VDS402A09921	9,921	.3906	25/64	—	49	61	1,7	103	40	10

(continued)

Solid Carbide Drills

(VDS202A • VDS402A • 5 x D — continued)



● first choice
○ alternate choice

D1 diameter

grade WU25PD TiAlN		grade WU25PD TiAlN		D1 diameter				L4 max	L3	L5	L	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4148258	VDS202A10000	4142823	VDS402A10000	10,000	.3937	—	—	49	61	1,7	103	40	10
4148259	VDS202A10100	4142825	VDS402A10100	10,100	.3976	—	—	56	71	1,7	118	45	12
4148260	VDS202A10200	4142827	VDS402A10200	10,200	.4016	—	—	56	71	1,7	118	45	12
4148261	VDS202A10300	4142829	VDS402A10300	10,300	.4055	—	—	56	71	1,8	118	45	12
4148262	VDS202A10320	4142831	VDS402A10320	10,320	.4063	13/32	—	56	71	1,8	118	45	12
4148283	VDS202A10400	4142832	VDS402A10400	10,400	.4094	—	—	56	71	1,8	118	45	12
4148284	VDS202A10500	4142834	VDS402A10500	10,500	.4134	—	—	56	71	1,8	118	45	12
4148285	VDS202A10600	4142836	VDS402A10600	10,600	.4173	—	—	56	71	1,8	118	45	12
4148286	VDS202A10700	4142838	VDS402A10700	10,700	.4213	—	—	56	71	1,8	118	45	12
4148287	VDS202A10716	4142840	VDS402A10716	10,716	.4219	27/64	—	56	71	1,8	118	45	12
4148288	VDS202A10800	4142842	VDS402A10800	10,800	.4252	—	—	56	71	1,8	118	45	12
4148289	VDS202A10900	4142855	VDS402A10900	10,900	.4291	—	—	56	71	1,9	118	45	12
4148290	VDS202A11000	4142857	VDS402A11000	11,000	.4331	—	—	56	71	1,9	118	45	12
4148291	VDS202A11100	4142858	VDS402A11100	11,100	.4370	—	—	56	71	1,9	118	45	12
4148292	VDS202A11113	4142861	VDS402A11113	11,113	.4375	7/16	—	56	71	1,9	118	45	12
4148293	VDS202A11200	4142862	VDS402A11200	11,200	.4409	—	—	56	71	1,9	118	45	12
4148294	VDS202A11300	4142873	VDS402A11300	11,300	.4449	—	—	56	71	1,9	118	45	12
4148295	VDS202A11400	4142874	VDS402A11400	11,400	.4488	—	—	56	71	2,0	118	45	12
4148296	VDS202A11500	4142875	VDS402A11500	11,500	.4528	—	—	56	71	2,0	118	45	12
4148297	VDS202A11509	4142876	VDS402A11509	11,509	.4531	29/64	—	56	71	2,0	118	45	12
4148298	VDS202A11600	4142877	VDS402A11600	11,600	.4567	—	—	56	71	2,0	118	45	12
4148299	VDS202A11700	4142878	VDS402A11700	11,700	.4606	—	—	56	71	2,0	118	45	12
4148300	VDS202A11800	4142879	VDS402A11800	11,800	.4646	—	—	56	71	2,0	118	45	12
4148301	VDS202A11900	4142880	VDS402A11900	11,900	.4685	—	—	56	71	2,0	118	45	12
4148302	VDS202A11908	4142881	VDS402A11908	11,908	.4688	15/32	—	56	71	2,0	118	45	12
4148313	VDS202A12000	4142882	VDS402A12000	12,000	.4724	—	—	56	71	2,1	118	45	12
4148314	VDS202A12100	4142913	VDS402A12100	12,100	.4764	—	—	60	77	2,1	124	45	14
4148315	VDS202A12200	4142914	VDS402A12200	12,200	.4803	—	—	60	77	2,1	124	45	14
4148316	VDS202A12300	4142915	VDS402A12300	12,300	.4843	—	—	60	77	2,1	124	45	14
4148317	VDS202A12304	4142916	VDS402A12304	12,304	.4844	31/64	—	60	77	2,1	124	45	14
4148318	VDS202A12400	4142917	VDS402A12400	12,400	.4882	—	—	60	77	2,1	124	45	14
4148319	VDS202A12500	4142918	VDS402A12500	12,500	.4921	—	—	60	77	2,1	124	45	14
4148320	VDS202A12600	4142919	VDS402A12600	12,600	.4961	—	—	60	77	2,2	124	45	14
4148321	VDS202A12700	4142920	VDS402A12700	12,700	.5000	1/2	—	60	77	2,2	124	45	14
4148322	VDS202A12800	4142921	VDS402A12800	12,800	.5039	—	—	60	77	2,2	124	45	14
4148343	VDS202A12900	4142922	VDS402A12900	12,900	.5079	—	—	60	77	2,2	124	45	14
4148344	VDS202A13000	4142953	VDS402A13000	13,000	.5118	—	—	60	77	2,2	124	45	14
4148345	VDS202A13096	4142954	VDS402A13096	13,096	.5156	33/64	—	60	77	2,3	124	45	14
4148346	VDS202A13100	4142955	VDS402A13100	13,100	.5157	—	—	60	77	2,3	124	45	14
4148347	VDS202A13200	4142956	VDS402A13200	13,200	.5197	—	—	60	77	2,3	124	45	14

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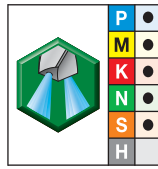
Solid Carbide Drills

Solid Carbide Drills

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(VDS202A • VDS402A • 5 x D — continued)



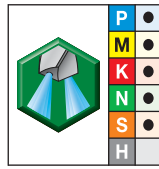
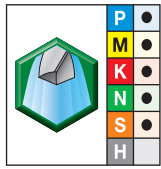
● first choice
○ alternate choice

grade WU25PD TiAlN		grade WU25PD TiAlN		D1 diameter				L4 max	L3	L5	L	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4148348	VDS202A13300	4142957	VDS402A13300	13,300	.5236	—	—	60	77	2,3	124	45	14
4148349	VDS202A13400	4142958	VDS402A13400	13,400	.5276	—	—	60	77	2,3	124	45	14
4148350	VDS202A13500	4142959	VDS402A13500	13,500	.5315	—	—	60	77	2,3	124	45	14
4148351	VDS202A13600	4142960	VDS402A13600	13,600	.5354	—	—	60	77	2,3	124	45	14
4148352	VDS202A13700	4142961	VDS402A13700	13,700	.5394	—	—	60	77	2,4	124	45	14
4148353	VDS202A13800	4142962	VDS402A13800	13,800	.5433	—	—	60	77	2,4	124	45	14
4148354	VDS202A13891	4142983	VDS402A13891	13,891	.5469	35/64	—	60	77	2,4	124	45	14
4148355	VDS202A13900	4142984	VDS402A13900	13,900	.5472	—	—	60	77	2,4	124	45	14
4148356	VDS202A14000	4142985	VDS402A14000	14,000	.5512	—	—	60	77	2,4	124	45	14
4148357	VDS202A14100	4142986	VDS402A14100	14,100	.5551	—	—	63	83	2,4	133	48	16
4148358	VDS202A14200	4142987	VDS402A14200	14,200	.5591	—	—	63	83	2,5	133	48	16
4148359	VDS202A14288	4142988	VDS402A14288	14,288	.5625	9/16	—	63	83	2,5	133	48	16
4148360	VDS202A14300	4142989	VDS402A14300	14,300	.5630	—	—	63	83	2,5	133	48	16
4148361	VDS202A14400	4142990	VDS402A14400	14,400	.5669	—	—	63	83	2,5	133	48	16
4148362	VDS202A14500	4142991	VDS402A14500	14,500	.5709	—	—	63	83	2,5	133	48	16
4148363	VDS202A14600	4142992	VDS402A14600	14,600	.5748	—	—	63	83	2,5	133	48	16
4148364	VDS202A14684	4143013	VDS402A14684	14,684	.5781	37/64	—	63	83	2,5	133	48	16
4148365	VDS202A14700	4143014	VDS402A14700	14,700	.5787	—	—	63	83	2,5	133	48	16
4148366	VDS202A14800	4143015	VDS402A14800	14,800	.5827	—	—	63	83	2,6	133	48	16
4148367	VDS202A14900	4143016	VDS402A14900	14,900	.5866	—	—	63	83	2,6	133	48	16
4148368	VDS202A15000	4143017	VDS402A15000	15,000	.5906	—	—	63	83	2,6	133	48	16
4148369	VDS202A15083	4143018	VDS402A15083	15,083	.5938	19/32	—	63	83	2,6	133	48	16
4148370	VDS202A15100	4143019	VDS402A15100	15,100	.5945	—	—	63	83	2,6	133	48	16
4148371	VDS202A15200	4143020	VDS402A15200	15,200	.5984	—	—	63	83	2,6	133	48	16
4148372	VDS202A15300	4143021	VDS402A15300	15,300	.6024	—	—	63	83	2,6	133	48	16
4148373	VDS202A15400	4143022	VDS402A15400	15,400	.6063	—	—	63	83	2,7	133	48	16
4148374	VDS202A15479	4143033	VDS402A15479	15,479	.6094	39/64	—	63	83	2,7	133	48	16
4148375	VDS202A15500	4143034	VDS402A15500	15,500	.6102	—	—	63	83	2,7	133	48	16
4148376	VDS202A15600	4143035	VDS402A15600	15,600	.6142	—	—	63	83	2,7	133	48	16
4148377	VDS202A15700	4143036	VDS402A15700	15,700	.6181	—	—	63	83	2,7	133	48	16
4148378	VDS202A15800	4143037	VDS402A15800	15,800	.6220	—	—	63	83	2,7	133	48	16
4148379	VDS202A15875	4143038	VDS402A15875	15,875	.6250	5/8	—	63	83	2,7	133	48	16
4148380	VDS202A15900	4143039	VDS402A15900	15,900	.6260	—	—	63	83	2,8	133	48	16
4148381	VDS202A16000	4143040	VDS402A16000	16,000	.6299	—	—	63	83	2,8	133	48	16
4148382	VDS202A16100	4143041	VDS402A16100	16,100	.6339	—	—	71	93	2,8	143	48	18
4148383	VDS202A16200	4143042	VDS402A16200	16,200	.6378	—	—	71	93	2,8	143	48	18
4148384	VDS202A16271	4143053	VDS402A16271	16,271	.6406	41/64	—	71	93	2,8	143	48	18
4148385	VDS202A16300	4143054	VDS402A16300	16,300	.6417	—	—	71	93	2,8	143	48	18
4148386	VDS202A16400	4143055	VDS402A16400	16,400	.6457	—	—	71	93	2,8	143	48	18
4148387	VDS202A16500	4143056	VDS402A16500	16,500	.6496	—	—	71	93	2,9	143	48	18

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Solid Carbide Drills

(VDS202A • VDS402A • 5 x D — continued)



● first choice
○ alternate choice

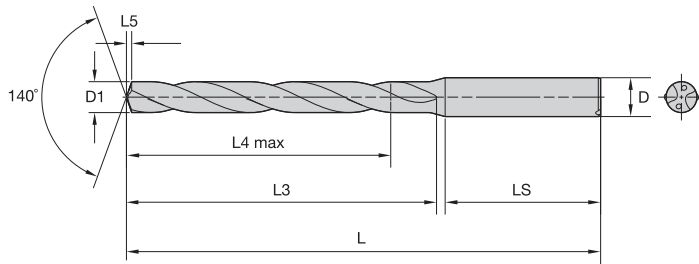
D1 diameter

grade WU25PD TiAlN		grade WU25PD TiAlN		D1 diameter				L4 max	L3	L5	L	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4148388	VDS202A16600	4143057	VDS402A16600	16,600	.6535	—	—	71	93	2,9	143	48	18
4148389	VDS202A16670	4143058	VDS402A16670	16,670	.6563	21/32	—	71	93	2,9	143	48	18
4148390	VDS202A16700	4143059	VDS402A16700	16,700	.6575	—	—	71	93	2,9	143	48	18
4148391	VDS202A16800	4143060	VDS402A16800	16,800	.6614	—	—	71	93	2,9	143	48	18
4148392	VDS202A16900	4143061	VDS402A16900	16,900	.6654	—	—	71	93	2,9	143	48	18
4148393	VDS202A17000	4143062	VDS402A17000	17,000	.6693	—	—	71	93	2,9	143	48	18
4148394	VDS202A17100	4143073	VDS402A17100	17,100	.6732	—	—	71	93	3,0	143	48	18
4148395	VDS202A17200	4143074	VDS402A17200	17,200	.6772	—	—	71	93	3,0	143	48	18
4148396	VDS202A17300	4143075	VDS402A17300	17,300	.6811	—	—	71	93	3,0	143	48	18
4148397	VDS202A17400	4143076	VDS402A17400	17,400	.6850	—	—	71	93	3,0	143	48	18
4148398	VDS202A17463	4143077	VDS402A17463	17,463	.6875	11/16	—	71	93	3,0	143	48	18
4148399	VDS202A17500	4143078	VDS402A17500	17,500	.6890	—	—	71	93	3,0	143	48	18
4148400	VDS202A17600	4143079	VDS402A17600	17,600	.6929	—	—	71	93	3,1	143	48	18
4148401	VDS202A17700	4143080	VDS402A17700	17,700	.6969	—	—	71	93	3,1	143	48	18
4148402	VDS202A17800	4143081	VDS402A17800	17,800	.7008	—	—	71	93	3,1	143	48	18
4148403	VDS202A17859	4143082	VDS402A17859	17,859	.7031	45/64	—	71	93	3,1	143	48	18
4148404	VDS202A17900	4143093	VDS402A17900	17,900	.7047	—	—	71	93	3,1	143	48	18
4147921	VDS202A18000	4142803	VDS402A18000	18,000	.7087	—	—	71	93	3,1	143	48	18
4147922	VDS202A18100	4142804	VDS402A18100	18,100	.7126	—	—	77	101	3,1	153	50	20
4148303	VDS202A18200	4142805	VDS402A18200	18,200	.7165	—	—	77	101	3,2	153	50	20
4148304	VDS202A18258	4142806	VDS402A18258	18,258	.7188	23/32	—	77	101	3,2	153	50	20
4148305	VDS202A18300	4142807	VDS402A18300	18,300	.7205	—	—	77	101	3,2	153	50	20
4148306	VDS202A18400	4142808	VDS402A18400	18,400	.7244	—	—	77	101	3,2	153	50	20
4148307	VDS202A18500	4142809	VDS402A18500	18,500	.7283	—	—	77	101	3,2	153	50	20
4148308	VDS202A18600	4142810	VDS402A18600	18,600	.7323	—	—	77	101	3,2	153	50	20
4148309	VDS202A18654	4142811	VDS402A18654	18,654	.7344	47/64	—	77	101	3,2	153	50	20
4148310	VDS202A18700	4142812	VDS402A18700	18,700	.7362	—	—	77	101	3,2	153	50	20
4148311	VDS202A18800	4142824	VDS402A18800	18,800	.7402	—	—	77	101	3,3	153	50	20
4148312	VDS202A18900	4142826	VDS402A18900	18,900	.7441	—	—	77	101	3,3	153	50	20
4148323	VDS202A19000	4142828	VDS402A19000	19,000	.7480	—	—	77	101	3,3	153	50	20
4148324	VDS202A19050	4142830	VDS402A19050	19,050	.7500	3/4	—	77	101	3,3	153	50	20
4148325	VDS202A19100	4142833	VDS402A19100	19,100	.7520	—	—	77	101	3,3	153	50	20
4148326	VDS202A19200	4142835	VDS402A19200	19,200	.7559	—	—	77	101	3,3	153	50	20
4148327	VDS202A19300	4142837	VDS402A19300	19,300	.7598	—	—	77	101	3,4	153	50	20
4148328	VDS202A19400	4142839	VDS402A19400	19,400	.7638	—	—	77	101	3,4	153	50	20
4148329	VDS202A19500	4142841	VDS402A19500	19,500	.7677	—	—	77	101	3,4	153	50	20
4148330	VDS202A19600	4142853	VDS402A19600	19,600	.7717	—	—	77	101	3,4	153	50	20
4148331	VDS202A19700	4142854	VDS402A19700	19,700	.7756	—	—	77	101	3,4	153	50	20
4148332	VDS202A19800	4142856	VDS402A19800	19,800	.7795	—	—	77	101	3,4	153	50	20
4148333	VDS202A19900	4142859	VDS402A19900	19,900	.7835	—	—	77	101	3,5	153	50	20
4148334	VDS202A20000	4142860	VDS402A20000	20,000	.7874	—	—	77	101	3,5	153	50	20

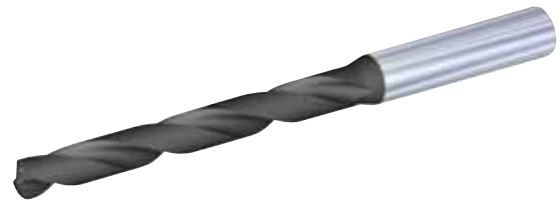
Solid Carbide Drills

Solid Carbide Drills

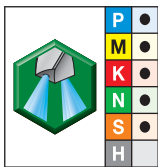
VariDrill™ • Steel, Stainless Steel, Cast Iron, Aluminum, and High-Temp Alloys • 8 x D



For information on L, L3, and L4 max, see page R133.



■ VDS403A • 8 x D



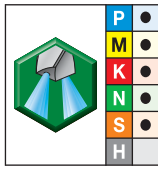
● first choice
○ alternate choice

grade WU25PD TiAlN		D1 diameter				L4 max	L3	L5	L	LS	D
order #	catalog #	mm	in	fraction	wire size						
6023126	VDS403A01000	1,000	.0394	—	—	10	12	0,1	58	28	4
6023127	VDS403A01016	1,016	.0400	—	60	10	12	0,1	58	28	4
6023128	VDS403A01067	1,067	.0420	—	58	10	12	0,2	58	28	4
6023129	VDS403A01100	1,100	.0433	—	—	10	12	0,2	58	28	4
6023130	VDS403A01181	1,181	.0465	—	56	10	12	0,2	58	28	4
6023131	VDS403A01191	1,191	.0469	3/64	—	10	12	0,2	58	28	4
6023132	VDS403A01200	1,200	.0472	—	—	10	12	0,2	58	28	4
6023133	VDS403A01300	1,300	.0512	—	—	10	12	0,2	58	28	4
6023134	VDS403A01321	1,321	.0520	—	55	10	12	0,2	58	28	4
6023135	VDS403A01397	1,397	.0550	—	54	10	12	0,2	58	28	4
6023136	VDS403A01400	1,400	.0551	—	—	10	12	0,2	58	28	4
4143700	VDS403A01500	1,500	.0591	—	—	15	18	0,2	58	28	4
4143701	VDS403A01600	1,600	.0630	—	—	15	18	0,2	58	28	4
4143702	VDS403A01700	1,700	.0669	—	—	15	18	0,3	58	28	4
4143723	VDS403A01800	1,800	.0709	—	—	15	18	0,3	58	28	4
4143724	VDS403A01900	1,900	.0748	—	—	15	18	0,3	58	28	4
4143725	VDS403A01984	1,984	.0781	—	—	22	26	0,3	66	28	4
4143726	VDS403A02000	2,000	.0787	—	—	22	26	0,3	66	28	4
4143727	VDS403A02100	2,100	.0827	—	—	22	26	0,3	66	28	4
4143728	VDS403A02200	2,200	.0866	—	—	22	26	0,3	66	28	4
4143729	VDS403A02300	2,300	.0906	—	—	22	26	0,4	66	28	4
4143730	VDS403A02383	2,383	.0938	3/32	—	25	30	0,4	66	28	4
4143731	VDS403A02400	2,400	.0945	—	—	25	30	0,4	66	28	4
4143732	VDS403A02439	2,439	.0960	—	41	25	30	0,4	66	28	4
4143733	VDS403A02489	2,489	.0980	—	40	25	30	0,4	66	28	4
4143734	VDS403A02500	2,500	.0984	—	—	25	30	0,4	66	28	4
4143735	VDS403A02578	2,578	.1015	—	38	25	30	0,4	66	28	4
4143736	VDS403A02600	2,600	.1024	—	—	25	30	0,4	66	28	4

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Solid Carbide Drills

(VDS403A • 8 x D — continued)



● first choice
○ alternate choice

grade WU25PD TiAlN		D1 diameter				L4 max	L3	L5	L	LS	D
order #	catalog #	mm	in	fraction	wire size						
4143737	VDS403A02642	2,642	.1040	—	37	25	30	0,4	66	28	4
4143738	VDS403A02700	2,700	.1063	—	—	25	30	0,4	66	28	4
4143739	VDS403A02705	2,705	.1065	—	36	25	30	0,4	66	28	4
4143740	VDS403A02779	2,779	.1094	7/64	—	25	30	0,4	66	28	4
4143741	VDS403A02800	2,800	.1102	—	—	25	30	0,5	66	28	4
4143742	VDS403A02820	2,820	.1110	—	34	25	30	0,5	66	28	4
4143743	VDS403A02870	2,870	.1130	—	33	25	30	0,5	66	28	4
4143744	VDS403A02900	2,900	.1142	—	—	25	30	0,5	66	28	4
4143745	VDS403A02947	2,947	.1160	—	32	25	30	0,5	66	28	4
4143746	VDS403A03000	3,000	.1181	—	—	33	40	0,5	78	36	6
4143747	VDS403A03048	3,048	.1200	—	31	33	40	0,5	78	36	6
4143748	VDS403A03100	3,100	.1220	—	—	33	40	0,5	78	36	6
4143749	VDS403A03175	3,175	.1250	1/8	—	33	40	0,5	78	36	6
4143750	VDS403A03200	3,200	.1260	—	—	33	40	0,5	78	36	6
4143751	VDS403A03264	3,264	.1285	—	30	33	40	0,5	78	36	6
4143752	VDS403A03300	3,300	.1299	—	30	33	40	0,5	78	36	6
4143753	VDS403A03400	3,400	.1339	—	—	33	40	0,6	78	36	6
4143754	VDS403A03455	3,455	.1360	—	29	33	49	0,6	78	36	6
4143755	VDS403A03500	3,500	.1378	—	21	33	49	0,6	78	36	6
4143756	VDS403A03571	3,571	.1406	9/64	—	33	49	0,6	78	36	6
4143757	VDS403A03600	3,600	.1417	—	—	33	40	0,6	78	36	6
4143758	VDS403A03658	3,658	.1440	—	27	33	49	0,6	78	36	6
4143759	VDS403A03700	3,700	.1457	—	—	33	40	0,6	78	36	6
4143760	VDS403A03734	3,734	.1470	—	26	33	40	0,6	78	36	6
4143761	VDS403A03800	3,800	.1496	—	—	41	49	0,6	87	36	6
4143762	VDS403A03900	3,900	.1535	—	—	41	40	0,6	87	36	6
4143763	VDS403A03970	3,970	.1563	5/32	—	41	49	0,7	87	36	6
4143764	VDS403A04000	4,000	.1575	—	—	41	40	0,7	87	36	6
4143765	VDS403A04039	4,039	.1590	—	21	41	40	0,7	87	36	6
4143766	VDS403A04090	4,090	.1610	—	20	41	40	0,7	87	36	6
4143767	VDS403A04100	4,100	.1614	—	—	41	49	0,7	87	36	6
4143768	VDS403A04200	4,200	.1654	—	—	41	49	0,7	87	36	6
4143769	VDS403A04217	4,217	.1660	—	19	41	49	0,7	87	36	6
4143770	VDS403A04300	4,300	.1693	—	14	41	49	0,7	87	36	6
4143771	VDS403A04366	4,366	.1719	11/64	—	41	49	0,7	87	36	6
4143772	VDS403A04400	4,400	.1732	—	—	41	49	0,7	87	36	6
4143773	VDS403A04500	4,500	.1772	—	—	41	49	0,7	87	36	6
4143774	VDS403A04600	4,600	.1811	—	19	41	49	0,8	87	36	6
4143775	VDS403A04623	4,623	.1820	—	14	41	49	0,8	87	36	6
4143776	VDS403A04700	4,700	.1850	—	13	41	56	0,8	87	36	6

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Solid Carbide Drills

(VDS403A • 8 x D – continued)



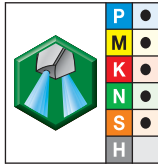
● first choice
○ alternate choice

grade WU25PD TiAlN		D1 diameter				L4 max	L3	L5	L	LS	D
order #	catalog #	mm	in	fraction	wire size						
4143777	VDS403A04763	4,763	.1875	3/16	13	48	49	0,8	94	36	6
4143778	VDS403A04800	4,800	.1890	—	12	48	56	0,8	94	36	6
4143779	VDS403A04852	4,852	.1910	—	11	48	56	0,8	94	36	6
4143780	VDS403A04900	4,900	.1929	—	—	48	56	0,8	94	36	6
4143781	VDS403A05000	5,000	.1969	—	—	48	56	0,8	94	36	6
4143782	VDS403A05100	5,100	.2008	—	—	48	56	0,8	94	36	6
4143783	VDS403A05106	5,106	.2010	—	7	48	56	0,8	94	36	6
4143784	VDS403A05159	5,159	.2031	13/64	—	48	56	0,9	94	36	6
4143785	VDS403A05200	5,200	.2047	—	—	48	56	0,9	94	36	6
4143786	VDS403A05300	5,300	.2087	—	12	48	56	0,9	94	36	6
4143787	VDS403A05400	5,400	.2126	—	7	48	56	0,9	94	36	6
4143788	VDS403A05410	5,410	.2130	—	3	48	56	0,9	94	36	6
4143789	VDS403A05500	5,500	.2165	—	3	48	56	0,9	94	36	6
4143790	VDS403A05558	5,558	.2188	7/32	2	48	56	0,9	94	36	6
4143791	VDS403A05600	5,600	.2205	—	—	48	56	0,9	94	36	6
4143792	VDS403A05616	5,616	.2211	—	2	48	56	0,9	94	36	6
4143793	VDS403A05700	5,700	.2244	—	—	48	56	1,0	94	36	6
4143794	VDS403A05800	5,800	.2283	—	—	48	67	1,0	94	36	6
4143795	VDS403A05900	5,900	.2323	—	—	48	67	1,0	94	36	6
4143796	VDS403A05954	5,954	.2344	15/64	—	48	56	1,0	94	36	6
4143797	VDS403A06000	6,000	.2362	—	—	48	67	1,0	94	36	6
4143798	VDS403A06100	6,100	.2402	—	—	57	67	1,0	105	36	8
4143799	VDS403A06200	6,200	.2441	—	F	57	67	1,0	105	36	8
4143800	VDS403A06300	6,300	.2480	—	—	57	56	1,1	105	36	8
4143801	VDS403A06350	6,350	.2500	1/4	E	57	67	1,1	105	36	8
4143802	VDS403A06400	6,400	.2520	—	—	57	67	1,1	105	36	8
4143803	VDS403A06500	6,500	.2559	—	—	57	67	1,1	105	36	8
4143804	VDS403A06528	6,528	.2570	—	F	57	67	1,1	105	36	8
4143805	VDS403A06600	6,600	.2598	—	E	57	67	1,1	105	36	8
4143806	VDS403A06630	6,630	.2610	—	G	57	56	1,1	105	36	8
4143807	VDS403A06700	6,700	.2638	—	—	57	67	1,1	105	36	8
4143808	VDS403A06746	6,746	.2656	17/64	—	57	56	1,1	105	36	8
4143809	VDS403A06800	6,800	.2677	—	—	57	67	1,1	105	36	8
4143810	VDS403A06900	6,900	.2717	—	—	57	67	1,2	105	36	8
4143811	VDS403A07000	7,000	.2756	—	—	57	72	1,2	105	36	8
4143812	VDS403A07100	7,100	.2795	—	—	61	72	1,2	110	36	8
4143813	VDS403A07145	7,145	.2813	9/32	—	61	67	1,2	110	36	8
4143814	VDS403A07200	7,200	.2835	—	—	61	72	1,2	110	36	8
4143815	VDS403A07300	7,300	.2874	—	—	61	72	1,2	110	36	8
4143816	VDS403A07400	7,400	.2913	—	—	61	72	1,3	110	36	8

(continued)

Solid Carbide Drills

(VDS403A • 8 x D — continued)



● first choice
○ alternate choice

grade WU25PD TiAlN		D1 diameter				L4 max	L3	L5	L	LS	D
order #	catalog #	mm	in	fraction	wire size						
4143817	VDS403A07500	7,500	.2953	—	—	61	72	1,3	110	36	8
4143818	VDS403A07541	7,541	.2969	19/64	—	61	72	1,3	110	36	8
4143819	VDS403A07600	7,600	.2992	—	—	61	80	1,3	110	36	8
4143820	VDS403A07700	7,700	.3031	—	—	61	80	1,3	110	36	8
4143821	VDS403A07800	7,800	.3071	—	—	61	80	1,3	110	36	8
4143822	VDS403A07900	7,900	.3110	—	—	61	80	1,3	110	36	8
4143823	VDS403A07938	7,938	.3125	5/16	Q	61	80	1,3	110	36	8
4143824	VDS403A08000	8,000	.3150	—	—	61	80	1,4	110	36	8
4143825	VDS403A08100	8,100	.3189	—	—	68	80	1,4	122	40	10
4143826	VDS403A08200	8,200	.3228	—	—	68	80	1,4	122	40	10
4143827	VDS403A08300	8,300	.3268	—	—	68	80	1,4	122	40	10
4143828	VDS403A08334	8,334	.3281	21/64	—	68	80	1,4	122	40	10
4143829	VDS403A08400	8,400	.3307	—	—	68	72	1,4	122	40	10
4143830	VDS403A08433	8,433	.3320	—	Q	68	80	1,4	122	40	10
4143831	VDS403A08500	8,500	.3346	—	—	68	80	1,4	122	40	10
4143832	VDS403A08600	8,600	.3386	—	—	68	80	1,5	122	40	10
4143833	VDS403A08700	8,700	.3425	—	—	68	72	1,5	122	40	10
4143834	VDS403A08733	8,733	.3438	11/32	—	68	72	1,5	122	40	10
4143835	VDS403A08800	8,800	.3465	—	—	68	72	1,5	122	40	10
4143836	VDS403A08900	8,900	.3504	—	—	68	72	1,5	122	40	10
4143837	VDS403A09000	9,000	.3543	—	—	68	72	1,5	122	40	10
4143838	VDS403A09100	9,100	.3583	—	—	68	80	1,5	122	40	10
4143839	VDS403A09129	9,129	.3594	23/64	—	68	80	1,6	122	40	10
4143840	VDS403A09200	9,200	.3622	—	—	68	80	1,6	122	40	10
4143841	VDS403A09300	9,300	.3661	—	—	68	80	1,6	122	40	10
4143842	VDS403A09347	9,347	.3680	—	U	68	80	1,6	122	40	10
4143843	VDS403A09400	9,400	.3701	—	—	68	80	1,6	122	40	10
4143844	VDS403A09500	9,500	.3740	—	—	68	80	1,6	122	40	10
4143845	VDS403A09525	9,525	.3750	3/8	—	68	80	1,6	122	40	10
4143846	VDS403A09600	9,600	.3780	—	U	68	80	1,6	122	40	10
4143847	VDS403A09700	9,700	.3819	—	—	68	80	1,7	122	40	10
4143848	VDS403A09800	9,800	.3858	—	—	68	80	1,7	122	40	10
4143849	VDS403A09900	9,900	.3898	—	—	68	80	1,7	122	40	10
4143850	VDS403A09921	9,921	.3906	25/64	—	68	80	1,7	122	40	10
4143421	VDS403A10000	10,000	.3937	—	—	68	80	1,7	122	40	10
4143422	VDS403A10100	10,100	.3976	—	—	79	94	1,7	141	45	12
4143473	VDS403A10200	10,200	.4016	—	—	79	94	1,7	141	45	12
4143474	VDS403A10300	10,300	.4055	—	—	79	94	1,8	141	45	12
4143475	VDS403A10320	10,320	.4063	13/32	—	79	94	1,8	141	45	12
4143476	VDS403A10400	10,400	.4094	—	—	79	94	1,8	141	45	12

(continued)

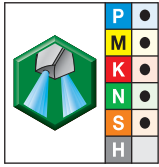
Solid Carbide Drills

Solid Carbide Drills

VariDrill™ • Steel, Stainless Steel, Cast Iron, Aluminum, and High-Temp Alloys • 8 x D



(VDS403A • 8 x D — continued)



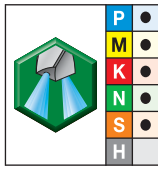
● first choice
○ alternate choice

grade WU25PD TiAlN		D1 diameter				L4 max	L3	L5	L	LS	D
order #	catalog #	mm	in	fraction	wire size						
4143477	VDS403A10500	10,500	.4134	—	—	79	94	1,8	141	45	12
4143478	VDS403A10600	10,600	.4173	—	—	79	94	1,8	141	45	12
4143479	VDS403A10700	10,700	.4213	—	—	79	94	1,8	141	45	12
4143480	VDS403A10716	10,716	.4219	27/64	—	79	94	1,8	141	45	12
4143481	VDS403A10800	10,800	.4252	—	—	79	94	1,8	141	45	12
4143482	VDS403A10900	10,900	.4291	—	—	79	94	1,9	141	45	12
4143483	VDS403A11000	11,000	.4331	—	—	79	94	1,9	141	45	12
4143484	VDS403A11100	11,100	.4370	—	—	79	94	1,9	141	45	12
4143485	VDS403A11113	11,113	.4375	7/16	—	79	94	1,9	141	45	12
4143486	VDS403A11200	11,200	.4409	—	—	79	94	1,9	141	45	12
4143487	VDS403A11300	11,300	.4449	—	—	79	94	1,9	141	45	12
4143488	VDS403A11400	11,400	.4488	—	—	79	94	2,0	141	45	12
4143489	VDS403A11500	11,500	.4528	—	—	79	94	2,0	141	45	12
4143490	VDS403A11509	11,509	.4531	29/64	—	79	94	2,0	141	45	12
4143491	VDS403A11600	11,600	.4567	—	—	79	94	2,0	141	45	12
4143492	VDS403A11700	11,700	.4606	—	—	79	94	2,0	141	45	12
4143493	VDS403A11800	11,800	.4646	—	—	79	94	2,0	141	45	12
4143494	VDS403A11900	11,900	.4685	—	—	79	94	2,0	141	45	12
4143495	VDS403A11908	11,908	.4688	15/32	—	79	94	2,0	141	45	12
4143496	VDS403A12000	12,000	.4724	—	—	79	94	2,1	141	45	12
4143497	VDS403A12100	12,100	.4764	—	—	91	108	2,1	155	45	14
4143498	VDS403A12200	12,200	.4803	—	—	91	108	2,1	155	45	14
4143499	VDS403A12300	12,300	.4843	—	—	91	108	2,1	155	45	14
4143500	VDS403A12304	12,304	.4844	31/64	—	91	108	2,1	155	45	14
4143501	VDS403A12400	12,400	.4882	—	—	91	108	2,1	155	45	14
4143502	VDS403A12500	12,500	.4921	—	—	91	108	2,1	155	45	14
4143503	VDS403A12600	12,600	.4961	—	—	91	108	2,2	155	45	14
4143504	VDS403A12700	12,700	.5000	1/2	—	91	108	2,2	155	45	14
4143505	VDS403A12800	12,800	.5039	—	—	91	108	2,2	155	45	14
4143506	VDS403A12900	12,900	.5079	—	—	91	108	2,2	155	45	14
4143507	VDS403A13000	13,000	.5118	—	—	91	108	2,2	155	45	14
4143508	VDS403A13096	13,096	.5156	33/64	—	91	108	2,3	155	45	14
4143509	VDS403A13100	13,100	.5157	—	—	91	108	2,3	155	45	14
4143510	VDS403A13200	13,200	.5197	—	—	91	108	2,3	155	45	14
4143511	VDS403A13300	13,300	.5236	—	—	91	108	2,3	155	45	14
4143512	VDS403A13400	13,400	.5276	—	—	91	108	2,3	155	45	14
4143513	VDS403A13500	13,500	.5315	—	—	91	108	2,3	155	45	14
4143514	VDS403A13600	13,600	.5354	—	—	91	108	2,3	155	45	14
4143515	VDS403A13700	13,700	.5394	—	—	91	108	2,4	155	45	14
4143516	VDS403A13800	13,800	.5433	—	—	91	108	2,4	155	45	14

(continued)

Solid Carbide Drills

(VDS403A • 8 x D — continued)



● first choice
○ alternate choice

grade WU25PD TiAlN		D1 diameter				L4 max	L3	L5	L	LS	D
order #	catalog #	mm	in	fraction	wire size						
4143517	VDS403A13891	13,891	.5469	35/64	—	91	108	2,4	155	45	14
4143518	VDS403A13900	13,900	.5472	—	—	91	108	2,4	155	45	14
4143519	VDS403A14000	14,000	.5512	—	—	91	108	2,4	155	45	14
4143520	VDS403A14100	14,100	.5551	—	—	101	121	2,4	171	48	16
4143521	VDS403A14200	14,200	.5591	—	—	101	121	2,5	171	48	16
4143522	VDS403A14288	14,288	.5625	9/16	—	101	121	2,5	171	48	16
4143523	VDS403A14300	14,300	.5630	—	—	101	121	2,5	171	48	16
4143524	VDS403A14400	14,400	.5669	—	—	101	121	2,5	171	48	16
4143525	VDS403A14500	14,500	.5709	—	—	101	121	2,5	171	48	16
4143526	VDS403A14600	14,600	.5748	—	—	101	121	2,5	171	48	16
4143527	VDS403A14684	14,684	.5781	37/64	—	101	121	2,5	171	48	16
4143528	VDS403A14700	14,700	.5787	—	—	101	121	2,5	171	48	16
4143529	VDS403A14800	14,800	.5827	—	—	101	121	2,6	171	48	16
4143530	VDS403A14900	14,900	.5866	—	—	101	121	2,6	171	48	16
4143531	VDS403A15000	15,000	.5906	—	—	101	121	2,6	171	48	16
4143532	VDS403A15083	15,083	.5938	19/32	—	101	121	2,6	171	48	16
4143533	VDS403A15100	15,100	.5945	—	—	101	121	2,6	171	48	16
4143534	VDS403A15200	15,200	.5984	—	—	101	121	2,6	171	48	16
4143535	VDS403A15300	15,300	.6024	—	—	101	121	2,6	171	48	16
4143536	VDS403A15400	15,400	.6063	—	—	101	121	2,7	171	48	16
4143537	VDS403A15479	15,479	.6094	39/64	—	101	121	2,7	171	48	16
4143538	VDS403A15500	15,500	.6102	—	—	101	121	2,7	171	48	16
4143539	VDS403A15600	15,600	.6142	—	—	101	121	2,7	171	48	16
4143540	VDS403A15700	15,700	.6181	—	—	101	121	2,7	171	48	16
4143541	VDS403A15800	15,800	.6220	—	—	101	121	2,7	171	48	16
4143542	VDS403A15875	15,875	.6250	5/8	—	101	121	2,7	171	48	16
4143543	VDS403A15900	15,900	.6260	—	—	101	121	2,8	171	48	16
4143544	VDS403A16000	16,000	.6299	—	—	101	121	2,8	171	48	16
4143545	VDS403A16100	16,100	.6339	—	—	113	135	2,8	185	48	18
4143546	VDS403A16200	16,200	.6378	—	—	113	135	2,8	185	48	18
4143547	VDS403A16271	16,271	.6406	41/64	—	113	135	2,8	185	48	18
4143548	VDS403A16300	16,300	.6417	—	—	113	135	2,8	185	48	18
4143549	VDS403A16400	16,400	.6457	—	—	113	135	2,8	185	48	18
4143550	VDS403A16500	16,500	.6496	—	—	113	135	2,9	185	48	18
4143551	VDS403A16600	16,600	.6535	—	—	113	135	2,9	185	48	18
4143552	VDS403A16670	16,670	.6563	21/32	—	113	135	2,9	185	48	18
4143553	VDS403A16700	16,700	.6575	—	—	113	135	2,9	185	48	18
4143554	VDS403A16800	16,800	.6614	—	—	113	135	2,9	185	48	18
4143555	VDS403A16900	16,900	.6654	—	—	113	135	2,9	185	48	18
4143556	VDS403A17000	17,000	.6693	—	—	113	135	2,9	185	48	18

(continued)

(VDS403A • 8 x D – continued)



● first choice
○ alternate choice

grade WU25PD TiAlN		D1 diameter				L4 max	L3	L5	L	LS	D
order #	catalog #	mm	in	fraction	wire size						
4143557	VDS403A17100	17,100	.6732	—	—	113	135	3,0	185	48	18
4143558	VDS403A17200	17,200	.6772	—	—	113	135	3,0	185	48	18
4143559	VDS403A17300	17,300	.6811	—	—	113	135	3,0	185	48	18
4143560	VDS403A17400	17,400	.6850	—	—	113	135	3,0	185	48	18
4143561	VDS403A17463	17,463	.6875	11/16	—	113	135	3,0	185	48	18
4143562	VDS403A17500	17,500	.6890	—	—	113	135	3,0	185	48	18
4143563	VDS403A17600	17,600	.6929	—	—	113	135	3,1	185	48	18
4143564	VDS403A17700	17,700	.6969	—	—	113	135	3,1	185	48	18
4143565	VDS403A17800	17,800	.7008	—	—	113	135	3,1	185	48	18
4143566	VDS403A17859	17,859	.7031	45/64	—	113	135	3,1	185	48	18
4143567	VDS403A17900	17,900	.7047	—	—	113	135	3,1	185	48	18
4144209	VDS403A18000	18,000	.7087	—	—	113	135	3,1	185	48	18
4144211	VDS403A18100	18,100	.7126	—	—	124	148	3,1	200	50	20
4144212	VDS403A18200	18,200	.7165	—	—	124	148	3,2	200	50	20
4144244	VDS403A18258	18,258	.7188	23/32	—	124	148	3,2	200	50	20
4144246	VDS403A18300	18,300	.7205	—	—	124	148	3,2	200	50	20
4144248	VDS403A18400	18,400	.7244	—	—	124	148	3,2	200	50	20
4144250	VDS403A18500	18,500	.7283	—	—	124	148	3,2	200	50	20
4144252	VDS403A18600	18,600	.7323	—	—	124	148	3,2	200	50	20
4144254	VDS403A18654	18,654	.7344	47/64	—	124	148	3,2	200	50	20
4144256	VDS403A18700	18,700	.7362	—	—	124	148	3,2	200	50	20
4144258	VDS403A18800	18,800	.7402	—	—	124	148	3,3	200	50	20
4144260	VDS403A18900	18,900	.7441	—	—	124	148	3,3	200	50	20
4144262	VDS403A19000	19,000	.7480	—	—	124	148	3,3	200	50	20
4144275	VDS403A19050	19,050	.7500	3/4	—	124	148	3,3	200	50	20
4144277	VDS403A19100	19,100	.7520	—	—	124	148	3,3	200	50	20
4144279	VDS403A19200	19,200	.7559	—	—	124	148	3,3	200	50	20
4144281	VDS403A19300	19,300	.7598	—	—	124	148	3,4	200	50	20
4144283	VDS403A19400	19,400	.7638	—	—	124	148	3,4	200	50	20
4144285	VDS403A19500	19,500	.7677	—	—	124	148	3,4	200	50	20
4144287	VDS403A19600	19,600	.7717	—	—	124	148	3,4	200	50	20
4144289	VDS403A19700	19,700	.7756	—	—	124	148	3,4	200	50	20
4144291	VDS403A19800	19,800	.7795	—	—	124	148	3,4	200	50	20
4144303	VDS403A19900	19,900	.7835	—	—	124	148	3,5	200	50	20
4144305	VDS403A20000	20,000	.7874	—	—	124	148	3,5	200	50	20

Solid Carbide Drills

VariDrill • VDS2_Series • WU25PD™ • Flood Coolant • Inch

Material Group		Cutting Speed – vc Range – SFM	Tool Diameter (inch)	Recommended Feed Rate (f) by Diameter									
				.0469– 3/64	.0781– 5/64	.125– 1/8	.188– 3/16	.250– 1/4	.313– 5/16	.375– 3/8	.500– 1/2	.625– 5/8	.750– 3/4
				min	-	max							
P	1	200 – 330	IPR	.002– .004	.002– .005	.003– .006	.003– .006	.004– .009	.005– .010	.006– .012	.007– .014	.009– .017	.011– .021
	2, 3, 4, 6, 7	160 – 300	IPR	.002– .004	.002– .005	.003– .006	.004– .007	.005– .009	.006– .011	.007– .013	.009– .015	.010– .018	.013– .023
	5, 9, 10, 11	160 – 330	IPR	.002– .004	.002– .005	.003– .006	.003– .007	.005– .009	.006– .011	.007– .013	.007– .015	.009– .018	.011– .023
	12, 13	100 – 200	IPR	.001– .002	.001– .002	.002– .003	.002– .004	.003– .006	.004– .007	.005– .009	.005– .010	.007– .012	.009– .016
M	14.1	100 – 160	IPR	.001– .002	.001– .002	.002– .003	.002– .004	.003– .004	.004– .005	.004– .006	.005– .006	.006– .007	.006– .008
	14.3	130 – 200	IPR	.001– .002	.001– .003	.002– .003	.002– .004	.003– .005	.004– .006	.004– .006	.005– .007	.006– .008	.006– .009
	14.2, 14.4	100 – 160	IPR	.001– .002	.001– .002	.002– .003	.002– .004	.003– .004	.004– .005	.004– .006	.005– .006	.006– .007	.006– .008
K	15, 16	230 – 490	IPR	.003– .005	.003– .005	.003– .007	.004– .008	.005– .010	.006– .012	.007– .014	.008– .015	.010– .019	.012– .023
	17, 18, 19	300 – 390	IPR	.003– .004	.003– .005	.004– .005	.004– .006	.005– .008	.006– .010	.007– .011	.008– .013	.010– .015	.012– .019
	20	260 – 390	IPR	.002– .004	.002– .005	.003– .005	.003– .006	.004– .008	.004– .009	.005– .011	.006– .013	.008– .015	.009– .019
N	21	300 – 890	IPR	.002– .005	.003– .005	.003– .006	.004– .006	.005– .008	.006– .009	.008– .011	.009– .013	.011– .016	.013– .019
	22, 23, 24	300 – 890	IPR	.002– .003	.003– .005	.003– .006	.004– .008	.005– .009	.006– .011	.008– .013	.009– .014	.011– .017	.013– .020
	25	300 – 740	IPR	.004– .005	.004– .005	.005– .006	.005– .006	.006– .008	.006– .009	.008– .011	.009– .013	.011– .016	.013– .017
	26, 27, 28	300 – 890	IPR	.002– .003	.003– .005	.003– .006	.004– .008	.005– .009	.006– .011	.008– .013	.009– .014	.011– .016	.013– .019
S	31, 32	70 – 100	IPR	.001– .002	.001– .002	.001– .002	.002– .003	.002– .004	.003– .005	.004– .005	.004– .006	.005– .006	.006– .007
	33, 34, 35	30 – 100	IPR	.001	.001	.001– .002	.001– .002	.002– .003	.003– .004	.003– .004	.004– .005	.004– .006	.004– .006
	36	70 – 130	IPR	.001	.001	.001– .002	.001– .002	.002– .003	.002– .004	.003– .004	.003– .004	.004– .005	.004– .006
	37	70 – 160	IPR	.001	.001	.001– .002	.001– .002	.002– .003	.003– .004	.003– .004	.004– .005	.004– .006	.004– .006

**Inch
tolerance**

nominal size range	D1 tolerance	D tolerance h6
.0394–.1181	.0000/-0.0006 (h8)	.0000/-0.0002
>.1181–.2362	.0000/-0.0005 (h7)	.0000/-0.0003
>.2362–.3937	.0000/-0.0006 (h7)	.0000/-0.0004
>.3937–.7087	.0000/-0.0007 (h7)	.0000/-0.0004
>.7087–.7874	.0000/-0.0008 (h7)	.0000/-0.0005

■ VariDrill • VDS4_Series • WU25PD™ • Through Coolant • Inch



Material Group		Cutting Speed – vc Range – SFM		Recommended Feed Rate (f) by Diameter										
		min – max		Tool Diameter (inch)	.0469– 3/64	.0781– 5/64	.125– 1/8	.188– 3/16	.250– 1/4	.313– 5/16	.375– 3/8	.500– 1/2	.625– 5/8	.750– 3/4
P	1	230	– 460	IPR	.002– .004	.002– .005	.003– .006	.003– .006	.004– .009	.005– .010	.006– .012	.007– .014	.009– .017	.011– .021
	2, 3, 4, 6, 7	200	– 330	IPR	.002– .004	.002– .005	.003– .006	.004– .007	.005– .009	.006– .011	.007– .013	.009– .015	.010– .018	.013– .023
	5, 9, 10, 11	160	– 330	IPR	.002– .004	.002– .005	.003– .006	.003– .007	.005– .009	.006– .011	.007– .013	.007– .015	.009– .018	.011– .023
	12, 13	130	– 230	IPR	.001– .002	.001– .002	.002– .003	.002– .004	.003– .006	.004– .007	.005– .009	.005– .010	.007– .012	.009– .016
M	14.1	100	– 160	IPR	.001– .002	.001– .002	.002– .003	.002– .004	.003– .004	.004– .005	.004– .006	.005– .006	.006– .007	.006– .008
	14.3	130	– 200	IPR	.001– .002	.001– .003	.002– .003	.002– .004	.003– .005	.004– .006	.004– .006	.005– .007	.006– .008	.006– .009
	14.2, 14.4	100	– 160	IPR	.001– .002	.001– .002	.002– .003	.002– .004	.003– .004	.004– .005	.004– .006	.005– .006	.006– .007	.006– .008
K	15, 16	260	– 520	IPR	.003– .006	.003– .006	.004– .008	.004– .009	.006– .011	.007– .013	.008– .016	.009– .017	.011– .021	.013– .026
	17, 18, 19	290	– 460	IPR	.004– .005	.004– .005	.004– .006	.005– .007	.006– .009	.007– .011	.008– .013	.009– .014	.011– .017	.013– .021
	20	260	– 430	IPR	.002– .005	.002– .005	.003– .006	.003– .007	.004– .009	.005– .011	.006– .012	.007– .014	.009– .017	.011– .021
N	21	290	– 1030	IPR	.002– .005	.003– .005	.003– .006	.004– .006	.005– .008	.006– .009	.008– .011	.009– .013	.011– .016	.013– .019
	22, 23, 24	290	– 890	IPR	.002– .003	.003– .005	.003– .006	.004– .008	.005– .009	.006– .011	.008– .013	.009– .014	.011– .017	.013– .020
	25	290	– 890	IPR	.004– .005	.004– .005	.005– .006	.005– .006	.006– .008	.006– .009	.008– .011	.009– .013	.011– .016	.013– .017
	26, 27, 28	290	– 890	IPR	.002– .003	.003– .005	.003– .006	.004– .008	.005– .009	.006– .011	.008– .013	.009– .014	.011– .016	.013– .019
S	31, 32	70	– 100	IPR	.001– .002	.001– .002	.001– .002	.002– .003	.002– .004	.003– .005	.004– .005	.004– .006	.005– .006	.006– .007
	33, 34, 35	30	– 100	IPR	.001	.001	.001– .002	.001– .002	.002– .003	.003– .004	.003– .004	.004– .005	.004– .006	.004– .006
	36	30	– 130	IPR	.001	.001	.001– .002	.001– .002	.002– .003	.002– .004	.003– .004	.003– .004	.004– .005	.004– .006
	37	30	– 130	IPR	.001	.001	.001– .002	.001– .002	.002– .003	.003– .004	.003– .004	.004– .005	.004– .006	.004– .006

Solid Carbide Drills

Inch
tolerance

nominal size range	D1 tolerance	D tolerance h6
.0394–.1181	.0000/-.0006 (h8)	.0000/-.0002
>.1181–.2362	.0000/-.0005 (h7)	.0000/-.0003
>.2362–.3937	.0000/-.0006 (h7)	.0000/-.0004
>.3937–.7087	.0000/-.0007 (h7)	.0000/-.0004
>.7087–.7874	.0000/-.0008 (h7)	.0000/-.0005

■ VariDrill • VDS2_Series • WU25PD™ • Flood Coolant • Metric

Material Group		Cutting Speed – vc Range – m/min	 	Recommended Feed Rate (f) by Diameter										
				Tool Diameter (mm)	1,0	2,0	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
					min - max	mm/r	mm/r	mm/r	mm/r	mm/r	mm/r	mm/r	mm/r	mm/r
P	1	60 - 100	mm/r	0,04-0,09	0,05-0,12	0,07-0,14	0,08-0,16	0,11-0,22	0,13-0,26	0,15-0,31	0,18-0,35	0,22-0,42	0,28-0,54	
	2, 3, 4, 6, 7	50 - 90	mm/r	0,05-0,10	0,06-0,13	0,08-0,15	0,09-0,17	0,13-0,23	0,15-0,28	0,19-0,33	0,22-0,38	0,26-0,47	0,34-0,59	
	5, 9, 10, 11	50 - 100	mm/r	0,05-0,10	0,06-0,13	0,07-0,15	0,08-0,17	0,12-0,23	0,14-0,28	0,17-0,33	0,19-0,38	0,23-0,47	0,29-0,59	
	12, 13	30 - 60	mm/r	0,03-0,05	0,04-0,06	0,05-0,08	0,06-0,10	0,08-0,14	0,10-0,18	0,13-0,22	0,14-0,24	0,18-0,32	0,23-0,41	
M	14.1	30 - 50	mm/r	0,02-0,05	0,03-0,06	0,04-0,07	0,05-0,09	0,08-0,11	0,09-0,12	0,10-0,14	0,12-0,16	0,14-0,18	0,16-0,20	
	14.3	40 - 60	mm/r	0,02-0,06	0,03-0,07	0,04-0,08	0,06-0,10	0,08-0,12	0,09-0,14	0,10-0,16	0,12-0,18	0,14-0,20	0,16-0,22	
	14.2, 14.4	30 - 50	mm/r	0,02-0,05	0,03-0,06	0,04-0,07	0,06-0,09	0,08-0,11	0,09-0,12	0,10-0,14	0,12-0,16	0,14-0,18	0,16-0,20	
K	15, 16	70 - 150	mm/r	0,06-0,13	0,07-0,14	0,09-0,18	0,10-0,19	0,13-0,25	0,16-0,30	0,18-0,35	0,20-0,39	0,25-0,48	0,30-0,59	
	17, 18, 19	90 - 120	mm/r	0,08-0,11	0,09-0,12	0,10-0,13	0,10-0,15	0,13-0,20	0,16-0,25	0,18-0,29	0,20-0,32	0,25-0,38	0,30-0,48	
	20	80 - 120	mm/r	0,04-0,10	0,06-0,12	0,06-0,14	0,07-0,15	0,10-0,20	0,11-0,24	0,14-0,28	0,15-0,32	0,19-0,38	0,24-0,48	
N	21	90 - 270	mm/r	0,05-0,12	0,06-0,13	0,08-0,14	0,10-0,16	0,12-0,20	0,16-0,24	0,20-0,28	0,24-0,32	0,28-0,40	0,32-0,48	
	22, 23, 24	90 - 270	mm/r	0,04-0,08	0,06-0,12	0,08-0,16	0,10-0,20	0,12-0,24	0,16-0,28	0,20-0,32	0,24-0,36	0,28-0,44	0,32-0,52	
	25	90 - 225	mm/r	0,10-0,13	0,11-0,14	0,12-0,14	0,13-0,16	0,14-0,20	0,16-0,24	0,20-0,28	0,24-0,32	0,28-0,40	0,32-0,44	
	26, 27, 28	90 - 270	mm/r	0,04-0,08	0,06-0,12	0,08-0,16	0,10-0,20	0,12-0,24	0,16-0,28	0,20-0,32	0,24-0,36	0,28-0,40	0,32-0,48	
S	31, 32	20 - 30	mm/r	0,01-0,04	0,02-0,05	0,03-0,06	0,04-0,08	0,06-0,10	0,08-0,12	0,09-0,13	0,10-0,14	0,12-0,16	0,14-0,18	
	33, 34, 35	10 - 30	mm/r	0,01-0,03	0,02-0,03	0,02-0,04	0,03-0,06	0,05-0,08	0,07-0,10	0,08-0,11	0,09-0,12	0,10-0,14	0,11-0,16	
	36	20 - 40	mm/r	0,01-0,03	0,02-0,03	0,02-0,04	0,02-0,05	0,04-0,07	0,06-0,09	0,07-0,10	0,08-0,11	0,09-0,13	0,10-0,15	
	37	20 - 50	mm/r	0,01-0,03	0,02-0,03	0,02-0,04	0,03-0,06	0,05-0,08	0,07-0,10	0,08-0,11	0,09-0,12	0,10-0,14	0,11-0,16	

Solid Carbide Drills

Metric tolerance

nominal size range	D1 tolerance	D tolerance h6
1-3	0,000/-0,014 (h8)	0,000/-0,006
>3-6	0,000/-0,012 (h7)	0,000/-0,008
>6-10	0,000/-0,015 (h7)	0,000/-0,009
>10-18	0,000/-0,018 (h7)	0,000/-0,011
>18-20	0,000/-0,021 (h7)	0,000/-0,013

■ VariDrill • VDS4_Series • WU25PD™ • Through Coolant • Metric

Material Group		Cutting Speed – vc Range – m/min	Tool Diameter (mm)	Recommended Feed Rate (f) by Diameter									
				1,0	2,0	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
				min	-	max							
P	1	70 – 140	mm/r	0,04–0,09	0,05–0,12	0,07–0,14	0,08–0,16	0,11–0,22	0,13–0,26	0,15–0,31	0,18–0,35	0,22–0,42	0,28–0,54
	2, 3, 4, 6, 7	60 – 100	mm/r	0,05–0,10	0,06–0,13	0,08–0,15	0,09–0,17	0,13–0,23	0,15–0,28	0,19–0,33	0,22–0,38	0,26–0,47	0,34–0,59
	5, 9, 10, 11	50 – 100	mm/r	0,05–0,10	0,06–0,13	0,07–0,15	0,08–0,17	0,12–0,23	0,14–0,28	0,17–0,33	0,19–0,38	0,23–0,47	0,29–0,59
	12, 13	40 – 70	mm/r	0,03–0,05	0,04–0,06	0,05–0,08	0,06–0,10	0,08–0,14	0,10–0,18	0,13–0,22	0,14–0,24	0,18–0,32	0,23–0,41
M	14.1	30 – 50	mm/r	0,02–0,05	0,03–0,06	0,04–0,07	0,05–0,09	0,08–0,11	0,09–0,12	0,10–0,14	0,12–0,16	0,14–0,18	0,16–0,20
	14.3	40 – 60	mm/r	0,02–0,06	0,03–0,07	0,04–0,08	0,06–0,10	0,08–0,12	0,09–0,14	0,10–0,16	0,12–0,18	0,14–0,20	0,16–0,22
	14.2, 14.4	30 – 50	mm/r	0,02–0,05	0,03–0,06	0,04–0,07	0,06–0,09	0,08–0,11	0,09–0,12	0,10–0,14	0,12–0,16	0,14–0,18	0,16–0,20
K	15, 16	80 – 160	mm/r	0,07–0,14	0,08–0,15	0,10–0,20	0,11–0,22	0,14–0,28	0,18–0,34	0,21–0,40	0,23–0,44	0,28–0,54	0,34–0,67
	17, 18, 19	90 – 140	mm/r	0,09–0,13	0,10–0,14	0,11–0,14	0,12–0,17	0,14–0,23	0,18–0,28	0,21–0,32	0,23–0,36	0,28–0,43	0,34–0,54
	20	80 – 130	mm/r	0,05–0,12	0,06–0,14	0,07–0,15	0,08–0,17	0,11–0,23	0,13–0,27	0,15–0,32	0,17–0,36	0,22–0,43	0,27–0,54
N	21	90 – 315	mm/r	0,05–0,12	0,06–0,13	0,08–0,14	0,10–0,16	0,12–0,20	0,16–0,24	0,20–0,28	0,24–0,32	0,28–0,40	0,32–0,48
	22, 23, 24	90 – 270	mm/r	0,04–0,08	0,06–0,12	0,08–0,16	0,10–0,20	0,12–0,24	0,16–0,28	0,20–0,32	0,24–0,36	0,28–0,44	0,32–0,52
	25	90 – 270	mm/r	0,10–0,13	0,11–0,14	0,12–0,14	0,13–0,16	0,14–0,20	0,16–0,24	0,20–0,28	0,24–0,32	0,28–0,40	0,32–0,44
	26, 27, 28	90 – 270	mm/r	0,04–0,08	0,06–0,12	0,08–0,16	0,10–0,20	0,12–0,24	0,16–0,28	0,20–0,32	0,24–0,36	0,28–0,40	0,32–0,48
S	31, 32	20 – 30	mm/r	0,01–0,04	0,02–0,05	0,03–0,06	0,04–0,08	0,06–0,10	0,08–0,12	0,09–0,13	0,10–0,14	0,12–0,16	0,14–0,18
	33, 34, 35	10 – 30	mm/r	0,01–0,03	0,02–0,03	0,02–0,04	0,03–0,06	0,05–0,08	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,14	0,11–0,16
	36	10 – 40	mm/r	0,01–0,03	0,02–0,03	0,02–0,04	0,02–0,05	0,04–0,07	0,06–0,09	0,07–0,10	0,08–0,11	0,09–0,13	0,10–0,15
	37	10 – 40	mm/r	0,01–0,03	0,02–0,03	0,02–0,04	0,03–0,06	0,05–0,08	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,14	0,11–0,16

Solid Carbide Drills

nominal size range	Metric tolerance	
	D1 tolerance	D tolerance h6
1–3	0,000/-0,014 (h8)	0,000/-0,006
>3–6	0,000/-0,012 (h7)	0,000/-0,008
>6–10	0,000/-0,015 (h7)	0,000/-0,009
>10–18	0,000/-0,018 (h7)	0,000/-0,011
>18–20	0,000/-0,021 (h7)	0,000/-0,013



EXTREME CHALLENGES. EXTREME RESULTS.

TDF Drills for Flat-Bottom Applications (Available as Semi-Standards)

Primary Application

Engineered specifically to eliminate the need for a two-part operation when drilling flat-bottom holes or on an inclined surface:

- Drill flat-bottom holes in one step.
- Eliminate the need to use both an end mill and a drill to machine a flat on an inclined surface.
- After full cylindrical engagement, the drills run at normal solid carbide drilling parameters.

Features and Benefits

- Four-Margin Design
 - Increases contact with material at full diameter.
 - Improves hold quality and drill stability in the cut.
 - Enables interrupted cuts and inclined exits.
- Special Point-Thinning
 - Increases centering capability.
 - Improves chip formation and flow.
 - Reduces cutting forces.

Product Portfolio

- The Flat-Bottom Drill product series TDF51* is pre-designed in four lengths and available in two grades, WN15HD for non-ferrous materials, and WU20PD™ for steel, iron, and stainless steel.
 - TDF510* 1,5 x D
 - TDF511* 3 x D
 - TDF512* 5 x D
 - TDF513* 8 x D
- Length variations and step drills available as engineered solutions.

Ordering Process

- Please contact your local Authorized Distributor for a quote.

Application-Specific Drilling •

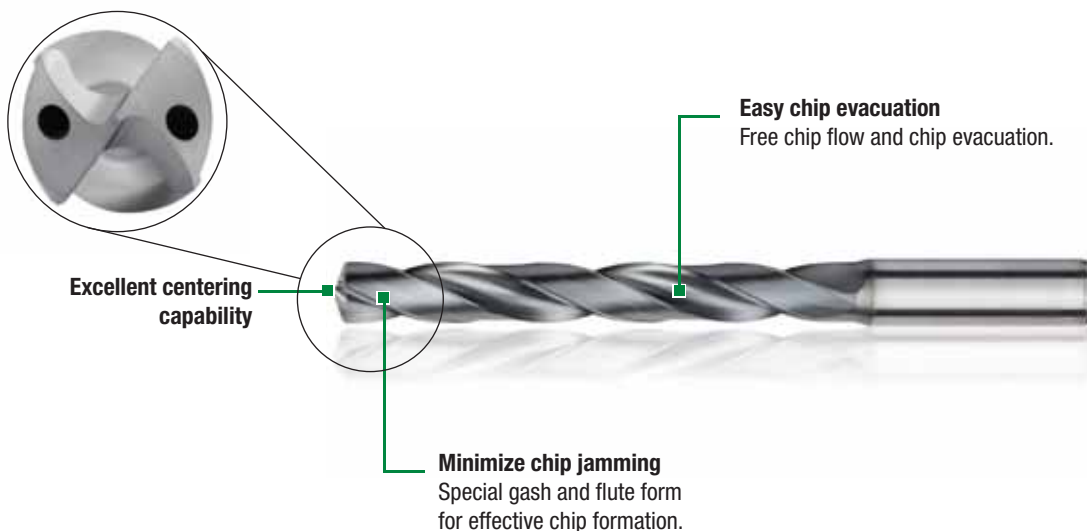
WIDIA™ TOP DRILL S™ for Steel and Cast Iron

TOP DRILL S



TOP DRILL S is the WIDIA line of solid carbide drills engineered to provide maximum performance and superior finish for application-specific tasks. Available in two material applications, TDS for steel and cast iron are each specially designed and coated to maximize output and increase tool life — offering less cost-per-hole and greater productivity.

- Designed for maximum productivity and longer tool life for steel and cast iron.
- Easy to choose and apply.
- One of the broadest ranges on the market for diameter selection, length series, and coolant options.
- Highest metal removal rates possible without sacrificing tool life.
- Latest Victory™ grades from WIDIA.



TOP DRILL S™ for Steel

TOP DRILL S for steel is a high-performance solid carbide drill with an application-specific design. Although the point geometry is strong enough to drill stainless steel and cast iron, it is engineered to maximize performance when drilling steel. The WP20PD™ grade, designed to resist high heat and wear, is the latest in WIDIA™ technology. The two-margin design facilitates excellent hole quality and less friction when drilling steel at high speeds.

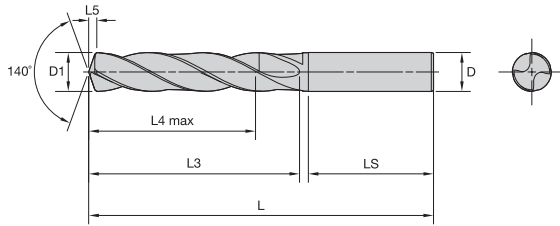
TOP DRILL S for Cast Iron

TOP DRILL S for cast iron is designed with application-specific point geometry for maximum performance in cast iron materials. The point features corner chamfers that minimize breakout on exit holes. A four-margin design improves hole straightness, increasing tool life and extending cross-hole and inclined exit capabilities when drilling tough cast iron. The technologically advanced WK15PD™ grade is specially engineered to withstand high wear.

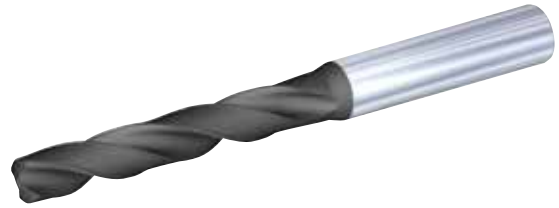
WIDIA Advantage

- Application-specific geometry with the latest WIDIA grade technology.
- Lower cost-per-hole due to high MRR and long tool life.
- Consistent performance from internally controlled supply chain:
Powder > Rod > Grinding > Coating
- Part of the complete WIDIA holemaking solution.
- Broad range of standard lengths, diameters, and coolant options in one line, including extensive intermediate metric, inch, fraction, and wire sizes.





For information on L, L3, and L4 max, see page R133.



■ TDS202A • TDS212A • 5 x D



● first choice
○ alternate choice

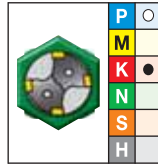
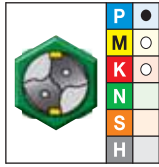
D1 diameter

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter				L	L3	L4 max	L5	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4162258	TDS202A03000	4162417	TDS212A03000	3,000	.1181	—	—	66	28	23	0,5	36	6
4162259	TDS202A03048	4162418	TDS212A03048	3,048	.1200	—	31	66	28	23	0,5	36	6
4162260	TDS202A03100	4162419	TDS212A03100	3,100	.1220	—	—	66	28	23	0,5	36	6
4162261	TDS202A03175	4162420	TDS212A03175	3,175	.1250	1/8	—	66	28	23	0,5	36	6
4162262	TDS202A03200	4162421	TDS212A03200	3,200	.1260	—	—	66	28	23	0,5	36	6
4162283	TDS202A03264	4162422	TDS212A03264	3,264	.1285	—	30	66	28	23	0,5	36	6
4162284	TDS202A03300	4162543	TDS212A03300	3,300	.1299	—	—	66	28	23	0,5	36	6
4162285	TDS202A03400	4162544	TDS212A03400	3,400	.1339	—	—	66	28	23	0,6	36	6
4162286	TDS202A03455	4162545	TDS212A03455	3,455	.1360	—	29	66	28	23	0,6	36	6
4162287	TDS202A03500	4162546	TDS212A03500	3,500	.1378	—	—	66	28	23	0,6	36	6
4162288	TDS202A03571	4162547	TDS212A03571	3,571	.1406	9/64	—	66	28	23	0,6	36	6
4162289	TDS202A03600	4162548	TDS212A03600	3,600	.1417	—	—	66	28	23	0,6	36	6
4162290	TDS202A03658	4162549	TDS212A03658	3,658	.1440	—	27	66	28	23	0,6	36	6
4162291	TDS202A03700	4162550	TDS212A03700	3,700	.1457	—	—	66	28	23	0,6	36	6
4162292	TDS202A03734	4162551	TDS212A03734	3,734	.1470	—	26	66	28	23	0,6	36	6
4162293	TDS202A03800	4162552	TDS212A03800	3,800	.1496	—	—	74	36	29	0,6	36	6
4162294	TDS202A03900	4162553	TDS212A03900	3,900	.1535	—	—	74	36	29	0,6	36	6
4162295	TDS202A03970	4162554	TDS212A03970	3,970	.1563	5/32	—	74	36	29	0,7	36	6
4162296	TDS202A04000	4162555	TDS212A04000	4,000	.1575	—	—	74	36	29	0,7	36	6
4162297	TDS202A04039	4162556	TDS212A04039	4,039	.1590	—	21	74	36	29	0,7	36	6
4162298	TDS202A04090	4162557	TDS212A04090	4,090	.1610	—	20	74	36	29	0,7	36	6
4162299	TDS202A04100	4162558	TDS212A04100	4,100	.1614	—	—	74	36	29	0,7	36	6
4162300	TDS202A04200	4162559	TDS212A04200	4,200	.1654	—	—	74	36	29	0,7	36	6
4162301	TDS202A04217	4162560	TDS212A04217	4,217	.1660	—	19	74	36	29	0,7	36	6

(continued)

Solid Carbide Drills

(TDS202A • TDS212A • 5 x D – continued)



● first choice
○ alternate choice

D1 diameter

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter									
order #	catalog #	order #	catalog #	mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D
4162302	TDS202A04300	4162561	TDS212A04300	4,300	.1693	—	—	74	36	29	0,7	36	6
4162303	TDS202A04366	4162562	TDS212A04366	4,366	.1719	11/64	—	74	36	29	0,7	36	6
4162304	TDS202A04400	4162563	TDS212A04400	4,400	.1732	—	—	74	36	29	0,7	36	6
4162305	TDS202A04500	4162564	TDS212A04500	4,500	.1772	—	—	74	36	29	0,7	36	6
4162306	TDS202A04600	4162565	TDS212A04600	4,600	.1811	—	—	74	36	29	0,8	36	6
4162307	TDS202A04623	4162566	TDS212A04623	4,623	.1820	—	14	74	36	29	0,8	36	6
4162308	TDS202A04700	4162567	TDS212A04700	4,700	.1850	—	13	74	36	29	0,8	36	6
4162309	TDS202A04763	4162568	TDS212A04763	4,763	.1875	3/16	—	82	44	35	0,8	36	6
4162310	TDS202A04800	4162569	TDS212A04800	4,800	.1890	—	12	82	44	35	0,8	36	6
4162311	TDS202A04852	4162570	TDS212A04852	4,852	.1910	—	11	82	44	35	0,8	36	6
4162312	TDS202A04900	4162571	TDS212A04900	4,900	.1929	—	—	82	44	35	0,8	36	6
4162313	TDS202A05000	4162572	TDS212A05000	5,000	.1969	—	—	82	44	35	0,8	36	6
4162314	TDS202A05100	4162573	TDS212A05100	5,100	.2008	—	—	82	44	35	0,8	36	6
4162315	TDS202A05106	4162574	TDS212A05106	5,106	.2010	—	7	82	44	35	0,8	36	6
4162316	TDS202A05159	4162575	TDS212A05159	5,159	.2031	13/64	—	82	44	35	0,9	36	6
4162317	TDS202A05200	4162576	TDS212A05200	5,200	.2047	—	—	82	44	35	0,9	36	6
4162318	TDS202A05300	4162577	TDS212A05300	5,300	.2087	—	—	82	44	35	0,9	36	6
4162319	TDS202A05400	4162578	TDS212A05400	5,400	.2126	—	—	82	44	35	0,9	36	6
4162320	TDS202A05410	4162579	TDS212A05410	5,410	.2130	—	3	82	44	35	0,9	36	6
4162321	TDS202A05500	4162580	TDS212A05500	5,500	.2165	—	—	82	44	35	0,9	36	6
4162322	TDS202A05558	4162581	TDS212A05558	5,558	.2188	7/32	—	82	44	35	0,9	36	6
4162323	TDS202A05600	4162582	TDS212A05600	5,600	.2205	—	—	82	44	35	0,9	36	6
4162324	TDS202A05616	4162583	TDS212A05616	5,616	.2211	—	2	82	44	35	0,9	36	6
4162325	TDS202A05700	4162584	TDS212A05700	5,700	.2244	—	—	82	44	35	1,0	36	6
4162326	TDS202A05800	4162585	TDS212A05800	5,800	.2283	—	—	82	44	35	1,0	36	6
4162327	TDS202A05900	4162586	TDS212A05900	5,900	.2323	—	—	82	44	35	1,0	36	6
4162328	TDS202A05954	4162587	TDS212A05954	5,954	.2344	15/64	—	82	44	35	1,0	36	6
4162329	TDS202A06000	4162588	TDS212A06000	6,000	.2362	—	—	82	44	35	1,0	36	6
4162330	TDS202A06100	4162589	TDS212A06100	6,100	.2402	—	—	91	53	43	1,0	36	8
4162331	TDS202A06200	4162590	TDS212A06200	6,200	.2441	—	—	91	53	43	1,0	36	8
4162332	TDS202A06300	4162591	TDS212A06300	6,300	.2480	—	—	91	53	43	1,1	36	8
4162333	TDS202A06350	4162592	TDS212A06350	6,350	.2500	1/4	—	91	53	43	1,1	36	8
4162334	TDS202A06400	4162593	TDS212A06400	6,400	.2520	—	—	91	53	43	1,1	36	8
4162335	TDS202A06500	4162594	TDS212A06500	6,500	.2559	—	—	91	53	43	1,1	36	8
4162336	TDS202A06528	4162595	TDS212A06528	6,528	.2570	—	—	91	53	43	1,1	36	8
4162337	TDS202A06600	4162596	TDS212A06600	6,600	.2598	—	—	91	53	43	1,1	36	8
4162338	TDS202A06630	4162597	TDS212A06630	6,630	.2610	—	—	91	53	43	1,1	36	8
4162339	TDS202A06700	4162598	TDS212A06700	6,700	.2638	—	—	91	53	43	1,1	36	8
4162340	TDS202A06746	4162599	TDS212A06746	6,746	.2656	17/64	—	91	53	43	1,1	36	8
4148908	TDS202A06800	4148983	TDS212A06800	6,800	.2677	—	—	91	53	43	1,1	36	8

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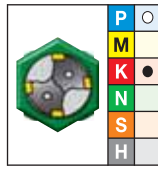
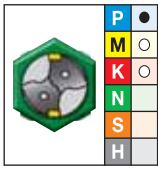
Solid Carbide Drills

Solid Carbide Drills

TOP DRILL S™ without Through Coolant • Steel and Cast Iron



(TDS202A • TDS212A • 5 x D — continued)



● first choice
○ alternate choice

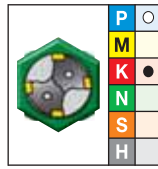
D1 diameter

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter				L	L3	L4 max	L5	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4162341	TDS202A06900	4162600	TDS212A06900	6,900	.2717	—	—	91	53	43	1,2	36	8
4162342	TDS202A07000	4162601	TDS212A07000	7,000	.2756	—	—	91	53	43	1,2	36	8
4162343	TDS202A07100	4162602	TDS212A07100	7,100	.2795	—	—	91	53	43	1,2	36	8
4162344	TDS202A07145	4162603	TDS212A07145	7,145	.2813	9/32	—	91	53	43	1,2	36	8
4162345	TDS202A07200	4162604	TDS212A07200	7,200	.2835	—	—	91	53	43	1,2	36	8
4162346	TDS202A07300	4162605	TDS212A07300	7,300	.2874	—	—	91	53	43	1,2	36	8
4162347	TDS202A07400	4162606	TDS212A07400	7,400	.2913	—	—	91	53	43	1,3	36	8
4162348	TDS202A07500	4162607	TDS212A07500	7,500	.2953	—	—	91	53	43	1,3	36	8
4162349	TDS202A07541	4162608	TDS212A07541	7,541	.2969	19/64	—	91	53	43	1,3	36	8
4162350	TDS202A07600	4162609	TDS212A07600	7,600	.2992	—	—	91	53	43	1,3	36	8
4162351	TDS202A07700	4162610	TDS212A07700	7,700	.3031	—	—	91	53	43	1,3	36	8
4162352	TDS202A07800	4162611	TDS212A07800	7,800	.3071	—	—	91	53	43	1,3	36	8
4162353	TDS202A07900	4162612	TDS212A07900	7,900	.3110	—	—	91	53	43	1,3	36	8
4162354	TDS202A07938	4162613	TDS212A07938	7,938	.3125	5/16	—	91	53	43	1,3	36	8
4162355	TDS202A08000	4162614	TDS212A08000	8,000	.3150	—	—	91	53	43	1,4	36	8
4162356	TDS202A08100	4162615	TDS212A08100	8,100	.3189	—	—	103	61	49	1,4	40	10
4162357	TDS202A08200	4162616	TDS212A08200	8,200	.3228	—	—	103	61	49	1,4	40	10
4162358	TDS202A08300	4162617	TDS212A08300	8,300	.3268	—	—	103	61	49	1,4	40	10
4162359	TDS202A08334	4162618	TDS212A08334	8,334	.3281	21/64	—	103	61	49	1,4	40	10
4162360	TDS202A08400	4162619	TDS212A08400	8,400	.3307	—	—	103	61	49	1,4	40	10
4162361	TDS202A08433	4162620	TDS212A08433	8,433	.3320	—	—	103	61	49	1,4	40	10
4162362	TDS202A08500	4162621	TDS212A08500	8,500	.3346	—	—	103	61	49	1,4	40	10
4162363	TDS202A08600	4162622	TDS212A08600	8,600	.3386	—	—	103	61	49	1,5	40	10
4162364	TDS202A08700	4162623	TDS212A08700	8,700	.3425	—	—	103	61	49	1,5	40	10
4162365	TDS202A08733	4162624	TDS212A08733	8,733	.3438	11/32	—	103	61	49	1,5	40	10
4162366	TDS202A08800	4162625	TDS212A08800	8,800	.3465	—	—	103	61	49	1,5	40	10
4162367	TDS202A08900	4162626	TDS212A08900	8,900	.3504	—	—	103	61	49	1,5	40	10
4162368	TDS202A09000	4162627	TDS212A09000	9,000	.3543	—	—	103	61	49	1,5	40	10
4162369	TDS202A09100	4162628	TDS212A09100	9,100	.3583	—	—	103	61	49	1,5	40	10
4162370	TDS202A09129	4162629	TDS212A09129	9,129	.3594	23/64	—	103	61	49	1,6	40	10
4162371	TDS202A09200	4162630	TDS212A09200	9,200	.3622	—	—	103	61	49	1,6	40	10
4162372	TDS202A09300	4162631	TDS212A09300	9,300	.3661	—	—	103	61	49	1,6	40	10
4162373	TDS202A09347	4162632	TDS212A09347	9,347	.3680	—	—	103	61	49	1,6	40	10
4162374	TDS202A09400	4162633	TDS212A09400	9,400	.3701	—	—	103	61	49	1,6	40	10
4162375	TDS202A09500	4162634	TDS212A09500	9,500	.3740	—	—	103	61	49	1,6	40	10
4162376	TDS202A09525	4162635	TDS212A09525	9,525	.3750	3/8	—	103	61	49	1,6	40	10
4162377	TDS202A09600	4162636	TDS212A09600	9,600	.3780	—	—	103	61	49	1,6	40	10
4162378	TDS202A09700	4162637	TDS212A09700	9,700	.3819	—	—	103	61	49	1,7	40	10
4162379	TDS202A09800	4162638	TDS212A09800	9,800	.3858	—	—	103	61	49	1,7	40	10
4162380	TDS202A09900	4162639	TDS212A09900	9,900	.3898	—	—	103	61	49	1,7	40	10

(continued)

Solid Carbide Drills

(TDS202A • TDS212A • 5 x D — continued)



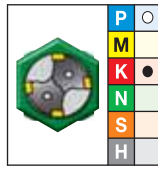
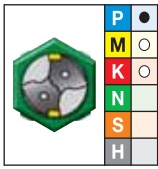
● first choice
○ alternate choice

D1 diameter

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter									
order #	catalog #	order #	catalog #	mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D
4162381	TDS202A09921	4162640	TDS212A09921	9,921	.3906	25/64	—	103	61	49	1,7	40	10
4167196	TDS202A10000	4162408	TDS212A10000	10,000	.3937	—	—	103	61	49	1,7	40	10
4167198	TDS202A10100	4162409	TDS212A10100	10,100	.3976	—	—	118	71	56	1,7	45	12
4167199	TDS202A10200	4162410	TDS212A10200	10,200	.4016	—	—	118	71	56	1,7	45	12
4167200	TDS202A10300	4162411	TDS212A10300	10,300	.4055	—	—	118	71	56	1,8	45	12
4167201	TDS202A10320	4162412	TDS212A10320	10,320	.4063	13/32	—	118	71	56	1,8	45	12
4167202	TDS202A10400	4162423	TDS212A10400	10,400	.4094	—	—	118	71	56	1,8	45	12
4167203	TDS202A10500	4162424	TDS212A10500	10,500	.4134	—	—	118	71	56	1,8	45	12
4167204	TDS202A10600	4162425	TDS212A10600	10,600	.4173	—	—	118	71	56	1,8	45	12
4167205	TDS202A10700	4162426	TDS212A10700	10,700	.4213	—	—	118	71	56	1,8	45	12
4167206	TDS202A10716	4162427	TDS212A10716	10,716	.4219	27/64	—	118	71	56	1,8	45	12
4167207	TDS202A10800	4162428	TDS212A10800	10,800	.4252	—	—	118	71	56	1,8	45	12
4167208	TDS202A10900	4162429	TDS212A10900	10,900	.4291	—	—	118	71	56	1,9	45	12
4167209	TDS202A11000	4162430	TDS212A11000	11,000	.4331	—	—	118	71	56	1,9	45	12
4167210	TDS202A11100	4162431	TDS212A11100	11,100	.4370	—	—	118	71	56	1,9	45	12
4167211	TDS202A11113	4162432	TDS212A11113	11,113	.4375	7/16	—	118	71	56	1,9	45	12
4167212	TDS202A11200	4162433	TDS212A11200	11,200	.4409	—	—	118	71	56	1,9	45	12
4167213	TDS202A11300	4162434	TDS212A11300	11,300	.4449	—	—	118	71	56	1,9	45	12
4167214	TDS202A11400	4162435	TDS212A11400	11,400	.4488	—	—	118	71	56	2,0	45	12
4167215	TDS202A11500	4162436	TDS212A11500	11,500	.4528	—	—	118	71	56	2,0	45	12
4167216	TDS202A11509	4162437	TDS212A11509	11,509	.4531	29/64	—	118	71	56	2,0	45	12
4167217	TDS202A11600	4162438	TDS212A11600	11,600	.4567	—	—	118	71	56	2,0	45	12
4167218	TDS202A11700	4162439	TDS212A11700	11,700	.4606	—	—	118	71	56	2,0	45	12
4167219	TDS202A11800	4162440	TDS212A11800	11,800	.4646	—	—	118	71	56	2,0	45	12
4167220	TDS202A11900	4162441	TDS212A11900	11,900	.4685	—	—	118	71	56	2,0	45	12
4167221	TDS202A11908	4162442	TDS212A11908	11,908	.4688	15/32	—	118	71	56	2,0	45	12
4167222	TDS202A12000	4162443	TDS212A12000	12,000	.4724	—	—	118	71	56	2,1	45	12
4167223	TDS202A12100	4162444	TDS212A12100	12,100	.4764	—	—	124	77	60	2,1	45	14
4167224	TDS202A12200	4162445	TDS212A12200	12,200	.4803	—	—	124	77	60	2,1	45	14
4167225	TDS202A12300	4162446	TDS212A12300	12,300	.4843	—	—	124	77	60	2,1	45	14
4167226	TDS202A12304	4162447	TDS212A12304	12,304	.4844	31/64	—	124	77	60	2,1	45	14
4167227	TDS202A12400	4162448	TDS212A12400	12,400	.4882	—	—	124	77	60	2,1	45	14
4167228	TDS202A12500	4162449	TDS212A12500	12,500	.4921	—	—	124	77	60	2,1	45	14
4167229	TDS202A12600	4162450	TDS212A12600	12,600	.4961	—	—	124	77	60	2,2	45	14
4167230	TDS202A12700	4162451	TDS212A12700	12,700	.5000	1/2	—	124	77	60	2,2	45	14
4167231	TDS202A12800	4162452	TDS212A12800	12,800	.5039	—	—	124	77	60	2,2	45	14
4167232	TDS202A12900	4162453	TDS212A12900	12,900	.5079	—	—	124	77	60	2,2	45	14
4167233	TDS202A13000	4162454	TDS212A13000	13,000	.5118	—	—	124	77	60	2,2	45	14
4167234	TDS202A13096	4162455	TDS212A13096	13,096	.5156	33/64	—	124	77	60	2,3	45	14
4167235	TDS202A13100	4162456	TDS212A13100	13,100	.5157	—	—	124	77	60	2,3	45	14

(continued)

(TDS202A • TDS212A • 5 x D — continued)



● first choice
○ alternate choice

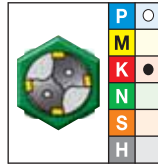
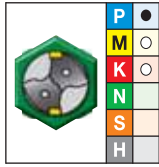
D1 diameter

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter				L	L3	L4 max	L5	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4167236	TDS202A13200	4162457	TDS212A13200	13,200	.5197	—	—	124	77	60	2,3	45	14
4167237	TDS202A13300	4162458	TDS212A13300	13,300	.5236	—	—	124	77	60	2,3	45	14
4167238	TDS202A13400	4162459	TDS212A13400	13,400	.5276	—	—	124	77	60	2,3	45	14
4167239	TDS202A13500	4162460	TDS212A13500	13,500	.5315	—	—	124	77	60	2,3	45	14
4167240	TDS202A13600	4162461	TDS212A13600	13,600	.5354	—	—	124	77	60	2,3	45	14
4167241	TDS202A13700	4162462	TDS212A13700	13,700	.5394	—	—	124	77	60	2,4	45	14
4167242	TDS202A13800	4162463	TDS212A13800	13,800	.5433	—	—	124	77	60	2,4	45	14
4167243	TDS202A13891	4162464	TDS212A13891	13,891	.5469	35/64	—	124	77	60	2,4	45	14
4167244	TDS202A13900	4162465	TDS212A13900	13,900	.5472	—	—	124	77	60	2,4	45	14
4167245	TDS202A14000	4162466	TDS212A14000	14,000	.5512	—	—	124	77	60	2,4	45	14
4167246	TDS202A14100	4162467	TDS212A14100	14,100	.5551	—	—	133	83	63	2,4	48	16
4167247	TDS202A14200	4162468	TDS212A14200	14,200	.5591	—	—	133	83	63	2,5	48	16
4167248	TDS202A14288	4162469	TDS212A14288	14,288	.5625	9/16	—	133	83	63	2,5	48	16
4167249	TDS202A14300	4162470	TDS212A14300	14,300	.5630	—	—	133	83	63	2,5	48	16
4167250	TDS202A14400	4162471	TDS212A14400	14,400	.5669	—	—	133	83	63	2,5	48	16
4167251	TDS202A14500	4162472	TDS212A14500	14,500	.5709	—	—	133	83	63	2,5	48	16
4167252	TDS202A14600	4162473	TDS212A14600	14,600	.5748	—	—	133	83	63	2,5	48	16
4167253	TDS202A14684	4162474	TDS212A14684	14,684	.5781	37/64	—	133	83	63	2,5	48	16
4167254	TDS202A14700	4162475	TDS212A14700	14,700	.5787	—	—	133	83	63	2,5	48	16
4167255	TDS202A14800	4162476	TDS212A14800	14,800	.5827	—	—	133	83	63	2,6	48	16
4167256	TDS202A14900	4162477	TDS212A14900	14,900	.5866	—	—	133	83	63	2,6	48	16
4167257	TDS202A15000	4162478	TDS212A15000	15,000	.5906	—	—	133	83	63	2,6	48	16
4167258	TDS202A15083	4162479	TDS212A15083	15,083	.5938	19/32	—	133	83	63	2,6	48	16
4167259	TDS202A15100	4162480	TDS212A15100	15,100	.5945	—	—	133	83	63	2,6	48	16
4167260	TDS202A15200	4162481	TDS212A15200	15,200	.5984	—	—	133	83	63	2,6	48	16
4167261	TDS202A15300	4162482	TDS212A15300	15,300	.6024	—	—	133	83	63	2,6	48	16
4167262	TDS202A15400	4162483	TDS212A15400	15,400	.6063	—	—	133	83	63	2,7	48	16
4167263	TDS202A15479	4162484	TDS212A15479	15,479	.6094	39/64	—	133	83	63	2,7	48	16
4167264	TDS202A15500	4162485	TDS212A15500	15,500	.6102	—	—	133	83	63	2,7	48	16
4167265	TDS202A15600	4162486	TDS212A15600	15,600	.6142	—	—	133	83	63	2,7	48	16
4167266	TDS202A15700	4162487	TDS212A15700	15,700	.6181	—	—	133	83	63	2,7	48	16
4167267	TDS202A15800	4162488	TDS212A15800	15,800	.6220	—	—	133	83	63	2,7	48	16
4167268	TDS202A15875	4162489	TDS212A15875	15,875	.6250	5/8	—	133	83	63	2,7	48	16
4167269	TDS202A15900	4162490	TDS212A15900	15,900	.6260	—	—	133	83	63	2,8	48	16
4167270	TDS202A16000	4162491	TDS212A16000	16,000	.6299	—	—	133	83	63	2,8	48	16
4167271	TDS202A16100	4162492	TDS212A16100	16,100	.6339	—	—	143	93	71	2,8	48	18
4167272	TDS202A16200	4162493	TDS212A16200	16,200	.6378	—	—	143	93	71	2,8	48	18
4167273	TDS202A16271	4162494	TDS212A16271	16,271	.6406	41/64	—	143	93	71	2,8	48	18
4167274	TDS202A16300	4162495	TDS212A16300	16,300	.6417	—	—	143	93	71	2,8	48	18
4167275	TDS202A16400	4162496	TDS212A16400	16,400	.6457	—	—	143	93	71	2,8	48	18

(continued)

Solid Carbide Drills

(TDS202A • TDS212A • 5 x D – continued)

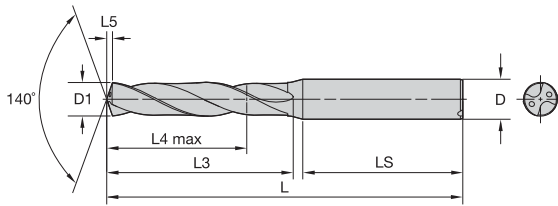


● first choice
○ alternate choice

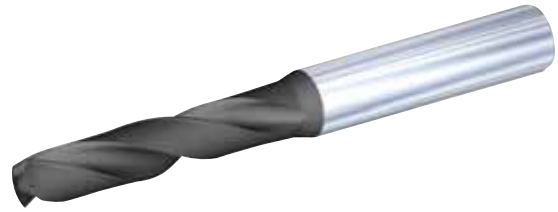
D1 diameter

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter									
order #	catalog #	order #	catalog #	mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D
4167276	TDS202A16500	4162497	TDS212A16500	16,500	.6496	—	—	143	93	71	2,9	48	18
4167277	TDS202A16600	4162498	TDS212A16600	16,600	.6535	—	—	143	93	71	2,9	48	18
4167278	TDS202A16670	4162499	TDS212A16670	16,670	.6563	21/32	—	143	93	71	2,9	48	18
4167279	TDS202A16700	4162500	TDS212A16700	16,700	.6575	—	—	143	93	71	2,9	48	18
4167280	TDS202A16800	4162501	TDS212A16800	16,800	.6614	—	—	143	93	71	2,9	48	18
4167281	TDS202A16900	4162502	TDS212A16900	16,900	.6654	—	—	143	93	71	2,9	48	18
4167282	TDS202A17000	4162503	TDS212A17000	17,000	.6693	—	—	143	93	71	2,9	48	18
4167283	TDS202A17100	4162504	TDS212A17100	17,100	.6732	—	—	143	93	71	3,0	48	18
4167284	TDS202A17200	4162505	TDS212A17200	17,200	.6772	—	—	143	93	71	3,0	48	18
4167285	TDS202A17300	4162506	TDS212A17300	17,300	.6811	—	—	143	93	71	3,0	48	18
4167286	TDS202A17400	4162507	TDS212A17400	17,400	.6850	—	—	143	93	71	3,0	48	18
4167287	TDS202A17463	4162508	TDS212A17463	17,463	.6875	11/16	—	143	93	71	3,0	48	18
4167288	TDS202A17500	4162509	TDS212A17500	17,500	.6890	—	—	143	93	71	3,0	48	18
4167289	TDS202A17600	4162510	TDS212A17600	17,600	.6929	—	—	143	93	71	3,1	48	18
4167290	TDS202A17700	4162511	TDS212A17700	17,700	.6969	—	—	143	93	71	3,1	48	18
4167291	TDS202A17800	4162512	TDS212A17800	17,800	.7008	—	—	143	93	71	3,1	48	18
4167292	TDS202A17859	4162513	TDS212A17859	17,859	.7031	45/64	—	143	93	71	3,1	48	18
4167293	TDS202A17900	4162514	TDS212A17900	17,900	.7047	—	—	143	93	71	3,1	48	18
4163313	TDS202A18000	4160528	TDS212A18000	18,000	.7087	—	—	143	93	71	3,1	48	18
4163314	TDS202A18100	4160464	TDS212A18100	18,100	.7126	—	—	153	101	77	3,1	50	20
4163305	TDS202A18200	4160465	TDS212A18200	18,200	.7165	—	—	153	101	77	3,2	50	20
4163306	TDS202A18258	4160466	TDS212A18258	18,258	.7188	23/32	—	153	101	77	3,2	50	20
4163307	TDS202A18300	4160467	TDS212A18300	18,300	.7205	—	—	153	101	77	3,2	50	20
4163308	TDS202A18400	4160468	TDS212A18400	18,400	.7244	—	—	153	101	77	3,2	50	20
4163309	TDS202A18500	4160469	TDS212A18500	18,500	.7283	—	—	153	101	77	3,2	50	20
4163310	TDS202A18600	4160470	TDS212A18600	18,600	.7323	—	—	153	101	77	3,2	50	20
4163311	TDS202A18654	4160471	TDS212A18654	18,654	.7344	47/64	—	153	101	77	3,2	50	20
4163312	TDS202A18700	4160472	TDS212A18700	18,700	.7362	—	—	153	101	77	3,2	50	20
4163323	TDS202A18800	4160583	TDS212A18800	18,800	.7402	—	—	153	101	77	3,3	50	20
4163324	TDS202A18900	4160584	TDS212A18900	18,900	.7441	—	—	153	101	77	3,3	50	20
4163325	TDS202A19000	4160585	TDS212A19000	19,000	.7480	—	—	153	101	77	3,3	50	20
4163326	TDS202A19050	4160586	TDS212A19050	19,050	.7500	3/4	—	153	101	77	3,3	50	20
4163327	TDS202A19100	4160587	TDS212A19100	19,100	.7520	—	—	153	101	77	3,3	50	20
4163328	TDS202A19200	4160588	TDS212A19200	19,200	.7559	—	—	153	101	77	3,3	50	20
4163329	TDS202A19300	4160589	TDS212A19300	19,300	.7598	—	—	153	101	77	3,4	50	20
4163330	TDS202A19400	4160590	TDS212A19400	19,400	.7638	—	—	153	101	77	3,4	50	20
4163331	TDS202A19500	4160591	TDS212A19500	19,500	.7677	—	—	153	101	77	3,4	50	20
4163332	TDS202A19600	4160592	TDS212A19600	19,600	.7717	—	—	153	101	77	3,4	50	20
4163333	TDS202A19700	4160593	TDS212A19700	19,700	.7756	—	—	153	101	77	3,4	50	20
4163334	TDS202A19800	4160594	TDS212A19800	19,800	.7795	—	—	153	101	77	3,4	50	20
4163335	TDS202A19900	4160595	TDS212A19900	19,900	.7835	—	—	153	101	77	3,5	50	20
4163336	TDS202A20000	4160596	TDS212A20000	20,000	.7874	—	—	153	101	77	3,5	50	20

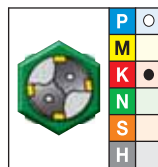
Solid Carbide Drills



For information on L, L3, and L4 max, see page R133.



■ TDS401A • TDS411A • 3 x D



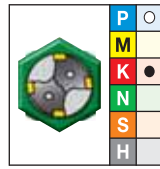
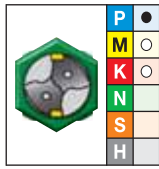
● first choice
○ alternate choice

D1 diameter

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter				L	L3	L4 max	L5	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4163315	TDS401A03000	4157799	TDS411A03000	3,000	.1181	—	—	62	20	14	0,5	36	6
4163337	TDS401A03048	4157800	TDS411A03048	3,048	.1200	—	31	62	20	14	0,5	36	6
4163338	TDS401A03100	4157801	TDS411A03100	3,100	.1220	—	—	62	20	14	0,5	36	6
4163339	TDS401A03175	4157802	TDS411A03175	3,175	.1250	1/8	—	62	20	14	0,5	36	6
4163340	TDS401A03200	4157803	TDS411A03200	3,200	.1260	—	—	62	20	14	0,5	36	6
4163341	TDS401A03264	4157804	TDS411A03264	3,264	.1285	—	30	62	20	14	0,5	36	6
4163342	TDS401A03300	4157805	TDS411A03300	3,300	.1299	—	—	62	20	14	0,5	36	6
4163463	TDS401A03400	4157806	TDS411A03400	3,400	.1339	—	—	62	20	14	0,6	36	6
4163464	TDS401A03455	4157807	TDS411A03455	3,455	.1360	—	29	62	20	14	0,6	36	6
4163465	TDS401A03500	4157808	TDS411A03500	3,500	.1378	—	—	62	20	14	0,6	36	6
4163466	TDS401A03571	4157809	TDS411A03571	3,571	.1406	9/64	—	62	20	14	0,6	36	6
4163467	TDS401A03600	4157810	TDS411A03600	3,600	.1417	—	—	62	20	14	0,6	36	6
4163468	TDS401A03658	4157811	TDS411A03658	3,658	.1440	—	27	62	20	14	0,6	36	6
4163469	TDS401A03700	4157812	TDS411A03700	3,700	.1457	—	—	62	20	14	0,6	36	6
4163470	TDS401A03734	4157813	TDS411A03734	3,734	.1470	—	26	62	20	14	0,6	36	6
4163471	TDS401A03800	4157814	TDS411A03800	3,800	.1496	—	—	66	24	17	0,6	36	6
4163472	TDS401A03900	4157815	TDS411A03900	3,900	.1535	—	—	66	24	17	0,6	36	6
4163473	TDS401A03970	4157816	TDS411A03970	3,970	.1563	5/32	—	66	24	17	0,7	36	6
4163474	TDS401A04000	4157817	TDS411A04000	4,000	.1575	—	—	66	24	17	0,7	36	6
4163475	TDS401A04039	4157818	TDS411A04039	4,039	.1590	—	21	66	24	17	0,7	36	6
4163476	TDS401A04090	4157819	TDS411A04090	4,090	.1610	—	20	66	24	17	0,7	36	6
4163477	TDS401A04100	4157820	TDS411A04100	4,100	.1614	—	—	66	24	17	0,7	36	6
4163478	TDS401A04200	4157821	TDS411A04200	4,200	.1654	—	—	66	24	17	0,7	36	6
4163479	TDS401A04217	4157822	TDS411A04217	4,217	.1660	—	19	66	24	17	0,7	36	6

(continued)

(TDS401A • TDS411A • 3 x D — continued)



● first choice
○ alternate choice

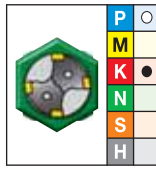
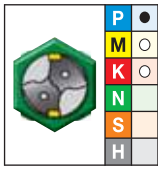
D1 diameter

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter				L	L3	L4 max	L5	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4163480	TDS401A04300	4157823	TDS411A04300	4,300	.1693	—	—	66	24	17	0,7	36	6
4163481	TDS401A04366	4157824	TDS411A04366	4,366	.1719	11/64	—	66	24	17	0,7	36	6
4163482	TDS401A04400	4157825	TDS411A04400	4,400	.1732	—	—	66	24	17	0,7	36	6
4163483	TDS401A04500	4157826	TDS411A04500	4,500	.1772	—	—	66	24	17	0,7	36	6
4163484	TDS401A04600	4157827	TDS411A04600	4,600	.1811	—	—	66	24	17	0,8	36	6
4163485	TDS401A04623	4157828	TDS411A04623	4,623	.1820	—	14	66	24	17	0,8	36	6
4163486	TDS401A04700	4157829	TDS411A04700	4,700	.1850	—	13	66	24	17	0,8	36	6
4163487	TDS401A04763	4157830	TDS411A04763	4,763	.1875	3/16	—	66	28	20	0,8	36	6
4163488	TDS401A04800	4157831	TDS411A04800	4,800	.1890	—	12	66	28	20	0,8	36	6
4163489	TDS401A04852	4157832	TDS411A04852	4,852	.1910	—	11	66	28	20	0,8	36	6
4163490	TDS401A04900	4157833	TDS411A04900	4,900	.1929	—	—	66	28	20	0,8	36	6
4163491	TDS401A05000	4157834	TDS411A05000	5,000	.1969	—	—	66	28	20	0,8	36	6
4163492	TDS401A05100	4157835	TDS411A05100	5,100	.2008	—	—	66	28	20	0,8	36	6
4163493	TDS401A05106	4157836	TDS411A05106	5,106	.2010	—	7	66	28	20	0,8	36	6
4163494	TDS401A05159	4157837	TDS411A05159	5,159	.2031	13/64	—	66	28	20	0,9	36	6
4163495	TDS401A05200	4157838	TDS411A05200	5,200	.2047	—	—	66	28	20	0,9	36	6
4163496	TDS401A05300	4157839	TDS411A05300	5,300	.2087	—	—	66	28	20	0,9	36	6
4163497	TDS401A05400	4157840	TDS411A05400	5,400	.2126	—	—	66	28	20	0,9	36	6
4163498	TDS401A05410	4157841	TDS411A05410	5,410	.2130	—	3	66	28	20	0,9	36	6
4163499	TDS401A05500	4157842	TDS411A05500	5,500	.2165	—	—	66	28	20	0,9	36	6
4163500	TDS401A05558	4157843	TDS411A05558	5,558	.2188	7/32	—	66	28	20	0,9	36	6
4163501	TDS401A05600	4157844	TDS411A05600	5,600	.2205	—	—	66	28	20	0,9	36	6
4163502	TDS401A05616	4157845	TDS411A05616	5,616	.2211	—	2	66	28	20	0,9	36	6
4163503	TDS401A05700	4157846	TDS411A05700	5,700	.2244	—	—	66	28	20	1,0	36	6
4163504	TDS401A05800	4157847	TDS411A05800	5,800	.2283	—	—	66	28	20	1,0	36	6
4163505	TDS401A05900	4157848	TDS411A05900	5,900	.2323	—	—	66	28	20	1,0	36	6
4163506	TDS401A05954	4157849	TDS411A05954	5,954	.2344	15/64	—	66	28	20	1,0	36	6
4163507	TDS401A06000	4157850	TDS411A06000	6,000	.2362	—	—	66	28	20	1,0	36	6
4163508	TDS401A06100	4157851	TDS411A06100	6,100	.2402	—	—	79	34	24	1,0	36	8
4163509	TDS401A06200	4157852	TDS411A06200	6,200	.2441	—	—	79	34	24	1,0	36	8
4163510	TDS401A06300	4157853	TDS411A06300	6,300	.2480	—	—	79	34	24	1,1	36	8
4163511	TDS401A06350	4157854	TDS411A06350	6,350	.2500	1/4	—	79	34	24	1,1	36	8
4163512	TDS401A06400	4157855	TDS411A06400	6,400	.2520	—	—	79	34	24	1,1	36	8
4163513	TDS401A06500	4157856	TDS411A06500	6,500	.2559	—	—	79	34	24	1,1	36	8
4163514	TDS401A06528	4157857	TDS411A06528	6,528	.2570	—	—	79	34	24	1,1	36	8
4163515	TDS401A06600	4157858	TDS411A06600	6,600	.2598	—	—	79	34	24	1,1	36	8
4163516	TDS401A06630	4157859	TDS411A06630	6,630	.2610	—	—	79	34	24	1,1	36	8
4163517	TDS401A06700	4157860	TDS411A06700	6,700	.2638	—	—	79	34	24	1,1	36	8
4163518	TDS401A06746	4157861	TDS411A06746	6,746	.2656	17/64	—	79	34	24	1,1	36	8
4163519	TDS401A06800	4157862	TDS411A06800	6,800	.2677	—	—	79	34	24	1,1	36	8

(continued)

Solid Carbide Drills

(TDS401A • TDS411A • 3 x D — continued)



● first choice
○ alternate choice

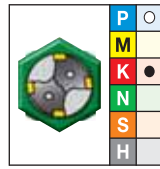
D1 diameter

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter				L	L3	L4 max	L5	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4163520	TDS401A06900	4157863	TDS411A06900	6,900	.2717	—	—	79	34	24	1,2	36	8
4163521	TDS401A07000	4157864	TDS411A07000	7,000	.2756	—	—	79	34	24	1,2	36	8
4163522	TDS401A07100	4157865	TDS411A07100	7,100	.2795	—	—	79	41	29	1,2	36	8
4163523	TDS401A07145	4157866	TDS411A07145	7,145	.2813	9/32	—	79	41	29	1,2	36	8
4163524	TDS401A07200	4157867	TDS411A07200	7,200	.2835	—	—	79	41	29	1,2	36	8
4163525	TDS401A07300	4157868	TDS411A07300	7,300	.2874	—	—	79	41	29	1,2	36	8
4163526	TDS401A07400	4157869	TDS411A07400	7,400	.2913	—	—	79	41	29	1,3	36	8
4163527	TDS401A07500	4157870	TDS411A07500	7,500	.2953	—	—	79	41	29	1,3	36	8
4163528	TDS401A07541	4157871	TDS411A07541	7,541	.2969	19/64	—	79	41	29	1,3	36	8
4163529	TDS401A07600	4157872	TDS411A07600	7,600	.2992	—	—	79	41	29	1,3	36	8
4163530	TDS401A07700	4157873	TDS411A07700	7,700	.3031	—	—	79	41	29	1,3	36	8
4163531	TDS401A07800	4157874	TDS411A07800	7,800	.3071	—	—	79	41	29	1,3	36	8
4163532	TDS401A07900	4157875	TDS411A07900	7,900	.3110	—	—	79	41	29	1,3	36	8
4163533	TDS401A07938	4157876	TDS411A07938	7,938	.3125	5/16	—	79	41	29	1,3	36	8
4163534	TDS401A08000	4157877	TDS411A08000	8,000	.3150	—	—	79	41	29	1,4	36	8
4163535	TDS401A08100	4157878	TDS411A08100	8,100	.3189	—	—	89	47	35	1,4	40	10
4163536	TDS401A08200	4157879	TDS411A08200	8,200	.3228	—	—	89	47	35	1,4	40	10
4163537	TDS401A08300	4157880	TDS411A08300	8,300	.3268	—	—	89	47	35	1,4	40	10
4163538	TDS401A08334	4157881	TDS411A08334	8,334	.3281	21/64	—	89	47	35	1,4	40	10
4163539	TDS401A08400	4157882	TDS411A08400	8,400	.3307	—	—	89	47	35	1,4	40	10
4163540	TDS401A08433	4157883	TDS411A08433	8,433	.3320	—	—	89	47	35	1,4	40	10
4163541	TDS401A08500	4157884	TDS411A08500	8,500	.3346	—	—	89	47	35	1,4	40	10
4163542	TDS401A08600	4157885	TDS411A08600	8,600	.3386	—	—	89	47	35	1,5	40	10
4163543	TDS401A08700	4157886	TDS411A08700	8,700	.3425	—	—	89	47	35	1,5	40	10
4163544	TDS401A08733	4157887	TDS411A08733	8,733	.3438	11/32	—	89	47	35	1,5	40	10
4163545	TDS401A08800	4157888	TDS411A08800	8,800	.3465	—	—	89	47	35	1,5	40	10
4163546	TDS401A08900	4157889	TDS411A08900	8,900	.3504	—	—	89	47	35	1,5	40	10
4163547	TDS401A09000	4157890	TDS411A09000	9,000	.3543	—	—	89	47	35	1,5	40	10
4163548	TDS401A09100	4157891	TDS411A09100	9,100	.3583	—	—	89	47	35	1,5	40	10
4163549	TDS401A09129	4157892	TDS411A09129	9,129	.3594	23/64	—	89	47	35	1,6	40	10
4163550	TDS401A09200	4157893	TDS411A09200	9,200	.3622	—	—	89	47	35	1,6	40	10
4163551	TDS401A09300	4157894	TDS411A09300	9,300	.3661	—	—	89	47	35	1,6	40	10
4163552	TDS401A09347	4157895	TDS411A09347	9,347	.3680	—	—	89	47	35	1,6	40	10
4163553	TDS401A09400	4157896	TDS411A09400	9,400	.3701	—	—	89	47	35	1,6	40	10
4163554	TDS401A09500	4157897	TDS411A09500	9,500	.3740	—	—	89	47	35	1,6	40	10
4163555	TDS401A09525	4157898	TDS411A09525	9,525	.3750	3/8	—	89	47	35	1,6	40	10
4163556	TDS401A09600	4157899	TDS411A09600	9,600	.3780	—	—	89	47	35	1,6	40	10
4163557	TDS401A09700	4157900	TDS411A09700	9,700	.3819	—	—	89	47	35	1,7	40	10
4163558	TDS401A09800	4157901	TDS411A09800	9,800	.3858	—	—	89	47	35	1,7	40	10
4163559	TDS401A09900	4157902	TDS411A09900	9,900	.3898	—	—	89	47	35	1,7	40	10

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Solid Carbide Drills

(TDS401A • TDS411A • 3 x D — continued)



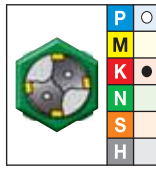
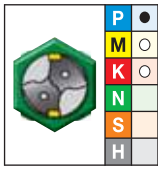
● first choice
○ alternate choice

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter				L	L3	L4 max	L5	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4163560	TDS401A09921	4157903	TDS411A09921	9,921	.3906	25/64	—	89	47	35	1,7	40	10
4162950	TDS401A10000	4156562	TDS411A10000	10,000	.3937	—	—	89	47	35	1,7	40	10
4162951	TDS401A10100	4156603	TDS411A10100	10,100	.3976	—	—	102	55	40	1,7	45	12
4162952	TDS401A10200	4156604	TDS411A10200	10,200	.4016	—	—	102	55	40	1,7	45	12
4163343	TDS401A10300	4156605	TDS411A10300	10,300	.4055	—	—	102	55	40	1,8	45	12
4163344	TDS401A10320	4156606	TDS411A10320	10,320	.4063	13/32	—	102	55	40	1,8	45	12
4163345	TDS401A10400	4156607	TDS411A10400	10,400	.4094	—	—	102	55	40	1,8	45	12
4163346	TDS401A10500	4156608	TDS411A10500	10,500	.4134	—	—	102	55	40	1,8	45	12
4163347	TDS401A10600	4156609	TDS411A10600	10,600	.4173	—	—	102	55	40	1,8	45	12
4163348	TDS401A10700	4156610	TDS411A10700	10,700	.4213	—	—	102	55	40	1,8	45	12
4163349	TDS401A10716	4156611	TDS411A10716	10,716	.4219	27/64	—	102	55	40	1,8	45	12
4163350	TDS401A10800	4156612	TDS411A10800	10,800	.4252	—	—	102	55	40	1,8	45	12
4163351	TDS401A10900	4156613	TDS411A10900	10,900	.4291	—	—	102	55	40	1,9	45	12
4163352	TDS401A11000	4156614	TDS411A11000	11,000	.4331	—	—	102	55	40	1,9	45	12
4163353	TDS401A11100	4156615	TDS411A11100	11,100	.4370	—	—	102	55	40	1,9	45	12
4163354	TDS401A11113	4156616	TDS411A11113	11,113	.4375	7/16	—	102	55	40	1,9	45	12
4163355	TDS401A11200	4156617	TDS411A11200	11,200	.4409	—	—	102	55	40	1,9	45	12
4163356	TDS401A11300	4156618	TDS411A11300	11,300	.4449	—	—	102	55	40	1,9	45	12
4163357	TDS401A11400	4156619	TDS411A11400	11,400	.4488	—	—	102	55	40	2,0	45	12
4163358	TDS401A11500	4156620	TDS411A11500	11,500	.4528	—	—	102	55	40	2,0	45	12
4163359	TDS401A11509	4156621	TDS411A11509	11,509	.4531	29/64	—	102	55	40	2,0	45	12
4163360	TDS401A11600	4156622	TDS411A11600	11,600	.4567	—	—	102	55	40	2,0	45	12
4163361	TDS401A11700	4156623	TDS411A11700	11,700	.4606	—	—	102	55	40	2,0	45	12
4163362	TDS401A11800	4156624	TDS411A11800	11,800	.4646	—	—	102	55	40	2,0	45	12
4163363	TDS401A11900	4156625	TDS411A11900	11,900	.4685	—	—	102	55	40	2,0	45	12
4163364	TDS401A11908	4156626	TDS411A11908	11,908	.4688	15/32	—	102	55	40	2,0	45	12
4163365	TDS401A12000	4156627	TDS411A12000	12,000	.4724	—	—	102	55	40	2,1	45	12
4163366	TDS401A12100	4156628	TDS411A12100	12,100	.4764	—	—	107	60	43	2,1	45	14
4163367	TDS401A12200	4156629	TDS411A12200	12,200	.4803	—	—	107	60	43	2,1	45	14
4163368	TDS401A12300	4156630	TDS411A12300	12,300	.4843	—	—	107	60	43	2,1	45	14
4163369	TDS401A12304	4156631	TDS411A12304	12,304	.4844	31/64	—	107	60	43	2,1	45	14
4163370	TDS401A12400	4156632	TDS411A12400	12,400	.4882	—	—	107	60	43	2,1	45	14
4163371	TDS401A12500	4156633	TDS411A12500	12,500	.4921	—	—	107	60	43	2,1	45	14
4163372	TDS401A12600	4156634	TDS411A12600	12,600	.4961	—	—	107	60	43	2,2	45	14
4163373	TDS401A12700	4156635	TDS411A12700	12,700	.5000	1/2	—	107	60	43	2,2	45	14
4163374	TDS401A12800	4156636	TDS411A12800	12,800	.5039	—	—	107	60	43	2,2	45	14
4163375	TDS401A12900	4156637	TDS411A12900	12,900	.5079	—	—	107	60	43	2,2	45	14
4163376	TDS401A13000	4156638	TDS411A13000	13,000	.5118	—	—	107	60	43	2,2	45	14
4163377	TDS401A13096	4156639	TDS411A13096	13,096	.5156	33/64	—	107	60	43	2,3	45	14
4163378	TDS401A13100	4156640	TDS411A13100	13,100	.5157	—	—	107	60	43	2,3	45	14

(continued)

Solid Carbide Drills

(TDS401A • TDS411A • 3 x D — continued)



● first choice
○ alternate choice

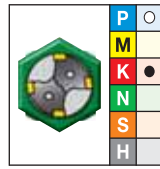
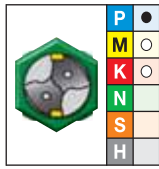
D1 diameter

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter				L	L3	L4 max	L5	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4163379	TDS401A13200	4156641	TDS411A13200	13,200	.5197	—	—	107	60	43	2,3	45	14
4163380	TDS401A13300	4156642	TDS411A13300	13,300	.5236	—	—	107	60	43	2,3	45	14
4163381	TDS401A13400	4156643	TDS411A13400	13,400	.5276	—	—	107	60	43	2,3	45	14
4163382	TDS401A13500	4156644	TDS411A13500	13,500	.5315	—	—	107	60	43	2,3	45	14
4163383	TDS401A13600	4156645	TDS411A13600	13,600	.5354	—	—	107	60	43	2,3	45	14
4163384	TDS401A13700	4156646	TDS411A13700	13,700	.5394	—	—	107	60	43	2,4	45	14
4163385	TDS401A13800	4156647	TDS411A13800	13,800	.5433	—	—	107	60	43	2,4	45	14
4163386	TDS401A13891	4156648	TDS411A13891	13,891	.5469	35/64	—	107	60	43	2,4	45	14
4163387	TDS401A13900	4156649	TDS411A13900	13,900	.5472	—	—	107	60	43	2,4	45	14
4163388	TDS401A14000	4156650	TDS411A14000	14,000	.5512	—	—	107	60	43	2,4	45	14
4163389	TDS401A14100	4156651	TDS411A14100	14,100	.5551	—	—	115	65	45	2,4	48	16
4163390	TDS401A14200	4156652	TDS411A14200	14,200	.5591	—	—	115	65	45	2,5	48	16
4163391	TDS401A14288	4156653	TDS411A14288	14,288	.5625	9/16	—	115	65	45	2,5	48	16
4163392	TDS401A14300	4156654	TDS411A14300	14,300	.5630	—	—	115	65	45	2,5	48	16
4163393	TDS401A14400	4156655	TDS411A14400	14,400	.5669	—	—	115	65	45	2,5	48	16
4163394	TDS401A14500	4156656	TDS411A14500	14,500	.5709	—	—	115	65	45	2,5	48	16
4163395	TDS401A14600	4156657	TDS411A14600	14,600	.5748	—	—	115	65	45	2,5	48	16
4163396	TDS401A14684	4156658	TDS411A14684	14,684	.5781	37/64	—	115	65	45	2,5	48	16
4163397	TDS401A14700	4156659	TDS411A14700	14,700	.5787	—	—	115	65	45	2,5	48	16
4163398	TDS401A14800	4156660	TDS411A14800	14,800	.5827	—	—	115	65	45	2,6	48	16
4163399	TDS401A14900	4156661	TDS411A14900	14,900	.5866	—	—	115	65	45	2,6	48	16
4163400	TDS401A15000	4156662	TDS411A15000	15,000	.5906	—	—	115	65	45	2,6	48	16
4163401	TDS401A15083	4156663	TDS411A15083	15,083	.5938	19/32	—	115	65	45	2,6	48	16
4163402	TDS401A15100	4156664	TDS411A15100	15,100	.5945	—	—	115	65	45	2,6	48	16
4163403	TDS401A15200	4156665	TDS411A15200	15,200	.5984	—	—	115	65	45	2,6	48	16
4163404	TDS401A15300	4156666	TDS411A15300	15,300	.6024	—	—	115	65	45	2,6	48	16
4163405	TDS401A15400	4156667	TDS411A15400	15,400	.6063	—	—	115	65	45	2,7	48	16
4163406	TDS401A15479	4156668	TDS411A15479	15,479	.6094	39/64	—	115	65	45	2,7	48	16
4163407	TDS401A15500	4156669	TDS411A15500	15,500	.6102	—	—	115	65	45	2,7	48	16
4163408	TDS401A15600	4156670	TDS411A15600	15,600	.6142	—	—	115	65	45	2,7	48	16
4163409	TDS401A15700	4156671	TDS411A15700	15,700	.6181	—	—	115	65	45	2,7	48	16
4163410	TDS401A15800	4156672	TDS411A15800	15,800	.6220	—	—	115	65	45	2,7	48	16
4163411	TDS401A15875	4156673	TDS411A15875	15,875	.6250	5/8	—	115	65	45	2,7	48	16
4163412	TDS401A15900	4156674	TDS411A15900	15,900	.6260	—	—	115	65	45	2,8	48	16
4163413	TDS401A16000	4156675	TDS411A16000	16,000	.6299	—	—	115	65	45	2,8	48	16
4163414	TDS401A16100	4156676	TDS411A16100	16,100	.6339	—	—	123	73	51	2,8	48	18
4163415	TDS401A16200	4156677	TDS411A16200	16,200	.6378	—	—	123	73	51	2,8	48	18
4163416	TDS401A16271	4156678	TDS411A16271	16,271	.6406	41/64	—	123	73	51	2,8	48	18
4163417	TDS401A16300	4156679	TDS411A16300	16,300	.6417	—	—	123	73	51	2,8	48	18
4163418	TDS401A16400	4156680	TDS411A16400	16,400	.6457	—	—	123	73	51	2,8	48	18

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Solid Carbide Drills

(TDS401A • TDS411A • 3 x D — continued)

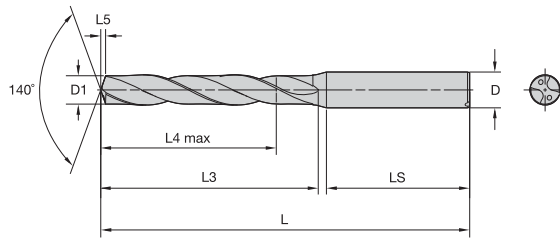


● first choice
○ alternate choice

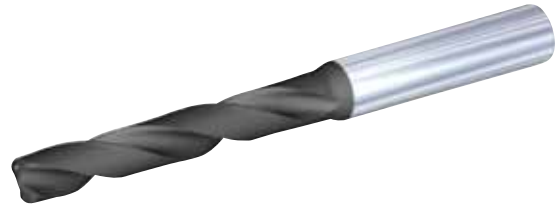
D1 diameter

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter				L	L3	L4 max	L5	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4163419	TDS401A16500	4156681	TDS411A16500	16,500	.6496	—	—	123	73	51	2,9	48	18
4163420	TDS401A16600	4156682	TDS411A16600	16,600	.6535	—	—	123	73	51	2,9	48	18
4163421	TDS401A16670	4156683	TDS411A16670	16,670	.6563	21/32	—	123	73	51	2,9	48	18
4163422	TDS401A16700	4156684	TDS411A16700	16,700	.6575	—	—	123	73	51	2,9	48	18
4163423	TDS401A16800	4156685	TDS411A16800	16,800	.6614	—	—	123	73	51	2,9	48	18
4163424	TDS401A16900	4156686	TDS411A16900	16,900	.6654	—	—	123	73	51	2,9	48	18
4163425	TDS401A17000	4156687	TDS411A17000	17,000	.6693	—	—	123	73	51	2,9	48	18
4163426	TDS401A17100	4156688	TDS411A17100	17,100	.6732	—	—	123	73	51	3,0	48	18
4163427	TDS401A17200	4156689	TDS411A17200	17,200	.6772	—	—	123	73	51	3,0	48	18
4163428	TDS401A17300	4156690	TDS411A17300	17,300	.6811	—	—	123	73	51	3,0	48	18
4163429	TDS401A17400	4156691	TDS411A17400	17,400	.6850	—	—	123	73	51	3,0	48	18
4163430	TDS401A17463	4156692	TDS411A17463	17,463	.6875	11/16	—	123	73	51	3,0	48	18
4163431	TDS401A17500	4156693	TDS411A17500	17,500	.6890	—	—	123	73	51	3,0	48	18
4163432	TDS401A17600	4156694	TDS411A17600	17,600	.6929	—	—	123	73	51	3,1	48	18
4163433	TDS401A17700	4156695	TDS411A17700	17,700	.6969	—	—	123	73	51	3,1	48	18
4163434	TDS401A17800	4156696	TDS411A17800	17,800	.7008	—	—	123	73	51	3,1	48	18
4163435	TDS401A17859	4156697	TDS411A17859	17,859	.7031	45/64	—	123	73	51	3,1	48	18
4163436	TDS401A17900	4156698	TDS411A17900	17,900	.7047	—	—	123	73	51	3,1	48	18
4163271	TDS401A18000	4156699	TDS411A18000	18,000	.7087	—	—	123	73	51	3,1	48	18
4163272	TDS401A18100	4156700	TDS411A18100	18,100	.7126	—	—	131	79	55	3,1	50	20
4163283	TDS401A18200	4156701	TDS411A18200	18,200	.7165	—	—	131	79	55	3,2	50	20
4163284	TDS401A18258	4156702	TDS411A18258	18,258	.7188	23/32	—	131	79	55	3,2	50	20
4163285	TDS401A18300	4156713	TDS411A18300	18,300	.7205	—	—	131	79	55	3,2	50	20
4163286	TDS401A18400	4156714	TDS411A18400	18,400	.7244	—	—	131	79	55	3,2	50	20
4163287	TDS401A18500	4156715	TDS411A18500	18,500	.7283	—	—	131	79	55	3,2	50	20
4163288	TDS401A18600	4156716	TDS411A18600	18,600	.7323	—	—	131	79	55	3,2	50	20
4163289	TDS401A18654	4156717	TDS411A18654	18,654	.7344	47/64	—	131	79	55	3,2	50	20
4163290	TDS401A18700	4156718	TDS411A18700	18,700	.7362	—	—	131	79	55	3,2	50	20
4163291	TDS401A18800	4156719	TDS411A18800	18,800	.7402	—	—	131	79	55	3,3	50	20
4163292	TDS401A18900	4156720	TDS411A18900	18,900	.7441	—	—	131	79	55	3,3	50	20
4163293	TDS401A19000	4156721	TDS411A19000	19,000	.7480	—	—	131	79	55	3,3	50	20
4163294	TDS401A19050	4156722	TDS411A19050	19,050	.7500	3/4	—	131	79	55	3,3	50	20
4163295	TDS401A19100	4156723	TDS411A19100	19,100	.7520	—	—	131	79	55	3,3	50	20
4163296	TDS401A19200	4156724	TDS411A19200	19,200	.7559	—	—	131	79	55	3,3	50	20
4163297	TDS401A19300	4156725	TDS411A19300	19,300	.7598	—	—	131	79	55	3,4	50	20
4163298	TDS401A19400	4156726	TDS411A19400	19,400	.7638	—	—	131	79	55	3,4	50	20
4163299	TDS401A19500	4156727	TDS411A19500	19,500	.7677	—	—	131	79	55	3,4	50	20
4163300	TDS401A19600	4156728	TDS411A19600	19,600	.7717	—	—	131	79	55	3,4	50	20
4163301	TDS401A19700	4156729	TDS411A19700	19,700	.7756	—	—	131	79	55	3,4	50	20
4163302	TDS401A19800	4156730	TDS411A19800	19,800	.7795	—	—	131	79	55	3,4	50	20
4163303	TDS401A19900	4156731	TDS411A19900	19,900	.7835	—	—	131	79	55	3,5	50	20
4163304	TDS401A20000	4156732	TDS411A20000	20,000	.7874	—	—	131	79	55	3,5	50	20

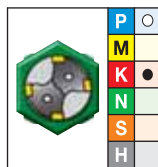
Solid Carbide Drills



For information on L, L3, and L4 max, see page R133.



■ TDS402A • TDS412A • 5 x D



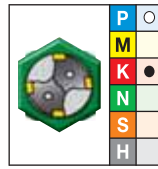
● first choice
○ alternate choice

D1 diameter

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter		wire size	L	L3	L4 max	L5	LS	D
order #	catalog #	order #	catalog #	mm	in							
4162967	TDS402A03000	4158757	TDS412A03000	3,000	.1181	—	66	28	23	0,5	36	6
4162968	TDS402A03048	4158758	TDS412A03048	3,048	.1200	—	66	28	23	0,5	36	6
4162969	TDS402A03100	4158759	TDS412A03100	3,100	.1220	—	66	28	23	0,5	36	6
4162970	TDS402A03175	4158760	TDS412A03175	3,175	.1250	1/8	66	28	23	0,5	36	6
4162972	TDS402A03200	4158761	TDS412A03200	3,200	.1260	—	66	28	23	0,5	36	6
4162983	TDS402A03264	4158762	TDS412A03264	3,264	.1285	—	66	28	23	0,5	36	6
4162984	TDS402A03300	4158793	TDS412A03300	3,300	.1299	—	66	28	23	0,5	36	6
4162985	TDS402A03400	4158794	TDS412A03400	3,400	.1339	—	66	28	23	0,6	36	6
4162986	TDS402A03455	4158795	TDS412A03455	3,455	.1360	—	66	28	23	0,6	36	6
4162987	TDS402A03500	4158796	TDS412A03500	3,500	.1378	—	66	28	23	0,6	36	6
4162988	TDS402A03571	4158797	TDS412A03571	3,571	.1406	9/64	66	28	23	0,6	36	6
4162989	TDS402A03600	4158798	TDS412A03600	3,600	.1417	—	66	28	23	0,6	36	6
4162990	TDS402A03658	4158799	TDS412A03658	3,658	.1440	—	66	28	23	0,6	36	6
4162991	TDS402A03700	4158800	TDS412A03700	3,700	.1457	—	66	28	23	0,6	36	6
4162992	TDS402A03734	4158801	TDS412A03734	3,734	.1470	—	66	28	23	0,6	36	6
4162993	TDS402A03800	4158802	TDS412A03800	3,800	.1496	—	74	36	29	0,6	36	6
4162994	TDS402A03900	4158803	TDS412A03900	3,900	.1535	—	74	36	29	0,6	36	6
4162995	TDS402A03970	4158804	TDS412A03970	3,970	.1563	5/32	74	36	29	0,7	36	6
4162996	TDS402A04000	4158805	TDS412A04000	4,000	.1575	—	74	36	29	0,7	36	6
4162997	TDS402A04039	4158806	TDS412A04039	4,039	.1590	—	74	36	29	0,7	36	6
4162998	TDS402A04090	4158807	TDS412A04090	4,090	.1610	—	74	36	29	0,7	36	6
4162999	TDS402A04100	4158808	TDS412A04100	4,100	.1614	—	74	36	29	0,7	36	6
4163000	TDS402A04200	4158809	TDS412A04200	4,200	.1654	—	74	36	29	0,7	36	6
4163001	TDS402A04217	4158810	TDS412A04217	4,217	.1660	—	74	36	29	0,7	36	6

(continued)

(TDS402A • TDS412A • 5 x D — continued)

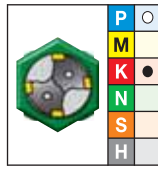
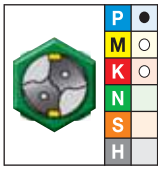


● first choice
○ alternate choice

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter				L	L3	L4 max	L5	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4163002	TDS402A04300	4158811	TDS412A04300	4,300	.1693	—	—	74	36	29	0,7	36	6
4163013	TDS402A04366	4158812	TDS412A04366	4,366	.1719	11/64	—	74	36	29	0,7	36	6
4163014	TDS402A04400	4158813	TDS412A04400	4,400	.1732	—	—	74	36	29	0,7	36	6
4163015	TDS402A04500	4158814	TDS412A04500	4,500	.1772	—	—	74	36	29	0,7	36	6
4163016	TDS402A04600	4158815	TDS412A04600	4,600	.1811	—	—	74	36	29	0,8	36	6
4163017	TDS402A04623	4158816	TDS412A04623	4,623	.1820	—	14	74	36	29	0,8	36	6
4163018	TDS402A04700	4158817	TDS412A04700	4,700	.1850	—	13	74	36	29	0,8	36	6
4163019	TDS402A04763	4158818	TDS412A04763	4,763	.1875	3/16	—	82	44	35	0,8	36	6
4163020	TDS402A04800	4158819	TDS412A04800	4,800	.1890	—	12	82	44	35	0,8	36	6
4163021	TDS402A04852	4158820	TDS412A04852	4,852	.1910	—	11	82	44	35	0,8	36	6
4163022	TDS402A04900	4158821	TDS412A04900	4,900	.1929	—	—	82	44	35	0,8	36	6
4163023	TDS402A05000	4158822	TDS412A05000	5,000	.1969	—	—	82	44	35	0,8	36	6
4163024	TDS402A05100	4158823	TDS412A05100	5,100	.2008	—	—	82	44	35	0,8	36	6
4163025	TDS402A05106	4158824	TDS412A05106	5,106	.2010	—	7	82	44	35	0,8	36	6
4163026	TDS402A05159	4158825	TDS412A05159	5,159	.2031	13/64	—	82	44	35	0,9	36	6
4163027	TDS402A05200	4158826	TDS412A05200	5,200	.2047	—	—	82	44	35	0,9	36	6
4163028	TDS402A05300	4158827	TDS412A05300	5,300	.2087	—	—	82	44	35	0,9	36	6
4163029	TDS402A05400	4158828	TDS412A05400	5,400	.2126	—	—	82	44	35	0,9	36	6
4163030	TDS402A05410	4158829	TDS412A05410	5,410	.2130	—	3	82	44	35	0,9	36	6
4163031	TDS402A05500	4158830	TDS412A05500	5,500	.2165	—	—	82	44	35	0,9	36	6
4163032	TDS402A05558	4158831	TDS412A05558	5,558	.2188	7/32	—	82	44	35	0,9	36	6
4163034	TDS402A05600	4158832	TDS412A05600	5,600	.2205	—	—	82	44	35	0,9	36	6
4163035	TDS402A05616	4158833	TDS412A05616	5,616	.2211	—	2	82	44	35	0,9	36	6
4163036	TDS402A05700	4158834	TDS412A05700	5,700	.2244	—	—	82	44	35	1,0	36	6
4163037	TDS402A05800	4158835	TDS412A05800	5,800	.2283	—	—	82	44	35	1,0	36	6
4163038	TDS402A05900	4158836	TDS412A05900	5,900	.2323	—	—	82	44	35	1,0	36	6
4163039	TDS402A05954	4158837	TDS412A05954	5,954	.2344	15/64	—	82	44	35	1,0	36	6
4163040	TDS402A06000	4158838	TDS412A06000	6,000	.2362	—	—	82	44	35	1,0	36	6
4163041	TDS402A06100	4158839	TDS412A06100	6,100	.2402	—	—	91	53	43	1,0	36	8
4163042	TDS402A06200	4158840	TDS412A06200	6,200	.2441	—	—	91	53	43	1,0	36	8
4163043	TDS402A06300	4158841	TDS412A06300	6,300	.2480	—	—	91	53	43	1,1	36	8
4163044	TDS402A06350	4158842	TDS412A06350	6,350	.2500	1/4	—	91	53	43	1,1	36	8
4163045	TDS402A06400	4158843	TDS412A06400	6,400	.2520	—	—	91	53	43	1,1	36	8
4163046	TDS402A06500	4158844	TDS412A06500	6,500	.2559	—	—	91	53	43	1,1	36	8
4163047	TDS402A06528	4158845	TDS412A06528	6,528	.2570	—	—	91	53	43	1,1	36	8
4163048	TDS402A06600	4158846	TDS412A06600	6,600	.2598	—	—	91	53	43	1,1	36	8
4163049	TDS402A06630	4158847	TDS412A06630	6,630	.2610	—	—	91	53	43	1,1	36	8
4163050	TDS402A06700	4158848	TDS412A06700	6,700	.2638	—	—	91	53	43	1,1	36	8
4163051	TDS402A06746	4158849	TDS412A06746	6,746	.2656	17/64	—	91	53	43	1,1	36	8
4163052	TDS402A06800	4158850	TDS412A06800	6,800	.2677	—	—	91	53	43	1,1	36	8

(continued)

(TDS402A • TDS412A • 5 x D — continued)



● first choice
○ alternate choice

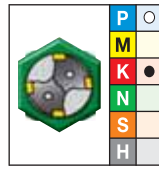
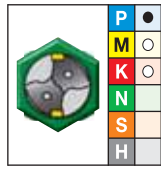
D1 diameter

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter				L	L3	L4 max	L5	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4163053	TDS402A06900	4158851	TDS412A06900	6,900	.2717	—	—	91	53	43	1,2	36	8
4163054	TDS402A07000	4158852	TDS412A07000	7,000	.2756	—	—	91	53	43	1,2	36	8
4163055	TDS402A07100	4158853	TDS412A07100	7,100	.2795	—	—	91	53	43	1,2	36	8
4163056	TDS402A07145	4158854	TDS412A07145	7,145	.2813	9/32	—	91	53	43	1,2	36	8
4163057	TDS402A07200	4158855	TDS412A07200	7,200	.2835	—	—	91	53	43	1,2	36	8
4163058	TDS402A07300	4158856	TDS412A07300	7,300	.2874	—	—	91	53	43	1,2	36	8
4163059	TDS402A07400	4158857	TDS412A07400	7,400	.2913	—	—	91	53	43	1,3	36	8
4163060	TDS402A07500	4158858	TDS412A07500	7,500	.2953	—	—	91	53	43	1,3	36	8
4163061	TDS402A07541	4158859	TDS412A07541	7,541	.2969	19/64	—	91	53	43	1,3	36	8
4163062	TDS402A07600	4158860	TDS412A07600	7,600	.2992	—	—	91	53	43	1,3	36	8
4163063	TDS402A07700	4158861	TDS412A07700	7,700	.3031	—	—	91	53	43	1,3	36	8
4163064	TDS402A07800	4158862	TDS412A07800	7,800	.3071	—	—	91	53	43	1,3	36	8
4163065	TDS402A07900	4158863	TDS412A07900	7,900	.3110	—	—	91	53	43	1,3	36	8
4163066	TDS402A07938	4158864	TDS412A07938	7,938	.3125	5/16	—	91	53	43	1,3	36	8
4163067	TDS402A08000	4158865	TDS412A08000	8,000	.3150	—	—	91	53	43	1,4	36	8
4163068	TDS402A08100	4158866	TDS412A08100	8,100	.3189	—	—	103	61	49	1,4	40	10
4163069	TDS402A08200	4158867	TDS412A08200	8,200	.3228	—	—	103	61	49	1,4	40	10
4163070	TDS402A08300	4158868	TDS412A08300	8,300	.3268	—	—	103	61	49	1,4	40	10
4163071	TDS402A08334	4158869	TDS412A08334	8,334	.3281	21/64	—	103	61	49	1,4	40	10
4163072	TDS402A08400	4158870	TDS412A08400	8,400	.3307	—	—	103	61	49	1,4	40	10
4163073	TDS402A08433	4158871	TDS412A08433	8,433	.3320	—	—	103	61	49	1,4	40	10
4163074	TDS402A08500	4158872	TDS412A08500	8,500	.3346	—	—	103	61	49	1,4	40	10
4163075	TDS402A08600	4158873	TDS412A08600	8,600	.3386	—	—	103	61	49	1,5	40	10
4163077	TDS402A08700	4158874	TDS412A08700	8,700	.3425	—	—	103	61	49	1,5	40	10
4163078	TDS402A08733	4158875	TDS412A08733	8,733	.3438	11/32	—	103	61	49	1,5	40	10
4163079	TDS402A08800	4158876	TDS412A08800	8,800	.3465	—	—	103	61	49	1,5	40	10
4163080	TDS402A08900	4158877	TDS412A08900	8,900	.3504	—	—	103	61	49	1,5	40	10
4163081	TDS402A09000	4158878	TDS412A09000	9,000	.3543	—	—	103	61	49	1,5	40	10
4163082	TDS402A09100	4158879	TDS412A09100	9,100	.3583	—	—	103	61	49	1,5	40	10
4163083	TDS402A09129	4158880	TDS412A09129	9,129	.3594	23/64	—	103	61	49	1,6	40	10
4163084	TDS402A09200	4158881	TDS412A09200	9,200	.3622	—	—	103	61	49	1,6	40	10
4163085	TDS402A09300	4158882	TDS412A09300	9,300	.3661	—	—	103	61	49	1,6	40	10
4163086	TDS402A09347	4158883	TDS412A09347	9,347	.3680	—	—	103	61	49	1,6	40	10
4163087	TDS402A09400	4158884	TDS412A09400	9,400	.3701	—	—	103	61	49	1,6	40	10
4163088	TDS402A09500	4158885	TDS412A09500	9,500	.3740	—	—	103	61	49	1,6	40	10
4163089	TDS402A09525	4158886	TDS412A09525	9,525	.3750	3/8	—	103	61	49	1,6	40	10
4163090	TDS402A09600	4158887	TDS412A09600	9,600	.3780	—	—	103	61	49	1,6	40	10
4163091	TDS402A09700	4158888	TDS412A09700	9,700	.3819	—	—	103	61	49	1,7	40	10
4163092	TDS402A09800	4158889	TDS412A09800	9,800	.3858	—	—	103	61	49	1,7	40	10
4163093	TDS402A09900	4158890	TDS412A09900	9,900	.3898	—	—	103	61	49	1,7	40	10

(continued)

Solid Carbide Drills

(TDS402A • TDS412A • 5 x D — continued)

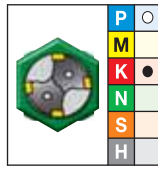
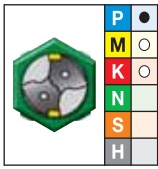


● first choice
○ alternate choice

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter									
order #	catalog #	order #	catalog #	mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D
4163094	TDS402A09921	4158891	TDS412A09921	9,921	.3906	25/64	—	103	61	49	1,7	40	10
4162803	TDS402A10000	4156602	TDS412A10000	10,000	.3937	—	—	103	61	49	1,7	40	10
4162804	TDS402A10100	4156733	TDS412A10100	10,100	.3976	—	—	118	71	56	1,7	45	12
4162805	TDS402A10200	4156734	TDS412A10200	10,200	.4016	—	—	118	71	56	1,7	45	12
4162806	TDS402A10300	4156735	TDS412A10300	10,300	.4055	—	—	118	71	56	1,8	45	12
4162807	TDS402A10320	4156736	TDS412A10320	10,320	.4063	13/32	—	118	71	56	1,8	45	12
4162808	TDS402A10400	4156737	TDS412A10400	10,400	.4094	—	—	118	71	56	1,8	45	12
4162809	TDS402A10500	4156738	TDS412A10500	10,500	.4134	—	—	118	71	56	1,8	45	12
4162810	TDS402A10600	4156739	TDS412A10600	10,600	.4173	—	—	118	71	56	1,8	45	12
4162811	TDS402A10700	4156740	TDS412A10700	10,700	.4213	—	—	118	71	56	1,8	45	12
4162812	TDS402A10716	4156741	TDS412A10716	10,716	.4219	27/64	—	118	71	56	1,8	45	12
4162813	TDS402A10800	4156742	TDS412A10800	10,800	.4252	—	—	118	71	56	1,8	45	12
4162814	TDS402A10900	4156743	TDS412A10900	10,900	.4291	—	—	118	71	56	1,9	45	12
4162815	TDS402A11000	4156744	TDS412A11000	11,000	.4331	—	—	118	71	56	1,9	45	12
4162816	TDS402A11100	4156745	TDS412A11100	11,100	.4370	—	—	118	71	56	1,9	45	12
4162817	TDS402A11113	4156746	TDS412A11113	11,113	.4375	7/16	—	118	71	56	1,9	45	12
4162818	TDS402A11200	4156747	TDS412A11200	11,200	.4409	—	—	118	71	56	1,9	45	12
4162819	TDS402A11300	4156748	TDS412A11300	11,300	.4449	—	—	118	71	56	1,9	45	12
4162820	TDS402A11400	4156749	TDS412A11400	11,400	.4488	—	—	118	71	56	2,0	45	12
4162821	TDS402A11500	4156750	TDS412A11500	11,500	.4528	—	—	118	71	56	2,0	45	12
4162822	TDS402A11509	4156751	TDS412A11509	11,509	.4531	29/64	—	118	71	56	2,0	45	12
4162823	TDS402A11600	4156752	TDS412A11600	11,600	.4567	—	—	118	71	56	2,0	45	12
4162824	TDS402A11700	4156753	TDS412A11700	11,700	.4606	—	—	118	71	56	2,0	45	12
4162825	TDS402A11800	4156754	TDS412A11800	11,800	.4646	—	—	118	71	56	2,0	45	12
4162826	TDS402A11900	4156755	TDS412A11900	11,900	.4685	—	—	118	71	56	2,0	45	12
4162827	TDS402A11908	4156756	TDS412A11908	11,908	.4688	15/32	—	118	71	56	2,0	45	12
4162828	TDS402A12000	4156757	TDS412A12000	12,000	.4724	—	—	118	71	56	2,1	45	12
4162829	TDS402A12100	4156758	TDS412A12100	12,100	.4764	—	—	124	77	60	2,1	45	14
4162830	TDS402A12200	4156759	TDS412A12200	12,200	.4803	—	—	124	77	60	2,1	45	14
4162831	TDS402A12300	4156760	TDS412A12300	12,300	.4843	—	—	124	77	60	2,1	45	14
4162832	TDS402A12304	4156761	TDS412A12304	12,304	.4844	31/64	—	124	77	60	2,1	45	14
4162833	TDS402A12400	4156762	TDS412A12400	12,400	.4882	—	—	124	77	60	2,1	45	14
4162834	TDS402A12500	4156763	TDS412A12500	12,500	.4921	—	—	124	77	60	2,1	45	14
4162835	TDS402A12600	4156764	TDS412A12600	12,600	.4961	—	—	124	77	60	2,2	45	14
4162836	TDS402A12700	4156765	TDS412A12700	12,700	.5000	1/2	—	124	77	60	2,2	45	14
4162837	TDS402A12800	4156766	TDS412A12800	12,800	.5039	—	—	124	77	60	2,2	45	14
4162838	TDS402A12900	4156767	TDS412A12900	12,900	.5079	—	—	124	77	60	2,2	45	14
4162839	TDS402A13000	4156768	TDS412A13000	13,000	.5118	—	—	124	77	60	2,2	45	14
4162840	TDS402A13096	4156769	TDS412A13096	13,096	.5156	33/64	—	124	77	60	2,3	45	14
4162841	TDS402A13100	4156770	TDS412A13100	13,100	.5157	—	—	124	77	60	2,3	45	14

(continued)

(TDS402A • TDS412A • 5 x D – continued)



● first choice
○ alternate choice

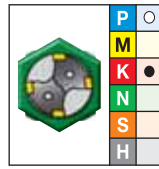
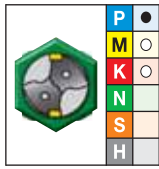
D1 diameter

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter				L	L3	L4 max	L5	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4162842	TDS402A13200	4156771	TDS412A13200	13,200	.5197	—	—	124	77	60	2,3	45	14
4162843	TDS402A13300	4156772	TDS412A13300	13,300	.5236	—	—	124	77	60	2,3	45	14
4162844	TDS402A13400	4156773	TDS412A13400	13,400	.5276	—	—	124	77	60	2,3	45	14
4162845	TDS402A13500	4156774	TDS412A13500	13,500	.5315	—	—	124	77	60	2,3	45	14
4162846	TDS402A13600	4156775	TDS412A13600	13,600	.5354	—	—	124	77	60	2,3	45	14
4162847	TDS402A13700	4156776	TDS412A13700	13,700	.5394	—	—	124	77	60	2,4	45	14
4162848	TDS402A13800	4156777	TDS412A13800	13,800	.5433	—	—	124	77	60	2,4	45	14
4162849	TDS402A13891	4156778	TDS412A13891	13,891	.5469	35/64	—	124	77	60	2,4	45	14
4162850	TDS402A13900	4156779	TDS412A13900	13,900	.5472	—	—	124	77	60	2,4	45	14
4162851	TDS402A14000	4156780	TDS412A14000	14,000	.5512	—	—	124	77	60	2,4	45	14
4162852	TDS402A14100	4156781	TDS412A14100	14,100	.5551	—	—	133	83	63	2,4	48	16
4162853	TDS402A14200	4156782	TDS412A14200	14,200	.5591	—	—	133	83	63	2,5	48	16
4162854	TDS402A14288	4156783	TDS412A14288	14,288	.5625	9/16	—	133	83	63	2,5	48	16
4162855	TDS402A14300	4156784	TDS412A14300	14,300	.5630	—	—	133	83	63	2,5	48	16
4162856	TDS402A14400	4156785	TDS412A14400	14,400	.5669	—	—	133	83	63	2,5	48	16
4162857	TDS402A14500	4156786	TDS412A14500	14,500	.5709	—	—	133	83	63	2,5	48	16
4162858	TDS402A14600	4156787	TDS412A14600	14,600	.5748	—	—	133	83	63	2,5	48	16
4162859	TDS402A14684	4156788	TDS412A14684	14,684	.5781	37/64	—	133	83	63	2,5	48	16
4162860	TDS402A14700	4156789	TDS412A14700	14,700	.5787	—	—	133	83	63	2,5	48	16
4162861	TDS402A14800	4156790	TDS412A14800	14,800	.5827	—	—	133	83	63	2,6	48	16
4162862	TDS402A14900	4156791	TDS412A14900	14,900	.5866	—	—	133	83	63	2,6	48	16
4162863	TDS402A15000	4156792	TDS412A15000	15,000	.5906	—	—	133	83	63	2,6	48	16
4162864	TDS402A15083	4156793	TDS412A15083	15,083	.5938	19/32	—	133	83	63	2,6	48	16
4162865	TDS402A15100	4156794	TDS412A15100	15,100	.5945	—	—	133	83	63	2,6	48	16
4162866	TDS402A15200	4156795	TDS412A15200	15,200	.5984	—	—	133	83	63	2,6	48	16
4162867	TDS402A15300	4156796	TDS412A15300	15,300	.6024	—	—	133	83	63	2,6	48	16
4162868	TDS402A15400	4156797	TDS412A15400	15,400	.6063	—	—	133	83	63	2,7	48	16
4162869	TDS402A15479	4156798	TDS412A15479	15,479	.6094	39/64	—	133	83	63	2,7	48	16
4162870	TDS402A15500	4156799	TDS412A15500	15,500	.6102	—	—	133	83	63	2,7	48	16
4162871	TDS402A15600	4156800	TDS412A15600	15,600	.6142	—	—	133	83	63	2,7	48	16
4162872	TDS402A15700	4156801	TDS412A15700	15,700	.6181	—	—	133	83	63	2,7	48	16
4162873	TDS402A15800	4156802	TDS412A15800	15,800	.6220	—	—	133	83	63	2,7	48	16
4162874	TDS402A15875	4156803	TDS412A15875	15,875	.6250	5/8	—	133	83	63	2,7	48	16
4162875	TDS402A15900	4156804	TDS412A15900	15,900	.6260	—	—	133	83	63	2,8	48	16
4162876	TDS402A16000	4156805	TDS412A16000	16,000	.6299	—	—	133	83	63	2,8	48	16
4162877	TDS402A16100	4156806	TDS412A16100	16,100	.6339	—	—	143	93	71	2,8	48	18
4162878	TDS402A16200	4156807	TDS412A16200	16,200	.6378	—	—	143	93	71	2,8	48	18
4162879	TDS402A16271	4156808	TDS412A16271	16,271	.6406	41/64	—	143	93	71	2,8	48	18
4162880	TDS402A16300	4156809	TDS412A16300	16,300	.6417	—	—	143	93	71	2,8	48	18
4162881	TDS402A16400	4156810	TDS412A16400	16,400	.6457	—	—	143	93	71	2,8	48	18

(continued)

Solid Carbide Drills

(TDS402A • TDS412A • 5 x D — continued)

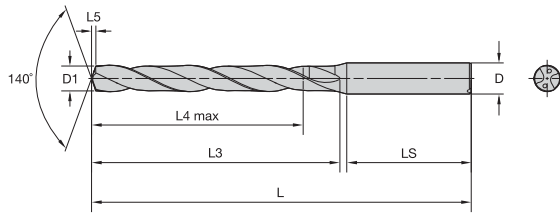


● first choice
○ alternate choice

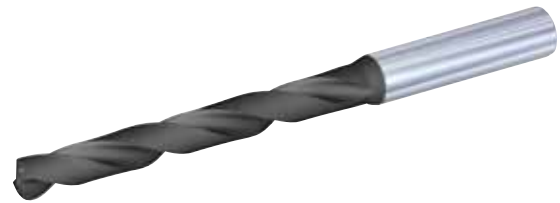
D1 diameter

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter									
order #	catalog #	order #	catalog #	mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D
4162882	TDS402A16500	4156811	TDS412A16500	16,500	.6496	—	—	143	93	71	2,9	48	18
4162883	TDS402A16600	4156812	TDS412A16600	16,600	.6535	—	—	143	93	71	2,9	48	18
4162884	TDS402A16670	4156813	TDS412A16670	16,670	.6563	21/32	—	143	93	71	2,9	48	18
4162885	TDS402A16700	4156814	TDS412A16700	16,700	.6575	—	—	143	93	71	2,9	48	18
4162886	TDS402A16800	4156815	TDS412A16800	16,800	.6614	—	—	143	93	71	2,9	48	18
4162887	TDS402A16900	4156816	TDS412A16900	16,900	.6654	—	—	143	93	71	2,9	48	18
4162888	TDS402A17000	4156817	TDS412A17000	17,000	.6693	—	—	143	93	71	2,9	48	18
4162889	TDS402A17100	4156818	TDS412A17100	17,100	.6732	—	—	143	93	71	3,0	48	18
4162890	TDS402A17200	4156819	TDS412A17200	17,200	.6772	—	—	143	93	71	3,0	48	18
4162891	TDS402A17300	4156820	TDS412A17300	17,300	.6811	—	—	143	93	71	3,0	48	18
4162892	TDS402A17400	4156821	TDS412A17400	17,400	.6850	—	—	143	93	71	3,0	48	18
4162893	TDS402A17463	4156822	TDS412A17463	17,463	.6875	11/16	—	143	93	71	3,0	48	18
4162894	TDS402A17500	4156823	TDS412A17500	17,500	.6890	—	—	143	93	71	3,0	48	18
4162895	TDS402A17600	4156824	TDS412A17600	17,600	.6929	—	—	143	93	71	3,1	48	18
4162896	TDS402A17700	4156825	TDS412A17700	17,700	.6969	—	—	143	93	71	3,1	48	18
4162897	TDS402A17800	4156826	TDS412A17800	17,800	.7008	—	—	143	93	71	3,1	48	18
4162898	TDS402A17859	4156827	TDS412A17859	17,859	.7031	45/64	—	143	93	71	3,1	48	18
4162899	TDS402A17900	4156828	TDS412A17900	17,900	.7047	—	—	143	93	71	3,1	48	18
4162274	TDS402A18000	4156853	TDS412A18000	18,000	.7087	—	—	143	93	71	3,1	48	18
4162275	TDS402A18100	4156854	TDS412A18100	18,100	.7126	—	—	153	101	77	3,1	50	20
4162276	TDS402A18200	4156855	TDS412A18200	18,200	.7165	—	—	153	101	77	3,2	50	20
4162277	TDS402A18258	4156856	TDS412A18258	18,258	.7188	23/32	—	153	101	77	3,2	50	20
4162278	TDS402A18300	4156857	TDS412A18300	18,300	.7205	—	—	153	101	77	3,2	50	20
4162279	TDS402A18400	4156858	TDS412A18400	18,400	.7244	—	—	153	101	77	3,2	50	20
4162280	TDS402A18500	4156859	TDS412A18500	18,500	.7283	—	—	153	101	77	3,2	50	20
4162281	TDS402A18600	4156860	TDS412A18600	18,600	.7323	—	—	153	101	77	3,2	50	20
4162282	TDS402A18654	4156861	TDS412A18654	18,654	.7344	47/64	—	153	101	77	3,2	50	20
4162393	TDS402A18700	4156862	TDS412A18700	18,700	.7362	—	—	153	101	77	3,2	50	20
4162394	TDS402A18800	4156863	TDS412A18800	18,800	.7402	—	—	153	101	77	3,3	50	20
4162395	TDS402A18900	4156864	TDS412A18900	18,900	.7441	—	—	153	101	77	3,3	50	20
4162396	TDS402A19000	4156865	TDS412A19000	19,000	.7480	—	—	153	101	77	3,3	50	20
4162397	TDS402A19050	4156866	TDS412A19050	19,050	.7500	3/4	—	153	101	77	3,3	50	20
4162398	TDS402A19100	4156867	TDS412A19100	19,100	.7520	—	—	153	101	77	3,3	50	20
4162399	TDS402A19200	4156868	TDS412A19200	19,200	.7559	—	—	153	101	77	3,3	50	20
4162400	TDS402A19300	4156869	TDS412A19300	19,300	.7598	—	—	153	101	77	3,4	50	20
4162401	TDS402A19400	4156870	TDS412A19400	19,400	.7638	—	—	153	101	77	3,4	50	20
4162402	TDS402A19500	4156871	TDS412A19500	19,500	.7677	—	—	153	101	77	3,4	50	20
4162403	TDS402A19600	4156872	TDS412A19600	19,600	.7717	—	—	153	101	77	3,4	50	20
4162404	TDS402A19700	4156873	TDS412A19700	19,700	.7756	—	—	153	101	77	3,4	50	20
4162405	TDS402A19800	4156874	TDS412A19800	19,800	.7795	—	—	153	101	77	3,4	50	20
4162406	TDS402A19900	4156875	TDS412A19900	19,900	.7835	—	—	153	101	77	3,5	50	20
4162407	TDS402A20000	4156876	TDS412A20000	20,000	.7874	—	—	153	101	77	3,5	50	20

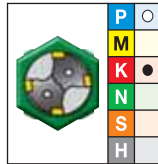
Solid Carbide Drills



For information on L, L3, and L4 max, see page R133.



■ TDS403A • TDS413A • 8 x D



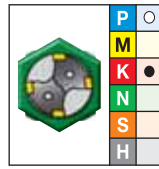
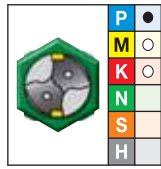
● first choice
○ alternate choice

D1 diameter

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter		wire size	L	L3	L4 max	L5	LS	D
order #	catalog #	order #	catalog #	mm	in							
4162796	TDS403A03000	4156972	TDS413A03000	3,000	.1181	—	78	40	33	0,5	36	6
4162797	TDS403A03048	4156993	TDS413A03048	3,048	.1200	—	78	40	33	0,5	36	6
4162798	TDS403A03100	4156994	TDS413A03100	3,100	.1220	—	78	40	33	0,5	36	6
4162799	TDS403A03175	4156995	TDS413A03175	3,175	.1250	1/8	78	40	33	0,5	36	6
4162800	TDS403A03200	4156996	TDS413A03200	3,200	.1260	—	78	40	33	0,5	36	6
4162801	TDS403A03264	4156997	TDS413A03264	3,264	.1285	—	78	40	33	0,5	36	6
4162802	TDS403A03300	4156998	TDS413A03300	3,300	.1299	—	78	40	33	0,5	36	6
4163163	TDS403A03400	4156999	TDS413A03400	3,400	.1339	—	78	40	33	0,6	36	6
4163164	TDS403A03455	4157000	TDS413A03455	3,455	.1360	—	78	40	33	0,6	36	6
4163165	TDS403A03500	4157001	TDS413A03500	3,500	.1378	—	78	40	33	0,6	36	6
4163166	TDS403A03571	4157002	TDS413A03571	3,571	.1406	9/64	78	40	33	0,6	36	6
4163167	TDS403A03600	4157003	TDS413A03600	3,600	.1417	—	78	40	33	0,6	36	6
4163168	TDS403A03658	4157004	TDS413A03658	3,658	.1440	—	78	40	33	0,6	36	6
4163169	TDS403A03700	4157005	TDS413A03700	3,700	.1457	—	78	40	33	0,6	36	6
4163170	TDS403A03734	4157006	TDS413A03734	3,734	.1470	—	78	40	33	0,6	36	6
4163171	TDS403A03800	4157007	TDS413A03800	3,800	.1496	—	87	49	41	0,6	36	6
4163172	TDS403A03900	4157008	TDS413A03900	3,900	.1535	—	87	49	41	0,6	36	6
4163173	TDS403A03970	4157009	TDS413A03970	3,970	.1563	5/32	87	49	41	0,7	36	6
4163174	TDS403A04000	4157010	TDS413A04000	4,000	.1575	—	87	49	41	0,7	36	6
4163175	TDS403A04039	4157011	TDS413A04039	4,039	.1590	—	87	49	41	0,7	36	6
4163176	TDS403A04090	4157012	TDS413A04090	4,090	.1610	—	87	49	41	0,7	36	6
4163177	TDS403A04100	4157013	TDS413A04100	4,100	.1614	—	87	49	41	0,7	36	6
4163178	TDS403A04200	4157014	TDS413A04200	4,200	.1654	—	87	49	41	0,7	36	6
4163179	TDS403A04217	4157015	TDS413A04217	4,217	.1660	—	87	49	41	0,7	36	6
4163180	TDS403A04300	4157016	TDS413A04300	4,300	.1693	—	87	49	41	0,7	36	6
4163181	TDS403A04366	4157017	TDS413A04366	4,366	.1719	11/64	87	49	41	0,7	36	6
4163182	TDS403A04400	4157018	TDS413A04400	4,400	.1732	—	87	49	41	0,7	36	6
4163193	TDS403A04500	4157019	TDS413A04500	4,500	.1772	—	87	49	41	0,7	36	6

(continued)

(TDS403A • TDS413A • 8 x D — continued)



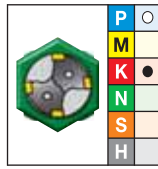
● first choice
○ alternate choice

D1 diameter

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter									
order #	catalog #	order #	catalog #	mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D
4163194	TDS403A04600	4157020	TDS413A04600	4,600	.1811	—	—	87	49	41	0,8	36	6
4163195	TDS403A04623	4157021	TDS413A04623	4,623	.1820	—	14	87	49	41	0,8	36	6
4163196	TDS403A04700	4157022	TDS413A04700	4,700	.1850	—	13	87	49	41	0,8	36	6
4163197	TDS403A04763	4157023	TDS413A04763	4,763	.1875	3/16	—	94	56	48	0,8	36	6
4163198	TDS403A04800	4157024	TDS413A04800	4,800	.1890	—	12	94	56	48	0,8	36	6
4163199	TDS403A04852	4157025	TDS413A04852	4,852	.1910	—	11	94	56	48	0,8	36	6
4163200	TDS403A04900	4157026	TDS413A04900	4,900	.1929	—	—	94	56	48	0,8	36	6
4163201	TDS403A05000	4157027	TDS413A05000	5,000	.1969	—	—	94	56	48	0,8	36	6
4163202	TDS403A05100	4157028	TDS413A05100	5,100	.2008	—	—	94	56	48	0,8	36	6
4163203	TDS403A05106	4157029	TDS413A05106	5,106	.2010	—	7	94	56	48	0,8	36	6
4163204	TDS403A05159	4157030	TDS413A05159	5,159	.2031	13/64	—	94	56	48	0,9	36	6
4163205	TDS403A05200	4157031	TDS413A05200	5,200	.2047	—	—	94	56	48	0,9	36	6
4163206	TDS403A05300	4157032	TDS413A05300	5,300	.2087	—	—	94	56	48	0,9	36	6
4163207	TDS403A05400	4157033	TDS413A05400	5,400	.2126	—	—	94	56	48	0,9	36	6
4163208	TDS403A05410	4157034	TDS413A05410	5,410	.2130	—	3	94	56	48	0,9	36	6
4163209	TDS403A05500	4157035	TDS413A05500	5,500	.2165	—	—	94	56	48	0,9	36	6
4163210	TDS403A05558	4157036	TDS413A05558	5,558	.2188	7/32	—	94	56	48	0,9	36	6
4163211	TDS403A05600	4157037	TDS413A05600	5,600	.2205	—	—	94	56	48	0,9	36	6
4163212	TDS403A05616	4157038	TDS413A05616	5,616	.2211	—	2	94	56	48	0,9	36	6
4163213	TDS403A05700	4157039	TDS413A05700	5,700	.2244	—	—	94	56	48	1,0	36	6
4163214	TDS403A05800	4157040	TDS413A05800	5,800	.2283	—	—	94	56	48	1,0	36	6
4163215	TDS403A05900	4157041	TDS413A05900	5,900	.2323	—	—	94	56	48	1,0	36	6
4163216	TDS403A05954	4157042	TDS413A05954	5,954	.2344	15/64	—	94	56	48	1,0	36	6
4163217	TDS403A06000	4157043	TDS413A06000	6,000	.2362	—	—	94	56	48	1,0	36	6
4163218	TDS403A06100	4157044	TDS413A06100	6,100	.2402	—	—	105	67	57	1,0	36	8
4163219	TDS403A06200	4157045	TDS413A06200	6,200	.2441	—	—	105	67	57	1,0	36	8
4163220	TDS403A06300	4157046	TDS413A06300	6,300	.2480	—	—	105	67	57	1,1	36	8
4163221	TDS403A06350	4157047	TDS413A06350	6,350	.2500	1/4	—	105	67	57	1,1	36	8
4163222	TDS403A06400	4157048	TDS413A06400	6,400	.2520	—	—	105	67	57	1,1	36	8
4163223	TDS403A06500	4157049	TDS413A06500	6,500	.2559	—	—	105	67	57	1,1	36	8
4163224	TDS403A06528	4157050	TDS413A06528	6,528	.2570	—	—	105	67	57	1,1	36	8
4163225	TDS403A06600	4157051	TDS413A06600	6,600	.2598	—	—	105	67	57	1,1	36	8
4163226	TDS403A06630	4157052	TDS413A06630	6,630	.2610	—	—	105	67	57	1,1	36	8
4163227	TDS403A06700	4157053	TDS413A06700	6,700	.2638	—	—	105	67	57	1,1	36	8
4163228	TDS403A06746	4157054	TDS413A06746	6,746	.2656	17/64	—	105	67	57	1,1	36	8
4163229	TDS403A06800	4157055	TDS413A06800	6,800	.2677	—	—	105	67	57	1,1	36	8
4163230	TDS403A06900	4157056	TDS413A06900	6,900	.2717	—	—	105	67	57	1,2	36	8
4163231	TDS403A07000	4157057	TDS413A07000	7,000	.2756	—	—	105	67	57	1,2	36	8
4163232	TDS403A07100	4157058	TDS413A07100	7,100	.2795	—	—	110	72	61	1,2	36	8
4163233	TDS403A07145	4157059	TDS413A07145	7,145	.2813	9/32	—	110	72	61	1,2	36	8

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(TDS403A • TDS413A • 8 x D — continued)



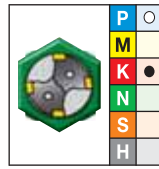
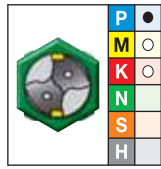
● first choice
○ alternate choice

D1 diameter

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter				L	L3	L4 max	L5	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4163234	TDS403A07200	4157060	TDS413A07200	7,200	.2835	—	—	110	72	61	1,2	36	8
4163235	TDS403A07300	4157061	TDS413A07300	7,300	.2874	—	—	110	72	61	1,2	36	8
4163236	TDS403A07400	4157062	TDS413A07400	7,400	.2913	—	—	110	72	61	1,3	36	8
4163237	TDS403A07500	4157063	TDS413A07500	7,500	.2953	—	—	110	72	61	1,3	36	8
4163238	TDS403A07541	4157064	TDS413A07541	7,541	.2969	19/64	—	110	72	61	1,3	36	8
4163239	TDS403A07600	4157065	TDS413A07600	7,600	.2992	—	—	110	72	61	1,3	36	8
4163240	TDS403A07700	4157066	TDS413A07700	7,700	.3031	—	—	110	72	61	1,3	36	8
4163241	TDS403A07800	4157067	TDS413A07800	7,800	.3071	—	—	110	72	61	1,3	36	8
4163242	TDS403A07900	4157068	TDS413A07900	7,900	.3110	—	—	110	72	61	1,3	36	8
4163243	TDS403A07938	4157069	TDS413A07938	7,938	.3125	5/16	—	110	72	61	1,3	36	8
4163244	TDS403A08000	4157070	TDS413A08000	8,000	.3150	—	—	110	72	61	1,4	36	8
4163245	TDS403A08100	4157071	TDS413A08100	8,100	.3189	—	—	122	80	68	1,4	40	10
4163246	TDS403A08200	4157072	TDS413A08200	8,200	.3228	—	—	122	80	68	1,4	40	10
4163247	TDS403A08300	4157073	TDS413A08300	8,300	.3268	—	—	122	80	68	1,4	40	10
4163248	TDS403A08334	4157074	TDS413A08334	8,334	.3281	21/64	—	122	80	68	1,4	40	10
4163249	TDS403A08400	4157075	TDS413A08400	8,400	.3307	—	—	122	80	68	1,4	40	10
4163250	TDS403A08433	4157076	TDS413A08433	8,433	.3320	—	—	122	80	68	1,4	40	10
4163251	TDS403A08500	4157077	TDS413A08500	8,500	.3346	—	—	122	80	68	1,4	40	10
4163252	TDS403A08600	4157078	TDS413A08600	8,600	.3386	—	—	122	80	68	1,5	40	10
4163253	TDS403A08700	4157079	TDS413A08700	8,700	.3425	—	—	122	80	68	1,5	40	10
4163254	TDS403A08733	4157080	TDS413A08733	8,733	.3438	11/32	—	122	80	68	1,5	40	10
4163255	TDS403A08800	4157081	TDS413A08800	8,800	.3465	—	—	122	80	68	1,5	40	10
4163256	TDS403A08900	4157082	TDS413A08900	8,900	.3504	—	—	122	80	68	1,5	40	10
4163257	TDS403A09000	4157083	TDS413A09000	9,000	.3543	—	—	122	80	68	1,5	40	10
4163258	TDS403A09100	4157084	TDS413A09100	9,100	.3583	—	—	122	80	68	1,5	40	10
4163259	TDS403A09129	4157085	TDS413A09129	9,129	.3594	23/64	—	122	80	68	1,6	40	10
4163260	TDS403A09200	4157086	TDS413A09200	9,200	.3622	—	—	122	80	68	1,6	40	10
4163261	TDS403A09300	4157087	TDS413A09300	9,300	.3661	—	—	122	80	68	1,6	40	10
4163262	TDS403A09347	4157088	TDS413A09347	9,347	.3680	—	—	122	80	68	1,6	40	10
4163263	TDS403A09400	4157089	TDS413A09400	9,400	.3701	—	—	122	80	68	1,6	40	10
4163264	TDS403A09500	4157090	TDS413A09500	9,500	.3740	—	—	122	80	68	1,6	40	10
4163265	TDS403A09525	4157091	TDS413A09525	9,525	.3750	3/8	—	122	80	68	1,6	40	10
4163266	TDS403A09600	4157092	TDS413A09600	9,600	.3780	—	—	122	80	68	1,6	40	10
4163267	TDS403A09700	4157093	TDS413A09700	9,700	.3819	—	—	122	80	68	1,7	40	10
4163268	TDS403A09800	4157094	TDS413A09800	9,800	.3858	—	—	122	80	68	1,7	40	10
4163269	TDS403A09900	4157095	TDS413A09900	9,900	.3898	—	—	122	80	68	1,7	40	10
4163270	TDS403A09921	4157096	TDS413A09921	9,921	.3906	25/64	—	122	80	68	1,7	40	10
4162679	TDS403A10000	4156836	TDS413A10000	10,000	.3937	—	—	122	80	68	1,7	40	10
4162680	TDS403A10100	4156837	TDS413A10100	10,100	.3976	—	—	141	94	79	1,7	45	12
4162382	TDS403A10200	4156838	TDS413A10200	10,200	.4016	—	—	141	94	79	1,7	45	12

(continued)

(TDS403A • TDS413A • 8 x D — continued)



● first choice
○ alternate choice

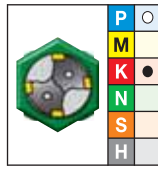
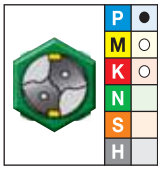
D1 diameter

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter									
order #	catalog #	order #	catalog #	mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D
4162703	TDS403A10300	4156839	TDS413A10300	10,300	.4055	—	—	141	94	79	1,8	45	12
4162704	TDS403A10320	4156840	TDS413A10320	10,320	.4063	13/32	—	141	94	79	1,8	45	12
4162705	TDS403A10400	4156841	TDS413A10400	10,400	.4094	—	—	141	94	79	1,8	45	12
4162706	TDS403A10500	4156842	TDS413A10500	10,500	.4134	—	—	141	94	79	1,8	45	12
4162707	TDS403A10600	4156883	TDS413A10600	10,600	.4173	—	—	141	94	79	1,8	45	12
4162708	TDS403A10700	4156884	TDS413A10700	10,700	.4213	—	—	141	94	79	1,8	45	12
4162709	TDS403A10716	4156885	TDS413A10716	10,716	.4219	27/64	—	141	94	79	1,8	45	12
4162710	TDS403A10800	4156886	TDS413A10800	10,800	.4252	—	—	141	94	79	1,8	45	12
4162711	TDS403A10900	4156887	TDS413A10900	10,900	.4291	—	—	141	94	79	1,9	45	12
4162712	TDS403A11000	4156888	TDS413A11000	11,000	.4331	—	—	141	94	79	1,9	45	12
4162713	TDS403A11100	4156889	TDS413A11100	11,100	.4370	—	—	141	94	79	1,9	45	12
4162714	TDS403A11113	4156890	TDS413A11113	11,113	.4375	7/16	—	141	94	79	1,9	45	12
4162715	TDS403A11200	4156891	TDS413A11200	11,200	.4409	—	—	141	94	79	1,9	45	12
4162716	TDS403A11300	4156892	TDS413A11300	11,300	.4449	—	—	141	94	79	1,9	45	12
4162717	TDS403A11400	4156893	TDS413A11400	11,400	.4488	—	—	141	94	79	2,0	45	12
4162718	TDS403A11500	4156894	TDS413A11500	11,500	.4528	—	—	141	94	79	2,0	45	12
4162719	TDS403A11509	4156895	TDS413A11509	11,509	.4531	29/64	—	141	94	79	2,0	45	12
4162720	TDS403A11600	4156896	TDS413A11600	11,600	.4567	—	—	141	94	79	2,0	45	12
4162721	TDS403A11700	4156897	TDS413A11700	11,700	.4606	—	—	141	94	79	2,0	45	12
4162722	TDS403A11800	4156898	TDS413A11800	11,800	.4646	—	—	141	94	79	2,0	45	12
4162723	TDS403A11900	4156899	TDS413A11900	11,900	.4685	—	—	141	94	79	2,0	45	12
4162724	TDS403A11908	4156900	TDS413A11908	11,908	.4688	15/32	—	141	94	79	2,0	45	12
4162725	TDS403A12000	4156901	TDS413A12000	12,000	.4724	—	—	141	94	79	2,1	45	12
4162726	TDS403A12100	4156902	TDS413A12100	12,100	.4764	—	—	155	108	91	2,1	45	14
4162727	TDS403A12200	4156903	TDS413A12200	12,200	.4803	—	—	155	108	91	2,1	45	14
4162728	TDS403A12300	4156904	TDS413A12300	12,300	.4843	—	—	155	108	91	2,1	45	14
4162729	TDS403A12304	4156905	TDS413A12304	12,304	.4844	31/64	—	155	108	91	2,1	45	14
4162730	TDS403A12400	4156906	TDS413A12400	12,400	.4882	—	—	155	108	91	2,1	45	14
4162681	TDS403A12500	4148984	TDS413A12500	12,500	.4921	—	—	155	108	91	2,1	45	14
4162731	TDS403A12600	4156907	TDS413A12600	12,600	.4961	—	—	155	108	91	2,2	45	14
4162732	TDS403A12700	4156908	TDS413A12700	12,700	.5000	1/2	—	155	108	91	2,2	45	14
4162733	TDS403A12800	4156909	TDS413A12800	12,800	.5039	—	—	155	108	91	2,2	45	14
4162734	TDS403A12900	4156910	TDS413A12900	12,900	.5079	—	—	155	108	91	2,2	45	14
4162735	TDS403A13000	4156911	TDS413A13000	13,000	.5118	—	—	155	108	91	2,2	45	14
4162736	TDS403A13096	4156912	TDS413A13096	13,096	.5156	33/64	—	155	108	91	2,3	45	14
4162737	TDS403A13100	4156913	TDS413A13100	13,100	.5157	—	—	155	108	91	2,3	45	14
4162738	TDS403A13200	4156914	TDS413A13200	13,200	.5197	—	—	155	108	91	2,3	45	14
4162739	TDS403A13300	4156915	TDS413A13300	13,300	.5236	—	—	155	108	91	2,3	45	14
4162740	TDS403A13400	4156916	TDS413A13400	13,400	.5276	—	—	155	108	91	2,3	45	14
4162741	TDS403A13500	4156917	TDS413A13500	13,500	.5315	—	—	155	108	91	2,3	45	14

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Solid Carbide Drills

(TDS403A • TDS413A • 8 x D — continued)



● first choice
○ alternate choice

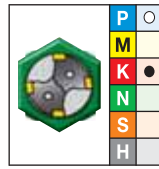
D1 diameter

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter				L	L3	L4 max	L5	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4162742	TDS403A13600	4156918	TDS413A13600	13,600	.5354	—	—	155	108	91	2,3	45	14
4162743	TDS403A13700	4156919	TDS413A13700	13,700	.5394	—	—	155	108	91	2,4	45	14
4162744	TDS403A13800	4156920	TDS413A13800	13,800	.5433	—	—	155	108	91	2,4	45	14
4162745	TDS403A13891	4156921	TDS413A13891	13,891	.5469	35/64	—	155	108	91	2,4	45	14
4162746	TDS403A13900	4156922	TDS413A13900	13,900	.5472	—	—	155	108	91	2,4	45	14
4162747	TDS403A14000	4156923	TDS413A14000	14,000	.5512	—	—	155	108	91	2,4	45	14
4162748	TDS403A14100	4156924	TDS413A14100	14,100	.5551	—	—	171	121	101	2,4	48	16
4162749	TDS403A14200	4156925	TDS413A14200	14,200	.5591	—	—	171	121	101	2,5	48	16
4162750	TDS403A14288	4156926	TDS413A14288	14,288	.5625	9/16	—	171	121	101	2,5	48	16
4162751	TDS403A14300	4156927	TDS413A14300	14,300	.5630	—	—	171	121	101	2,5	48	16
4162752	TDS403A14400	4156928	TDS413A14400	14,400	.5669	—	—	171	121	101	2,5	48	16
4162753	TDS403A14500	4156929	TDS413A14500	14,500	.5709	—	—	171	121	101	2,5	48	16
4162754	TDS403A14600	4156930	TDS413A14600	14,600	.5748	—	—	171	121	101	2,5	48	16
4162755	TDS403A14684	4156931	TDS413A14684	14,684	.5781	37/64	—	171	121	101	2,5	48	16
4162756	TDS403A14700	4156932	TDS413A14700	14,700	.5787	—	—	171	121	101	2,5	48	16
4162757	TDS403A14800	4156933	TDS413A14800	14,800	.5827	—	—	171	121	101	2,6	48	16
4162758	TDS403A14900	4156934	TDS413A14900	14,900	.5866	—	—	171	121	101	2,6	48	16
4162759	TDS403A15000	4156935	TDS413A15000	15,000	.5906	—	—	171	121	101	2,6	48	16
4162760	TDS403A15083	4156936	TDS413A15083	15,083	.5938	19/32	—	171	121	101	2,6	48	16
4162761	TDS403A15100	4156937	TDS413A15100	15,100	.5945	—	—	171	121	101	2,6	48	16
4162762	TDS403A15200	4156938	TDS413A15200	15,200	.5984	—	—	171	121	101	2,6	48	16
4162763	TDS403A15300	4156939	TDS413A15300	15,300	.6024	—	—	171	121	101	2,6	48	16
4162764	TDS403A15400	4156940	TDS413A15400	15,400	.6063	—	—	171	121	101	2,7	48	16
4162765	TDS403A15479	4156941	TDS413A15479	15,479	.6094	39/64	—	171	121	101	2,7	48	16
4162766	TDS403A15500	4156942	TDS413A15500	15,500	.6102	—	—	171	121	101	2,7	48	16
4162767	TDS403A15600	4156943	TDS413A15600	15,600	.6142	—	—	171	121	101	2,7	48	16
4162768	TDS403A15700	4156944	TDS413A15700	15,700	.6181	—	—	171	121	101	2,7	48	16
4162769	TDS403A15800	4156945	TDS413A15800	15,800	.6220	—	—	171	121	101	2,7	48	16
4162770	TDS403A15875	4156946	TDS413A15875	15,875	.6250	5/8	—	171	121	101	2,7	48	16
4162771	TDS403A15900	4156947	TDS413A15900	15,900	.6260	—	—	171	121	101	2,8	48	16
4162772	TDS403A16000	4156948	TDS413A16000	16,000	.6299	—	—	171	121	101	2,8	48	16
4162773	TDS403A16100	4156949	TDS413A16100	16,100	.6339	—	—	185	135	113	2,8	48	18
4162774	TDS403A16200	4156950	TDS413A16200	16,200	.6378	—	—	185	135	113	2,8	48	18
4162775	TDS403A16271	4156951	TDS413A16271	16,271	.6406	41/64	—	185	135	113	2,8	48	18
4162776	TDS403A16300	4156952	TDS413A16300	16,300	.6417	—	—	185	135	113	2,8	48	18
4162777	TDS403A16400	4156953	TDS413A16400	16,400	.6457	—	—	185	135	113	2,8	48	18
4162778	TDS403A16500	4156954	TDS413A16500	16,500	.6496	—	—	185	135	113	2,9	48	18
4162779	TDS403A16600	4156955	TDS413A16600	16,600	.6535	—	—	185	135	113	2,9	48	18
4162780	TDS403A16670	4156956	TDS413A16670	16,670	.6563	21/32	—	185	135	113	2,9	48	18
4162781	TDS403A16700	4156957	TDS413A16700	16,700	.6575	—	—	185	135	113	2,9	48	18

(continued)

Solid Carbide Drills

(TDS403A • TDS413A • 8 x D — continued)



● first choice
○ alternate choice

D1 diameter

grade WP20PD TiAlN		grade WK15PD AlCrN		D1 diameter									
order #	catalog #	order #	catalog #	mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D
4162782	TDS403A16800	4156958	TDS413A16800	16,800	.6614	—	—	185	135	113	2,9	48	18
4162783	TDS403A16900	4156959	TDS413A16900	16,900	.6654	—	—	185	135	113	2,9	48	18
4162784	TDS403A17000	4156960	TDS413A17000	17,000	.6693	—	—	185	135	113	2,9	48	18
4162785	TDS403A17100	4156961	TDS413A17100	17,100	.6732	—	—	185	135	113	3,0	48	18
4162786	TDS403A17200	4156962	TDS413A17200	17,200	.6772	—	—	185	135	113	3,0	48	18
4162787	TDS403A17300	4156963	TDS413A17300	17,300	.6811	—	—	185	135	113	3,0	48	18
4162788	TDS403A17400	4156964	TDS413A17400	17,400	.6850	—	—	185	135	113	3,0	48	18
4162789	TDS403A17463	4156965	TDS413A17463	17,463	.6875	11/16	—	185	135	113	3,0	48	18
4162790	TDS403A17500	4156966	TDS413A17500	17,500	.6890	—	—	185	135	113	3,0	48	18
4162791	TDS403A17600	4156967	TDS413A17600	17,600	.6929	—	—	185	135	113	3,1	48	18
4162792	TDS403A17700	4156968	TDS413A17700	17,700	.6969	—	—	185	135	113	3,1	48	18
4162793	TDS403A17800	4156969	TDS413A17800	17,800	.7008	—	—	185	135	113	3,1	48	18
4162794	TDS403A17859	4156970	TDS413A17859	17,859	.7031	45/64	—	185	135	113	3,1	48	18
4162795	TDS403A17900	4156971	TDS413A17900	17,900	.7047	—	—	185	135	113	3,1	48	18
4162515	TDS403A18000	4157206	TDS413A18000	18,000	.7087	—	—	185	135	113	3,1	48	18
4162516	TDS403A18100	4157207	TDS413A18100	18,100	.7126	—	—	200	148	124	3,1	50	20
4162517	TDS403A18200	4157208	TDS413A18200	18,200	.7165	—	—	200	148	124	3,2	50	20
4162518	TDS403A18258	4157209	TDS413A18258	18,258	.7188	23/32	—	200	148	124	3,2	50	20
4162519	TDS403A18300	4157210	TDS413A18300	18,300	.7205	—	—	200	148	124	3,2	50	20
4162520	TDS403A18400	4157211	TDS413A18400	18,400	.7244	—	—	200	148	124	3,2	50	20
4162521	TDS403A18500	4157212	TDS413A18500	18,500	.7283	—	—	200	148	124	3,2	50	20
4162522	TDS403A18600	4157253	TDS413A18600	18,600	.7323	—	—	200	148	124	3,2	50	20
4162663	TDS403A18654	4157254	TDS413A18654	18,654	.7344	47/64	—	200	148	124	3,2	50	20
4162664	TDS403A18700	4157255	TDS413A18700	18,700	.7362	—	—	200	148	124	3,2	50	20
4162665	TDS403A18800	4157256	TDS413A18800	18,800	.7402	—	—	200	148	124	3,3	50	20
4162666	TDS403A18900	4157257	TDS413A18900	18,900	.7441	—	—	200	148	124	3,3	50	20
4162667	TDS403A19000	4157258	TDS413A19000	19,000	.7480	—	—	200	148	124	3,3	50	20
4162668	TDS403A19050	4157259	TDS413A19050	19,050	.7500	3/4	—	200	148	124	3,3	50	20
4162669	TDS403A19100	4157260	TDS413A19100	19,100	.7520	—	—	200	148	124	3,3	50	20
4162670	TDS403A19200	4157261	TDS413A19200	19,200	.7559	—	—	200	148	124	3,3	50	20
4162671	TDS403A19300	4157262	TDS413A19300	19,300	.7598	—	—	200	148	124	3,4	50	20
4162672	TDS403A19400	4157263	TDS413A19400	19,400	.7638	—	—	200	148	124	3,4	50	20
4162673	TDS403A19500	4157264	TDS413A19500	19,500	.7677	—	—	200	148	124	3,4	50	20
4162674	TDS403A19600	4157265	TDS413A19600	19,600	.7717	—	—	200	148	124	3,4	50	20
4162675	TDS403A19700	4157266	TDS413A19700	19,700	.7756	—	—	200	148	124	3,4	50	20
4162676	TDS403A19800	4157267	TDS413A19800	19,800	.7795	—	—	200	148	124	3,4	50	20
4162677	TDS403A19900	4157268	TDS413A19900	19,900	.7835	—	—	200	148	124	3,5	50	20
4162678	TDS403A20000	4157269	TDS413A20000	20,000	.7874	—	—	200	148	124	3,5	50	20

Solid Carbide Drills

■ TOP DRILL S • TDS202 Series • WP20PD™ • Flood Coolant • Inch

		Cutting Speed – vc Range – SFM		Recommended Feed Rate (f) by Diameter							
Material Group	min – max	Tool Diameter (inch)	.125–1/8	.188–3/16	.250–1/4	.313–5/16	.375–3/8	.500–1/2	.625–5/8	.750–3/4	
P	1	230 – 460	IPR	.003–.006	.004–.007	.005–.010	.006–.012	.006–.013	.008–.015	.009–.018	.011–.022
	2, 3, 4, 6, 7	230 – 460	IPR	.003–.006	.004–.007	.005–.010	.006–.012	.007–.013	.009–.015	.011–.019	.013–.024
	5, 9, 10, 11	200 – 390	IPR	.003–.006	.004–.007	.005–.010	.006–.012	.007–.013	.008–.015	.009–.019	.011–.024
	12, 13.1, 13.2	130 – 200	IPR	.002–.004	.003–.005	.004–.008	.004–.009	.005–.009	.005–.011	.007–.012	.009–.017
M	14.1	100 – 160	IPR	.002–.004	.002–.004	.003–.005	.004–.006	.004–.007	.005–.008	.006–.009	.006–.010
	14.3	130 – 200	IPR	.002–.004	.003–.005	.004–.005	.004–.007	.004–.008	.005–.009	.006–.010	.006–.011
	14.2, 14.4	100 – 160	IPR	.002–.004	.003–.004	.003–.005	.004–.006	.004–.007	.005–.007	.006–.008	.006–.010



■ TOP DRILL S • TDS401/TDS402/TDS403 Series • WP20PD • Through Coolant • Inch

		Cutting Speed – vc Range – SFM		Recommended Feed Rate (f) by Diameter							
Material Group	min – max	Tool Diameter (inch)	.125–1/8	.188–3/16	.250–1/4	.313–5/16	.375–3/8	.500–1/2	.625–5/8	.750–3/4	
P	1	260 – 590	IPR	.003–.006	.004–.007	.005–.010	.006–.012	.006–.014	.008–.016	.010–.019	.012–.023
	2, 3, 4, 6, 7	260 – 520	IPR	.003–.007	.004–.008	.005–.010	.006–.012	.008–.014	.009–.016	.012–.020	.014–.025
	5, 9, 10, 11	260 – 460	IPR	.003–.007	.004–.008	.005–.010	.006–.012	.007–.014	.008–.016	.010–.020	.012–.025
	12, 13.1, 13.2	160 – 260	IPR	.002–.004	.003–.005	.004–.008	.004–.009	.005–.010	.006–.011	.007–.013	.010–.017
M	14.1	130 – 200	IPR	.002–.004	.002–.005	.003–.005	.004–.006	.004–.007	.005–.008	.006–.009	.007–.010
	14.3	130 – 230	IPR	.002–.004	.003–.005	.004–.005	.004–.007	.004–.008	.005–.009	.006–.010	.007–.012
	14.2, 14.4	110 – 160	IPR	.002–.004	.003–.005	.003–.005	.004–.006	.004–.007	.005–.008	.006–.009	.007–.010



Solid Carbide Drills

nominal size range	Inch tolerance	
	D1 tolerance m7	D tolerance h6
>.1181–.2362	.0000/.0005	.0000/-.0003
>.2360–.3937	.0000/.0006	.0000/-.0004
>.3937–.7087	.0000/.0007	.0000/-.0004
>.7078–1.0000	.0000/.0009	.0000/-.0005

■ TOP DRILL S • TDS202 Series • WP20PD™ • Flood Coolant • Metric

												
		Cutting Speed – vc Range – m/min		Recommended Feed Rate (f) by Diameter								
Material Group		min	max	Tool Diameter (mm)	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	1	70	140	mm/r	0,08–0,15	0,10–0,18	0,12–0,25	0,15–0,30	0,15–0,34	0,20–0,38	0,23–0,45	0,28–0,55
	2, 3, 4, 6, 7	70	140	mm/r	0,08–0,16	0,10–0,19	0,12–0,25	0,15–0,30	0,19–0,34	0,22–0,38	0,28–0,48	0,34–0,60
	5, 9, 10, 11	60	120	mm/r	0,08–0,16	0,10–0,19	0,12–0,25	0,14–0,30	0,17–0,33	0,20–0,38	0,24–0,48	0,29–0,60
	12, 13.1, 13.2	40	60	mm/r	0,06–0,10	0,08–0,12	0,10–0,20	0,10–0,22	0,13–0,24	0,14–0,27	0,18–0,32	0,24–0,42
M	14.1	30	50	mm/r	0,05–0,09	0,06–0,11	0,08–0,13	0,09–0,15	0,10–0,17	0,12–0,20	0,14–0,22	0,16–0,25
	14.3	40	60	mm/r	0,05–0,10	0,07–0,12	0,09–0,13	0,10–0,18	0,10–0,20	0,12–0,22	0,14–0,25	0,16–0,28
	14.2, 14.4	30	50	mm/r	0,05–0,09	0,07–0,11	0,08–0,12	0,09–0,15	0,10–0,17	0,12–0,19	0,14–0,21	0,16–0,25

■ TOP DRILL S • TDS401/TDS402/TDS403 Series • WP20PD • Through Coolant • Metric

												
		Cutting Speed – vc Range – m/min		Recommended Feed Rate (f) by Diameter								
Material Group		min	max	Tool Diameter (mm)	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	1	80	180	mm/r	0,08–0,16	0,11–0,19	0,13–0,26	0,16–0,32	0,16–0,36	0,21–0,40	0,24–0,47	0,29–0,58
	2, 3, 4, 6, 7	80	160	mm/r	0,09–0,17	0,11–0,20	0,13–0,26	0,16–0,32	0,20–0,36	0,23–0,40	0,29–0,50	0,36–0,63
	5, 9, 10, 11	80	140	mm/r	0,08–0,17	0,11–0,20	0,12–0,26	0,15–0,32	0,18–0,35	0,21–0,40	0,25–0,50	0,30–0,63
	12, 13.1, 13.2	50	80	mm/r	0,06–0,11	0,08–0,13	0,11–0,21	0,10–0,23	0,13–0,25	0,14–0,28	0,29–0,33	0,25–0,44
M	14.1	40	60	mm/r	0,05–0,09	0,06–0,12	0,08–0,14	0,09–0,16	0,11–0,18	0,13–0,21	0,15–0,23	0,17–0,26
	14.3	40	70	mm/r	0,05–0,11	0,07–0,13	0,09–0,14	0,11–0,19	0,11–0,21	0,13–0,23	0,15–0,26	0,17–0,29
	14.2, 14.4	35	50	mm/r	0,05–0,09	0,07–0,12	0,08–0,13	0,09–0,16	0,11–0,18	0,13–0,20	0,15–0,22	0,17–0,26

nominal size range	Metric tolerance	
	D1 tolerance m7	D tolerance h6
>3–6	0,004/0,016	0,000/-0,008
>6–10	0,006/0,021	0,000/-0,009
>10–18	0,007/0,025	0,000/-0,011
>18–25,4	0,008/0,029	0,000/-0,013

■ TOP DRILL S • TDS212 Series • WK15PD™ • Flood Coolant • Inch

		Cutting Speed – vc		Recommended Feed Rate (f) by Diameter							
		Range – SFM									
Material Group	min – max	Tool Diameter (inch)	.125–1/8	.188–3/16	.250–1/4	.313–5/16	.375–3/8	.500–1/2	.625–5/8	.750–3/4	
			K	15, 16	230 – 560	IPR	.004–.009	.005–.009	.006–.012	.008–.015	.009–.017
	17, 18, 19	260 – 460	IPR	.005–.006	.005–.007	.006–.010	.008–.012	.009–.014	.010–.016	.012–.019	.015–.024
	20	230 – 430	IPR	.003–.007	.004–.007	.005–.010	.006–.012	.007–.014	.007–.016	.009–.019	.012–.024

■ TOP DRILL S • TDS411/TDS412/TDS413 Series • WK15PD • Through Coolant • Inch

		Cutting Speed – vc		Recommended Feed Rate (f) by Diameter							
		Range – SFM									
Material Group	min – max	Tool Diameter (inch)	.125–1/8	.188–3/16	.250–1/4	.313–5/16	.375–3/8	.500–1/2	.625–5/8	.750–3/4	
			K	15, 16	260 – 620	IPR	.004–.009	.005–.009	.006–.012	.008–.015	.009–.017
	17, 18, 19	300 – 560	IPR	.005–.006	.005–.007	.006–.010	.008–.012	.009–.014	.010–.016	.012–.019	.015–.024
	20	260 – 490	IPR	.003–.007	.004–.007	.005–.010	.006–.012	.007–.014	.007–.016	.009–.019	.012–.024

Solid Carbide Drills

nominal size range	Inch tolerance	
	D1 tolerance m7	D tolerance h6
>.1181–.2362	.0000/.0005	.0000/-.0003
>.2360–.3937	.0000/.0006	.0000/-.0004
>.3937–.7087	.0000/.0007	.0000/-.0004
>.7078–1.0000	.0000/.0009	.0000/-.0005

■ TOP DRILL S • TDS212 Series • WK15PD™ • Flood Coolant • Metric

		Cutting Speed – vc Range – m/min	Recommended Feed Rate (f) by Diameter								
Material Group	min - max	Tool Diameter (mm)	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0	
K	15, 16	70 - 170	mm/r	0,16–0,31	0,20–0,38	0,23–0,44	0,25–0,49	0,31–0,60	0,38–0,74	0,31–0,60	0,38–0,74
	17, 18, 19	80 - 140	mm/r	0,16–0,25	0,20–0,31	0,23–0,36	0,25–0,40	0,31–0,48	0,38–0,60	0,31–0,48	0,38–0,60
	20	70 - 130	mm/r	0,12–0,25	0,14–0,30	0,17–0,35	0,19–0,40	0,24–0,48	0,30–0,60	0,24–0,48	0,30–0,60

■ TOP DRILL S • TDS411/TDS412/TDS413 Series • WK15PD • Through Coolant • Metric

		Cutting Speed – vc Range – m/min	Recommended Feed Rate (f) by Diameter								
Material Group	min - max	Tool Diameter (mm)	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0	
K	15, 16	80 - 190	mm/r	0,11–0,22	0,12–0,24	0,16–0,31	0,20–0,38	0,23–0,44	0,25–0,49	0,31–0,60	0,38–0,74
	17, 18, 19	90 - 170	mm/r	0,12–0,16	0,13–0,19	0,16–0,25	0,20–0,31	0,23–0,36	0,25–0,40	0,31–0,48	0,38–0,60
	20	80 - 150	mm/r	0,08–0,17	0,09–0,19	0,12–0,25	0,14–0,30	0,17–0,35	0,19–0,40	0,24–0,48	0,30–0,60

nominal size range	Metric tolerance	
	D1 tolerance m7	D tolerance h6
>3-6	0,004/0,016	0,000/-0,008
>6-10	0,006/0,021	0,000/-0,009
>10-18	0,007/0,025	0,000/-0,011
>18-25,4	0,008/0,029	0,000/-0,013

Multiple-Application Drilling •
TOP DRILL S+™

TOP DRILL S+



The WIDIA™ line of TOP DRILL S+ enables superior performance across a wide variety of even the most complex and challenging applications, such as drilling through inclined entries, x-holes, and exits. Proprietary technology ensures the highest speed and feed rates available. Advanced grade and geometry features define the TOP DRILL S+ as a true troubleshooter.

- Suitable for a broad range of materials and applications.
- Ensures increased tool life and enhanced wear resistance.
- Facilitates consistent chip forming and breaking.

The versatile TOP DRILL S+ provides reliable performance across a broad scope of applications, including alloyed and unalloyed steel, cast iron, and some stainless steels and high-temperature alloys.

- Four-margin design ensures stability, consistency, and improved hole quality.
- PVD coating provides increased tool life and wear resistance.
- Through tool coolant and solid versions available standard.

Use as Pilot Drill

- Ideal point angle and tolerance make the TOP DRILL S+™ drill the preferred pilot drill for TDD Series solid carbide deep-hole drills.

TOP DRILL S+ Drill-Point Design

- Low thrust. Works well on a variety of machines.
- Excellent centering capabilities.
- Easy to regrind.

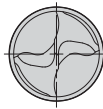
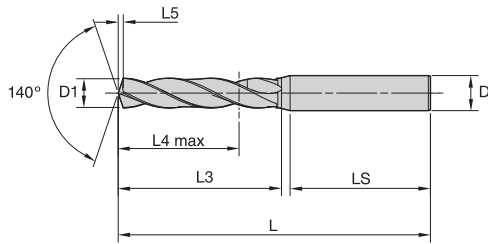
Four-Margin Land Design

- Improves hole straightness and roundness.
- Provides good alignment and stability in tough drilling applications — even when drilling through cross holes.

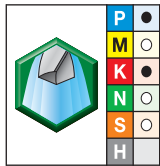


Solid Carbide Drills

TOP DRILL S+™ • Steel, Stainless Steel, Cast Iron, Aluminum, and High-Temp Alloys • 3 x D



■ TDS301A • 3 x D



● first choice
○ alternate choice

grade WU25PD
TiAlN

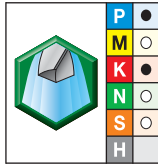
D1 diameter

order #	catalog #	mm	in	fraction	wire size	D	L3	L4 max	L5	LS	L
2964222	TDS301A03000	3,000	.1181	—	—	.24	.79	.55	.019	1.42	2.44
2964233	TDS301A03100	3,100	.1220	—	—	.24	.79	.55	.020	1.42	2.44
2964234	TDS301A03200	3,200	.1260	—	—	.24	.79	.55	.020	1.42	2.44
2964235	TDS301A03250	3,250	.1280	—	—	.24	.79	.55	.021	1.42	2.44
2964236	TDS301A03300	3,300	.1299	—	—	.24	.79	.55	.021	1.42	2.44
2964237	TDS301A03400	3,400	.1339	—	—	.24	.79	.55	.022	1.42	2.44
2964238	TDS301A03500	3,500	.1378	—	—	.24	.79	.55	.022	1.42	2.44
2964239	TDS301A03600	3,600	.1417	—	—	.24	.79	.55	.023	1.42	2.44
2964240	TDS301A03700	3,700	.1457	—	—	.24	.79	.55	.024	1.42	2.44
2964241	TDS301A03800	3,800	.1496	—	—	.24	.94	.67	.025	1.42	2.60
2964242	TDS301A03900	3,900	.1535	—	—	.24	.94	.67	.025	1.42	2.60
2964243	TDS301A04000	4,000	.1575	—	—	.24	.94	.67	.026	1.42	2.60
2964244	TDS301A04100	4,100	.1614	—	—	.24	.94	.67	.027	1.42	2.60
2964245	TDS301A04200	4,200	.1654	—	—	.24	.94	.67	.027	1.42	2.60
2964246	TDS301A04300	4,300	.1693	—	—	.24	.94	.67	.028	1.42	2.60
2964247	TDS301A04370	4,370	.1720	—	—	.24	.94	.67	.028	1.42	2.60
2964248	TDS301A04400	4,400	.1732	—	—	.24	.94	.67	.029	1.42	2.60
2964249	TDS301A04500	4,500	.1772	—	—	.24	.94	.67	.029	1.42	2.60
2964250	TDS301A04600	4,600	.1811	—	—	.24	.94	.67	.030	1.42	2.60
2964251	TDS301A04650	4,650	.1831	—	—	.24	.94	.67	.030	1.42	2.60
2964252	TDS301A04700	4,700	.1850	—	13	.24	.94	.67	.031	1.42	2.60
2964273	TDS301A04760	4,760	.1874	—	—	.24	1.10	.79	.031	1.42	2.60
2964274	TDS301A04800	4,800	.1890	—	12	.24	1.10	.79	.031	1.42	2.60
2964275	TDS301A04900	4,900	.1929	—	—	.24	1.10	.79	.032	1.42	2.60

(continued)

Solid Carbide Drills

(TDS301A • 3 x D – continued)



● first choice
○ alternate choice

grade WU25PD TiAlN		D1 diameter				D	L3	L4 max	L5	LS	L
order #	catalog #	mm	in	fraction	wire size						
2964276	TDS301A05000	5,000	.1969	—	—	.24	1.10	.79	.033	1.42	2.60
2964277	TDS301A05100	5,100	.2008	—	—	.24	1.10	.79	.033	1.42	2.60
2964278	TDS301A05160	5,160	.2031	13/64	—	.24	1.10	.79	.034	1.42	2.60
2964279	TDS301A05200	5,200	.2047	—	—	.24	1.10	.79	.034	1.42	2.60
2964280	TDS301A05300	5,300	.2087	—	—	.24	1.10	.79	.035	1.42	2.60
2964281	TDS301A05400	5,400	.2126	—	—	.24	1.10	.79	.035	1.42	2.60
2964282	TDS301A05500	5,500	.2165	—	—	.24	1.10	.79	.036	1.42	2.60
2964293	TDS301A05550	5,550	.2185	—	—	.24	1.10	.79	.037	1.42	2.60
2964294	TDS301A05560	5,560	.2189	—	—	.24	1.10	.79	.037	1.42	2.60
2964295	TDS301A05600	5,600	.2205	—	—	.24	1.10	.79	.037	1.42	2.60
2964296	TDS301A05700	5,700	.2244	—	—	.24	1.10	.79	.038	1.42	2.60
2964297	TDS301A05800	5,800	.2283	—	—	.24	1.10	.79	.038	1.42	2.60
2964298	TDS301A05900	5,900	.2323	—	—	.24	1.10	.79	.039	1.42	2.60
2964299	TDS301A05950	5,950	.2343	—	—	.24	1.10	.79	.039	1.42	2.60
2964300	TDS301A06000	6,000	.2362	—	—	.24	1.10	.79	.040	1.42	2.60
2964301	TDS301A06100	6,100	.2402	—	—	.32	1.34	.94	.040	1.42	3.11
2964302	TDS301A06200	6,200	.2441	—	—	.32	1.34	.94	.041	1.42	3.11
2964313	TDS301A06300	6,300	.2480	—	—	.32	1.34	.94	.042	1.42	3.11
2964314	TDS301A06350	6,350	.2500	1/4	E	.32	1.34	.94	.042	1.42	3.11
2964315	TDS301A06400	6,400	.2520	—	—	.32	1.34	.94	.042	1.42	3.11
2964316	TDS301A06500	6,500	.2559	—	—	.32	1.34	.94	.043	1.42	3.11
2964317	TDS301A06600	6,600	.2598	—	—	.32	1.34	.94	.044	1.42	3.11
2964318	TDS301A06700	6,700	.2638	—	—	.32	1.34	.94	.044	1.42	3.11
2964319	TDS301A06750	6,750	.2657	—	—	.32	1.34	.94	.045	1.42	3.11
2964320	TDS301A06800	6,800	.2677	—	—	.32	1.34	.94	.045	1.42	3.11
2964321	TDS301A06900	6,900	.2717	—	—	.32	1.34	.94	.046	1.42	3.11
2964322	TDS301A07000	7,000	.2756	—	—	.32	1.34	.94	.046	1.42	3.11
2964333	TDS301A07100	7,100	.2795	—	—	.32	1.61	1.14	.047	1.42	3.11
2964334	TDS301A07140	7,140	.2811	—	—	.32	1.61	1.14	.047	1.42	3.11
2964335	TDS301A07200	7,200	.2835	—	—	.32	1.61	1.14	.048	1.42	3.11
2964336	TDS301A07300	7,300	.2874	—	—	.32	1.61	1.14	.049	1.42	3.11
2964337	TDS301A07400	7,400	.2913	—	—	.32	1.61	1.14	.049	1.42	3.11
2964338	TDS301A07500	7,500	.2953	—	—	.32	1.61	1.14	.050	1.42	3.11
2964339	TDS301A07540	7,540	.2969	19/64	—	.32	1.61	1.14	.050	1.42	3.11
2964340	TDS301A07600	7,600	.2992	—	—	.32	1.61	1.14	.051	1.42	3.11
2964341	TDS301A07700	7,700	.3031	—	—	.32	1.61	1.14	.051	1.42	3.11
2964342	TDS301A07800	7,800	.3071	—	—	.32	1.61	1.14	.052	1.42	3.11
2964353	TDS301A07900	7,900	.3110	—	—	.32	1.61	1.14	.053	1.42	3.11
2964354	TDS301A07940	7,940	.3126	—	—	.32	1.61	1.14	.053	1.42	3.11
2964355	TDS301A08000	8,000	.3150	—	—	.32	1.61	1.14	.053	1.42	3.11

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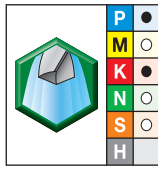
Solid Carbide Drills

Solid Carbide Drills

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(TDS301A • 3 x D — continued)

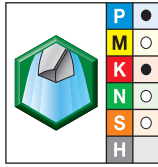


● first choice
○ alternate choice

grade WU25PD TiAlN		D1 diameter				D	L3	L4 max	L5	LS	L
order #	catalog #	mm	in	fraction	wire size						
2964356	TDS301A08100	8,100	.3189	—	—	.39	1.85	1.38	.054	1.57	3.50
2964357	TDS301A08200	8,200	.3228	—	—	.39	1.85	1.38	.055	1.57	3.50
2964358	TDS301A08300	8,300	.3268	—	—	.39	1.85	1.38	.055	1.57	3.50
2964359	TDS301A08330	8,330	.3280	—	—	.39	1.85	1.38	.056	1.57	3.50
2964360	TDS301A08400	8,400	.3307	—	—	.39	1.85	1.38	.056	1.57	3.50
2964361	TDS301A08500	8,500	.3346	—	—	.39	1.85	1.38	.057	1.57	3.50
2964362	TDS301A08600	8,600	.3386	—	—	.39	1.85	1.38	.058	1.57	3.50
2964373	TDS301A08700	8,700	.3425	—	—	.39	1.85	1.38	.058	1.57	3.50
2964374	TDS301A08800	8,800	.3465	—	—	.39	1.85	1.38	.059	1.57	3.50
2964375	TDS301A08900	8,900	.3504	—	—	.39	1.85	1.38	.060	1.57	3.50
2964376	TDS301A09000	9,000	.3543	—	—	.39	1.85	1.38	.060	1.57	3.50
2964377	TDS301A09100	9,100	.3583	—	—	.39	1.85	1.38	.061	1.57	3.50
2964378	TDS301A09130	9,130	.3594	23/64	—	.39	1.85	1.38	.061	1.57	3.50
2964379	TDS301A09200	9,200	.3622	—	—	.39	1.85	1.38	.062	1.57	3.50
2964380	TDS301A09300	9,300	.3661	—	—	.39	1.85	1.38	.062	1.57	3.50
2964381	TDS301A09400	9,400	.3701	—	—	.39	1.85	1.38	.063	1.57	3.50
2964382	TDS301A09500	9,500	.3740	—	—	.39	1.85	1.38	.064	1.57	3.50
2964393	TDS301A09520	9,520	.3748	—	—	.39	1.85	1.38	.064	1.57	3.50
2964394	TDS301A09600	9,600	.3780	—	—	.39	1.85	1.38	.064	1.57	3.50
2964395	TDS301A09700	9,700	.3819	—	—	.39	1.85	1.38	.065	1.57	3.50
2964396	TDS301A09800	9,800	.3858	—	—	.39	1.85	1.38	.066	1.57	3.50
2964397	TDS301A09900	9,900	.3898	—	—	.39	1.85	1.38	.067	1.57	3.50
2964398	TDS301A09920	9,920	.3906	25/64	—	.39	1.85	1.38	.067	1.57	3.50
2964399	TDS301A10000	10,000	.3937	—	—	.39	1.85	1.38	.067	1.57	3.50
2964400	TDS301A10100	10,100	.3976	—	—	.47	2.17	1.57	.068	1.77	4.02
2964401	TDS301A10200	10,200	.4016	—	—	.47	2.17	1.57	.069	1.77	4.02
2964402	TDS301A10300	10,300	.4055	—	—	.47	2.17	1.57	.069	1.77	4.02
2964413	TDS301A10320	10,320	.4063	13/32	—	.47	2.17	1.57	.069	1.77	4.02
2964414	TDS301A10400	10,400	.4094	—	—	.47	2.17	1.57	.070	1.77	4.02
2964415	TDS301A10500	10,500	.4134	—	—	.47	2.17	1.57	.071	1.77	4.02
2964416	TDS301A10600	10,600	.4173	—	—	.47	2.17	1.57	.071	1.77	4.02
2964417	TDS301A10700	10,700	.4213	—	—	.47	2.17	1.57	.072	1.77	4.02
2964418	TDS301A10720	10,720	.4220	—	—	.47	2.17	1.57	.072	1.77	4.02
2964419	TDS301A10800	10,800	.4252	—	—	.47	2.17	1.57	.073	1.77	4.02
2964420	TDS301A10900	10,900	.4291	—	—	.47	2.17	1.57	.074	1.77	4.02
2964421	TDS301A11000	11,000	.4331	—	—	.47	2.17	1.57	.074	1.77	4.02
2964423	TDS301A11100	11,100	.4370	—	—	.47	2.17	1.57	.075	1.77	4.02
2964424	TDS301A11110	11,110	.4374	—	—	.47	2.17	1.57	.075	1.77	4.02
2964425	TDS301A11200	11,200	.4409	—	—	.47	2.17	1.57	.076	1.77	4.02
2964426	TDS301A11300	11,300	.4449	—	—	.47	2.17	1.57	.076	1.77	4.02

Solid Carbide Drills

(TDS301A • 3 x D – continued)



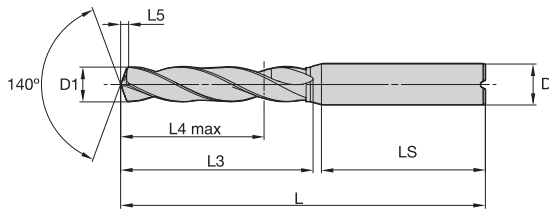
● first choice
○ alternate choice

grade WU25PD TiAlN		D1 diameter				D	L3	L4 max	L5	LS	L
order #	catalog #	mm	in	fraction	wire size						
2964427	TDS301A11400	11,400	.4488	—	—	.47	2.17	1.57	.077	1.77	4.02
2964428	TDS301A11500	11,500	.4528	—	—	.47	2.17	1.57	.078	1.77	4.02
2964429	TDS301A11600	11,600	.4567	—	—	.47	2.17	1.57	.078	1.77	4.02
2964430	TDS301A11700	11,700	.4606	—	—	.47	2.17	1.57	.079	1.77	4.02
2964431	TDS301A11800	11,800	.4646	—	—	.47	2.17	1.57	.080	1.77	4.02
2964432	TDS301A11900	11,900	.4685	—	—	.47	2.17	1.57	.080	1.77	4.02
2964433	TDS301A11910	11,910	.4689	—	—	.47	2.17	1.57	.081	1.77	4.02
2964434	TDS301A12000	12,000	.4724	—	—	.47	2.17	1.57	.081	1.77	4.02
2964435	TDS301A12300	12,300	.4843	—	—	.55	2.36	1.69	.083	1.77	4.21
2964436	TDS301A12500	12,500	.4921	—	—	.55	2.36	1.69	.085	1.77	4.21
2964437	TDS301A12700	12,700	.5000	1/2	—	.55	2.36	1.69	.086	1.77	4.21
2964438	TDS301A12800	12,800	.5039	—	—	.55	2.36	1.69	.087	1.77	4.21
2964439	TDS301A13000	13,000	.5118	—	—	.55	2.36	1.69	.088	1.77	4.21
2964440	TDS301A13500	13,500	.5315	—	—	.55	2.36	1.69	.092	1.77	4.21
2964441	TDS301A13800	13,800	.5433	—	—	.55	2.36	1.69	.094	1.77	4.21
2964442	TDS301A14000	14,000	.5512	—	—	.55	2.36	1.69	.095	1.77	4.21
2964443	TDS301A14290	14,290	.5626	—	—	.63	2.56	1.77	.097	1.89	4.53
2964444	TDS301A14500	14,500	.5709	—	—	.63	2.56	1.77	.099	1.89	4.53
2964445	TDS301A14800	14,800	.5827	—	—	.63	2.56	1.77	.101	1.89	4.53
2964446	TDS301A15000	15,000	.5906	—	—	.63	2.56	1.77	.102	1.89	4.53
2964447	TDS301A15500	15,500	.6102	—	—	.63	2.56	1.77	.106	1.89	4.53
2964448	TDS301A15800	15,800	.6220	—	—	.63	2.56	1.77	.108	1.89	4.53
2964449	TDS301A15870	15,870	.6248	—	—	.63	2.56	1.77	.108	1.89	4.53
2964450	TDS301A16000	16,000	.6299	—	—	.63	2.56	1.77	.109	1.89	4.53
2964451	TDS301A16500	16,500	.6496	—	—	.71	2.87	2.01	.113	1.89	4.84
2964452	TDS301A16670	16,670	.6563	21/32	—	.71	2.87	2.01	.114	1.89	4.84
2964453	TDS301A16800	16,800	.6614	—	—	.71	2.87	2.01	.115	1.89	4.84
2964454	TDS301A17000	17,000	.6693	—	—	.71	2.87	2.01	.116	1.89	4.84
2964455	TDS301A17500	17,500	.6890	—	—	.71	2.87	2.01	.120	1.89	4.84
2964456	TDS301A17800	17,800	.7008	—	—	.71	2.87	2.01	.122	1.89	4.84
2964457	TDS301A18000	18,000	.7087	—	—	.71	2.87	2.01	.123	1.89	4.84
2964458	TDS301A18500	18,500	.7283	—	—	.79	3.11	2.17	.127	1.97	5.16
2964459	TDS301A18800	18,800	.7402	—	—	.79	3.11	2.17	.129	1.97	5.16
2964460	TDS301A19000	19,000	.7480	—	—	.79	3.11	2.17	.130	1.97	5.16
2964461	TDS301A19050	19,050	.7500	3/4	—	.79	3.11	2.17	.130	1.97	5.16
2964462	TDS301A19500	19,500	.7677	—	—	.79	3.11	2.17	.134	1.97	5.16
2964463	TDS301A19800	19,800	.7795	—	—	.79	3.11	2.17	.136	1.97	5.16
2964464	TDS301A20000	20,000	.7874	—	—	.79	3.11	2.17	.137	1.97	5.16

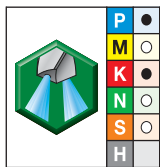
Solid Carbide Drills

Solid Carbide Drills

TOP DRILL S+™ • Steel, Stainless Steel, Cast Iron, Aluminum, and High-Temp Alloys • 3 x D



■ TDS501A • 3 x D



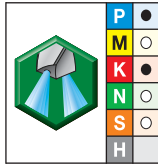
● first choice
○ alternate choice

grade WU25PD TiAlN		D1 diameter				D	L3	L4 max	L5	LS	L
order #	catalog #	mm	in	fraction	wire size						
2964947	TDS501A03000	3,000	.1181	—	—	.24	.79	.55	.019	1.42	2.44
2964948	TDS501A03100	3,100	.1220	—	—	.24	.79	.55	.020	1.42	2.44
4051234	TDS501A03175	3,175	.1250	1/8	—	.24	.79	.55	.025	1.42	2.44
2964949	TDS501A03200	3,200	.1260	—	—	.24	.79	.55	.020	1.42	2.44
2964950	TDS501A03250	3,250	.1280	—	—	.24	.79	.55	.021	1.42	2.44
2964951	TDS501A03300	3,300	.1299	—	—	.24	.79	.55	.021	1.42	2.44
2964952	TDS501A03400	3,400	.1339	—	—	.24	.79	.55	.022	1.42	2.44
4051233	TDS501A03455	3,450	.1358	—	29	.24	.79	.55	.022	1.42	2.44
2964953	TDS501A03500	3,500	.1378	—	—	.24	.79	.55	.022	1.42	2.44
5661464	TDS501A03571	3,571	.1406	9/64	—	.24	.79	.55	.023	1.42	2.44
2964954	TDS501A03600	3,600	.1417	—	—	.24	.79	.55	.023	1.42	2.44
2964955	TDS501A03700	3,700	.1457	—	—	.24	.79	.55	.024	1.42	2.44
2964956	TDS501A03800	3,800	.1496	—	—	.24	.94	.67	.025	1.42	2.60
2964957	TDS501A03900	3,900	.1535	—	—	.24	.94	.67	.025	1.42	2.60
2964958	TDS501A04000	4,000	.1575	—	—	.24	.94	.67	.026	1.42	2.60
2964959	TDS501A04100	4,100	.1614	—	—	.24	.94	.67	.027	1.42	2.60
2964960	TDS501A04200	4,200	.1654	—	—	.24	.94	.67	.027	1.42	2.60
2964961	TDS501A04300	4,300	.1693	—	—	.24	.94	.67	.028	1.42	2.60
2964962	TDS501A04370	4,370	.1720	—	—	.24	.94	.67	.028	1.42	2.60
2964963	TDS501A04400	4,400	.1732	—	—	.24	.94	.67	.029	1.42	2.60
2964964	TDS501A04500	4,500	.1772	—	—	.24	.94	.67	.029	1.42	2.60
2964965	TDS501A04600	4,600	.1811	—	—	.24	.94	.67	.030	1.42	2.60
5661502	TDS501A04623	4,623	.1820	—	14	.24	.94	.67	.030	1.42	2.60
2964966	TDS501A04650	4,650	.1831	—	—	.24	.94	.67	.030	1.42	2.60

(continued)

Solid Carbide Drills

(TDS501A • 3 x D – continued)



● first choice
○ alternate choice

grade WU25PD TiAlN		D1 diameter				D	L3	L4 max	L5	LS	L
order #	catalog #	mm	in	fraction	wire size						
2964967	TDS501A04700	4,700	.1850	—	13	.24	.94	.67	.031	1.42	2.60
5661503	TDS501A04763	4,763	.1875	3/16	—	.24	1.10	.79	.031	1.42	2.60
2964969	TDS501A04800	4,800	.1890	—	12	.24	1.10	.79	.031	1.42	2.60
2964970	TDS501A04900	4,900	.1929	—	—	.24	1.10	.79	.032	1.42	2.60
2964971	TDS501A05000	5,000	.1969	—	—	.24	1.10	.79	.033	1.42	2.60
2964972	TDS501A05100	5,100	.2008	—	—	.24	1.10	.79	.033	1.42	2.60
2964973	TDS501A05160	5,160	.2031	13/64	—	.24	1.10	.79	.034	1.42	2.60
2964974	TDS501A05200	5,200	.2047	—	—	.24	1.10	.79	.034	1.42	2.60
2964975	TDS501A05300	5,300	.2087	—	—	.24	1.10	.79	.035	1.42	2.60
2964976	TDS501A05400	5,400	.2126	—	—	.24	1.10	.79	.035	1.42	2.60
5661504	TDS501A05410	5,410	.2130	—	3	.24	1.10	.79	.036	1.42	2.60
2964977	TDS501A05500	5,500	.2165	—	—	.24	1.10	.79	.036	1.42	2.60
2964978	TDS501A05550	5,550	.2185	—	—	.24	1.10	.79	.037	1.42	2.60
5661505	TDS501A05558	5,558	.2188	7/32	—	.24	1.10	.79	.037	1.42	2.60
2964980	TDS501A05600	5,600	.2205	—	—	.24	1.10	.79	.037	1.42	2.60
2964981	TDS501A05700	5,700	.2244	—	—	.24	1.10	.79	.038	1.42	2.60
2964982	TDS501A05800	5,800	.2283	—	—	.24	1.10	.79	.038	1.42	2.60
2964983	TDS501A05900	5,900	.2323	—	—	.24	1.10	.79	.039	1.42	2.60
2964984	TDS501A05950	5,950	.2343	—	—	.24	1.10	.79	.039	1.42	2.60
2964985	TDS501A06000	6,000	.2362	—	—	.24	1.10	.79	.040	1.42	2.60
2964986	TDS501A06100	6,100	.2402	—	—	.32	1.34	.94	.040	1.42	3.11
2964987	TDS501A06200	6,200	.2441	—	—	.32	1.34	.94	.041	1.42	3.11
2964988	TDS501A06300	6,300	.2480	—	—	.32	1.34	.94	.042	1.42	3.11
2964989	TDS501A06350	6,350	.2500	1/4	E	.32	1.34	.94	.042	1.42	3.11
2964990	TDS501A06400	6,400	.2520	—	—	.32	1.34	.94	.042	1.42	3.11
2964991	TDS501A06500	6,500	.2559	—	—	.32	1.34	.94	.043	1.42	3.11
5661506	TDS501A06528	6,528	.2570	—	F	.32	1.34	.94	.043	1.42	3.11
2964992	TDS501A06600	6,600	.2598	—	—	.32	1.34	.94	.044	1.42	3.11
2964993	TDS501A06700	6,700	.2638	—	—	.32	1.34	.94	.044	1.42	3.11
5661507	TDS501A06746	6,746	.2656	17/64	—	.32	1.34	.94	.045	1.42	3.11
2964995	TDS501A06800	6,800	.2677	—	—	.32	1.34	.94	.045	1.42	3.11
2964996	TDS501A06900	6,900	.2717	—	—	.32	1.34	.94	.046	1.42	3.11
2964997	TDS501A07000	7,000	.2756	—	—	.32	1.34	.94	.046	1.42	3.11
2964998	TDS501A07100	7,100	.2795	—	—	.32	1.61	1.14	.047	1.42	3.11
5661509	TDS501A07145	7,145	.2813	9/32	—	.32	1.61	1.14	.047	1.42	3.11
2965000	TDS501A07200	7,200	.2835	—	—	.32	1.61	1.14	.048	1.42	3.11
2965001	TDS501A07300	7,300	.2874	—	—	.32	1.61	1.14	.049	1.42	3.11
2965002	TDS501A07400	7,400	.2913	—	—	.32	1.61	1.14	.049	1.42	3.11
2965003	TDS501A07500	7,500	.2953	—	—	.32	1.61	1.14	.050	1.42	3.11
2965004	TDS501A07541	7,540	.2969	19/64	—	.32	1.61	1.14	.050	1.42	3.11

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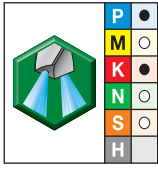
Solid Carbide Drills

Solid Carbide Drills

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(TDS501A • 3 x D — continued)



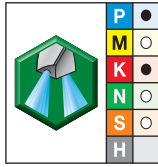
● first choice
○ alternate choice

grade WU25PD TiAlN		D1 diameter				D	L3	L4 max	L5	LS	L
order #	catalog #	mm	in	fraction	wire size						
2965005	TDS501A07600	7,600	.2992	—	—	.32	1.61	1.14	.051	1.42	3.11
2965006	TDS501A07700	7,700	.3031	—	—	.32	1.61	1.14	.051	1.42	3.11
2965007	TDS501A07800	7,800	.3071	—	—	.32	1.61	1.14	.052	1.42	3.11
2965008	TDS501A07900	7,900	.3110	—	—	.32	1.61	1.14	.053	1.42	3.11
5661540	TDS501A07938	7,938	.3125	5/16	—	.32	1.61	1.14	.053	1.42	3.11
2965010	TDS501A08000	8,000	.3150	—	—	.32	1.61	1.14	.053	1.42	3.11
2965011	TDS501A08100	8,100	.3189	—	—	.39	1.85	1.38	.054	1.57	3.50
2965012	TDS501A08200	8,200	.3228	—	—	.39	1.85	1.38	.055	1.57	3.50
2965013	TDS501A08300	8,300	.3268	—	—	.39	1.85	1.38	.055	1.57	3.50
5661541	TDS501A08334	8,334	.3281	21/64	—	.39	1.85	1.38	.056	1.57	3.50
2965015	TDS501A08400	8,400	.3307	—	—	.39	1.85	1.38	.056	1.57	3.50
5661542	TDS501A08433	8,433	.3320	—	Q	.39	1.85	1.38	.056	1.57	3.50
2965016	TDS501A08500	8,500	.3346	—	—	.39	1.85	1.38	.057	1.57	3.50
2965017	TDS501A08600	8,600	.3386	—	—	.39	1.85	1.38	.058	1.57	3.50
2965018	TDS501A08700	8,700	.3425	—	—	.39	1.85	1.38	.058	1.57	3.50
5661543	TDS501A08733	8,733	.3438	11/32	—	.39	1.85	1.38	.058	1.57	3.50
2965019	TDS501A08800	8,800	.3465	—	—	.39	1.85	1.38	.059	1.57	3.50
2965020	TDS501A08900	8,900	.3504	—	—	.39	1.85	1.38	.060	1.57	3.50
2965021	TDS501A09000	9,000	.3543	—	—	.39	1.85	1.38	.060	1.57	3.50
2965022	TDS501A09100	9,100	.3583	—	—	.39	1.85	1.38	.061	1.57	3.50
2965023	TDS501A09129	9,130	.3594	23/64	—	.39	1.85	1.38	.061	1.57	3.50
2965024	TDS501A09200	9,200	.3622	—	—	.39	1.85	1.38	.062	1.57	3.50
2965025	TDS501A09300	9,300	.3661	—	—	.39	1.85	1.38	.062	1.57	3.50
5661544	TDS501A09347	9,347	.3680	—	U	.39	1.85	1.38	.063	1.57	3.50
2965026	TDS501A09400	9,400	.3701	—	—	.39	1.85	1.38	.063	1.57	3.50
2965027	TDS501A09500	9,500	.3740	—	—	.39	1.85	1.38	.064	1.57	3.50
2965029	TDS501A09600	9,600	.3780	—	—	.39	1.85	1.38	.064	1.57	3.50
2965030	TDS501A09700	9,700	.3819	—	—	.39	1.85	1.38	.065	1.57	3.50
5661546	TDS501A09750	9,750	.3839	—	—	.39	1.85	1.38	.066	1.57	3.50
2965031	TDS501A09800	9,800	.3858	—	—	.39	1.85	1.38	.066	1.57	3.50
2965032	TDS501A09900	9,900	.3898	—	—	.39	1.85	1.38	.067	1.57	3.50
2965033	TDS501A09921	9,920	.3906	25/64	—	.39	1.85	1.38	.067	1.57	3.50
2965034	TDS501A10000	10,000	.3937	—	—	.39	1.85	1.38	.067	1.57	3.50
2965035	TDS501A10100	10,100	.3976	—	—	.47	2.17	1.57	.068	1.77	4.02
2965036	TDS501A10200	10,200	.4016	—	—	.47	2.17	1.57	.069	1.77	4.02
2965037	TDS501A10300	10,300	.4055	—	—	.47	2.17	1.57	.069	1.77	4.02
2965038	TDS501A10320	10,320	.4063	13/32	—	.47	2.17	1.57	.069	1.77	4.02
2965039	TDS501A10400	10,400	.4094	—	—	.47	2.17	1.57	.070	1.77	4.02
2965040	TDS501A10500	10,500	.4134	—	—	.47	2.17	1.57	.071	1.77	4.02
2965041	TDS501A10600	10,600	.4173	—	—	.47	2.17	1.57	.071	1.77	4.02

(continued)

Solid Carbide Drills

(TDS501A • 3 x D – continued)



● first choice
○ alternate choice

grade WU25PD TiAlN		D1 diameter				D	L3	L4 max	L5	LS	L
order #	catalog #	mm	in	fraction	wire size						
2965042	TDS501A10700	10,700	.4213	—	—	.47	2.17	1.57	.072	1.77	4.02
5661547	TDS501A10716	10,716	.4219	27/64	—	.47	2.17	1.57	.072	1.77	4.02
2965044	TDS501A10800	10,800	.4252	—	—	.47	2.17	1.57	.073	1.77	4.02
2965045	TDS501A10900	10,900	.4291	—	—	.47	2.17	1.57	.074	1.77	4.02
2965046	TDS501A11000	11,000	.4331	—	—	.47	2.17	1.57	.074	1.77	4.02
2965047	TDS501A11100	11,100	.4370	—	—	.47	2.17	1.57	.075	1.77	4.02
2965048	TDS501A11113	11,113	.4375	7/16	—	.47	2.17	1.57	.075	1.77	4.02
2964736	TDS501A11200	11,200	.4409	—	—	.47	2.17	1.57	.076	1.77	4.02
2964737	TDS501A11300	11,300	.4449	—	—	.47	2.17	1.57	.076	1.77	4.02
2964738	TDS501A11400	11,400	.4488	—	—	.47	2.17	1.57	.077	1.77	4.02
2964739	TDS501A11500	11,500	.4528	—	—	.47	2.17	1.57	.078	1.77	4.02
2964740	TDS501A11600	11,600	.4567	—	—	.47	2.17	1.57	.078	1.77	4.02
2964741	TDS501A11700	11,700	.4606	—	—	.47	2.17	1.57	.079	1.77	4.02
2964742	TDS501A11800	11,800	.4646	—	—	.47	2.17	1.57	.080	1.77	4.02
2965053	TDS501A11900	11,900	.4685	—	—	.47	2.17	1.57	.080	1.77	4.02
2965054	TDS501A11910	11,910	.4689	—	—	.47	2.17	1.57	.081	1.77	4.02
2965055	TDS501A12000	12,000	.4724	—	—	.47	2.17	1.57	.081	1.77	4.02
2965056	TDS501A12300	12,300	.4843	—	—	.55	2.36	1.69	.083	1.77	4.21
5661548	TDS501A12304	12,304	.4844	31/64	—	.55	2.36	1.69	.083	1.77	4.21
2965057	TDS501A12500	12,500	.4921	—	—	.55	2.36	1.69	.085	1.77	4.21
2965058	TDS501A12700	12,700	.5000	1/2	—	.55	2.36	1.69	.086	1.77	4.21
2965059	TDS501A12800	12,800	.5039	—	—	.55	2.36	1.69	.087	1.77	4.21
2965060	TDS501A13000	13,000	.5118	—	—	.55	2.36	1.69	.088	1.77	4.21
4051235	TDS501A13100	13,100	.5157	—	—	.55	2.36	1.69	.110	1.77	4.21
2965061	TDS501A13500	13,500	.5315	—	—	.55	2.36	1.69	.092	1.77	4.21
2965062	TDS501A13800	13,800	.5433	—	—	.55	2.36	1.69	.094	1.77	4.21
2965063	TDS501A14000	14,000	.5512	—	—	.55	2.36	1.69	.095	1.77	4.21
2965064	TDS501A14290	14,290	.5626	—	—	.63	2.56	1.77	.097	1.89	4.53
2965065	TDS501A14500	14,500	.5709	—	—	.63	2.56	1.77	.099	1.89	4.53
2965066	TDS501A14800	14,800	.5827	—	—	.63	2.56	1.77	.101	1.89	4.53
2965067	TDS501A15000	15,000	.5906	—	—	.63	2.56	1.77	.102	1.89	4.53
2965068	TDS501A15500	15,500	.6102	—	—	.63	2.56	1.77	.106	1.89	4.53
2965069	TDS501A15800	15,800	.6220	—	—	.63	2.56	1.77	.108	1.89	4.53
2965070	TDS501A15870	15,870	.6248	—	—	.63	2.56	1.77	.108	1.89	4.53
2965071	TDS501A16000	16,000	.6299	—	—	.63	2.56	1.77	.109	1.89	4.53
2965072	TDS501A16500	16,500	.6496	—	—	.71	2.87	2.01	.113	1.89	4.84
2965073	TDS501A16670	16,670	.6563	21/32	—	.71	2.87	2.01	.114	1.89	4.84
2965074	TDS501A16800	16,800	.6614	—	—	.71	2.87	2.01	.115	1.89	4.84
2965075	TDS501A17000	17,000	.6693	—	—	.71	2.87	2.01	.116	1.89	4.84
2965076	TDS501A17500	17,500	.6890	—	—	.71	2.87	2.01	.120	1.89	4.84

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Solid Carbide Drills

Solid Carbide Drills

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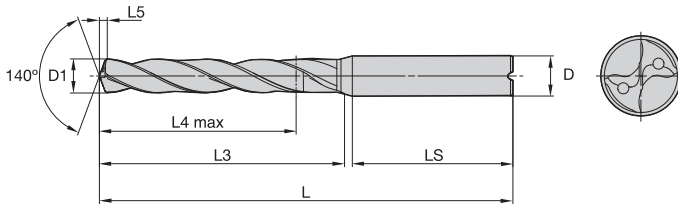


(TDS501A • 3 x D — continued)



● first choice
○ alternate choice

grade WU25PD TiAlN		D1 diameter				D	L3	L4 max	L5	LS	L
order #	catalog #	mm	in	fraction	wire size						
2965077	TDS501A17800	17,800	.7008	—	—	.71	2.87	2.01	.122	1.89	4.84
2965078	TDS501A18000	18,000	.7087	—	—	.71	2.87	2.01	.123	1.89	4.84
2965079	TDS501A18500	18,500	.7283	—	—	.79	3.11	2.17	.127	1.97	5.16
2965080	TDS501A18800	18,800	.7402	—	—	.79	3.11	2.17	.129	1.97	5.16
2965081	TDS501A19000	19,000	.7480	—	—	.79	3.11	2.17	.130	1.97	5.16
2965082	TDS501A19050	19,050	.7500	3/4	—	.79	3.11	2.17	.130	1.97	5.16
2965083	TDS501A19500	19,500	.7677	—	—	.79	3.11	2.17	.134	1.97	5.16
2965084	TDS501A19800	19,800	.7795	—	—	.79	3.11	2.17	.136	1.97	5.16
2965085	TDS501A20000	20,000	.7874	—	—	.79	3.11	2.17	.137	1.97	5.16



■ TDS502A • 5 x D



● first choice
○ alternate choice

grade WU25PD TiAlN		D1 diameter				D	L3	L4 max	L5	LS	L
order #	catalog #	mm	in	fraction	wire size						
2964803	TDS502A03000	3,000	.1181	—	—	.24	1.10	.91	.019	1.42	2.60
2964804	TDS502A03100	3,100	.1220	—	—	.24	1.10	.91	.020	1.42	2.60
4051237	TDS502A03175	3,175	.1250	1/8	—	.24	1.10	.91	.025	1.42	2.60
2964805	TDS502A03200	3,200	.1260	—	—	.24	1.10	.91	.020	1.42	2.60
2964806	TDS502A03250	3,250	.1280	—	—	.24	1.10	.91	.021	1.42	2.60
2964807	TDS502A03300	3,300	.1299	—	—	.24	1.10	.91	.021	1.42	2.60
2964808	TDS502A03400	3,400	.1339	—	—	.24	1.10	.91	.022	1.42	2.60
4051236	TDS502A03455	3,455	.1360	—	29	.24	1.10	.91	.028	1.42	2.60
2964809	TDS502A03500	3,500	.1378	—	—	.24	1.10	.91	.022	1.42	2.60
2964810	TDS502A03600	3,600	.1417	—	—	.24	1.10	.91	.023	1.42	2.60
2964811	TDS502A03700	3,700	.1457	—	—	.24	1.10	.91	.024	1.42	2.60
2964812	TDS502A03800	3,800	.1496	—	—	.24	1.42	1.14	.025	1.42	2.91
2964813	TDS502A03900	3,900	.1535	—	—	.24	1.42	1.14	.025	1.42	2.91
2964814	TDS502A04000	4,000	.1575	—	—	.24	1.42	1.14	.026	1.42	2.91
2964815	TDS502A04100	4,100	.1614	—	—	.24	1.42	1.14	.027	1.42	2.91
2964816	TDS502A04200	4,200	.1654	—	—	.24	1.42	1.14	.027	1.42	2.91
2964817	TDS502A04300	4,300	.1693	—	—	.24	1.42	1.14	.028	1.42	2.91
2964818	TDS502A04370	4,370	.1720	—	—	.24	1.42	1.14	.028	1.42	2.91
2964819	TDS502A04400	4,400	.1732	—	—	.24	1.42	1.14	.029	1.42	2.91
2964820	TDS502A04500	4,500	.1772	—	—	.24	1.42	1.14	.029	1.42	2.91
2964821	TDS502A04600	4,600	.1811	—	—	.24	1.42	1.14	.030	1.42	2.91
2964822	TDS502A04650	4,650	.1831	—	—	.24	1.42	1.14	.030	1.42	2.91
2964823	TDS502A04700	4,700	.1850	—	13	.24	1.42	1.14	.031	1.42	2.91
2964824	TDS502A04760	4,760	.1874	—	—	.24	1.73	1.38	.031	1.42	3.23

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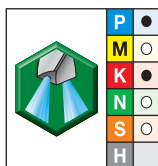
Solid Carbide Drills

Solid Carbide Drills

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(TDS502A • 5 x D – continued)



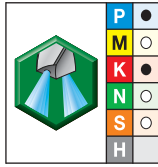
● first choice
○ alternate choice

grade WU25PD TiAlN		D1 diameter				D	L3	L4 max	L5	LS	L
order #	catalog #	mm	in	fraction	wire size						
2964825	TDS502A04800	4,800	.1890	—	12	.24	1.73	1.38	.031	1.42	3.23
2964826	TDS502A04900	4,900	.1929	—	—	.24	1.73	1.38	.032	1.42	3.23
2964827	TDS502A05000	5,000	.1969	—	—	.24	1.73	1.38	.033	1.42	3.23
2964828	TDS502A05100	5,100	.2008	—	—	.24	1.73	1.38	.033	1.42	3.23
2964829	TDS502A05160	5,160	.2031	13/64	—	.24	1.73	1.38	.034	1.42	3.23
2964830	TDS502A05200	5,200	.2047	—	—	.24	1.73	1.38	.034	1.42	3.23
2964831	TDS502A05300	5,300	.2087	—	—	.24	1.73	1.38	.035	1.42	3.23
2964832	TDS502A05400	5,400	.2126	—	—	.24	1.73	1.38	.035	1.42	3.23
2964833	TDS502A05500	5,500	.2165	—	—	.24	1.73	1.38	.036	1.42	3.23
2964834	TDS502A05550	5,550	.2185	—	—	.24	1.73	1.38	.037	1.42	3.23
2964835	TDS502A05560	5,560	.2189	—	—	.24	1.73	1.38	.037	1.42	3.23
2964836	TDS502A05600	5,600	.2205	—	—	.24	1.73	1.38	.037	1.42	3.23
2964837	TDS502A05700	5,700	.2244	—	—	.24	1.73	1.38	.038	1.42	3.23
2964838	TDS502A05800	5,800	.2283	—	—	.24	1.73	1.38	.038	1.42	3.23
2964839	TDS502A05900	5,900	.2323	—	—	.24	1.73	1.38	.039	1.42	3.23
2964840	TDS502A05950	5,950	.2343	—	—	.24	1.73	1.38	.039	1.42	3.23
2964841	TDS502A06000	6,000	.2362	—	—	.24	1.73	1.38	.040	1.42	3.23
2964842	TDS502A06100	6,100	.2402	—	—	.32	2.09	1.69	.040	1.42	3.58
2964843	TDS502A06200	6,200	.2441	—	—	.32	2.09	1.69	.041	1.42	3.58
2964844	TDS502A06300	6,300	.2480	—	—	.32	2.09	1.69	.042	1.42	3.58
2964845	TDS502A06350	6,350	.2500	1/4	E	.32	2.09	1.69	.042	1.42	3.58
2964846	TDS502A06400	6,400	.2520	—	—	.32	2.09	1.69	.042	1.42	3.58
2964847	TDS502A06500	6,500	.2559	—	—	.32	2.09	1.69	.043	1.42	3.58
2964848	TDS502A06600	6,600	.2598	—	—	.32	2.09	1.69	.044	1.42	3.58
2964849	TDS502A06700	6,700	.2638	—	—	.32	2.09	1.69	.044	1.42	3.58
2964850	TDS502A06750	6,750	.2657	—	—	.32	2.09	1.69	.045	1.42	3.58
2964851	TDS502A06800	6,800	.2677	—	—	.32	2.09	1.69	.045	1.42	3.58
2964852	TDS502A06900	6,900	.2717	—	—	.32	2.09	1.69	.046	1.42	3.58
2964853	TDS502A07000	7,000	.2756	—	—	.32	2.09	1.69	.046	1.42	3.58
2964854	TDS502A07100	7,100	.2795	—	—	.32	2.09	1.69	.047	1.42	3.58
2964855	TDS502A07140	7,140	.2811	—	—	.32	2.09	1.69	.047	1.42	3.58
2964856	TDS502A07200	7,200	.2835	—	—	.32	2.09	1.69	.048	1.42	3.58
2964857	TDS502A07300	7,300	.2874	—	—	.32	2.09	1.69	.049	1.42	3.58
2964858	TDS502A07400	7,400	.2913	—	—	.32	2.09	1.69	.049	1.42	3.58
2964859	TDS502A07500	7,500	.2953	—	—	.32	2.09	1.69	.050	1.42	3.58
2964860	TDS502A07540	7,540	.2969	19/64	—	.32	2.09	1.69	.050	1.42	3.58
2964861	TDS502A07600	7,600	.2992	—	—	.32	2.09	1.69	.051	1.42	3.58
2964862	TDS502A07700	7,700	.3031	—	—	.32	2.09	1.69	.051	1.42	3.58
2964863	TDS502A07800	7,800	.3071	—	—	.32	2.09	1.69	.052	1.42	3.58
2964864	TDS502A07900	7,900	.3110	—	—	.32	2.09	1.69	.053	1.42	3.58

(continued)

Solid Carbide Drills

(TDS502A • 5 x D — continued)



● first choice
○ alternate choice

grade WU25PD TiAlN		D1 diameter				D	L3	L4 max	L5	LS	L
order #	catalog #	mm	in	fraction	wire size						
2964865	TDS502A07940	7,940	.3126	—	—	.32	2.09	1.69	.053	1.42	3.58
2964866	TDS502A08000	8,000	.3150	—	—	.32	2.09	1.69	.053	1.42	3.58
2964867	TDS502A08100	8,100	.3189	—	—	.39	2.40	1.93	.054	1.57	4.06
2964868	TDS502A08200	8,200	.3228	—	—	.39	2.40	1.93	.055	1.57	4.06
2964869	TDS502A08300	8,300	.3268	—	—	.39	2.40	1.93	.055	1.57	4.06
2964870	TDS502A08330	8,330	.3280	—	—	.39	2.40	1.93	.056	1.57	4.06
2964871	TDS502A08400	8,400	.3307	—	—	.39	2.40	1.93	.056	1.57	4.06
2964872	TDS502A08500	8,500	.3346	—	—	.39	2.40	1.93	.057	1.57	4.06
2964873	TDS502A08600	8,600	.3386	—	—	.39	2.40	1.93	.058	1.57	4.06
2964874	TDS502A08700	8,700	.3425	—	—	.39	2.40	1.93	.058	1.57	4.06
2964875	TDS502A08800	8,800	.3465	—	—	.39	2.40	1.93	.059	1.57	4.06
2964876	TDS502A08900	8,900	.3504	—	—	.39	2.40	1.93	.060	1.57	4.06
2964877	TDS502A09000	9,000	.3543	—	—	.39	2.40	1.93	.060	1.57	4.06
2964878	TDS502A09100	9,100	.3583	—	—	.39	2.40	1.93	.061	1.57	4.06
2964879	TDS502A09130	9,130	.3594	23/64	—	.39	2.40	1.93	.061	1.57	4.06
2964880	TDS502A09200	9,200	.3622	—	—	.39	2.40	1.93	.062	1.57	4.06
2964881	TDS502A09300	9,300	.3661	—	—	.39	2.40	1.93	.062	1.57	4.06
2964882	TDS502A09400	9,400	.3701	—	—	.39	2.40	1.93	.063	1.57	4.06
2964883	TDS502A09500	9,500	.3740	—	—	.39	2.40	1.93	.064	1.57	4.06
2964884	TDS502A09520	9,520	.3748	—	—	.39	2.40	1.93	.064	1.57	4.06
2964885	TDS502A09600	9,600	.3780	—	—	.39	2.40	1.93	.064	1.57	4.06
2964886	TDS502A09700	9,700	.3819	—	—	.39	2.40	1.93	.065	1.57	4.06
2964887	TDS502A09800	9,800	.3858	—	—	.39	2.40	1.93	.066	1.57	4.06
2964888	TDS502A09900	9,900	.3898	—	—	.39	2.40	1.93	.067	1.57	4.06
2964889	TDS502A09920	9,920	.3906	25/64	—	.39	2.40	1.93	.067	1.57	4.06
2964890	TDS502A10000	10,000	.3937	—	—	.39	2.40	1.93	.067	1.57	4.06
2964891	TDS502A10100	10,100	.3976	—	—	.47	2.80	2.20	.068	1.77	4.65
2964892	TDS502A10200	10,200	.4016	—	—	.47	2.80	2.20	.069	1.77	4.65
2964893	TDS502A10300	10,300	.4055	—	—	.47	2.80	2.20	.069	1.77	4.65
2964894	TDS502A10320	10,320	.4063	13/32	—	.47	2.80	2.20	.069	1.77	4.65
2964895	TDS502A10400	10,400	.4094	—	—	.47	2.80	2.20	.070	1.77	4.65
2964896	TDS502A10500	10,500	.4134	—	—	.47	2.80	2.20	.071	1.77	4.65
2964897	TDS502A10600	10,600	.4173	—	—	.47	2.80	2.20	.071	1.77	4.65
2964898	TDS502A10700	10,700	.4213	—	—	.47	2.80	2.20	.072	1.77	4.65
2964899	TDS502A10720	10,720	.4220	—	—	.47	2.80	2.20	.072	1.77	4.65
2964900	TDS502A10800	10,800	.4252	—	—	.47	2.80	2.20	.073	1.77	4.65
2964901	TDS502A10900	10,900	.4291	—	—	.47	2.80	2.20	.074	1.77	4.65
2964902	TDS502A11000	11,000	.4331	—	—	.47	2.80	2.20	.074	1.77	4.65
2964903	TDS502A11100	11,100	.4370	—	—	.47	2.80	2.20	.075	1.77	4.65
2964904	TDS502A11110	11,110	.4374	—	—	.47	2.80	2.20	.075	1.77	4.65

(continued)

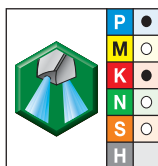
Solid Carbide Drills

Solid Carbide Drills

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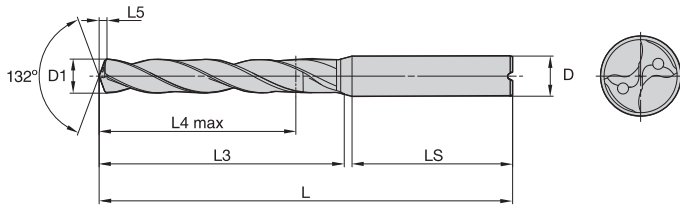
(TDS502A • 5 x D — continued)



● first choice
○ alternate choice

grade WU25PD TiAlN		D1 diameter				D	L3	L4 max	L5	LS	L
order #	catalog #	mm	in	fraction	wire size						
2964905	TDS502A11200	11,200	.4409	—	—	.47	2.80	2.20	.076	1.77	4.65
2964906	TDS502A11300	11,300	.4449	—	—	.47	2.80	2.20	.076	1.77	4.65
2968374	TDS502A11400	11,400	.4488	—	—	.47	2.80	2.20	.077	1.77	4.65
2968375	TDS502A11500	11,500	.4528	—	—	.47	2.80	2.20	.078	1.77	4.65
2968376	TDS502A11600	11,600	.4567	—	—	.47	2.80	2.20	.078	1.77	4.65
2968377	TDS502A11700	11,700	.4606	—	—	.47	2.80	2.20	.079	1.77	4.65
2968378	TDS502A11800	11,800	.4646	—	—	.47	2.80	2.20	.080	1.77	4.65
2968379	TDS502A11900	11,900	.4685	—	—	.47	2.80	2.20	.080	1.77	4.65
2968380	TDS502A11910	11,910	.4689	—	—	.47	2.80	2.20	.081	1.77	4.65
2968381	TDS502A12000	12,000	.4724	—	—	.47	2.80	2.20	.081	1.77	4.65
2968382	TDS502A12300	12,300	.4843	—	—	.55	3.03	2.36	.083	1.77	4.88
2968393	TDS502A12500	12,500	.4921	—	—	.55	3.03	2.36	.085	1.77	4.88
2968394	TDS502A12700	12,700	.5000	1/2	—	.55	3.03	2.36	.086	1.77	4.88
2968395	TDS502A12800	12,800	.5039	—	—	.55	3.03	2.36	.087	1.77	4.88
2968396	TDS502A13000	13,000	.5118	—	—	.55	3.03	2.36	.088	1.77	4.88
4051238	TDS502A13100	13,100	.5157	—	—	.55	3.03	2.36	.110	1.77	4.88
2968397	TDS502A13500	13,500	.5315	—	—	.55	3.03	2.36	.092	1.77	4.88
2968398	TDS502A13800	13,800	.5433	—	—	.55	3.03	2.36	.094	1.77	4.88
2968399	TDS502A14000	14,000	.5512	—	—	.55	3.03	2.36	.095	1.77	4.88
2968400	TDS502A14290	14,290	.5626	—	—	.63	3.27	2.48	.097	1.89	5.24
2968401	TDS502A14500	14,500	.5709	—	—	.63	3.27	2.48	.099	1.89	5.24
2968402	TDS502A14800	14,800	.5827	—	—	.63	3.27	2.48	.101	1.89	5.24
2968403	TDS502A15000	15,000	.5906	—	—	.63	3.27	2.48	.102	1.89	5.24
2968404	TDS502A15500	15,500	.6102	—	—	.63	3.27	2.48	.106	1.89	5.24
2968405	TDS502A15800	15,800	.6220	—	—	.63	3.27	2.48	.108	1.89	5.24
2968406	TDS502A15870	15,870	.6248	—	—	.63	3.27	2.48	.108	1.89	5.24
2968407	TDS502A16000	16,000	.6299	—	—	.63	3.27	2.48	.109	1.89	5.24
2968408	TDS502A16500	16,500	.6496	—	—	.71	3.66	2.80	.113	1.89	5.63
2968409	TDS502A16670	16,670	.6563	21/32	—	.71	3.66	2.80	.114	1.89	5.63
2968410	TDS502A16800	16,800	.6614	—	—	.71	3.66	2.80	.115	1.89	5.63
2968411	TDS502A17000	17,000	.6693	—	—	.71	3.66	2.80	.116	1.89	5.63
2968412	TDS502A17500	17,500	.6890	—	—	.71	3.66	2.80	.120	1.89	5.63
2968413	TDS502A17800	17,800	.7008	—	—	.71	3.66	2.80	.122	1.89	5.63
2968414	TDS502A18000	18,000	.7087	—	—	.71	3.66	2.80	.123	1.89	5.63
2968415	TDS502A18500	18,500	.7283	—	—	.79	3.98	3.03	.127	1.97	6.02
2968416	TDS502A18800	18,800	.7402	—	—	.79	3.98	3.03	.129	1.97	6.02
2968417	TDS502A19000	19,000	.7480	—	—	.79	3.98	3.03	.130	1.97	6.02
2968418	TDS502A19050	19,050	.7500	3/4	—	.79	3.98	3.03	.130	1.97	6.02
2968419	TDS502A19500	19,500	.7677	—	—	.79	3.98	3.03	.134	1.97	6.02
2968420	TDS502A19800	19,800	.7795	—	—	.79	3.98	3.03	.136	1.97	6.02
2968421	TDS502A20000	20,000	.7874	—	—	.79	3.98	3.03	.137	1.97	6.02

Solid Carbide Drills



■ **TDS503A • 8 x D**



● first choice
○ alternate choice

grade WU25PD TiAlN		D1 diameter					D	L3	L4 max	L5	LS	L
order #	catalog #	mm	in	fraction	wire size							
2968422	TDS503A03000	3,000	.1181	—	—	.24	1.57	1.30	.024	1.42	3.07	
4051239	TDS503A03100	3,100	.1220	—	—	.24	1.57	1.30	.025	1.42	3.07	
4051240	TDS503A03175	3,175	.1250	1/8	—	.24	1.57	1.30	.025	1.42	3.07	
4051241	TDS503A03200	3,200	.1260	—	—	.24	1.57	1.30	.026	1.42	3.07	
4051242	TDS503A03250	3,250	.1280	—	—	.24	1.57	1.30	.026	1.42	3.07	
2968503	TDS503A03300	3,300	.1299	—	—	.24	1.57	1.30	.026	1.42	3.07	
4051243	TDS503A03400	3,400	.1339	—	—	.24	1.57	1.30	.027	1.42	3.07	
4051244	TDS503A03455	3,455	.1360	—	29	.24	1.57	1.30	.028	1.42	3.07	
2968504	TDS503A03500	3,500	.1378	—	—	.24	1.57	1.30	.028	1.42	3.07	
2968505	TDS503A03700	3,700	.1457	—	—	.24	1.57	1.30	.030	1.42	3.07	
2968506	TDS503A03800	3,800	.1496	—	—	.24	1.93	1.61	.031	1.42	3.43	
4051245	TDS503A03900	3,900	.1535	—	—	.24	1.93	1.61	.031	1.42	3.43	
2968507	TDS503A04000	4,000	.1575	—	—	.24	1.93	1.61	.032	1.42	3.43	
4051246	TDS503A04100	4,100	.1614	—	—	.24	1.93	1.61	.033	1.42	3.43	
2968508	TDS503A04200	4,200	.1654	—	—	.24	1.93	1.61	.034	1.42	3.43	
4051247	TDS503A04300	4,300	.1693	—	—	.24	1.93	1.61	.035	1.42	3.43	
2968509	TDS503A04370	4,370	.1720	—	—	.24	1.93	1.61	.035	1.42	3.43	
4051248	TDS503A04400	4,400	.1732	—	—	.24	1.93	1.61	.036	1.42	3.43	
2968510	TDS503A04500	4,500	.1772	—	—	.24	1.93	1.61	.037	1.42	3.43	
4051249	TDS503A04600	4,600	.1811	—	—	.24	1.93	1.61	.037	1.42	3.43	
4051250	TDS503A04650	4,650	.1831	—	—	.24	1.93	1.61	.038	1.42	3.43	
2968511	TDS503A04700	4,700	.1850	—	13	.24	1.93	1.61	.038	1.42	3.43	
2968512	TDS503A04760	4,760	.1874	—	—	.24	2.20	1.89	.039	1.42	3.70	
2968513	TDS503A04800	4,800	.1890	—	12	.24	2.20	1.89	.039	1.42	3.70	

(continued)

Solid Carbide Drills

Solid Carbide Drills

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(TDS503A • 8 x D — continued)



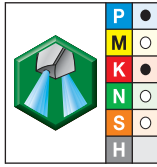
● first choice
○ alternate choice

grade WU25PD TiAlN		D1 diameter				D	L3	L4 max	L5	LS	L
order #	catalog #	mm	in	fraction	wire size						
4051251	TDS503A04900	4,900	.1929	—	—	.24	2.20	1.89	.040	1.42	3.70
2968514	TDS503A05000	5,000	.1969	—	—	.24	2.20	1.89	.041	1.42	3.70
4051252	TDS503A05100	5,100	.2008	—	—	.24	2.20	1.89	.042	1.42	3.70
2968515	TDS503A05160	5,160	.2031	13/64	—	.24	2.20	1.89	.042	1.42	3.70
4051253	TDS503A05200	5,200	.2047	—	—	.24	2.20	1.89	.042	1.42	3.70
4051254	TDS503A05300	5,300	.2087	—	—	.24	2.20	1.89	.043	1.42	3.70
4051255	TDS503A05400	5,400	.2126	—	—	.24	2.20	1.89	.044	1.42	3.70
2968516	TDS503A05500	5,500	.2165	—	—	.24	2.20	1.89	.045	1.42	3.70
4051256	TDS503A05550	5,550	.2185	—	—	.24	2.20	1.89	.045	1.42	3.70
2968517	TDS503A05560	5,560	.2189	—	—	.24	2.20	1.89	.045	1.42	3.70
4051257	TDS503A05600	5,600	.2205	—	—	.24	2.20	1.89	.046	1.42	3.70
4051258	TDS503A05700	5,700	.2244	—	—	.24	2.20	1.89	.047	1.42	3.70
2968518	TDS503A05800	5,800	.2283	—	—	.24	2.20	1.89	.047	1.42	3.70
4051259	TDS503A05900	5,900	.2323	—	—	.24	2.20	1.89	.048	1.42	3.70
2968519	TDS503A05950	5,950	.2343	—	—	.24	2.20	1.89	.049	1.42	3.70
2968520	TDS503A06000	6,000	.2362	—	—	.24	2.20	1.89	.049	1.42	3.70
4051260	TDS503A06100	6,100	.2402	—	—	.32	2.64	2.24	.050	1.42	4.13
4051261	TDS503A06200	6,200	.2441	—	—	.32	2.64	2.24	.051	1.42	4.13
4051262	TDS503A06300	6,300	.2480	—	—	.32	2.64	2.24	.052	1.42	4.13
2968521	TDS503A06350	6,350	.2500	1/4	E	.32	2.64	2.24	.052	1.42	4.13
4051263	TDS503A06400	6,400	.2520	—	—	.32	2.64	2.24	.053	1.42	4.13
2968522	TDS503A06500	6,500	.2559	—	—	.32	2.64	2.24	.053	1.42	4.13
4051264	TDS503A06600	6,600	.2598	—	—	.32	2.64	2.24	.054	1.42	4.13
4051265	TDS503A06700	6,700	.2638	—	—	.32	2.64	2.24	.055	1.42	4.13
2968523	TDS503A06750	6,750	.2657	—	—	.32	2.64	2.24	.056	1.42	4.13
2968524	TDS503A06800	6,800	.2677	—	—	.32	2.64	2.24	.056	1.42	4.13
4051266	TDS503A06900	6,900	.2717	—	—	.32	2.64	2.24	.057	1.42	4.13
2968525	TDS503A07000	7,000	.2756	—	—	.32	2.64	2.24	.058	1.42	4.13
4051267	TDS503A07100	7,100	.2795	—	—	.32	2.83	2.40	.059	1.42	4.33
2968526	TDS503A07140	7,140	.2811	—	—	.32	2.83	2.40	.059	1.42	4.33
4051268	TDS503A07200	7,200	.2835	—	—	.32	2.83	2.40	.059	1.42	4.33
4051269	TDS503A07300	7,300	.2874	—	—	.32	2.83	2.40	.060	1.42	4.33
4051270	TDS503A07400	7,400	.2913	—	—	.32	2.83	2.40	.061	1.42	4.33
2968527	TDS503A07500	7,500	.2953	—	—	.32	2.83	2.40	.062	1.42	4.33
2968528	TDS503A07540	7,540	.2969	19/64	—	.32	2.83	2.40	.062	1.42	4.33
3998454	TDS503A07600	7,600	.2992	—	—	.32	2.83	2.40	.063	1.42	4.33
4051271	TDS503A07700	7,700	.3031	—	—	.32	2.83	2.40	.064	1.42	4.33
2968529	TDS503A07800	7,800	.3071	—	—	.32	2.83	2.40	.064	1.42	4.33
4051272	TDS503A07900	7,900	.3110	—	—	.32	2.83	2.40	.065	1.42	4.33
2968530	TDS503A07940	7,940	.3126	—	—	.32	2.83	2.40	.066	1.42	4.33

(continued)

Solid Carbide Drills

(TDS503A • 8 x D — continued)



● first choice
○ alternate choice

grade WU25PD TiAlN		D1 diameter				D	L3	L4 max	L5	LS	L
order #	catalog #	mm	in	fraction	wire size						
2968531	TDS503A08000	8,000	.3150	—	—	.32	2.83	2.40	.066	1.42	4.33
4051273	TDS503A08100	8,100	.3189	—	—	.39	3.15	2.68	.067	1.57	4.80
4051274	TDS503A08200	8,200	.3228	—	—	.39	3.15	2.68	.068	1.57	4.80
4051275	TDS503A08300	8,300	.3268	—	—	.39	3.15	2.68	.069	1.57	4.80
2968532	TDS503A08330	8,330	.3280	—	—	.39	3.15	2.68	.069	1.57	4.80
4051276	TDS503A08400	8,400	.3307	—	—	.39	3.15	2.68	.070	1.57	4.80
2968533	TDS503A08500	8,500	.3346	—	—	.39	3.15	2.68	.070	1.57	4.80
4051277	TDS503A08600	8,600	.3386	—	—	.39	3.15	2.68	.071	1.57	4.80
4051278	TDS503A08700	8,700	.3425	—	—	.39	3.15	2.68	.072	1.57	4.80
4051279	TDS503A08800	8,800	.3465	—	—	.39	3.15	2.68	.073	1.57	4.80
4051280	TDS503A08900	8,900	.3504	—	—	.39	3.15	2.68	.074	1.57	4.80
2968534	TDS503A09000	9,000	.3543	—	—	.39	3.15	2.68	.075	1.57	4.80
4051281	TDS503A09100	9,100	.3583	—	—	.39	3.15	2.68	.076	1.57	4.80
2968535	TDS503A09130	9,130	.3594	23/64	—	.39	3.15	2.68	.076	1.57	4.80
4051282	TDS503A09200	9,200	.3622	—	—	.39	3.15	2.68	.076	1.57	4.80
4051283	TDS503A09300	9,300	.3661	—	—	.39	3.15	2.68	.077	1.57	4.80
4051284	TDS503A09400	9,400	.3701	—	—	.39	3.15	2.68	.078	1.57	4.80
2968536	TDS503A09500	9,500	.3740	—	—	.39	3.15	2.68	.079	1.57	4.80
2968537	TDS503A09520	9,520	.3748	—	—	.39	3.15	2.68	.079	1.57	4.80
4051285	TDS503A09600	9,600	.3780	—	—	.39	3.15	2.68	.080	1.57	4.80
4051286	TDS503A09700	9,700	.3819	—	—	.39	3.15	2.68	.081	1.57	4.80
2968538	TDS503A09800	9,800	.3858	—	—	.39	3.15	2.68	.082	1.57	4.80
4051287	TDS503A09900	9,900	.3898	—	—	.39	3.15	2.68	.082	1.57	4.80
2968539	TDS503A09920	9,920	.3906	25/64	—	.39	3.15	2.68	.083	1.57	4.80
2968540	TDS503A10000	10,000	.3937	—	—	.39	3.15	2.68	.083	1.57	4.80
4051288	TDS503A10100	10,100	.3976	—	—	.47	3.70	3.11	.084	1.77	5.55
2968541	TDS503A10200	10,200	.4016	—	—	.47	3.70	3.11	.085	1.77	5.55
4051289	TDS503A10300	10,300	.4055	—	—	.47	3.70	3.11	.086	1.77	5.55
2968542	TDS503A10320	10,320	.4063	13/32	—	.47	3.70	3.11	.086	1.77	5.55
4051290	TDS503A10400	10,400	.4094	—	—	.47	3.70	3.11	.087	1.77	5.55
2968543	TDS503A10500	10,500	.4134	—	—	.47	3.70	3.11	.088	1.77	5.55
4051291	TDS503A10600	10,600	.4173	—	—	.47	3.70	3.11	.088	1.77	5.55
4051292	TDS503A10700	10,700	.4213	—	—	.47	3.70	3.11	.089	1.77	5.55
2968544	TDS503A10720	10,720	.4220	—	—	.47	3.70	3.11	.089	1.77	5.55
2968545	TDS503A10800	10,800	.4252	—	—	.47	3.70	3.11	.090	1.77	5.55
4051293	TDS503A10900	10,900	.4291	—	—	.47	3.70	3.11	.091	1.77	5.55
2968546	TDS503A11000	11,000	.4331	—	—	.47	3.70	3.11	.092	1.77	5.55
4051294	TDS503A11100	11,100	.4370	—	—	.47	3.70	3.11	.093	1.77	5.55
3998456	TDS503A11110	11,110	.4374	—	—	.47	3.70	3.11	.093	1.77	5.55
4051295	TDS503A11200	11,200	.4409	—	—	.47	3.70	3.11	.094	1.77	5.55

(continued)

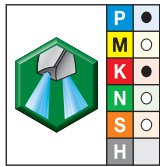
Solid Carbide Drills

Solid Carbide Drills

TOP DRILL S+™ • Steel, Stainless Steel, Cast Iron, Aluminum, and High-Temp Alloys • 8 x D



(TDS503A • 8 x D — continued)



● first choice
○ alternate choice

grade WU25PD TiAlN		D1 diameter				D	L3	L4 max	L5	LS	L
order #	catalog #	mm	in	fraction	wire size						
4051296	TDS503A11300	11,300	.4449	—	—	.47	3.70	3.11	.094	1.77	5.55
4051297	TDS503A11400	11,400	.4488	—	—	.47	3.70	3.11	.095	1.77	5.55
2968547	TDS503A11500	11,500	.4528	—	—	.47	3.70	3.11	.096	1.77	5.55
4051298	TDS503A11600	11,600	.4567	—	—	.47	3.70	3.11	.097	1.77	5.55
4051299	TDS503A11700	11,700	.4606	—	—	.47	3.70	3.11	.098	1.77	5.55
2968548	TDS503A11800	11,800	.4646	—	—	.47	3.70	3.11	.099	1.77	5.55
4051300	TDS503A11900	11,900	.4685	—	—	.47	3.70	3.11	.099	1.77	5.55
2968549	TDS503A11910	11,910	.4689	—	—	.47	3.70	3.11	.100	1.77	5.55
2968550	TDS503A12000	12,000	.4724	—	—	.47	3.70	3.11	.100	1.77	5.55
2968551	TDS503A12300	12,300	.4843	—	—	.55	4.25	3.58	.103	1.77	6.10
2968552	TDS503A12500	12,500	.4921	—	—	.55	4.25	3.58	.105	1.77	6.10
2968553	TDS503A12700	12,700	.5000	1/2	—	.55	4.25	3.58	.106	1.77	6.10
2968554	TDS503A12800	12,800	.5039	—	—	.55	4.25	3.58	.107	1.77	6.10
2968555	TDS503A13000	13,000	.5118	—	—	.55	4.25	3.58	.109	1.77	6.10
4051301	TDS503A13100	13,100	.5157	—	—	.55	4.25	3.58	.110	1.77	6.10
2968556	TDS503A13500	13,500	.5315	—	—	.55	4.25	3.58	.113	1.77	6.10
2968557	TDS503A13800	13,800	.5433	—	—	.55	4.25	3.58	.116	1.77	6.10
2968558	TDS503A14000	14,000	.5512	—	—	.55	4.25	3.58	.117	1.77	6.10
2968559	TDS503A14290	14,290	.5626	—	—	.63	4.76	3.98	.120	1.89	6.73
2968560	TDS503A14500	14,500	.5709	—	—	.63	4.76	3.98	.122	1.89	6.73
2968561	TDS503A14800	14,800	.5827	—	—	.63	4.76	3.98	.124	1.89	6.73
2968562	TDS503A15000	15,000	.5906	—	—	.63	4.76	3.98	.126	1.89	6.73
2968563	TDS503A15500	15,500	.6102	—	—	.63	4.76	3.98	.130	1.89	6.73
2968564	TDS503A15800	15,800	.6220	—	—	.63	4.76	3.98	.133	1.89	6.73
2968565	TDS503A15870	15,870	.6248	—	—	.63	4.76	3.98	.134	1.89	6.73
2968566	TDS503A16000	16,000	.6299	—	—	.63	4.76	3.98	.135	1.89	6.73
4051302	TDS503A16500	16,500	.6496	—	—	.71	5.32	4.45	.139	1.89	7.28
4051303	TDS503A16670	16,670	.6563	—	—	.71	5.32	4.45	.140	1.89	7.28
4051304	TDS503A16800	16,800	.6614	—	—	.71	5.32	4.45	.142	1.89	7.28
4051305	TDS503A17000	17,000	.6693	—	—	.71	5.32	4.45	.143	1.89	7.28
4051306	TDS503A17500	17,500	.6890	—	—	.71	5.32	4.45	.148	1.89	7.28
4051307	TDS503A17800	17,800	.7008	—	—	.71	5.32	4.45	.150	1.89	7.28
4051308	TDS503A18000	18,000	.7087	—	—	.71	5.32	4.45	.152	1.89	7.28
4051309	TDS503A18500	18,500	.7283	—	—	.79	5.83	4.88	.156	1.97	7.87
4051310	TDS503A18800	18,800	.7402	—	—	.79	5.83	4.88	.159	1.97	7.87
4051311	TDS503A19000	19,000	.7480	—	—	.79	5.83	4.88	.160	1.97	7.87
4051312	TDS503A19050	19,050	.7500	3/4	—	.79	5.83	4.88	.161	1.97	7.87
4051313	TDS503A19500	19,500	.7677	—	—	.79	5.83	4.88	.165	1.97	7.87
4051314	TDS503A19800	19,800	.7795	—	—	.79	5.83	4.88	.167	1.97	7.87
4051315	TDS503A20000	20,000	.7874	—	—	.79	5.83	4.88	.169	1.97	7.87

Solid Carbide Drills

■ TOP DRILL S+ • TDS301 • WU25PD™ • Flood Coolant • Inch

Material Group		Cutting Speed – vc Range – SFM		Recommended Feed Rate (f) by Diameter								
												Tool Diameter (inch)
		min	max	.125-1/8	.188-3/16	.250-1/4	.313-5/16	.375-3/8	.500-1/2	.625-5/8	.750-3/4	
P	1	260	430	IPR	.002-.005	.004-.007	.005-.009	.006-.011	.007-.013	.008-.015	.009-.019	.012-.024
	2, 3, 4, 6, 7	200	390	IPR	.003-.005	.004-.007	.006-.010	.007-.012	.008-.015	.009-.017	.011-.020	.015-.026
	5, 9, 10, 11	200	390	IPR	.003-.005	.004-.007	.005-.010	.006-.012	.007-.015	.008-.017	.010-.020	.013-.026
	12, 13.1, 13.2	130	230	IPR	.002-.003	.002-.004	.004-.006	.004-.008	.005-.009	.006-.011	.008-.014	.010-.018
M	14.1	100	160	IPR	.002-.003	.002-.004	.003-.004	.004-.005	.004-.006	.005-.006	.006-.007	.006-.008
	14.3	100	200	IPR	.002-.003	.002-.004	.003-.005	.004-.006	.004-.006	.005-.007	.006-.008	.006-.009
	14.2, 14.4	100	160	IPR	.002-.003	.002-.004	.003-.004	.004-.005	.004-.006	.005-.006	.006-.007	.006-.008
K	15, 16	330	690	IPR	.003-.006	.005-.009	.006-.012	.008-.015	.009-.017	.010-.019	.012-.002	.015-.029
	17, 18, 19	430	520	IPR	.003-.005	.005-.007	.006-.010	.008-.012	.009-.014	.010-.016	.012-.019	.015-.024
	20	330	560	IPR	.002-.005	.004-.007	.005-.010	.006-.012	.007-.014	.007-.016	.010-.019	.012-.024
N	21	330	980	IPR	.004-.007	.005-.008	.006-.010	.008-.012	.010-.014	.012-.016	.014-.020	.016-.024
	22, 23, 24	330	980	IPR	.004-.008	.005-.010	.006-.012	.008-.014	.010-.016	.012-.018	.014-.022	.016-.026
	25	330	980	IPR	.006-.007	.006-.008	.007-.010	.008-.012	.010-.014	.012-.016	.014-.020	.016-.022
	26, 27, 28	330	820	IPR	.004-.008	.005-.010	.006-.012	.008-.014	.010-.016	.012-.018	.014-.020	.016-.024
S	31, 32	70	100	IPR	.001-.002	.002-.003	.002-.004	.003-.005	.004-.005	.004-.006	.005-.006	.006-.007
	33, 34, 35	30	100	IPR	.001-.002	.001-.002	.002-.003	.003-.004	.003-.004	.004-.005	.004-.006	.004-.006
	36	70	130	IPR	.001-.002	.001-.002	.002-.003	.002-.004	.003-.004	.003-.004	.004-.005	.004-.006
	37	70	160	IPR	.001-.002	.001-.002	.002-.003	.003-.004	.003-.004	.004-.005	.004-.006	.004-.006

Solid Carbide Drills

Inch tolerance			
D1	D1 tolerance m7	D	D tolerance h6
> .1181-.2362	.0002/.0006	.2362	.0000/- .0003
> .2362-.3937	.0002/.0008	.315-.3937	.0000/- .0004
> .3937-.7087	.0003/.0010	.4724-.7087	.0000/- .0004
> .7087-.7874	.0003/.0011	.7874	.0000/- .0005

■ TOP DRILL S+ • TDS301 • WU25PD™ • Flood Coolant • Metric

Material Group	min	-	max	Tool Diameter (mm)	Recommended Feed Rate (f) by Diameter								
					3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0	
					Cutting Speed – vc Range – m/min								
P	1	80	-	130	mm/r	0,06-0,12	0,10-0,18	0,12-0,24	0,14-0,29	0,17-0,34	0,20-0,39	0,24-0,47	0,31-0,60
	2, 3, 4, 6, 7	60	-	120	mm/r	0,07-0,13	0,10-0,19	0,14-0,25	0,17-0,31	0,21-0,37	0,24-0,42	0,29-0,52	0,38-0,65
	5, 9, 10, 11	60	-	120	mm/r	0,07-0,13	0,09-0,19	0,13-0,25	0,16-0,31	0,19-0,37	0,21-0,42	0,26-0,52	0,32-0,65
	12, 13.1, 13.2	40	-	70	mm/r	0,05-0,08	0,06-0,11	0,09-0,16	0,11-0,20	0,13-0,24	0,15-0,27	0,20-0,35	0,26-0,45
M	14.1	30	-	50	mm/r	0,04-0,07	0,05-0,09	0,08-0,11	0,09-0,12	0,10-0,14	0,12-0,16	0,14-0,18	0,16-0,20
	14.3	30	-	60	mm/r	0,04-0,08	0,06-0,10	0,08-0,12	0,09-0,14	0,10-0,16	0,12-0,18	0,14-0,20	0,16-0,22
	14.2, 14.4	30	-	50	mm/r	0,04-0,07	0,06-0,09	0,08-0,11	0,09-0,12	0,10-0,14	0,12-0,16	0,14-0,18	0,16-0,20
K	15, 16	100	-	210	mm/r	0,08-0,16	0,12-0,24	0,16-0,31	0,20-0,38	0,23-0,44	0,25-0,49	0,31-0,06	0,38-0,74
	17, 18, 19	130	-	160	mm/r	0,08-0,13	0,12-0,19	0,16-0,25	0,20-0,31	0,23-0,36	0,25-0,40	0,31-0,48	0,38-0,60
	20	100	-	170	mm/r	0,06-0,13	0,09-0,19	0,12-0,25	0,14-0,30	0,17-0,35	0,19-0,40	0,25-0,48	0,30-0,60
N	21	100	-	300	mm/r	0,10-0,18	0,12-0,20	0,15-0,25	0,20-0,30	0,25-0,35	0,30-0,40	0,35-0,50	0,40-0,60
	22, 23, 24	100	-	300	mm/r	0,10-0,20	0,12-0,25	0,15-0,30	0,20-0,35	0,25-0,40	0,30-0,45	0,35-0,55	0,40-0,65
	25	100	-	300	mm/r	0,15-0,18	0,16-0,20	0,18-0,25	0,20-0,30	0,25-0,35	0,30-0,40	0,35-0,50	0,40-0,55
	26, 27, 28	100	-	250	mm/r	0,10-0,20	0,12-0,25	0,15-0,30	0,20-0,35	0,25-0,40	0,30-0,45	0,35-0,50	0,40-0,60
S	31, 32	20	-	30	mm/r	0,03-0,06	0,04-0,08	0,06-0,10	0,08-0,12	0,09-0,13	0,10-0,14	0,12-0,16	0,14-0,18
	33, 34, 35	10	-	30	mm/r	0,02-0,04	0,03-0,06	0,05-0,08	0,07-0,10	0,08-0,11	0,09-0,12	0,10-0,14	0,11-0,16
	36	20	-	40	mm/r	0,02-0,04	0,02-0,05	0,04-0,07	0,06-0,09	0,07-0,10	0,08-0,11	0,09-0,13	0,10-0,15
	37	20	-	50	mm/r	0,02-0,04	0,03-0,06	0,05-0,08	0,07-0,10	0,08-0,11	0,09-0,12	0,10-0,14	0,11-0,16

Solid Carbide Drills

Metric tolerance

nominal size range	D1 tolerance	D tolerance h6
>3-6	0,004/0,016	0,000/-0,008
>6-10	0,006/0,021	0,000/-0,009
>10-18	0,007/0,025	0,000/-0,011
>18-21	0,008/0,029	0,000/-0,013

TOP DRILL S+ • TDS501 TDS502 TDS503 • WU25PD™ • Through Coolant • Inch

Material Group		 Cutting Speed – vc Range – SFM		 Recommended Feed Rate (f) by Diameter								
		P	1	300	590	IPR	.003–.006	.004–.007	.005–.009	.006–.011	.007–.013	.008–.015
2, 3, 4, 6, 7	260		390	IPR	.004–.007	.004–.007	.006–.010	.007–.012	.008–.015	.009–.017	.011–.020	.015–.026
5, 9, 10, 11	230		390	IPR	.003–.007	.004–.007	.005–.010	.006–.012	.007–.015	.008–.017	.010–.020	.013–.026
12, 13.1, 13.2	160		260	IPR	.002–.004	.002–.004	.004–.006	.004–.008	.006–.009	.006–.011	.008–.014	.010–.018
M	14.1	100	160	IPR	.002–.003	.002–.004	.003–.004	.004–.005	.004–.006	.005–.006	.006–.007	.006–.008
	14.3	100	200	IPR	.002–.003	.002–.004	.003–.005	.004–.006	.004–.006	.005–.007	.006–.008	.006–.009
	14.2, 14.4	100	160	IPR	.002–.003	.002–.004	.003–.004	.004–.005	.004–.006	.005–.006	.006–.007	.006–.008
K	15, 16	330	690	IPR	.004–.009	.005–.009	.006–.012	.008–.015	.009–.017	.010–.019	.012–.024	.015–.029
	17, 18, 19	430	520	IPR	.004–.007	.005–.007	.006–.010	.008–.012	.009–.014	.010–.016	.012–.019	.015–.024
	20	330	560	IPR	.003–.007	.004–.007	.005–.010	.006–.012	.007–.014	.007–.016	.009–.019	.012–.024
N	21	330	1150	IPR	.004–.007	.005–.008	.006–.010	.008–.012	.010–.014	.012–.016	.014–.020	.016–.024
	22, 23, 24	330	980	IPR	.004–.008	.005–.010	.006–.012	.008–.014	.010–.016	.012–.018	.014–.022	.016–.026
	25	330	980	IPR	.006–.007	.006–.008	.007–.010	.008–.012	.010–.014	.012–.016	.014–.020	.016–.022
	26, 27, 28	330	820	IPR	.004–.008	.005–.010	.006–.012	.008–.014	.010–.016	.012–.018	.014–.020	.016–.024
S	31, 32	70	100	IPR	.001–.002	.002–.003	.002–.004	.003–.005	.004–.005	.004–.006	.005–.006	.006–.007
	33, 34, 35	30	100	IPR	.001–.002	.001–.002	.002–.003	.003–.004	.003–.004	.004–.005	.004–.006	.004–.006
	36	70	130	IPR	.001–.002	.001–.002	.002–.003	.002–.004	.003–.004	.003–.004	.004–.005	.004–.006
	37	70	160	IPR	.001–.002	.001–.002	.002–.003	.003–.004	.003–.004	.004–.005	.004–.006	.004–.006

Solid Carbide Drills

Inch tolerance			
D1	D1 tolerance m7	D	D tolerance h6
> .1181–.2362	.0002/.0006	.2362	.0000/-.0003
> .2362–.3937	.0002/.0008	.315–.3937	.0000/-.0004
> .3937–.7087	.0003/.0010	.4724–.7087	.0000/-.0004
> .7087–.7874	.0003/.0011	.7874	.0000/-.0005

■ TOP DRILL S+ • TDS501 TDS502 TDS503 • WU25PD™ • Through Coolant • Metric

Material Group	Cutting Speed – vc Range – m/min	Recommended Feed Rate (f) by Diameter									
		Tool Diameter (mm)	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0	
			min	-	max						
P	1	90 – 180	mm/r	0,08–0,16	0,09–0,18	0,12–0,24	0,14–0,29	0,17–0,34	0,20–0,39	0,24–0,47	0,31–0,60
	2, 3, 4, 6, 7	80 – 120	mm/r	0,09–0,17	0,10–0,19	0,14–0,25	0,17–0,31	0,21–0,37	0,24–0,42	0,29–0,52	0,38–0,65
	5, 9, 10, 11	70 – 120	mm/r	0,08–0,17	0,09–0,19	0,13–0,25	0,16–0,31	0,19–0,37	0,21–0,42	0,26–0,52	0,32–0,65
	12, 13.1, 13.2	50 – 80	mm/r	0,05–0,09	0,06–0,11	0,09–0,16	0,11–0,20	0,14–0,24	0,15–0,27	0,20–0,35	0,26–0,45
M	14.1	30 – 50	mm/r	0,04–0,07	0,05–0,09	0,08–0,11	0,09–0,12	0,10–0,14	0,12–0,16	0,14–0,18	0,16–0,20
	14.3	30 – 60	mm/r	0,04–0,08	0,06–0,10	0,08–0,12	0,09–0,14	0,10–0,16	0,12–0,18	0,14–0,20	0,16–0,22
	14.2, 14.4	30 – 50	mm/r	0,04–0,07	0,06–0,09	0,08–0,11	0,09–0,12	0,10–0,14	0,12–0,16	0,14–0,18	0,16–0,20
K	15, 16	100 – 210	mm/r	0,11–0,22	0,12–0,24	0,16–0,31	0,20–0,38	0,23–0,44	0,25–0,49	0,31–0,60	0,38–0,74
	17, 18, 19	130 – 160	mm/r	0,11–0,17	0,12–0,19	0,16–0,25	0,20–0,31	0,23–0,36	0,25–0,40	0,31–0,48	0,38–0,60
	20	100 – 170	mm/r	0,08–0,17	0,09–0,19	0,12–0,25	0,14–0,30	0,17–0,35	0,19–0,40	0,24–0,48	0,30–0,60
N	21	100 – 350	mm/r	0,10–0,18	0,12–0,20	0,15–0,25	0,20–0,30	0,25–0,35	0,30–0,40	0,35–0,50	0,40–0,60
	22, 23, 24	100 – 300	mm/r	0,10–0,20	0,12–0,25	0,15–0,30	0,20–0,35	0,25–0,40	0,30–0,45	0,35–0,55	0,40–0,65
	25	100 – 300	mm/r	0,15–0,18	0,16–0,20	0,18–0,25	0,20–0,30	0,25–0,35	0,30–0,40	0,35–0,50	0,40–0,55
	26, 27, 28	100 – 250	mm/r	0,10–0,20	0,12–0,25	0,15–0,30	0,20–0,35	0,25–0,40	0,30–0,45	0,35–0,50	0,40–0,60
S	31, 32	20 – 30	mm/r	0,03–0,06	0,04–0,08	0,06–0,10	0,08–0,12	0,09–0,13	0,10–0,14	0,12–0,16	0,14–0,18
	33, 34, 35	10 – 30	mm/r	0,02–0,04	0,03–0,06	0,05–0,08	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,14	0,11–0,16
	36	20 – 40	mm/r	0,02–0,04	0,02–0,05	0,04–0,07	0,06–0,09	0,07–0,10	0,08–0,11	0,09–0,13	0,10–0,15
	37	20 – 50	mm/r	0,02–0,04	0,03–0,06	0,05–0,08	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,14	0,11–0,16

Solid Carbide Drills

Metric tolerance

nominal size range	D1 tolerance	D tolerance h6
>3–6	0,004/0,016	0,000/–0,008
>6–10	0,006/0,021	0,000/–0,009
>10–18	0,007/0,025	0,000/–0,011
>18–21	0,008/0,029	0,000/–0,013

Good for You, Better for the Environment!

The WIDIA™ Carbide Recycling Program can turn accumulated scrap carbide tooling in your shop into cash.

Carbide Recycling

EXTREME CHALLENGES. EXTREME RESULTS.

We pay cash for used carbide tooling, including coated or non-coated carbide inserts, drills, end mills, reamers, and taps, regardless of brand.

It's good for the environment and a responsible way to dispose of scrap carbide.

Our carbide recycling program features:

- Easy-to-use web portal that shows what your scrap carbide is worth before sending it to us.
- Online forms that make it easy to ship scrap carbide to WIDIA.
- Green Box™ containers for safe, convenient shipping of scrap carbide to WIDIA.
- Cash payment for used carbide tooling.



For more information, contact your local WIDIA Authorized Distributor or visit widia.com/services.

WIDIA 

Deep-Hole Drilling without Piloting •

WIDIA™ TOP DRILL S+™ 12 x D

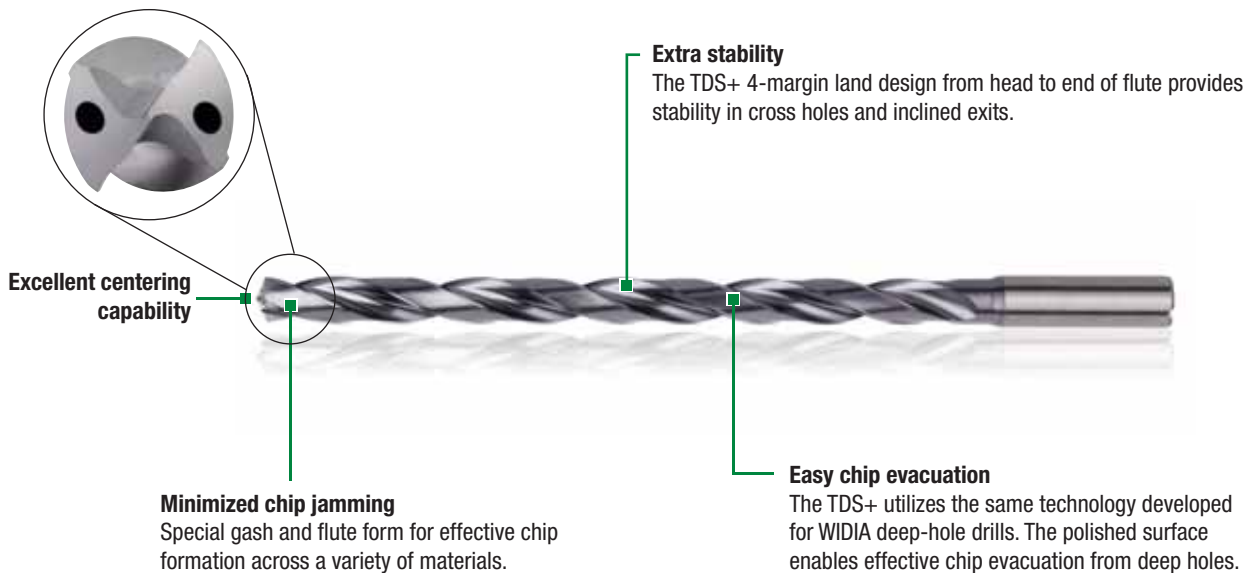
The versatile TOP DRILL S+ provides reliable performance across a broad scope of applications, including alloyed and unalloyed steel, cast iron, and some stainless steels and high-temperature alloys. TDS+ is now available in 12 x D, adding to its already wide range of options from 3–8 x D.



TOP DRILL S+ 12 x D

TDS+ 12 x D is capable of drilling an array of materials. The 4-margin land configuration offers stability, minimizes chipping and jamming, and promotes chip evacuation. Because TDS+ 12 x D does not require a pilot drill, it increases efficiency by reducing the number of steps required for basic applications.

- 12 x D fits the gap between 8 x D and 15 x D.
- One drill that covers all materials.
- Can be used without a pilot.



Improved Productivity

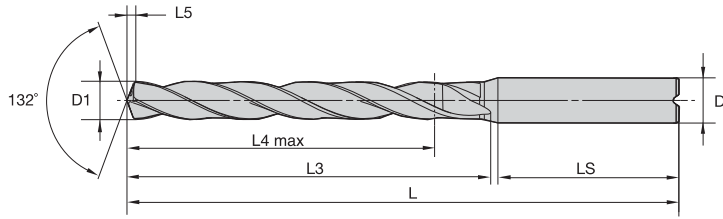
- Excellent centering capability — the new TDS+ 12 x D point is engineered to provide excellent centering capability.
- No pilot drill required — save time and money by reducing the number of steps required for your 12 x D application.

Increased Tool Life

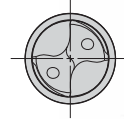
- Minimized runout — cylindrical body design provides guidance, and precision h6 shank is standard for better runout and less breakage.
- New WU20PD™ grade — designed specifically for long tool life.
- Factory regrind service — available through your WIDIA™ reconditioning service.

WIDIA Advantage

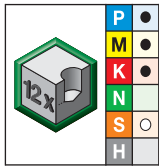
- Lower cost-per-hole due to high MRR and long tool life.
- Consistent performance from internally controlled supply chain:
Powder > Rod > Grinding > Coating
- Part of the complete WIDIA holemaking solution.
- Get more predictable results from local regrind services using OEM standards to recondition, ensuring value throughout the entire life of the drill.
- Broad range of standard lengths, diameters, and coolant options in one line. Includes extensive intermediate metric, inch, fraction, and wire size, including tap drill sizes.



For information on L, L3, and L4 max, see page R133.



■ TDS504A • 12 x D



grade WU20PD
TiAlN

● first choice
○ alternate choice

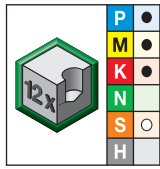
D1 diameter

order #	catalog #	mm	in	fraction	wire size	L	L4 max	L3	L5	LS	D
4173459	TDS504A03000	3,000	.1181	—	—	93	44	52,0	0,6	36	6
4173460	TDS504A03175	3,175	.1250	1/8	—	93	44	52,0	0,7	36	6
4173461	TDS504A03264	3,264	.1285	—	30	93	44	53,0	0,7	36	6
4173545	TDS504A03455	3,455	.1360	—	29	93	44	53,0	0,7	36	6
4173462	TDS504A03500	3,500	.1378	—	—	93	44	53,0	0,7	36	6
4173546	TDS504A03734	3,734	.1470	—	26	93	45	54,0	0,8	36	6
4173463	TDS504A03970	3,970	.1563	5/32	—	107	56	66,0	0,8	36	6
4173464	TDS504A04000	4,000	.1575	—	—	107	56	66,0	0,8	36	6
4173465	TDS504A04500	4,500	.1772	—	—	107	56	67,0	0,9	36	6
4173466	TDS504A04600	4,600	.1811	—	—	107	57	68,0	1,0	36	6
4173467	TDS504A04763	4,763	.1875	3/16	—	125	69	82,0	1,0	36	6
4173468	TDS504A04800	4,800	.1890	—	12	125	69	82,0	1,0	36	6
4173469	TDS504A05000	5,000	.1969	—	—	125	70	83,0	1,1	36	6
4173470	TDS504A05100	5,100	.2008	—	—	125	70	83,0	1,1	36	6
4173471	TDS504A05200	5,200	.2047	—	—	125	70	83,0	1,1	36	6
4173472	TDS504A05300	5,300	.2087	—	—	125	71	84,0	1,1	36	6
4173473	TDS504A05410	5,410	.2130	—	3	125	71	84,0	1,1	36	6
4173474	TDS504A05500	5,500	.2165	—	—	125	71	84,0	1,2	36	6
4173475	TDS504A05558	5,558	.2188	7/32	—	125	71	84,0	1,2	36	6
4173476	TDS504A05600	5,600	.2205	—	—	125	72	85,0	1,2	36	6
4173477	TDS504A05700	5,700	.2244	—	—	125	72	85,0	1,2	36	6
4173478	TDS504A05800	5,800	.2283	—	—	125	71	85,0	1,2	36	6
4173479	TDS504A06000	6,000	.2362	—	—	125	72	86,0	1,3	36	6
4173480	TDS504A06200	6,200	.2441	—	—	139	82	97,0	1,3	36	8

(continued)

Solid Carbide Drills

(TDS504A • 12 x D — continued)



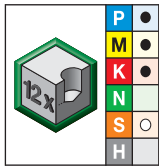
● first choice
○ alternate choice

grade WU20PD TiAlN		D1 diameter				L	L4 max	L3	L5	LS	D
order #	catalog #	mm	in	fraction	wire size						
4173481	TDS504A06350	6,350	.2500	1/4	E	139	83	98,0	1,3	36	8
4173482	TDS504A06500	6,500	.2559	—	—	139	83	98,0	1,4	36	8
4173483	TDS504A06528	6,528	.2570	—	F	139	83	98,0	1,4	36	8
4173484	TDS504A06600	6,600	.2598	—	—	139	84	99,0	1,4	36	8
4173485	TDS504A06746	6,746	.2656	17/64	—	139	83	99,0	1,4	36	8
4173486	TDS504A06800	6,800	.2677	—	—	139	83	99,0	1,4	36	8
4173487	TDS504A06909	6,909	.2720	—	I	139	84	100,0	1,5	36	8
4173488	TDS504A07000	7,000	.2756	—	—	139	84	100,0	1,5	36	8
4173489	TDS504A07145	7,145	.2813	9/32	—	153	94	111,0	1,5	36	8
4173490	TDS504A07500	7,500	.2953	—	—	153	95	112,0	1,6	36	8
4173491	TDS504A07541	7,541	.2969	19/64	—	153	95	112,0	1,6	36	8
4173492	TDS504A07700	7,700	.3031	—	—	153	96	113,0	1,6	36	8
4173493	TDS504A07800	7,800	.3071	—	—	153	95	113,0	1,7	36	8
4173494	TDS504A07938	7,938	.3125	5/16	—	153	96	114,0	1,7	36	8
4173495	TDS504A08000	8,000	.3150	—	—	153	96	114,0	1,7	36	8
4173496	TDS504A08100	8,100	.3189	—	—	185	116	136,0	1,7	40	10
4173497	TDS504A08334	8,334	.3281	21/64	—	185	117	137,0	1,8	40	10
4173498	TDS504A08433	8,433	.3320	—	Q	185	117	137,0	1,8	40	10
4173499	TDS504A08500	8,500	.3346	—	—	185	117	137,0	1,8	40	10
4173500	TDS504A08700	8,700	.3425	—	—	185	118	138,0	1,9	40	10
4173501	TDS504A08733	8,733	.3438	11/32	—	185	117	138,0	1,9	40	10
4173502	TDS504A09000	9,000	.3543	—	—	185	118	139,0	1,9	40	10
4173503	TDS504A09100	9,100	.3583	—	—	185	118	139,0	1,9	40	10
4173504	TDS504A09129	9,129	.3594	23/64	—	185	118	139,0	1,9	40	10
4173547	TDS504A09347	9,347	.3680	—	U	185	119	140,0	2,0	40	10
4173505	TDS504A09500	9,500	.3740	—	—	185	119	140,0	2,0	40	10
4173506	TDS504A09525	9,525	.3750	3/8	—	185	119	140,0	2,0	40	10
4173507	TDS504A09921	9,921	.3906	25/64	—	185	120	142,0	2,1	40	10
4173508	TDS504A10000	10,000	.3937	—	—	185	120	142,0	2,1	40	10
4173509	TDS504A10200	10,200	.4016	—	—	218	140	164,0	2,2	45	12
4173510	TDS504A10300	10,300	.4055	—	—	218	141	165,0	2,2	45	12
4173511	TDS504A10320	10,320	.4063	13/32	—	218	141	165,0	2,2	45	12
4173512	TDS504A10500	10,500	.4134	—	—	218	141	165,0	2,2	45	12
4173513	TDS504A10716	10,716	.4219	27/64	—	218	142	166,0	2,3	45	12
4173514	TDS504A10800	10,800	.4252	—	—	218	141	166,0	2,3	45	12
4173515	TDS504A11000	11,000	.4331	—	—	218	142	167,0	2,4	45	12
4173516	TDS504A11113	11,113	.4375	7/16	—	218	142	167,0	2,4	45	12
4173517	TDS504A11500	11,500	.4528	—	—	218	143	168,0	2,5	45	12
4173518	TDS504A11800	11,800	.4646	—	—	218	143	169,0	2,5	45	12
4173519	TDS504A12000	12,000	.4724	—	—	218	144	170,0	2,6	45	12

(continued)

Solid Carbide Drills

(TDS504A • 12 x D — continued)



● first choice
○ alternate choice

grade WU20PD TiAlN		D1 diameter				L	L4 max	L3	L5	LS	D
order #	catalog #	mm	in	fraction	wire size						
4173520	TDS504A12100	12,100	.4764	—	—	246	164	192,0	2,6	45	14
4173521	TDS504A12304	12,304	.4844	31/64	—	246	165	193,0	2,6	45	14
4148906	TDS504A12500	12,500	.4921	—	—	246	165	193,0	2,7	45	14
4173522	TDS504A12700	12,700	.5000	1/2	—	246	166	194,0	2,7	45	14
4173523	TDS504A13000	13,000	.5118	—	—	246	166	195,0	2,8	45	14
4173524	TDS504A13100	13,100	.5157	—	—	246	166	195,0	2,8	45	14
4173525	TDS504A13500	13,500	.5315	—	—	246	167	196,0	2,9	45	14
4173526	TDS504A14000	14,000	.5512	—	—	246	168	198,0	3,0	45	14
4173527	TDS504A14100	14,100	.5551	—	—	277	188	220,0	3,0	48	16
4173528	TDS504A14288	14,288	.5625	9/16	—	277	188	220,0	3,1	48	16
4173529	TDS504A14500	14,500	.5709	—	—	277	189	221,0	3,1	48	16
4173530	TDS504A14684	14,684	.5781	37/64	—	277	190	222,0	3,2	48	16
4173531	TDS504A15000	15,000	.5906	—	—	277	190	223,0	3,2	48	16
4173532	TDS504A15500	15,500	.6102	—	—	277	191	224,0	3,3	48	16
4173533	TDS504A15875	15,875	.6250	5/8	—	277	192	225,0	3,4	48	16
4173534	TDS504A16000	16,000	.6299	—	—	277	192	226,0	3,4	48	16
4173535	TDS504A16500	16,500	.6496	—	—	305	213	249,0	3,6	48	18
4173536	TDS504A17000	17,000	.6693	—	—	305	214	250,0	3,7	48	18
4173537	TDS504A17463	17,463	.6875	11/16	—	305	215	252,0	3,8	48	18
4173538	TDS504A17500	17,500	.6890	—	—	305	215	252,0	3,8	48	18
4173539	TDS504A18000	18,000	.7087	—	—	305	216	253,0	3,9	48	18
4173540	TDS504A18500	18,500	.7283	—	—	334	237	277,0	4,0	50	20
4173541	TDS504A19000	19,000	.7480	—	—	334	238	278,0	4,1	50	20
4173542	TDS504A19050	19,050	.7500	3/4	—	334	239	279,0	4,1	50	20
4173543	TDS504A19500	19,500	.7677	—	—	334	239	280,0	4,2	50	20
4173544	TDS504A20000	20,000	.7874	—	—	334	240	281,0	4,3	50	20

Solid Carbide Drills

■ TOP DRILL S+ • TDS504 Series • WU20PD™ • Through Coolant • Inch

Material Group		Cutting Speed – vc Range – SFM		Recommended Feed Rate (f) by Diameter								
				Tool Diameter (inch)	.125–1/8	.188–3/16	.250–1/4	.313–5/16	.375–3/8	.500–1/2	.625–5/8	.750–3/4
		min	– max									
P	1	300	– 590	IPR	.003–.006	.004–.007	.005–.009	.006–.011	.007–.013	.008–.015	.009–.019	.012–.024
	2, 3, 4, 6, 7	260	– 390	IPR	.004–.007	.004–.007	.006–.010	.007–.012	.008–.015	.009–.017	.011–.020	.015–.026
	5, 9, 10, 11	230	– 390	IPR	.003–.007	.004–.007	.005–.010	.006–.012	.007–.015	.008–.017	.010–.020	.013–.026
	12, 13	160	– 260	IPR	.002–.004	.002–.004	.004–.006	.004–.008	.006–.009	.006–.011	.008–.014	.010–.018
M	14,1	100	– 160	IPR	.002–.003	.002–.004	.003–.004	.004–.005	.004–.006	.005–.006	.006–.007	.006–.008
	14,3	100	– 200	IPR	.002–.003	.002–.004	.003–.005	.004–.006	.004–.006	.005–.007	.006–.008	.006–.009
	14.2, 14.4	100	– 160	IPR	.002–.003	.002–.004	.003–.004	.004–.005	.004–.006	.005–.006	.006–.007	.006–.008
K	15, 16	330	– 690	IPR	.004–.009	.005–.009	.006–.012	.008–.015	.009–.017	.010–.019	.012–.024	.015–.029
	17, 18, 19	430	– 520	IPR	.004–.007	.005–.007	.006–.010	.008–.012	.009–.014	.010–.016	.012–.019	.015–.024
	20	330	– 560	IPR	.003–.007	.004–.007	.005–.010	.006–.012	.007–.014	.007–.016	.009–.019	.012–.024

■ TOP DRILL S+ • TDS504 Series • WU20PD • Through Coolant • Metric

Material Group		Cutting Speed – vc Range – m/min		Recommended Feed Rate (f) by Diameter								
				Tool Diameter (mm)	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
		min	– max									
P	1	90	– 180	mm/r	0,08–0,16	0,09–0,18	0,12–0,24	0,14–0,29	0,17–0,34	0,20–0,39	0,24–0,47	0,31–0,60
	2, 3, 4, 6, 7	80	– 120	mm/r	0,09–0,17	0,10–0,19	0,14–0,25	0,17–0,31	0,21–0,37	0,24–0,42	0,29–0,52	0,38–0,65
	5, 9, 10, 11	70	– 120	mm/r	0,08–0,17	0,09–0,19	0,13–0,25	0,16–0,31	0,19–0,37	0,21–0,42	0,26–0,52	0,32–0,65
	12, 13	50	– 80	mm/r	0,05–0,09	0,06–0,11	0,09–0,16	0,11–0,20	0,14–0,24	0,15–0,27	0,20–0,35	0,26–0,45
M	14,1	30	– 50	mm/r	0,04–0,07	0,05–0,09	0,08–0,11	0,09–0,12	0,10–0,14	0,12–0,16	0,14–0,18	0,16–0,20
	14,3	30	– 60	mm/r	0,04–0,08	0,06–0,10	0,08–0,12	0,09–0,14	0,10–0,16	0,12–0,18	0,14–0,20	0,16–0,22
	14.2, 14.4	30	– 50	mm/r	0,04–0,07	0,06–0,09	0,08–0,11	0,09–0,12	0,10–0,14	0,12–0,16	0,14–0,18	0,16–0,20
K	15, 16	100	– 210	mm/r	0,11–0,22	0,12–0,24	0,16–0,31	0,20–0,38	0,23–0,44	0,25–0,49	0,31–0,60	0,38–0,74
	17, 18, 19	130	– 160	mm/r	0,11–0,17	0,12–0,19	0,16–0,25	0,20–0,31	0,23–0,36	0,25–0,40	0,31–0,48	0,38–0,60
	20	100	– 170	mm/r	0,08–0,17	0,09–0,19	0,12–0,25	0,14–0,30	0,17–0,35	0,19–0,40	0,24–0,48	0,30–0,60

nominal size range	Inch tolerance	
	D1 tolerance m7	D tolerance h6
>.1181–.2362	.0000/.0005	.0000/-.0003
>.2360–.3937	.0000/.0006	.0000/-.0004
>.3937–.7087	.0000/.0007	.0000/-.0004
>.7078–.1.0000	.0000/.0009	.0000/-.0005

nominal size range	Metric tolerance	
	D1 tolerance m7	D tolerance h6
>3–6	0,004/0,016	0,000/–0,008
>6–10	0,006/0,021	0,000/–0,009
>10–18	0,007/0,025	0,000/–0,011
>18–25,4	0,008/0,029	0,000/–0,013

Superior Deep-Hole Drilling •

WIDIA™ TOP DRILL™ Deep-Hole Drills for Steel and Cast Iron



TOP DRILL Deep-Hole Drills

Solid carbide deep-hole drills outperform gun drills and HSS deep-hole drills in deep-hole applications up to 30 x D by increasing metal removal rates by 3–4 times. Increased MRR equals bottom-line savings to customers in throughput, machine time, and personnel hours.

The TDD1*Z* Series in the WU20PD™ grade offers secure and consistent performance, excellent hole quality, and reduced cycle times. The standard lines are available from 3 to .512" (13mm) and lengths of 15, 20, 25, and 30 x D. It eliminates the traditional HSS or gun drilling without pecking, at up to 100% increased penetration rates.

132° TDS Point Geometry

- Low thrust.
- Excellent centering capabilities.
- Easy to regrind.

30° Helix with Optimized Flute Profile

- Reduces risk of chip jamming and catastrophic failure.

Four-Margin Lands

- Improves hole straightness.
- Improves hole alignment when drilling through cross holes and inclined exits.

Highly Polished Surfaces

- Reduction of friction in the chip flute and on the lands, resulting in superior chip evacuation.
- Shorter drilling time through omission of reversing cycles.

WU20PD™ Grade

- Advanced TiAlN multilayer PVD coating for steel and cast iron.
- Ultra fine-grain carbide ensures process reliability at high feed rates.

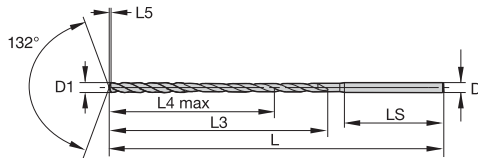
Customization

- Intermediate sizes, even up to .6299" (16mm) diameter, available as semi-standards.
- Length variations, including longer versions up to 21.65" (550mm), available as custom solutions.
- For drilling non-ferrous and uncoated materials, sharp versions are recommended and available as custom solutions.
- Excellent surface finish and concentricity.

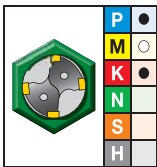


Solid Carbide Drills

Deep-Hole Drills for Steel and Cast Iron • 2 Flute • 15 x D • Z Shank



Deep-Hole Drills for Steel and Cast Iron • 2 Flute • WU20PD™ • 15 x D • Z Shank • Inch



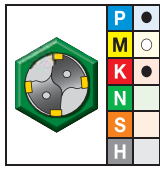
● first choice
○ alternate choice

grade WU20PD TiAlN		D1 diameter										pilot drill
order #	catalog #	mm	in	fraction	wire size	D	L3	L4 max	L5	LS	L	
3899626	TDD105Z03000	3,000	.1181	—	—	.1181	2.07	1.77	.02	1.18	3.39	TDS501A03000
3899627	TDD105Z03175	3,175	.1250	1/8	—	.1575	2.64	2.30	.03	1.26	4.13	TDS501A03175
3899628	TDD105Z03500	3,500	.1378	—	—	.1575	2.68	2.32	.03	1.26	4.13	TDS501A03500
3899629	TDD105Z03571	3,571	.1406	9/64	—	.1575	2.68	2.32	.03	1.26	4.13	TDS501A03571
3899630	TDD105Z03800	3,800	.1496	—	—	.1575	2.72	2.35	.03	1.26	4.13	TDS501A03800
3899631	TDD105Z03970	3,970	.1563	5/32	—	.1575	2.74	2.36	.03	1.26	4.13	TDS501A03970
3899632	TDD105Z04000	4,000	.1575	—	—	.1575	2.74	2.36	.03	1.26	4.13	TDS501A04000
3899683	TDD105Z04039	4,039	.1590	—	21	.1969	3.30	2.88	.03	1.34	4.88	TDS501A04039
3899684	TDD105Z04300	4,300	.1693	—	—	.1969	3.33	2.90	.03	1.34	4.88	TDS501A04300
3899685	TDD105Z04500	4,500	.1772	—	—	.1969	3.35	2.91	.04	1.34	4.88	TDS501A04500
3899686	TDD105Z04623	4,623	.1820	—	14	.1969	3.37	2.92	.04	1.34	4.88	TDS501A04623
3899687	TDD105Z04763	4,763	.1875	3/16	—	.1969	3.39	2.93	.04	1.34	4.88	TDS501A04763
3899688	TDD105Z05000	5,000	.1969	—	—	.1969	3.41	2.95	.04	1.34	4.88	TDS501A05000
3899689	TDD105Z05159	5,159	.2031	13/64	—	.2362	4.00	3.48	.04	1.42	5.63	TDS501A05160
3899690	TDD105Z05410	5,410	.2130	—	3	.2362	4.02	3.50	.04	1.42	5.63	TDS501A05410
3899691	TDD105Z05500	5,500	.2165	—	—	.2362	4.02	3.50	.04	1.42	5.63	TDS501A05500
3899692	TDD105Z05558	5,558	.2188	7/32	—	.2362	4.03	3.51	.05	1.42	5.63	TDS501A05558
3899693	TDD105Z05800	5,800	.2283	—	—	.2362	4.06	3.53	.05	1.42	5.63	TDS501A05800
3899694	TDD105Z06000	6,000	.2362	—	—	.2362	4.08	3.54	.05	1.42	5.63	TDS501A06000
3899695	TDD105Z06200	6,200	.2441	—	—	.2756	4.66	4.07	.05	1.50	6.38	TDS501A06200
3899696	TDD105Z06350	6,350	.2500	1/4	E	.2756	4.68	4.08	.05	1.50	6.38	TDS501A06350
3899697	TDD105Z06500	6,500	.2559	—	—	.2756	4.70	4.09	.05	1.50	6.38	TDS501A06500
3899698	TDD105Z06528	6,528	.2570	—	F	.2756	4.70	4.10	.05	1.50	6.38	TDS501A06528
3899699	TDD105Z06746	6,746	.2656	17/64	—	.2756	4.72	4.11	.06	1.50	6.38	TDS501A06746

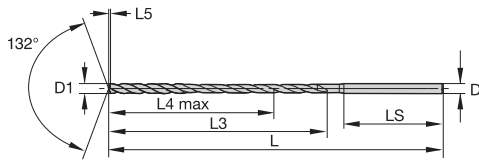
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Solid Carbide Drills

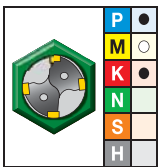
(Deep-Hole Drills for Steel and Cast Iron • 2 Flute • WU20PD™ • 15 x D • Z Shank • Inch — continued)


 ● first choice
 ○ alternate choice

grade WU20PD TiAlN		D1 diameter											pilot drill
order #	catalog #	mm	in	fraction	wire size	D	L3	L4 max	L5	LS	L		
3899700	TDD105Z06800	6,800	.2677	—	—	.2756	4.73	4.12	.06	1.50	6.38	TDS501A06800	
3899701	TDD105Z06909	6,909	.2720	—	I	.2756	4.74	4.13	.06	1.50	6.38	TDS501A06909	
3899702	TDD105Z07000	7,000	.2756	—	—	.2756	4.76	4.13	.06	1.50	6.38	TDS501A07000	
3900612	TDD105Z07145	7,145	.2813	9/32	—	.3150	5.32	4.66	.06	1.57	7.13	TDS501A07145	
3900633	TDD105Z07500	7,500	.2953	—	—	.3150	5.37	4.69	.06	1.57	7.13	TDS501A07500	
3899764	TDD106Z07500	7,500	.2953	—	—	.3150	6.84	6.16	.06	1.57	8.70	TDS501A07500	
3900634	TDD105Z07541	7,541	.2969	19/64	—	.3150	5.37	4.69	.06	1.57	7.13	TDS501A07541	
3900635	TDD105Z07938	7,938	.3125	5/16	—	.3150	5.42	4.72	.07	1.57	7.13	TDS501A07938	
3900636	TDD105Z08000	8,000	.3150	—	—	.3150	5.43	4.72	.07	1.57	7.13	TDS501A08000	
3900637	TDD105Z08334	8,334	.3281	21/64	—	.3543	6.02	5.26	.07	1.65	7.87	TDS501A08334	
3900638	TDD105Z08433	8,433	.3320	—	Q	.3543	6.03	5.27	.07	1.65	7.87	TDS501A08433	
3900639	TDD105Z08500	8,500	.3346	—	—	.3543	6.04	5.28	.07	1.65	7.87	TDS501A08500	
3900640	TDD105Z08733	8,733	.3438	11/32	—	.3543	6.06	5.29	.07	1.65	7.87	TDS501A08733	
3900641	TDD105Z09000	9,000	.3543	—	—	.3543	6.09	5.32	.07	1.65	7.87	TDS501A09000	
3900642	TDD105Z09347	9,347	.3680	—	U	.3937	6.69	5.85	.08	1.73	8.62	TDS501A09347	
3900643	TDD105Z09500	9,500	.3740	—	—	.3937	6.70	5.87	.08	1.73	8.62	TDS501A09500	
3900644	TDD105Z09525	9,525	.3750	3/8	—	.3937	6.71	5.87	.08	1.73	8.62	TDS501A09525	
3900645	TDD105Z09750	9,750	.3839	—	—	.3937	6.73	5.89	.08	1.73	8.62	TDS501A09750	
3900647	TDD105Z10000	10,000	.3937	—	—	.3937	6.76	5.91	.08	1.73	8.62	TDS501A10000	
3900648	TDD105Z10200	10,200	.4016	—	—	.4331	7.34	6.43	.08	1.81	9.37	TDS501A10200	
3900649	TDD105Z10320	10,317	.4062	13/32	—	.4331	7.35	6.44	.09	1.81	9.37	TDS501A10317	
3900650	TDD105Z10500	10,500	.4134	—	—	.4331	7.37	6.46	.09	1.81	9.37	TDS501A10500	
3900651	TDD105Z10716	10,716	.4219	27/64	—	.4331	7.40	6.47	.09	1.81	9.37	TDS501A10716	
3900652	TDD105Z11000	11,000	.4331	—	—	.4331	7.98	7.01	.09	1.81	9.37	TDS501A11000	
3900653	TDD105Z11113	11,113	.4375	7/16	—	.4724	8.00	7.02	.09	1.89	10.12	TDS501A11113	
3900654	TDD105Z11500	11,500	.4528	—	—	.4724	8.04	7.05	.10	1.89	10.12	TDS501A11500	
3900656	TDD105Z12000	12,000	.4724	—	—	.4724	8.10	7.09	.10	1.89	10.12	TDS501A12000	
3900657	TDD105Z12304	12,304	.4844	31/64	—	.5118	8.69	7.62	.10	1.97	10.87	TDS501A12304	
3900658	TDD105Z12500	12,500	.4921	—	—	.5118	8.71	7.64	.10	1.97	10.87	TDS501A12500	
3900659	TDD105Z12700	12,700	.5000	1/2	—	.5118	8.73	7.65	.11	1.97	10.87	TDS501A12700	
3900660	TDD105Z13000	13,000	.5118	—	—	.5118	8.77	7.68	.11	1.97	10.87	TDS501A13000	



■ Deep-Hole Drills for Steel and Cast Iron • 2 Flute • WU20PD™ • 20 x D • Z Shank • Inch



● first choice
○ alternate choice

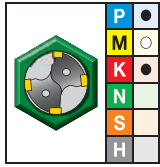
D1 diameter

grade WU20PD TiAlN		D1 diameter										pilot drill
order #	catalog #	mm	in	fraction	wire size	D	L3	L4 max	L5	LS	L	
3899782	TDD106Z03000	3,000	.1181	—	—	.1181	2.66	2.36	.02	1.18	3.98	TDS501A03000
3899803	TDD106Z03175	3,175	.1250	1/8	—	.1575	3.27	2.92	.03	1.26	4.92	TDS501A03175
3899804	TDD106Z03500	3,500	.1378	—	—	.1575	3.37	3.01	.03	1.26	4.92	TDS501A03500
3899805	TDD106Z03571	3,571	.1406	9/64	—	.1575	3.39	3.03	.03	1.26	4.92	TDS501A03571
3899806	TDD106Z03800	3,800	.1496	—	—	.1575	3.46	3.09	.03	1.26	4.92	TDS501A03800
3899807	TDD106Z03970	3,970	.1563	5/32	—	.1575	3.52	3.14	.03	1.26	4.92	TDS501A03970
3899808	TDD106Z04000	4,000	.1575	—	—	.1575	3.53	3.15	.03	1.26	4.92	TDS501A04000
3899809	TDD106Z04039	4,039	.1590	—	21	.1969	4.09	3.67	.03	1.34	5.87	TDS501A04039
3899810	TDD106Z04300	4,300	.1693	—	—	.1969	4.18	3.74	.03	1.34	5.87	TDS501A04300
3899811	TDD106Z04500	4,500	.1772	—	—	.1969	4.24	3.80	.04	1.34	5.87	TDS501A04500
3899812	TDD106Z04623	4,623	.1820	—	14	.1969	4.28	3.83	.04	1.34	5.87	TDS501A04623
3899813	TDD106Z04763	4,763	.1875	3/16	—	.1969	4.32	3.87	.04	1.34	5.87	TDS501A04763
3899814	TDD106Z05000	5,000	.1969	—	—	.1969	4.40	3.94	.04	1.34	5.87	TDS501A05000
3899815	TDD106Z05159	5,159	.2031	13/64	—	.2362	5.03	4.49	.04	1.42	6.81	TDS501A05160
3899816	TDD106Z05410	5,410	.2130	—	3	.2362	5.08	4.56	.04	1.42	6.81	TDS501A05410
3899818	TDD106Z05500	5,500	.2165	—	—	.2362	5.11	4.59	.04	1.42	6.81	TDS501A05500
3899819	TDD106Z05558	5,558	.2188	7/32	—	.2362	5.13	4.60	.05	1.42	6.81	TDS501A05558
3899820	TDD106Z05800	5,800	.2283	—	—	.2362	5.20	4.67	.05	1.42	6.81	TDS501A05800
3899821	TDD106Z06000	6,000	.2362	—	—	.2362	5.26	4.72	.05	1.42	6.81	TDS501A06000
3899822	TDD106Z06200	6,200	.2441	—	—	.2756	5.88	5.29	.05	1.50	7.76	TDS501A06200
3899823	TDD106Z06350	6,350	.2500	1/4	E	.2756	5.93	5.33	.05	1.50	7.76	TDS501A06350
3899824	TDD106Z06500	6,500	.2559	—	—	.2756	5.98	5.37	.05	1.50	7.76	TDS501A06500
3899825	TDD106Z06528	6,528	.2570	—	F	.2756	5.98	5.38	.05	1.50	7.76	TDS501A06528
3899826	TDD106Z06746	6,746	.2656	17/64	—	.2756	6.05	5.44	.06	1.50	7.76	TDS501A06746

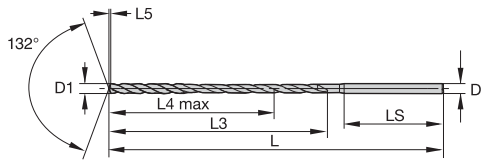
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Solid Carbide Drills

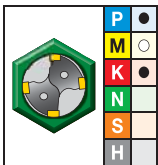
(Deep-Hole Drills for Steel and Cast Iron • 2 Flute • WU20PD™ • 20 x D • Z Shank • Inch — continued)


 ● first choice
 ○ alternate choice

grade WU20PD TiAlN		D1 diameter										pilot drill
order #	catalog #	mm	in	fraction	wire size	D	L3	L4 max	L5	LS	L	
3899827	TDD106Z06800	6,800	.2677	—	—	.2756	6.07	5.46	.06	1.50	7.76	TDS501A06800
3899828	TDD106Z06909	6,909	.2720	—	I	.2756	6.10	5.49	.06	1.50	7.76	TDS501A06909
3899829	TDD106Z07000	7,000	.2756	—	—	.2756	6.13	5.51	.06	1.50	7.76	TDS501A07000
3899763	TDD106Z07145	7,145	.2813	9/32	—	.3150	6.73	6.06	.06	1.57	8.70	TDS501A07145
3899765	TDD106Z07541	7,541	.2969	19/64	—	.3150	6.85	6.17	.06	1.57	8.70	TDS501A07541
3899766	TDD106Z07938	7,938	.3125	5/16	—	.3150	6.98	6.28	.07	1.57	8.70	TDS501A07938
3899767	TDD106Z08000	8,000	.3150	—	—	.3150	7.00	6.30	.07	1.57	8.70	TDS501A08000
3899768	TDD106Z08334	8,334	.3281	21/64	—	.3543	7.66	6.90	.07	1.65	9.65	TDS501A08334
3899769	TDD106Z08433	8,433	.3320	—	Q	.3543	7.69	6.93	.07	1.65	9.65	TDS501A08433
3899770	TDD106Z08500	8,500	.3346	—	—	.3543	7.71	6.95	.07	1.65	9.65	TDS501A08500
3899771	TDD106Z08733	8,733	.3438	11/32	—	.3543	7.78	7.01	.07	1.65	9.65	TDS501A08733
3899772	TDD106Z09000	9,000	.3543	—	—	.3543	7.87	7.09	.07	1.65	9.65	TDS501A09000
3899783	TDD106Z09347	9,347	.3680	—	U	.3937	8.53	7.69	.08	1.73	10.59	TDS501A09347
3899784	TDD106Z09500	9,500	.3740	—	—	.3937	8.57	7.74	.08	1.73	10.59	TDS501A09500
3899785	TDD106Z09525	9,525	.3750	3/8	—	.3937	8.58	7.74	.08	1.73	10.59	TDS501A09525
3899786	TDD106Z09750	9,750	.3839	—	—	.3937	8.65	7.81	.08	1.73	10.59	TDS501A09750
3899787	TDD106Z09921	9,921	.3906	25/64	—	.3937	8.71	7.85	.08	1.73	10.59	TDS501A09921
3899788	TDD106Z10000	10,000	.3937	—	—	.3937	8.73	7.87	.08	1.73	10.59	TDS501A10000
3899789	TDD106Z10200	10,200	.4016	—	—	.4331	9.35	8.44	.08	1.81	11.54	TDS501A10200
3899790	TDD106Z10320	10,317	.4062	13/32	—	.4331	9.38	8.47	.09	1.81	11.54	TDS501A10317
3899791	TDD106Z10500	10,500	.4134	—	—	.4331	9.44	8.52	.09	1.81	11.54	TDS501A10500
3899792	TDD106Z10716	10,716	.4219	27/64	—	.4331	9.51	8.58	.09	1.81	11.54	TDS501A10716
3899793	TDD106Z11000	11,000	.4331	—	—	.4331	10.15	9.17	.09	1.81	12.48	TDS501A11000
3899794	TDD106Z11113	11,113	.4375	7/16	—	.4724	10.19	9.20	.09	1.89	12.48	TDS501A11113
3899795	TDD106Z11500	11,500	.4528	—	—	.4724	10.31	9.31	.10	1.89	12.48	TDS501A11500
3899797	TDD106Z12000	12,000	.4724	—	—	.4724	10.46	9.45	.10	1.89	12.48	TDS501A12000
3899799	TDD106Z12500	12,500	.4921	—	—	.5118	11.17	10.10	.10	1.97	13.43	TDS501A12500
3899800	TDD106Z12700	12,700	.5000	1/2	—	.5118	11.23	10.15	.11	1.97	13.43	TDS501A12700
3899801	TDD106Z13000	13,000	.5118	—	—	.5118	11.33	10.24	.11	1.97	13.43	TDS501A13000



■ Deep-Hole Drills for Steel and Cast Iron • 2 Flute • WU20PD™ • 25 x D • Z Shank • Inch



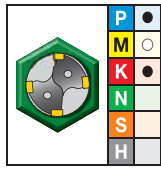
● first choice
○ alternate choice

grade WU20PD TiAlN		D1 diameter				D	L3	L4 max	L5	LS	L	pilot drill
order #	catalog #	mm	in	fraction	wire size							
3899708	TDD107Z03000	3,000	.1181	—	—	.1181	3.25	2.95	.02	1.18	4.57	TDS501A03000
3899709	TDD107Z03175	3,175	.1250	1/8	—	.1575	3.89	3.55	.03	1.26	5.71	TDS501A03175
3899710	TDD107Z03500	3,500	.1378	—	—	.1575	4.06	3.70	.03	1.26	5.71	TDS501A03500
3899712	TDD107Z03800	3,800	.1496	—	—	.1575	4.21	3.84	.03	1.26	5.71	TDS501A03800
3899733	TDD107Z03970	3,970	.1563	5/32	—	.1575	4.30	3.92	.03	1.26	5.71	TDS501A03970
3899734	TDD107Z04000	4,000	.1575	—	—	.1575	4.32	3.94	.03	1.26	5.71	TDS501A04000
3899735	TDD107Z04039	4,039	.1590	—	21	.1969	4.89	4.47	.03	1.34	6.85	TDS501A04039
3899737	TDD107Z04500	4,500	.1772	—	—	.1969	5.13	4.69	.04	1.34	6.85	TDS501A04500
3899739	TDD107Z04763	4,763	.1875	3/16	—	.1969	5.26	4.81	.04	1.34	6.85	TDS501A04763
3899740	TDD107Z05000	5,000	.1969	—	—	.1969	5.38	4.92	.04	1.34	6.85	TDS501A05000
3899743	TDD107Z05500	5,500	.2165	—	—	.2362	6.19	5.67	.04	1.42	7.99	TDS501A05500
3899744	TDD107Z05558	5,558	.2188	7/32	—	.2362	6.22	5.70	.05	1.42	7.99	TDS501A05558
3899745	TDD107Z05800	5,800	.2283	—	—	.2362	6.34	5.81	.05	1.42	7.99	TDS501A05800
3899746	TDD107Z06000	6,000	.2362	—	—	.2362	6.44	5.91	.05	1.42	7.99	TDS501A06000
3899748	TDD107Z06350	6,350	.2500	1/4	E	.2756	7.18	6.58	.05	1.50	9.13	TDS501A06350
3899749	TDD107Z06500	6,500	.2559	—	—	.2756	7.26	6.65	.05	1.50	9.13	TDS501A06500
3899750	TDD107Z06528	6,528	.2570	—	—	.2756	7.27	6.67	.05	1.50	9.13	TDS501A06528
3899751	TDD107Z06746	6,746	.2656	17/64	—	.2756	7.38	6.77	.06	1.50	9.13	TDS501A06746
3899753	TDD107Z06909	6,909	.2720	—	—	.2756	7.46	6.85	.06	1.50	9.13	TDS501A06909
3899754	TDD107Z07000	7,000	.2756	—	—	.2756	7.51	6.89	.06	1.50	9.13	TDS501A07000
3899567	TDD107Z07541	7,541	.2969	19/64	—	.3150	8.34	7.66	.06	1.57	10.28	TDS501A07541
3899568	TDD107Z07938	7,938	.3125	5/16	—	.3150	8.54	7.84	.07	1.57	10.28	TDS501A07938
3899569	TDD107Z08000	8,000	.3150	—	—	.3150	8.57	7.87	.07	1.57	10.28	TDS501A08000
3899571	TDD107Z08433	8,433	.3320	—	Q	.3543	9.35	8.59	.07	1.65	11.42	TDS501A08433

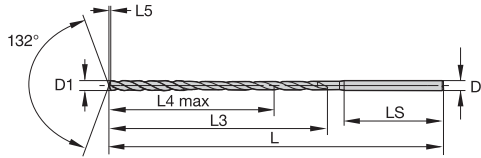
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Solid Carbide Drills

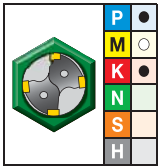
(Deep-Hole Drills for Steel and Cast Iron • 2 Flute • WU20PD™ • 25 x D • Z Shank • Inch — continued)


 ● first choice
 ○ alternate choice

grade WU20PD TiAlN		D1 diameter										pilot drill
order #	catalog #	mm	in	fraction	wire size	D	L3	L4 max	L5	LS	L	
3899572	TDD107Z08500	8,500	.3346	—	—	.3543	9.38	8.62	.07	1.65	11.42	TDS501A08500
3899603	TDD107Z08733	8,733	.3438	11/32	—	.3543	9.50	8.73	.07	1.65	11.42	TDS501A08733
3899604	TDD107Z09000	9,000	.3543	—	—	.3543	9.64	8.86	.07	1.65	11.42	TDS501A09000
3899605	TDD107Z09347	9,347	.3680	—	U	.3937	10.37	9.53	.08	1.73	12.56	TDS501A09347
3899606	TDD107Z09500	9,500	.3740	—	—	.3937	10.44	9.61	.08	1.73	12.56	TDS501A09500
3899607	TDD107Z09525	9,525	.3750	3/8	—	.3937	10.46	9.62	.08	1.73	12.56	TDS501A09525
3899610	TDD107Z10000	10,000	.3937	—	—	.3937	10.70	9.84	.08	1.73	12.56	TDS501A10000
3899611	TDD107Z10300	10,200	.4016	—	—	.4331	11.35	10.45	.08	1.81	13.70	TDS501A10300
3899612	TDD107Z10320	10,317	.4062	13/32	—	.4331	11.41	10.50	.09	1.81	13.70	TDS501A10317
3899613	TDD107Z10500	10,500	.4134	—	—	.4331	11.51	10.59	.09	1.81	13.70	TDS501A10500
3899614	TDD107Z10716	10,716	.4219	27/64	—	.4331	11.62	10.69	.09	1.81	13.70	TDS501A10716
3899615	TDD107Z11000	11,000	.4331	—	—	.4331	12.32	11.34	.09	1.81	14.84	TDS501A11000
3899616	TDD107Z11113	11,113	.4375	7/16	—	.4724	12.37	11.39	.09	1.89	14.84	TDS501A11113
3899617	TDD107Z11500	11,500	.4528	—	—	.4724	12.57	11.57	.10	1.89	14.84	TDS501A11500
3899619	TDD107Z12000	12,000	.4724	—	—	.4724	12.83	11.81	.10	1.89	14.84	TDS501A12000
3899621	TDD107Z12500	12,500	.4921	—	—	.5118	13.63	12.56	.10	1.97	15.98	TDS501A12500
3899622	TDD107Z12700	12,700	.5000	1/2	—	.5118	13.73	12.65	.11	1.97	15.98	TDS501A12700
3899623	TDD107Z13000	13,000	.5118	—	—	.5118	13.89	12.80	.11	1.97	15.98	TDS501A13000



■ Deep-Hole Drills for Steel and Cast Iron • 2 Flute • WU20PD™ • 30 x D • Z Shank • Inch



● first choice
○ alternate choice

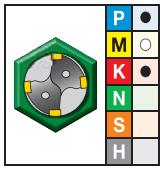
D1 diameter

grade WU20PD TiAlN		D1 diameter										pilot drill
order #	catalog #	mm	in	fraction	wire size	D	L3	L4 max	L5	LS	L	
3899539	TDD108Z03000	3,000	.1181	—	—	.1181	3.84	3.54	.02	1.18	5.16	TDS501A03000
3899540	TDD108Z03175	3,175	.1250	1/8	—	.1575	4.52	4.17	.03	1.26	6.50	TDS501A03175
3899541	TDD108Z03500	3,500	.1378	—	—	.1575	4.75	4.39	.03	1.26	6.50	TDS501A03500
3899542	TDD108Z03571	3,571	.1406	9/64	—	.1575	4.80	4.44	.03	1.26	6.50	TDS501A03571
3899573	TDD108Z03800	3,800	.1496	—	—	.1575	4.96	4.59	.03	1.26	6.50	TDS501A03800
3899574	TDD108Z03970	3,970	.1563	5/32	—	.1575	5.08	4.70	.03	1.26	6.50	TDS501A03970
3899575	TDD108Z04000	4,000	.1575	—	—	.1575	5.10	4.72	.03	1.26	6.50	TDS501A04000
3899576	TDD108Z04039	4,039	.1590	—	21	.1969	5.69	5.26	.03	1.34	7.83	TDS501A04039
3899577	TDD108Z04300	4,300	.1693	—	—	.1969	5.87	5.44	.03	1.34	7.83	TDS501A04300
3899578	TDD108Z04500	4,500	.1772	—	—	.1969	6.01	5.57	.04	1.34	7.83	TDS501A04500
3899579	TDD108Z04623	4,623	.1820	—	14	.1969	6.10	5.65	.04	1.34	7.83	TDS501A04623
3899580	TDD108Z04763	4,763	.1875	3/16	—	.1969	6.20	5.75	.04	1.34	7.83	TDS501A04763
3899581	TDD108Z05000	5,000	.1969	—	—	.1969	6.37	5.91	.04	1.34	7.83	TDS501A05000
3899582	TDD108Z05159	5,159	.2031	13/64	—	.2362	7.10	6.52	.04	1.42	9.17	TDS501A05160
3899583	TDD108Z05410	5,410	.2130	—	3	.2362	7.21	6.69	.04	1.42	9.17	TDS501A05410
3899584	TDD108Z05500	5,500	.2165	—	—	.2362	7.27	6.75	.04	1.42	9.17	TDS501A05500
3899585	TDD108Z05558	5,558	.2188	7/32	—	.2362	7.32	6.79	.05	1.42	9.17	TDS501A05558
3899586	TDD108Z05800	5,800	.2283	—	—	.2362	7.48	6.95	.05	1.42	9.17	TDS501A05800
3899587	TDD108Z06000	6,000	.2362	—	—	.2362	7.63	7.09	.05	1.42	9.17	TDS501A06000
3899588	TDD108Z06200	6,200	.2441	—	—	.2756	8.32	7.73	.05	1.50	10.51	TDS501A06200
3899589	TDD108Z06350	6,350	.2500	1/4	E	.2756	8.43	7.83	.05	1.50	10.51	TDS501A06350
3899590	TDD108Z06500	6,500	.2559	—	—	.2756	8.54	7.93	.05	1.50	10.51	TDS501A06500
3899591	TDD108Z06528	6,528	.2570	—	—	.2756	8.56	7.95	.05	1.50	10.51	TDS501A06528
3899592	TDD108Z06746	6,746	.2656	17/64	—	.2756	8.71	8.10	.06	1.50	10.51	TDS501A06746

(continued)

Solid Carbide Drills

(Deep-Hole Drills for Steel and Cast Iron • 2 Flute • WU20PD™ • 30 x D • Z Shank • Inch — continued)


 ● first choice
 ○ alternate choice

grade WU20PD TiAlN		D1 diameter										pilot drill
order #	catalog #	mm	in	fraction	wire size	D	L3	L4 max	L5	LS	L	
3899593	TDD108Z06800	6,800	.2677	—	—	.2756	8.75	8.13	.06	1.50	10.51	TDS501A06800
3899594	TDD108Z06909	6,909	.2720	—	—	.2756	8.82	8.21	.06	1.50	10.51	TDS501A06909
3899595	TDD108Z07000	7,000	.2756	—	—	.2756	8.89	8.27	.06	1.50	10.51	TDS501A07000
3899600	TDD108Z07145	7,145	.2813	9/32	—	.3150	9.54	8.88	.06	1.57	11.85	TDS501A07145
3899601	TDD108Z07500	7,500	.2953	—	—	.3150	9.80	9.11	.06	1.57	11.85	TDS501A07500
3899653	TDD108Z07938	7,938	.3125	5/16	—	.3150	10.11	9.41	.07	1.57	11.85	TDS501A07938
3899654	TDD108Z08000	8,000	.3150	—	—	.3150	10.15	9.45	.07	1.57	11.85	TDS501A08000
3899655	TDD108Z08334	8,334	.3281	21/64	—	.3543	10.94	10.18	.07	1.65	13.19	TDS501A08334
3899657	TDD108Z08500	8,500	.3346	—	—	.3543	11.06	10.30	.07	1.65	13.19	TDS501A08500
3899658	TDD108Z08733	8,733	.3438	11/32	—	.3543	11.22	10.45	.07	1.65	13.19	TDS501A08733
3899659	TDD108Z09000	9,000	.3543	—	—	.3543	11.41	10.63	.07	1.65	13.19	TDS501A09000
3899661	TDD108Z09500	9,500	.3740	—	—	.3937	12.32	11.48	.08	1.73	14.53	TDS501A09500
3899662	TDD108Z09525	9,525	.3750	3/8	—	.3937	12.33	11.49	.08	1.73	14.53	TDS501A09525
3899663	TDD108Z09750	9,750	.3839	—	—	.3937	12.49	11.64	.08	1.73	14.53	TDS501A09750
3899665	TDD108Z10000	10,000	.3937	—	—	.3937	12.67	11.81	.08	1.73	14.53	TDS501A10000
3899666	TDD108Z10200	10,200	.4016	—	—	.4331	13.36	12.46	.08	1.81	15.87	TDS501A10200
3899667	TDD108Z10320	10,317	.4062	13/32	—	.4331	13.44	12.54	.09	1.81	15.87	TDS501A10317
3899668	TDD108Z10500	10,500	.4134	—	—	.4331	13.57	12.66	.09	1.81	15.87	TDS501A10500
3899670	TDD108Z11000	11,000	.4331	—	—	.4331	14.48	13.50	.09	1.81	17.20	TDS501A11000
3899671	TDD108Z11113	11,113	.4375	7/16	—	.4724	14.56	13.58	.09	1.89	17.20	TDS501A11113
3899672	TDD108Z11500	11,500	.4528	—	—	.4724	14.83	13.84	.10	1.89	17.20	TDS501A11500
3899674	TDD108Z12000	12,000	.4724	—	—	.4724	15.19	14.17	.10	1.89	17.20	TDS501A12000
3899675	TDD108Z12304	12,304	.4844	31/64	—	.5118	15.95	14.89	.10	1.97	18.54	TDS501A12304
3899676	TDD108Z12500	12,500	.4921	—	—	.5118	16.09	15.02	.10	1.97	18.54	TDS501A12500
3899677	TDD108Z12700	12,700	.5000	1/2	—	.5118	16.23	15.15	.11	1.97	18.54	TDS501A12700
3899678	TDD108Z13000	13,000	.5118	—	—	.5118	16.44	15.35	.11	1.97	18.54	TDS501A13000

■ Series TDD • Deep-Hole SC Drills • Through Coolant Applications • Metric

		Cutting Speed – vc Range – m/min		Recommended Feed Rate (f) by Diameter									
Material Group		min	-	max	Tool Diameter (mm)								
						3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	1	90	-	130	mm/r	0,08-0,12	0,12-0,18	0,18-0,20	0,20-0,22	0,22-0,25	0,25-0,28	0,28-0,30	0,30-0,34
	2	80	-	115	mm/r	0,08-0,12	0,12-0,18	0,18-0,20	0,20-0,22	0,22-0,25	0,25-0,28	0,28-0,30	0,30-0,34
	3	70	-	110	mm/r	0,05-0,10	0,10-0,16	0,16-0,18	0,18-0,20	0,20-0,22	0,22-0,24	0,24-0,26	0,26-0,28
	4	65	-	95	mm/r	0,05-0,10	0,10-0,16	0,16-0,18	0,18-0,20	0,20-0,22	0,22-0,24	0,24-0,26	0,26-0,28
K	1	105	-	145	mm/r	0,10-0,15	0,15-0,20	0,20-0,25	0,25-0,28	0,28-0,30	0,30-0,33	0,33-0,36	0,36-0,38
	2	85	-	120	mm/r	0,10-0,15	0,15-0,20	0,20-0,25	0,25-0,28	0,28-0,30	0,30-0,33	0,33-0,36	0,36-0,38
	3	100	-	140	mm/r	0,10-0,15	0,15-0,20	0,20-0,25	0,25-0,28	0,28-0,30	0,30-0,33	0,33-0,36	0,36-0,38

■ Series TDD • Deep-Hole SC Drills • Through Coolant Applications • Inch

		Cutting Speed – vc Range – SFM		Recommended Feed Rate (f) by Diameter									
Material Group		min	-	max	Tool Diameter (inch)								
						0.125-1/8	0.188-3/16	0.250-1/4	0.313-5/16	0.375-3/8	0.500-1/2	0.625-5/8	0.750-3/4
P	1	295	-	425	IPR	0.003-0.005	0.005-0.007	0.007-0.008	0.008-0.009	0.009-0.010	0.010-0.011	0.011-0.012	0.012-0.013
	2	260	-	375	IPR	0.003-0.005	0.005-0.007	0.007-0.008	0.008-0.009	0.009-0.010	0.010-0.011	0.011-0.012	0.012-0.013
	3	230	-	360	IPR	0.002-0.004	0.004-0.006	0.006-0.007	0.007-0.008	0.008-0.009	0.009	0.009-0.010	0.010-0.011
	4	215	-	310	IPR	0.002-0.004	0.004-0.006	0.006-0.007	0.007-0.008	0.008-0.009	0.009	0.009-0.010	0.010-0.011
K	1	345	-	475	IPR	0.004-0.006	0.006-0.008	0.008-0.010	0.010-0.011	0.011-0.012	0.012-0.013	0.013-0.014	0.014-0.015
	2	280	-	390	IPR	0.004-0.006	0.006-0.008	0.008-0.010	0.010-0.011	0.011-0.012	0.012-0.013	0.013-0.014	0.014-0.015
	3	325	-	460	IPR	0.004-0.006	0.006-0.008	0.008-0.010	0.010-0.011	0.011-0.012	0.012-0.013	0.013-0.014	0.014-0.015

Solid Carbide Drills

Inch tolerance				Metric tolerance			
D1	D1 tolerance m7	D	D tolerance h6	nominal size range	D1 tolerance	D1 tolerance	D tolerance h6
> .1181-.2362	.0000/-0.0005	> .1181-.2362	.0000/-0.0003	>3-6	0,000/-0,012	>3-6	0,000/-0,008
> .2362-.3937	.0000/-0.0006	> .2362-.3937	.0000/-0.0004	>6-10	0,000/-0,015	>6-10	0,000/-0,009
> .3937-.5118	.0000/-0.0007	> .3937-.5118	.0000/-0.0004	>10-13	0,000/-0,018	>10-13	0,000/-0,011

WIDIA™ TOP DRILL™ Deep-Hole Drills Customization



EXTREME **CHALLENGES.**
EXTREME **RESULTS.**

Diameters

- Intermediate sizes, even up to .6299" (16mm) diameter, available as semi-standards.

Lengths

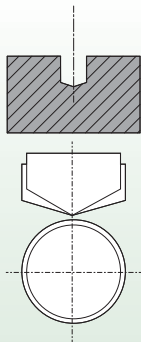
- Length variations, including longer versions up to 21.65" (550mm) depending on diameter, available as custom solutions.

Material-Specific

- For drilling non-ferrous materials, sharp and uncoated versions are recommended and available as custom solutions.

Consult the custom solutions department for specific applications.

WIDIA 

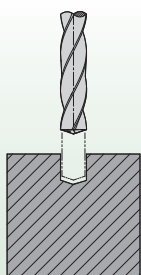


1) Pilot Drill Hole — IMPORTANT!

- The point angle of the pilot drill must be greater than one of the following deep-hole drills to protect its cutting corners.
- The diameter size of the pilot drill must be greater than one of the deep-hole drills to enable easy fit and protect margin lands. The required difference in diameter is covered by design with the different position of tolerance.
- Drill \varnothing = nominal \varnothing up to nominal $+0.0004''$ ($+0,010\text{mm}$).
- Depth of pilot hole: minimum $2 \times D$.
- Deeper pilot holes are preferable.

Recommendations:

- Use a conical (TDS*) or split-point drill to pilot (do not use a TDG, VariDrill™, or TDS 12 x D or any competitive drill).
- Check the pilot drill for wear, which can lead to premature wear on the TDD10* cutting edge and possibly catastrophic failure.
- TOP DRILL S™ for steel or cast iron (TDS4* series) and TOP DRILL S +™ for multiple applications (TDS501* series 3 x D and TD502* series 5 x D) with a 140° point angle are recommended.
- TDS503* series 8 x D and TDS504* series 12 x D is not recommended as the point angle is 132°!

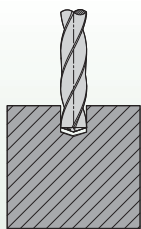


2) Feed TDD10* into Pilot Hole

- Max 500 RPM and recommended feed rate; no rapid traverse.
- Run counter-clockwise, especially in horizontal applications to protect the cutting edge, when entering the pilot hole.
- Depth: $.039''$ (1mm) above the bottom of pilot hole.
- Feed TDD10* into pilot hole

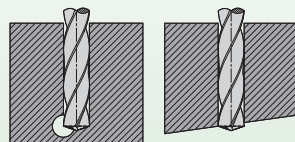
Recommendations:

- Reduce cutting speed to minimize imbalances in machine spindle/adapter!



3) Drill Hole

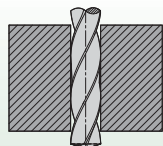
Cutting Parameters: Start recommended speed and feed rate at $.039''$ (1mm) from the bottom of the pilot hole, clockwise.



Recommendations:

- DO NOT PECK OR DWELL up to 30 x D!
- With long-chipping steel materials, it may be necessary to increase feed rate by 10–20% to provide optimal chip control.
- For long-chipping aluminum materials, it may be necessary to decrease feed rate and increase speed.
- Reduce feed rate on angled exits and crossholes by 50–60%.

HP feed recommendations are usually higher than with competitive SC drills!



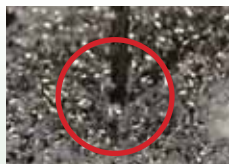
4) Drill Retraction

Cutting Parameters: 50–500 RPM and feed rate 2–6 m/min.

Recommendations:

To achieve the best tool performance, we recommend using the deep-hole drill with a hydraulic chuck.

Reduce cutting speed to minimize imbalances in machine spindle/adapter!



5) Vertical Applications

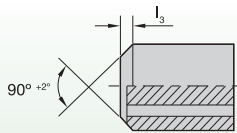
- If the pilot holes are close to each other, chips can fall into the neighboring hole.
- Do not enter a pilot hole that might contain chips with a deep hole drill to avoid chip jamming, wear, or breakage.
- If required holes are close to each other, use smart drilling strategies, make sure the pilot holes are getting properly cleaned, or switch to horizontal drilling.

Horizontal drilling process preferred for optimum chip evacuation.



6) Coolant

- For increased stability, the coolant channels of the TDD10* are smaller than on typical WIDIA™ drills.
- Steady supply of coolant delivered to the cutting edges necessary. If coolant supply is not steady or is unequal through both channels, check:
 - Coolant filtering system.
 - Sealing of adapter/spindle.
 - Chips blocking the coolant hole on the drill shank.
- Make sure that the coolant supply reaches the cutting edge before drilling begins.
- Pressure by diameter: <5mm 40–50 bar maximum; >5mm 25 bar minimum.



MQL back end according to DIN 69090-3

7) Minimal Quantity Lubrication

- On MQL applications, make sure that the coolant is directly supplied from the chuck into the back end of the drill shank (without gap) to avoid leakage.
- Pressure should be between 1–10 bar depending on coolant hole size.
- Spray contains an amount of oil less than 50 ml/h.
- If required, the shank can be evenly optimized for MQL applications with enlarged 90° chamfer instead of 40°.



8) Shanks

- Other than normal SC Drills, TDD10* series have a “Z” shank, increasing with 1mm-steps.
- For drills with uneven shank size, use reduction sleeves to adapt the shank to the customer’s toolholder.
- The clamping force is better with increasing diameter.
- If required, DIN-shanks (even, 2mm steps) are available as custom solutions.

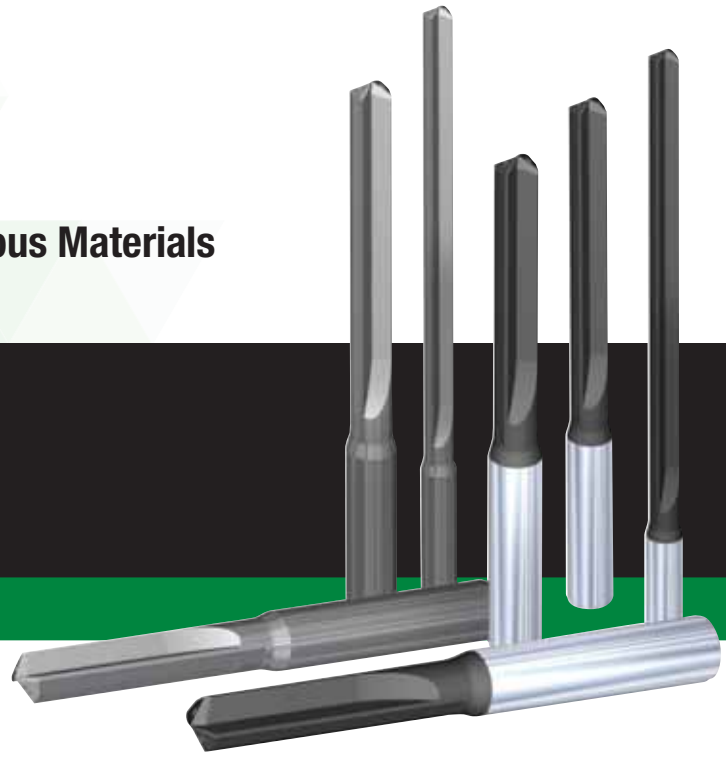
Achieve the best tool performance with hydraulic chucks.

D1	12mm hydraulic reducer sleeve		20mm hydraulic reducer sleeve		25mm hydraulic reducer sleeve		32mm hydraulic reducer sleeve		.500" hydraulic reducer sleeve		.750" hydraulic reducer sleeve	
	order number	catalog number	order number	catalog number	order number	catalog number	order number	catalog number	order number	catalog number	order number	catalog number
3	3026450	12MHC030M	3026648	20MHC030M	3026662	25MHC030M	–	–	2248993	50HC030M	2248995	75HC030M
4	3026451	12MHC040M	3026649	20MHC040M	3026663	25MHC040M	–	–	1606050	50HC040M	2248996	75HC040M
5	3026452	12MHC050M	3026650	20MHC050M	3026664	25MHC050M	–	–	2248994	50HC050M	2248997	75HC050M
6	3026643	12MHC060M	3026651	20MHC060M	3026665	25MHC060M	3026675	32MHC060M	1606061	50HC060M	1093271	75HC060M
7	3026644	12MHC070M	3026652	20MHC070M	3026666	25MHC070M	3026676	32MHC070M	–	–	–	–
8	3026645	12MHC080M	3026653	20MHC080M	3026667	25MHC080M	3026677	32MHC080M	1606062	50HC080M	1093272	75HC080M
9	3026646	12MHC090M	3026654	20MHC090M	3026668	25MHC090M	3026678	32MHC090M	–	–	–	–
10	3026647	12MHC100M	3026655	20MHC100M	3026669	25MHC100M	3026679	32MHC100M	1606064	50HC100M	1093273	75HC100M
11	–	–	3026656	20MHC110M	–	–	3026680	32MHC110M	–	–	–	–
12	–	–	3026657	20MHC120M	3026669	25MHC120M	3026681	32MHC120M	–	–	1093524	75HC120M
13	–	–	3026658	20MHC130M	–	–	3026682	32MHC130M	–	–	–	–
14	–	–	3026659	20MHC140M	3026671	25MHC140M	3026683	32MHC140M	–	–	1093525	75HC140M
15	–	–	3026660	20MHC150M	–	–	3026684	32MHC150M	–	–	–	–
16	–	–	3026661	20MHC160M	3026672	25MHC160M	3026685	32MHC160M	–	–	1093526	75HC160M

Difficult Drilling Applications •

WIDIA™ TOP DRILL G™ for Non-Ferrous Materials

TOP DRILL G



TOP DRILL G is the WIDIA solution for difficult drilling applications. Designed specifically for non-ferrous materials, TDG can be used on challenging applications with tighter hole tolerance, inclined planes, intersecting holes, and cored holes. The design of these drills also makes them appropriate for drilling custom aluminum applications.

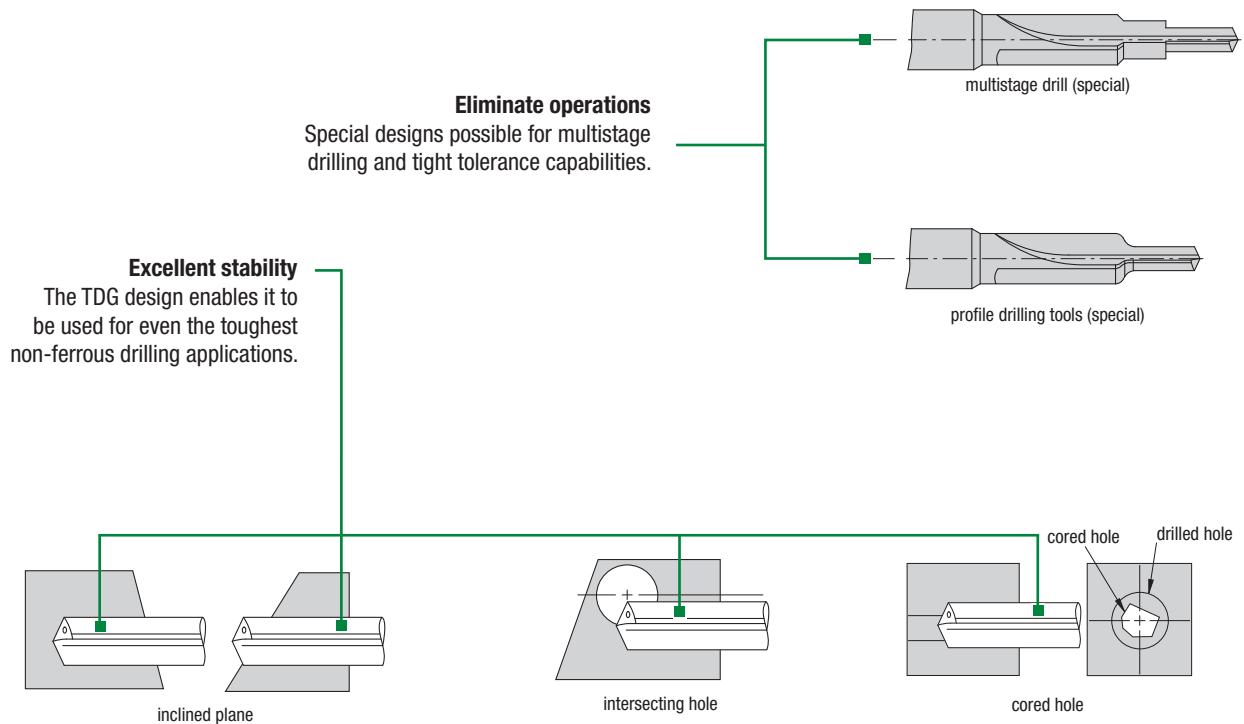
- Next generation of GGX WIDIA-Rübig™ series.
- Targeted for aluminum and non-ferrous materials.
- Can be used in challenging conditions.
- Good for multi-step drills.

TOP DRILL G™ Design

TDG is designed to handle the toughest non-ferrous drilling applications. The WN10HD™ grade is the latest in application-specific technology. This advanced grade, combined with the TDG's optimal concentricity and safe transmission of torque, gives it long tool life and extreme repeatability. The design of TDG is optimized to evacuate "sticky" chips that result from drilling non-ferrous materials. Easily evacuating these difficult-to-remove chips results in better hole quality due to less heat and friction while drilling.

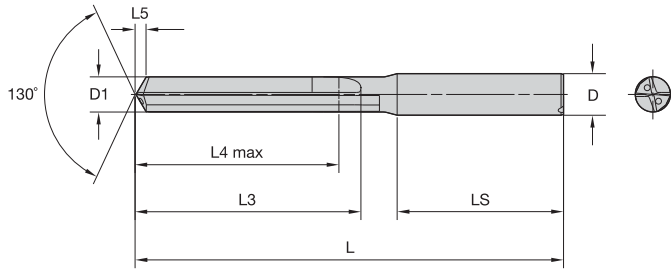
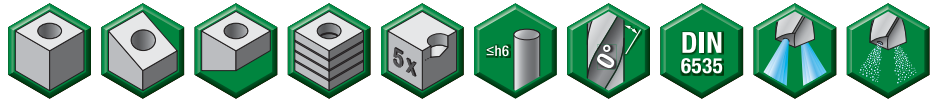
WIDIA™ Advantage

- Lower cost-per-hole due to high MRR and long tool life.
- Consistent performance from internally controlled supply chain:
Powder > Rod > Grinding > Coating
- Part of the complete WIDIA holemaking solution.
- Get more predictable results from local regrind services using OEM standards to recondition, ensuring value throughout the entire life of the drill.
- Broad range of standard lengths, diameters, and coolant options in one line. Includes extensive intermediate metric, inch, fraction, and wire sizes, including tap drill sizes.



Solid Carbide Drills

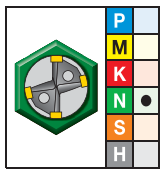
TOP DRILL G™ • Non-Ferrous Materials • 5 x D



For information on L, L3, and L4 max, see page R133.



TDG532A • 5 x D



grade WN10HD

- first choice
- alternate choice

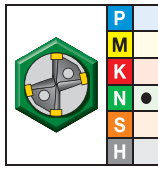
D1 diameter

order #	catalog #	mm	in	fraction	wire size	L	L4 max	L3	L5	LS	D
4157950	TDG532A03000	3,000	.1181	—	—	66	23	28	0,7	36	6
4157951	TDG532A03048	3,048	.1200	—	31	66	23	28	0,7	36	6
4157952	TDG532A03100	3,100	.1220	—	—	66	23	28	0,7	36	6
4157973	TDG532A03175	3,175	.1250	1/8	—	66	23	28	0,7	36	6
4157974	TDG532A03200	3,200	.1260	—	—	66	23	28	0,7	36	6
4157975	TDG532A03264	3,264	.1285	—	30	66	23	28	0,8	36	6
4157976	TDG532A03300	3,300	.1299	—	—	66	23	28	0,8	36	6
4157977	TDG532A03400	3,400	.1339	—	—	66	23	28	0,8	36	6
4157978	TDG532A03455	3,455	.1360	—	29	66	23	28	0,8	36	6
4157979	TDG532A03500	3,500	.1378	—	—	66	23	28	0,8	36	6
4157980	TDG532A03571	3,571	.1406	9/64	—	66	23	28	0,8	36	6
4157981	TDG532A03600	3,600	.1417	—	—	66	23	28	0,8	36	6
4157982	TDG532A03658	3,658	.1440	—	27	66	23	28	0,9	36	6
4157983	TDG532A03700	3,700	.1457	—	—	66	23	28	0,9	36	6
4157984	TDG532A03734	3,734	.1470	—	26	66	23	28	0,9	36	6
4157985	TDG532A03800	3,800	.1496	—	—	74	29	36	0,9	36	6
4157986	TDG532A03900	3,900	.1535	—	—	74	29	36	0,9	36	6
4157987	TDG532A03970	3,970	.1563	5/32	—	74	29	36	0,9	36	6
4157988	TDG532A04000	4,000	.1575	—	—	74	29	36	0,9	36	6
4157989	TDG532A04039	4,039	.1590	—	21	74	29	36	0,9	36	6
4157990	TDG532A04090	4,090	.1610	—	20	74	29	36	1,0	36	6
4157991	TDG532A04100	4,100	.1614	—	—	74	29	36	1,0	36	6
4157992	TDG532A04200	4,200	.1654	—	—	74	29	36	1,0	36	6
4157993	TDG532A04217	4,217	.1660	—	19	74	29	36	1,0	36	6

(continued)

Solid Carbide Drills

(TDG532A • 5 x D – continued)



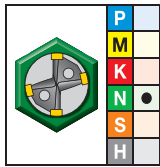
● first choice
○ alternate choice

grade WN10HD		D1 diameter				L	L4 max	L3	L5	LS	D
order #	catalog #	mm	in	fraction	wire size						
4157994	TDG532A04300	4,300	.1693	—	—	74	29	36	1,0	36	6
4157995	TDG532A04366	4,366	.1719	11/64	—	74	29	36	1,0	36	6
4157996	TDG532A04400	4,400	.1732	—	—	74	29	36	1,0	36	6
4157997	TDG532A04500	4,500	.1772	—	—	74	29	36	1,0	36	6
4157998	TDG532A04600	4,600	.1811	—	—	74	29	36	1,1	36	6
4157999	TDG532A04623	4,623	.1820	—	14	74	29	36	1,1	36	6
4158000	TDG532A04700	4,700	.1850	—	13	74	29	36	1,1	36	6
4158001	TDG532A04763	4,763	.1875	3/16	—	82	35	44	1,1	36	6
4158002	TDG532A04800	4,800	.1890	—	12	82	35	44	1,1	36	6
4158003	TDG532A04852	4,852	.1910	—	11	82	35	44	1,1	36	6
4158004	TDG532A04900	4,900	.1929	—	—	82	35	44	1,1	36	6
4158005	TDG532A05000	5,000	.1969	—	—	82	35	44	1,2	36	6
4158006	TDG532A05100	5,100	.2008	—	—	82	35	44	1,2	36	6
4158007	TDG532A05106	5,106	.2010	—	7	82	35	44	1,2	36	6
4158008	TDG532A05159	5,159	.2031	13/64	—	82	35	44	1,2	36	6
4158009	TDG532A05200	5,200	.2047	—	—	82	35	44	1,2	36	6
4158010	TDG532A05300	5,300	.2087	—	—	82	35	44	1,2	36	6
4158011	TDG532A05400	5,400	.2126	—	—	82	35	44	1,3	36	6
4158012	TDG532A05410	5,410	.2130	—	3	82	35	44	1,3	36	6
4158013	TDG532A05500	5,500	.2165	—	—	82	35	44	1,3	36	6
4158014	TDG532A05558	5,558	.2188	7/32	—	82	35	44	1,3	36	6
4158015	TDG532A05600	5,600	.2205	—	—	82	35	44	1,3	36	6
4158016	TDG532A05616	5,616	.2211	—	2	82	35	44	1,3	36	6
4158017	TDG532A05700	5,700	.2244	—	—	82	35	44	1,3	36	6
4158018	TDG532A05800	5,800	.2283	—	—	82	35	44	1,4	36	6
4158019	TDG532A05900	5,900	.2323	—	—	82	35	44	1,4	36	6
4158020	TDG532A05954	5,954	.2344	15/64	—	82	35	44	1,4	36	6
4158021	TDG532A06000	6,000	.2362	—	—	82	35	44	1,4	36	6
4158022	TDG532A06100	6,100	.2402	—	—	91	43	53	1,4	36	8
4158023	TDG532A06200	6,200	.2441	—	—	91	43	53	1,4	36	8
4158024	TDG532A06300	6,300	.2480	—	—	91	43	53	1,5	36	8
4158025	TDG532A06350	6,350	.2500	1/4	E	91	43	53	1,5	36	8
4158026	TDG532A06400	6,400	.2520	—	—	91	43	53	1,5	36	8
4158027	TDG532A06500	6,500	.2559	—	—	91	43	53	1,5	36	8
4158028	TDG532A06528	6,528	.2570	—	F	91	43	53	1,5	36	8
4158029	TDG532A06600	6,600	.2598	—	—	91	43	53	1,5	36	8
4158030	TDG532A06630	6,630	.2610	—	G	91	43	53	1,5	36	8
4158031	TDG532A06700	6,700	.2638	—	—	91	43	53	1,6	36	8
4158032	TDG532A06746	6,746	.2656	17/64	—	91	43	53	1,6	36	8
4158033	TDG532A06800	6,800	.2677	—	—	91	43	53	1,6	36	8

(continued)

Solid Carbide Drills

(TDG532A • 5 x D — continued)



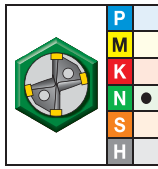
- first choice
- alternate choice

grade WN10HD		D1 diameter				L	L4 max	L3	L5	LS	D
order #	catalog #	mm	in	fraction	wire size						
4158034	TDG532A06900	6,900	.2717	—	—	91	43	53	1,6	36	8
4158035	TDG532A07000	7,000	.2756	—	—	91	43	53	1,6	36	8
4158036	TDG532A07100	7,100	.2795	—	—	91	43	53	1,7	36	8
4158037	TDG532A07145	7,145	.2813	9/32	—	91	43	53	1,7	36	8
4158038	TDG532A07200	7,200	.2835	—	—	91	43	53	1,7	36	8
4158039	TDG532A07300	7,300	.2874	—	—	91	43	53	1,7	36	8
4158040	TDG532A07400	7,400	.2913	—	—	91	43	53	1,7	36	8
4158041	TDG532A07500	7,500	.2953	—	—	91	43	53	1,7	36	8
4158042	TDG532A07541	7,541	.2969	19/64	—	91	43	53	1,8	36	8
4158043	TDG532A07600	7,600	.2992	—	—	91	43	53	1,8	36	8
4158044	TDG532A07700	7,700	.3031	—	—	91	43	53	1,8	36	8
4158045	TDG532A07800	7,800	.3071	—	—	91	43	53	1,8	36	8
4158046	TDG532A07900	7,900	.3110	—	—	91	43	53	1,8	36	8
4158047	TDG532A07938	7,938	.3125	5/16	—	91	43	53	1,9	36	8
4158048	TDG532A08000	8,000	.3150	—	—	91	43	53	1,9	36	8
4158049	TDG532A08100	8,100	.3189	—	—	103	49	61	1,9	40	10
4158050	TDG532A08200	8,200	.3228	—	—	103	49	61	1,9	40	10
4158051	TDG532A08300	8,300	.3268	—	—	103	49	61	1,9	40	10
4158052	TDG532A08334	8,334	.3281	21/64	—	103	49	61	1,9	40	10
4158053	TDG532A08400	8,400	.3307	—	—	103	49	61	2,0	40	10
4158054	TDG532A08433	8,433	.3320	—	Q	103	49	61	2,0	40	10
4158055	TDG532A08500	8,500	.3346	—	—	103	49	61	2,0	40	10
4158056	TDG532A08600	8,600	.3386	—	—	103	49	61	2,0	40	10
4158057	TDG532A08700	8,700	.3425	—	—	103	49	61	2,0	40	10
4158058	TDG532A08733	8,733	.3438	11/32	—	103	49	61	2,0	40	10
4158059	TDG532A08800	8,800	.3465	—	—	103	49	61	2,1	40	10
4158060	TDG532A08900	8,900	.3504	—	—	103	49	61	2,1	40	10
4158061	TDG532A09000	9,000	.3543	—	—	103	49	61	2,1	40	10
4158062	TDG532A09100	9,100	.3583	—	—	103	49	61	2,1	40	10
4158063	TDG532A09129	9,129	.3594	23/64	—	103	49	61	2,1	40	10
4158064	TDG532A09200	9,200	.3622	—	—	103	49	61	2,1	40	10
4158065	TDG532A09300	9,300	.3661	—	—	103	49	61	2,2	40	10
4158066	TDG532A09347	9,347	.3680	—	U	103	49	61	2,2	40	10
4158067	TDG532A09400	9,400	.3701	—	—	103	49	61	2,2	40	10
4158068	TDG532A09500	9,500	.3740	—	—	103	49	61	2,2	40	10
4158069	TDG532A09525	9,525	.3750	3/8	—	103	49	61	2,2	40	10
4158070	TDG532A09600	9,600	.3780	—	—	103	49	61	2,2	40	10
4158071	TDG532A09700	9,700	.3819	—	—	103	49	61	2,3	40	10
4158072	TDG532A09800	9,800	.3858	—	—	103	49	61	2,3	40	10
4158073	TDG532A09900	9,900	.3898	—	—	103	49	61	2,3	40	10

(continued)

Solid Carbide Drills

(TDG532A • 5 x D – continued)



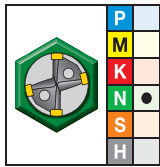
- first choice
- alternate choice

grade WN10HD		D1 diameter				L	L4 max	L3	L5	LS	D
order #	catalog #	mm	in	fraction	wire size						
4158074	TDG532A09921	9,921	.3906	25/64	—	103	49	61	2,3	40	10
4158081	TDG532A10000	10,000	.3937	—	—	103	49	61	2,3	40	10
4158082	TDG532A10100	10,100	.3976	—	—	118	56	71	2,4	45	12
4158353	TDG532A10200	10,200	.4016	—	—	118	56	71	2,4	45	12
4158354	TDG532A10300	10,300	.4055	—	—	118	56	71	2,4	45	12
4158355	TDG532A10320	10,320	.4063	13/32	—	118	56	71	2,4	45	12
4158356	TDG532A10400	10,400	.4094	—	—	118	56	71	2,4	45	12
4158357	TDG532A10500	10,500	.4134	—	—	118	56	71	2,4	45	12
4158358	TDG532A10600	10,600	.4173	—	—	118	56	71	2,5	45	12
4158359	TDG532A10700	10,700	.4213	—	—	118	56	71	2,5	45	12
4158360	TDG532A10716	10,716	.4219	27/64	—	118	56	71	2,5	45	12
4158361	TDG532A10800	10,800	.4252	—	—	118	56	71	2,5	45	12
4158362	TDG532A10900	10,900	.4291	—	—	118	56	71	2,5	45	12
4158363	TDG532A11000	11,000	.4331	—	—	118	56	71	2,6	45	12
4158364	TDG532A11100	11,100	.4370	—	—	118	56	71	2,6	45	12
4158365	TDG532A11113	11,113	.4375	7/16	—	118	56	71	2,6	45	12
4158366	TDG532A11200	11,200	.4409	—	—	118	56	71	2,6	45	12
4158367	TDG532A11300	11,300	.4449	—	—	118	56	71	2,6	45	12
4158368	TDG532A11400	11,400	.4488	—	—	118	56	71	2,7	45	12
4158369	TDG532A11500	11,500	.4528	—	—	118	56	71	2,7	45	12
4158370	TDG532A11509	11,509	.4531	29/64	—	118	56	71	2,7	45	12
4158371	TDG532A11600	11,600	.4567	—	—	118	56	71	2,7	45	12
4158372	TDG532A11700	11,700	.4606	—	—	118	56	71	2,7	45	12
4158373	TDG532A11800	11,800	.4646	—	—	118	56	71	2,8	45	12
4158374	TDG532A11900	11,900	.4685	—	—	118	56	71	2,8	45	12
4158375	TDG532A11908	11,908	.4688	15/32	—	118	56	71	2,8	45	12
4158376	TDG532A12000	12,000	.4724	—	—	118	56	71	2,8	45	12
4158377	TDG532A12100	12,100	.4764	—	—	124	60	77	2,8	45	14
4158378	TDG532A12200	12,200	.4803	—	—	124	60	77	2,8	45	14
4158379	TDG532A12300	12,300	.4843	—	—	124	60	77	2,9	45	14
4158380	TDG532A12304	12,304	.4844	31/64	—	124	60	77	2,9	45	14
4158381	TDG532A12400	12,400	.4882	—	—	124	60	77	2,9	45	14
4158382	TDG532A12500	12,500	.4921	—	—	124	60	77	2,9	45	14
4158383	TDG532A12600	12,600	.4961	—	—	124	60	77	2,9	45	14
4158384	TDG532A12700	12,700	.5000	1/2	—	124	60	77	3,0	45	14
4158385	TDG532A12800	12,800	.5039	—	—	124	60	77	3,0	45	14
4158386	TDG532A12900	12,900	.5079	—	—	124	60	77	3,0	45	14
4158387	TDG532A13000	13,000	.5118	—	—	124	60	77	3,0	45	14
4158388	TDG532A13096	13,096	.5156	33/64	—	124	60	77	3,1	45	14
4158389	TDG532A13100	13,100	.5157	—	—	124	60	77	3,1	45	14

(continued)

Solid Carbide Drills

(TDG532A • 5 x D – continued)



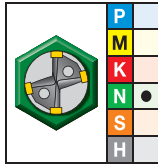
- first choice
- alternate choice

grade WN10HD		D1 diameter				L	L4 max	L3	L5	LS	D
order #	catalog #	mm	in	fraction	wire size						
4158390	TDG532A13200	13,200	.5197	—	—	124	60	77	3,1	45	14
4158391	TDG532A13300	13,300	.5236	—	—	124	60	77	3,1	45	14
4158392	TDG532A13400	13,400	.5276	—	—	124	60	77	3,1	45	14
4158448	TDG532A13490	13,490	.5311	—	—	124	60	77	3,1	45	14
4158393	TDG532A13500	13,500	.5315	—	—	124	60	77	3,1	45	14
4158394	TDG532A13600	13,600	.5354	—	—	124	60	77	3,2	45	14
4158395	TDG532A13700	13,700	.5394	—	—	124	60	77	3,2	45	14
4158396	TDG532A13800	13,800	.5433	—	—	124	60	77	3,2	45	14
4158397	TDG532A13891	13,891	.5469	35/64	—	124	60	77	3,2	45	14
4158398	TDG532A13900	13,900	.5472	—	—	124	60	77	3,2	45	14
4158399	TDG532A14000	14,000	.5512	—	—	124	60	77	3,3	45	14
4158400	TDG532A14100	14,100	.5551	—	—	133	63	83	3,3	48	16
4158401	TDG532A14200	14,200	.5591	—	—	133	63	83	3,3	48	16
4158402	TDG532A14288	14,288	.5625	9/16	—	133	63	83	3,3	48	16
4158403	TDG532A14300	14,300	.5630	—	—	133	63	83	3,3	48	16
4158404	TDG532A14400	14,400	.5669	—	—	133	63	83	3,4	48	16
4158405	TDG532A14500	14,500	.5709	—	—	133	63	83	3,4	48	16
4158406	TDG532A14600	14,600	.5748	—	—	133	63	83	3,4	48	16
4158407	TDG532A14684	14,684	.5781	37/64	—	133	63	83	3,4	48	16
4158408	TDG532A14700	14,700	.5787	—	—	133	63	83	3,4	48	16
4158409	TDG532A14800	14,800	.5827	—	—	133	63	83	3,5	48	16
4158410	TDG532A14900	14,900	.5866	—	—	133	63	83	3,5	48	16
4158411	TDG532A15000	15,000	.5906	—	—	133	63	83	3,5	48	16
4158412	TDG532A15083	15,083	.5938	19/32	—	133	63	83	3,5	48	16
4158413	TDG532A15100	15,100	.5945	—	—	133	63	83	3,5	48	16
4158414	TDG532A15200	15,200	.5984	—	—	133	63	83	3,5	48	16
4158415	TDG532A15300	15,300	.6024	—	—	133	63	83	3,6	48	16
4158416	TDG532A15400	15,400	.6063	—	—	133	63	83	3,6	48	16
4158417	TDG532A15479	15,479	.6094	39/64	—	133	63	83	3,6	48	16
4158418	TDG532A15500	15,500	.6102	—	—	133	63	83	3,6	48	16
4158419	TDG532A15600	15,600	.6142	—	—	133	63	83	3,6	48	16
4158420	TDG532A15700	15,700	.6181	—	—	133	63	83	3,7	48	16
4158421	TDG532A15800	15,800	.6220	—	—	133	63	83	3,7	48	16
4158422	TDG532A15875	15,875	.6250	5/8	—	133	63	83	3,7	48	16
4158423	TDG532A15900	15,900	.6260	—	—	133	63	83	3,7	48	16
4158424	TDG532A16000	16,000	.6299	—	—	133	63	83	3,7	48	16
4158425	TDG532A16100	16,100	.6339	—	—	143	71	93	3,8	48	18
4158426	TDG532A16200	16,200	.6378	—	—	143	71	93	3,8	48	18
4158427	TDG532A16271	16,271	.6406	41/64	—	143	71	93	3,8	48	18
4158428	TDG532A16300	16,300	.6417	—	—	143	71	93	3,8	48	18

(continued)

Solid Carbide Drills

(TDG532A • 5 x D – continued)



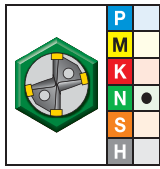
● first choice
○ alternate choice

grade WN10HD		D1 diameter				L	L4 max	L3	L5	LS	D
order #	catalog #	mm	in	fraction	wire size						
4158429	TDG532A16400	16,400	.6457	—	—	143	71	93	3,8	48	18
4158430	TDG532A16500	16,500	.6496	—	—	143	71	93	3,8	48	18
4158431	TDG532A16600	16,600	.6535	—	—	143	71	93	3,9	48	18
4158432	TDG532A16670	16,670	.6563	21/32	—	143	71	93	3,9	48	18
4158433	TDG532A16700	16,700	.6575	—	—	143	71	93	3,9	48	18
4158434	TDG532A16800	16,800	.6614	—	—	143	71	93	3,9	48	18
4158435	TDG532A16900	16,900	.6654	—	—	143	71	93	3,9	48	18
4158436	TDG532A17000	17,000	.6693	—	—	143	71	93	4,0	48	18
4158437	TDG532A17100	17,100	.6732	—	—	143	71	93	4,0	48	18
4158438	TDG532A17200	17,200	.6772	—	—	143	71	93	4,0	48	18
4158439	TDG532A17300	17,300	.6811	—	—	143	71	93	4,0	48	18
4158440	TDG532A17400	17,400	.6850	—	—	143	71	93	4,1	48	18
4158441	TDG532A17463	17,463	.6875	11/16	—	143	71	93	4,1	48	18
4158442	TDG532A17500	17,500	.6890	—	—	143	71	93	4,1	48	18
4158443	TDG532A17600	17,600	.6929	—	—	143	71	93	4,1	48	18
4158444	TDG532A17700	17,700	.6969	—	—	143	71	93	4,1	48	18
4158445	TDG532A17800	17,800	.7008	—	—	143	71	93	4,2	48	18
4158446	TDG532A17859	17,859	.7031	45/64	—	143	71	93	4,2	48	18
4158447	TDG532A17900	17,900	.7047	—	—	143	71	93	4,2	48	18
4158555	TDG532A18000	18,000	.7087	—	—	143	71	93	4,2	48	18
4158557	TDG532A18100	18,100	.7126	—	—	153	77	101	4,2	50	20
4158559	TDG532A18200	18,200	.7165	—	—	153	77	101	4,2	50	20
4158561	TDG532A18258	18,258	.7188	23/32	—	153	77	101	4,3	50	20
4158573	TDG532A18300	18,300	.7205	—	—	153	77	101	4,3	50	20
4158575	TDG532A18400	18,400	.7244	—	—	153	77	101	4,3	50	20
4158577	TDG532A18500	18,500	.7283	—	—	153	77	101	4,3	50	20
4158579	TDG532A18600	18,600	.7323	—	—	153	77	101	4,3	50	20
4158581	TDG532A18654	18,654	.7344	47/64	—	153	77	101	4,3	50	20
4158584	TDG532A18700	18,700	.7362	—	—	153	77	101	4,4	50	20
4158585	TDG532A18800	18,800	.7402	—	—	153	77	101	4,4	50	20
4158587	TDG532A18900	18,900	.7441	—	—	153	77	101	4,4	50	20
4158589	TDG532A19000	19,000	.7480	—	—	153	77	101	4,4	50	20
4158591	TDG532A19050	19,050	.7500	3/4	—	153	77	101	4,4	50	20
4158603	TDG532A19100	19,100	.7520	—	—	153	77	101	4,5	50	20
4158605	TDG532A19200	19,200	.7559	—	—	153	77	101	4,5	50	20
4158607	TDG532A19300	19,300	.7598	—	—	153	77	101	4,5	50	20
4158609	TDG532A19400	19,400	.7638	—	—	153	77	101	4,5	50	20
4158611	TDG532A19500	19,500	.7677	—	—	153	77	101	4,5	50	20
4158613	TDG532A19600	19,600	.7717	—	—	153	77	101	4,6	50	20
4158616	TDG532A19700	19,700	.7756	—	—	153	77	101	4,6	50	20

(continued)

Solid Carbide Drills

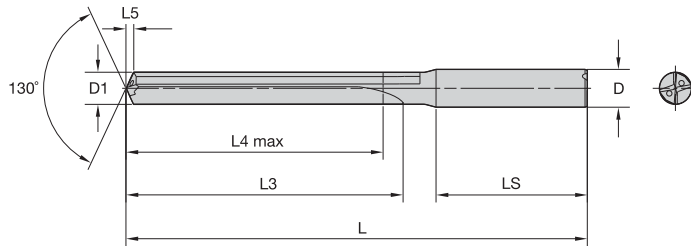
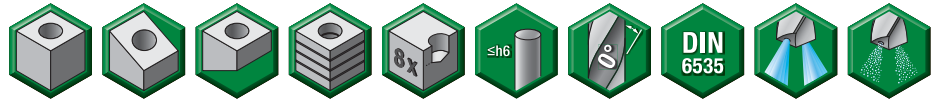
(TDG532A • 5 x D – continued)



- first choice
- alternate choice

grade WN10HD		D1 diameter				L	L4 max	L3	L5	LS	D
order #	catalog #	mm	in	fraction	wire size						
4158618	TDG532A19800	19,800	.7795	—	—	153	77	101	4,6	50	20
4158620	TDG532A19900	19,900	.7835	—	—	153	77	101	4,6	50	20
4158622	TDG532A20000	20,000	.7874	—	—	153	77	101	4,7	50	20
4158634	TDG532A21000	21,000	.8268	—	—	167	85	114	4,9	50	20
4158636	TDG532A22000	22,000	.8661	—	—	167	85	114	5,1	50	20
4158637	TDG532A23000	23,000	.9055	—	—	184	98	126	5,4	56	25

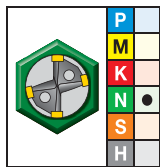




For information on L, L3, and L4 max, see page R133.



■ TDG533A • 8 x D



grade WN10HD

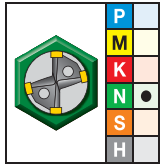
- first choice
- alternate choice

order #	catalog #	D1 diameter				L	L4 max	L3	L5	LS	D
		mm	in	fraction	wire size						
4158475	TDG533A03000	3,000	.1181	—	—	78	33	40	0,7	36	6
4158476	TDG533A03048	3,048	.1200	—	31	78	33	40	0,7	36	6
4158477	TDG533A03100	3,100	.1220	—	—	78	33	40	0,7	36	6
4158478	TDG533A03175	3,175	.1250	1/8	—	78	33	40	0,7	36	6
4158479	TDG533A03200	3,200	.1260	—	—	78	33	40	0,7	36	6
4158480	TDG533A03264	3,264	.1285	—	30	78	33	40	0,8	36	6
4158481	TDG533A03300	3,300	.1299	—	—	78	33	40	0,8	36	6
4158482	TDG533A03400	3,400	.1339	—	—	78	33	40	0,8	36	6
4158553	TDG533A03455	3,455	.1360	—	29	78	33	40	0,8	36	6
4158554	TDG533A03500	3,500	.1378	—	—	78	33	40	0,8	36	6
4158556	TDG533A03571	3,571	.1406	9/64	—	78	33	40	0,8	36	6
4158558	TDG533A03600	3,600	.1417	—	—	78	33	40	0,8	36	6
4158560	TDG533A03658	3,658	.1440	—	27	78	33	40	0,9	36	6
4158562	TDG533A03700	3,700	.1457	—	—	78	33	40	0,9	36	6
4158574	TDG533A03734	3,734	.1470	—	26	78	33	40	0,9	36	6
4158576	TDG533A03800	3,800	.1496	—	—	87	41	49	0,9	36	6
4158578	TDG533A03900	3,900	.1535	—	—	87	41	49	0,9	36	6
4158580	TDG533A03970	3,970	.1563	5/32	—	87	41	49	0,9	36	6
4158582	TDG533A04000	4,000	.1575	—	—	87	41	49	0,9	36	6
4158583	TDG533A04039	4,039	.1590	—	21	87	41	49	0,9	36	6
4158586	TDG533A04090	4,090	.1610	—	20	87	41	49	1,0	36	6
4158588	TDG533A04100	4,100	.1614	—	—	87	41	49	1,0	36	6
4158590	TDG533A04200	4,200	.1654	—	—	87	41	49	1,0	36	6
4158592	TDG533A04217	4,217	.1660	—	19	87	41	49	1,0	36	6

(continued)

Solid Carbide Drills

(TDG533A • 8 x D — continued)



● first choice
○ alternate choice

grade WN10HD

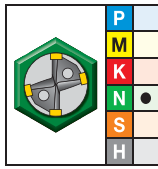
D1 diameter

order #	catalog #	mm	in	fraction	wire size	L	L4 max	L3	L5	LS	D
4158604	TDG533A04300	4,300	.1693	—	—	87	41	49	1,0	36	6
4158606	TDG533A04366	4,366	.1719	11/64	—	87	41	49	1,0	36	6
4158608	TDG533A04400	4,400	.1732	—	—	87	41	49	1,0	36	6
4158610	TDG533A04500	4,500	.1772	—	—	87	41	49	1,0	36	6
4158612	TDG533A04600	4,600	.1811	—	—	87	41	49	1,1	36	6
4158614	TDG533A04623	4,623	.1820	—	14	87	41	49	1,1	36	6
4158615	TDG533A04700	4,700	.1850	—	13	87	41	49	1,1	36	6
4158617	TDG533A04763	4,763	.1875	3/16	—	94	48	56	1,1	36	6
4158619	TDG533A04800	4,800	.1890	—	12	94	48	56	1,1	36	6
4158621	TDG533A04852	4,852	.1910	—	11	94	48	56	1,1	36	6
4158633	TDG533A04900	4,900	.1929	—	—	94	48	56	1,1	36	6
4158635	TDG533A05000	5,000	.1969	—	—	94	48	56	1,2	36	6
4158638	TDG533A05100	5,100	.2008	—	—	94	48	56	1,2	36	6
4158639	TDG533A05106	5,106	.2010	—	7	94	48	56	1,2	36	6
4158640	TDG533A05159	5,159	.2031	13/64	—	94	48	56	1,2	36	6
4158641	TDG533A05200	5,200	.2047	—	—	94	48	56	1,2	36	6
4158642	TDG533A05300	5,300	.2087	—	—	94	48	56	1,2	36	6
4158653	TDG533A05400	5,400	.2126	—	—	94	48	56	1,3	36	6
4158654	TDG533A05410	5,410	.2130	—	3	94	48	56	1,3	36	6
4158655	TDG533A05500	5,500	.2165	—	—	94	48	56	1,3	36	6
4158656	TDG533A05558	5,558	.2188	7/32	—	94	48	56	1,3	36	6
4158657	TDG533A05600	5,600	.2205	—	—	94	48	56	1,3	36	6
4158658	TDG533A05616	5,616	.2211	—	2	94	48	56	1,3	36	6
4158659	TDG533A05700	5,700	.2244	—	—	94	48	56	1,3	36	6
4158660	TDG533A05800	5,800	.2283	—	—	94	48	56	1,4	36	6
4158661	TDG533A05900	5,900	.2323	—	—	94	48	56	1,4	36	6
4158662	TDG533A05954	5,954	.2344	15/64	—	94	48	56	1,4	36	6
4158673	TDG533A06000	6,000	.2362	—	—	94	48	56	1,4	36	6
4158674	TDG533A06100	6,100	.2402	—	—	105	57	67	1,4	36	8
4158675	TDG533A06200	6,200	.2441	—	—	105	57	67	1,4	36	8
4158676	TDG533A06300	6,300	.2480	—	—	105	57	67	1,5	36	8
4158677	TDG533A06350	6,350	.2500	1/4	E	105	57	67	1,5	36	8
4158678	TDG533A06400	6,400	.2520	—	—	105	57	67	1,5	36	8
4158679	TDG533A06500	6,500	.2559	—	—	105	57	67	1,5	36	8
4158680	TDG533A06528	6,528	.2570	—	F	105	57	67	1,5	36	8
4158681	TDG533A06600	6,600	.2598	—	—	105	57	67	1,5	36	8
4158682	TDG533A06630	6,630	.2610	—	G	105	57	67	1,5	36	8
4158693	TDG533A06700	6,700	.2638	—	—	105	57	67	1,6	36	8
4158694	TDG533A06746	6,746	.2656	17/64	—	105	57	67	1,6	36	8
4158695	TDG533A06800	6,800	.2677	—	—	105	57	67	1,6	36	8

(continued)

Solid Carbide Drills

(TDG533A • 8 x D – continued)



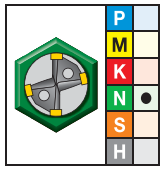
- first choice
- alternate choice

grade WN10HD		D1 diameter				L	L4 max	L3	L5	LS	D
order #	catalog #	mm	in	fraction	wire size						
4158696	TDG533A06900	6,900	.2717	—	—	105	57	67	1,6	36	8
4158697	TDG533A07000	7,000	.2756	—	—	105	57	67	1,6	36	8
4158698	TDG533A07100	7,100	.2795	—	—	110	61	72	1,7	36	8
4158699	TDG533A07145	7,145	.2813	9/32	—	110	61	72	1,7	36	8
4158700	TDG533A07200	7,200	.2835	—	—	110	61	72	1,7	36	8
4158701	TDG533A07300	7,300	.2874	—	—	110	61	72	1,7	36	8
4158702	TDG533A07400	7,400	.2913	—	—	110	61	72	1,7	36	8
4158713	TDG533A07500	7,500	.2953	—	—	110	61	72	1,7	36	8
4158714	TDG533A07541	7,541	.2969	19/64	—	110	61	72	1,8	36	8
4158715	TDG533A07600	7,600	.2992	—	—	110	61	72	1,8	36	8
4158716	TDG533A07700	7,700	.3031	—	—	110	61	72	1,8	36	8
4158717	TDG533A07800	7,800	.3071	—	—	110	61	72	1,8	36	8
4158718	TDG533A07900	7,900	.3110	—	—	110	61	72	1,8	36	8
4158719	TDG533A07938	7,938	.3125	5/16	—	110	61	72	1,9	36	8
4158720	TDG533A08000	8,000	.3150	—	—	110	61	72	1,9	36	8
4158721	TDG533A08100	8,100	.3189	—	—	122	68	80	1,9	40	10
4158722	TDG533A08200	8,200	.3228	—	—	122	68	80	1,9	40	10
4158733	TDG533A08300	8,300	.3268	—	—	122	68	80	1,9	40	10
4158734	TDG533A08334	8,334	.3281	21/64	—	122	68	80	1,9	40	10
4158735	TDG533A08400	8,400	.3307	—	—	122	68	80	2,0	40	10
4158736	TDG533A08433	8,433	.3320	—	Q	122	68	80	2,0	40	10
4158737	TDG533A08500	8,500	.3346	—	—	122	68	80	2,0	40	10
4158738	TDG533A08600	8,600	.3386	—	—	122	68	80	2,0	40	10
4158739	TDG533A08700	8,700	.3425	—	—	122	68	80	2,0	40	10
4158740	TDG533A08733	8,733	.3438	11/32	—	122	68	80	2,0	40	10
4158741	TDG533A08800	8,800	.3465	—	—	122	68	80	2,1	40	10
4158742	TDG533A08900	8,900	.3504	—	—	122	68	80	2,1	40	10
4158743	TDG533A09000	9,000	.3543	—	—	122	68	80	2,1	40	10
4158744	TDG533A09100	9,100	.3583	—	—	122	68	80	2,1	40	10
4158745	TDG533A09129	9,129	.3594	23/64	—	122	68	80	2,1	40	10
4158746	TDG533A09200	9,200	.3622	—	—	122	68	80	2,1	40	10
4158747	TDG533A09300	9,300	.3661	—	—	122	68	80	2,2	40	10
4158748	TDG533A09347	9,347	.3680	—	U	122	68	80	2,2	40	10
4158749	TDG533A09400	9,400	.3701	—	—	122	68	80	2,2	40	10
4158750	TDG533A09500	9,500	.3740	—	—	122	68	80	2,2	40	10
4158751	TDG533A09525	9,525	.3750	3/8	—	122	68	80	2,2	40	10
4158752	TDG533A09600	9,600	.3780	—	—	122	68	80	2,2	40	10
4158753	TDG533A09700	9,700	.3819	—	—	122	68	80	2,3	40	10
4158754	TDG533A09800	9,800	.3858	—	—	122	68	80	2,3	40	10
4158755	TDG533A09900	9,900	.3898	—	—	122	68	80	2,3	40	10

(continued)

Solid Carbide Drills

(TDG533A • 8 x D — continued)



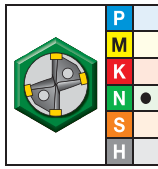
- first choice
- alternate choice

grade WN10HD		D1 diameter				L	L4 max	L3	L5	LS	D
order #	catalog #	mm	in	fraction	wire size						
4158756	TDG533A09921	9,921	.3906	25/64	—	122	68	80	2,3	40	10
4158520	TDG533A10000	10,000	.3937	—	—	122	68	80	2,3	40	10
4158521	TDG533A10100	10,100	.3976	—	—	141	79	94	2,4	45	12
4158522	TDG533A10200	10,200	.4016	—	—	141	79	94	2,4	45	12
4158533	TDG533A10300	10,300	.4055	—	—	141	79	94	2,4	45	12
4158534	TDG533A10320	10,320	.4063	13/32	—	141	79	94	2,4	45	12
4158535	TDG533A10400	10,400	.4094	—	—	141	79	94	2,4	45	12
4158536	TDG533A10500	10,500	.4134	—	—	141	79	94	2,4	45	12
4158537	TDG533A10600	10,600	.4173	—	—	141	79	94	2,5	45	12
4158538	TDG533A10700	10,700	.4213	—	—	141	79	94	2,5	45	12
4158539	TDG533A10716	10,716	.4219	27/64	—	141	79	94	2,5	45	12
4158540	TDG533A10800	10,800	.4252	—	—	141	79	94	2,5	45	12
4158541	TDG533A10900	10,900	.4291	—	—	141	79	94	2,5	45	12
4158542	TDG533A11000	11,000	.4331	—	—	141	79	94	2,6	45	12
4158543	TDG533A11100	11,100	.4370	—	—	141	79	94	2,6	45	12
4158544	TDG533A11113	11,113	.4375	7/16	—	141	79	94	2,6	45	12
4158545	TDG533A11200	11,200	.4409	—	—	141	79	94	2,6	45	12
4158546	TDG533A11300	11,300	.4449	—	—	141	79	94	2,6	45	12
4158547	TDG533A11400	11,400	.4488	—	—	141	79	94	2,7	45	12
4158548	TDG533A11500	11,500	.4528	—	—	141	79	94	2,7	45	12
4158549	TDG533A11509	11,509	.4531	29/64	—	141	79	94	2,7	45	12
4158550	TDG533A11600	11,600	.4567	—	—	141	79	94	2,7	45	12
4158551	TDG533A11700	11,700	.4606	—	—	141	79	94	2,7	45	12
4158552	TDG533A11800	11,800	.4646	—	—	141	79	94	2,8	45	12
4158563	TDG533A11900	11,900	.4685	—	—	141	79	94	2,8	45	12
4158564	TDG533A11908	11,908	.4688	15/32	—	141	79	94	2,8	45	12
4158565	TDG533A12000	12,000	.4724	—	—	141	79	94	2,8	45	12
4158566	TDG533A12100	12,100	.4764	—	—	155	91	108	2,8	45	14
4158567	TDG533A12200	12,200	.4803	—	—	155	91	108	2,8	45	14
4158568	TDG533A12300	12,300	.4843	—	—	155	91	108	2,9	45	14
4158569	TDG533A12304	12,304	.4844	31/64	—	155	91	108	2,9	45	14
4158570	TDG533A12400	12,400	.4882	—	—	155	91	108	2,9	45	14
4158571	TDG533A12500	12,500	.4921	—	—	155	91	108	2,9	45	14
4158572	TDG533A12600	12,600	.4961	—	—	155	91	108	2,9	45	14
4158593	TDG533A12700	12,700	.5000	1/2	—	155	91	108	3,0	45	14
4158594	TDG533A12800	12,800	.5039	—	—	155	91	108	3,0	45	14
4158595	TDG533A12900	12,900	.5079	—	—	155	91	108	3,0	45	14
4158596	TDG533A13000	13,000	.5118	—	—	155	91	108	3,0	45	14
4158597	TDG533A13096	13,096	.5156	33/64	—	155	91	108	3,1	45	14
4158598	TDG533A13100	13,100	.5157	—	—	155	91	108	3,1	45	14

(continued)

Solid Carbide Drills

(TDG533A • 8 x D – continued)



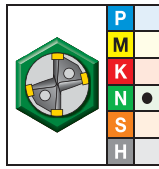
- first choice
- alternate choice

grade WN10HD		D1 diameter				L	L4 max	L3	L5	LS	D
order #	catalog #	mm	in	fraction	wire size						
4158599	TDG533A13200	13,200	.5197	—	—	155	91	108	3,1	45	14
4158600	TDG533A13300	13,300	.5236	—	—	155	91	108	3,1	45	14
4158601	TDG533A13400	13,400	.5276	—	—	155	91	108	3,1	45	14
4158727	TDG533A13490	13,490	.5311	—	—	155	91	108	3,1	45	14
4158602	TDG533A13500	13,500	.5315	—	—	155	91	108	3,1	45	14
4158623	TDG533A13600	13,600	.5354	—	—	155	91	108	3,2	45	14
4158624	TDG533A13700	13,700	.5394	—	—	155	91	108	3,2	45	14
4158625	TDG533A13800	13,800	.5433	—	—	155	91	108	3,2	45	14
4158626	TDG533A13891	13,891	.5469	35/64	—	155	91	108	3,2	45	14
4158627	TDG533A13900	13,900	.5472	—	—	155	91	108	3,2	45	14
4158628	TDG533A14000	14,000	.5512	—	—	155	91	108	3,3	45	14
4158629	TDG533A14100	14,100	.5551	—	—	171	101	121	3,3	48	16
4158630	TDG533A14200	14,200	.5591	—	—	171	101	121	3,3	48	16
4158631	TDG533A14288	14,288	.5625	9/16	—	171	101	121	3,3	48	16
4158632	TDG533A14300	14,300	.5630	—	—	171	101	121	3,3	48	16
4158643	TDG533A14400	14,400	.5669	—	—	171	101	121	3,4	48	16
4158644	TDG533A14500	14,500	.5709	—	—	171	101	121	3,4	48	16
4158645	TDG533A14600	14,600	.5748	—	—	171	101	121	3,4	48	16
4158646	TDG533A14684	14,684	.5781	37/64	—	171	101	121	3,4	48	16
4158647	TDG533A14700	14,700	.5787	—	—	171	101	121	3,4	48	16
4158648	TDG533A14800	14,800	.5827	—	—	171	101	121	3,5	48	16
4158649	TDG533A14900	14,900	.5866	—	—	171	101	121	3,5	48	16
4158650	TDG533A15000	15,000	.5906	—	—	171	101	121	3,5	48	16
4158651	TDG533A15083	15,083	.5938	19/32	—	171	101	121	3,5	48	16
4158652	TDG533A15100	15,100	.5945	—	—	171	101	121	3,5	48	16
4158663	TDG533A15200	15,200	.5984	—	—	171	101	121	3,5	48	16
4158664	TDG533A15300	15,300	.6024	—	—	171	101	121	3,6	48	16
4158665	TDG533A15400	15,400	.6063	—	—	171	101	121	3,6	48	16
4158666	TDG533A15479	15,479	.6094	39/64	—	171	101	121	3,6	48	16
4158667	TDG533A15500	15,500	.6102	—	—	171	101	121	3,6	48	16
4158668	TDG533A15600	15,600	.6142	—	—	171	101	121	3,6	48	16
4158669	TDG533A15700	15,700	.6181	—	—	171	101	121	3,7	48	16
4158670	TDG533A15800	15,800	.6220	—	—	171	101	121	3,7	48	16
4158671	TDG533A15875	15,875	.6250	5/8	—	171	101	121	3,7	48	16
4158672	TDG533A15900	15,900	.6260	—	—	171	101	121	3,7	48	16
4158683	TDG533A16000	16,000	.6299	—	—	171	101	121	3,7	48	16
4158684	TDG533A16100	16,100	.6339	—	—	185	113	135	3,8	48	18
4158685	TDG533A16200	16,200	.6378	—	—	185	113	135	3,8	48	18
4158686	TDG533A16271	16,271	.6406	41/64	—	185	113	135	3,8	48	18
4158687	TDG533A16300	16,300	.6417	—	—	185	113	135	3,8	48	18

(continued)

Solid Carbide Drills

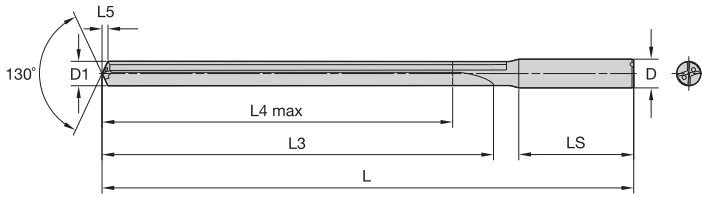
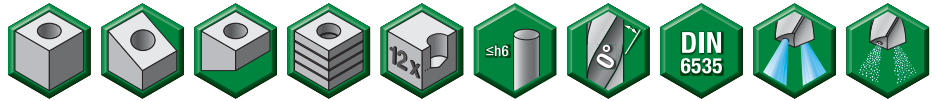
(TDG533A • 8 x D — continued)



- first choice
- alternate choice

grade WN10HD		D1 diameter				L	L4 max	L3	L5	LS	D
order #	catalog #	mm	in	fraction	wire size						
4158688	TDG533A16400	16,400	.6457	—	—	185	113	135	3,8	48	18
4158689	TDG533A16500	16,500	.6496	—	—	185	113	135	3,8	48	18
4158690	TDG533A16600	16,600	.6535	—	—	185	113	135	3,9	48	18
4158691	TDG533A16670	16,670	.6563	21/32	—	185	113	135	3,9	48	18
4158692	TDG533A16700	16,700	.6575	—	—	185	113	135	3,9	48	18
4158703	TDG533A16800	16,800	.6614	—	—	185	113	135	3,9	48	18
4158704	TDG533A16900	16,900	.6654	—	—	185	113	135	3,9	48	18
4158705	TDG533A17000	17,000	.6693	—	—	185	113	135	4,0	48	18
4158706	TDG533A17100	17,100	.6732	—	—	185	113	135	4,0	48	18
4158707	TDG533A17200	17,200	.6772	—	—	185	113	135	4,0	48	18
4158708	TDG533A17300	17,300	.6811	—	—	185	113	135	4,0	48	18
4158709	TDG533A17400	17,400	.6850	—	—	185	113	135	4,1	48	18
4158710	TDG533A17463	17,463	.6875	11/16	—	185	113	135	4,1	48	18
4158711	TDG533A17500	17,500	.6890	—	—	185	113	135	4,1	48	18
4158712	TDG533A17600	17,600	.6929	—	—	185	113	135	4,1	48	18
4158723	TDG533A17700	17,700	.6969	—	—	185	113	135	4,1	48	18
4158724	TDG533A17800	17,800	.7008	—	—	185	113	135	4,2	48	18
4158725	TDG533A17859	17,859	.7031	45/64	—	185	113	135	4,2	48	18
4158726	TDG533A17900	17,900	.7047	—	—	185	113	135	4,2	48	18
4157333	TDG533A18000	18,000	.7087	—	—	185	113	135	4,2	48	18
4157334	TDG533A18100	18,100	.7126	—	—	200	124	148	4,2	50	20
4157335	TDG533A18200	18,200	.7165	—	—	200	124	148	4,2	50	20
4157336	TDG533A18258	18,258	.7188	23/32	—	200	124	148	4,3	50	20
4157337	TDG533A18300	18,300	.7205	—	—	200	124	148	4,3	50	20
4157338	TDG533A18400	18,400	.7244	—	—	200	124	148	4,3	50	20
4157339	TDG533A18500	18,500	.7283	—	—	200	124	148	4,3	50	20
4157340	TDG533A18600	18,600	.7323	—	—	200	124	148	4,3	50	20
4157341	TDG533A18654	18,654	.7344	47/64	—	200	124	148	4,3	50	20
4157342	TDG533A18700	18,700	.7362	—	—	200	124	148	4,4	50	20
4157343	TDG533A18800	18,800	.7402	—	—	200	124	148	4,4	50	20
4157344	TDG533A18900	18,900	.7441	—	—	200	124	148	4,4	50	20
4157345	TDG533A19000	19,000	.7480	—	—	200	124	148	4,4	50	20
4157346	TDG533A19050	19,050	.7500	3/4	—	200	124	148	4,4	50	20
4157347	TDG533A19100	19,100	.7520	—	—	200	124	148	4,5	50	20
4157348	TDG533A19200	19,200	.7559	—	—	200	124	148	4,5	50	20
4157349	TDG533A19300	19,300	.7598	—	—	200	124	148	4,5	50	20
4157350	TDG533A19400	19,400	.7638	—	—	200	124	148	4,5	50	20
4157351	TDG533A19500	19,500	.7677	—	—	200	124	148	4,5	50	20
4157352	TDG533A19600	19,600	.7717	—	—	200	124	148	4,6	50	20
4157353	TDG533A19700	19,700	.7756	—	—	200	124	148	4,6	50	20
4157354	TDG533A19800	19,800	.7795	—	—	200	124	148	4,6	50	20
4157355	TDG533A19900	19,900	.7835	—	—	200	124	148	4,6	50	20
4157356	TDG533A20000	20,000	.7874	—	—	200	124	148	4,7	50	20

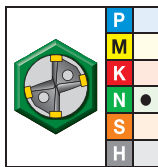
Solid Carbide Drills



For information on L, L3, and L4 max, see page R133.



■ TDG534A • 12 x D



grade WN10HD

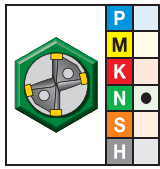
- first choice
- alternate choice

order #	catalog #	D1 diameter				L	L4 max	L3	L5	LS	D
		mm	in	fraction	wire size						
4157357	TDG534A03000	3,000	.1181	—	—	93	44	55	0,7	36	6
4157358	TDG534A03048	3,048	.1200	—	31	93	44	55	0,7	36	6
4157359	TDG534A03100	3,100	.1220	—	—	93	44	55	0,7	36	6
4157360	TDG534A03175	3,175	.1250	1/8	—	93	44	55	0,7	36	6
4157361	TDG534A03200	3,200	.1260	—	—	93	43	55	0,7	36	6
4157362	TDG534A03264	3,264	.1285	—	30	93	44	55	0,8	36	6
4157363	TDG534A03300	3,300	.1299	—	—	93	44	55	0,8	36	6
4157364	TDG534A03400	3,400	.1339	—	—	93	44	55	0,8	36	6
4157365	TDG534A03455	3,455	.1360	—	29	93	44	55	0,8	36	6
4157366	TDG534A03500	3,500	.1378	—	—	93	44	55	0,8	36	6
4157367	TDG534A03571	3,571	.1406	9/64	—	93	45	55	0,8	36	6
4157368	TDG534A03600	3,600	.1417	—	—	93	45	55	0,8	36	6
4157369	TDG534A03658	3,658	.1440	—	27	93	45	55	0,9	36	6
4157370	TDG534A03700	3,700	.1457	—	—	93	45	55	0,9	36	6
4157371	TDG534A03734	3,734	.1470	—	26	93	45	55	0,9	36	6
4157372	TDG534A03800	3,800	.1496	—	—	107	55	69	0,9	36	6
4157373	TDG534A03900	3,900	.1535	—	—	107	56	69	0,9	36	6
4157374	TDG534A03970	3,970	.1563	5/32	—	107	56	69	0,9	36	6
4157375	TDG534A04000	4,000	.1575	—	—	107	56	69	0,9	36	6
4157376	TDG534A04039	4,039	.1590	—	21	107	56	69	0,9	36	6
4157377	TDG534A04090	4,090	.1610	—	20	107	55	69	1,0	36	6
4157378	TDG534A04100	4,100	.1614	—	—	107	55	69	1,0	36	6
4157379	TDG534A04200	4,200	.1654	—	—	107	56	69	1,0	36	6
4157380	TDG534A04217	4,217	.1660	—	19	107	56	69	1,0	36	6

(continued)

Solid Carbide Drills

(TDG534A • 12 x D — continued)



● first choice
○ alternate choice

grade WN10HD

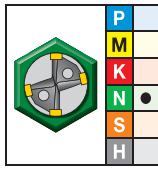
D1 diameter

order #	catalog #	mm	in	fraction	wire size	L	L4 max	L3	L5	LS	D
4157381	TDG534A04300	4,300	.1693	—	—	107	56	69	1,0	36	6
4157382	TDG534A04366	4,366	.1719	11/64	—	107	56	69	1,0	36	6
4157383	TDG534A04400	4,400	.1732	—	—	107	56	69	1,0	36	6
4157384	TDG534A04500	4,500	.1772	—	—	107	56	69	1,0	36	6
4157385	TDG534A04600	4,600	.1811	—	—	107	57	69	1,1	36	6
4157386	TDG534A04623	4,623	.1820	—	14	107	57	69	1,1	36	6
4157387	TDG534A04700	4,700	.1850	—	13	107	57	69	1,1	36	6
4157388	TDG534A04763	4,763	.1875	3/16	—	125	69	87	1,1	36	6
4157389	TDG534A04800	4,800	.1890	—	12	125	69	87	1,1	36	6
4157390	TDG534A04852	4,852	.1910	—	11	125	69	87	1,1	36	6
4157391	TDG534A04900	4,900	.1929	—	—	125	69	87	1,1	36	6
4157392	TDG534A05000	5,000	.1969	—	—	125	70	87	1,2	36	6
4157393	TDG534A05100	5,100	.2008	—	—	125	70	87	1,2	36	6
4157394	TDG534A05106	5,106	.2010	—	7	125	70	87	1,2	36	6
4157395	TDG534A05159	5,159	.2031	13/64	—	125	70	87	1,2	36	6
4157396	TDG534A05200	5,200	.2047	—	—	125	70	87	1,2	36	6
4157397	TDG534A05300	5,300	.2087	—	—	125	71	87	1,2	36	6
4157398	TDG534A05400	5,400	.2126	—	—	125	71	87	1,3	36	6
4157399	TDG534A05410	5,410	.2130	—	3	125	71	87	1,3	36	6
4157400	TDG534A05500	5,500	.2165	—	—	125	71	87	1,3	36	6
4157401	TDG534A05558	5,558	.2188	7/32	—	125	71	87	1,3	36	6
4157402	TDG534A05600	5,600	.2205	—	—	125	72	87	1,3	36	6
4157403	TDG534A05616	5,616	.2211	—	2	125	72	87	1,3	36	6
4157404	TDG534A05700	5,700	.2244	—	—	125	72	87	1,3	36	6
4157405	TDG534A05800	5,800	.2283	—	—	125	71	87	1,4	36	6
4157406	TDG534A05900	5,900	.2323	—	—	125	71	87	1,4	36	6
4157407	TDG534A05954	5,954	.2344	15/64	—	125	72	87	1,4	36	6
4157408	TDG534A06000	6,000	.2362	—	—	125	72	87	1,4	36	6
4157409	TDG534A06100	6,100	.2402	—	—	139	82	101	1,4	36	8
4157410	TDG534A06200	6,200	.2441	—	—	139	82	101	1,4	36	8
4157411	TDG534A06300	6,300	.2480	—	—	139	83	101	1,5	36	8
4157412	TDG534A06350	6,350	.2500	1/4	E	139	83	101	1,5	36	8
4157413	TDG534A06400	6,400	.2520	—	—	139	83	101	1,5	36	8
4157414	TDG534A06500	6,500	.2559	—	—	139	83	101	1,5	36	8
4157415	TDG534A06528	6,528	.2570	—	F	139	83	101	1,5	36	8
4157416	TDG534A06600	6,600	.2598	—	—	139	84	101	1,5	36	8
4157417	TDG534A06630	6,630	.2610	—	G	139	84	101	1,5	36	8
4157418	TDG534A06700	6,700	.2638	—	—	139	84	101	1,6	36	8
4157419	TDG534A06746	6,746	.2656	17/64	—	139	83	101	1,6	36	8
4157420	TDG534A06800	6,800	.2677	—	—	139	83	101	1,6	36	8

(continued)

Solid Carbide Drills

(TDG534A • 12 x D — continued)



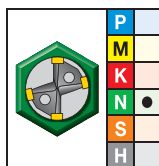
- first choice
- alternate choice

grade WN10HD		D1 diameter				L	L4 max	L3	L5	LS	D
order #	catalog #	mm	in	fraction	wire size						
4157421	TDG534A06900	6,900	.2717	—	—	139	83	101	1,6	36	8
4157422	TDG534A07000	7,000	.2756	—	—	139	84	101	1,6	36	8
4157423	TDG534A07100	7,100	.2795	—	—	153	94	115	1,7	36	8
4157424	TDG534A07145	7,145	.2813	9/32	—	153	94	115	1,7	36	8
4157425	TDG534A07200	7,200	.2835	—	—	153	94	115	1,7	36	8
4157426	TDG534A07300	7,300	.2874	—	—	153	95	115	1,7	36	8
4157427	TDG534A07400	7,400	.2913	—	—	153	95	115	1,7	36	8
4157428	TDG534A07500	7,500	.2953	—	—	153	95	115	1,7	36	8
4157429	TDG534A07541	7,541	.2969	19/64	—	153	95	115	1,8	36	8
4157430	TDG534A07600	7,600	.2992	—	—	153	96	115	1,8	36	8
4157431	TDG534A07700	7,700	.3031	—	—	153	96	115	1,8	36	8
4157432	TDG534A07800	7,800	.3071	—	—	153	95	115	1,8	36	8
4157433	TDG534A07900	7,900	.3110	—	—	153	95	115	1,8	36	8
4157434	TDG534A07938	7,938	.3125	5/16	—	153	96	115	1,9	36	8
4157435	TDG534A08000	8,000	.3150	—	—	153	96	115	1,9	36	8
4157436	TDG534A08100	8,100	.3189	—	—	185	116	143	1,9	40	10
4157437	TDG534A08200	8,200	.3228	—	—	185	116	143	1,9	40	10
4157438	TDG534A08300	8,300	.3268	—	—	185	117	143	1,9	40	10
4157439	TDG534A08334	8,334	.3281	21/64	—	185	117	143	1,9	40	10
4157440	TDG534A08400	8,400	.3307	—	—	185	117	143	2,0	40	10
4157441	TDG534A08433	8,433	.3320	—	Q	185	117	143	2,0	40	10
4157442	TDG534A08500	8,500	.3346	—	—	185	117	143	2,0	40	10
4157443	TDG534A08600	8,600	.3386	—	—	185	118	143	2,0	40	10
4157444	TDG534A08700	8,700	.3425	—	—	185	118	143	2,0	40	10
4157445	TDG534A08733	8,733	.3438	11/32	—	185	117	143	2,0	40	10
4157446	TDG534A08800	8,800	.3465	—	—	185	117	143	2,1	40	10
4157447	TDG534A08900	8,900	.3504	—	—	185	117	143	2,1	40	10
4157448	TDG534A09000	9,000	.3543	—	—	185	118	143	2,1	40	10
4157449	TDG534A09100	9,100	.3583	—	—	185	118	143	2,1	40	10
4157450	TDG534A09129	9,129	.3594	23/64	—	185	118	143	2,1	40	10
4157451	TDG534A09200	9,200	.3622	—	—	185	118	143	2,1	40	10
4157452	TDG534A09300	9,300	.3661	—	—	185	119	143	2,2	40	10
4157453	TDG534A09347	9,347	.3680	—	U	185	119	143	2,2	40	10
4157454	TDG534A09400	9,400	.3701	—	—	185	119	143	2,2	40	10
4157455	TDG534A09500	9,500	.3740	—	—	185	119	143	2,2	40	10
4157456	TDG534A09525	9,525	.3750	3/8	—	185	119	143	2,2	40	10
4157457	TDG534A09600	9,600	.3780	—	—	185	120	143	2,2	40	10
4157458	TDG534A09700	9,700	.3819	—	—	185	120	143	2,3	40	10
4157459	TDG534A09800	9,800	.3858	—	—	185	119	143	2,3	40	10
4157460	TDG534A09900	9,900	.3898	—	—	185	119	143	2,3	40	10

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Solid Carbide Drills

(TDG534A • 12 x D — continued)



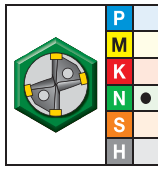
- first choice
- alternate choice

grade WN10HD		D1 diameter				L	L4 max	L3	L5	LS	D
order #	catalog #	mm	in	fraction	wire size						
4157461	TDG534A09921	9,921	.3906	25/64	—	185	120	143	2,3	40	10
4157476	TDG534A10000	10,000	.3937	—	—	185	120	143	2,3	40	10
4157555	TDG534A10100	10,100	.3976	—	—	218	140	171	2,4	45	12
4157556	TDG534A10200	10,200	.4016	—	—	218	140	171	2,4	45	12
4157557	TDG534A10300	10,300	.4055	—	—	218	141	171	2,4	45	12
4157558	TDG534A10320	10,320	.4063	13/32	—	218	141	171	2,4	45	12
4157559	TDG534A10400	10,400	.4094	—	—	218	141	171	2,4	45	12
4157560	TDG534A10500	10,500	.4134	—	—	218	141	171	2,4	45	12
4157561	TDG534A10600	10,600	.4173	—	—	218	142	171	2,5	45	12
4157562	TDG534A10700	10,700	.4213	—	—	218	142	171	2,5	45	12
4157583	TDG534A10716	10,716	.4219	27/64	—	218	142	171	2,5	45	12
4157584	TDG534A10800	10,800	.4252	—	—	218	141	171	2,5	45	12
4157585	TDG534A10900	10,900	.4291	—	—	218	141	171	2,5	45	12
4157586	TDG534A11000	11,000	.4331	—	—	218	142	171	2,6	45	12
4157587	TDG534A11100	11,100	.4370	—	—	218	142	171	2,6	45	12
4157588	TDG534A11113	11,113	.4375	7/16	—	218	142	171	2,6	45	12
4157589	TDG534A11200	11,200	.4409	—	—	218	142	171	2,6	45	12
4157590	TDG534A11300	11,300	.4449	—	—	218	143	171	2,6	45	12
4157591	TDG534A11400	11,400	.4488	—	—	218	143	171	2,7	45	12
4157592	TDG534A11500	11,500	.4528	—	—	218	143	171	2,7	45	12
4157593	TDG534A11509	11,509	.4531	29/64	—	218	143	171	2,7	45	12
4157594	TDG534A11600	11,600	.4567	—	—	218	144	171	2,7	45	12
4157595	TDG534A11700	11,700	.4606	—	—	218	144	171	2,7	45	12
4157596	TDG534A11800	11,800	.4646	—	—	218	143	171	2,8	45	12
4157597	TDG534A11900	11,900	.4685	—	—	218	143	171	2,8	45	12
4157598	TDG534A11908	11,908	.4688	15/32	—	218	143	171	2,8	45	12
4157599	TDG534A12000	12,000	.4724	—	—	218	144	171	2,8	45	12
4157600	TDG534A12100	12,100	.4764	—	—	246	164	199	2,8	45	14
4157601	TDG534A12200	12,200	.4803	—	—	246	164	199	2,8	45	14
4157602	TDG534A12300	12,300	.4843	—	—	246	165	199	2,9	45	14
4157603	TDG534A12304	12,304	.4844	31/64	—	246	165	199	2,9	45	14
4157604	TDG534A12400	12,400	.4882	—	—	246	165	199	2,9	45	14
4157605	TDG534A12500	12,500	.4921	—	—	246	165	199	2,9	45	14
4157606	TDG534A12600	12,600	.4961	—	—	246	165	199	2,9	45	14
4157607	TDG534A12700	12,700	.5000	1/2	—	246	166	199	3,0	45	14
4157608	TDG534A12800	12,800	.5039	—	—	246	166	199	3,0	45	14
4157609	TDG534A12900	12,900	.5079	—	—	246	165	199	3,0	45	14
4157610	TDG534A13000	13,000	.5118	—	—	246	166	199	3,0	45	14
4157611	TDG534A13096	13,096	.5156	33/64	—	246	166	199	3,1	45	14
4157612	TDG534A13100	13,100	.5157	—	—	246	166	199	3,1	45	14

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Solid Carbide Drills

(TDG534A • 12 x D — continued)

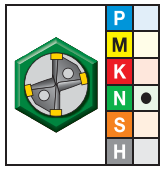


- first choice
- alternate choice

grade WN10HD		D1 diameter				L	L4 max	L3	L5	LS	D
order #	catalog #	mm	in	fraction	wire size						
4157613	TDG534A13200	13,200	.5197	—	—	246	166	199	3,1	45	14
4157614	TDG534A13300	13,300	.5236	—	—	246	167	199	3,1	45	14
4157615	TDG534A13400	13,400	.5276	—	—	246	167	199	3,1	45	14
4157671	TDG534A13490	13,490	.5311	—	—	246	167	199	3,1	45	14
4157616	TDG534A13500	13,500	.5315	—	—	246	167	199	3,1	45	14
4157617	TDG534A13600	13,600	.5354	—	—	246	167	199	3,2	45	14
4157618	TDG534A13700	13,700	.5394	—	—	246	168	199	3,2	45	14
4157619	TDG534A13800	13,800	.5433	—	—	246	168	199	3,2	45	14
4157620	TDG534A13891	13,891	.5469	35/64	—	246	167	199	3,2	45	14
4157621	TDG534A13900	13,900	.5472	—	—	246	167	199	3,2	45	14
4157622	TDG534A14000	14,000	.5512	—	—	246	168	199	3,3	45	14
4157623	TDG534A14100	14,100	.5551	—	—	277	188	227	3,3	48	16
4157624	TDG534A14200	14,200	.5591	—	—	277	188	227	3,3	48	16
4157625	TDG534A14288	14,288	.5625	9/16	—	277	188	227	3,3	48	16
4157626	TDG534A14300	14,300	.5630	—	—	277	188	227	3,3	48	16
4157627	TDG534A14400	14,400	.5669	—	—	277	189	227	3,4	48	16
4157628	TDG534A14500	14,500	.5709	—	—	277	189	227	3,4	48	16
4157629	TDG534A14600	14,600	.5748	—	—	277	189	227	3,4	48	16
4157630	TDG534A14684	14,684	.5781	37/64	—	277	190	227	3,4	48	16
4157631	TDG534A14700	14,700	.5787	—	—	277	190	227	3,4	48	16
4157632	TDG534A14800	14,800	.5827	—	—	277	190	227	3,5	48	16
4157633	TDG534A14900	14,900	.5866	—	—	277	190	227	3,5	48	16
4157634	TDG534A15000	15,000	.5906	—	—	277	190	227	3,5	48	16
4157635	TDG534A15083	15,083	.5938	19/32	—	277	190	227	3,5	48	16
4157636	TDG534A15100	15,100	.5945	—	—	277	190	227	3,5	48	16
4157637	TDG534A15200	15,200	.5984	—	—	277	190	227	3,5	48	16
4157638	TDG534A15300	15,300	.6024	—	—	277	191	227	3,6	48	16
4157639	TDG534A15400	15,400	.6063	—	—	277	191	227	3,6	48	16
4157640	TDG534A15479	15,479	.6094	39/64	—	277	191	227	3,6	48	16
4157641	TDG534A15500	15,500	.6102	—	—	277	191	227	3,6	48	16
4157642	TDG534A15600	15,600	.6142	—	—	277	191	227	3,6	48	16
4157643	TDG534A15700	15,700	.6181	—	—	277	192	227	3,7	48	16
4157644	TDG534A15800	15,800	.6220	—	—	277	192	227	3,7	48	16
4157645	TDG534A15875	15,875	.6250	5/8	—	277	192	227	3,7	48	16
4157646	TDG534A15900	15,900	.6260	—	—	277	192	227	3,7	48	16
4157647	TDG534A16000	16,000	.6299	—	—	277	192	227	3,7	48	16
4157648	TDG534A16100	16,100	.6339	—	—	305	212	255	3,8	48	18
4157649	TDG534A16200	16,200	.6378	—	—	305	212	255	3,8	48	18
4157650	TDG534A16271	16,271	.6406	41/64	—	305	212	255	3,8	48	18
4157651	TDG534A16300	16,300	.6417	—	—	305	212	255	3,8	48	18

(continued)

(TDG534A • 12 x D — continued)



- first choice
- alternate choice

grade WN10HD		D1 diameter				L	L4 max	L3	L5	LS	D
order #	catalog #	mm	in	fraction	wire size						
4157652	TDG534A16400	16,400	.6457	—	—	305	213	255	3,8	48	18
4157653	TDG534A16500	16,500	.6496	—	—	305	213	255	3,8	48	18
4157654	TDG534A16600	16,600	.6535	—	—	305	213	255	3,9	48	18
4157655	TDG534A16670	16,670	.6563	21/32	—	305	214	255	3,9	48	18
4157656	TDG534A16700	16,700	.6575	—	—	305	214	255	3,9	48	18
4157657	TDG534A16800	16,800	.6614	—	—	305	214	255	3,9	48	18
4157658	TDG534A16900	16,900	.6654	—	—	305	214	255	3,9	48	18
4157659	TDG534A17000	17,000	.6693	—	—	305	214	255	4,0	48	18
4157660	TDG534A17100	17,100	.6732	—	—	305	214	255	4,0	48	18
4157661	TDG534A17200	17,200	.6772	—	—	305	214	255	4,0	48	18
4157662	TDG534A17300	17,300	.6811	—	—	305	214	255	4,0	48	18
4157663	TDG534A17400	17,400	.6850	—	—	305	215	255	4,1	48	18
4157664	TDG534A17463	17,463	.6875	11/16	—	305	215	255	4,1	48	18
4157665	TDG534A17500	17,500	.6890	—	—	305	215	255	4,1	48	18
4157666	TDG534A17600	17,600	.6929	—	—	305	215	255	4,1	48	18
4157667	TDG534A17700	17,700	.6969	—	—	305	216	255	4,1	48	18
4157668	TDG534A17800	17,800	.7008	—	—	305	216	255	4,2	48	18
4157669	TDG534A17859	17,859	.7031	45/64	—	305	216	255	4,2	48	18
4157670	TDG534A17900	17,900	.7047	—	—	305	216	255	4,2	48	18
4156877	TDG534A18000	18,000	.7087	—	—	305	216	255	4,2	48	18
4156878	TDG534A18100	18,100	.7126	—	—	334	237	282	4,2	50	20
4156879	TDG534A18200	18,200	.7165	—	—	334	236	282	4,2	50	20
4156880	TDG534A18258	18,258	.7188	23/32	—	334	236	282	4,3	50	20
4156881	TDG534A18300	18,300	.7205	—	—	334	236	282	4,3	50	20
4156882	TDG534A18400	18,400	.7244	—	—	334	237	282	4,3	50	20
4156973	TDG534A18500	18,500	.7283	—	—	334	237	282	4,3	50	20
4156974	TDG534A18600	18,600	.7323	—	—	334	237	282	4,3	50	20
4156975	TDG534A18654	18,654	.7344	47/64	—	334	237	282	4,3	50	20
4156976	TDG534A18700	18,700	.7362	—	—	334	237	282	4,4	50	20
4156977	TDG534A18800	18,800	.7402	—	—	334	238	282	4,4	50	20
4156978	TDG534A18900	18,900	.7441	—	—	334	238	282	4,4	50	20
4156979	TDG534A19000	19,000	.7480	—	—	334	238	282	4,4	50	20
4156980	TDG534A19050	19,050	.7500	3/4	—	334	239	282	4,4	50	20
4156981	TDG534A19100	19,100	.7520	—	—	334	239	282	4,5	50	20
4156982	TDG534A19200	19,200	.7559	—	—	334	238	282	4,5	50	20
4156983	TDG534A19300	19,300	.7598	—	—	334	238	282	4,5	50	20
4156984	TDG534A19400	19,400	.7638	—	—	334	239	282	4,5	50	20
4156985	TDG534A19500	19,500	.7677	—	—	334	239	282	4,5	50	20
4156986	TDG534A19600	19,600	.7717	—	—	334	239	282	4,6	50	20
4156987	TDG534A19700	19,700	.7756	—	—	334	239	282	4,6	50	20
4156988	TDG534A19800	19,800	.7795	—	—	334	240	282	4,6	50	20
4156989	TDG534A19900	19,900	.7835	—	—	334	240	282	4,6	50	20
4156990	TDG534A20000	20,000	.7874	—	—	334	240	282	4,7	50	20

Solid Carbide Drills

■ TOP DRILL G • TDG532/TDG533/TDG534 • WN10HD™ • Through Coolant • Inch

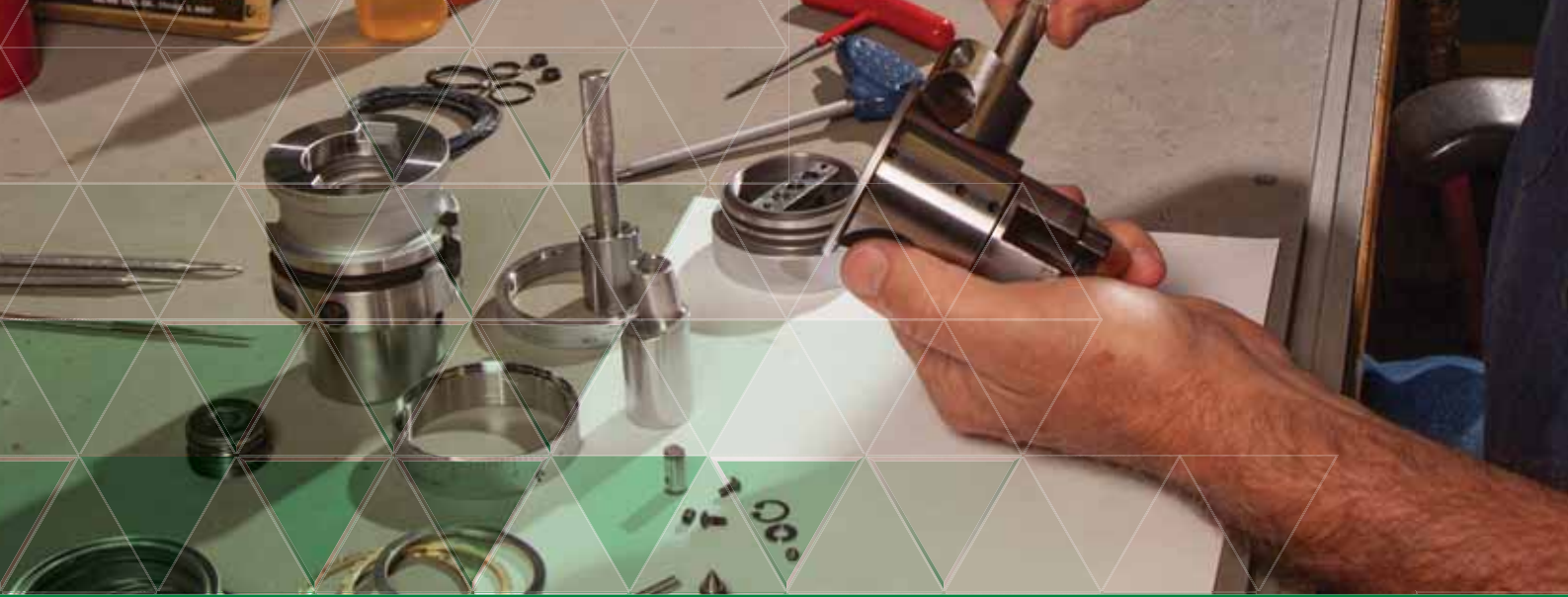
Material Group			Cutting Speed – vc Range – SFM	Recommended Feed Rate (f) by Diameter							
N	21	330 – 1480	IPR	.006–.010	.007–.011	.009–.014	.011–.017	.012–.020	.014–.022	.017–.027	.020–.032
	22, 23, 24	330 – 980	IPR	.006–.009	.007–.011	.008–.013	.010–.015	.012–.018	.013–.021	.017–.026	.020–.032
	26	330 – 820	IPR	.006–.011	.006–.013	.007–.014	.009–.016	.010–.017	.011–.019	.013–.022	.014–.025

■ TOP DRILL G • TDG532/TDG533/TDG534 • WN10HD • Through Coolant • Metric

Material Group			Cutting Speed – vc Range – m/min	Recommended Feed Rate (f) by Diameter							
N	21	100 – 450	mm/r	0,16–0,25	0,19–0,29	0,23–0,35	0,27–0,42	0,31–0,50	0,36–0,57	0,44–0,69	0,52–0,82
	22, 23, 24	100 – 300	mm/r	0,15–0,23	0,17–0,28	0,21–0,34	0,25–0,39	0,30–0,46	0,34–0,54	0,42–0,67	0,52–0,82
	26	100 – 250	mm/r	0,16–0,28	0,15–0,32	0,19–0,36	0,23–0,40	0,25–0,44	0,28–0,48	0,32–0,56	0,35–0,63

nominal size range	Inch tolerance	
	D1 tolerance m7	D tolerance h6
>.1181–.2362	.0000/.0005	.0000/-.0003
>.2360–.3937	.0000/.0006	.0000/-.0004
>.3937–.7087	.0000/.0007	.0000/-.0004
>.7078–1.0000	.0000/.0009	.0000/-.0005

nominal size range	Metric tolerance	
	D1 tolerance m7	D tolerance h6
>3–6	0,004/0,016	0,000/–0,008
>6–10	0,006/0,021	0,000/–0,009
>10–18	0,007/0,025	0,000/–0,011
>18–25,4	0,008/0,029	0,000/–0,013



WIDIA™ Solid Carbide Drills — Reconditioning

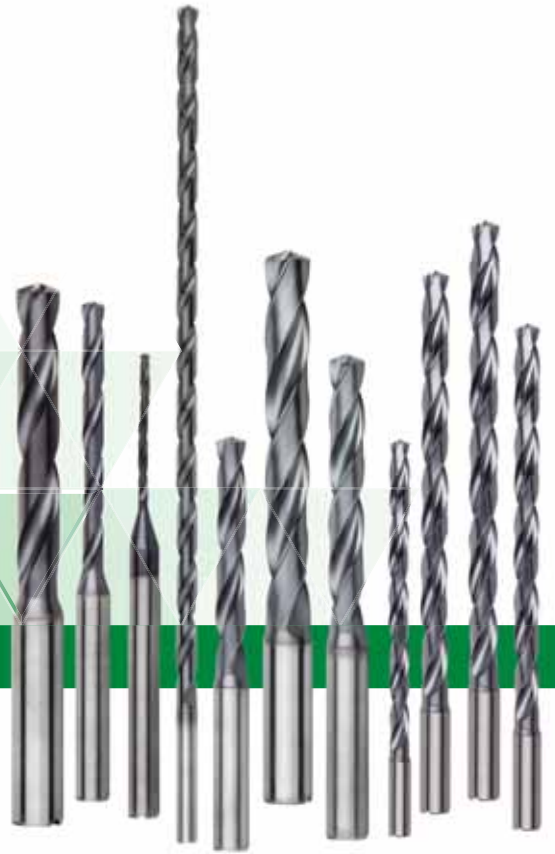
Anyone can regrind your tools — only we can recondition them.

WIDIA Reconditioning Services optimize the value of metalcutting tools throughout their entire lifecycle by giving like-new performance — with rapid turnaround time — so tools are always on hand and perform just like new.

How Does WIDIA Do It?

- Reconditioned tooling undergoes the same process as new tools — the same drill point (WIDIA proprietary geometry) and coating are applied back on the tool.
- Tooling is returned to like-new condition, with WIDIA proprietary geometry providing a longer tooling lifecycle and increased performance.
- With current lead-time less than 10 days, customers get tools back quickly — lowering cost-per-tool usage.

Protect your investment by using the WIDIA™ Reconditioning Program.



EXTREME **CHALLENGES.**
EXTREME **RESULTS.**

To use WIDIA™ tool reconditioning services, contact your authorized WIDIA distributor to get started.

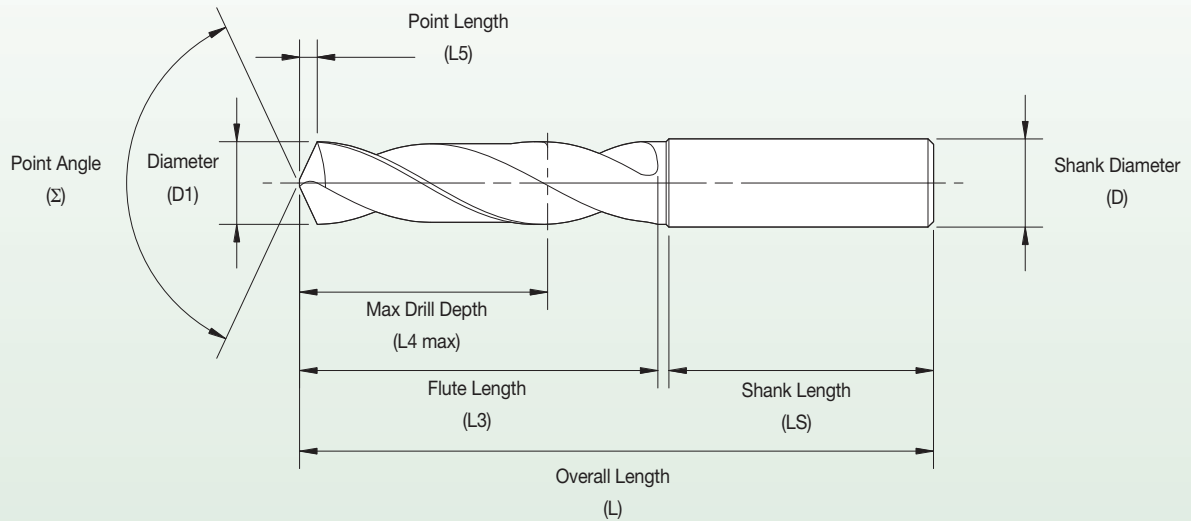
WIDIA Solid Carbide Drills Reconditioning Product Lines

- VariDrill™
- TOP DRILL S™ for Steel
- TOP DRILL S™ for Cast Iron
- TOP DRILL S+™
- TOP DRILL G™

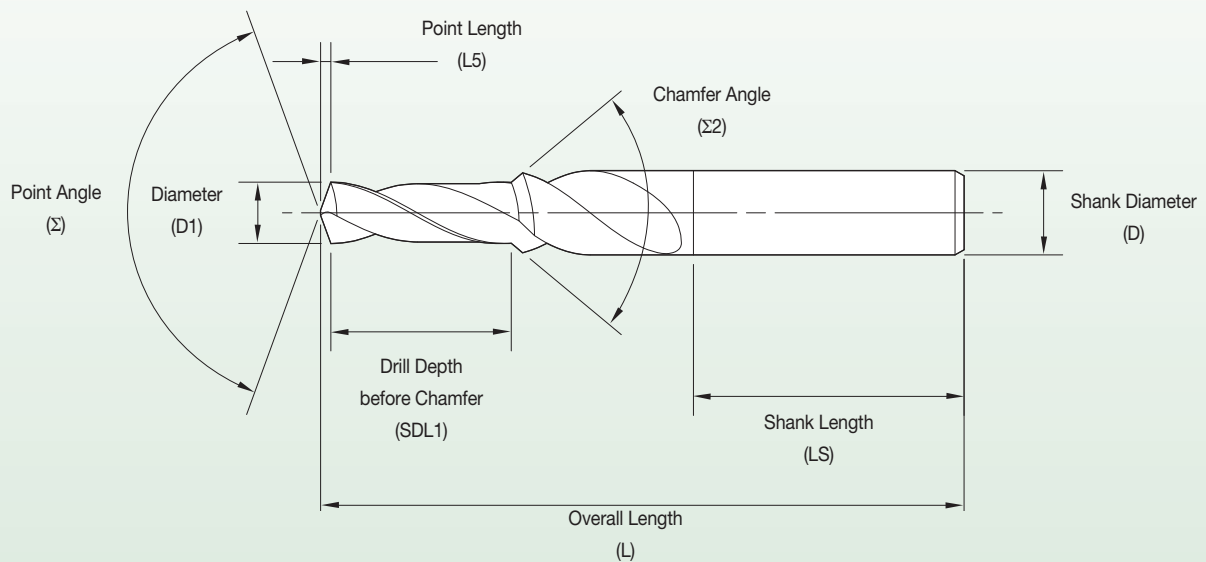
WIDIA 

The Anatomy of a Drill

Use this diagram when describing features of a solid carbide drill.



Use this diagram when describing features of a solid carbide step drill.



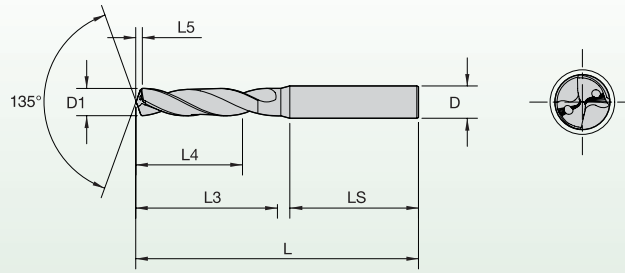
Shank Designs to DIN 6535



Form HE,
2° angle
Design F



Form HA,
straight
design A



Dimensions for WIDIA™ High-Performance Solid Carbide Drills

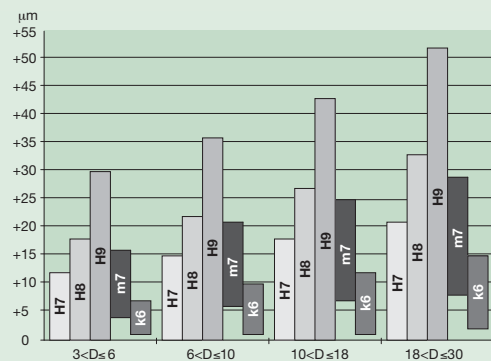
inch Ø		DIN 6535		SHORT* ~3 x D			LONG* ~5 x D			EXTRA LONG** ~8 x D		
D1 min	D1 max	D	LS	L	L3	L4 max	L	L3	L4 max	L	L3	L4 max
.0394	.0551	.1575	1.10	2.28	.28	.20	2.28	.35	.24	2.28	.47	.35
.0552	.0748	.1575	1.10	2.28	.35	.24	2.28	.47	.35	2.28	.71	.59
.0748	.0906	.1575	1.10	2.28	.51	.35	2.28	.71	.55	2.60	1.02	.87
.0906	.1177	.1575	1.10	2.28	.67	.47	2.28	.87	.67	2.60	1.18	.98
.1181	.1476	.2362	1.42	2.44	.79	.55	2.60	1.10	.91	3.07	1.57	1.30
.1477	.1870	.2362	1.42	2.60	.94	.67	2.91	1.42	1.14	3.43	1.93	1.61
.1870	.2362	.2362	1.42	2.60	1.10	.79	3.23	1.73	1.38	3.70	2.20	1.89
.2363	.2756	.3150	1.42	3.11	1.34	.94	3.58	2.09	1.69	4.13	2.64	2.24
.2756	.3150	.3150	1.42	3.11	1.61	1.14	3.58	2.09	1.69	4.33	2.83	2.40
.3150	.3937	.3937	1.57	3.50	1.85	1.38	4.06	2.40	1.93	4.80	3.15	2.68
.3937	.4724	.4724	1.77	4.02	2.17	1.57	4.65	2.80	2.20	5.55	3.70	3.11
.4725	.5512	.5512	1.77	4.21	2.36	1.69	4.88	3.03	2.36	6.10	4.25	3.58
.5512	.6299	.6299	1.89	4.53	2.56	1.77	5.24	3.27	2.48	6.73	4.76	3.98
.6300	.7087	.7087	1.89	4.84	2.87	2.01	5.63	3.66	2.80	7.28	5.32	4.45
.7087	.7874	.7874	1.97	5.16	3.11	2.17	6.02	3.98	3.03	7.87	5.83	4.88
.7874	.8661	.7874	1.97	5.55	3.39	2.36	6.57	4.41	3.35	8.54	6.38	5.35
.8662	.9843	.9843	2.20	6.02	3.74	2.56	7.24	4.96	3.86	9.37	7.09	5.91

* D1 < 20mm to DIN 6537K
D1 > 20mm to factory standard
** To factory standard

Tolerances of Drills and Holes

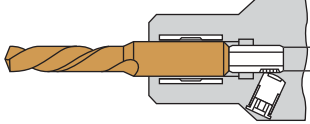
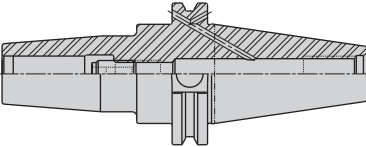
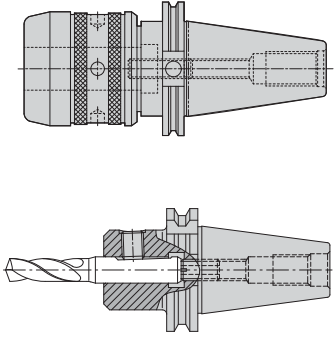
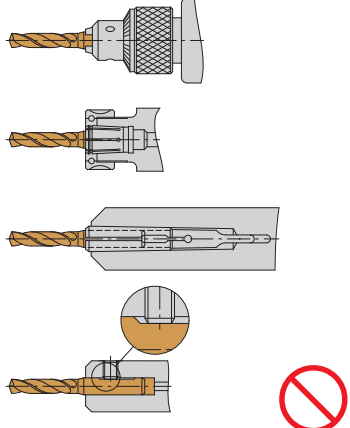
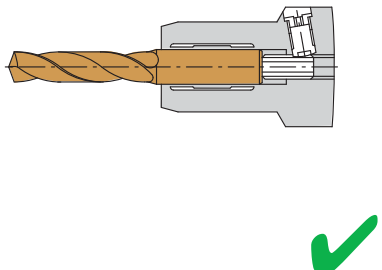
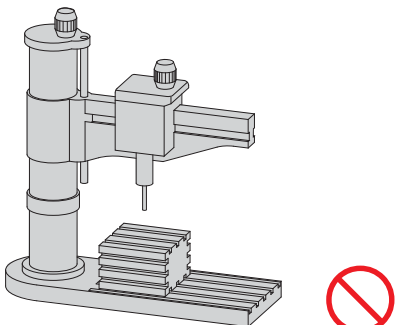
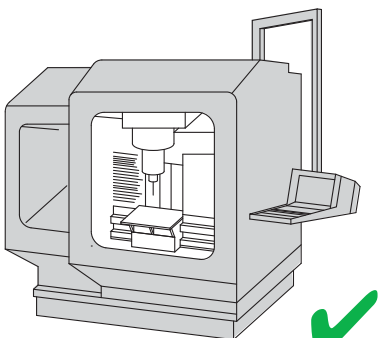
High-performance solid carbide drills with tolerances of m7 create holes with tolerances of H9. H8 can be achieved in very good conditions. The drill should be used for holes in H8, and in favorable conditions, H7 can be achieved. Solid carbide drills with H7 create holes in K9-11. Other drilling tolerances require special solid carbide drill versions.

Tolerances of diameter D1 on:
Spiral Flute
TDG Drill



Toolholding Systems

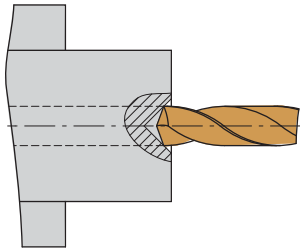
As with any drilling system, components of the entire system contribute to the quality of the machined hole, not just the drill itself. For maximum efficiency and accuracy, the following toolholding systems are your best choices:

<p>First Choice Hydraulic chucks</p> 	<p>Second Choice Shrink Fit</p> 	<p>Third Choice High-performance milling chucks with reduction sleeves</p> 
<p>Not Recommended</p> 	<p>Clamping Chuck Use of all-purpose drilling chuck collets, clamping sleeves, and Weldon® clamping chucks should be avoided because they do not absorb cutting forces reliably and provide insufficient precision of concentricity.</p>	<p>Highly Recommended Hydraulic chucks ensure a secure torque transmission with excellent concentricity.</p> 
<p>Not Recommended</p> 	<p>Machine Solid carbide drills have a much higher rigidity than conventional high-speed steel drills. This enables the machining of close-tolerance holes with a position accuracy of ± 0.001". However, it also means that drills require rigid machine tools with good spindles.</p>	<p>Rigid Machine Tool Recommended</p> 

(continued)

(continued)

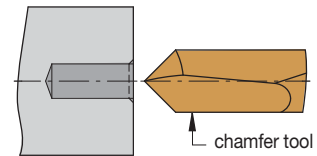
Wrong



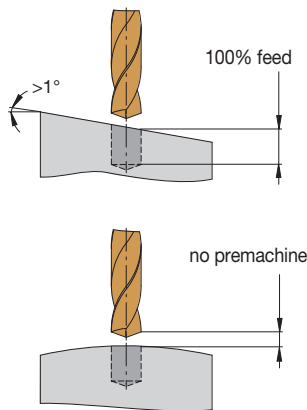
Drilling and Chamfering

Drill into the solid first, then chamfer.

Correct



Wrong



Drilling on Inclined or Rounded Surfaces

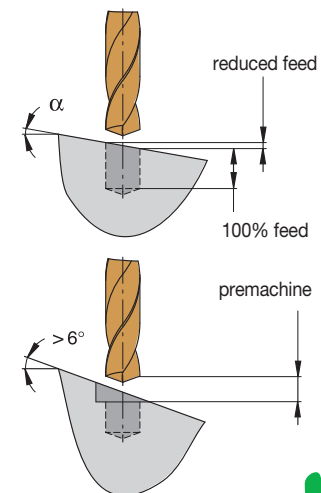
When drilling on inclined or curved surfaces, use a lower feed than the standard value. The reduction of feed required is dependent on the inclination angle of the workpiece surface and the drill type (see table).

reduced feed (% of standard value)

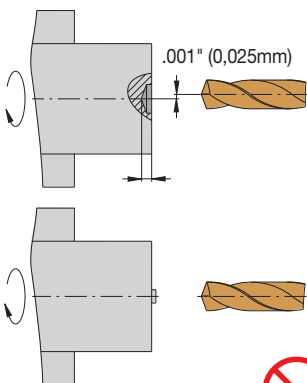
inclination α	3 x D	5 x D Long	<5 x D
1°	100%	80%	premachine
2°	80-50%	80-50%	premachine
3°	65%	50%	premachine
4°	50%	premachine	premachine
6°	30%	premachine	premachine

Premachining is usually done with an end mill operation.

Correct



Wrong



Drilling on Turning Machines

When drilling on turning machines, the drill must be on center. The tolerance range of the center position should not exceed $\pm 0.001''$. On bar-turning lathes, do not drill into center stub or bur. Cut-off tools must be mounted precisely to eliminate center stub or bur. Do not drill into pre-existing holes.

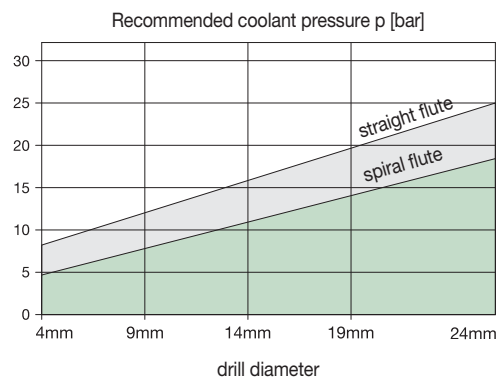
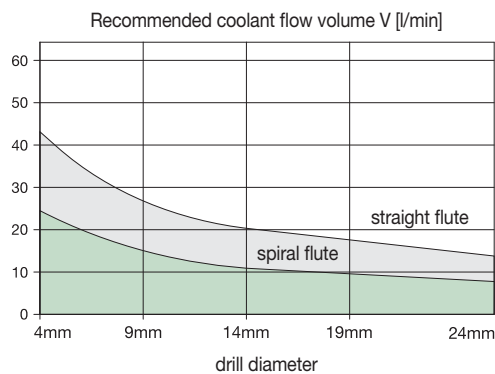
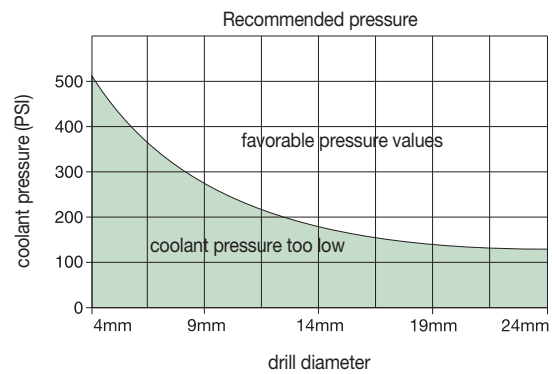
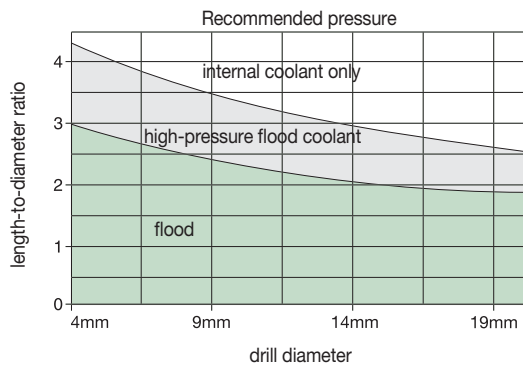
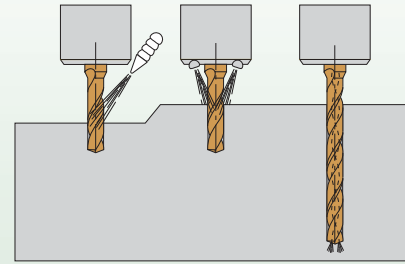
Hole Depths Greater than 3 x D

Hole depths that are deeper than three times the drill diameter may require a speed reduction. A 15% lower speed is suggested.

Coolant

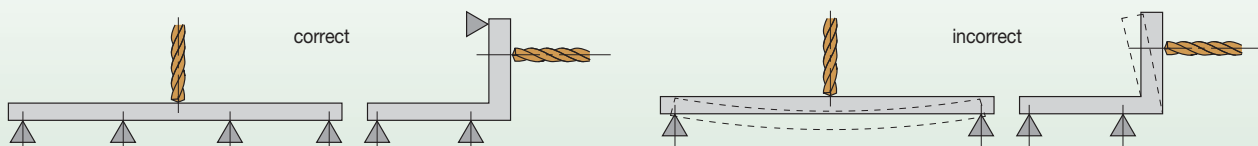
- To optimize their performance, drills must be adequately cooled. With the proper coolant flow, better tool life and higher maximum effective cutting speeds can be achieved.
- If not properly cooled, the drill will heat up rapidly. This causes the drill diameter to expand, which in turn may cause the drill to seize inside the hole.
- Solid carbide drills with internal coolant channels require deeper drilling depths to be effective. The higher the coolant pressure, the better the drilling results. Drill life and hole quality improve with ample coolant flow.
- When using drills without internal coolant flow, try to get at least one coolant jet as parallel to the drill as possible.
- For short-hole applications, drills without internal coolant may often provide better tool life. The tool is more solid, and it does not suffer from thermal shock at the cutting edge.
- It is important to use high coolant concentration to provide lubricity, which will aid in tool life, chip evacuation, and finer surface finishes.
- High-pressure coolant, either through the tool or through a line adjacent and parallel to the tool, should always be considered for increased tool life and production.
- Do not use multi-coolant lines. Use one line with 100% of the flow capacity to evacuate the chips from the hole.

Coolant requirement for carbide drills

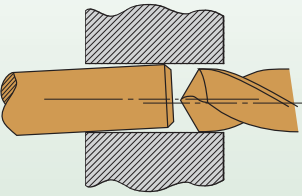
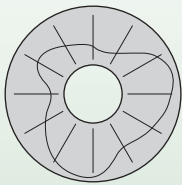
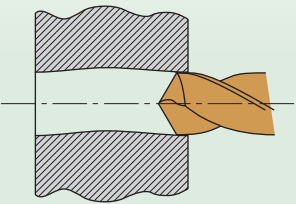



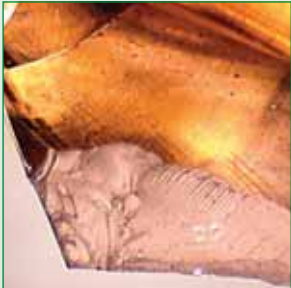
Workpiece Rigidity

Because solid carbide drills have much higher penetration rates, it is important that the workpiece has adequate support.




problem	source	solution
heavy wear on the cutting corners 	insufficient coolant	<ul style="list-style-type: none"> Check cooling lubricant. In the case of internal coolant supply, increase coolant pressure. In the case of external coolant supply, adjust positioning of coolant jet. Cool from both sides.
	workpiece movement	<ul style="list-style-type: none"> Stabilize workpiece chucking and check stability of machine tool.
	wrong drill	<ul style="list-style-type: none"> Check drill type, drilling depth, cooling system, and workpiece material.
	cutting conditions	<ul style="list-style-type: none"> Reduce cutting speed; increase feed.
splintering on the chisel edge 	clamping chuck	<ul style="list-style-type: none"> Check clamping accuracy. Use hydraulic clamping chuck or high-precision chucking system.
	cutting conditions	<ul style="list-style-type: none"> Decrease feed; increase speed.
built-up edge 	insufficient coolant	<ul style="list-style-type: none"> Check cooling lubricant. In the case of internal coolant supply, increase coolant pressure. In the case of external coolant supply, adjust positioning of coolant jet. Cool from both sides.
	cutting conditions	<ul style="list-style-type: none"> Increase speed 20–30%.
splintering on the cutting edges 	clamping chuck	<ul style="list-style-type: none"> Check clamping accuracy and torque transmission. Use hydraulic clamping chuck or high-precision chucking system.
	cutting conditions caused by built-up edge	<ul style="list-style-type: none"> Check cutting values, and possibly increase cutting speed.
		<ul style="list-style-type: none"> Examine regularly for built-up edge.
thermal checking/comb cracking 	cutting conditions	<ul style="list-style-type: none"> Adapt coolant and cutting conditions to reduce thermal shock.

problem	source	solution
<p>hole too big</p> 	cutting conditions	<ul style="list-style-type: none"> • Check cutting values, increase cutting speed, or reduce feed.
	clamping chuck	<ul style="list-style-type: none"> • Check clamping accuracy and torque transmission. Use hydraulic clamping chuck or high-precision chucking system.
	wrong drill	<ul style="list-style-type: none"> • Check drill diameter. Please note that drills are ground to a positive tolerance. Check concentric running.
<p>hole too small</p> 	insufficient coolant	<ul style="list-style-type: none"> • Check cooling lubricant. In the case of internal coolant supply, increase coolant pressure. In the case of external coolant supply, adjust positioning of coolant jet. Cool from both sides.
	cutting conditions	<ul style="list-style-type: none"> • Decrease feed; increase speed.
	wrong drill	<ul style="list-style-type: none"> • Check cutting-edge diameter.
<p>hole not cylindrical</p> 	clamping chuck	<ul style="list-style-type: none"> • Check clamping accuracy and torque transmission. Use hydraulic clamping chuck or high-precision chucking system.
	workpiece movement	<ul style="list-style-type: none"> • Stabilize workpiece chucking and check stability of machine tool.
	wrong drill	<ul style="list-style-type: none"> • Check drill type and drilling depth. Use longer drills.
	cutting conditions	<ul style="list-style-type: none"> • Reduce feed at entry.

problem	source	solution
<p>drill breakage</p> 	<p>clamping chuck</p>	<ul style="list-style-type: none"> • Check clamping accuracy and torque transmission. Use hydraulic clamping chuck or high-precision chucking system.
	<p>workpiece movement</p>	<ul style="list-style-type: none"> • Stabilize workpiece chucking and check stability of machine tool.
	<p>wrong drill</p>	<ul style="list-style-type: none"> • Check drill type, drilling depth, cooling system, and workpiece material.
	<p>insufficient coolant</p>	<ul style="list-style-type: none"> • Check cooling lubricant. In the case of internal coolant supply, increase coolant pressure. In the case of external coolant supply, adjust positioning of coolant jet. Cool from both sides.
	<p>cutting conditions</p>	<ul style="list-style-type: none"> • Check cutting values, and possibly reduce feed.
	<p>clamping chuck</p>	<ul style="list-style-type: none"> • Check torque transmission. Use hydraulic clamping chuck or high-precision chucking system.
<p>splintering on the cutting corners</p> 	<p>workpiece movement</p>	<ul style="list-style-type: none"> • Stabilize workpiece chucking and check stability of machine tool.
	<p>wrong drill</p>	<ul style="list-style-type: none"> • Check drill type, drilling depth, cooling system, and workpiece material. Possibly use longer drill.
	<p>insufficient coolant</p>	<ul style="list-style-type: none"> • Check cooling lubricant. In the case of internal coolant supply, increase coolant pressure. In the case of external coolant supply, adjust positioning of coolant jet. Cool from both sides.
	<p>cutting conditions</p>	<ul style="list-style-type: none"> • Check cutting values, and possibly reduce feed.

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01

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NOVO  TM



Modular Drills

Introduction..... S2-S3

TOP DRILL M1 S4-S30

Spade Blades..... S32-S51



modular drills with internal coolant channel		grade/series	standard*						hole tolerance	standard range			
			● first choice ○ alternate choice							diameter range			
			P	M	K	N	S	H		D1 mm min-max	D1 inch min-max	drilling depth L/D1	
TOP DRILL M1™ with front clamping mechanism													
	TOP DRILL M1 inserts	WU25PD**	●	○	●				IT9-IT11	7,94-25,99	.3125-1.1023	—	
	chamfering inserts	TopSTEP SH-WP20PH	●	○	○	●	○		—	12,50-36,01	.4921-1.4177	—	
		TopSTEP VG-WP20PH	●	○	○	○	○		—				
	TOP DRILL M1 bodies	—							—	7,94≤Ø<9,50	.3125≤Ø<.3740	max 3-8 x D	
										9,50≤Ø<11,00	.3740≤Ø<.4331		
											11,00≤Ø<12,50		.4331≤Ø<.4921
											12,50≤Ø<14,00		.4921≤Ø<.5512
											14,00≤Ø<15,50		.5512≤Ø<.6102
											15,50≤Ø<16,50		.6102≤Ø<.6496
											16,50≤Ø<20,50		.6496≤Ø<.8071
											20,50≤Ø<21,00		.8071≤Ø<.8268
								21,00≤Ø<25,99	.8268≤Ø<1.023				

* Apart from our standard drills, we can offer you a wide variety of special coating solutions and edge preparations to fulfill all your needs.
 If a specific drill is not suitable for your workpiece material, please contact your WIDIA™ distributor for available options.
 ** Grade WU25PD™ was previously named K20FTiAIN.

- Standard Product
- Engineered Solutions

engineered solution range			coolant	drilling	inclined exit	counter-sinking	counter-boring	2 flute, 2 margin cooled	corner chamfer	plain shank $\leq H6$	SCF Shanks	page(s)
diameter range												
D1 mm min-max	D1 inch min-max	max drilling depth										
TOP DRILL M1™ with front clamping mechanism (continued)												
7,94–27,99	.3125–1.1020	–		●	●			●	●			S16–S21
12,50–36,01	.4921–1.4177	–				●						S22–S23
		–				●	●					
7,94 ≤ Ø < 9,50	.3125 ≤ Ø < .3740	12 x D	●	●	●	○	○			●	●	S6–S14
9,50 ≤ Ø < 11,00	.3740 ≤ Ø < .4331	13 x D	●	●	●	○	○			●	●	
11,00 ≤ Ø < 12,50	.5424 ≤ Ø < .4921	14 x D	●	●	●	○	○			●	●	
12,50 ≤ Ø < 14,00	.4921 ≤ Ø < .5512	15 x D	●	●	●	○	○			●	●	
14,00 ≤ Ø < 15,00	.5512 ≤ Ø < .6102	16 x D	●	●	●	○	○			●	●	
15,50 ≤ Ø < 16,50	.6102 ≤ Ø < .6496	17 x D	●	●	●	○	○			●	●	
16,50 ≤ Ø < 20,50	.6496 ≤ Ø < .8070	18 x D	●	●	●	○	○			●	●	
20,50 ≤ Ø < 21,00	.8070 ≤ Ø < .8267	20 x D	●	●	●	○	○			●	●	
21,00 ≤ Ø < 27,99	.8267 ≤ Ø < 1.1010	500,0mm	●	●	●	○	○			●	●	

TOP DRILL M1™ Modular Drill System

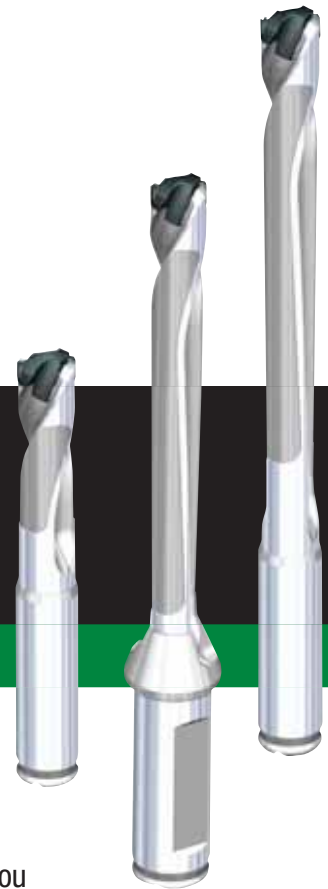
TOP DRILL M1



With performance levels and metal removal rates comparable to that of solid carbide drills, WIDIA™ TOP DRILL M1 offers all the quality and performance you need in one versatile, economical package. The unique front clamping system enables inserts to be changed quickly, even inside the machine tool, saving setup time and manufacturing costs.

The TDM1 platform offers UP(M) drill-point design in WU25PD™ grade — a wide application range geometry, specially developed for cost-efficient drilling of steel, cast iron, and stainless steel. It covers diameter ranges from .3159–1.0232" (8–25.99mm) within the standard offering in L/D ratios of 3, 5, and 8 x D.

With its high level of performance, wide application range, and proven point geometry, TDM1 combines all of the economic benefits of a modular drilling system with the machining performance and hole quality to tackle even your most challenging operations.



UP Point Design — Versatility and Productivity

- One insert style for all your work in steel, cast iron, and even stainless steels.
- Low cutting forces and excellent centering capabilities.
- Universal point style for consistent performance and excellent hole quality.

Easy Insert Change

- No screws or clamps required.
- Insert blades can be changed with a simple wrench that comes with each holder.

Disposable

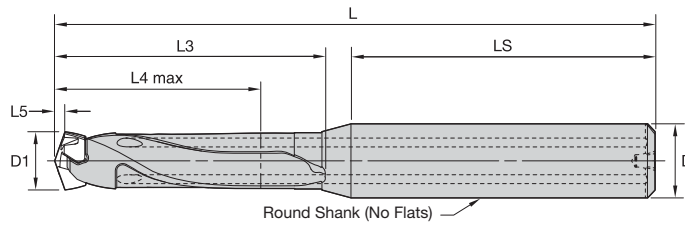
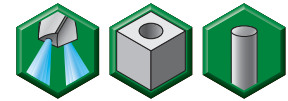
- No reconditioning costs.
- Consistent performance from tip to tip.
- Eliminates number of tools waiting for reconditioning, thus avoiding hidden costs.

Customization

- All intermediate diameters are quickly available as semi-standards.
- Multiple step drills available as customized solutions.
- New TopSTEP range of inserts offer extended chamfering and counterboring to your one-shot drilling solution.



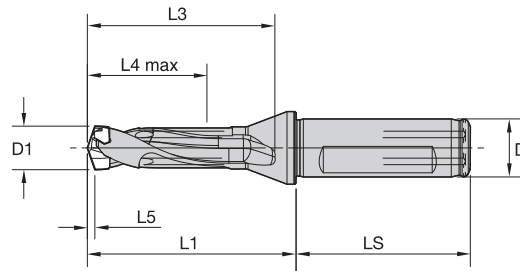
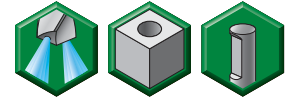
- Tool body shipped with insert wrench.



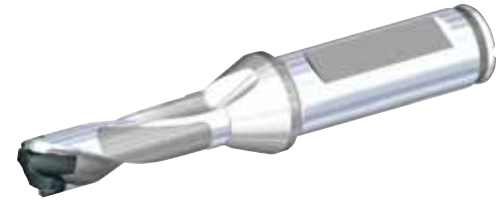
■ TOP DRILL M1 • 3 x D • Straight • Inch

order number	catalog number	D1	D1 max	D	L	L3	L4 max	L5	LS	insert blade seat size
3851478	TDM0313R3SS038	.313	.3343	.3750	3.13	1.42	1.00	.060	1.59	W10
3851480	TDM0335R3SS038	.335	.3539	.3750	3.25	1.54	1.06	.065	1.59	W11
3851482	TDM0354R3SS038	.354	.3736	.3750	3.38	1.67	1.12	.069	1.59	W12
3851544	TDM0374R3SS038	.374	.3933	.3750	3.38	1.67	1.18	.072	1.59	W13
3851545	TDM0374R3SS044	.374	.3933	.4375	3.38	1.59	1.18	.072	1.67	W13
3851548	TDM0394R3SS044	.394	.4130	.4375	3.63	1.84	1.24	.076	1.67	W14
3851550	TDM0413R3SS044	.413	.4327	.4375	3.75	1.96	1.30	.081	1.67	W15
3851552	TDM0433R3SS044	.433	.4524	.4375	3.88	2.09	1.36	.084	1.67	W16
3851554	TDM0453R3SS050	.453	.4720	.5000	3.88	1.97	1.42	.086	1.79	W17
3851556	TDM0472R3SS050	.472	.4917	.5000	4.00	2.88	1.48	.092	1.79	W18
3851558	TDM0492R3SS050	.492	.5114	.5000	4.13	2.22	1.54	.095	1.79	W19
3851559	TDM0492R3SS056	.492	.5114	.5625	4.13	2.22	1.54	.095	1.79	W19
3851562	TDM0512R3SS056	.512	.5311	.5625	4.25	2.34	1.60	.098	1.79	W20
3851564	TDM0532R3SS056	.532	.5508	.5625	4.25	2.34	1.65	.104	1.79	W21
3851566	TDM0551R3SS056	.551	.5705	.5625	4.50	2.59	1.71	.107	1.79	W22
3851568	TDM0571R3SS063	.571	.5902	.6250	4.50	2.47	1.77	.109	1.91	W23
3851570	TDM0591R3SS063	.591	.6295	.6250	4.75	2.72	1.89	.113	1.91	W24
3851572	TDM0630R3SS069	.630	.6689	.6875	4.88	2.85	2.01	.119	1.91	W25
3851574	TDM0669R3SS069	.669	.7083	.6875	5.00	2.97	2.12	.127	1.91	W26
3851576	TDM0709R3SS075	.709	.7476	.7500	5.25	3.13	2.24	.136	2.00	W27
3851578	TDM0748R3SS075	.748	.7870	.7500	5.50	3.38	2.36	.142	2.00	W28
3851580	TDM0787R3SS081	.787	.8264	.8125	5.75	3.63	2.48	.150	2.00	W29
3992477	TDM0827R3SS088	.827	.8657	.8750	5.87	3.69	2.60	.150	2.07	W30
3992478	TDM0866R3SS088	.866	.9051	.8750	6.00	3.81	2.72	.154	2.07	W31
3992479	TDM0906R3SS094	.906	.9445	.9375	6.25	3.98	2.83	.165	2.15	W32
3992480	TDM0945R3SS100	.945	.9839	1.0000	7.25	4.13	2.95	.169	3.00	W33
3992481	TDM0984R3SS100	.984	1.0232	1.0000	7.37	4.26	3.07	.177	3.00	W34

- Tool body shipped with insert wrench.



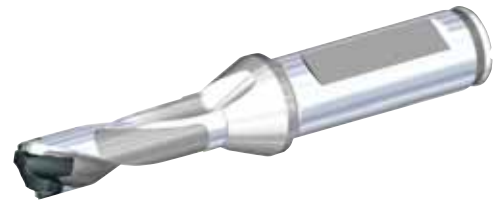
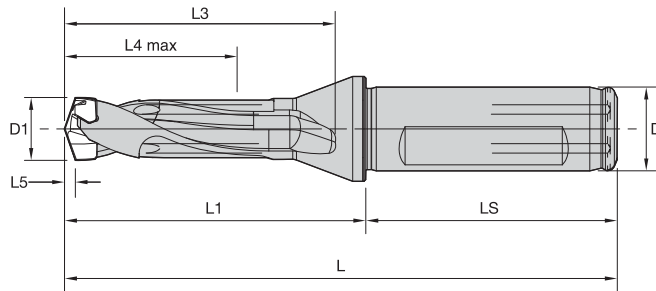
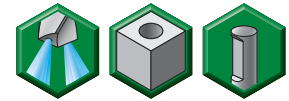
Flanged Shank with Flats (SCF)



■ TOP DRILL M1 • 3 x D • Flanged • Inch

order number	catalog number	D1	D1 max	D	L1	L3	L4 max	L5	LS	insert blade seat size
4098937	TDM0313R3SCF050	.313	.3343	.5000	1.63	1.41	1.00	.057	1.77	W10
4098938	TDM0335R3SCF050	.335	.3539	.5000	1.75	1.53	1.06	.062	1.77	W11
4098939	TDM0354R3SCF050	.354	.3736	.5000	1.88	1.66	1.12	.065	1.77	W12
4098940	TDM0374R3SCF050	.374	.3933	.5000	1.88	1.66	1.18	.068	1.77	W13
4098941	TDM0394R3SCF063	.394	.4130	.6250	2.00	1.78	1.24	.072	1.89	W14
4098942	TDM0413R3SCF063	.413	.4327	.6250	2.00	1.78	1.30	.076	1.89	W15
4099013	TDM0433R3SCF063	.433	.4524	.6250	2.13	1.91	1.36	.079	1.89	W16
4099014	TDM0453R3SCF063	.453	.4720	.6250	2.25	2.03	1.42	.082	1.89	W17
4099015	TDM0472R3SCF063	.472	.4917	.6250	2.38	2.16	1.48	.087	1.89	W18
4099016	TDM0492R3SCF063	.492	.5114	.6250	2.38	2.16	1.54	.090	1.89	W19
4099017	TDM0512R3SCF063	.512	.5311	.6250	2.50	2.28	1.59	.093	1.89	W20
4099018	TDM0532R3SCF063	.532	.5508	.6250	2.50	2.28	1.65	.098	1.89	W21
4099019	TDM0551R3SCF063	.551	.5705	.6250	2.63	2.41	1.71	.101	1.89	W22
4099020	TDM0571R3SCF063	.571	.5902	.6250	2.75	2.53	1.77	.104	1.89	W23
4099021	TDM0591R3SCF075	.591	.6295	.7500	2.88	2.66	1.89	.107	1.97	W24
4099022	TDM0630R3SCF075	.630	.6689	.7500	3.00	2.78	2.01	.113	1.97	W25
4099023	TDM0669R3SCF075	.669	.7083	.7500	3.25	3.03	2.13	.121	1.97	W26
4099024	TDM0709R3SCF075	.709	.7476	.7500	3.38	3.16	2.24	.129	1.97	W27
4099025	TDM0748R3SCF075	.748	.7870	.7500	3.50	3.28	2.36	.134	1.97	W28
4099026	TDM0787R3SCF100	.787	.8264	1.0000	3.75	3.53	2.48	.143	2.20	W29
4099027	TDM0827R3SCF100	.827	.8657	1.0000	3.88	3.66	2.60	.151	2.20	W30
4099028	TDM0866R3SCF100	.866	.9051	1.0000	4.00	3.78	2.72	.156	2.20	W31
4099029	TDM0906R3SCF100	.906	.9445	1.0000	4.25	4.03	2.84	.167	2.20	W32
4099030	TDM0945R3SCF100	.945	.9839	1.0000	4.38	4.16	2.95	.173	2.20	W33
4099031	TDM0984R3SCF100	.984	1.0232	1.0000	4.50	4.28	3.07	.178	2.20	W34

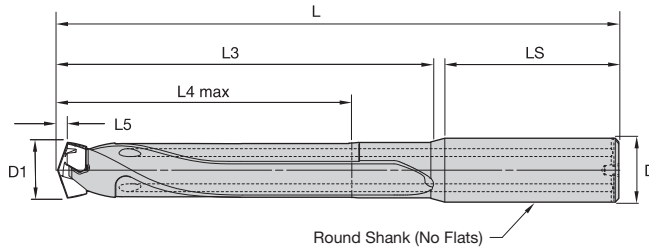
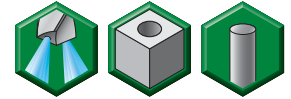
- Tool body shipped with insert wrench.



■ TOP DRILL M1 • 3 x D • Flanged • Metric

order number	catalog number	D1	D1 max	D	L	L1	L3	L4 max	L5	LS	insert blade seat size
3850904	TDM080R3SCF12M	7,94	8,49	12	86	41	35	26	1,5	45	W10
3850906	TDM085R3SCF12M	8,50	8,99	12	88	43	37	27	1,6	45	W11
3850908	TDM090R3SCF12M	9,00	9,49	12	90	45	39	29	1,7	45	W12
3850910	TDM095R3SCF12M	9,50	9,99	12	92	47	41	30	1,8	45	W13
3850912	TDM100R3SCF16M	10,00	10,49	16	97	49	43	32	1,9	48	W14
3850924	TDM105R3SCF16M	10,50	10,99	16	99	51	45	33	2,0	48	W15
3850926	TDM110R3SCF16M	11,00	11,49	16	101	53	47	35	2,1	48	W16
3850928	TDM115R3SCF16M	11,50	11,99	16	103	55	49	36	2,2	48	W17
3850930	TDM120R3SCF16M	12,00	12,49	16	106	58	52	38	2,3	48	W18
3850932	TDM125R3SCF16M	12,50	12,99	16	108	60	54	39	2,4	48	W19
3850934	TDM130R3SCF16M	13,00	13,49	16	110	62	56	41	2,5	48	W20
3850936	TDM135R3SCF16M	13,50	13,99	16	112	64	58	42	2,6	48	W21
3850938	TDM140R3SCF16M	14,00	14,49	16	114	66	60	44	2,7	48	W22
3850940	TDM145R3SCF16M	14,50	14,99	16	116	68	62	45	2,8	48	W23
3850942	TDM150R3SCF20M	15,00	15,99	20	122	72	66	48	2,8	50	W24
3850944	TDM160R3SCF20M	16,00	16,99	20	126	76	70	51	3,0	50	W25
3850946	TDM170R3SCF20M	17,00	17,99	20	131	81	75	54	3,2	50	W26
3850948	TDM180R3SCF25M	18,00	18,99	25	141	85	79	57	3,4	56	W27
3850950	TDM190R3SCF25M	19,00	19,99	25	144	89	83	60	3,6	56	W28
3850952	TDM200R3SCF25M	20,00	20,99	25	149	93	87	63	3,8	56	W29
3992070	TDM210R3SCF25M	21,00	21,99	25	153	97	91	66	3,7	56	W30
3992071	TDM220R3SCF25M	22,00	22,99	25	158	102	96	69	3,9	56	W31
3992072	TDM230R3SCF25M	23,00	23,99	25	162	106	100	72	4,1	56	W32
3992483	TDM240R3SCF25M	24,00	24,99	25	166	110	104	75	4,2	56	W33
3992484	TDM250R3SCF25M	25,00	25,99	25	170	114	108	78	4,4	56	W34

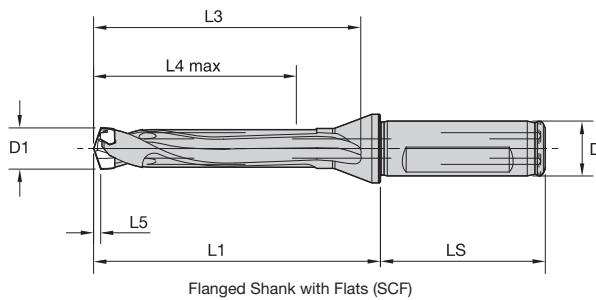
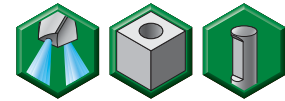
- Tool body shipped with insert wrench.



■ TOP DRILL M1 • 5 x D • Straight • Inch

order number	catalog number	D1	D1 max	D	L	L3	L4 max	L5	LS	insert blade seat size
3851479	TDM0313R5SS038	.313	.3343	.3750	3.88	2.17	1.67	.060	1.59	W10
3851481	TDM0335R5SS038	.335	.3539	.3750	4.00	2.29	1.77	.065	1.59	W11
3851543	TDM0354R5SS038	.354	.3736	.3750	4.13	2.42	1.87	.069	1.59	W12
3851546	TDM0374R5SS038	.374	.3933	.3750	4.25	2.54	1.97	.072	1.59	W13
3851547	TDM0374R5SS044	.374	.3933	.4375	4.38	2.59	1.97	.072	1.67	W13
3851549	TDM0394R5SS044	.394	.4130	.4375	4.63	2.84	2.07	.076	1.67	W14
3851551	TDM0413R5SS044	.413	.4327	.4375	4.75	2.96	2.16	.081	1.67	W15
3851553	TDM0433R5SS044	.433	.4524	.4375	4.88	3.09	2.26	.084	1.67	W16
3851555	TDM0453R5SS050	.453	.4720	.5000	5.00	3.09	2.36	.086	1.79	W17
3851557	TDM0472R5SS050	.472	.4917	.5000	5.00	3.09	2.46	.092	1.79	W18
3851560	TDM0492R5SS050	.492	.5114	.5000	5.13	3.22	2.56	.095	1.79	W19
3851561	TDM0492R5SS056	.492	.5114	.5625	5.13	3.22	2.56	.095	1.79	W19
3851563	TDM0512R5SS056	.512	.5311	.5625	5.25	3.34	2.66	.098	1.79	W20
3851565	TDM0532R5SS056	.532	.5508	.5625	5.50	3.59	2.75	.104	1.79	W21
3851567	TDM0551R5SS056	.551	.5705	.5625	5.75	3.84	2.85	.107	1.79	W22
3851569	TDM0571R5SS063	.571	.5902	.6250	5.75	3.72	2.95	.109	1.91	W23
3851571	TDM0591R5SS063	.591	.6295	.6250	6.00	3.97	3.15	.113	1.91	W24
3851573	TDM0630R5SS069	.630	.6689	.6875	6.25	4.22	3.34	.119	1.91	W25
3851575	TDM0669R5SS069	.669	.7083	.6875	6.50	4.47	3.54	.127	1.91	W26
3851577	TDM0709R5SS075	.709	.7476	.7500	6.88	4.76	3.74	.136	2.00	W27
3851579	TDM0748R5SS075	.748	.7870	.7500	7.13	5.01	3.94	.142	2.00	W28
3851581	TDM0787R5SS081	.787	.8264	.8125	7.50	5.38	4.13	.150	2.00	W29
3992503	TDM0827R5SS088	.827	.8657	.8750	7.63	5.44	4.33	.150	2.07	W30
3992504	TDM0866R5SS088	.866	.9051	.8750	7.87	5.69	4.53	.154	2.07	W31
3992505	TDM0906R5SS094	.906	.9445	.9375	8.25	5.98	4.72	.165	2.15	W32
3992506	TDM0945R5SS100	.945	.9839	1.0000	9.37	6.26	4.92	.169	3.00	W33
3992507	TDM0984R5SS100	.984	1.0232	1.0000	9.63	6.51	5.12	.177	3.00	W34

- Tool body shipped with insert wrench.

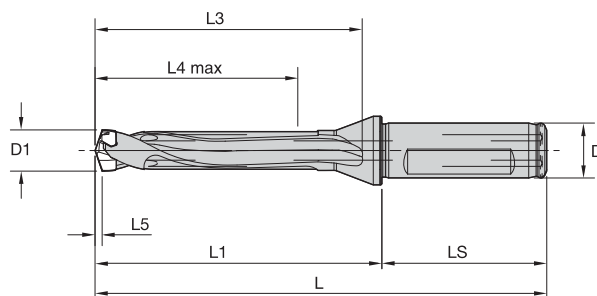
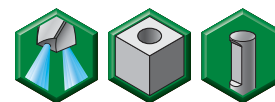


■ TOP DRILL M1 • 5 x D • Flanged • Inch

order number	catalog number	D1	D1 max	D	L1	L3	L4 max	L5	LS	insert blade seat size
4099032	TDM0313R5SCF050	.313	.3343	.5000	2.38	2.16	1.67	.057	1.77	W10
4099033	TDM0335R5SCF050	.335	.3539	.5000	2.50	2.28	1.77	.062	1.77	W11
4099034	TDM0354R5SCF050	.354	.3736	.5000	2.63	2.41	1.87	.065	1.77	W12
4099035	TDM0374R5SCF050	.374	.3933	.5000	2.75	2.53	1.97	.068	1.77	W13
4099036	TDM0394R5SCF063	.394	.4130	.6250	2.88	2.66	2.07	.072	1.89	W14
4099037	TDM0413R5SCF063	.413	.4327	.6250	3.00	2.78	2.17	.076	1.89	W15
4099038	TDM0433R5SCF063	.433	.4524	.6250	3.13	2.91	2.26	.079	1.89	W16
4099039	TDM0453R5SCF063	.453	.4720	.6250	3.25	3.03	2.36	.082	1.89	W17
4099040	TDM0472R5SCF063	.472	.4917	.6250	3.38	3.16	2.46	.087	1.89	W18
4099041	TDM0492R5SCF063	.492	.5114	.6250	3.50	3.28	2.56	.090	1.89	W19
4099042	TDM0512R5SCF063	.512	.5311	.6250	3.63	3.41	2.66	.093	1.89	W20
4099043	TDM0532R5SCF063	.532	.5508	.6250	3.75	3.53	2.76	.098	1.89	W21
4099044	TDM0551R5SCF063	.551	.5705	.6250	3.88	3.66	2.85	.101	1.89	W22
4099045	TDM0571R5SCF063	.571	.5902	.6250	4.00	3.78	2.95	.104	1.89	W23
4099046	TDM0591R5SCF075	.591	.6295	.7500	4.25	4.03	3.15	.107	1.97	W24
4099047	TDM0630R5SCF075	.630	.6689	.7500	4.50	4.28	3.35	.113	1.97	W25
4099048	TDM0669R5SCF075	.669	.7083	.7500	4.75	4.53	3.54	.121	1.97	W26
4099049	TDM0709R5SCF075	.709	.7476	.7500	5.00	4.78	3.74	.129	1.97	W27
4099050	TDM0748R5SCF075	.748	.7870	.7500	5.25	5.03	3.94	.134	1.97	W28
4099051	TDM0787R5SCF100	.787	.8264	1.0000	5.38	5.16	4.13	.143	2.20	W29
4099052	TDM0827R5SCF100	.827	.8657	1.0000	5.75	5.53	4.33	.151	2.20	W30
4099053	TDM0866R5SCF100	.866	.9051	1.0000	6.00	5.78	4.53	.156	2.20	W31
4099054	TDM0906R5SCF100	.906	.9445	1.0000	6.13	5.91	4.72	.167	2.20	W32
4099055	TDM0945R5SCF100	.945	.9839	1.0000	6.38	6.16	4.92	.173	2.20	W33
4099056	TDM0984R5SCF100	.984	1.0232	1.0000	6.75	6.53	5.12	.178	2.20	W34

Modular Drills

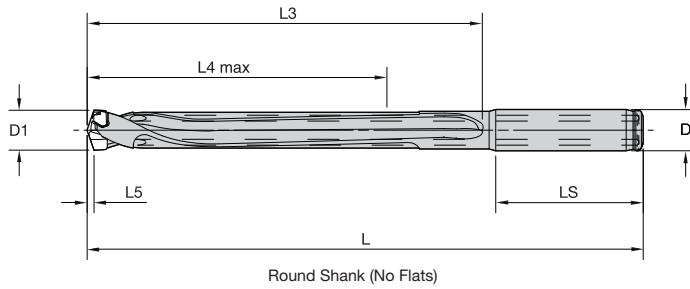
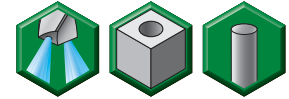
- Tool body shipped with insert wrench.



■ TOP DRILL M1 • 5 x D • Flanged • Metric

order number	catalog number	D1	D1 max	D	L	L1	L3	L4 max	L5	LS	insert blade seat size
3850905	TDM080R5SCF12M	7,94	8,49	12	104	59	53	43	1,5	45	W10
3850907	TDM085R5SCF12M	8,50	8,99	12	107	62	56	45	1,6	45	W11
3850909	TDM090R5SCF12M	9,00	9,49	12	110	65	59	48	1,7	45	W12
3850911	TDM095R5SCF12M	9,50	9,99	12	114	69	63	50	1,8	45	W13
3850923	TDM100R5SCF16M	10,00	10,49	16	120	72	66	53	1,9	48	W14
3850925	TDM105R5SCF16M	10,50	10,99	16	123	75	69	55	2,0	48	W15
3850927	TDM110R5SCF16M	11,00	11,49	16	126	78	72	58	2,1	48	W16
3850929	TDM115R5SCF16M	11,50	11,99	16	129	81	75	60	2,2	48	W17
3850931	TDM120R5SCF16M	12,00	12,49	16	132	84	78	63	2,3	48	W18
3850933	TDM125R5SCF16M	12,50	12,99	16	135	87	81	65	2,4	48	W19
3850935	TDM130R5SCF16M	13,00	13,49	16	138	90	84	68	2,5	48	W20
3850937	TDM135R5SCF16M	13,50	13,99	16	142	94	88	70	2,6	48	W21
3850939	TDM140R5SCF16M	14,00	14,49	16	145	97	91	73	2,7	48	W22
3850941	TDM145R5SCF16M	14,50	14,99	16	148	100	94	75	2,8	48	W23
3850943	TDM150R5SCF20M	15,00	15,99	20	156	106	100	80	2,8	50	W24
3850945	TDM160R5SCF20M	16,00	16,99	20	162	112	106	85	3,0	50	W25
3850947	TDM170R5SCF20M	17,00	17,99	20	169	119	113	90	3,2	50	W26
3850949	TDM180R5SCF25M	18,00	18,99	25	181	125	119	95	3,4	56	W27
3850951	TDM190R5SCF25M	19,00	19,99	25	187	131	125	100	3,6	56	W28
3850953	TDM200R5SCF25M	20,00	20,99	25	193	137	131	105	3,8	56	W29
3992485	TDM210R5SCF25M	21,00	21,99	25	200	144	138	110	3,7	56	W30
3992486	TDM220R5SCF25M	22,00	22,99	25	206	150	144	115	3,9	56	W31
3992487	TDM230R5SCF25M	23,00	23,99	25	212	156	150	120	4,1	56	W32
3992488	TDM240R5SCF25M	24,00	24,99	25	218	162	156	125	4,2	56	W33
3992489	TDM250R5SCF25M	25,00	25,99	25	225	169	163	130	4,4	56	W34

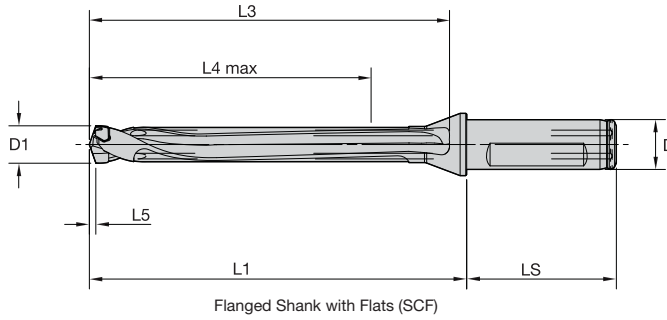
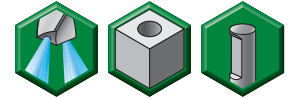
- Tool body shipped with insert wrench.



■ TOP DRILL M1 • 8 x D • Straight • Inch

order number	catalog number	D1	D1 max	D	L	L3	L4 max	L5	LS	insert blade seat size
3992536	TDM0313R8SS038	.313	.3343	.3750	4.87	3.17	2.68	.055	1.59	W10
3992537	TDM0335R8SS038	.335	.3539	.3750	5.13	3.42	2.83	.063	1.59	W11
3992538	TDM0354R8SS038	.354	.3736	.3750	5.25	3.55	2.99	.063	1.59	W12
3992539	TDM0374R8SS038	.374	.3933	.3750	5.37	3.67	3.15	.067	1.59	W13
3992540	TDM0374R8SS044	.374	.3933	.4375	5.37	3.59	3.15	.067	1.67	W13
3992541	TDM0394R8SS044	.394	.4130	.4375	5.75	3.96	3.31	.071	1.67	W14
3992542	TDM0413R8SS044	.413	.4327	.4375	6.00	4.21	3.46	.075	1.67	W15
3992543	TDM0433R8SS044	.433	.4524	.4375	6.25	4.46	3.62	.079	1.67	W16
3992544	TDM0453R8SS050	.453	.4720	.5000	6.50	4.56	3.78	.083	1.79	W17
3992545	TDM0472R8SS050	.472	.4917	.5000	6.75	4.84	3.94	.087	1.79	W18
3992546	TDM0492R8SS050	.492	.5114	.5000	7.00	5.08	4.09	.091	1.79	W19
3992547	TDM0492R8SS056	.492	.5114	.5625	7.00	5.08	4.09	.091	1.79	W19
3992548	TDM0512R8SS056	.512	.5311	.5625	7.13	5.22	4.25	.091	1.79	W20
3992549	TDM0532R8SS056	.532	.5508	.5625	7.25	5.34	4.41	.098	1.79	W21
3992550	TDM0551R8SS056	.551	.5705	.5625	7.37	5.47	4.57	.098	1.79	W22
3992551	TDM0571R8SS063	.571	.5902	.6250	7.50	5.47	4.72	.102	1.91	W23
3992552	TDM0591R8SS063	.591	.6295	.6250	7.75	5.72	5.04	.106	1.91	W24
3992553	TDM0630R8SS069	.630	.6689	.6875	8.00	5.97	5.35	.114	1.91	W25
3992554	TDM0669R8SS069	.669	.7083	.6875	8.75	6.72	5.67	.118	1.91	W26
3992555	TDM0709R8SS075	.709	.7476	.7500	9.25	7.13	5.98	.126	2.00	W27
3992556	TDM0748R8SS075	.748	.7870	.7500	9.63	7.51	6.30	.134	2.00	W28
3992557	TDM0787R8SS081	.787	.8264	.8125	10.00	7.88	6.61	.142	2.00	W29
3992558	TDM0827R8SS088	.827	.8657	.8750	10.25	8.06	6.93	.150	2.07	W30
3992559	TDM0866R8SS088	.866	.9051	.8750	10.63	8.44	7.24	.154	2.07	W31
3992560	TDM0906R8SS094	.906	.9445	.9375	11.13	8.86	7.56	.165	2.15	W32
3992561	TDM0945R8SS100	.945	.9839	1.0000	12.25	9.13	7.87	.169	3.00	W33
3992562	TDM0984R8SS100	.984	1.0232	1.0000	12.63	9.51	8.19	.177	3.00	W34

- Tool body shipped with insert wrench.

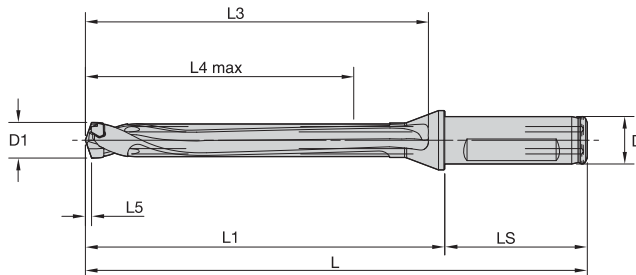
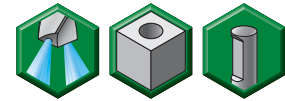


■ TOP DRILL M1 • 8 x D • Flanged • Inch

order number	catalog number	D1	D1 max	D	L1	L3	L4 max	L5	LS	insert blade seat size
4099057	TDM0313R8SCF050	.313	.3343	.5000	3.38	3.16	2.68	.057	1.77	W10
4099058	TDM0335R8SCF050	.335	.3539	.5000	3.50	3.28	2.83	.062	1.77	W11
4099059	TDM0354R8SCF050	.354	.3736	.5000	3.75	3.53	2.99	.065	1.77	W12
4099060	TDM0374R8SCF050	.374	.3933	.5000	4.00	3.78	3.15	.068	1.77	W13
4099061	TDM0394R8SCF063	.394	.4130	.6250	4.13	3.91	3.31	.072	1.89	W14
4099062	TDM0413R8SCF063	.413	.4327	.6250	4.25	4.03	3.46	.076	1.89	W15
4099063	TDM0433R8SCF063	.433	.4524	.6250	4.50	4.28	3.62	.079	1.89	W16
4099064	TDM0453R8SCF063	.453	.4720	.6250	4.63	4.41	3.78	.082	1.89	W17
4099065	TDM0472R8SCF063	.472	.4917	.6250	4.88	4.66	3.94	.087	1.89	W18
4099066	TDM0492R8SCF063	.492	.5114	.6250	5.00	4.78	4.09	.090	1.89	W19
4099067	TDM0512R8SCF063	.512	.5311	.6250	5.13	4.91	4.25	.093	1.89	W20
4099068	TDM0532R8SCF063	.532	.5508	.6250	5.38	5.16	4.41	.098	1.89	W21
4099069	TDM0551R8SCF063	.551	.5705	.6250	5.63	5.41	4.57	.101	1.89	W22
4099070	TDM0571R8SCF063	.571	.5902	.6250	5.75	5.53	4.72	.104	1.89	W23
4099071	TDM0591R8SCF075	.591	.6295	.7500	6.13	5.91	5.04	.107	1.97	W24
4099072	TDM0630R8SCF075	.630	.6689	.7500	6.50	6.28	5.35	.113	1.97	W25
4099073	TDM0669R8SCF075	.669	.7083	.7500	6.88	6.66	5.67	.121	1.97	W26
4099074	TDM0709R8SCF075	.709	.7476	.7500	7.25	7.03	5.98	.129	1.97	W27
4099075	TDM0748R8SCF075	.748	.7870	.7500	7.50	7.28	6.30	.134	1.97	W28
4099076	TDM0787R8SCF100	.787	.8264	1.0000	7.88	7.66	6.61	.143	2.20	W29
4099077	TDM0827R8SCF100	.827	.8657	1.0000	8.25	8.03	6.93	.151	2.20	W30
4099078	TDM0866R8SCF100	.866	.9051	1.0000	8.63	8.41	7.24	.156	2.20	W31
4099079	TDM0906R8SCF100	.906	.9445	1.0000	9.00	8.78	7.56	.167	2.20	W32
4099080	TDM0945R8SCF100	.945	.9839	1.0000	9.38	9.16	7.87	.173	2.20	W33
4099081	TDM0984R8SCF100	.984	1.0232	1.0000	9.75	9.53	8.19	.178	2.20	W34

Modular Drills

- Tool body shipped with insert wrench.



■ TOP DRILL M1 • 8 x D • Flanged • Metric

order number	catalog number	D1	D1 max	D	L	L1	L3	L4 max	L5	LS	insert blade seat size
3992141	TDM080R8SCF12M	7,94	8,49	12	129	84	79	68	1,4	45	W10
3992142	TDM085R8SCF12M	8,50	8,99	12	134	89	83	72	1,5	45	W11
3992213	TDM090R8SCF12M	9,00	9,49	12	138	93	88	76	1,6	45	W12
3992214	TDM095R8SCF12M	9,50	9,99	12	144	99	93	80	1,7	45	W13
3992215	TDM100R8SCF16M	10,00	10,49	16	151	103	98	84	1,8	48	W14
3992216	TDM105R8SCF16M	10,50	10,99	16	156	108	102	88	1,9	48	W15
3992217	TDM110R8SCF16M	11,00	11,49	16	160	112	107	92	2,0	48	W16
3992218	TDM115R8SCF16M	11,50	11,99	16	165	117	111	96	2,1	48	W17
3992219	TDM120R8SCF16M	12,00	12,49	16	169	121	116	100	2,1	48	W18
3992220	TDM125R8SCF16M	12,50	12,99	16	174	126	120	104	2,2	48	W19
3992221	TDM130R8SCF16M	13,00	13,49	16	178	130	125	108	2,3	48	W20
3992222	TDM135R8SCF16M	13,50	13,99	16	184	136	130	112	2,4	48	W21
3992223	TDM140R8SCF16M	14,00	14,49	16	188	140	135	116	2,5	48	W22
3992224	TDM145R8SCF16M	14,50	14,99	16	193	145	139	120	2,6	48	W23
3992225	TDM150R8SCF20M	15,00	15,99	20	204	154	148	128	2,7	50	W24
3992226	TDM160R8SCF20M	16,00	16,99	20	213	163	157	136	2,8	50	W25
3992227	TDM170R8SCF20M	17,00	17,99	20	223	173	167	144	3,0	50	W26
3992228	TDM180R8SCF25M	18,00	18,99	25	238	182	176	152	3,2	56	W27
3992229	TDM190R8SCF25M	19,00	19,99	25	247	191	185	160	3,4	56	W28
3992230	TDM200R8SCF25M	20,00	20,99	25	256	200	194	168	3,6	56	W29
3992231	TDM210R8SCF25M	21,00	21,99	25	266	210	204	176	3,7	56	W30
3992232	TDM220R8SCF25M	22,00	22,99	25	275	219	213	184	3,9	56	W31
3992233	TDM230R8SCF25M	23,00	23,99	25	284	228	222	192	4,1	56	W32
3992234	TDM240R8SCF25M	24,00	24,99	25	293	237	231	200	4,2	56	W33
3992235	TDM250R8SCF25M	25,00	25,99	25	303	247	241	208	4,4	56	W34

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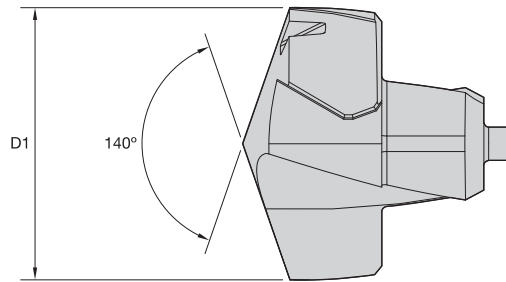
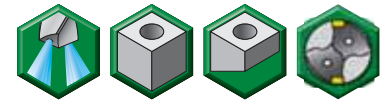
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TOP DRILL M1 • UP(M)

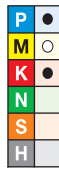
P	●
M	○
K	●
N	○
S	○
H	○

● first choice
○ alternate choice

grade WU25PD TiAlN		D1		seat size/series
order #	catalog #	mm	in	
3850959	TDM0794UPM	7,94	.313	W10
3848984	TDM0800UPM	8,00	.315	W10
3848985	TDM0810UPM	8,10	.319	W10
3850960	TDM0816UPM	8,16	.321	W10
3850961	TDM0820UPM	8,20	.323	W10
3848986	TDM0830UPM	8,30	.327	W10
3850962	TDM0833UPM	8,33	.328	W10
3848987	TDM0840UPM	8,40	.331	W10
3850963	TDM0843UPM	8,43	.332	W10
3848988	TDM0850UPM	8,50	.335	W11
3848989	TDM0860UPM	8,60	.339	W11
3850964	TDM0861UPM	8,61	.339	W11
3848990	TDM0870UPM	8,70	.343	W11
3850965	TDM0873UPM	8,73	.344	W11
3848991	TDM0880UPM	8,80	.347	W11
3850966	TDM0884UPM	8,84	.348	W11
3848992	TDM0890UPM	8,90	.350	W11
3849043	TDM0900UPM	9,00	.354	W12
3850967	TDM0909UPM	9,09	.358	W12
3849044	TDM0910UPM	9,10	.358	W12
3850968	TDM0913UPM	9,13	.359	W12
3849045	TDM0920UPM	9,20	.362	W12
3849046	TDM0930UPM	9,30	.366	W12
3850969	TDM0935UPM	9,35	.368	W12

(continued)

(TOP DRILL M1 • UP(M) – continued)



● first choice
○ alternate choice

grade WU25PD TiAlN		D1		
order #	catalog #	mm	in	seat size/series
3849047	TDM0940UPM	9,40	.370	W12
3849048	TDM0950UPM	9,50	.374	W13
3850970	TDM0953UPM	9,53	.375	W13
3850971	TDM0956UPM	9,56	.376	W13
3850972	TDM0958UPM	9,58	.377	W13
3849049	TDM0960UPM	9,60	.378	W13
3850973	TDM0970UPM	9,70	.382	W13
3850974	TDM0980UPM	9,80	.386	W13
3849050	TDM0990UPM	9,90	.390	W13
3850975	TDM0992UPM	9,92	.391	W13
3849051	TDM1000UPM	10,00	.394	W14
3850976	TDM1002UPM	10,02	.395	W14
3850977	TDM1008UPM	10,08	.397	W14
3849052	TDM1010UPM	10,10	.398	W14
3849053	TDM1020UPM	10,20	.402	W14
3850978	TDM1026UPM	10,26	.404	W14
3849054	TDM1030UPM	10,30	.406	W14
3850979	TDM1032UPM	10,32	.406	W14
3849055	TDM1040UPM	10,40	.409	W14
3850980	TDM1049UPM	10,49	.413	W14
3849056	TDM1050UPM	10,50	.413	W15
3849057	TDM1060UPM	10,60	.417	W15
3849058	TDM1070UPM	10,70	.421	W15
3850981	TDM1072UPM	10,72	.422	W15
3849059	TDM1080UPM	10,80	.425	W15
3849060	TDM1090UPM	10,90	.429	W15
3849061	TDM1100UPM	11,00	.433	W16
3849062	TDM1110UPM	11,10	.437	W16
3850982	TDM1111UPM	11,11	.438	W16
3849063	TDM1120UPM	11,20	.441	W16
3849064	TDM1130UPM	11,30	.445	W16
3849065	TDM1140UPM	11,40	.449	W16
3849066	TDM1150UPM	11,50	.453	W17
3850983	TDM1151UPM	11,51	.453	W17
3849067	TDM1160UPM	11,60	.457	W17
3850984	TDM1161UPM	11,61	.457	W17
3849068	TDM1170UPM	11,70	.461	W17
3849069	TDM1180UPM	11,80	.465	W17
3849070	TDM1190UPM	11,90	.469	W17
3850985	TDM1191UPM	11,91	.469	W17

(continued)

(TOP DRILL M1 • UP(M) – continued)



● first choice
○ alternate choice

grade WU25PD TiAlN		D1		
order #	catalog #	mm	in	seat size/series
3849071	TDM1200UPM	12,00	.473	W18
3849072	TDM1210UPM	12,10	.476	W18
3849073	TDM1220UPM	12,20	.480	W18
3850986	TDM1230UPM	12,30	.484	W18
3849074	TDM1240UPM	12,40	.488	W18
3850987	TDM1247UPM	12,47	.491	W18
3849075	TDM1250UPM	12,50	.492	W19
3849076	TDM1260UPM	12,60	.496	W19
3850988	TDM1270UPM	12,70	.500	W19
3849077	TDM1280UPM	12,80	.504	W19
3850989	TDM1290UPM	12,90	.508	W19
3849078	TDM1300UPM	13,00	.512	W20
3850990	TDM1310UPM	13,10	.516	W20
3849079	TDM1320UPM	13,20	.520	W20
3849080	TDM1330UPM	13,30	.524	W20
3849081	TDM1340UPM	13,40	.528	W20
3850991	TDM1349UPM	13,49	.531	W20
3849082	TDM1350UPM	13,50	.532	W21
3849083	TDM1360UPM	13,60	.535	W21
3849084	TDM1370UPM	13,70	.539	W21
3849085	TDM1380UPM	13,80	.543	W21
3850992	TDM1389UPM	13,89	.547	W21
3850993	TDM1390UPM	13,90	.547	W21
3849086	TDM1400UPM	14,00	.551	W22
3849087	TDM1410UPM	14,10	.555	W22
3849088	TDM1420UPM	14,20	.559	W22
3850994	TDM1429UPM	14,29	.563	W22
3849089	TDM1430UPM	14,30	.563	W22
3849090	TDM1440UPM	14,40	.567	W22
3849091	TDM1450UPM	14,50	.571	W23
3849092	TDM1460UPM	14,60	.575	W23
3850995	TDM1467UPM	14,67	.577	W23
3850996	TDM1468UPM	14,68	.578	W23
3849093	TDM1470UPM	14,70	.579	W23
3849094	TDM1480UPM	14,80	.583	W23
3849095	TDM1490UPM	14,90	.587	W23
3849096	TDM1500UPM	15,00	.591	W24
3850997	TDM1508UPM	15,08	.594	W24
3849097	TDM1510UPM	15,10	.595	W24
3849098	TDM1520UPM	15,20	.598	W24

(continued)

(TOP DRILL M1 • UP(M) – continued)



● first choice
○ alternate choice

grade WU25PD TiAlN		D1		
order #	catalog #	mm	in	seat size/series
3849099	TDM1530UPM	15,30	.602	W24
3849100	TDM1540UPM	15,40	.606	W24
3850998	TDM1548UPM	15,48	.609	W24
3849101	TDM1550UPM	15,50	.610	W24
3849102	TDM1560UPM	15,60	.614	W24
3849103	TDM1570UPM	15,70	.618	W24
3849104	TDM1580UPM	15,80	.622	W24
3850999	TDM1588UPM	15,88	.625	W24
3849105	TDM1600UPM	16,00	.630	W25
3851000	TDM1603UPM	16,03	.631	W25
3851001	TDM1608UPM	16,08	.633	W25
3849106	TDM1610UPM	16,10	.634	W25
4010625	TDM1618UPM	16,18	.637	W25
3849107	TDM1620UPM	16,20	.638	W25
3851002	TDM1627UPM	16,27	.641	W25
3849108	TDM1630UPM	16,30	.642	W25
3849109	TDM1640UPM	16,40	.646	W25
3849110	TDM1650UPM	16,50	.650	W25
3849111	TDM1660UPM	16,60	.654	W25
3851003	TDM1667UPM	16,67	.656	W25
3849112	TDM1670UPM	16,70	.658	W25
3849113	TDM1680UPM	16,80	.661	W25
3851004	TDM1687UPM	16,87	.664	W25
3849114	TDM1690UPM	16,90	.665	W25
3849119	TDM1700UPM	17,00	.669	W26
3851005	TDM1707UPM	17,07	.672	W26
3849120	TDM1710UPM	17,10	.673	W26
3849121	TDM1720UPM	17,20	.677	W26
3849122	TDM1730UPM	17,30	.681	W26
3849193	TDM1740UPM	17,40	.685	W26
3851006	TDM1746UPM	17,46	.688	W26
3849194	TDM1750UPM	17,50	.689	W26
3849195	TDM1760UPM	17,60	.693	W26
3849196	TDM1770UPM	17,70	.697	W26
3849197	TDM1780UPM	17,80	.701	W26
3851007	TDM1786UPM	17,86	.703	W26
3849198	TDM1790UPM	17,90	.705	W26
3849199	TDM1800UPM	18,00	.709	W27
3849200	TDM1810UPM	18,10	.713	W27
3849201	TDM1820UPM	18,20	.717	W27

(continued)

(TOP DRILL M1 • UP(M) – continued)



● first choice
○ alternate choice

grade WU25PD TiAlN		D1		
order #	catalog #	mm	in	seat size/series
3851008	TDM1826UPM	18,26	.719	W27
3849202	TDM1830UPM	18,30	.721	W27
3849203	TDM1840UPM	18,40	.724	W27
3849204	TDM1850UPM	18,50	.728	W27
3849205	TDM1860UPM	18,60	.732	W27
3851009	TDM1865UPM	18,65	.734	W27
3849206	TDM1870UPM	18,70	.736	W27
3849207	TDM1880UPM	18,80	.740	W27
3849208	TDM1890UPM	18,90	.744	W27
3849209	TDM1900UPM	19,00	.748	W28
3851010	TDM1905UPM	19,05	.750	W28
3849210	TDM1910UPM	19,10	.752	W28
3849211	TDM1920UPM	19,20	.756	W28
3851011	TDM1923UPM	19,23	.757	W28
3851012	TDM1925UPM	19,25	.758	W28
3851013	TDM1928UPM	19,28	.759	W28
3849212	TDM1930UPM	19,30	.760	W28
3851014	TDM1935UPM	19,35	.762	W28
3849213	TDM1940UPM	19,40	.764	W28
3851015	TDM1945UPM	19,45	.766	W28
3849214	TDM1950UPM	19,50	.768	W28
3849215	TDM1960UPM	19,60	.772	W28
3849216	TDM1970UPM	19,70	.776	W28
3849217	TDM1980UPM	19,80	.780	W28
3851016	TDM1984UPM	19,84	.781	W28
3849218	TDM1990UPM	19,90	.784	W28
3849219	TDM2000UPM	20,00	.788	W29
3849220	TDM2010UPM	20,10	.791	W29
3849221	TDM2020UPM	20,20	.795	W29
3851017	TDM2024UPM	20,24	.797	W29
3849222	TDM2030UPM	20,30	.799	W29
3849223	TDM2040UPM	20,40	.803	W29
3849224	TDM2050UPM	20,50	.807	W29
3849225	TDM2060UPM	20,60	.811	W29
3851018	TDM2064UPM	20,64	.813	W29
3849226	TDM2070UPM	20,70	.815	W29
3849227	TDM2080UPM	20,80	.819	W29
3849228	TDM2090UPM	20,90	.823	W29
3849229	TDM2099UPM	20,99	.826	W29
4003225	TDM2100UPM	21,00	.827	W30

(continued)

(TOP DRILL M1 • UP(M) – continued)



● first choice
○ alternate choice

grade WU25PD TiAlN		D1			
order #	catalog #	mm	in	seat size/series	
4003203	TDM2144UPM	21,44	.844	W30	
3969291	TDM2150UPM	21,50	.846	W30	
4003226	TDM2200UPM	22,00	.866	W31	
4003204	TDM2223UPM	22,23	.875	W31	
4003205	TDM2245UPM	22,45	.884	W31	
4003227	TDM2250UPM	22,50	.887	W31	
4003228	TDM2300UPM	23,00	.906	W32	
4003229	TDM2350UPM	23,50	.925	W32	
4003206	TDM2381UPM	23,81	.938	W32	
4003230	TDM2400UPM	24,00	.945	W33	
4003231	TDM2450UPM	24,50	.965	W33	
4003207	TDM2461UPM	24,61	.969	W33	
4003232	TDM2500UPM	25,00	.984	W34	
4003208	TDM2540UPM	25,40	1.000	W34	
4002444	TDM2550UPM	25,50	1.004	W34	
4003209	TDM2568UPM	25,68	1.011	W34	
4003210	TDM2581UPM	25,81	1.016	W34	
3992013	TDM2599UPM	25,99	1.023	W34	

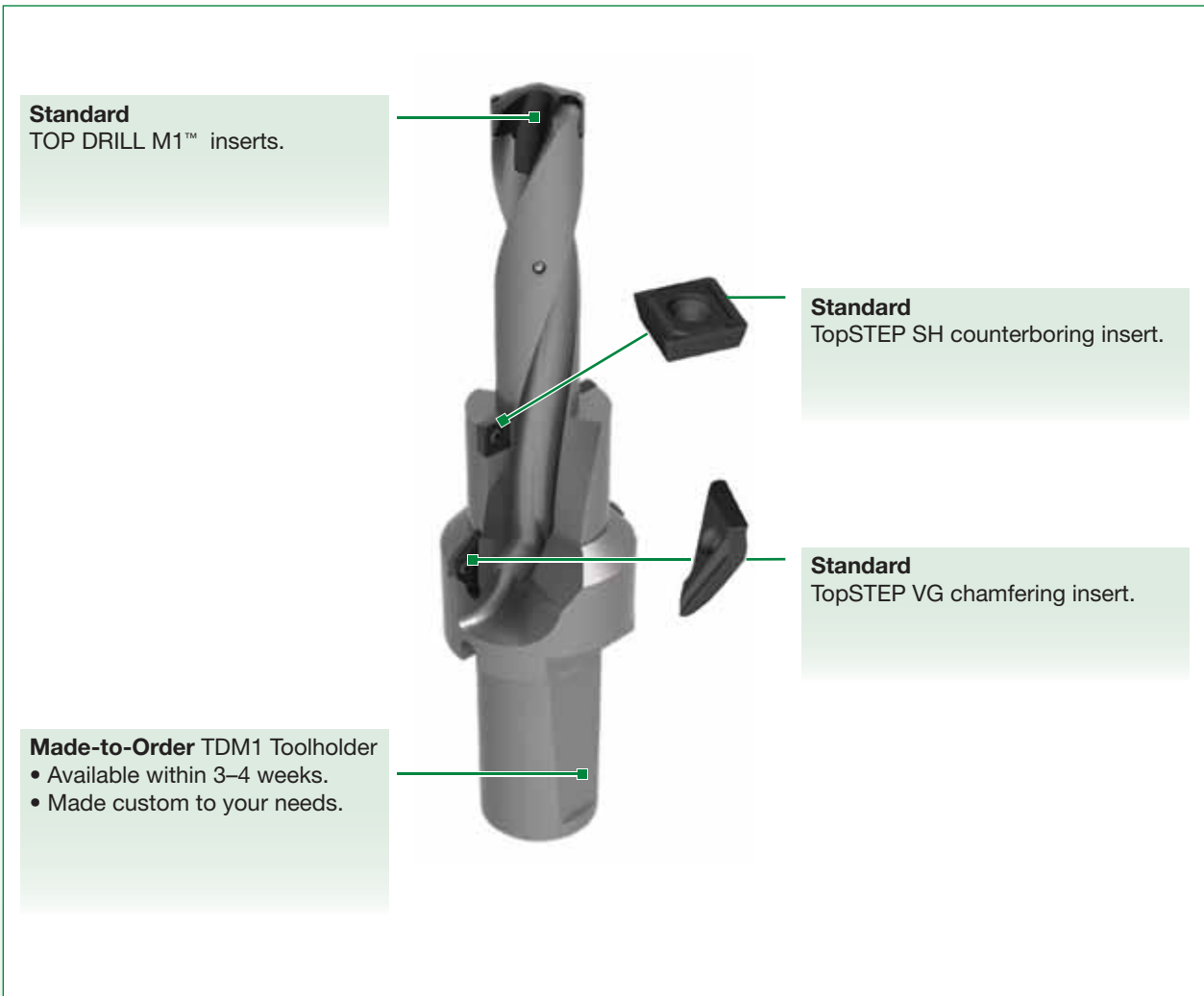
Inch tolerance		Metric tolerance	
D1	tolerance k8	D1	tolerance k8
.3125-.3906	.000/+0.0009	8-10	0,000/+0,022
>.3906-.6250	.000/+0.0011	>10-17	0,000/+0,027
>.6692-.7090	.000/+0.0010	>17-18	0,000/+0,027
>.7090-.8228	.000/+0.0013	>18-21	0,000/+0,033



Modular TOP DRILL M1 Step Drill

Provides high productivity through high-feed, one-shot operations, and excellent tool life.

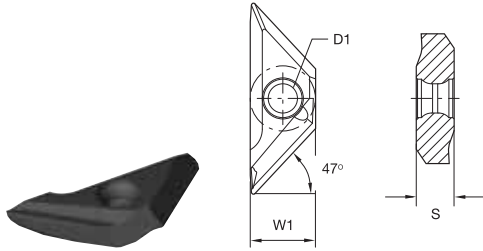
- Use TopSTEP VG and SH chamfer and counterboring inserts to create your specific TDM1 modular step drill.
- Create complex holes with countersinks, chamfers, or even both operations in one shot.
- Save time, achieve better cost, and run your complex drilling process with higher stability.



Let your WIDIA™ representative know about your specific needs. Use the Chamfer and Counterboring Order Planning pages to create and send us your request – available online as well.

TopSTEP VG Chamfering Inserts

- 45° chamfer angle with broad cutting edge.
- Hassle-free usage.
- Very stable and accurate positioning in pocket.
- Two times indexable.
- One universal insert size for a lot of applications.



● first choice
○ alternate choice

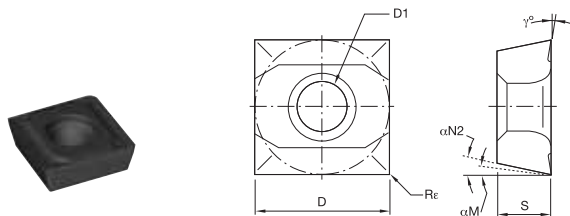
P	●
M	○
K	●
N	○
S	○
H	

■ TopSTEP VG Chamfering Inserts

catalog number	W1		D1		S		WP20PH
	mm	in	mm	in	mm	in	
VXGX10030234	6,35	.250	2,85	.112	3,48	.137	5983706

TopSTEP SH Counterboring Inserts

- 90° insert can be positioned in alternative angles.
- Very good chip forming and surface quality.
- Two times indexable.
- Stocked standards in six insert sizes.



● first choice
○ alternate choice

P	●
M	○
K	○
N	○
S	○
H	

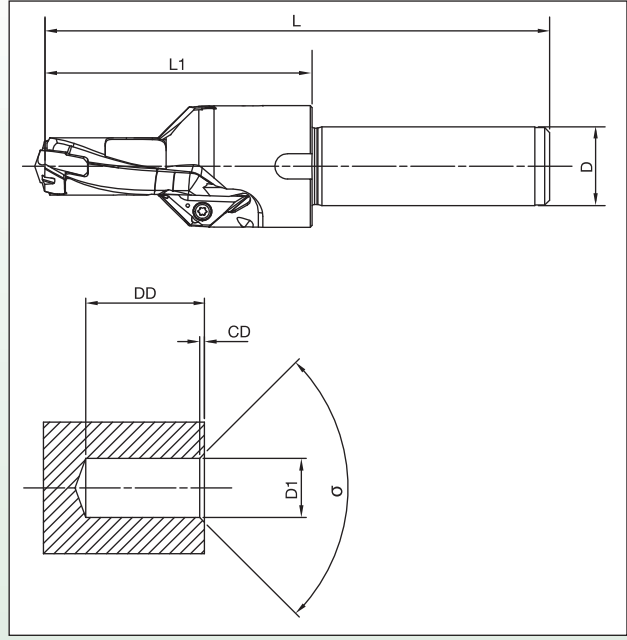
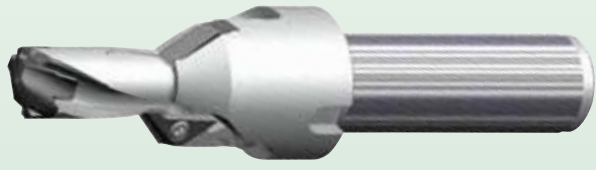
■ TopSTEP SH Counterboring Inserts

catalog number	D		D1		S		Rε		αN	αN M	WP20PH
	mm	in	mm	in	mm	in	mm	in			
SXHX060204R20	6,35	.250	2,85	.112	2,38	.094	0,40	.016	11	7	5983390
SXHX070304R20	6,35	.250	2,85	.112	2,38	.094	0,40	.016	11	7	5983702
SXHX060208R20	6,35	.250	2,85	.112	2,38	.094	0,80	.031	11	7	5983701
SXHX070308R20	6,35	.250	2,85	.112	2,38	.094	0,80	.031	11	7	5983703
SXHX090304R20	9,52	.375	3,50	.138	3,18	.125	0,40	.016	11	7	5983704
SXHX090308R20	9,52	.375	3,50	.138	3,18	.125	0,80	.031	11	7	5983705

Please utilize guide below to plan your TOP DRILL M1™ modular step drill based on your needs and requirements. Please contact your distributor for a quote.

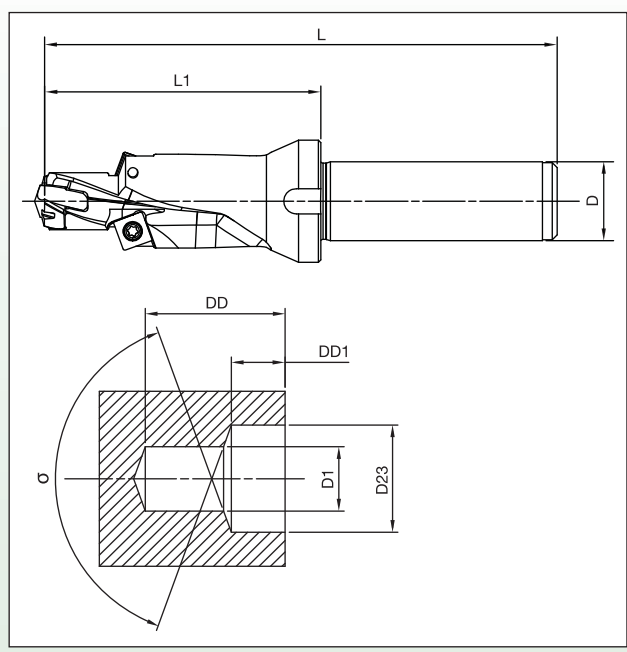
Option 1 TOP DRILL M1 Drilling and Chamfering

Overall Length	[L]	<input type="text"/>
Drill Length	[L1]	<input type="text"/>
Shank Diameter	[D]	<input type="text"/>
Drill Diameter Min	[D1]	<input type="text"/>
Drilling Depth	[DD]	<input type="text"/>
Cutting Diameter 2 Angle	σ	<input type="text"/>
Chamfering Depth	[CD]	<input type="text"/>



Option 2 TOP DRILL M1 Drilling and Countersinking

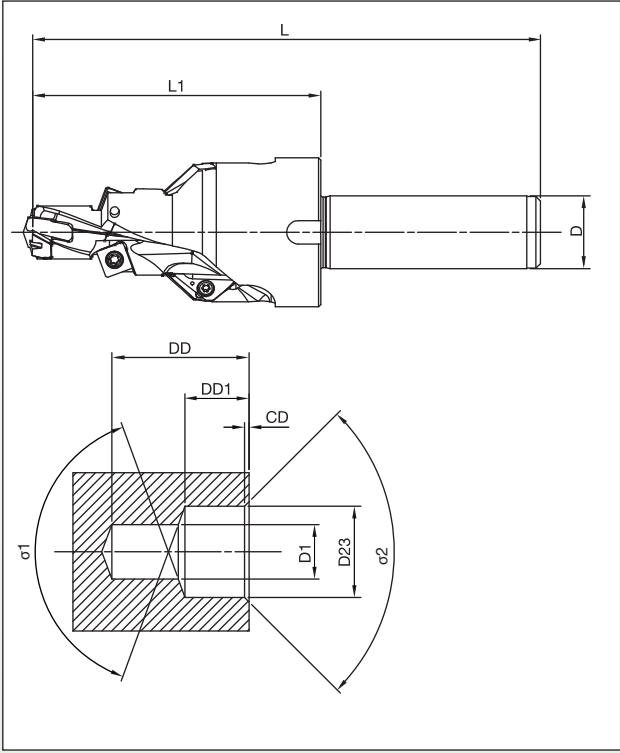
Overall Length	[L]	<input type="text"/>
Drill Length	[L1]	<input type="text"/>
Shank Diameter	[D]	<input type="text"/>
Drill Diameter Min	[D1]	<input type="text"/>
Drilling Depth	[DD]	<input type="text"/>
Cut Diameter 23	[D23]	<input type="text"/>
Countersinking Depth	[DD1]	<input type="text"/>
Cutting Diameter 2 Angle	σ	<input type="text"/>



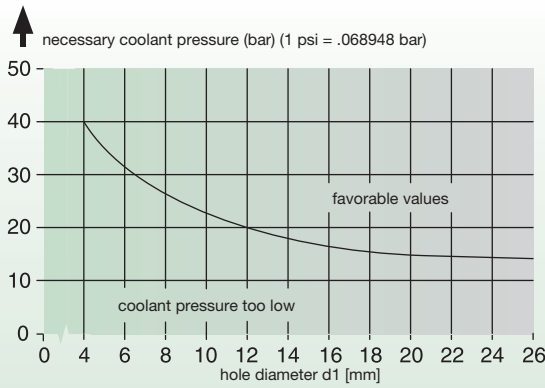
Please utilize guide below to plan your TOP DRILL M1™ modular step drill based on your needs and requirements. Please contact your distributor for a quote.

Option 3 TOP DRILL M1 Drilling and Countersinking and Chamfering

Overall Length	[L]	<input type="text"/>
Drill Length	[L1]	<input type="text"/>
Shank Diameter	[D]	<input type="text"/>
Drill Diameter Min	[D1]	<input type="text"/>
Drilling Depth	[DD]	<input type="text"/>
Cut Diameter 23	[D23]	<input type="text"/>
Countersinking Depth	[DD1]	<input type="text"/>
Cutting Diameter 2 Angle	$\sigma 1$	<input type="text"/>
Cutting Diameter 3 Angle	$\sigma 2$	<input type="text"/>
Chamfering depth	[CD]	<input type="text"/>



If a more complex tool is required, we need your individual information to serve your specific needs. Please contact your WIDIA™ distributor for further guidance.



Coolant Pressure

The diagram at left shows the coolant pressure as a function of the hole diameter. The higher the coolant pressure, the better the drilling result. Tool life and hole quality improve with increased coolant flow.

Drilling on Inclined Surfaces

When drilling on inclined or curved surfaces, use a 50% lower feed than the standard value. After the drill margins are fully engaged in the workpiece, increase the feed to the standard value (100%). Premachining is required on surfaces with inclination greater than 3°.

■ TOP DRILL M1 • UP(M) • WU25PD™ • Speed and Feed Chart • Metric

Material Group		Cutting Speed – vc Range – m/min			Recommended Feed Rate							
		min	Starting Value	max	Tool Diameter (mm)	8,0	10,0	12,0	14,0	16,0	20,0	25,0
		P	1	90	125	170	mm/r	0,11–0,20	0,13–0,25	0,14–0,31	0,17–0,39	0,19–0,45
2	105		140	180	mm/r	0,11–0,28	0,12–0,35	0,16–0,37	0,21–0,46	0,23–0,46	0,28–0,50	0,30–0,52
3	50		75	100	mm/r	0,11–0,28	0,12–0,35	0,16–0,37	0,21–0,46	0,23–0,46	0,28–0,50	0,30–0,52
4	50		75	100	mm/r	0,11–0,28	0,12–0,35	0,16–0,37	0,17–0,36	0,19–0,45	0,22–0,48	0,25–0,50
5	50		65	80	mm/r	0,10–0,20	0,10–0,23	0,10–0,25	0,14–0,29	0,16–0,32	0,18–0,36	0,22–0,42
6	50		65	80	mm/r	0,10–0,20	0,10–0,23	0,10–0,25	0,14–0,29	0,16–0,32	0,18–0,36	0,22–0,42
M	1	40	80	110	mm/r	0,06–0,22	0,08–0,23	0,09–0,24	0,10–0,25	0,11–0,26	0,13–0,28	0,13–0,32
	2	35	55	75	mm/r	0,06–0,22	0,08–0,23	0,09–0,24	0,10–0,25	0,11–0,26	0,13–0,28	0,13–0,32
	3	20	35	50	mm/r	0,06–0,22	0,08–0,23	0,09–0,24	0,10–0,25	0,11–0,26	0,13–0,28	0,13–0,32
K	1	60	95	170	mm/r	0,15–0,29	0,16–0,32	0,17–0,35	0,21–0,42	0,25–0,48	0,28–0,52	0,32–0,56
	2	60	75	90	mm/r	0,15–0,29	0,16–0,30	0,17–0,33	0,21–0,41	0,25–0,48	0,28–0,52	0,32–0,56
	3	40	65	90	mm/r	0,16–0,30	0,17–0,33	0,18–0,36	0,20–0,41	0,21–0,44	0,23–0,48	0,25–0,50

NOTE: Through coolant recommended for greater than 3 x D applications.

■ TOP DRILL M1 • UP(M) • WU25PD • Speed and Feed Chart • Inch

Material Group		Cutting Speed – vc Range – SFM			Recommended Feed Rate							
		min	Starting Value	max	Tool Diameter (inch)	.315	.394	.472	.551	.630	.787	1.000
		P	1	262	410	558	IPR	.004–.008	.005–.010	.006–.012	.007–.015	.007–.018
2	345		459	591	IPR	.004–.011	.005–.014	.006–.015	.008–.018	.009–.018	.011–.020	.012–.020
3	164		246	328	IPR	.004–.011	.005–.014	.006–.015	.008–.018	.009–.018	.011–.020	.012–.020
4	164		246	328	IPR	.004–.011	.005–.014	.006–.015	.007–.018	.007–.018	.009–.019	.010–.020
5	160		210	260	IPR	.004–.008	.004–.009	.004–.010	.006–.011	.006–.013	.007–.014	.009–.017
6	160		210	260	IPR	.004–.008	.004–.009	.004–.010	.006–.011	.006–.013	.007–.014	.009–.017
M	1	130	260	360	IPR	.002–.009	.003–.009	.004–.010	.004–.010	.004–.010	.005–.012	.006–.013
	2	110	180	250	IPR	.002–.009	.003–.009	.004–.010	.004–.010	.004–.010	.005–.012	.006–.013
	3	70	110	160	IPR	.002–.009	.003–.009	.004–.010	.004–.010	.004–.010	.005–.012	.006–.013
K	1	197	312	558	IPR	.006–.011	.006–.013	.007–.014	.008–.017	.010–.019	.011–.020	.013–.022
	2	197	246	295	IPR	.006–.011	.006–.012	.007–.013	.008–.016	.010–.019	.011–.020	.013–.022
	3	131	213	295	IPR	.006–.012	.007–.013	.007–.014	.008–.016	.008–.017	.009–.019	.010–.020

NOTE: Through coolant recommended for greater than 3 x D applications.

How to attach inserts



1) Fix drill holder on arbor. For insert exchange, fix arbor on the machine or set on tool presetter.



2) Remove dust using air blast.



3) Put insert into drill holder. (Use gloves to protect your hands.)



4) Turn lightly in a clockwise direction. (Use gloves to protect your hands.)



5) Set the wrench properly.*



6) Make sure the wrench fits with the insert slot for the wrench. (Is the wrench unfixated from the slot?)



7) Slowly turn the wrench in a clockwise direction.



8) Complete.

How to detach inserts



1) Remove dust from insert using air blast.



2) Set the wrench properly.*



3) Fit the wrench to insert slot.



4) Turn the wrench in a counterclockwise direction.



5) Once lock is released, insert can be turned with fingers. (Use gloves to protect your hands.)



6) Remove insert. (Use gloves to protect your hands.)

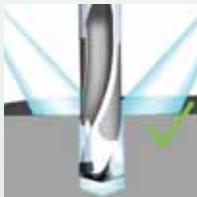
**To order the TDM1 Wrench, please use order number 3861623 and catalog number 170.315.*

Cautions

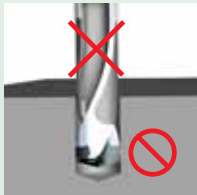
Coolant



1) Internal coolant is recommended.



2) In case of external coolant, cutting depth must be 3 x D or less.

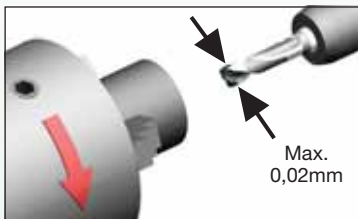


3) Dry cutting is not recommended. Limited applicability in cast iron materials, MQL strongly recommended.

Usage Precautions

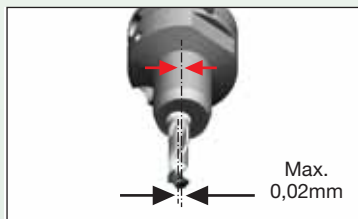
Core deviation

1) For Turning Machines



Set deviation amount under 0,02mm between workpiece and drill.

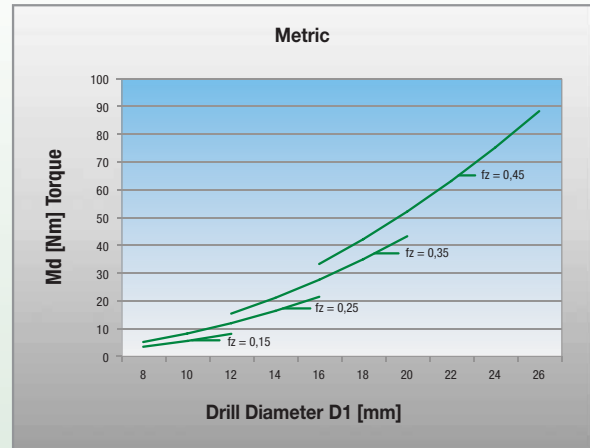
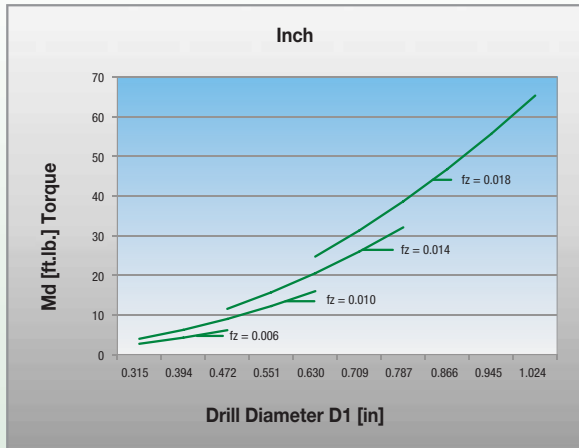
2) For Machining Centers



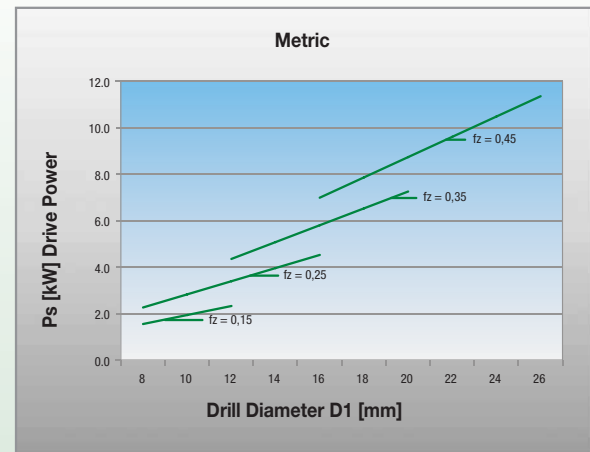
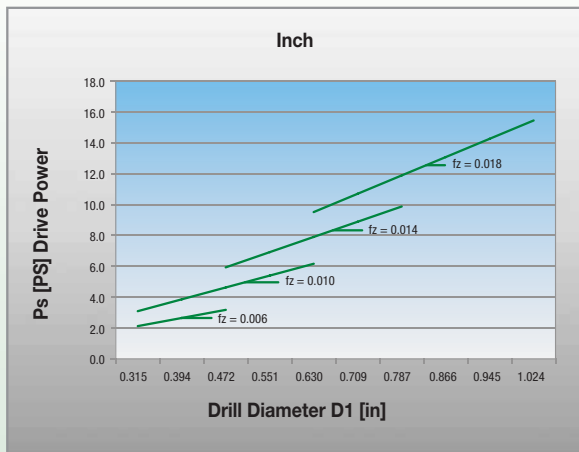
Do not use any arbor with a damaged attachment surface. Center of arbor deviation must be within 0,02mm.

Application Recommendation	Workpiece Shape
Flat Face Recommended	
Stacked Plates Recommended	
Inclined Surface >3° Not Recommended	
Half Cylindrical Not Recommended	
Hole Expansion Not Recommended	
Concave Surface Not Recommended	
Pipe Material Not Recommended	
Cored Hole Not Recommended	

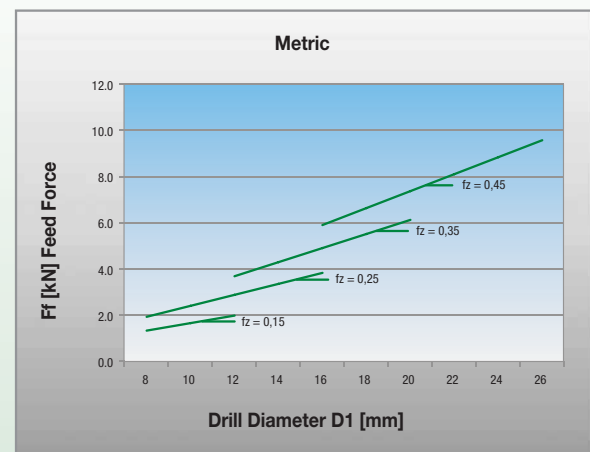
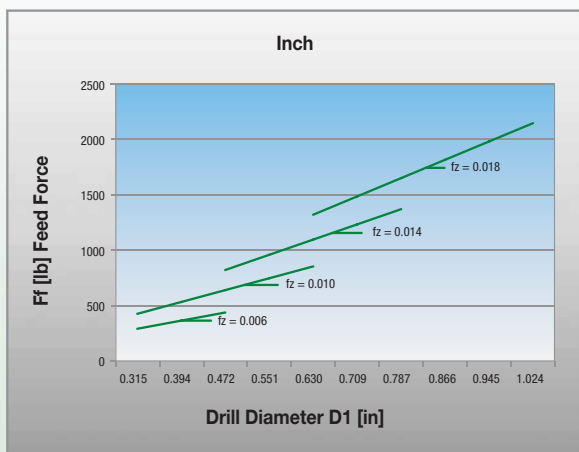
■ Torque



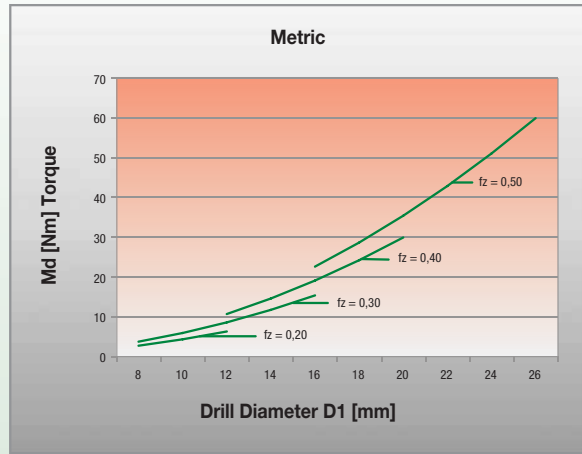
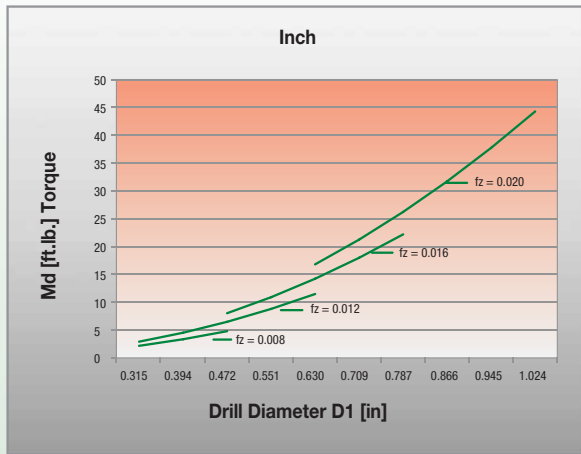
■ Power



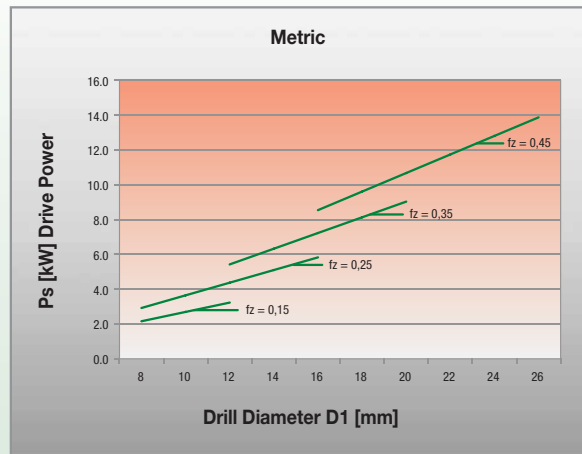
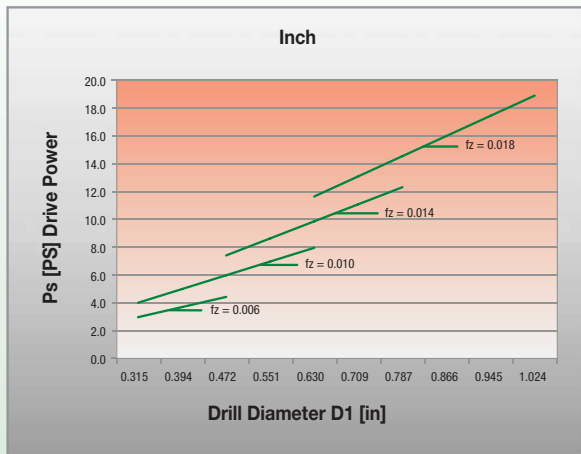
■ Feed Force



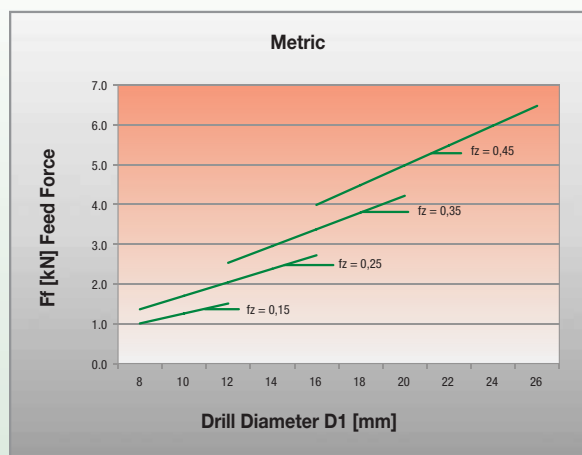
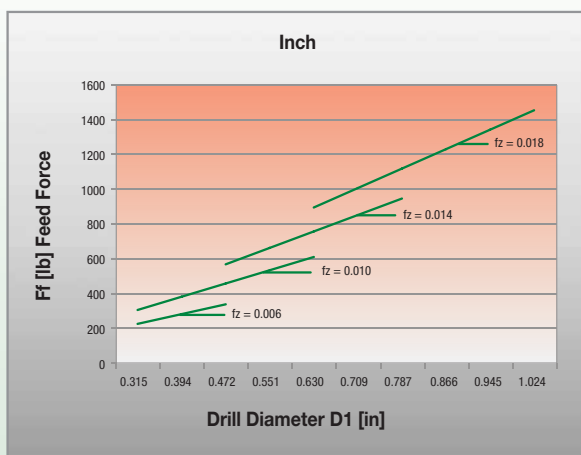
■ Torque



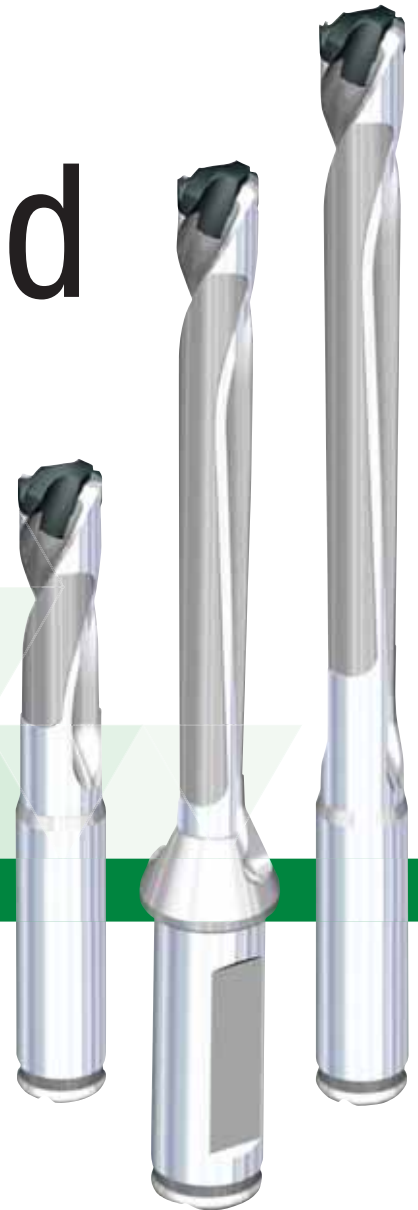
■ Power



■ Feed Force



Cut Time and Costs, Not Quality and Performance



EXTREME **CHALLENGES.**
EXTREME **RESULTS.**

TOP DRILL M1™

The TDM1 modular drill system offers performance levels and Metal Removal Rates (MRR) comparable to that of solid carbide drills. The unique front clamping system enables inserts to be changed quickly, even inside the machine tool, saving setup time and manufacturing costs.

- UP(M) drill point design in WU25PD™.
- Diameter ranges from .3159–1.023" (8–25.99mm) in L/D ratios of 3, 5, and 8 x D.
- Disposable — eliminates number of tools waiting for reconditioning, avoiding hidden costs.
- All intermediate diameters available as semi-standards. Multiple step drills available as customized solutions. New TopSTEP range of inserts offer extended chamfering and counterboring.

To learn more about the benefits of **WIDIA™ TOP DRILL M1**, contact your local distributor.

WIDIA 

WIDIA-Metcut™ Spade Blades •

A complement to TOP DRILL M1™

Spade Blades

WIDIA™ provides a comprehensive line of spade blades from .315–4.5" (8–114mm) to cover a wide range of machining environments and materials.

- Fast penetration rates, less downtime, and lower variability.
- Interchangeable with other conventional spade blade holders.
- Improved surface finish — eliminates subsequent hole finishing operations.
- Standard and special drill body/holder offering, including step drill and porting tool configurations.
- Intermediate diameters and specific toolholder length quickly available upon request.

WIDIA-Metcut spade blades are great choices for:

- Universal application for most plain and alloyed steel applications as well as for cast iron and stainless steels.
- Machining environments where rigidity, coolant supply, or speed and feed rates are limiting factors.
- Short run manufacturing and prototyping environments.
- Especially when dealing with larger diameters and deeper holes.



Application Information

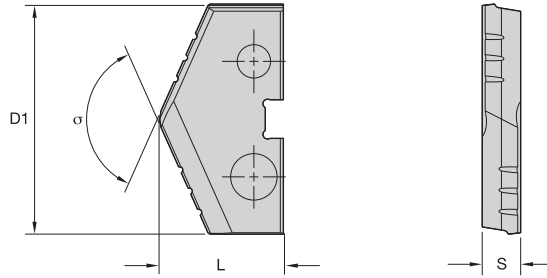
T-15 HSS spade blades are recommended:

- For providing straighter and more consistent holes with superior surface finishes than can be produced using either HSS twist drills or carbide indexable drills.
- When rigidity of the machine or the fixture requires a more forgiving, durable, and tougher tool; T-15 steel possesses a higher transverse rupture strength and is more impact-resistant than comparable carbide spade blades and/or carbide indexable drills.
- In applications requiring hole depths up through 15x to 20x diameter; pecking may be required for depths above 7x diameter for some materials.
- As a cost-effective alternative to carbide indexable drills since T-15 steel spade blades operate at comparable penetration rates to single-effective indexable drills in materials <35 Rc, and one spade blade holder accommodates multiple diameter blades.



Spade Blade Holders

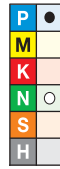
Generally can accommodate a range of blade sizes up to 1.30–1.35 times the smallest blade size. It is therefore possible to cover the entire range of hole sizes with just a few spade drill holders. Contrast this with the inventories required for indexable drills and steel taper shank drills.



■ Seat Size Z



TiAlN



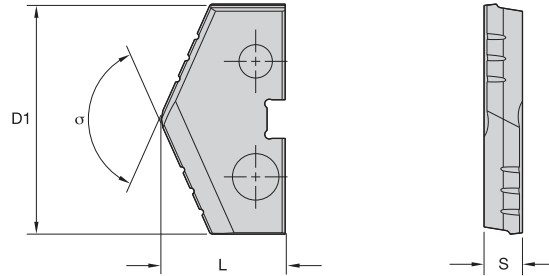
TiN

● first choice
○ alternate choice

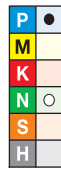
TiAlN		TiN		D1		L		S		σ
order #	catalog #	order #	catalog #	mm	in	mm	in	mm	in	
2759621	7FZ-0438A	—	—	11,11	.438	9,19	.362	2,39	.094	132°
2759599	7FZ-0472A	—	—	12,00	.472	9,19	.362	2,39	.094	132°
2759592	7FZ-0484A	—	—	12,30	.484	9,19	.362	2,39	.094	132°
2759588	7FZ-0492A	—	—	12,50	.492	9,19	.362	2,39	.094	132°
2891175	7FZ-0500A	2759581	7FZ-0500T	12,70	.500	9,19	.362	2,39	.094	132°

NOTE: Toolholders available upon request as an Engineered Solution.





■ Seat Size 0



● first choice
○ alternate choice

TiAlN		TiN		D1		L		S		σ
order #	catalog #	order #	catalog #	mm	in	mm	in	mm	in	
2907270	7F0-0509A	—		12,93	.509	10,80	.425	3,18	.125	132°
—		2760494	7F0-0512T	13,00	.512	10,80	.425	3,18	.125	132°
2760492	7F0-0516A	—		13,10	.516	10,80	.425	3,18	.125	132°
2760489	7F0-0531A	2760485	7F0-0531T	13,50	.531	10,80	.425	3,18	.125	132°
2760481	7F0-0547A	2760478	7F0-0547T	13,89	.547	10,80	.425	3,18	.125	132°
2760477	7F0-0551A	2760473	7F0-0551T	14,00	.551	10,80	.425	3,18	.125	132°
2760472	7F0-0563A	2760466	7F0-0563T	14,29	.563	10,80	.425	3,18	.125	132°
2760463	7F0-0571A	—		14,50	.571	10,80	.425	3,18	.125	132°
2760460	7F0-0578A	2760458	7F0-0578T	14,68	.578	10,80	.425	3,18	.125	132°
2760454	7F0-0591A	2760453	7F0-0591T	15,00	.591	10,80	.425	3,18	.125	132°
2760452	7F0-0594A	2760449	7F0-0594T	15,08	.594	10,80	.425	3,18	.125	132°
2760444	7F0-0609A	2760441	7F0-0609T	15,48	.609	10,80	.425	3,18	.125	132°
2760440	7F0-0610A	—		15,50	.610	10,80	.425	3,18	.125	132°
3053979	7F0-0625A	2760430	7F0-0625T	15,88	.625	10,80	.425	3,18	.125	132°
2891178	7F0-0630A	2760424	7F0-0630T	16,00	.630	10,80	.425	3,18	.125	132°
2760420	7F0-0641A	2760418	7F0-0641T	16,27	.641	10,80	.425	3,18	.125	132°
—		2760415	7F0-0650T	16,50	.650	10,80	.425	3,18	.125	132°
2760413	7F0-0656A	1988432	7F0-0656T	16,67	.656	10,80	.425	3,18	.125	132°
2760404	7F0-0669A	—		17,00	.669	10,80	.425	3,18	.125	132°
2760399	7F0-0672A	2760397	7F0-0672T	17,07	.672	10,80	.425	3,18	.125	132°
2760393	7F0-0688A	2760390	7F0-0688T	17,46	.688	10,80	.425	3,18	.125	132°
3083635	7F0-0689A	2760386	7F0-0689T	17,50	.689	10,80	.425	3,18	.125	132°

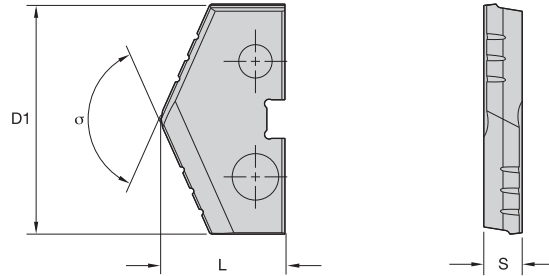
NOTE: Toolholders available upon request as an Engineered Solution.



TiAlN



TiN



■ Seat Size 1



TiAlN

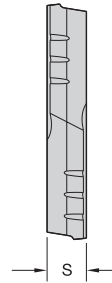
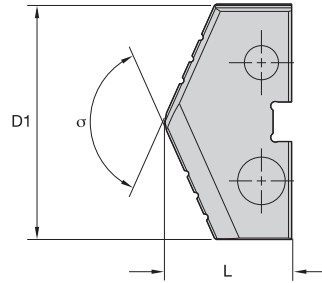


TiN

● first choice
○ alternate choice

order #	catalog #	order #	catalog #	D1		L		S		σ
				mm	in	mm	in	mm	in	
2760383	7F1-0703A	2760381	7F1-0703T	17,86	.703	13,84	.545	3,96	.156	132°
2760380	7F1-0709A	2760377	7F1-0709T	18,00	.709	13,84	.545	3,96	.156	132°
—	—	2760371	7F1-0719T	18,26	.719	13,84	.545	3,96	.156	132°
2760365	7F1-0734A	2760362	7F1-0734T	18,65	.734	13,84	.545	3,96	.156	132°
2760361	7F1-0748A	2760359	7F1-0748T	19,00	.748	13,84	.545	3,96	.156	132°
3114699	7F1-0750A	2387228	7F1-0750T	19,05	.750	13,84	.545	3,96	.156	132°
—	—	2604191	7F1-0756T	19,20	.756	13,84	.545	3,96	.156	132°
2760344	7F1-0766A	2760341	7F1-0766T	19,45	.766	13,84	.545	3,96	.156	132°
—	—	2760338	7F1-0768T	19,50	.768	13,84	.545	3,96	.156	132°
2760335	7F1-0781A	2760331	7F1-0781T	19,85	.781	13,84	.545	3,96	.156	132°
2760330	7F1-0787A	2760328	7F1-0787T	20,00	.787	13,84	.545	3,96	.156	132°
—	—	2760323	7F1-0797T	20,24	.797	13,84	.545	3,96	.156	132°
2255810	7F1-0806A	—	—	20,47	.806	13,84	.545	3,96	.156	132°
2760319	7F1-0807A	2760316	7F1-0807T	20,50	.807	13,84	.545	3,96	.156	132°
2760315	7F1-0813A	2760310	7F1-0813T	20,64	.813	13,84	.545	3,96	.156	132°
2760305	7F1-0827A	2760303	7F1-0827T	21,00	.827	13,84	.545	3,96	.156	132°
2760302	7F1-0828A	2760300	7F1-0828T	21,03	.828	13,84	.545	3,96	.156	132°
—	—	2760296	7F1-0844T	21,43	.844	13,84	.545	3,96	.156	132°
2760292	7F1-0859A	2760290	7F1-0859T	21,83	.859	13,84	.545	3,96	.156	132°
2940716	7F1-0866A	2760287	7F1-0866T	22,00	.866	13,84	.545	3,96	.156	132°
1926120	7F1-0875A	2760282	7F1-0875T	22,23	.875	13,84	.545	3,96	.156	132°
2760280	7F1-0891A	2760278	7F1-0891T	22,62	.891	13,84	.545	3,96	.156	132°
2760276	7F1-0906A	2760273	7F1-0906T	23,02	.906	13,84	.545	3,96	.156	132°
3099442	7F1-0922A	2760268	7F1-0922T	23,42	.922	13,84	.545	3,96	.156	132°
2760265	7F1-0938A	2760262	7F1-0938T	23,81	.938	13,84	.545	3,96	.156	132°
2891181	7F1-0945A	2760257	7F1-0945T	24,00	.945	13,84	.545	3,96	.156	132°
2760256	7F1-0953A	2760253	7F1-0953T	24,21	.953	13,84	.545	3,96	.156	132°
—	—	3339713	7F1-0960T	24,38	.960	13,84	.545	3,96	.156	132°

NOTE: Toolholders available upon request as an Engineered Solution.



■ Seat Size 2



TiAlN



TiN

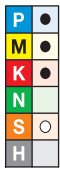
● first choice
○ alternate choice

order #	catalog #	order #	catalog #	D1		L		S		σ
				mm	in	mm	in	mm	in	
—	—	2760247	7F2-0969T	24,61	.969	16,13	.635	4,76	.188	132°
2760243	7F2-0984A	2760240	7F2-0984T	25,00	.984	16,13	.635	4,76	.188	132°
2760239	7F2-1000A	2760235	7F2-1000T	25,40	1.000	16,13	.635	4,76	.188	132°
2760234	7F2-1003A	—	—	25,48	1.003	16,13	.635	4,76	.188	132°
3088200	7F2-1016A	2760226	7F2-1016T	25,80	1.016	16,13	.635	4,76	.188	132°
3096208	7F2-1024A	2760223	7F2-1024T	26,00	1.024	16,13	.635	4,76	.188	132°
2760222	7F2-1031A	2760219	7F2-1031T	26,20	1.031	16,13	.635	4,76	.188	132°
2760216	7F2-1047A	2760214	7F2-1047T	26,59	1.047	16,13	.635	4,76	.188	132°
3096207	7F2-1063A	2760207	7F2-1063T	26,99	1.063	16,13	.635	4,76	.188	132°
2261849	7F2-1078A	2760203	7F2-1078T	27,61	1.078	16,13	.635	4,76	.188	132°
2760199	7F2-1094A	2760196	7F2-1094T	27,78	1.094	16,13	.635	4,76	.188	132°
2760195	7F2-1102A	2760194	7F2-1102T	28,00	1.102	16,13	.635	4,76	.188	132°
—	—	2760189	7F2-1109T	28,17	1.109	16,13	.635	4,76	.188	132°
2760188	7F2-1125A	2760184	7F2-1125T	28,58	1.125	16,13	.635	4,76	.188	132°
3024915	7F2-1141A	—	—	28,97	1.141	16,13	.635	4,76	.188	132°
2760181	7F2-1142A	—	—	29,00	1.142	16,13	.635	4,76	.188	132°
3088746	7F2-1156A	2760174	7F2-1156T	29,37	1.156	16,13	.635	4,76	.188	132°
—	—	2760169	7F2-1172T	29,77	1.172	16,13	.635	4,76	.188	132°
2760167	7F2-1181A	2760164	7F2-1181T	30,00	1.181	16,13	.635	4,76	.188	132°
2760162	7F2-1188A	2760159	7F2-1188T	30,16	1.188	16,13	.635	4,76	.188	132°
—	—	2760152	7F2-1203T	30,56	1.203	16,13	.635	4,76	.188	132°
2760150	7F2-1219A	2760148	7F2-1219T	30,96	1.219	16,13	.635	4,76	.188	132°
2760147	7F2-1221A	—	—	31,00	1.221	16,13	.635	4,76	.188	132°
2907272	7F2-1231A	—	—	31,27	1.231	16,13	.635	4,76	.188	132°
—	—	2760141	7F2-1234T	31,35	1.234	16,13	.635	4,76	.188	132°
2760137	7F2-1250A	2760134	7F2-1250T	31,75	1.250	16,13	.635	4,76	.188	132°
—	—	2895976	7F2-1254T	31,85	1.254	16,13	.635	4,76	.188	132°
2760131	7F2-1260A	2760128	7F2-1260T	32,00	1.260	16,13	.635	4,76	.188	132°

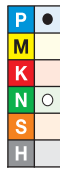
NOTE: Toolholders available upon request as an Engineered Solution.

(continued)

(Seat Size 2 – continued)



TiAlN



TiN

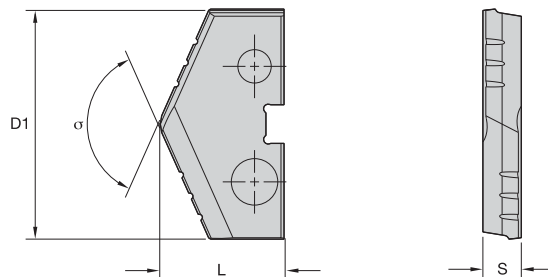
● first choice
○ alternate choice

TiAlN		TiN		D1		L		S		σ
order #	catalog #	order #	catalog #	mm	in	mm	in	mm	in	
3032539	7F2-1266A	2967699	7F2-1266T	32,15	1.266	16,13	.635	4,76	.188	132°
—	—	2760121	7F2-1281T	32,55	1.281	16,13	.635	4,76	.188	132°
2760118	7F2-1299A	—	—	33,00	1.299	16,13	.635	4,76	.188	132°
2760112	7F2-1313A	2760109	7F2-1313T	33,34	1.313	16,13	.635	4,76	.188	132°
—	—	2760106	7F2-1328T	33,73	1.328	16,13	.635	4,76	.188	132°
2760105	7F2-1339A	—	—	34,00	1.339	16,13	.635	4,76	.188	132°
2760101	7F2-1344A	2760098	7F2-1344T	34,13	1.344	16,13	.635	4,76	.188	132°
—	—	2760094	7F2-1359T	34,53	1.359	16,13	.635	4,76	.188	132°
1926121	7F2-1375A	2760090	7F2-1375T	34,93	1.375	16,13	.635	4,76	.188	132°
2760089	7F2-1378A	—	—	35,00	1.378	16,13	.635	4,76	.188	132°
2759880	7F4-2166A	—	—	55,02	2.166	23,62	.930	7,94	.313	132°

NOTE: Toolholders available upon request as an Engineered Solution.



Modular Drills



■ Seat Size 3



TiAlN



TiN

● first choice
○ alternate choice

TiAlN		TiN		D1		L		S		σ
order #	catalog #	order #	catalog #	mm	in	mm	in	mm	in	
—	—	2760079	7F3-1391T	35,32	1.391	20,45	.805	6,35	.250	132°
2760078	7F3-1406A	2760076	7F3-1406T	35,72	1.406	20,45	.805	6,35	.250	132°
2760072	7F3-1417A	2760069	7F3-1417T	36,00	1.417	20,45	.805	6,35	.250	132°
2760066	7F3-1438A	2760063	7F3-1438T	36,51	1.438	20,45	.805	6,35	.250	132°
2760060	7F3-1457A	2760059	7F3-1457T	37,00	1.457	20,45	.805	6,35	.250	132°
2760058	7F3-1469A	2760056	7F3-1469T	37,31	1.469	20,45	.805	6,35	.250	132°
—	—	2760053	7F3-1484T	37,70	1.484	20,45	.805	6,35	.250	132°
2760051	7F3-1496A	—	—	38,00	1.496	20,45	.805	6,35	.250	132°
2760048	7F3-1500A	2760045	7F3-1500T	38,10	1.500	20,45	.805	6,35	.250	132°
—	—	2760038	7F3-1516T	38,50	1.516	20,45	.805	6,35	.250	132°
—	—	2760035	7F3-1531T	38,90	1.531	20,45	.805	6,35	.250	132°
2760034	7F3-1535A	—	—	39,00	1.535	20,45	.805	6,35	.250	132°
2760027	7F3-1563A	2760024	7F3-1563T	39,69	1.563	20,45	.805	6,35	.250	132°
2760023	7F3-1575A	2760021	7F3-1575T	40,00	1.575	20,45	.805	6,35	.250	132°
—	—	2760015	7F3-1594T	40,48	1.594	20,45	.805	6,35	.250	132°
2760011	7F3-1614A	—	—	41,00	1.614	20,45	.805	6,35	.250	132°
2760008	7F3-1625A	2760004	7F3-1625T	41,28	1.625	20,45	.805	6,35	.250	132°
2760001	7F3-1654A	—	—	42,00	1.654	20,45	.805	6,35	.250	132°
—	—	2759996	7F3-1656T	42,07	1.656	20,45	.805	6,35	.250	132°
2759993	7F3-1688A	2759991	7F3-1688T	42,86	1.688	20,45	.805	6,35	.250	132°
—	—	2759989	7F3-1693T	43,00	1.693	20,45	.805	6,35	.250	132°
2759987	7F3-1719A	2759985	7F3-1719T	43,66	1.719	20,45	.805	6,35	.250	132°
2759984	7F3-1732A	—	—	44,00	1.732	20,45	.805	6,35	.250	132°
2759977	7F3-1750A	2759974	7F3-1750T	44,45	1.750	20,45	.805	6,35	.250	132°
—	—	2759970	7F3-1766T	44,85	1.766	20,45	.805	6,35	.250	132°
2759969	7F3-1772A	2759967	7F3-1772T	45,00	1.772	20,45	.805	6,35	.250	132°
—	—	2759963	7F3-1781T	45,25	1.781	20,45	.805	6,35	.250	132°
2759960	7F3-1811A	—	—	46,00	1.811	20,45	.805	6,35	.250	132°
2759958	7F3-1813A	2759956	7F3-1813T	46,04	1.813	20,45	.805	6,35	.250	132°
—	—	2759951	7F3-1844T	46,83	1.844	20,45	.805	6,35	.250	132°
—	—	2759949	7F3-1850T	47,00	1.850	20,45	.805	6,35	.250	132°
2759945	7F3-1875A	2759942	7F3-1875T	47,63	1.875	20,45	.805	6,35	.250	132°

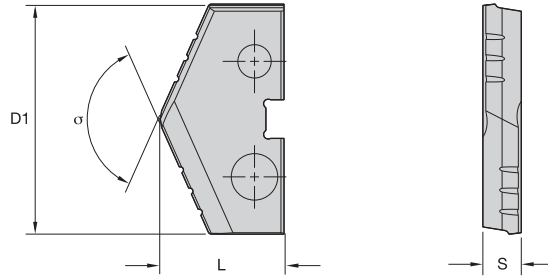
NOTE: Toolholders available upon request as an Engineered Solution.



TiAlN



TiN



■ Seat Size 4



TiAlN



TiN

● first choice
○ alternate choice

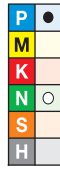
order #	catalog #	order #	catalog #	D1		L		S		σ
				mm	in	mm	in	mm	in	
—	—	2759937	7F4-1880T	47,75	1.880	23,62	.930	7,95	.313	132°
2759936	7F4-1890A	2759935	7F4-1890T	48,00	1.890	23,62	.930	7,95	.313	132°
2759934	7F4-1906A	2759932	7F4-1906T	48,42	1.906	23,62	.930	7,95	.313	132°
2759930	7F4-1929A	—	—	49,00	1.929	23,62	.930	7,95	.313	132°
2759927	7F4-1938A	2759925	7F4-1938T	49,21	1.938	23,62	.930	7,95	.313	132°
2759921	7F4-1969A	2759919	7F4-1969T	50,00	1.969	23,62	.930	7,95	.313	132°
2759916	7F4-2000A	2759913	7F4-2000T	50,80	2.000	23,62	.930	7,95	.313	132°
—	—	2759911	7F4-2008T	51,00	2.008	23,62	.930	7,95	.313	132°
—	—	2952747	7F4-2016T	51,20	2.016	23,62	.930	7,95	.313	132°
2759904	7F4-2031A	2759902	7F4-2031T	51,60	2.031	23,62	.930	7,95	.313	132°
2759901	7F4-2047A	2759900	7F4-2047T	52,00	2.047	23,62	.930	7,95	.313	132°
2759899	7F4-2063A	2759896	7F4-2063T	52,39	2.063	23,62	.930	7,95	.313	132°
2895971	7F4-2087A	—	—	53,00	2.087	23,62	.930	7,95	.313	132°
—	—	2759892	7F4-2094T	53,18	2.094	23,62	.930	7,95	.313	132°
2759891	7F4-2125A	2759888	7F4-2125T	53,98	2.125	23,62	.930	7,95	.313	132°
2759887	7F4-2126A	—	—	54,00	2.126	23,62	.930	7,95	.313	132°
—	—	2759882	7F4-2156T	54,77	2.156	23,62	.930	7,95	.313	132°
—	—	2759876	7F4-2188T	55,56	2.188	23,62	.930	7,95	.313	132°
2759874	7F4-2205A	—	—	56,00	2.205	23,62	.930	7,95	.313	132°
2759872	7F4-2219A	2759870	7F4-2219T	56,36	2.219	23,62	.930	7,95	.313	132°
2759868	7F4-2244A	—	—	57,00	2.244	23,62	.930	7,95	.313	132°
2759865	7F4-2250A	2759862	7F4-2250T	57,15	2.250	23,62	.930	7,95	.313	132°
—	—	2759858	7F4-2281T	57,95	2.281	23,62	.930	7,95	.313	132°
2759857	7F4-2284A	—	—	58,00	2.284	23,62	.930	7,95	.313	132°
2759854	7F4-2313A	2759852	7F4-2313T	58,74	2.313	23,62	.930	7,95	.313	132°
2759851	7F4-2323A	—	—	59,00	2.323	23,62	.930	7,95	.313	132°
—	—	2759848	7F4-2344T	59,53	2.344	23,62	.930	7,95	.313	132°
—	—	2759845	7F4-2362T	60,00	2.362	23,62	.930	7,95	.313	132°

(continued)

(Seat Size 4 – continued)



TiAlN



TiN

● first choice
○ alternate choice

TiAlN		TiN		D1		L		S		σ
order #	catalog #	order #	catalog #	mm	in	mm	in	mm	in	
2759843	7F4-2375A	2759840	7F4-2375T	60,33	2.375	23,62	.930	7,95	.313	132°
2759833	7F4-2438A	2759831	7F4-2438T	61,91	2.438	23,62	.930	7,95	.313	132°
2759830	7F4-2441A	—	—	62,00	2.441	23,62	.930	7,95	.313	132°
2759828	7F4-2469A	—	—	62,71	2.469	23,62	.930	7,95	.313	132°
—	—	2759823	7F4-2480T	63,00	2.480	23,62	.930	7,95	.313	132°
2759822	7F4-2500A	2759820	7F4-2500T	63,50	2.500	23,62	.930	7,95	.313	132°
—	—	2759816	7F4-2531T	64,30	2.531	23,62	.930	7,95	.313	132°
3027222	7F4-2559A	—	—	65,00	2.559	23,62	.930	7,95	.313	132°
2759813	7F4-2563A	2759811	7F4-2563T	65,09	2.563	23,62	.930	7,95	.313	132°

NOTE: Toolholders available upon request as an Engineered Solution.



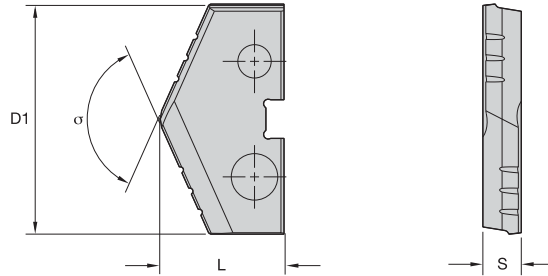
Modular Drills



TiAlN



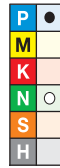
TiN



■ Seat Size 5



TiAlN



TiN

● first choice
○ alternate choice

order #	catalog #	order #	catalog #	D1		L		S		σ
				mm	in	mm	in	mm	in	
—	—	2759808	7F5-2500T	63,50	2.500	31,50	1.240	11,11	.437	144°
2759802	7F5-2563A	2759801	7F5-2563T	65,09	2.563	31,50	1.240	11,11	.437	144°
—	—	2759791	7F5-2625T	66,68	2.625	31,50	1.240	11,11	.437	144°
—	—	2759789	7F5-2656T	67,47	2.656	31,50	1.240	11,11	.437	144°
2759788	7F5-2677A	—	—	68,00	2.677	31,50	1.240	11,11	.437	144°
—	—	2759781	7F5-2719T	69,06	2.719	31,50	1.240	11,11	.437	144°
2759780	7F5-2750A	2759778	7F5-2750T	69,85	2.750	31,50	1.240	11,11	.437	144°
2961641	7F5-2756A	—	—	70,00	2.756	31,50	1.240	11,11	.437	144°
2759773	7F5-2813A	—	—	71,44	2.813	31,50	1.240	11,11	.437	144°
2759766	7F5-2875A	2759764	7F5-2875T	73,03	2.875	31,50	1.240	11,11	.437	144°
—	—	2759756	7F5-2938T	74,61	2.938	31,50	1.240	11,11	.437	144°
2759755	7F5-2969A	2759753	7F5-2969T	75,41	2.969	31,50	1.240	11,11	.437	144°
2759751	7F5-3000A	2759748	7F5-3000T	76,20	3.000	31,50	1.240	11,11	.437	144°

NOTE: Toolholders available upon request as an Engineered Solution.

■ Seat Size 6



TiAlN

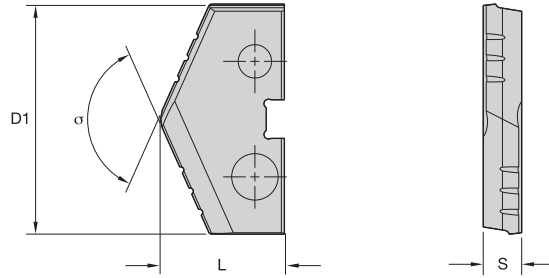


TiN

● first choice
○ alternate choice

order #	catalog #	order #	catalog #	D1		L		S		σ
				mm	in	mm	in	mm	in	
2759745	7F6-3063A	2759743	7F6-3063T	77,79	3.063	31,50	1.240	11,11	.437	144°
2759742	7F6-3071A	—	—	78,00	3.071	31,50	1.240	11,11	.437	144°
2759739	7F6-3125A	—	—	79,38	3.125	31,50	1.240	11,11	.437	144°
2759736	7F6-3150A	—	—	80,00	3.150	31,50	1.240	11,11	.437	144°
—	—	2759731	7F6-3188T	80,96	3.188	31,50	1.240	11,11	.437	144°
—	—	2759726	7F6-3250T	82,55	3.250	31,50	1.240	11,11	.437	144°
—	—	2759718	7F6-3375T	85,73	3.375	31,50	1.240	11,13	.438	144°
—	—	2759715	7F6-3438T	87,31	3.438	31,50	1.240	11,13	.438	144°
—	—	2759709	7F6-3500T	88,90	3.500	31,50	1.240	11,13	.438	144°

NOTE: Toolholders available upon request as an Engineered Solution.



■ Seat Size 7

P	●
M	●
K	●
N	○
S	○
H	

TiAlN

P	●
M	
K	
N	○
S	
H	

TiN

● first choice
○ alternate choice

order #	catalog #	order #	catalog #	D1		L		S		σ
				mm	in	mm	in	mm	in	
—	—	3279755	7F7-3543T	90,00	3.543	31,50	1.240	11,13	.438	144°
—	—	2759703	7F7-3563T	90,49	3.563	31,50	1.240	11,13	.438	144°
—	—	2759698	7F7-3688T	93,66	3.688	31,50	1.240	11,13	.438	144°
—	—	2759688	7F7-3938T	96,00	3.938	31,50	1.240	11,13	.438	144°
2972689	7F7-3813A	—	—	96,84	3.813	31,50	1.240	11,13	.438	144°
2759684	7F7-4000A	—	—	101,60	4.000	31,50	1.240	11,13	.438	144°

NOTE: Toolholders available upon request as an Engineered Solution.

■ HSS Spade Blades • Speed and Feed Chart • Inch

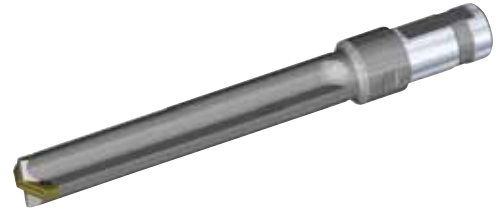
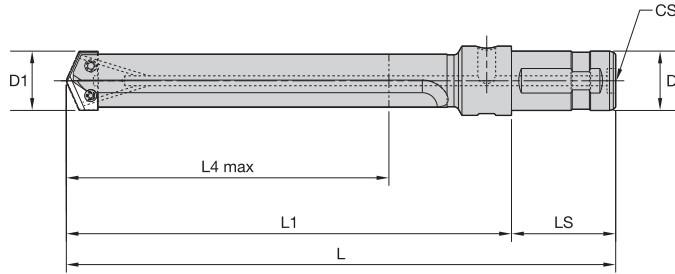
Material Group	Hardness BHN	Grade		Feed (mm/rev)								
		TiN	TiAlN	Y & Z (9.5 to 12.7)	0 (13 to 17.5)	1 (17.86 – 24)	2 (24.61 – 35)	3 (35.72– 47.63)	4 (48 – 65.09)	5 (63.5 – 76.2)	6-7-8- (76.99 – 114.3)	
P	0	85 – 125	175	–	0.007	0.009	0.012	0.015	0.019	0.023	0.025	0.027
		125–175	165	–	0.006	0.009	0.012	0.015	0.019	0.023	0.024	0.026
		175 – 225	155	–	0.005	0.008	0.010	0.014	0.018	0.021	0.023	0.025
		225 – 275	145	–	0.005	0.008	0.010	0.014	0.018	0.021	0.023	0.025
	1	100 – 150	200	–	0.008	0.011	0.014	0.017	0.021	0.025	0.026	0.028
		150 – 200	180	–	0.007	0.010	0.013	0.016	0.020	0.023	0.024	0.026
		200 – 250	160	–	0.006	0.010	0.013	0.016	0.020	0.023	0.024	0.026
	2	125–175	165	–	0.006	0.009	0.012	0.015	0.019	0.023	0.025	0.027
		175 – 225	155	–	0.005	0.008	0.010	0.014	0.018	0.021	0.023	0.025
		225 – 275	145	215	0.005	0.008	0.010	0.014	0.018	0.021	0.022	0.024
		275 – 325	135	200	0.004	0.007	0.009	0.012	0.016	0.019	0.021	0.023
	3	125–175	150	–	0.007	0.009	0.011	0.014	0.018	0.021	0.023	0.025
		175 – 225	140	–	0.006	0.008	0.010	0.014	0.017	0.019	0.021	0.023
		225 – 275	130	185	0.005	0.007	0.010	0.013	0.017	0.019	0.020	0.021
		275 – 325	120	175	0.004	0.006	0.009	0.012	0.015	0.017	0.018	0.019
		325–375	110	160	0.003	0.006	0.009	0.012	0.015	0.017	0.018	0.019
	4	225 – 300	85	120	0.005	0.007	0.009	0.010	0.014	0.016	0.018	0.020
		300–350	65	90	0.004	0.007	0.009	0.010	0.014	0.016	0.018	0.020
		350 – 400	55	75	0.003	0.006	0.008	0.009	0.012	0.014	0.016	0.018
	5	100 – 150	150	–	0.006	0.010	0.012	0.014	0.018	0.021	0.022	0.024
		150 – 250	125	190	0.005	0.009	0.010	0.012	0.016	0.019	0.020	0.022
		250 – 350	100	160	0.004	0.008	0.009	0.010	0.014	0.017	0.018	0.020
	6	150 – 200	85	–	0.005	0.006	0.008	0.010	0.012	0.015	0.016	0.017
		200 – 250	65	–	0.004	0.006	0.008	0.010	0.012	0.015	0.016	0.017
250 – 300		45	70	0.004	0.005	0.007	0.008	0.010	0.013	0.014	0.015	
300 – 350		–	55	0.003	0.004	0.006	0.007	0.009	0.012	0.013	0.014	
M	1	135 – 185	80	110	0.006	0.008	0.009	0.011	0.014	0.016	0.018	0.020
		185 – 275	65	100	0.005	0.007	0.008	0.010	0.012	0.014	0.016	0.018
		275 – 350	–	90	0.005	0.006	0.007	0.009	0.011	0.013	0.015	0.017
K	1,2	120 – 150	180	270	0.008	0.012	0.016	0.020	0.024	0.027	0.029	0.031
		150 – 200	160	240	0.007	0.011	0.014	0.018	0.022	0.025	0.027	0.029
		200 – 220	140	210	0.006	0.009	0.012	0.016	0.018	0.021	0.023	0.025
		220 – 260	120	180	0.005	0.007	0.009	0.012	0.014	0.017	0.019	0.021
		260 – 320	100	150	0.004	0.006	0.007	0.009	0.012	0.014	0.016	0.018
N	1	–	600	–	0.007	0.012	0.015	0.019	0.021	0.024	0.025	0.026
		–	300	–	0.008	0.013	0.016	0.020	0.022	0.025	0.026	0.027
S	1	140 – 210	–	45	0.005	0.007	0.008	0.010	0.012	0.015	0.016	0.017
		210 – 280	–	40	0.004	0.006	0.007	0.008	0.010	0.012	0.013	0.014
		280 – 340	–	35	0.004	0.005	0.006	0.007	0.009	0.011	0.012	0.013

Modular Drills

■ HSS Spade Blades • Speed and Feed Chart • Metric

Material Group	Hardness BHN	Grade		Feed (mm/rev)								
		TiN	TiAlN	Y & Z (9.5 to 12.7)	0 (13 to 17.5)	1 (17.86 – 24)	2 (24.61 – 35)	3 (35.72– 47.63)	4 (48 – 65.09)	5 (63.5 – 76.2)	6-7-8- (76.99 – 114.3)	
P	0	85-125	55	-	0,18	0,23	0,30	0,38	0,48	0,58	0,64	0,69
		125-175	50	-	0,15	0,23	0,30	0,38	0,48	0,58	0,61	0,66
		175-225	45	-	0,13	0,20	0,25	0,36	0,46	0,53	0,58	0,64
		225-275	45	-	0,13	0,20	0,25	0,36	0,46	0,53	0,58	0,64
	1	100-150	60	-	0,20	0,28	0,36	0,43	0,53	0,64	0,66	0,71
		150-200	55	-	0,18	0,25	0,33	0,41	0,51	0,58	0,61	0,66
		200-250	50	-	0,15	0,25	0,33	0,41	0,51	0,58	0,61	0,66
	2	125-175	50	-	0,15	0,23	0,30	0,38	0,48	0,58	0,64	0,69
		175-225	45	-	0,13	0,20	0,25	0,36	0,46	0,53	0,58	0,64
		225-275	45	65	0,13	0,20	0,25	0,36	0,46	0,53	0,56	0,61
		275-325	40	60	0,10	0,18	0,23	0,30	0,41	0,48	0,53	0,58
	3	125-175	45	-	0,18	0,23	0,28	0,36	0,46	0,53	0,58	0,64
		175-225	45	-	0,15	0,20	0,25	0,36	0,43	0,48	0,53	0,58
		225-275	40	55	0,13	0,18	0,25	0,33	0,43	0,48	0,51	0,53
		275-325	35	50	0,10	0,15	0,23	0,30	0,38	0,43	0,46	0,48
		325-375	35	50	0,08	0,15	0,23	0,30	0,38	0,43	0,46	0,48
	4	225-300	25	35	0,13	0,18	0,23	0,25	0,36	0,41	0,46	0,51
		300-350	20	30	0,10	0,18	0,23	0,25	0,36	0,41	0,46	0,51
		350-400	15	25	0,08	0,15	0,20	0,23	0,30	0,36	0,41	0,46
	5	100-150	45	-	0,15	0,25	0,30	0,36	0,46	0,53	0,56	0,61
150-250		40	60	0,13	0,23	0,25	0,30	0,41	0,48	0,51	0,56	
250-350		30	50	0,10	0,20	0,23	0,25	0,36	0,43	0,46	0,51	
6	150-200	25	-	0,13	0,15	0,20	0,25	0,30	0,38	0,41	0,43	
	200-250	20	-	0,10	0,15	0,20	0,25	0,30	0,38	0,41	0,43	
	250-300	15	20	0,10	0,13	0,18	0,20	0,25	0,33	0,36	0,38	
	300-350	-	15	0,08	0,10	0,15	0,18	0,23	0,30	0,33	0,36	
M	1	135-185	25	35	0,15	0,20	0,23	0,28	0,36	0,41	0,46	0,51
		185-275	30	30	0,13	0,18	0,20	0,25	0,30	0,36	0,41	0,46
		275-350	-	25	0,13	0,15	0,18	0,23	0,28	0,33	0,38	0,43
K	1,2	120-150	55	80	0,20	0,30	0,41	0,51	0,61	0,69	0,74	0,79
		150-200	45	75	0,18	0,28	0,36	0,46	0,56	0,64	0,69	0,74
		200-220	40	65	0,15	0,23	0,30	0,41	0,46	0,53	0,58	0,64
		220-260	35	55	0,13	0,18	0,23	0,30	0,36	0,43	0,48	0,53
		260-320	30	45	0,10	0,15	0,18	0,23	0,30	0,36	0,41	0,46
N	1	-	180	-	0,18	0,30	0,38	0,48	0,53	0,61	0,64	0,66
		-	90	-	0,20	0,33	0,41	0,51	0,56	0,64	0,66	0,69
S	1	140-210	-	15	0,13	0,18	0,20	0,25	0,30	0,38	0,41	0,43
		210-280	-	10	0,10	0,15	0,18	0,20	0,25	0,30	0,33	0,36
		280-340	-	10	0,10	0,13	0,15	0,18	0,23	0,28	0,30	0,33

Modular Drills



■ Straight Flute Holders • Inch • Short

short	D1		D1 max		L	L1	L4 max	LS	D	seat size	CS	insert screw	Torx wrench
	mm	in	mm	in									
7SZSS	11,10	.437	12,90	.508	5.75	3.37	1.09	2.38	.750	Z	1/8 - 27 NPT	56-1015	56-2026
7S0SS	12,93	.509	17,65	.695	6.35	3.97	1.85	2.38	.750	0	1/8 - 27 NPT	56-1014	56-2017
7S0.5SS	15,47	.609	17,65	.695	6.35	3.97	1.76	2.38	.750	—	1/8 - 27 NPT	56-1014	56-2017
7S1SS	17,53	.690	24,38	.960	7.23	4.85	2.25	2.38	1.000	1	1/4 - 18 NPT	56-1020	56-2028
7S1.5SS	21,82	.859	24,38	.960	7.23	4.85	2.17	2.38	1.000	1.5	1/4 - 18 NPT	56-1020	56-2028
7S2SS	24,41	.961	35,05	1.380	8.00	5.56	2.77	2.44	1.250	2	1/4 - 18 NPT	56-1018	56-2015
7S2.5SS	30,15	1.187	35,05	1.380	8.00	5.56	3.59	2.44	1.250	2.5	1/4 - 18 NPT	56-1018	56-2015
7S3SS	35,08	1.381	47,73	1.879	9.88	7.25	3.76	2.63	1.500	3	1/4 - 18 NPT	56-1585	56-2020
7S4SS	47,75	1.880	65,28	2.570	11.38	8.75	6.21	2.63	1.500	4	1/4 - 18 NPT	56-1585	56-2020
7S5SS	63,50	2.500	88,90	3.500	12.50	9.25	5.36	3.25	2.000	5	1/4 - 18 NPT	56-1025	56-2125

■ Straight Flute Holders • Inch • Medium

medium	D1		D1 max		L	L1	L4 max	LS	D	seat size	CS	insert screw	Torx wrench
	mm	in	mm	in									
7SZSM	11,10	.437	12,90	.508	6.76	4.38	2.08	2.38	.750	Z	1/8 - 27 NPT	56-1015	56-2026
7S0SM	12,93	.509	17,65	.695	7.71	5.33	2.93	2.38	.750	0	1/8 - 27 NPT	56-1014	56-2017
7S0.5SM	15,47	.609	17,65	.695	7.71	5.33	2.90	2.38	.750	—	1/8 - 27 NPT	56-1014	56-2017
7S1SM	17,53	.690	24,38	.960	9.18	6.80	4.20	2.38	1.000	1	1/4 - 18 NPT	56-1020	56-2028
7S1.5SM	21,82	.859	24,38	.960	9.18	6.80	4.12	2.38	1.000	1.5	1/4 - 18 NPT	56-1020	56-2028
7S2SM	24,41	.961	35,05	1.380	10.38	7.94	5.15	2.44	1.250	2	1/4 - 18 NPT	56-1018	56-2015
7S2.5SM	30,15	1.187	35,05	1.380	10.38	7.94	5.03	2.44	1.250	2.5	1/4 - 18 NPT	56-1020	56-2028
7S3SM	35,08	1.381	47,73	1.879	13.88	11.25	7.89	2.63	1.500	3	1/4 - 18 NPT	56-1585	56-2020
7S4SM	47,75	1.880	65,28	2.570	15.38	12.75	9.57	2.63	1.500	4	1/4 - 18 NPT	56-1585	56-2020
7S5SM	63,50	2.500	88,90	3.500	18.25	15.00	11.38	3.25	2.000	5	1/4 - 18 NPT	56-1025	56-2125
7S7SM	88,93	3.501	114,30	4.500	21.25	14.62	11.50	6.63	3.000	7	1/4 - 18 NPT	56-1025	56-2125

Modular Drills

■ Straight Flute Holders • Inch • Long

long	D1		D1 max		L	L1	L4 max	LS	D	seat size	CS	insert screw	Torx wrench
	mm	in	mm	in									
7SZSL	11,10	.437	12,90	.508	7.76	5.38	3.10	2.38	.750	Z	1/8 - 27 NPT	56-1015	56-2026
7S0SL	12,93	.509	17,65	.695	9.13	6.75	4.60	2.38	.750	0	1/8 - 27 NPT	56-1014	56-2017
7S0.5SL	15,47	.609	17,65	.695	9.13	6.75	7.36	2.38	.750	—	1/8 - 27 NPT	56-1014	56-2017
7S1SL	17,53	.690	24,38	.960	11.10	8.72	6.34	2.38	1.000	1	1/4 - 18 NPT	56-1020	56-2028
7S2SL	24,41	.961	35,05	1.380	12.75	10.31	7.86	2.44	1.250	2	1/4 - 18 NPT	56-1018	56-2015
7S3SL	35,08	1.381	47,73	1.879	18.63	16.00	13.28	2.63	1.500	3	1/4 - 18 NPT	56-1585	56-2020
7S4SL	47,75	1.880	65,28	2.570	21.50	18.87	15.89	2.63	1.500	4	1/4 - 18 NPT	56-1585	56-2020
7S7SL	88,93	3.501	114,30	4.500	29.50	22.88	19.25	6.63	3.000	7	1/4 - 18 NPT	56-1025	56-2125

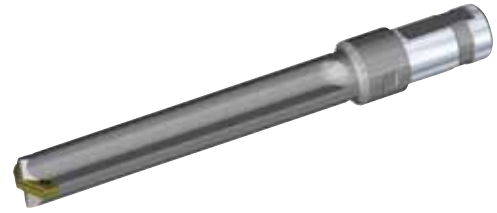
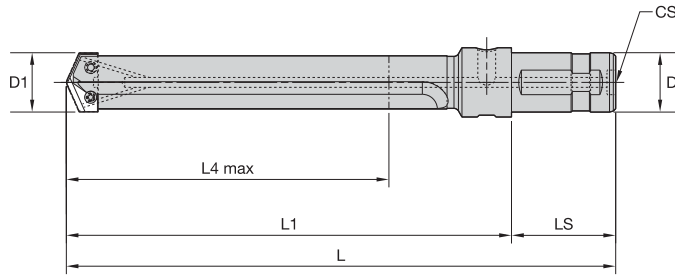


■ Straight Flute Holders • Inch • Extra Long



extra long	D1		D1 max		L	L1	L4 max	LS	D	seat size	CS	insert screw	Torx wrench
	mm	in	mm	in									
7S0SE	12,93	.509	17,65	.695	12.17	9.80	7.44	2.38	.750	0	1/8 - 27 NPT	56-1014	56-2017
7S0.5SE	15,47	.609	17,65	.695	12.17	9.80	7.60	2.38	.750	—	1/8 - 27 NPT	56-1014	56-2017
7S1SE	17,53	.690	24,38	.960	15.12	12.75	5.67	2.38	1.000	1	1/4 - 18 NPT	56-1020	56-2028
7S1.5SE	21,82	.859	24,38	.960	15.13	12.75	10.29	2.38	1.000	1.5	1/4 - 18 NPT	56-1020	56-2028
7S2SE	24,41	.961	35,05	1.380	15.82	13.38	11.07	2.44	1.250	2	1/4 - 18 NPT	56-1018	56-2015
7S3SE	35,08	1.381	47,73	1.879	25.51	22.88	20.16	2.63	1.500	3	1/4 - 18 NPT	56-1585	56-2020
7S4SE	47,75	1.880	65,28	2.570	—	—	15.89	2.63	1.500	4	1/4 - 18 NPT	56-1585	56-2020





Modular Drills



■ Straight Flute Holders • Metric • Short

short	D1		D1 max		L	L1	L4 max	LS	D	seat size	 insert screw	 Torx wrench
	mm	in	mm	in								
8S0SS	13,00	.512	17,50	.689	4.88	2.88	1.91	2.01	.787	0	56-1014	FT7
8S1SS	17,86	.703	24,00	.945	6.53	4.33	2.16	2.24	.984	1	56-1020	FT8
8S2SS	24,61	.969	35,00	1.378	7.49	5.13	2.72	2.40	1.260	2	56-1585	FT15
8S4SS	48,00	1.890	65,09	2.563	10.08	7.32	3.97	2.80	1.575	4	56-1585	FT20

■ Straight Flute Holders • Metric • Medium

medium	D1		D1 max		L	L1	L4 max	LS	D	seat size	 insert screw	 Torx wrench
	mm	in	mm	in								
8S0SM	13,00	.512	17,50	.689	6.01	4.00	2.76	2.01	.787	0	56-1014	FT7
8S1SM	17,86	.703	24,00	.945	8.58	6.33	4.16	2.24	.984	1	56-1020	FT8
8S2SM	24,61	.969	35,00	1.378	9.53	7.13	4.72	2.40	1.260	2	56-1018	FT15
8S3SM	35,72	1.406	47,63	1.875	11.11	8.31	5.32	2.80	1.575	3	56-1585	FT20

■ Straight Flute Holders • Metric • Long

long	D1		D1 max		L	L1	L4 max	LS	D	seat size	CS	insert screw	Torx wrench
	mm	in	mm	in									
8S0SL	12,93	.509	17,53	.690	8.01	6.00	4.13	2.01	.787	0	R1/8	56-1014	FT7
8S1SL	17,86	.703	24,00	.945	10.53	8.33	6.16	2.24	.984	1	—	56-1020	FT8
8S2SL	24,61	.969	35,00	1.378	11.53	9.13	6.72	2.40	1.260	2	—	56-1018	FT15

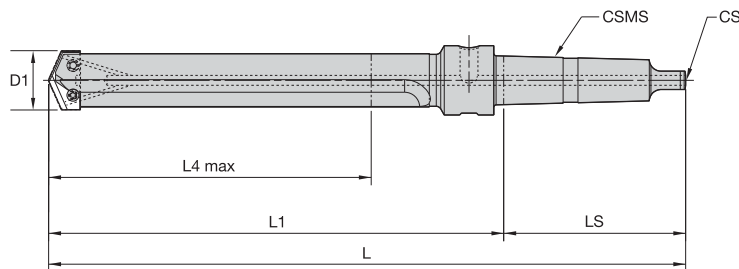


■ Straight Flute Holders • Metric • Extra Long

extra long	D1		D1 max		L	L1	L4 max	LS	D	seat size	insert screw	Torx wrench
	mm	in	mm	in								
8S2SE	24,61	.969	35,00	1.378	18.17	15.76	14.27	2.40	1.260	2	56-1018	FT15



- Through coolant must be used with spade drills depths greater than 1 x D.
- Direct spindle cooling is preferable when using WIDIA™ Spade Blades.
- If spindle cooling is unavailable, then coolant glands or inducers should be used to provide through coolant capability.
- Our holders provide both options; please find available coolant glands below.



■ Straight Flute Holders • Short

short	D1		D1 max		L	L1	L4 max	LS	CSMS system size	seat size	CS	insert screw	Torx wrench
	mm	in	mm	in									
7SZTS	11,10	.437	12,90	.508	6.50	3.56	1.50	3.13	2	Z	8 - 32	56-1015	56-2026
7S1TS	17,53	.690	24,38	.960	8.73	5.04	2.85	3.88	3	1	1/4 - 20	56-1020	56-2028
7S2TS	24,41	.961	35,05	1.380	9.44	5.75	3.56	3.88	3	2	1/4 - 20	56-1018	56-2015
7S2.5TS	30,15	1.187	35,05	1.380	9.44	5.56	2.88	3.88	3	2.5	1/4 - 20	56-1018	56-2015
7S3TS	35,08	1.381	47,73	1.879	12.13	7.50	5.00	4.88	4	3	5/16-18	56-1585	56-2020
7S4TS	47,75	1.880	65,28	2.570	13.62	9.00	6.50	4.88	4	4	5/16-18	56-1585	56-2020
7S5TS	63,50	2.500	88,90	3.500	15.38	9.50	6.75	6.13	5	5	1/2 - 13	56-1025	56-2125

NOTE: CSMS = Morse taper size.

■ Straight Flute Holders • Medium

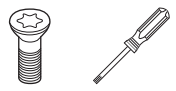
medium	D1		D1 max		L	L1	L4 max	LS	CSMS system size	seat size	CS	insert screw	Torx wrench
	mm	in	mm	in									
7S0TM	12,93	.509	17,65	.695	8.46	5.52	3.45	3.13	2	0	8 - 32	56-1014	56-2017
7S1TM	17,53	.690	24,38	.960	10.68	6.99	4.80	3.88	3	1	1/4 - 20	56-1020	56-2028
7S1.5TM	21,82	.859	24,38	.960	10.68	6.80	4.80	3.88	3	1.5	1/4 - 20	56-1020	56-2028
7S2TM	24,41	.961	35,05	1.380	11.82	8.13	5.94	3.88	3	2	1/4 - 20	56-1018	56-2015
7S2.5TM-4MT	30,15	1.187	35,05	1.380	12.82	8.19	5.26	4.88	4	2.5	5/16-18	56-1018	56-2015
7S3TM	35,08	1.381	47,73	1.879	16.13	11.50	9.00	4.88	4	3	5/16-18	56-1585	56-2020
7S4TM	47,75	1.880	65,28	2.570	17.63	13.00	10.50	4.88	4	4	5/16-18	56-1585	56-2020
7S5TM	63,50	2.500	88,90	3.500	21.13	15.25	12.50	6.13	5	5	1/2 - 13	56-1025	56-2125
7S7TM	88,93	3.501	114,30	4.500	22.28	16.40	12.25	6.13	5	7	1/2 - 13	56-1025	56-2125

NOTE: CSMS = Morse taper size.

■ Straight Flute Holders • Long

long	D1		D1 max		L	L1	L4 max	LS	CSMS system size	seat size	CS	insert screw	Torx wrench
	mm	in	mm	in									
7SZTL	11,10	.437	12,90	.508	8.51	5.57	3.50	3.13	2	Z	8 - 32	56-1015	56-2026
7S0TL	12,93	.509	17,65	.695	9.88	6.94	4.87	3.13	2	0	8 - 32	56-1014	56-2017
7S1TL	17,53	.690	24,38	.960	12.60	8.91	6.72	3.88	3	1	1/4 - 20	56-1020	56-2028
7S2TL	24,41	.961	35,05	1.380	14.19	10.50	8.31	3.88	3	2	1/4 - 20	56-1018	56-2015
7S3TL	35,08	1.381	47,73	1.879	20.88	16.25	13.75	4.88	4	3	5/16-18	56-1585	56-2020
7S4TL	47,75	1.880	65,28	2.570	23.75	19.12	16.62	4.88	4	4	5/16-18	56-1585	56-2020
7S5TL	63,50	2.500	88,90	3.500	26.88	21.00	18.25	6.13	5	5	1/2 - 13	56-1025	56-2125
7S7TL	88,93	3.501	114,30	4.500	30.53	24.65	19.45	6.13	5	7	1/2 - 13	56-1025	56-2125

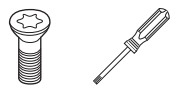
NOTE: CSMS = Morse taper size.



■ Straight Flute Holders • Extra Long

extra long	D1		D1 max		L	L1	L4 max	LS	CSMS system size	seat size	CS	insert screw	Torx wrench
	mm	in	mm	in									
7S0TE	12,93	.509	17,65	.695	12.93	10.00	7.80	3.13	2	0	8 - 32	56-1014	56-2017
7S0.5TE	15,47	.609	17,65	.695	12.93	9.80	7.80	3.13	2	—	8 - 32	56-1014	56-2017
7S2TE	24,41	.961	35,05	1.380	17.26	13.57	11.38	3.88	3	2	1/4 - 20	56-1018	56-2015

NOTE: CSMS = Morse taper size.



Modular Drills

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EXTREME **RESULTS.**

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WIDIA 



Indexable Drills

Introduction..... T2-T3
Top Cut 4..... T4-T60





























		standard						hole tolerance	standard range			customized solution range		
		● first choice ○ alternate choice							diameter range		drilling depth L/D1	diameter range		drilling depth
		P	M	K	N	S	H		D1 mm	D1 in		D1 mm	D1 inch	
		min-max		min-max		min-max			min-max			min-max		
	Top Cut 4™ Indexable Drill Body Short Hole Drilling	●	●	●				IT9-11	12-68	.473-2.5	2 x D 3 x D 4 x D 5 x D	12-110	.473-4.33	2-5 x D ²⁾

In regard to insert and drill coatings, anything is possible. If a specific insert or drill is not suitable for your workpiece material, please contact our Engineered Solutions Department for an offer about special coatings and edge preparations.

*Except for L/D 5 x D.

1) Other shank styles available as customized solution.

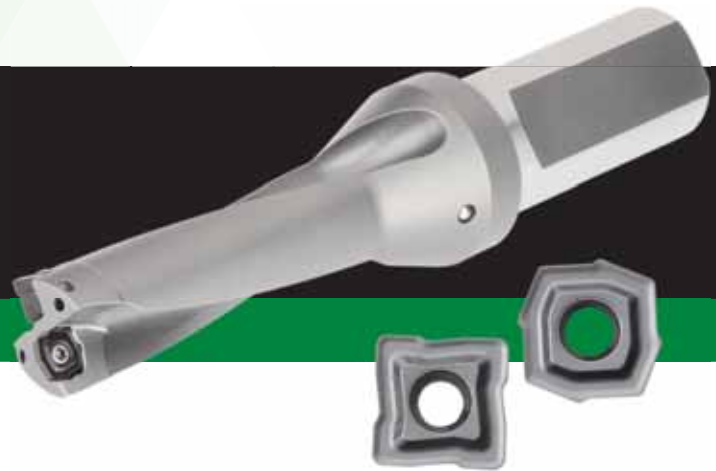
2) Dependent on the application, up to 6 x D is possible.

● standard capabilities ¹⁾			● standard ○ customized solution capabilities											page(s)
Coolant														
														
	●	● ●	●	●	●	●	●	●	●*	●	●	●	●	T8-T31

WIDIA™ Top Cut 4™ •

New Generation Indexable Drilling System

Top Cut 4



The new WIDIA Top Cut 4 (TC4) portfolio is a broad offering for customers looking for a versatile indexable drilling platform.

The newly developed TC4 features improved centering capabilities and inserts with four cutting edges for both pocket seats (central and periphery). This, in combination with the renowned WIDIA grade technology, leads to outstanding flexibility and efficiency.

The TC4 platform offers three easy-to-select grades and two geometries applicable for steel, cast iron, and stainless steel materials. It covers the diameter range from .473–2.5" (12–68mm) within the standard offering in L/D ratios of 2–5 x D.

One Comprehensive Platform

- Standard diameter range covering .473–2.500" (12–68mm) in 2 x D, 3 x D, 4 x D, and 5 x D.
- Four real cutting edges each for entire platform.
- Eight insert sizes to cover complete diameter range.

Easy to Apply

- No risk of mixing up inner and outer insert due to clear visual differences.
- Easy-to-change inserts, laser marked with geometries and grades.
- Easy-to-use nomenclature guide enabling the tool body and the related insert selection to avoid order failures.

Highly Versatile

- Breadth of application capabilities include through and cross holes, inclined entry and exit opportunity, 45° corner, half cylindrical, concave, or chain drilling.
- Various geometries and grades available.

Highest Performance

- 2x four true cutting edges.
- Cutting edge profile of central and periphery insert work together, leading to high stabilization of the drill, preventing drifting of the tool even on irregular surfaces.
- X-offset design to adjust diameter size on turning machines and optimize tolerances on machining centers.
- Apply where speed and economy are prime considerations.
- Three grades to achieve higher tool life at accelerated speeds:
 - WU25CH grade for highest metal removal rate in general applications.
 - WU40PH grade for high toughness demands.
 - WPK10CH grade for high-speed applications.



The guide below provides an example of how to select the Top Cut 4 tool body and accompanying inserts for a stable steel drilling application.

Metric Body

TCF	250	R	3	SL	32	M	D
Tool Family Top Cut 4	Diameter Metric = 3 digits (e.g. 250 = 25mm) Inch = 4 digits (e.g. 2500 = 2.5")	Right-Hand Cutting	Length Diameter Ratio L/D = 3 x D	Shank Style SL = Side Lock Adapter	Shank Size	Metric	Insert Size

Inch Body

TCF	1000	R	3	SSF	100	D
Tool Family Top Cut 4	Diameter Metric = 3 digits (e.g. 250 = 25mm) Inch = 4 digits (e.g. 2500 = 2.5")	Right-Hand Cutting	Length Diameter Ratio L/D = 3 x D	Shank Style SSF = Straight Shank Flange	Shank Size	Insert Size

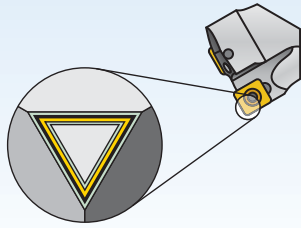
Periphery Insert

TCF	08	03	08	D	P	V34	WU25CH
Tool Family Top Cut 4	Size In-Circle D1	Insert Thickness	Insert Corner Radius	Insert Size	Insert Positioning C = Central P = Periphery	Insert Geometry	Grade

Insert Geometry – V34 for steel or cast iron or V36 for stainless steel and long chipping steel.

Insert Guide for Grades

W	U	25	C	H
W	U	40	P	H
W	PK	10	C	H
WIDIA™	Material Range U = Universal P = Steel K = Cast Iron	Toughness Range Choose high numbers for toughness in stable conditions, low numbers for high wear resistance at continuous cuts.	Coating P = PVD C = CVD	Application H = Holemaking

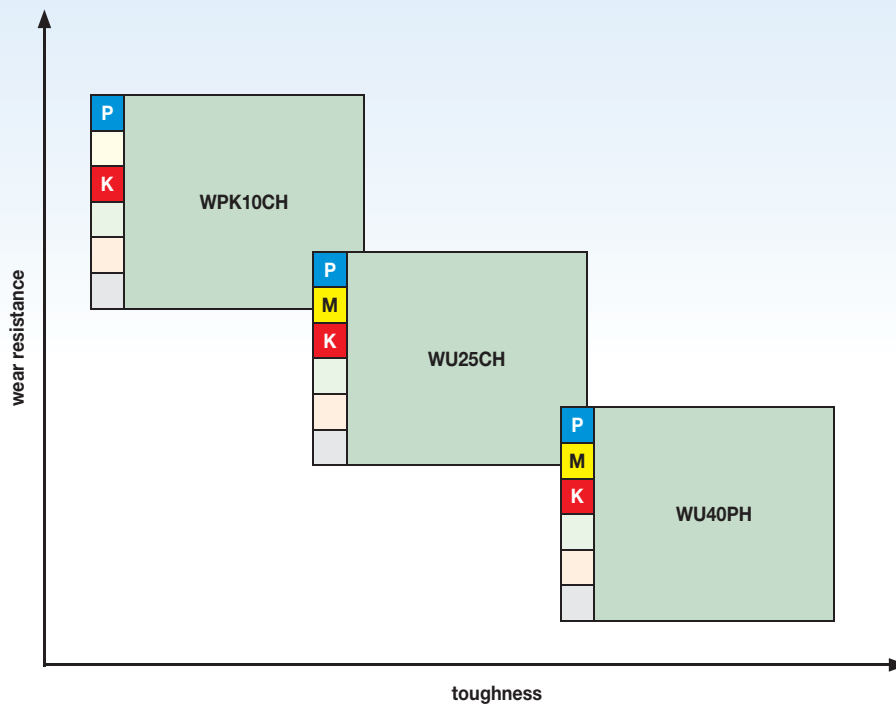


Coatings provide high-speed capability and are engineered for finishing to light roughing.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

wear resistance ← → toughness

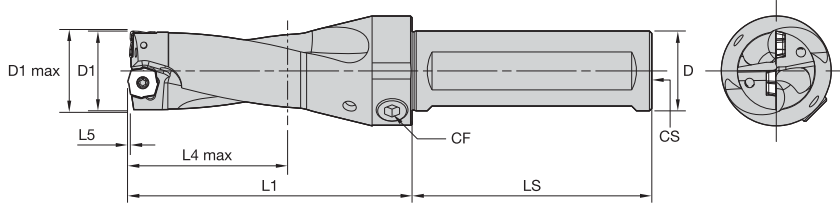
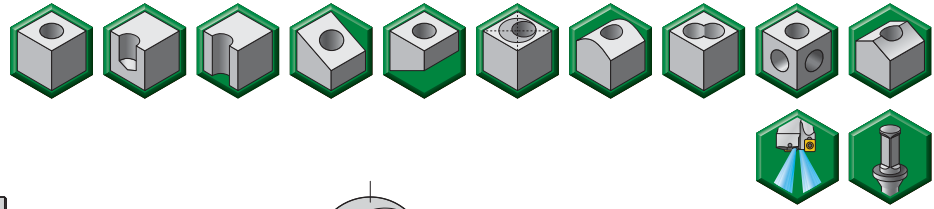
Coating		Grade Description		05	10	15	20	25	30	35	40	45	
Grade	WPK10CH TiCN-Al ₂ O ₃	<p>Composition: With an advanced CVD TiCN-Al₂O₃ coating combined with a cobalt-enriched carbide substrate, this grade offers a balanced combination of deformation-resistance and edge toughness.</p> <p>Application: Offers outstanding abrasion and crater wear resistance for high-speed machining of steels and cast irons. Use for very high cutting speeds with low to medium feed rates.</p>	P										
			M										
			K										
WU25CH TiCN-Al ₂ O ₃	<p>Composition: Advanced CVD TiCN-Al₂O₃ coating together with a newly engineered tough carbide substrate. Ensures adequate deformation resistance and excellent edge strength and offers very good wear resistance over a wide range of machining conditions.</p> <p>Application: A high productivity grade with high speeds and feeds. First choice for high productivity with very good reliability in steels, stainless steels, and cast iron rates.</p>	P											
		M											
		K											
WU40PH TiCN-Al ₂ O ₃	<p>Composition: With a multilayered PVD TiN-TiAlN coating and a tough substrate, this grade withstands interruptions and provides high wear resistance for long tool life.</p> <p>Application: First choice for high reliability in most materials. This grade should be used at medium speeds and high feeds due to sharper edges and as a grade for high-toughness applications. It covers steel, stainless steel, cast iron, and high-temp alloys under certain conditions.</p>	P											
		M											
		K											



WPK10CH:
High-Speed Grade

WU25CH:
High Metal Removal Rate Grade

WU40PH:
High Toughness Grade



For information on CF, LS, and CS, see the table on page T9.



■ **Top Cut 4 Drill • Inch • 2 x D • SSF Shanks**

order number	catalog number	D1	D1 max	D	L1	L4 max	L5	insert size	periphery insert	center insert
5537879	TCF0473R2SSF075A	.473	.493	.75	2.309	.946	.017	A	TCF040204AP	TCF040203AC
5537880	TCF0500R2SSF075A	.500	.520	.75	2.372	1.000	.020	A	TCF040204AP	TCF040203AC
5537881	TCF0531R2SSF075A	.531	.551	.75	2.444	1.062	.025	A	TCF040204AP	TCF040203AC
5578226	TCF0563R2SSF075B	.563	.583	.75	2.499	1.126	.017	B	TCF050204BP	TCF060203BC
5578227	TCF0594R2SSF075B	.594	.614	.75	2.571	1.188	.020	B	TCF050204BP	TCF060203BC
5578228	TCF0625R2SSF075B	.625	.645	.75	2.643	1.250	.023	B	TCF050204BP	TCF060203BC
5578229	TCF0656R2SSF075B	.656	.676	.75	2.715	1.312	.028	B	TCF050204BP	TCF060203BC
5578300	TCF0688R2SSF075B	.688	.708	.75	2.856	1.367	.032	B	TCF050204BP	TCF060203BC
5578301	TCF0703R2SSF075B	.703	.723	.75	2.891	1.406	.034	B	TCF050204BP	TCF060203BC
5578302	TCF0719R2SSF075B	.719	.739	.75	2.928	1.438	.036	B	TCF050204BP	TCF060203BC
5578303	TCF0734R2SSF075B	.734	.754	.75	2.963	1.468	.038	B	TCF050204BP	TCF060203BC
5578379	TCF0750R2SSF100C	.750	.770	1.00	3.037	1.500	.024	C	TCF070306CP	TCF070304CC
5578400	TCF0781R2SSF100C	.781	.801	1.00	3.109	1.562	.027	C	TCF070306CP	TCF070304CC
5578401	TCF0813R2SSF100C	.813	.833	1.00	3.183	1.626	.030	C	TCF070306CP	TCF070304CC
5578402	TCF0844R2SSF100C	.844	.864	1.00	3.255	1.688	.034	C	TCF070306CP	TCF070304CC
5578403	TCF0875R2SSF100C	.875	.895	1.00	3.328	1.750	.040	C	TCF070306CP	TCF070304CC
5578404	TCF0906R2SSF100C	.906	.926	1.00	3.400	1.812	.045	C	TCF070306CP	TCF070304CC
5578405	TCF0938R2SSF100C	.938	.958	1.00	3.473	1.876	.037	C	TCF070306CP	TCF070304CC
5537845	TCF0969R2SSF100D	.969	1.008	1.00	3.490	1.938	.032	D	TCF080308DP	TCF090305DC
5537846	TCF0984R2SSF100D	.984	1.023	1.00	3.525	1.968	.034	D	TCF080308DP	TCF090305DC
5537847	TCF1000R2SSF100D	1.000	1.039	1.00	3.562	2.000	.036	D	TCF080308DP	TCF090305DC
5537848	TCF1031R2SSF125D	1.031	1.070	1.25	3.634	2.062	.039	D	TCF080308DP	TCF090305DC
5537849	TCF1063R2SSF125D	1.063	1.102	1.25	3.708	2.126	.045	D	TCF080308DP	TCF090305DC
5537910	TCF1094R2SSF125D	1.094	1.133	1.25	3.780	2.188	.050	D	TCF080308DP	TCF090305DC
5537911	TCF1125R2SSF125D	1.125	1.164	1.25	3.852	2.250	.054	D	TCF080308DP	TCF090305DC
5537912	TCF1156R2SSF125D	1.156	1.195	1.25	3.924	2.312	.059	D	TCF080308DP	TCF090305DC
5537965	TCF1188R2SSF125E	1.188	1.227	1.25	4.077	2.376	.026	E	TCF100408EP	TCF120405EC
5537966	TCF1210R2SSF125E	1.210	1.249	1.25	4.128	2.420	.027	E	TCF100408EP	TCF120405EC
5537967	TCF1219R2SSF125E	1.219	1.258	1.25	4.149	2.438	.028	E	TCF100408EP	TCF120405EC
5537968	TCF1250R2SSF125E	1.250	1.289	1.25	4.221	2.500	.031	E	TCF100408EP	TCF120405EC
5537969	TCF1280R2SSF125E	1.280	1.319	1.25	4.291	2.560	.035	E	TCF100408EP	TCF120405EC
5538060	TCF1313R2SSF125E	1.313	1.352	1.25	4.367	2.626	.040	E	TCF100408EP	TCF120405EC
5538061	TCF1375R2SSF125E	1.375	1.414	1.25	4.511	2.750	.050	E	TCF100408EP	TCF120405EC
5538062	TCF1406R2SSF150E	1.406	1.445	1.50	4.583	2.812	.055	E	TCF100408EP	TCF120405EC
5538063	TCF1438R2SSF150E	1.438	1.477	1.50	4.657	2.876	.059	E	TCF100408EP	TCF120405EC
5578651	TCF1469R2SSF150F	1.469	1.508	1.50	4.681	2.938	.048	F	TCF120412FP	TCF150406FC

(continued)

(Top Cut 4 Drill • Inch • 2 x D • SSF Shanks — continued)

order number	catalog number	D1	D1 max	D	L1	L4 max	L5	insert size	periphery insert	center insert
5578652	TCF1500R2SSF150F	1.500	1.539	1.50	4.752	3.000	.050	F	TCF120412FP	TCF150406FC
5578653	TCF1531R2SSF150F	1.531	1.570	1.50	4.824	3.062	.053	F	TCF120412FP	TCF150406FC
5578654	TCF1563R2SSF150F	1.563	1.602	1.50	4.898	3.126	.056	F	TCF120412FP	TCF150406FC
5578655	TCF1625R2SSF150F	1.625	1.664	1.50	5.042	3.250	.065	F	TCF120412FP	TCF150406FC
5578656	TCF1656R2SSF150F	1.656	1.695	1.50	5.114	3.312	.070	F	TCF120412FP	TCF150406FC
5578657	TCF1688R2SSF150F	1.688	1.727	1.50	5.188	3.376	.077	F	TCF120412FP	TCF150406FC
5578658	TCF1750R2SSF150F	1.750	1.789	1.50	5.332	3.500	.085	F	TCF120412FP	TCF150406FC
5578765	TCF1813R2SSF150G	1.813	1.852	1.50	5.478	3.626	.057	G	TCF150512GP	TCF180508GC
5578766	TCF1875R2SSF150G	1.875	1.914	1.50	5.622	3.750	.063	G	TCF150512GP	TCF180508GC
5578767	TCF1938R2SSF150G	1.938	1.977	1.50	5.768	3.876	.069	G	TCF150512GP	TCF180508GC
5578768	TCF2000R2SSF150G	2.000	2.039	1.50	5.971	4.000	.078	G	TCF150512GP	TCF180508GC
5578769	TCF2125R2SSF200G	2.125	2.164	2.00	6.261	4.250	.100	G	TCF150512GP	TCF180508GC
5578790	TCF2219R2SSF200G	2.219	2.258	2.00	6.479	4.438	.085	G	TCF150512GP	TCF180508GC
5538500	TCF2250R2SSF200H	2.250	2.289	2.00	6.531	4.500	.070	H	TCF180614HP	TCF210608HC
5538501	TCF2375R2SSF200H	2.375	2.414	2.00	6.821	4.750	.084	H	TCF180614HP	TCF210608HC
5538502	TCF2500R2SSF200H	2.500	2.539	2.00	7.111	5.000	.110	H	TCF180614HP	TCF210608HC

■ Spare Parts

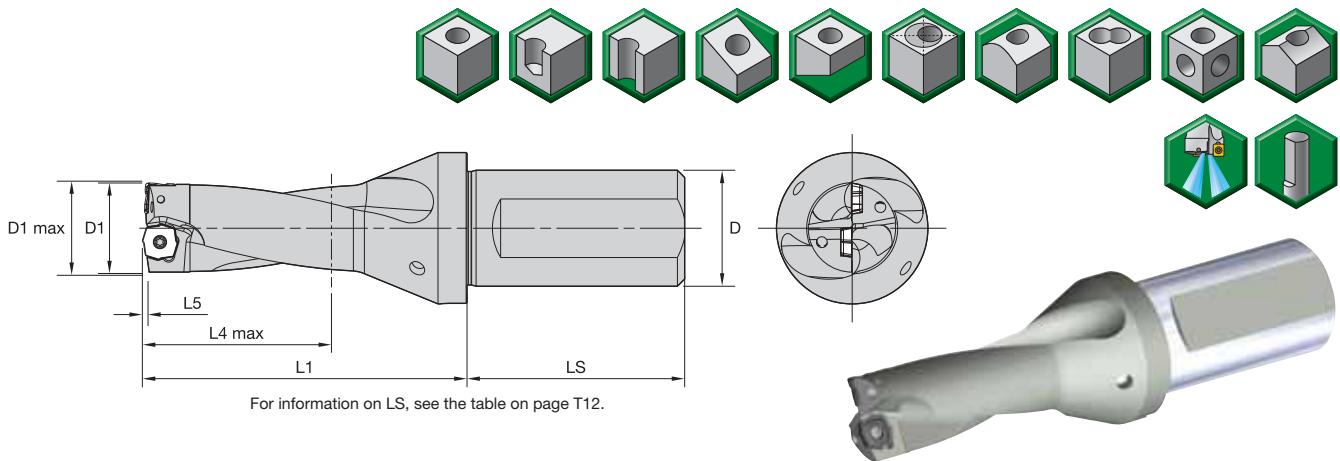

insert size	periphery insert	center insert	insert screw order number	Torx size	Torx driver order number	tightening torque Nm	tightening torque ft. lbs
A	TCF040204AP	TCF040203AC	2025073	T5	2029221	0,40	.295
B	TCF050204BP	TCF060203BC	1175225	T6	1138455	0,53	.390
C	TCF070306CP	TCF070304CC	1021337	T7	2029266	0,90	.663
D	TCF080308DP	TCF090305DC	1134385	T8	2029598	1,10	.811
E	TCF100408EP	TCF120405EC	2018194	T9	1138430	2,00	1.475
F	TCF120412FP	TCF150406FC	1756815	T15	2029596	4,00	2.950
G	TCF150512GP	TCF180508GC	1099645	T20	2029488	6,30	4.646
H	TCF180614HP	TCF210608HC	1823871	T25	2585812	8,80	6.490

D	LS		CF	CS
	mm	in		
.750	50,8	2.000	1/8 - 27 NPT	1/8 - 27 NPT
1.000	76,2	3.000	1/8 - 27 NPT	1/4 - 18 NPT
1.250	82,6	3.250	1/8 - 27 NPT	1/4 - 18 NPT
1.500	95,3	3.750	1/8 - 27 NPT	1/4 - 18 NPT
2.000	101,6	4.000	1/8 - 27 NPT	1/4 - 18 NPT

NOTE: Drilling in stacked plates possible in certain applications. Ask for technical support.
 Drill shipped with insert screws and Torx wrench.
 See pages T28–T31 for inserts.
 SSF = Straight Shank Flange
 D1 max is an achievable diameter using x-offset.



WARNING
 During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.



■ Top Cut 4 Drill • Metric • 2 x D • SL Shanks

order number	catalog number	D1	D1 max	D	L1	L4 max	L5	insert size	periphery insert	center insert
5537778	TCF120R2SL20MA	12,00	12,50	20	54,6	24,0	0,41	A	TCF040204AP	TCF040203AC
5537779	TCF125R2SL20MA	12,50	13,00	20	55,8	25,0	0,48	A	TCF040204AP	TCF040203AC
5537860	TCF127R2SL20MA	12,70	13,20	20	56,2	26,0	0,51	A	TCF040204AP	TCF040203AC
5537861	TCF130R2SL20MA	13,00	13,50	20	56,9	26,0	0,56	A	TCF040204AP	TCF040203AC
5537862	TCF135R2SL20MA	13,50	14,00	20	58,1	27,0	0,64	A	TCF040204AP	TCF040203AC
5577828	TCF140R2SL25MB	14,00	14,50	25	59,8	28,0	0,42	B	TCF050204BP	TCF060203BC
5577829	TCF145R2SL25MB	14,50	15,00	25	60,9	29,0	0,45	B	TCF050204BP	TCF060203BC
5577920	TCF150R2SL25MB	15,00	15,50	25	62,1	30,0	0,49	B	TCF050204BP	TCF060203BC
5577921	TCF155R2SL25MB	15,50	16,00	25	63,3	31,0	0,54	B	TCF050204BP	TCF060203BC
5577922	TCF160R2SL25MB	16,00	16,50	25	64,4	32,0	0,60	B	TCF050204BP	TCF060203BC
5577923	TCF165R2SL25MB	16,50	17,00	25	65,6	33,0	0,68	B	TCF050204BP	TCF060203BC
5577924	TCF170R2SL25MB	17,00	17,50	25	68,4	34,0	0,74	B	TCF050204BP	TCF060203BC
5577925	TCF175R2SL25MB	17,50	18,00	25	69,6	35,0	0,79	B	TCF050204BP	TCF060203BC
5577926	TCF180R2SL25MB	18,00	18,50	25	70,8	36,0	0,86	B	TCF050204BP	TCF060203BC
5577927	TCF185R2SL25MB	18,50	19,00	25	71,9	37,0	0,83	B	TCF050204BP	TCF060203BC
5578820	TCF190R2SL25MC	19,00	19,50	25	72,1	38,0	0,60	C	TCF070306CP	TCF070304CC
5578821	TCF195R2SL25MC	19,50	20,00	25	73,2	39,0	0,70	C	TCF070306CP	TCF070304CC
5578822	TCF200R2SL25MC	20,00	20,50	25	74,4	40,0	0,70	C	TCF070306CP	TCF070304CC
5578823	TCF205R2SL25MC	20,50	21,00	25	75,6	41,0	0,70	C	TCF070306CP	TCF070304CC
5578824	TCF210R2SL25MC	21,00	21,50	25	76,7	42,0	0,80	C	TCF070306CP	TCF070304CC
5578825	TCF220R2SL25MC	22,00	22,50	25	79,0	44,0	1,00	C	TCF070306CP	TCF070304CC
5578826	TCF225R2SL25MC	22,50	23,00	25	80,2	45,0	1,10	C	TCF070306CP	TCF070304CC
5578827	TCF230R2SL25MC	23,00	23,50	25	81,4	46,0	1,10	C	TCF070306CP	TCF070304CC
5537167	TCF240R2SL25MD	24,00	25,00	25	87,2	48,0	0,78	D	TCF080308DP	TCF090305DC
5537168	TCF250R2SL32MD	25,00	26,00	32	89,6	50,0	0,86	D	TCF080308DP	TCF090305DC
5537169	TCF260R2SL32MD	26,00	27,00	32	91,9	52,0	0,97	D	TCF080308DP	TCF090305DC
5537820	TCF265R2SL32MD	26,50	27,50	32	93,0	53,0	1,05	D	TCF080308DP	TCF090305DC
5537821	TCF270R2SL32MD	27,00	28,00	32	94,2	54,0	1,15	D	TCF080308DP	TCF090305DC
5537822	TCF280R2SL32MD	28,00	29,00	32	96,5	56,0	1,30	D	TCF080308DP	TCF090305DC
5537823	TCF290R2SL32MD	29,00	30,00	32	98,8	58,0	1,45	D	TCF080308DP	TCF090305DC
5537937	TCF300R2SL32ME	30,00	31,00	32	100,2	60,0	0,63	E	TCF100408EP	TCF120405EC
5537938	TCF310R2SL32ME	31,00	32,00	32	102,5	62,0	0,72	E	TCF100408EP	TCF120405EC

(continued)

(Top Cut 4 Drill • Metric • 2 x D • SL Shanks — continued)

order number	catalog number	D1	D1 max	D	L1	L4 max	L5	insert size	periphery insert	center insert
5537939	TCF320R2SL32ME	32,00	33,00	32	104,8	64,0	0,82	E	TCF100408EP	TCF120405EC
5537940	TCF330R2SL40ME	33,00	34,00	40	107,1	66,0	0,95	E	TCF100408EP	TCF120405EC
5537941	TCF340R2SL40ME	34,00	35,00	40	109,4	68,0	1,14	E	TCF100408EP	TCF120405EC
5537942	TCF350R2SL40ME	35,00	36,00	40	111,8	70,0	1,30	E	TCF100408EP	TCF120405EC
5537943	TCF360R2SL40ME	36,00	37,00	40	114,1	72,0	1,45	E	TCF100408EP	TCF120405EC
5578539	TCF370R2SL40MF	37,00	38,00	40	118,1	74,0	1,19	F	TCF120412FP	TCF150406FC
5578600	TCF375R2SL40MF	37,50	38,50	40	119,3	75,0	1,23	F	TCF120412FP	TCF150406FC
5578601	TCF380R2SL40MF	38,00	39,00	40	120,5	76,0	1,27	F	TCF120412FP	TCF150406FC
5578602	TCF390R2SL40MF	39,00	40,00	40	122,8	78,0	1,36	F	TCF120412FP	TCF150406FC
5578603	TCF400R2SL40MF	40,00	41,00	40	125,1	80,0	1,47	F	TCF120412FP	TCF150406FC
5578604	TCF410R2SL40MF	41,00	42,00	40	127,4	82,0	1,60	F	TCF120412FP	TCF150406FC
5578605	TCF420R2SL40MF	42,00	43,00	40	129,7	84,0	1,77	F	TCF120412FP	TCF150406FC
5578606	TCF430R2SL40MF	43,00	44,00	40	132,1	86,0	1,99	F	TCF120412FP	TCF150406FC
5578607	TCF440R2SL40MF	44,00	45,00	40	134,4	88,0	2,10	F	TCF120412FP	TCF150406FC
5578608	TCF450R2SL50MF	45,00	46,00	50	136,7	90,0	2,21	F	TCF120412FP	TCF150406FC
5578694	TCF460R2SL50MG	46,00	47,00	50	139,0	92,0	1,45	G	TCF150512GP	TCF180508GC
5578695	TCF470R2SL50MG	47,00	48,00	50	141,3	94,0	1,53	G	TCF150512GP	TCF180508GC
5578696	TCF480R2SL50MG	48,00	49,00	50	143,7	96,0	1,63	G	TCF150512GP	TCF180508GC
5578697	TCF490R2SL50MG	49,00	50,00	50	146,0	98,0	1,74	G	TCF150512GP	TCF180508GC
5578698	TCF500R2SL50MG	50,00	51,00	50	149,8	100,0	1,87	G	TCF150512GP	TCF180508GC
5578699	TCF505R2SL50MG	50,50	51,50	50	151,0	101,0	1,94	G	TCF150512GP	TCF180508GC
5578710	TCF510R2SL50MG	51,00	52,00	50	152,1	102,0	2,02	G	TCF150512GP	TCF180508GC
5578711	TCF520R2SL50MG	52,00	53,00	50	154,4	104,0	2,22	G	TCF150512GP	TCF180508GC
5578712	TCF530R2SL50MG	53,00	54,00	50	156,8	106,0	2,46	G	TCF150512GP	TCF180508GC
5578713	TCF540R2SL50MG	54,00	55,00	50	159,1	108,0	2,53	G	TCF150512GP	TCF180508GC
5578714	TCF550R2SL50MG	55,00	56,00	50	161,4	110,0	2,73	G	TCF150512GP	TCF180508GC
5578715	TCF560R2SL50MG	56,00	57,00	50	163,7	112,0	2,37	G	TCF150512GP	TCF180508GC
5538613	TCF570R2SL50MH	57,00	58,00	50	165,5	114,0	1,76	H	TCF180614HP	TCF210608HC
5538614	TCF580R2SL50MH	58,00	59,00	50	167,9	116,0	1,85	H	TCF180614HP	TCF210608HC
5538615	TCF590R2SL50MH	59,00	60,00	50	170,2	118,0	1,96	H	TCF180614HP	TCF210608HC
5538616	TCF600R2SL50MH	60,00	61,00	50	172,5	120,0	1,42	H	TCF180614HP	TCF210608HC
5538617	TCF610R2SL50MH	61,00	62,00	50	174,8	122,0	2,23	H	TCF180614HP	TCF210608HC
5538618	TCF620R2SL50MH	62,00	63,00	50	177,1	124,0	2,41	H	TCF180614HP	TCF210608HC
5538619	TCF630R2SL50MH	63,00	64,00	50	179,5	126,0	2,64	H	TCF180614HP	TCF210608HC
5538630	TCF640R2SL50MH	64,00	65,00	50	181,8	128,0	2,94	H	TCF180614HP	TCF210608HC
5538631	TCF650R2SL50MH	65,00	66,00	50	184,1	130,0	3,06	H	TCF180614HP	TCF210608HC
5538632	TCF660R2SL50MH	66,00	67,00	50	186,4	132,0	3,18	H	TCF180614HP	TCF210608HC
5538633	TCF670R2SL50MH	67,00	68,00	50	188,7	134,0	3,30	H	TCF180614HP	TCF210608HC
5538634	TCF680R2SL50MH	68,00	69,00	50	191,1	136,0	2,93	H	TCF180614HP	TCF210608HC

(continued)

(Top Cut 4 Drill • Metric • 2 x D • SL Shanks — continued)

■ Spare Parts



insert size	periphery insert	center insert	insert screw order number	Torx size	Torx driver order number	tightening torque Nm	tightening torque ft. lbs
A	TCF040204AP	TCF040203AC	2025073	T5	2029221	0,40	.295
B	TCF050204BP	TCF060203BC	1175225	T6	1138455	0,53	.390
C	TCF070306CP	TCF070304CC	1021337	T7	2029266	0,90	.663
D	TCF080308DP	TCF090305DC	1134385	T8	2029598	1,10	.811
E	TCF100408EP	TCF120405EC	2018194	T9	1138430	2,00	1.475
F	TCF120412FP	TCF150406FC	1756815	T15	2029596	4,00	2.950
G	TCF150512GP	TCF180508GC	1099645	T20	2029488	6,30	4.646
H	TCF180614HP	TCF210608HC	1823871	T25	1022519	8,80	6.490

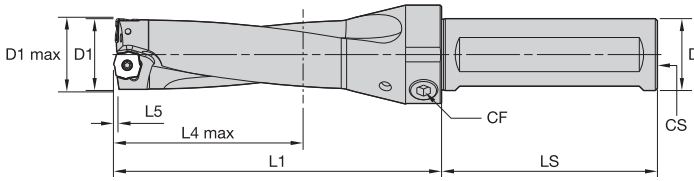
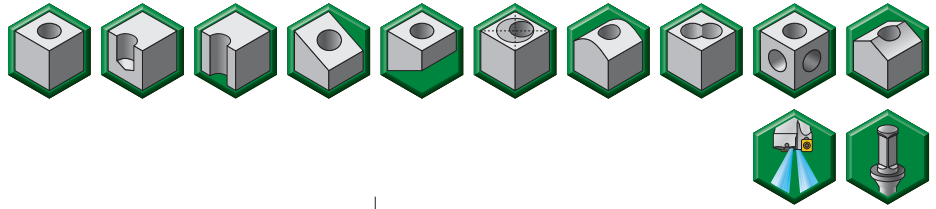
D	LS	
	mm	in
20,00	50	1.969
25,00	56	2.205
32,00	60	2.362
40,00	70	2.756
50,00	80	3.150

NOTE: Drilling in stacked plates possible in certain applications. Ask for technical support.
 Drill shipped with insert screws and Torx wrench.
 See pages T28–T31 for inserts.
 SL = Side Lock
 D1 max is an achievable diameter using x-offset.



WARNING

During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.



For information on CF, LS, and CS, see the table on page T14.



■ Top Cut 4 Drill • Inch • 3 x D • SSF Shanks

order number	catalog number	D1	D1 max	D	L1	L4 max	L5	insert size	periphery insert	center insert
5537882	TCF0473R3SSF075A	.473	.493	.75	2.782	1.431	.017	A	TCF040204AP	TCF040203AC
5537883	TCF0500R3SSF075A	.500	.520	.75	2.872	1.500	.020	A	TCF040204AP	TCF040203AC
5537884	TCF0531R3SSF075A	.531	.551	.75	2.975	1.593	.025	A	TCF040204AP	TCF040203AC
5578304	TCF0563R3SSF075B	.563	.583	.75	3.062	1.689	.017	B	TCF050204BP	TCF060203BC
5578305	TCF0594R3SSF075B	.594	.614	.75	3.165	1.782	.020	B	TCF050204BP	TCF060203BC
5578306	TCF0625R3SSF075B	.625	.645	.75	3.268	1.875	.023	B	TCF050204BP	TCF060203BC
5578307	TCF0656R3SSF075B	.656	.676	.75	3.371	1.968	.028	B	TCF050204BP	TCF060203BC
5578308	TCF0688R3SSF075B	.688	.708	.75	3.544	2.064	.032	B	TCF050204BP	TCF060203BC
5578309	TCF0703R3SSF075B	.703	.723	.75	3.594	2.109	.034	B	TCF050204BP	TCF060203BC
5578310	TCF0719R3SSF075B	.719	.739	.75	3.647	2.157	.036	B	TCF050204BP	TCF060203BC
5578311	TCF0734R3SSF075B	.734	.754	.75	3.697	2.202	.038	B	TCF050204BP	TCF060203BC
5578406	TCF0750R3SSF100C	.750	.770	1.00	3.787	2.250	.024	C	TCF070306CP	TCF070304CC
5578407	TCF0781R3SSF100C	.781	.801	1.00	3.890	2.343	.027	C	TCF070306CP	TCF070304CC
5578408	TCF0813R3SSF100C	.813	.833	1.00	3.996	2.439	.030	C	TCF070306CP	TCF070304CC
5578409	TCF0844R3SSF100C	.844	.864	1.00	4.099	2.532	.034	C	TCF070306CP	TCF070304CC
5578410	TCF0875R3SSF100C	.875	.895	1.00	4.203	2.625	.040	C	TCF070306CP	TCF070304CC
5578411	TCF0906R3SSF100C	.906	.926	1.00	4.306	2.718	.045	C	TCF070306CP	TCF070304CC
5578412	TCF0938R3SSF100C	.938	.958	1.00	4.411	2.814	.037	C	TCF070306CP	TCF070304CC
5537913	TCF0969R3SSF100D	.969	1.008	1.00	4.459	2.907	.032	D	TCF080308DP	TCF090305DC
5537914	TCF0984R3SSF100D	.984	1.023	1.00	4.509	2.952	.034	D	TCF080308DP	TCF090305DC
5537915	TCF1000R3SSF100D	1.000	1.039	1.00	4.562	3.000	.036	D	TCF080308DP	TCF090305DC
5537916	TCF1031R3SSF125D	1.031	1.070	1.25	4.665	3.093	.039	D	TCF080308DP	TCF090305DC
5537917	TCF1063R3SSF125D	1.063	1.102	1.25	4.771	3.189	.045	D	TCF080308DP	TCF090305DC
5537918	TCF1094R3SSF125D	1.094	1.133	1.25	4.874	3.282	.050	D	TCF080308DP	TCF090305DC
5537919	TCF1125R3SSF125D	1.125	1.164	1.25	4.977	3.375	.054	D	TCF080308DP	TCF090305DC
5537920	TCF1156R3SSF125D	1.156	1.195	1.25	5.080	3.468	.059	D	TCF080308DP	TCF090305DC
5538064	TCF1188R3SSF125E	1.188	1.227	1.25	5.265	3.564	.026	E	TCF100408EP	TCF120405EC
5538065	TCF1210R3SSF125E	1.210	1.249	1.25	5.338	3.630	.027	E	TCF100408EP	TCF120405EC
5538066	TCF1219R3SSF125E	1.219	1.258	1.25	5.368	3.657	.028	E	TCF100408EP	TCF120405EC
5538067	TCF1250R3SSF125E	1.250	1.289	1.25	5.471	3.750	.031	E	TCF100408EP	TCF120405EC
5538068	TCF1280R3SSF125E	1.280	1.319	1.25	5.571	3.840	.035	E	TCF100408EP	TCF120405EC
5538069	TCF1313R3SSF125E	1.313	1.352	1.25	5.680	3.939	.040	E	TCF100408EP	TCF120405EC
5538080	TCF1375R3SSF125E	1.375	1.414	1.25	5.886	4.125	.050	E	TCF100408EP	TCF120405EC
5538081	TCF1406R3SSF150E	1.406	1.445	1.50	5.989	4.218	.055	E	TCF100408EP	TCF120405EC
5538082	TCF1438R3SSF150E	1.438	1.477	1.50	6.095	4.314	.059	E	TCF100408EP	TCF120405EC
5578659	TCF1469R3SSF150F	1.469	1.508	1.50	6.149	4.407	.048	F	TCF120412FP	TCF150406FC

(continued)

(Top Cut 4 Drill • Inch • 3 x D • SSF Shanks — continued)

order number	catalog number	D1	D1 max	D	L1	L4 max	L5	insert size	periphery insert	center insert
5578670	TCF1500R3SSF150F	1.500	1.539	1.50	6.252	4.500	.050	F	TCF120412FP	TCF150406FC
5578671	TCF1531R3SSF150F	1.531	1.570	1.50	6.355	4.593	.053	F	TCF120412FP	TCF150406FC
5578672	TCF1563R3SSF150F	1.563	1.602	1.50	6.461	4.689	.056	F	TCF120412FP	TCF150406FC
5578673	TCF1625R3SSF150F	1.625	1.664	1.50	6.667	4.875	.065	F	TCF120412FP	TCF150406FC
5578674	TCF1656R3SSF150F	1.656	1.695	1.50	6.770	4.968	.070	F	TCF120412FP	TCF150406FC
5578675	TCF1688R3SSF150F	1.688	1.727	1.50	6.876	5.064	.077	F	TCF120412FP	TCF150406FC
5578676	TCF1750R3SSF150F	1.750	1.789	1.50	7.082	5.250	.085	F	TCF120412FP	TCF150406FC
5578791	TCF1813R3SSF150G	1.813	1.852	1.50	7.291	5.439	.057	G	TCF150512GP	TCF180508GC
5578792	TCF1875R3SSF150G	1.875	1.914	1.50	7.497	5.625	.063	G	TCF150512GP	TCF180508GC
5578793	TCF1938R3SSF150G	1.938	1.977	1.50	7.706	5.814	.069	G	TCF150512GP	TCF180508GC
5578794	TCF2000R3SSF150G	2.000	2.039	1.50	7.971	6.000	.078	G	TCF150512GP	TCF180508GC
5578795	TCF2125R3SSF200G	2.125	2.164	2.00	8.386	6.375	.100	G	TCF150512GP	TCF180508GC
5578796	TCF2219R3SSF200G	2.219	2.258	2.00	8.698	6.657	.085	G	TCF150512GP	TCF180508GC
5538503	TCF2250R3SSF200H	2.250	2.289	2.00	8.781	6.750	.070	H	TCF180614HP	TCF210608HC
5538504	TCF2375R3SSF200H	2.375	2.414	2.00	9.196	7.125	.084	H	TCF180614HP	TCF210608HC
5538505	TCF2500R3SSF200H	2.500	2.539	2.00	9.611	7.500	.110	H	TCF180614HP	TCF210608HC

■ Spare Parts



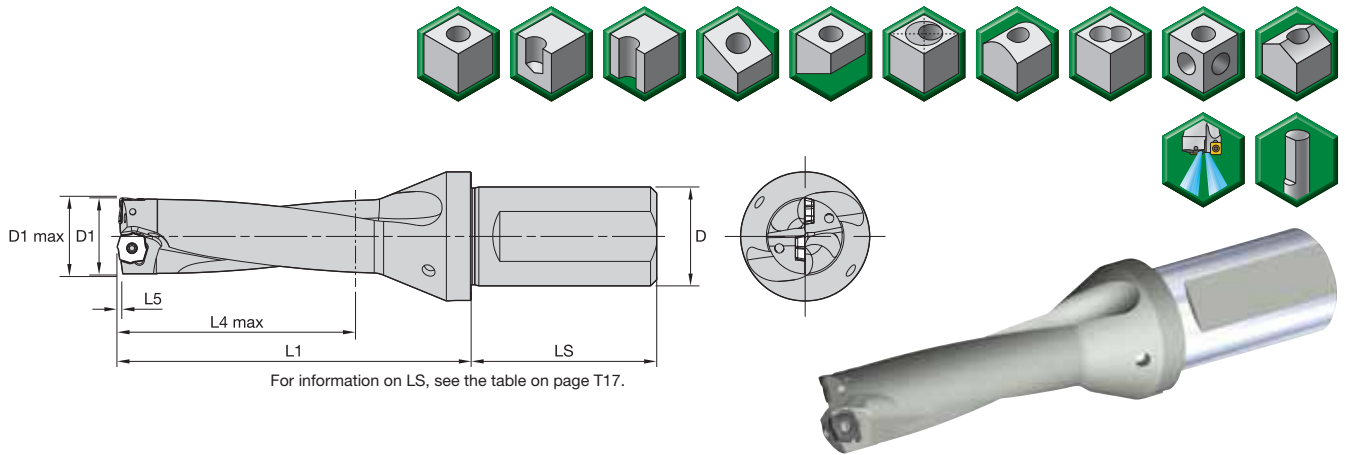
insert size	periphery insert	center insert	insert screw order number	Torx size	Torx driver order number	tightening torque Nm	tightening torque ft. lbs
A	TCF040204AP	TCF040203AC	2025073	T5	2029221	0,40	.295
B	TCF050204BP	TCF060203BC	1175225	T6	1138455	0,53	.390
C	TCF070306CP	TCF070304CC	1021337	T7	2029266	0,90	.663
D	TCF080308DP	TCF090305DC	1134385	T8	2029598	1,10	.811
E	TCF100408EP	TCF120405EC	2018194	T9	1138430	2,00	1.475
F	TCF120412FP	TCF150406FC	1756815	T15	2029596	4,00	2.950
G	TCF150512GP	TCF180508GC	1099645	T20	2029488	6,30	4.646
H	TCF180614HP	TCF210608HC	1823871	T25	2585812	8,80	6.490

D	LS		CF	CS
	mm	in		
.750	50,8	2.000	1/8 - 27 NPT	1/8 - 27 NPT
1.000	76,2	3.000	1/8 - 27 NPT	1/4 - 18 NPT
1.250	82,6	3.250	1/8 - 27 NPT	1/4 - 18 NPT
1.500	95,3	3.750	1/8 - 27 NPT	1/4 - 18 NPT
2.000	101,6	4.000	1/8 - 27 NPT	1/4 - 18 NPT

NOTE: Drilling in stacked plates possible in certain applications. Ask for technical support.
 Drill shipped with insert screws and Torx wrench.
 See pages T28–T31 for inserts.
 SSF = Straight Shank Flange
 D1 max is an achievable diameter using x-offset.



WARNING
 During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.



For information on LS, see the table on page T17.

■ Top Cut 4 Drill • Metric • 3 x D • SL Shanks

order number	catalog number	D1	D1 max	D	L1	L4 max	L5	insert size	periphery insert	center insert
5537863	TCF120R3SL20MA	12,00	12,50	20	66,6	36,0	0,41	A	TCF040204AP	TCF040203AC
5537864	TCF125R3SL20MA	12,50	13,00	20	68,3	37,5	0,48	A	TCF040204AP	TCF040203AC
5537866	TCF127R3SL20MA	12,70	13,20	20	68,9	38,1	0,51	A	TCF040204AP	TCF040203AC
5537867	TCF130R3SL20MA	13,00	13,50	20	69,9	39,0	0,56	A	TCF040204AP	TCF040203AC
5537868	TCF135R3SL20MA	13,50	14,00	20	71,6	41,0	0,64	A	TCF040204AP	TCF040203AC
5577928	TCF140R3SL25MB	14,00	14,50	25	73,8	42,0	0,42	B	TCF050204BP	TCF060203BC
5577929	TCF145R3SL25MB	14,50	15,00	25	75,4	43,5	0,45	B	TCF050204BP	TCF060203BC
5577930	TCF150R3SL25MB	15,00	15,50	25	77,1	45,0	0,49	B	TCF050204BP	TCF060203BC
5577931	TCF155R3SL25MB	15,50	16,00	25	78,8	46,5	0,54	B	TCF050204BP	TCF060203BC
5577932	TCF160R3SL25MB	16,00	16,50	25	80,4	48,0	0,60	B	TCF050204BP	TCF060203BC
5577933	TCF165R3SL25MB	16,50	17,00	25	82,1	49,5	0,68	B	TCF050204BP	TCF060203BC
5577934	TCF170R3SL25MB	17,00	17,50	25	85,4	51,0	0,74	B	TCF050204BP	TCF060203BC
5577935	TCF175R3SL25MB	17,50	18,00	25	87,1	52,5	0,79	B	TCF050204BP	TCF060203BC
5577936	TCF180R3SL25MB	18,00	18,50	25	88,8	54,0	0,86	B	TCF050204BP	TCF060203BC
5577937	TCF185R3SL25MB	18,50	19,00	25	90,4	55,5	0,83	B	TCF050204BP	TCF060203BC
5578828	TCF190R3SL25MC	19,00	19,50	25	91,1	57,0	0,60	C	TCF070306CP	TCF070304CC
5578829	TCF195R3SL25MC	19,50	20,00	25	92,7	58,5	0,70	C	TCF070306CP	TCF070304CC
5578830	TCF200R3SL25MC	20,00	20,50	25	94,4	60,0	0,70	C	TCF070306CP	TCF070304CC
5578831	TCF205R3SL25MC	20,50	21,00	25	96,1	61,5	0,70	C	TCF070306CP	TCF070304CC
5578832	TCF210R3SL25MC	21,00	21,50	25	97,7	63,0	0,80	C	TCF070306CP	TCF070304CC
5578833	TCF220R3SL25MC	22,00	22,50	25	101,0	66,0	1,00	C	TCF070306CP	TCF070304CC
5578834	TCF225R3SL25MC	22,50	23,00	25	102,7	67,5	1,10	C	TCF070306CP	TCF070304CC
5578835	TCF230R3SL25MC	23,00	23,50	25	104,4	69,0	1,10	C	TCF070306CP	TCF070304CC
5537824	TCF240R3SL25MD	24,00	25,00	25	111,2	72,0	0,78	D	TCF080308DP	TCF090305DC
5537825	TCF250R3SL32MD	25,00	26,00	32	114,6	75,0	0,86	D	TCF080308DP	TCF090305DC
5537826	TCF260R3SL32MD	26,00	27,00	32	117,9	78,0	0,97	D	TCF080308DP	TCF090305DC
5537827	TCF265R3SL32MD	26,50	27,50	32	119,5	79,5	1,05	D	TCF080308DP	TCF090305DC
5537828	TCF270R3SL32MD	27,00	28,00	32	121,2	81,0	1,15	D	TCF080308DP	TCF090305DC
5537829	TCF280R3SL32MD	28,00	29,00	32	124,5	84,0	1,30	D	TCF080308DP	TCF090305DC
5537830	TCF290R3SL32MD	29,00	30,00	32	127,8	87,0	1,45	D	TCF080308DP	TCF090305DC
5537944	TCF300R3SL32ME	30,00	31,00	32	130,2	90,0	0,63	E	TCF100408EP	TCF120405EC
5537945	TCF310R3SL32ME	31,00	32,00	32	133,5	93,0	0,72	E	TCF100408EP	TCF120405EC

(continued)

(Top Cut 4 Drill • Metric • 3 x D • SL Shanks — continued)

order number	catalog number	D1	D1 max	D	L1	L4 max	L5	insert size	periphery insert	center insert
5537946	TCF320R3SL32ME	32,00	33,00	32	136,8	96,0	0,82	E	TCF100408EP	TCF120405EC
5537947	TCF330R3SL40ME	33,00	34,00	40	140,1	99,0	0,95	E	TCF100408EP	TCF120405EC
5537948	TCF340R3SL40ME	34,00	35,00	40	143,4	102,0	1,14	E	TCF100408EP	TCF120405EC
5537949	TCF350R3SL40ME	35,00	36,00	40	146,8	105,0	1,30	E	TCF100408EP	TCF120405EC
5537950	TCF360R3SL40ME	36,00	37,00	40	150,1	108,0	1,45	E	TCF100408EP	TCF120405EC
5578609	TCF370R3SL40MF	37,00	38,00	40	155,1	111,0	1,19	F	TCF120412FP	TCF150406FC
5578610	TCF375R3SL40MF	37,50	38,50	40	156,8	113,0	1,23	F	TCF120412FP	TCF150406FC
5578611	TCF380R3SL40MF	38,00	39,00	40	158,5	114,0	1,27	F	TCF120412FP	TCF150406FC
5578612	TCF390R3SL40MF	39,00	40,00	40	161,8	117,0	1,36	F	TCF120412FP	TCF150406FC
5578613	TCF400R3SL40MF	40,00	41,00	40	165,1	120,0	1,47	F	TCF120412FP	TCF150406FC
5578614	TCF410R3SL40MF	41,00	42,00	40	168,4	123,0	1,60	F	TCF120412FP	TCF150406FC
5578615	TCF420R3SL40MF	42,00	43,00	40	171,7	126,0	1,77	F	TCF120412FP	TCF150406FC
5578616	TCF430R3SL40MF	43,00	44,00	40	175,1	129,0	1,99	F	TCF120412FP	TCF150406FC
5578617	TCF440R3SL40MF	44,00	45,00	40	178,4	132,0	2,10	F	TCF120412FP	TCF150406FC
5578618	TCF450R3SL50MF	45,00	46,00	50	181,7	135,0	2,21	F	TCF120412FP	TCF150406FC
5578716	TCF460R3SL50MG	46,00	47,00	50	185,0	138,0	1,45	G	TCF150512GP	TCF180508GC
5578717	TCF470R3SL50MG	47,00	48,00	50	188,3	141,0	1,53	G	TCF150512GP	TCF180508GC
5578718	TCF480R3SL50MG	48,00	49,00	50	191,7	144,0	1,63	G	TCF150512GP	TCF180508GC
5578719	TCF490R3SL50MG	49,00	50,00	50	195,0	147,0	1,74	G	TCF150512GP	TCF180508GC
5578720	TCF500R3SL50MG	50,00	51,00	50	199,8	150,0	1,87	G	TCF150512GP	TCF180508GC
5578721	TCF505R3SL50MG	50,50	51,50	50	201,5	152,0	1,94	G	TCF150512GP	TCF180508GC
5578722	TCF510R3SL50MG	51,00	52,00	50	203,1	153,0	2,02	G	TCF150512GP	TCF180508GC
5578723	TCF520R3SL50MG	52,00	53,00	50	206,4	156,0	2,22	G	TCF150512GP	TCF180508GC
5578724	TCF530R3SL50MG	53,00	54,00	50	209,8	159,0	2,46	G	TCF150512GP	TCF180508GC
5578726	TCF540R3SL50MG	54,00	55,00	50	213,1	162,0	2,53	G	TCF150512GP	TCF180508GC
5578727	TCF550R3SL50MG	55,00	56,00	50	216,4	165,0	2,73	G	TCF150512GP	TCF180508GC
5578728	TCF560R3SL50MG	56,00	57,00	50	219,7	168,0	2,37	G	TCF150512GP	TCF180508GC
5538635	TCF570R3SL50MH	57,00	58,00	50	222,5	171,0	1,76	H	TCF180614HP	TCF210608HC
5538636	TCF580R3SL50MH	58,00	59,00	50	225,9	174,0	1,85	H	TCF180614HP	TCF210608HC
5538637	TCF590R3SL50MH	59,00	60,00	50	229,2	177,0	1,96	H	TCF180614HP	TCF210608HC
5538638	TCF600R3SL50MH	60,00	61,00	50	232,5	180,0	1,42	H	TCF180614HP	TCF210608HC
5538639	TCF610R3SL50MH	61,00	62,00	50	235,8	183,0	2,23	H	TCF180614HP	TCF210608HC
5538640	TCF620R3SL50MH	62,00	63,00	50	239,1	186,0	2,41	H	TCF180614HP	TCF210608HC
5538641	TCF630R3SL50MH	63,00	64,00	50	242,5	189,0	2,64	H	TCF180614HP	TCF210608HC
5538642	TCF640R3SL50MH	64,00	65,00	50	245,8	192,0	2,94	H	TCF180614HP	TCF210608HC
5538643	TCF650R3SL50MH	65,00	66,00	50	249,1	195,0	3,06	H	TCF180614HP	TCF210608HC
5538644	TCF660R3SL50MH	66,00	67,00	50	252,4	198,0	3,18	H	TCF180614HP	TCF210608HC
5538645	TCF670R3SL50MH	67,00	68,00	50	255,7	201,0	3,30	H	TCF180614HP	TCF210608HC
5538646	TCF680R3SL50MH	68,00	69,00	50	259,1	204,0	2,93	H	TCF180614HP	TCF210608HC

(continued)

(Top Cut 4 Drill • Metric • 3 x D • SL Shanks — continued)

■ Spare Parts



insert size	periphery insert	center insert	insert screw order number	Torx size	Torx driver order number	tightening torque Nm	tightening torque ft. lbs
A	TCF040204AP	TCF040203AC	2025073	T5	2029221	0,40	.295
B	TCF050204BP	TCF060203BC	1175225	T6	1138455	0,53	.390
C	TCF070306CP	TCF070304CC	1021337	T7	2029266	0,90	.663
D	TCF080308DP	TCF090305DC	1134385	T8	2029598	1,10	.811
E	TCF100408EP	TCF120405EC	2018194	T9	1138430	2,00	1.475
F	TCF120412FP	TCF150406FC	1756815	T15	2029596	4,00	2.950
G	TCF150512GP	TCF180508GC	1099645	T20	2029488	6,30	4.646
H	TCF180614HP	TCF210608HC	1823871	T25	1022519	8,80	6.490

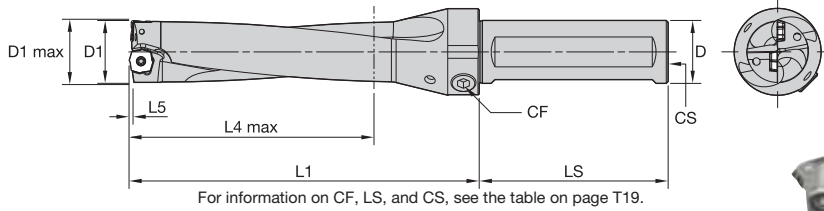
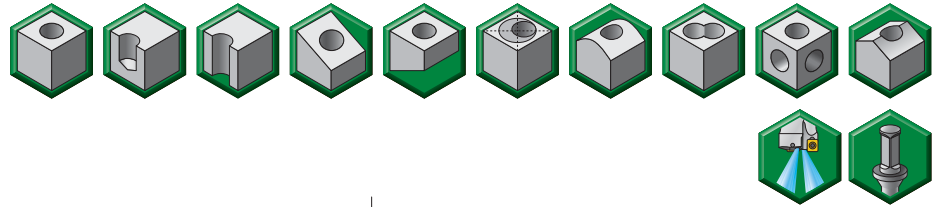
D	LS	
	mm	in
20,00	50	1.969
25,00	56	2.205
32,00	60	2.362
40,00	70	2.756
50,00	80	3.150

NOTE: Drilling in stacked plates possible in certain applications. Ask for technical support.
 Drill shipped with insert screws and Torx wrench.
 See pages T28–T31 for inserts.
 SL = Side Lock
 D1 max is an achievable diameter using x-offset.



WARNING

During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.



■ Top Cut 4 Drill • Inch • 4 x D • SSF Shanks

order number	catalog number	D1	D1 max	D	L1	L4 max	L5	insert size	periphery insert	center insert
5537885	TCF0473R4SSF075A	.473	.493	.75	3.255	1.891	.017	A	TCF040204AP	TCF040203AC
5537886	TCF0500R4SSF075A	.500	.520	.75	3.372	2.000	.020	A	TCF040204AP	TCF040203AC
5537887	TCF0531R4SSF075A	.531	.551	.75	3.506	2.124	.025	A	TCF040204AP	TCF040203AC
5578312	TCF0563R4SSF075B	.563	.583	.75	3.625	2.252	.017	B	TCF050204BP	TCF060203BC
5578313	TCF0594R4SSF075B	.594	.614	.75	3.759	2.376	.020	B	TCF050204BP	TCF060203BC
5578314	TCF0625R4SSF075B	.625	.645	.75	3.893	2.500	.023	B	TCF050204BP	TCF060203BC
5578315	TCF0656R4SSF075B	.656	.676	.75	4.027	2.624	.028	B	TCF050204BP	TCF060203BC
5578316	TCF0688R4SSF075B	.688	.708	.75	4.232	2.752	.032	B	TCF050204BP	TCF060203BC
5578317	TCF0703R4SSF075B	.703	.723	.75	4.297	2.812	.034	B	TCF050204BP	TCF060203BC
5578318	TCF0719R4SSF075B	.719	.739	.75	4.366	2.876	.036	B	TCF050204BP	TCF060203BC
5578319	TCF0734R4SSF075B	.734	.754	.75	4.431	2.936	.038	B	TCF050204BP	TCF060203BC
5578413	TCF0750R4SSF100C	.750	.770	1.00	4.537	3.000	.024	C	TCF070306CP	TCF070304CC
5578414	TCF0781R4SSF100C	.781	.801	1.00	4.671	3.124	.027	C	TCF070306CP	TCF070304CC
5578415	TCF0813R4SSF100C	.813	.833	1.00	4.809	3.252	.030	C	TCF070306CP	TCF070304CC
5578416	TCF0844R4SSF100C	.844	.864	1.00	4.943	3.376	.034	C	TCF070306CP	TCF070304CC
5578417	TCF0875R4SSF100C	.875	.895	1.00	5.078	3.500	.040	C	TCF070306CP	TCF070304CC
5578418	TCF0906R4SSF100C	.906	.926	1.00	5.212	3.624	.045	C	TCF070306CP	TCF070304CC
5578419	TCF0938R4SSF100C	.938	.958	1.00	5.349	3.752	.037	C	TCF070306CP	TCF070304CC
5537921	TCF0969R4SSF100D	.969	1.008	1.00	5.428	3.876	.032	D	TCF080308DP	TCF090305DC
5537922	TCF0984R4SSF100D	.984	1.023	1.00	5.493	3.936	.034	D	TCF080308DP	TCF090305DC
5537923	TCF1000R4SSF100D	1.000	1.039	1.00	5.562	4.000	.036	D	TCF080308DP	TCF090305DC
5537924	TCF1031R4SSF125D	1.031	1.070	1.25	5.696	4.124	.039	D	TCF080308DP	TCF090305DC
5537925	TCF1063R4SSF125D	1.063	1.102	1.25	5.834	4.252	.045	D	TCF080308DP	TCF090305DC
5537926	TCF1094R4SSF125D	1.094	1.133	1.25	5.968	4.376	.050	D	TCF080308DP	TCF090305DC
5537927	TCF1125R4SSF125D	1.125	1.164	1.25	6.102	4.500	.054	D	TCF080308DP	TCF090305DC
5537928	TCF1156R4SSF125D	1.156	1.195	1.25	6.236	4.624	.059	D	TCF080308DP	TCF090305DC
5538083	TCF1188R4SSF125E	1.188	1.227	1.25	6.453	4.752	.026	E	TCF100408EP	TCF120405EC
5538084	TCF1210R4SSF125E	1.210	1.249	1.25	6.548	4.840	.027	E	TCF100408EP	TCF120405EC
5538085	TCF1219R4SSF125E	1.219	1.258	1.25	6.587	4.876	.028	E	TCF100408EP	TCF120405EC
5538086	TCF1250R4SSF125E	1.250	1.289	1.25	6.721	5.000	.031	E	TCF100408EP	TCF120405EC
5538087	TCF1280R4SSF125E	1.280	1.319	1.25	6.851	5.120	.035	E	TCF100408EP	TCF120405EC
5538088	TCF1313R4SSF125E	1.313	1.352	1.25	6.993	5.252	.040	E	TCF100408EP	TCF120405EC
5538089	TCF1375R4SSF125E	1.375	1.414	1.25	7.261	5.500	.050	E	TCF100408EP	TCF120405EC
5538090	TCF1406R4SSF150E	1.406	1.445	1.50	7.395	5.624	.055	E	TCF100408EP	TCF120405EC
5538091	TCF1438R4SSF150E	1.438	1.477	1.50	7.533	5.752	.059	E	TCF100408EP	TCF120405EC
5578677	TCF1469R4SSF150F	1.469	1.508	1.50	7.618	5.876	.048	F	TCF120412FP	TCF150406FC

(continued)

(Top Cut 4 Drill • Inch • 4 x D • SSF Shanks — continued)

order number	catalog number	D1	D1 max	D	L1	L4 max	L5	insert size	periphery insert	center insert
5578678	TCF1500R4SSF150F	1.500	1.539	1.50	7.752	6.000	.050	F	TCF120412FP	TCF150406FC
5578679	TCF1531R4SSF150F	1.531	1.570	1.50	7.886	6.124	.053	F	TCF120412FP	TCF150406FC
5578680	TCF1563R4SSF150F	1.563	1.602	1.50	8.024	6.252	.056	F	TCF120412FP	TCF150406FC
5578681	TCF1625R4SSF150F	1.625	1.664	1.50	8.292	6.500	.065	F	TCF120412FP	TCF150406FC
5578682	TCF1656R4SSF150F	1.656	1.695	1.50	8.426	6.624	.070	F	TCF120412FP	TCF150406FC
5578683	TCF1688R4SSF150F	1.688	1.727	1.50	8.564	6.752	.077	F	TCF120412FP	TCF150406FC
5578684	TCF1750R4SSF150F	1.750	1.789	1.50	8.832	7.000	.085	F	TCF120412FP	TCF150406FC
5578797	TCF1813R4SSF150G	1.813	1.852	1.50	9.104	7.252	.057	G	TCF150512GP	TCF180508GC
5578798	TCF1875R4SSF150G	1.875	1.914	1.50	9.372	7.500	.063	G	TCF150512GP	TCF180508GC
5578799	TCF1938R4SSF150G	1.938	1.977	1.50	9.644	7.752	.069	G	TCF150512GP	TCF180508GC
5578800	TCF2000R4SSF150G	2.000	2.039	1.50	9.971	8.000	.078	G	TCF150512GP	TCF180508GC
5578801	TCF2125R4SSF200G	2.125	2.164	2.00	10.511	8.500	.100	G	TCF150512GP	TCF180508GC
5578802	TCF2219R4SSF200G	2.219	2.258	2.00	10.917	8.876	.085	G	TCF150512GP	TCF180508GC
5538506	TCF2250R4SSF200H	2.250	2.289	2.00	11.031	9.000	.070	H	TCF180614HP	TCF210608HC
5538507	TCF2375R4SSF200H	2.375	2.414	2.00	11.571	9.500	.084	H	TCF180614HP	TCF210608HC
5538508	TCF2500R4SSF200H	2.500	2.539	2.00	12.111	10.000	.110	H	TCF180614HP	TCF210608HC

■ Spare Parts

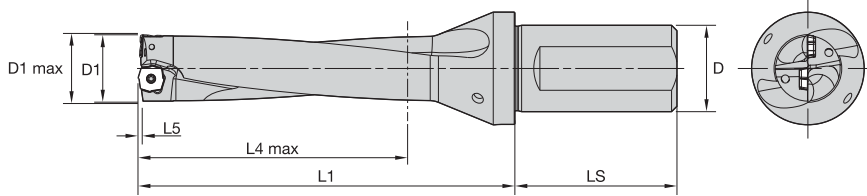
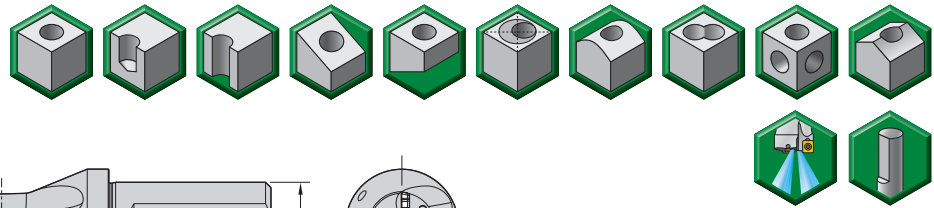

insert size	periphery insert	center insert	insert screw order number	Torx size	Torx driver order number	tightening torque Nm	tightening torque ft. lbs
A	TCF040204AP	TCF040203AC	2025073	T5	2029221	0,40	.295
B	TCF050204BP	TCF060203BC	1175225	T6	1138455	0,53	.390
C	TCF070306CP	TCF070304CC	1021337	T7	2029266	0,90	.663
D	TCF080308DP	TCF090305DC	1134385	T8	2029598	1,10	.811
E	TCF100408EP	TCF120405EC	2018194	T9	1138430	2,00	1.475
F	TCF120412FP	TCF150406FC	1756815	T15	2029596	4,00	2.950
G	TCF150512GP	TCF180508GC	1099645	T20	2029488	6,30	4.646
H	TCF180614HP	TCF210608HC	1823871	T25	2585812	8,80	6.490

D	LS		CF	CS
	mm	in		
.750	50,8	2.000	1/8 - 27 NPT	1/8 - 27 NPT
1.000	76,2	3.000	1/8 - 27 NPT	1/4 - 18 NPT
1.250	82,6	3.250	1/8 - 27 NPT	1/4 - 18 NPT
1.500	95,3	3.750	1/8 - 27 NPT	1/4 - 18 NPT
2.000	101,6	4.000	1/8 - 27 NPT	1/4 - 18 NPT

NOTE: Drilling in stacked plates possible in certain applications. Ask for technical support.
 Drill shipped with insert screws and Torx wrench.
 See pages T28–T31 for inserts.
 SSF = Straight Shank Flange
 D1 max is an achievable diameter using x-offset.



WARNING
 During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.



For information on LS, see the table on page T22.



■ Top Cut 4 Drill • Metric • 4 x D • SL Shanks

order number	catalog number	D1	D1 max	D	L1	L4 max	L5	insert size	periphery insert	center insert
5537869	TCF120R4SL20MA	12,00	12,50	20	78,6	48,0	0,41	A	TCF040204AP	TCF040203AC
5537870	TCF125R4SL20MA	12,50	13,00	20	80,8	50,0	0,48	A	TCF040204AP	TCF040203AC
5537871	TCF127R4SL20MA	12,70	13,20	20	81,6	50,8	0,51	A	TCF040204AP	TCF040203AC
5537872	TCF130R4SL20MA	13,00	13,50	20	82,9	52,0	0,56	A	TCF040204AP	TCF040203AC
5537873	TCF135R4SL20MA	13,50	14,00	20	85,1	54,0	0,64	A	TCF040204AP	TCF040203AC
5577938	TCF140R4SL25MB	14,00	14,50	25	87,8	56,0	0,42	B	TCF050204BP	TCF060203BC
5577939	TCF145R4SL25MB	14,50	15,00	25	89,9	58,0	0,45	B	TCF050204BP	TCF060203BC
5577940	TCF150R4SL25MB	15,00	15,50	25	92,1	60,0	0,49	B	TCF050204BP	TCF060203BC
5577941	TCF155R4SL25MB	15,50	16,00	25	94,3	62,0	0,54	B	TCF050204BP	TCF060203BC
5577942	TCF160R4SL25MB	16,00	16,50	25	96,4	64,0	0,60	B	TCF050204BP	TCF060203BC
5577943	TCF165R4SL25MB	16,50	17,00	25	98,6	66,0	0,68	B	TCF050204BP	TCF060203BC
5577944	TCF170R4SL25MB	17,00	17,50	25	102,4	68,0	0,74	B	TCF050204BP	TCF060203BC
5577945	TCF175R4SL25MB	17,50	18,00	25	104,6	70,0	0,79	B	TCF050204BP	TCF060203BC
5577946	TCF180R4SL25MB	18,00	18,50	25	106,8	72,0	0,86	B	TCF050204BP	TCF060203BC
5577947	TCF185R4SL25MB	18,50	19,00	25	108,9	74,0	0,83	B	TCF050204BP	TCF060203BC
5578836	TCF190R4SL25MC	19,00	19,50	25	110,1	76,0	0,60	C	TCF070306CP	TCF070304CC
5578837	TCF195R4SL25MC	19,50	20,00	25	112,2	78,0	0,70	C	TCF070306CP	TCF070304CC
5578838	TCF200R4SL25MC	20,00	20,50	25	114,4	80,0	0,70	C	TCF070306CP	TCF070304CC
5578839	TCF205R4SL25MC	20,50	21,00	25	116,6	82,0	0,70	C	TCF070306CP	TCF070304CC
5578840	TCF210R4SL25MC	21,00	21,50	25	118,7	84,0	0,80	C	TCF070306CP	TCF070304CC
5578841	TCF220R4SL25MC	22,00	22,50	25	123,0	88,0	1,00	C	TCF070306CP	TCF070304CC
5578842	TCF225R4SL25MC	22,50	23,00	25	125,2	90,0	1,10	C	TCF070306CP	TCF070304CC
5578843	TCF230R4SL25MC	23,00	23,50	25	127,4	92,0	1,10	C	TCF070306CP	TCF070304CC
5537831	TCF240R4SL25MD	24,00	25,00	25	135,2	96,0	0,78	D	TCF080308DP	TCF090305DC
5537832	TCF250R4SL32MD	25,00	26,00	32	139,6	100,0	0,86	D	TCF080308DP	TCF090305DC
5537833	TCF260R4SL32MD	26,00	27,00	32	143,9	104,0	0,97	D	TCF080308DP	TCF090305DC
5537834	TCF265R4SL32MD	26,50	27,50	32	146,0	106,0	1,05	D	TCF080308DP	TCF090305DC
5537835	TCF270R4SL32MD	27,00	28,00	32	148,2	108,0	1,15	D	TCF080308DP	TCF090305DC
5537836	TCF280R4SL32MD	28,00	29,00	32	152,5	112,0	1,30	D	TCF080308DP	TCF090305DC
5537837	TCF290R4SL32MD	29,00	30,00	32	156,8	116,0	1,45	D	TCF080308DP	TCF090305DC
5537951	TCF300R4SL32ME	30,00	31,00	32	160,2	120,0	0,63	E	TCF100408EP	TCF120405EC
5537952	TCF310R4SL32ME	31,00	32,00	32	164,5	124,0	0,72	E	TCF100408EP	TCF120405EC

(continued)

(Top Cut 4 Drill • Metric • 4 x D • SL Shanks — continued)

order number	catalog number	D1	D1 max	D	L1	L4 max	L5	insert size	periphery insert	center insert
5537953	TCF320R4SL32ME	32,00	33,00	32	168,8	128,0	0,82	E	TCF100408EP	TCF120405EC
5537954	TCF330R4SL40ME	33,00	34,00	40	173,1	132,0	0,95	E	TCF100408EP	TCF120405EC
5537955	TCF340R4SL40ME	34,00	35,00	40	177,4	136,0	1,14	E	TCF100408EP	TCF120405EC
5537956	TCF350R4SL40ME	35,00	36,00	40	181,8	140,0	1,30	E	TCF100408EP	TCF120405EC
5537957	TCF360R4SL40ME	36,00	37,00	40	186,1	144,0	1,45	E	TCF100408EP	TCF120405EC
5578619	TCF370R4SL40MF	37,00	38,00	40	192,1	148,0	1,19	F	TCF120412FP	TCF150406FC
5578620	TCF375R4SL40MF	37,50	38,50	40	194,3	150,0	1,23	F	TCF120412FP	TCF150406FC
5578621	TCF380R4SL40MF	38,00	39,00	40	196,5	152,0	1,27	F	TCF120412FP	TCF150406FC
5578622	TCF390R4SL40MF	39,00	40,00	40	200,8	156,0	1,36	F	TCF120412FP	TCF150406FC
5578623	TCF400R4SL40MF	40,00	41,00	40	205,1	160,0	1,47	F	TCF120412FP	TCF150406FC
5578624	TCF410R4SL40MF	41,00	42,00	40	209,4	164,0	1,60	F	TCF120412FP	TCF150406FC
5578625	TCF420R4SL40MF	42,00	43,00	40	213,7	168,0	1,77	F	TCF120412FP	TCF150406FC
5578626	TCF430R4SL40MF	43,00	44,00	40	218,1	172,0	1,99	F	TCF120412FP	TCF150406FC
5578627	TCF440R4SL40MF	44,00	45,00	40	222,4	176,0	2,10	F	TCF120412FP	TCF150406FC
5578628	TCF450R4SL50MF	45,00	46,00	50	226,7	180,0	2,21	F	TCF120412FP	TCF150406FC
5578729	TCF460R4SL50MG	46,00	47,00	50	231,0	184,0	1,45	G	TCF150512GP	TCF180508GC
5578730	TCF470R4SL50MG	47,00	48,00	50	235,3	188,0	1,53	G	TCF150512GP	TCF180508GC
5578731	TCF480R4SL50MG	48,00	49,00	50	239,7	192,0	1,63	G	TCF150512GP	TCF180508GC
5578732	TCF490R4SL50MG	49,00	50,00	50	244,0	196,0	1,74	G	TCF150512GP	TCF180508GC
5578733	TCF500R4SL50MG	50,00	51,00	50	249,8	200,0	1,87	G	TCF150512GP	TCF180508GC
5578734	TCF505R4SL50MG	50,50	51,50	50	252,0	202,0	1,94	G	TCF150512GP	TCF180508GC
5578735	TCF510R4SL50MG	51,00	52,00	50	254,1	204,0	2,02	G	TCF150512GP	TCF180508GC
5578736	TCF520R4SL50MG	52,00	53,00	50	258,4	208,0	2,22	G	TCF150512GP	TCF180508GC
5578737	TCF530R4SL50MG	53,00	54,00	50	262,8	212,0	2,46	G	TCF150512GP	TCF180508GC
5578738	TCF540R4SL50MG	54,00	55,00	50	267,1	216,0	2,53	G	TCF150512GP	TCF180508GC
5578739	TCF550R4SL50MG	55,00	56,00	50	271,4	220,0	2,73	G	TCF150512GP	TCF180508GC
5578750	TCF560R4SL50MG	56,00	57,00	50	275,7	224,0	2,37	G	TCF150512GP	TCF180508GC
5538647	TCF570R4SL50MH	57,00	58,00	50	279,5	228,0	1,76	H	TCF180614HP	TCF210608HC
5538648	TCF580R4SL50MH	58,00	59,00	50	283,9	232,0	1,85	H	TCF180614HP	TCF210608HC
5538649	TCF590R4SL50MH	59,00	60,00	50	288,2	236,0	1,96	H	TCF180614HP	TCF210608HC
5538650	TCF600R4SL50MH	60,00	61,00	50	292,5	240,0	1,42	H	TCF180614HP	TCF210608HC
5538651	TCF610R4SL50MH	61,00	62,00	50	296,8	244,0	2,23	H	TCF180614HP	TCF210608HC
5538652	TCF620R4SL50MH	62,00	63,00	50	301,1	248,0	2,41	H	TCF180614HP	TCF210608HC
5538653	TCF630R4SL50MH	63,00	64,00	50	305,5	252,0	2,64	H	TCF180614HP	TCF210608HC
5538654	TCF640R4SL50MH	64,00	65,00	50	309,8	256,0	2,94	H	TCF180614HP	TCF210608HC
5538655	TCF650R4SL50MH	65,00	66,00	50	314,1	260,0	3,06	H	TCF180614HP	TCF210608HC
5538656	TCF660R4SL50MH	66,00	67,00	50	318,4	264,0	3,18	H	TCF180614HP	TCF210608HC
5538657	TCF670R4SL50MH	67,00	68,00	50	322,7	268,0	3,30	H	TCF180614HP	TCF210608HC
5538658	TCF680R4SL50MH	68,00	69,00	50	327,1	272,0	2,93	H	TCF180614HP	TCF210608HC

(continued)

(Top Cut 4 Drill • Metric • 4 x D • SL Shanks — continued)

■ Spare Parts



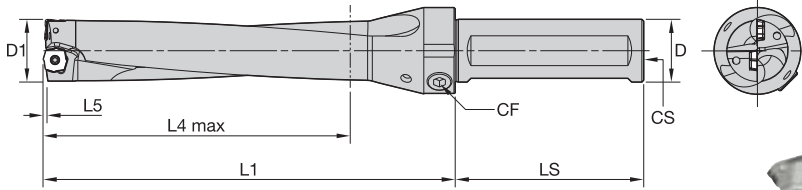
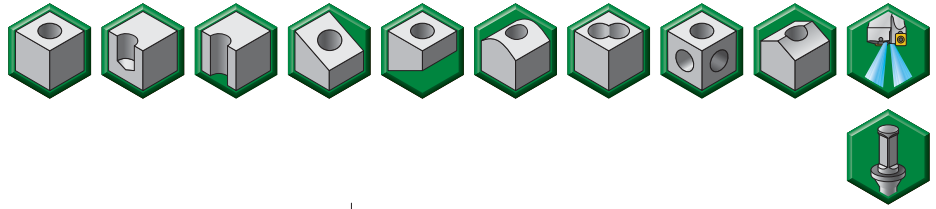
insert size	periphery insert	center insert	insert screw order number	Torx size	Torx driver order number	tightening torque Nm	tightening torque ft. lbs
A	TCF040204AP	TCF040203AC	2025073	T5	2029221	0,40	.295
B	TCF050204BP	TCF060203BC	1175225	T6	1138455	0,53	.390
C	TCF070306CP	TCF070304CC	1021337	T7	2029266	0,90	.663
D	TCF080308DP	TCF090305DC	1134385	T8	2029598	1,10	.811
E	TCF100408EP	TCF120405EC	2018194	T9	1138430	2,00	1.475
F	TCF120412FP	TCF150406FC	1756815	T15	2029596	4,00	2.950
G	TCF150512GP	TCF180508GC	1099645	T20	2029488	6,30	4.646
H	TCF180614HP	TCF210608HC	1823871	T25	1022519	8,80	6.490

D	LS	
	mm	in
20,00	50	1.969
25,00	56	2.205
32,00	60	2.362
40,00	70	2.756
50,00	80	3.150

NOTE: Drilling in stacked plates possible in certain applications. Ask for technical support.
 Drill shipped with insert screws and Torx wrench.
 See pages T28–T31 for inserts.
 SL = Side Lock
 D1 max is an achievable diameter using x-offset.



WARNING
 During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.



For information on CF, LS, and CS, see the table on page T24.



■ Top Cut 4 Drill • Inch • 5 x D • SSF Shanks

order number	catalog number	D1	D1 max	D	L1	L4 max	L5	insert size	periphery insert	center insert
5537888	TCF0473R5SSF075A	.473	.493	.75	3.543	2.364	.017	A	TCF040204AP	TCF040203AC
5537889	TCF0500R5SSF075A	.500	.520	.75	3.703	2.500	.020	A	TCF040204AP	TCF040203AC
5537890	TCF0531R5SSF075A	.531	.551	.75	3.860	2.655	.025	A	TCF040204AP	TCF040203AC
5578320	TCF0563R5SSF075B	.563	—	.75	4.054	2.815	.017	B	TCF050204BP	TCF060203BC
5578321	TCF0594R5SSF075B	.594	—	.75	4.172	2.970	.020	B	TCF050204BP	TCF060203BC
5578322	TCF0625R5SSF075B	.625	—	.75	4.408	3.125	.023	B	TCF050204BP	TCF060203BC
5578323	TCF0656R5SSF075B	.656	—	.75	4.529	3.280	.028	B	TCF050204BP	TCF060203BC
5578324	TCF0688R5SSF075B	.688	—	.75	4.802	3.440	.032	B	TCF050204BP	TCF060203BC
5578325	TCF0703R5SSF075B	.703	—	.75	4.764	3.515	.034	B	TCF050204BP	TCF060203BC
5578326	TCF0719R5SSF075B	.719	—	.75	4.920	3.590	.036	B	TCF050204BP	TCF060203BC
5578327	TCF0734R5SSF075B	.734	—	.75	4.921	3.670	.038	B	TCF050204BP	TCF060203BC
5578420	TCF0750R5SSF100C	.750	—	1.00	5.169	3.750	.024	C	TCF070306CP	TCF070304CC
5578421	TCF0781R5SSF100C	.781	—	1.00	5.334	3.905	.027	C	TCF070306CP	TCF070304CC
5578422	TCF0813R5SSF100C	.813	—	1.00	5.504	4.065	.030	C	TCF070306CP	TCF070304CC
5578423	TCF0844R5SSF100C	.844	—	1.00	5.669	4.220	.034	C	TCF070306CP	TCF070304CC
5578424	TCF0875R5SSF100C	.875	—	1.00	5.846	4.375	.040	C	TCF070306CP	TCF070304CC
5578425	TCF0906R5SSF100C	.906	—	1.00	5.999	4.530	.045	C	TCF070306CP	TCF070304CC
5578426	TCF0938R5SSF100C	.938	—	1.00	6.169	4.690	.037	C	TCF070306CP	TCF070304CC
5537929	TCF0969R5SSF100D	.969	—	1.00	6.319	4.845	.032	D	TCF080308DP	TCF090305DC
5537930	TCF0984R5SSF100D	.984	—	1.00	6.398	4.920	.034	D	TCF080308DP	TCF090305DC
5537931	TCF1000R5SSF100D	1.000	—	1.00	6.484	5.000	.036	D	TCF080308DP	TCF090305DC
5537932	TCF1031R5SSF125D	1.031	—	1.25	6.649	5.155	.039	D	TCF080308DP	TCF090305DC
5537933	TCF1063R5SSF125D	1.063	—	1.25	6.779	5.315	.045	D	TCF080308DP	TCF090305DC
5537934	TCF1094R5SSF125D	1.094	—	1.25	6.944	5.470	.050	D	TCF080308DP	TCF090305DC
5537935	TCF1125R5SSF125D	1.125	—	1.25	7.109	5.625	.054	D	TCF080308DP	TCF090305DC
5537936	TCF1156R5SSF125D	1.156	—	1.25	7.274	5.780	.059	D	TCF080308DP	TCF090305DC
5538092	TCF1188R5SSF125E	1.188	—	1.25	7.440	5.940	.026	E	TCF100408EP	TCF120405EC
5538093	TCF1210R5SSF125E	1.210	—	1.25	7.597	6.050	.027	E	TCF100408EP	TCF120405EC
5538094	TCF1219R5SSF125E	1.219	—	1.25	7.597	6.095	.028	E	TCF100408EP	TCF120405EC
5538095	TCF1250R5SSF125E	1.250	—	1.25	7.814	6.250	.031	E	TCF100408EP	TCF120405EC
5538096	TCF1280R5SSF125E	1.280	—	1.25	7.934	6.400	.035	E	TCF100408EP	TCF120405EC
5538097	TCF1313R5SSF125E	1.313	—	1.25	8.109	6.565	.040	E	TCF100408EP	TCF120405EC
5538098	TCF1375R5SSF125E	1.375	—	1.25	8.423	6.875	.050	E	TCF100408EP	TCF120405EC
5538099	TCF1406R5SSF150E	1.406	—	1.50	8.584	7.030	.055	E	TCF100408EP	TCF120405EC
5538100	TCF1438R5SSF150E	1.438	—	1.50	8.971	7.190	.059	E	TCF100408EP	TCF120405EC
5578685	TCF1469R5SSF150F	1.469	—	1.50	9.087	7.345	.048	F	TCF120412FP	TCF150406FC

(continued)

(Top Cut 4 Drill • Inch • 5 x D • SSF Shanks — continued)

order number	catalog number	D1	D1 max	D	L1	L4 max	L5	insert size	periphery insert	center insert
5578686	TCF1500R5SSF150F	1.500	—	1.50	9.252	7.500	.050	F	TCF120412FP	TCF150406FC
5578687	TCF1531R5SSF150F	1.531	—	1.50	9.417	7.655	.053	F	TCF120412FP	TCF150406FC
5578688	TCF1563R5SSF150F	1.563	—	1.50	9.587	7.815	.056	F	TCF120412FP	TCF150406FC
5578689	TCF1625R5SSF150F	1.625	—	1.50	9.917	8.125	.065	F	TCF120412FP	TCF150406FC
5578690	TCF1656R5SSF150F	1.656	—	1.50	10.082	8.280	.070	F	TCF120412FP	TCF150406FC
5578691	TCF1688R5SSF150F	1.688	—	1.50	10.252	8.440	.077	F	TCF120412FP	TCF150406FC
5578693	TCF1750R5SSF150F	1.750	—	1.50	10.582	8.750	.085	F	TCF120412FP	TCF150406FC
5578803	TCF1813R5SSF150G	1.813	—	1.50	10.917	9.065	.057	G	TCF150512GP	TCF180508GC
5578804	TCF1875R5SSF150G	1.875	—	1.50	11.247	9.375	.063	G	TCF150512GP	TCF180508GC
5578805	TCF1938R5SSF150G	1.938	—	1.50	11.582	9.690	.069	G	TCF150512GP	TCF180508GC
5578806	TCF2000R5SSF150G	2.000	—	1.50	11.971	10.000	.078	G	TCF150512GP	TCF180508GC
5578807	TCF2125R5SSF200G	2.125	—	2.00	12.748	10.625	.100	G	TCF150512GP	TCF180508GC
5578808	TCF2219R5SSF200G	2.219	—	2.00	13.293	11.095	.085	G	TCF150512GP	TCF180508GC
5538509	TCF2250R5SSF200H	2.250	—	2.00	13.191	11.250	.070	H	TCF180614HP	TCF210608HC
5538510	TCF2375R5SSF200H	2.375	—	2.00	13.781	11.875	.084	H	TCF180614HP	TCF210608HC
5538511	TCF2500R5SSF200H	2.500	—	2.00	14.218	12.500	.110	H	TCF180614HP	TCF210608HC

■ Spare Parts



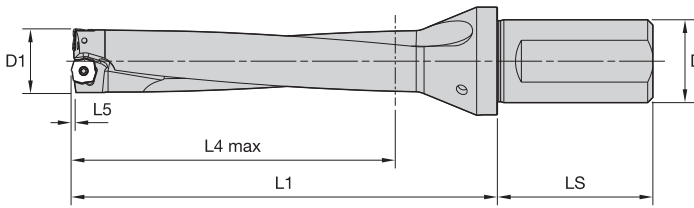
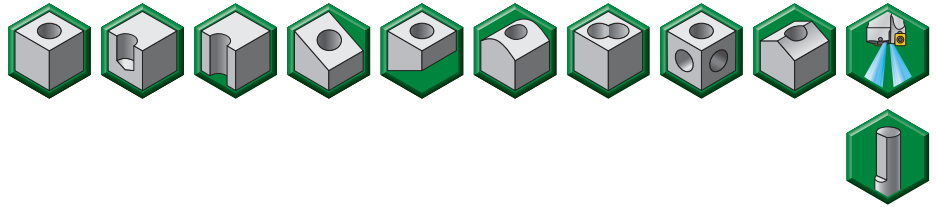
insert size	periphery insert	center insert	insert screw order number	Torx size	Torx driver order number	tightening torque Nm	tightening torque ft. lbs
A	TCF040204AP	TCF040203AC	2025073	T5	2029221	0,40	.295
B	TCF050204BP	TCF060203BC	1175225	T6	1138455	0,53	.390
C	TCF070306CP	TCF070304CC	1021337	T7	2029266	0,90	.663
D	TCF080308DP	TCF090305DC	1134385	T8	2029598	1,10	.811
E	TCF100408EP	TCF120405EC	2018194	T9	1138430	2,00	1.475
F	TCF120412FP	TCF150406FC	1756815	T15	2029596	4,00	2.950
G	TCF150512GP	TCF180508GC	1099645	T20	2029488	6,30	4.646
H	TCF180614HP	TCF210608HC	1823871	T25	2585812	8,80	6.490

D	LS		CF	CS
	mm	in		
.750	50,8	2.000	1/8 - 27 NPT	1/8 - 27 NPT
1.000	76,2	3.000	1/8 - 27 NPT	1/4 - 18 NPT
1.250	82,6	3.250	1/8 - 27 NPT	1/4 - 18 NPT
1.500	95,3	3.750	1/8 - 27 NPT	1/4 - 18 NPT
2.000	101,6	4.000	1/8 - 27 NPT	1/4 - 18 NPT

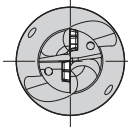
NOTE: Drill shipped with insert screws and Torx wrench.
See pages T28–T31 for inserts.
SSF = Straight Shank Flange



WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.



For information on LS, see the table on page T27.



■ Top Cut 4 Drill • Metric • 5 x D • SL Shanks

order number	catalog number	D1	D	L1	L4 max	L5	insert size	periphery insert	center insert
5537874	TCF120R5SL20MA	12,00	20	86,0	60,0	0,41	A	TCF040204AP	TCF040203AC
5537875	TCF125R5SL20MA	12,50	20	89,0	63,0	0,48	A	TCF040204AP	TCF040203AC
5537876	TCF127R5SL20MA	12,70	20	90,0	63,5	0,51	A	TCF040204AP	TCF040203AC
5537877	TCF130R5SL20MA	13,00	20	90,0	65,0	0,56	A	TCF040204AP	TCF040203AC
5537878	TCF135R5SL20MA	13,50	20	94,0	68,0	0,64	A	TCF040204AP	TCF040203AC
5577948	TCF140R5SL25MB	14,00	25	99,0	70,0	0,42	B	TCF050204BP	TCF060203BC
5577949	TCF145R5SL25MB	14,50	25	100,0	72,5	0,45	B	TCF050204BP	TCF060203BC
5577950	TCF150R5SL25MB	15,00	25	103,0	75,0	0,49	B	TCF050204BP	TCF060203BC
5577951	TCF155R5SL25MB	15,50	25	104,8	77,5	0,54	B	TCF050204BP	TCF060203BC
5577952	TCF160R5SL25MB	16,00	25	108,4	80,0	0,60	B	TCF050204BP	TCF060203BC
5577953	TCF165R5SL25MB	16,50	25	111,1	82,5	0,68	B	TCF050204BP	TCF060203BC
5577954	TCF170R5SL25MB	17,00	25	115,4	85,0	0,74	B	TCF050204BP	TCF060203BC
5577955	TCF175R5SL25MB	17,50	25	118,1	87,5	0,79	B	TCF050204BP	TCF060203BC
5577956	TCF180R5SL25MB	18,00	25	120,8	90,0	0,86	B	TCF050204BP	TCF060203BC
5577957	TCF185R5SL25MB	18,50	25	122,4	92,5	0,83	B	TCF050204BP	TCF060203BC
5578844	TCF190R5SL25MC	19,00	25	129,1	95,0	0,60	C	TCF070306CP	TCF070304CC
5578845	TCF195R5SL25MC	19,50	25	131,7	97,5	0,70	C	TCF070306CP	TCF070304CC
5578846	TCF200R5SL25MC	20,00	25	132,0	100,0	0,70	C	TCF070306CP	TCF070304CC
5578847	TCF205R5SL25MC	20,50	25	134,1	102,5	0,70	C	TCF070306CP	TCF070304CC
5578848	TCF210R5SL25MC	21,00	25	137,0	105,0	0,80	C	TCF070306CP	TCF070304CC
5578849	TCF220R5SL25MC	22,00	25	142,0	110,0	1,00	C	TCF070306CP	TCF070304CC
5578850	TCF225R5SL25MC	22,50	25	144,7	112,5	1,10	C	TCF070306CP	TCF070304CC
5578851	TCF230R5SL25MC	23,00	25	147,0	115,0	1,10	C	TCF070306CP	TCF070304CC
5537838	TCF240R5SL25MD	24,00	25	152,0	120,0	0,78	D	TCF080308DP	TCF090305DC
5537839	TCF250R5SL32MD	25,00	32	158,0	125,0	0,86	D	TCF080308DP	TCF090305DC
5537840	TCF260R5SL32MD	26,00	32	164,0	130,0	0,97	D	TCF080308DP	TCF090305DC
5537841	TCF265R5SL32MD	26,50	32	166,5	132,5	1,05	D	TCF080308DP	TCF090305DC
5537842	TCF270R5SL32MD	27,00	32	170,0	135,0	1,15	D	TCF080308DP	TCF090305DC
5537843	TCF280R5SL32MD	28,00	32	176,5	140,0	1,30	D	TCF080308DP	TCF090305DC
5537844	TCF290R5SL32MD	29,00	32	181,0	145,0	1,45	D	TCF080308DP	TCF090305DC
5537958	TCF300R5SL32ME	30,00	32	186,0	150,0	0,63	E	TCF100408EP	TCF120405EC
5537959	TCF310R5SL32ME	31,00	32	193,0	155,0	0,72	E	TCF100408EP	TCF120405EC

(continued)

(Top Cut 4 Drill • Metric • 5 x D • SL Shanks — continued)

order number	catalog number	D1	D	L1	L4 max	L5	insert size	periphery insert	center insert
5537960	TCF320R5SL32ME	32,00	32	199,0	160,0	0,82	E	TCF100408EP	TCF120405EC
5537961	TCF330R5SL40ME	33,00	40	204,0	165,0	0,95	E	TCF100408EP	TCF120405EC
5537962	TCF340R5SL40ME	34,00	40	210,0	170,0	1,14	E	TCF100408EP	TCF120405EC
5537963	TCF350R5SL40ME	35,00	40	216,8	175,0	1,30	E	TCF100408EP	TCF120405EC
5537964	TCF360R5SL40ME	36,00	40	222,0	180,0	1,45	E	TCF100408EP	TCF120405EC
5578629	TCF370R5SL40MF	37,00	40	228,0	185,0	1,19	F	TCF120412FP	TCF150406FC
5578640	TCF375R5SL40MF	37,50	40	231,8	188,0	1,23	F	TCF120412FP	TCF150406FC
5578641	TCF380R5SL40MF	38,00	40	234,5	190,0	1,27	F	TCF120412FP	TCF150406FC
5578642	TCF390R5SL40MF	39,00	40	239,8	195,0	1,36	F	TCF120412FP	TCF150406FC
5578643	TCF400R5SL40MF	40,00	40	245,1	200,0	1,47	F	TCF120412FP	TCF150406FC
5578644	TCF410R5SL40MF	41,00	40	250,4	205,0	1,60	F	TCF120412FP	TCF150406FC
5578645	TCF420R5SL40MF	42,00	40	255,7	210,0	1,77	F	TCF120412FP	TCF150406FC
5578646	TCF430R5SL40MF	43,00	40	261,1	215,0	1,99	F	TCF120412FP	TCF150406FC
5578647	TCF440R5SL40MF	44,00	40	266,4	220,0	2,10	F	TCF120412FP	TCF150406FC
5578648	TCF450R5SL50MF	45,00	50	271,7	225,0	2,21	F	TCF120412FP	TCF150406FC
5578751	TCF460R5SL50MG	46,00	50	277,0	230,0	1,45	G	TCF150512GP	TCF180508GC
5578752	TCF470R5SL50MG	47,00	50	282,3	235,0	1,53	G	TCF150512GP	TCF180508GC
5578753	TCF480R5SL50MG	48,00	50	287,7	240,0	1,63	G	TCF150512GP	TCF180508GC
5578754	TCF490R5SL50MG	49,00	50	293,0	245,0	1,74	G	TCF150512GP	TCF180508GC
5578755	TCF500R5SL50MG	50,00	50	299,8	250,0	1,87	G	TCF150512GP	TCF180508GC
5578756	TCF505R5SL50MG	50,50	50	302,5	253,0	1,94	G	TCF150512GP	TCF180508GC
5578757	TCF510R5SL50MG	51,00	50	305,1	255,0	2,02	G	TCF150512GP	TCF180508GC
5578758	TCF520R5SL50MG	52,00	50	310,4	260,0	2,22	G	TCF150512GP	TCF180508GC
5578759	TCF530R5SL50MG	53,00	50	315,8	265,0	2,46	G	TCF150512GP	TCF180508GC
5578760	TCF540R5SL50MG	54,00	50	321,1	270,0	2,53	G	TCF150512GP	TCF180508GC
5578761	TCF550R5SL50MG	55,00	50	326,4	275,0	2,73	G	TCF150512GP	TCF180508GC
5578762	TCF560R5SL50MG	56,00	50	331,7	280,0	2,37	G	TCF150512GP	TCF180508GC
5538659	TCF570R5SL50MH	57,00	50	330,0	285,0	1,76	H	TCF180614HP	TCF210608HC
5538680	TCF580R5SL50MH	58,00	50	336,0	290,0	1,85	H	TCF180614HP	TCF210608HC
5538681	TCF590R5SL50MH	59,00	50	339,2	295,0	1,96	H	TCF180614HP	TCF210608HC
5538682	TCF600R5SL50MH	60,00	50	345,5	300,0	1,42	H	TCF180614HP	TCF210608HC
5538683	TCF610R5SL50MH	61,00	50	347,8	305,0	2,23	H	TCF180614HP	TCF210608HC
5538684	TCF620R5SL50MH	62,00	50	358,0	310,0	2,41	H	TCF180614HP	TCF210608HC
5538685	TCF630R5SL50MH	63,00	50	365,0	315,0	2,64	H	TCF180614HP	TCF210608HC
5538686	TCF640R5SL50MH	64,00	50	363,8	320,0	2,94	H	TCF180614HP	TCF210608HC
5538687	TCF650R5SL50MH	65,00	50	375,0	325,0	3,06	H	TCF180614HP	TCF210608HC
5538688	TCF660R5SL50MH	66,00	50	376,4	330,0	3,18	H	TCF180614HP	TCF210608HC
5538689	TCF670R5SL50MH	67,00	50	385,0	335,0	3,30	H	TCF180614HP	TCF210608HC
5538700	TCF680R5SL50MH	68,00	50	390,0	340,0	2,93	H	TCF180614HP	TCF210608HC

(continued)

(Top Cut 4 Drill • Metric • 5 x D • SL Shanks – continued)

■ Spare Parts



insert size	periphery insert	center insert	insert screw order number	Torx size	Torx driver order number	tightening torque Nm	tightening torque ft. lbs
A	TCF040204AP	TCF040203AC	2025073	T5	2029221	0,40	.295
B	TCF050204BP	TCF060203BC	1175225	T6	1138455	0,53	.390
C	TCF070306CP	TCF070304CC	1021337	T7	2029266	0,90	.663
D	TCF080308DP	TCF090305DC	1134385	T8	2029598	1,10	.811
E	TCF100408EP	TCF120405EC	2018194	T9	1138430	2,00	1.475
F	TCF120412FP	TCF150406FC	1756815	T15	2029596	4,00	2.950
G	TCF150512GP	TCF180508GC	1099645	T20	2029488	6,30	4.646
H	TCF180614HP	TCF210608HC	1823871	T25	1022519	8,80	6.490

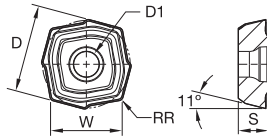
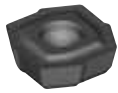
D	LS	
	mm	in
20,00	50	1.969
25,00	56	2.205
32,00	60	2.362
40,00	70	2.756
50,00	80	3.150

NOTE: Drill shipped with insert screws and Torx wrench.
See pages T28–T31 for inserts.
SL = Side Lock



WARNING

During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.



● first choice
○ alternate choice

P	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
M	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
K	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
N	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

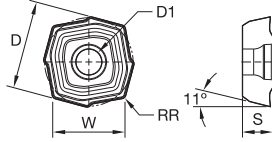
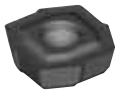
■ Top Cut 4 Drill • Center Inserts • V34

catalog number	D		D1		W		S		RR		insert size	WPK10CH	WU25CH	WU40PH
	mm	in	mm	in	mm	in	mm	in	mm	in				
TCF040203ACV34	4,47	.176	2,10	.083	3,65	.144	2,00	.079	0,300	.011	A		5541817	5541818
TCF060203BCV34	6,00	.236	2,40	.094	4,90	.193	2,40	.095	0,300	.011	B		5542602	5542604
TCF070304CCV34	7,59	.299	2,60	.102	6,20	.244	2,80	.110	0,400	.015	C		5542642	5542643
TCF090305DCV34	9,55	.376	2,80	.110	7,80	.307	3,00	.118	0,500	.019	D		5538554	5538555
TCF120405ECV34	12,00	.473	3,40	.134	9,80	.386	3,60	.142	0,500	.019	E		5538603	5538604
TCF150406FCV34	14,94	.588	4,80	.189	12,20	.480	4,20	.165	0,600	.023	F		5542623	5542624
TCF180508GCV34	17,88	.704	6,00	.236	14,60	.575	5,40	.213	0,800	.031	G		5542475	5542476
TCF210608HCV34	21,68	.853	7,50	.295	17,70	.697	6,50	.256	0,800	.031	H		5542002	5542003

NOTE: For application-specific insert selection, please refer to the application data on pages T32–T55.

Indexable Drills

Geometry	Application
V34	First choice for machining steel, cast iron, and short chipping materials. Suitable for severe cutting conditions.
V36	First choice for stainless steel. Suitable for long chipping steel and where low power consumption is required.



● first choice
○ alternate choice

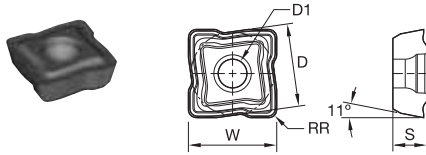
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M	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
K	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
N	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
S	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

■ Top Cut 4 Drill • Center Inserts • V36

catalog number	D		D1		W		S		RR		insert size	WPK10CH	WU25CH	WU40PH
	mm	in	mm	in	mm	in	mm	in	mm	in				
TCF040203ACV36	4,47	.176	2,10	.083	3,65	.144	2,00	.079	0,300	.011	A		5541819	5541840
TCF060203BCV36	6,00	.236	2,40	.094	4,90	.193	2,40	.094	0,300	.011	B		5542606	5542607
TCF070304CCV36	7,59	.299	2,60	.102	6,20	.244	2,80	.110	0,400	.015	C		5542644	5542645
TCF090305DCV36	9,55	.376	2,80	.110	7,80	.307	3,00	.118	0,500	.019	D		5538556	5538557
TCF120405ECV36	12,00	.473	3,40	.134	9,80	.386	3,60	.142	0,500	.019	E		5538606	5538607
TCF150406FCV36	14,94	.588	4,80	.189	12,20	.480	4,20	.165	0,600	.023	F		5542625	5542626
TCF180508GCV36	17,88	.704	6,00	.236	14,60	.575	5,40	.213	0,800	.031	G		5542477	5542478
TCF210608HCV36	21,68	.853	7,50	.295	17,70	.697	6,50	.256	0,800	.031	H		5542004	5542005

NOTE: For application-specific insert selection, please refer to the application data on pages T32–T55.

Geometry	Application
V34	First choice for machining steel, cast iron, and short chipping materials. Suitable for severe cutting conditions.
V36	First choice for stainless steel. Suitable for long chipping steel and where low power consumption is required.



● first choice
○ alternate choice

P	●	○	○	○
M	○	○	○	○
K	○	○	○	○
N	○	○	○	○
S	○	○	○	○
H	○	○	○	○

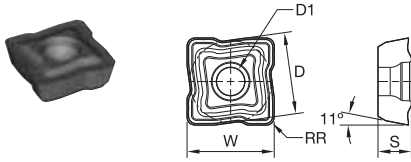
■ Top Cut 4 Drill • Periphery Inserts • V34

catalog number	D		D1		W		S		RR		insert size	
	mm	in	mm	in	mm	in	mm	in	mm	in		
TCF040204APV34	4,14	.163	2,10	.083	4,40	.173	2,00	.079	0,400	.015	A	WPK10CH 5541843 5541841
TCF050204BPV34	5,07	.200	2,40	.094	5,40	.213	2,40	.094	0,400	.015	B	WU25CH 5542620 5542608 5542609 5542647
TCF070306CPV34	6,67	.263	2,60	.102	7,10	.280	2,80	.110	0,600	.023	C	5542648 5542646
TCF080308DPV34	8,08	.318	2,80	.110	8,60	.339	3,00	.118	0,800	.031	D	5538600 5538558 5538559
TCF100408EPV34	9,96	.392	3,40	.134	10,60	.417	3,60	.142	0,800	.031	E	5538610 5538608
TCF120412FPV34	12,59	.496	4,80	.189	13,40	.528	4,20	.165	1,200	.046	F	5542629 5542627 5542628
TCF150512GPV34	15,13	.596	6,00	.236	16,10	.634	5,40	.213	1,200	.046	G	5542601 5542479 5542600
TCF180614HPV34	18,04	.710	7,50	.295	19,20	.756	6,50	.256	1,400	.054	H	5542008 5542006 5542007

NOTE: For application-specific insert selection, please refer to the application data on pages T32–T55.

Indexable Drills

Geometry	Application
V34	First choice for machining steel, cast iron, and short chipping materials. Suitable for severe cutting conditions.
V36	First choice for stainless steel. Suitable for long chipping steel and where low power consumption is required.



● first choice
○ alternate choice

P	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
M	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
K	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
N	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
S	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

■ Top Cut 4 Drill • Periphery Inserts • V36

catalog number	D		D1		W		S		RR		insert size	WPK10CH	WU25CH	WU40PH
	mm	in	mm	in	mm	in	mm	in	mm	in				
TCF040204APV36	4,14	.163	2,10	.083	4,40	.173	2,00	.079	0,400	.015	A		5541844	5541845
TCF050204BPV36	5,07	.200	2,40	.094	5,40	.213	2,40	.094	0,400	.015	B		5542621	5542622
TCF070306CPV36	6,67	.263	2,60	.102	7,10	.280	2,80	.110	0,600	.023	C		5542649	5542650
TCF080308DPV36	8,08	.318	2,80	.110	8,60	.339	3,00	.118	0,800	.031	D		5538601	5538602
TCF100408EPV36	9,96	.392	3,40	.134	10,60	.417	3,60	.142	0,800	.031	E		5538611	5538612
TCF120412FPV36	12,59	.496	4,80	.189	13,40	.528	4,20	.165	1,200	.046	F		5542640	5542641
TCF150512GPV36	15,13	.596	6,00	.236	16,10	.634	5,40	.213	1,200	.046	G		5542603	5542605
TCF180614HPV36	18,04	.710	7,50	.295	19,20	.756	6,50	.256	1,400	.054	H		5542009	5542020

NOTE: For application-specific insert selection, please refer to the application data on pages T32–T55.

Geometry	Application
V34	First choice for machining steel, cast iron, and short chipping materials. Suitable for severe cutting conditions.
V36	First choice for stainless steel. Suitable for long chipping steel and where low power consumption is required.

■ Top Cut 4 • Steel • 2 x D/3 x D • Feed Chart • Inch

Top Cut 4					Recommended Feed Rate by Diameter (IPR)												
					Insert Size A			Insert Size B			Insert Size C			Insert Size D			
					TCF040203AC TCF040204AP 12,00–13,99mm .473–.531"			TCF060203BC TCF050204BP 14,00–18,99mm .563–.734"			TCF070304CC TCF070306CP 19,00–23,99mm .750–.938"			TCF090305DC TCF080308DP 24,00–29,99mm .969–1.156"			
Material Group	Condition	Pocket Seat	Geometry	Grade	min	Start	max	min	Start	max	min	Start	max	min	Start	max	
P	1	S	P	V36	WU25CH	0.0024	0.0031	0.0039	0.0031	0.0039	0.0051	0.0039	0.0047	0.0059	0.0043	0.0051	0.0063
			C	V36	WU40PH												
		U	P	V36	WU40PH	0.0024	0.0031	0.0039	0.0031	0.0039	0.0051	0.0039	0.0047	0.0059	0.0043	0.0051	0.0063
			C	V36	WU40PH												
		I	P	V36	WU40PH	0.0024	0.0031	0.0039	0.0031	0.0039	0.0051	0.0039	0.0047	0.0059	0.0043	0.0051	0.0063
			C	V36	WU40PH												
	2	S	P	V34	WPK10CH	0.0024	0.0031	0.0039	0.0031	0.0047	0.0059	0.0039	0.0051	0.0063	0.0043	0.0055	0.0067
			C	V34	WU40PH												
		U	P	V34	WU25CH	0.0024	0.0031	0.0039	0.0031	0.0047	0.0059	0.0039	0.0051	0.0063	0.0043	0.0055	0.0067
			C	V34	WU40PH												
		I	P	V34	WU40PH	0.0024	0.0031	0.0039	0.0031	0.0047	0.0059	0.0039	0.0051	0.0063	0.0043	0.0055	0.0067
			C	V34	WU40PH												
	3	S	P	V34	WPK10CH	0.0031	0.0043	0.0059	0.0039	0.0047	0.0063	0.0043	0.0055	0.0071	0.0047	0.0059	0.0079
			C	V34	WU40PH												
		U	P	V34	WU25CH	0.0031	0.0043	0.0055	0.0039	0.0047	0.0059	0.0043	0.0055	0.0063	0.0047	0.0059	0.0071
			C	V34	WU40PH												
		I	P	V34	WU40PH	0.0031	0.0043	0.0055	0.0039	0.0047	0.0059	0.0043	0.0055	0.0063	0.0047	0.0059	0.0071
			C	V34	WU40PH												
	4	S	P	V34	WPK10CH	0.0031	0.0043	0.0059	0.0039	0.0047	0.0063	0.0043	0.0055	0.0071	0.0047	0.0059	0.0079
			C	V34	WU40PH												
		U	P	V34	WU25CH	0.0031	0.0043	0.0055	0.0039	0.0047	0.0059	0.0043	0.0055	0.0063	0.0047	0.0059	0.0071
			C	V34	WU40PH												
		I	P	V34	WU40PH	0.0031	0.0043	0.0055	0.0039	0.0047	0.0059	0.0043	0.0055	0.0063	0.0047	0.0059	0.0071
			C	V34	WU40PH												
5	S	P	V36	WU25CH	0.0024	0.0031	0.0039	0.0031	0.0039	0.0055	0.0039	0.0047	0.0059	0.0043	0.0051	0.0063	
		C	V36	WU40PH													
	U	P	V36	WU40PH	0.0024	0.0031	0.0039	0.0031	0.0039	0.0055	0.0039	0.0047	0.0059	0.0043	0.0051	0.0063	
		C	V36	WU40PH													
	I	P	V36	WU40PH	0.0024	0.0031	0.0039	0.0031	0.0039	0.0055	0.0039	0.0047	0.0059	0.0043	0.0051	0.0063	
		C	V36	WU40PH													
6	S	P	V36	WU25CH	0.0024	0.0031	0.0039	0.0031	0.0039	0.0055	0.0039	0.0047	0.0059	0.0043	0.0051	0.0063	
		C	V36	WU40PH													
	U	P	V36	WU40PH	0.0024	0.0031	0.0039	0.0031	0.0039	0.0055	0.0039	0.0047	0.0059	0.0043	0.0051	0.0063	
		C	V36	WU40PH													
	I	P	V36	WU40PH	0.0024	0.0031	0.0039	0.0031	0.0039	0.0055	0.0039	0.0047	0.0059	0.0043	0.0051	0.0063	
		C	V36	WU40PH													

NOTE: For 4 x D, it is highly recommended to start with feed and speed values reduced by 10% less than above recommendations.
 For 5 x D, diameter range .473–.938" (12–23,99mm) (insert sizes A to C), it is highly recommended to start with feed and speed values reduced by 20% less than above recommendations.
 For 5 x D, diameter range .969–2.5" (24–68mm) (insert sizes D to H), it is highly recommended to start with feed and speed values reduced by 15% less than above recommendations.
 For 4 x D and 5 x D, it is recommended to reduce the feed rate during entry and exit by 30–50%.

Condition: S = stable conditions;
 U = unstable cutting conditions;
 I = interrupted cutting conditions
 Pocket Seat: P = periphery insert;
 C = center insert

Indexable Drills

■ Top Cut 4 • Steel • 2 x D/3 x D • Speed Chart • Inch

Top Cut 4					Recommended Cutting Speed by Diameter (SFM)													
					Insert Size A			Insert Size B			Insert Size C			Insert Size D				
					TCF040203AC TCF040204AP 12,00–13,99mm .473–.531"			TCF060203BC TCF050204BP 14,00–18,99mm .563–.734"			TCF070304CC TCF070306CP 19,00–23,99mm .750–.938"			TCF090305DC TCF080308DP 24,00–29,99mm .969–1.156"				
Material Group	Condition	Pocket Seat	Geometry	Grade	min	Start	max	min	Start	max	min	Start	max	min	Start	max		
P	1	S	P	V36	WU25CH	394	459	525	459	525	787	492	590	853	525	590	853	
			C	V36	WU40PH													
		U	P	V36	WU40PH	361	394	459	426	492	722	426	558	820	459	558	820	
			C	V36	WU40PH													
		I	P	V36	WU40PH	295	328	394	426	492	689	426	558	787	459	558	787	
			C	V36	WU40PH													
	2	S	P	V34	WPK10CH	394	459	525	459	558	853	492	623	918	525	623	918	
			C	V34	WU40PH													
		U	P	V34	WU25CH	361	394	459	426	558	787	459	590	853	492	590	853	
			C	V34	WU40PH													
		I	P	V34	WU40PH	295	328	394	426	558	754	426	558	787	459	558	787	
			C	V34	WU40PH													
	3	S	P	V34	WPK10CH	394	459	590	459	558	886	492	656	951	525	656	1017	
			C	V34	WU40PH													
		U	P	V34	WU25CH	361	394	525	426	525	853	459	656	918	492	656	918	
			C	V34	WU40PH													
		I	P	V34	WU40PH	328	361	459	394	492	820	426	590	853	459	590	853	
			C	V34	WU40PH													
	4	S	P	V34	WPK10CH	394	459	590	459	558	886	492	656	951	525	656	1017	
			C	V34	WU40PH													
		U	P	V34	WU25CH	361	394	525	426	525	853	459	656	918	492	656	918	
			C	V34	WU40PH													
		I	P	V34	WU40PH	328	361	459	394	492	820	426	590	853	459	590	853	
			C	V34	WU40PH													
5	S	P	V36	WU25CH	394	459	525	459	558	787	492	590	820	525	590	820		
		C	V36	WU40PH														
	U	P	V36	WU40PH	361	394	459	426	525	754	459	558	787	492	558	787		
		C	V36	WU40PH														
	I	P	V36	WU40PH	295	328	394	426	525	754	426	525	722	459	525	722		
		C	V36	WU40PH														
6	S	P	V36	WU25CH	394	459	525	459	558	656	459	558	689	492	558	689		
		C	V36	WU40PH														
	U	P	V36	WU40PH	361	394	459	394	492	623	426	525	656	459	525	656		
		C	V36	WU40PH														
	I	P	V36	WU40PH	295	328	394	361	426	590	394	459	623	394	459	623		
		C	V36	WU40PH														

NOTE: For 4 x D, it is highly recommended to start with feed and speed values reduced by 10% less than above recommendations.
 For 5 x D, diameter range .473–.938" (12–23,99mm) (insert sizes A to C), it is highly recommended to start with feed and speed values reduced by 20% less than above recommendations.
 For 5 x D, diameter range .969–2.5" (24–68mm) (insert sizes D to H), it is highly recommended to start with feed and speed values reduced by 15% less than above recommendations.
 For 4 x D and 5 x D, it is recommended to reduce the feed rate during entry and exit by 30–50%.

Condition: S = stable conditions;
 U = unstable cutting conditions;
 I = interrupted cutting conditions
 Pocket Seat: P = periphery insert;
 C = center insert

■ Top Cut 4 • Steel • 2 x D/3 x D • Feed Chart • Inch

Top Cut 4					Recommended Feed Rate by Diameter (IPR)												
					Insert Size E			Insert Size F			Insert Size G			Insert Size H			
					TCF120405EC TCF100408EP 30,00–36,99mm 1.188–1.438"			TCF150406FC TCF120412FP 37,00–45,99mm 1.469–1.750"			TCF180508GC TCF150512GP 46,00–56,99mm 1.813–2.219"			TCF210608HC TCF180614HP 57,00–68,00mm 2.250–2.500"			
Material Group	Condition	Pocket Seat	Geometry	Grade	min	Start	max	min	Start	max	min	Start	max	min	Start	max	
P	1	S	P	V36	WU25CH	0.0051	0.0055	0.0071	0.0059	0.0067	0.0079	0.0063	0.0091	0.0106	0.0067	0.0094	0.0114
			C	V36	WU40PH												
		U	P	V36	WU40PH	0.0051	0.0055	0.0071	0.0059	0.0067	0.0079	0.0063	0.0091	0.0106	0.0067	0.0094	0.0114
			C	V36	WU40PH												
		I	P	V36	WU40PH	0.0051	0.0055	0.0071	0.0059	0.0067	0.0079	0.0063	0.0091	0.0106	0.0067	0.0094	0.0114
			C	V36	WU40PH												
	2	S	P	V34	WPK10CH	0.0051	0.0059	0.0079	0.0059	0.0071	0.0083	0.0063	0.0094	0.0110	0.0067	0.0098	0.0118
			C	V34	WU40PH												
		U	P	V34	WU25CH	0.0051	0.0059	0.0079	0.0059	0.0071	0.0083	0.0063	0.0094	0.0110	0.0067	0.0098	0.0118
			C	V34	WU40PH												
		I	P	V34	WU40PH	0.0051	0.0059	0.0079	0.0059	0.0071	0.0083	0.0063	0.0094	0.0110	0.0067	0.0098	0.0118
			C	V34	WU40PH												
	3	S	P	V34	WPK10CH	0.0055	0.0063	0.0087	0.0063	0.0079	0.0094	0.0071	0.0098	0.0118	0.0075	0.0102	0.0126
			C	V34	WU40PH												
		U	P	V34	WU25CH	0.0055	0.0063	0.0079	0.0063	0.0079	0.0091	0.0071	0.0098	0.0110	0.0075	0.0102	0.0118
			C	V34	WU40PH												
		I	P	V34	WU40PH	0.0055	0.0063	0.0079	0.0063	0.0079	0.0087	0.0071	0.0098	0.0110	0.0075	0.0102	0.0118
			C	V34	WU40PH												
	4	S	P	V34	WPK10CH	0.0055	0.0063	0.0087	0.0063	0.0079	0.0094	0.0071	0.0098	0.0118	0.0075	0.0102	0.0126
			C	V34	WU40PH												
		U	P	V34	WU25CH	0.0055	0.0063	0.0079	0.0063	0.0079	0.0087	0.0071	0.0098	0.0110	0.0075	0.0102	0.0118
			C	V34	WU40PH												
		I	P	V34	WU40PH	0.0055	0.0063	0.0079	0.0063	0.0079	0.0087	0.0071	0.0098	0.0110	0.0075	0.0102	0.0118
			C	V34	WU40PH												
5	S	P	V36	WU25CH	0.0051	0.0059	0.0071	0.0059	0.0071	0.0079	0.0063	0.0094	0.0110	0.0067	0.0098	0.0118	
		C	V36	WU40PH													
	U	P	V36	WU40PH	0.0051	0.0059	0.0071	0.0059	0.0071	0.0079	0.0063	0.0094	0.0110	0.0067	0.0098	0.0118	
		C	V36	WU40PH													
	I	P	V36	WU40PH	0.0051	0.0059	0.0071	0.0059	0.0071	0.0079	0.0063	0.0094	0.0110	0.0067	0.0098	0.0118	
		C	V36	WU40PH													
6	S	P	V36	WU25CH	0.0051	0.0059	0.0071	0.0059	0.0067	0.0079	0.0063	0.0091	0.0110	0.0067	0.0094	0.0114	
		C	V36	WU40PH													
	U	P	V36	WU40PH	0.0051	0.0059	0.0071	0.0059	0.0067	0.0079	0.0063	0.0091	0.0110	0.0067	0.0094	0.0114	
		C	V36	WU40PH													
	I	P	V36	WU40PH	0.0051	0.0059	0.0071	0.0059	0.0067	0.0079	0.0063	0.0091	0.0110	0.0067	0.0094	0.0114	
		C	V36	WU40PH													

NOTE: For 4 x D, it is highly recommended to start with feed and speed values reduced by 10% less than above recommendations.
 For 5 x D, diameter range .473-.938" (12-23,99mm) (insert sizes A to C), it is highly recommended to start with feed and speed values reduced by 20% less than above recommendations.
 For 5 x D, diameter range .969-2.5" (24-68mm) (insert sizes D to H), it is highly recommended to start with feed and speed values reduced by 15% less than above recommendations.
 For 4 x D and 5 x D, it is recommended to reduce the feed rate during entry and exit by 30-50%.

Condition: S = stable conditions;
 U = unstable cutting conditions;
 I = interrupted cutting conditions
 Pocket Seat: P = periphery insert;
 C = center insert

Indexable Drills

■ Top Cut 4 • Steel • 2 x D/3 x D • Speed Chart • Inch

Top Cut 4					Recommended Cutting Speed by Diameter (SFM)												
					Insert Size E			Insert Size F			Insert Size G			Insert Size H			
					TCF120405EC TCF100408EP 30,00–36,99mm 1.188–1.438"			TCF150406FC TCF120412FP 37,00–45,99mm 1.469–1.750"			TCF180508GC TCF150512GP 46,00–56,99mm 1.813–2.219"			TCF210608HC TCF180614HP 57,00–68,00mm 2.250–2.500"			
Material Group	Condition	Pocket Seat	Geometry	Grade	min	Start	max	min	Start	max	min	Start	max	min	Start	max	
P	1	S	P	V36	WU25CH	525	590	853	525	590	853	525	590	853	525	590	853
			C	V36	WU40PH												
		U	P	V36	WU40PH	459	558	820	459	558	820	459	558	820	459	558	820
			C	V36	WU40PH												
		I	P	V36	WU40PH	459	558	787	459	558	787	459	558	787	459	558	787
			C	V36	WU40PH												
	2	S	P	V34	WPK10CH	525	623	918	525	623	918	525	623	918	525	623	918
			C	V34	WU40PH												
		U	P	V34	WU25CH	492	590	853	492	590	853	492	590	853	492	590	853
			C	V34	WU40PH												
		I	P	V34	WU40PH	459	558	787	459	558	787	459	558	787	459	558	787
			C	V34	WU40PH												
	3	S	P	V34	WPK10CH	525	656	1017	525	656	1017	525	656	1017	525	656	1017
			C	V34	WU40PH												
		U	P	V34	WU25CH	492	656	918	492	656	918	492	656	918	492	656	918
			C	V34	WU40PH												
		I	P	V34	WU40PH	459	590	853	459	590	853	459	590	853	459	590	853
			C	V34	WU40PH												
	4	S	P	V34	WPK10CH	525	656	1017	525	656	1017	525	656	1017	525	656	1017
			C	V34	WU40PH												
		U	P	V34	WU25CH	492	656	918	492	656	918	492	656	918	492	656	918
			C	V34	WU40PH												
		I	P	V34	WU40PH	459	590	853	459	590	853	459	590	853	459	590	853
			C	V34	WU40PH												
5	S	P	V36	WU25CH	525	590	820	525	590	820	525	590	820	525	590	820	
		C	V36	WU40PH													
	U	P	V36	WU40PH	492	558	787	492	558	787	492	558	787	492	558	787	
		C	V36	WU40PH													
	I	P	V36	WU40PH	459	525	722	459	525	722	459	525	722	459	525	722	
		C	V36	WU40PH													
6	S	P	V36	WU25CH	492	558	689	492	558	689	492	558	689	492	558	689	
		C	V36	WU40PH													
	U	P	V36	WU40PH	459	525	656	459	525	656	459	525	656	459	525	656	
		C	V36	WU40PH													
	I	P	V36	WU40PH	394	459	623	394	459	623	394	459	623	394	459	623	
		C	V36	WU40PH													

NOTE: For 4 x D, it is highly recommended to start with feed and speed values reduced by 10% less than above recommendations.
 For 5 x D, diameter range .473–.938" (12–23,99mm) (insert sizes A to C), it is highly recommended to start with feed and speed values reduced by 20% less than above recommendations.
 For 5 x D, diameter range .969–2.5" (24–68mm) (insert sizes D to H), it is highly recommended to start with feed and speed values reduced by 15% less than above recommendations.
 For 4 x D and 5 x D, it is recommended to reduce the feed rate during entry and exit by 30–50%.

Condition: S = stable conditions;
 U = unstable cutting conditions;
 I = interrupted cutting conditions
 Pocket Seat: P = periphery insert;
 C = center insert

■ Top Cut 4 • Steel • 2 x D/3 x D • Feed Chart • Metric

Top Cut 4					Recommended Feed Rate by Diameter (mm/r)												
					Insert Size A			Insert Size B			Insert Size C			Insert Size D			
					TCF040203AC TCF040204AP 12,00–13,99mm .473–.531"			TCF060203BC TCF050204BP 14,00–18,99mm .563–.734"			TCF070304CC TCF070306CP 19,00–23,99mm .750–.938"			TCF090305DC TCF080308DP 24,00–29,99mm .969–1.156"			
Material Group	Condition	Pocket Seat	Geometry	Grade	min	Start	max	min	Start	max	min	Start	max	min	Start	max	
P	1	S	P	V36	WU25CH	0,06	0,08	0,10	0,08	0,10	0,13	0,10	0,12	0,15	0,11	0,13	0,16
			C	V36	WU40PH												
		U	P	V36	WU40PH	0,06	0,08	0,10	0,08	0,10	0,13	0,10	0,12	0,15	0,11	0,13	0,16
			C	V36	WU40PH												
		I	P	V36	WU40PH	0,06	0,08	0,10	0,08	0,10	0,13	0,10	0,12	0,15	0,11	0,13	0,16
			C	V36	WU40PH												
	2	S	P	V34	WPK10CH	0,06	0,08	0,10	0,08	0,12	0,15	0,10	0,13	0,16	0,11	0,14	0,17
			C	V34	WU40PH												
		U	P	V34	WU25CH	0,06	0,08	0,10	0,08	0,12	0,15	0,10	0,13	0,16	0,11	0,14	0,17
			C	V34	WU40PH												
		I	P	V34	WU40PH	0,06	0,08	0,10	0,08	0,12	0,15	0,10	0,13	0,16	0,11	0,14	0,17
			C	V34	WU40PH												
	3	S	P	V34	WPK10CH	0,08	0,11	0,15	0,10	0,12	0,16	0,11	0,14	0,18	0,12	0,15	0,20
			C	V34	WU40PH												
		U	P	V34	WU25CH	0,08	0,11	0,14	0,10	0,12	0,15	0,11	0,14	0,16	0,12	0,15	0,18
			C	V34	WU40PH												
		I	P	V34	WU40PH	0,08	0,11	0,14	0,10	0,12	0,15	0,11	0,14	0,16	0,12	0,15	0,18
			C	V34	WU40PH												
	4	S	P	V34	WPK10CH	0,08	0,11	0,15	0,10	0,12	0,16	0,11	0,14	0,18	0,12	0,15	0,20
			C	V34	WU40PH												
		U	P	V34	WU25CH	0,08	0,11	0,14	0,10	0,12	0,15	0,11	0,14	0,16	0,12	0,15	0,18
			C	V34	WU40PH												
		I	P	V34	WU40PH	0,08	0,11	0,14	0,10	0,12	0,15	0,11	0,14	0,16	0,12	0,15	0,18
			C	V34	WU40PH												
5	S	P	V36	WU25CH	0,06	0,08	0,10	0,08	0,10	0,14	0,10	0,12	0,15	0,11	0,13	0,16	
		C	V36	WU40PH													
	U	P	V36	WU40PH	0,06	0,08	0,10	0,08	0,10	0,14	0,10	0,12	0,15	0,11	0,13	0,16	
		C	V36	WU40PH													
	I	P	V36	WU40PH	0,06	0,08	0,10	0,08	0,10	0,14	0,10	0,12	0,15	0,11	0,13	0,16	
		C	V36	WU40PH													
6	S	P	V36	WU25CH	0,06	0,08	0,10	0,08	0,10	0,14	0,10	0,12	0,15	0,11	0,13	0,16	
		C	V36	WU40PH													
	U	P	V36	WU40PH	0,06	0,08	0,10	0,08	0,10	0,14	0,10	0,12	0,15	0,11	0,13	0,16	
		C	V36	WU40PH													
	I	P	V36	WU40PH	0,06	0,08	0,10	0,08	0,10	0,14	0,10	0,12	0,15	0,11	0,13	0,16	
		C	V36	WU40PH													

NOTE: For 4 x D, it is highly recommended to start with feed and speed values reduced by 10% less than above recommendations.
 For 5 x D, diameter range .473–.938" (12–23,99mm) (insert sizes A to C), it is highly recommended to start with feed and speed values reduced by 20% less than above recommendations.
 For 5 x D, diameter range .969–2.5" (24–68mm) (insert sizes D to H), it is highly recommended to start with feed and speed values reduced by 15% less than above recommendations.
 For 4 x D and 5 x D, it is recommended to reduce the feed rate during entry and exit by 30–50%.

Condition: S = stable conditions,
 U = unstable cutting conditions,
 I = interrupted cutting conditions
 Pocket Seat: P = periphery insert,
 C = center insert

Indexable Drills

■ Top Cut 4 • Steel • 2 x D/3 x D • Speed Chart • Metric

Top Cut 4					Recommended Cutting Speed by Diameter (m/min)												
					Insert Size A			Insert Size B			Insert Size C			Insert Size D			
					TCF040203AC TCF040204AP 12,00–13,99mm .473–.531"			TCF060203BC TCF050204BP 14,00–18,99mm .563–.734"			TCF070304CC TCF070306CP 19,00–23,99mm .750–.938"			TCF090305DC TCF080308DP 24,00–29,99mm .969–1.156"			
Material Group	Condition	Pocket Seat	Geometry	Grade	min	Start	max	min	Start	max	min	Start	max	min	Start	max	
P	1	S	P	V36	WU25CH	120	140	160	140	160	240	150	180	260	160	180	260
			C	V36	WU40PH												
		U	P	V36	WU40PH	110	120	140	130	150	220	130	170	250	140	170	250
			C	V36	WU40PH												
		I	P	V36	WU40PH	90	100	120	130	150	210	130	170	240	140	170	240
			C	V36	WU40PH												
	2	S	P	V34	WPK10CH	120	140	160	140	170	260	150	190	280	160	190	280
			C	V34	WU40PH												
		U	P	V34	WU25CH	110	120	140	130	170	240	140	180	260	150	180	260
			C	V34	WU40PH												
		I	P	V34	WU40PH	90	100	120	130	170	230	130	170	240	140	170	240
			C	V34	WU40PH												
	3	S	P	V34	WPK10CH	120	140	180	140	170	270	150	200	290	160	200	310
			C	V34	WU40PH												
		U	P	V34	WU25CH	110	120	160	130	160	260	140	200	280	150	200	280
			C	V34	WU40PH												
		I	P	V34	WU40PH	100	110	140	120	150	250	130	180	260	140	180	260
			C	V34	WU40PH												
	4	S	P	V34	WPK10CH	120	140	180	140	170	270	150	200	290	160	200	310
			C	V34	WU40PH												
		U	P	V34	WU25CH	110	120	160	130	160	260	140	200	280	150	200	280
			C	V34	WU40PH												
		I	P	V34	WU40PH	100	110	140	120	150	250	130	180	260	140	180	260
			C	V34	WU40PH												
5	S	P	V36	WU25CH	120	140	160	140	170	240	150	180	250	160	180	250	
		C	V36	WU40PH													
	U	P	V36	WU40PH	110	120	140	130	160	230	140	170	240	150	170	240	
		C	V36	WU40PH													
	I	P	V36	WU40PH	90	100	120	130	160	230	130	160	220	140	160	220	
		C	V36	WU40PH													
6	S	P	V36	WU25CH	120	140	160	140	170	200	140	170	210	150	170	210	
		C	V36	WU40PH													
	U	P	V36	WU40PH	110	120	140	120	150	190	130	160	200	140	160	200	
		C	V36	WU40PH													
	I	P	V36	WU40PH	90	100	120	110	130	180	120	140	190	120	140	190	
		C	V36	WU40PH													

NOTE: For 4 x D, it is highly recommended to start with feed and speed values reduced by 10% less than above recommendations.
 For 5 x D, diameter range .473–.938" (12–23,99mm) (insert sizes A to C), it is highly recommended to start with feed and speed values reduced by 20% less than above recommendations.
 For 5 x D, diameter range .969–2.5" (24–68mm) (insert sizes D to H), it is highly recommended to start with feed and speed values reduced by 15% less than above recommendations.
 For 4 x D and 5 x D, it is recommended to reduce the feed rate during entry and exit by 30–50%.

Condition: S = stable conditions,
 U = unstable cutting conditions,
 I = interrupted cutting conditions
 Pocket Seat: P = periphery insert,
 C = center insert

■ Top Cut 4 • Steel • 2 x D/3 x D • Feed Chart • Metric

Top Cut 4					Recommended Feed Rate by Diameter (mm/r)													
					Insert Size E			Insert Size F			Insert Size G			Insert Size H				
					TCF120405EC TCF100408EP 30,00–36,99mm 1.188–1.438"			TCF150406FC TCF120412FP 37,00–45,99mm 1.469–1.750"			TCF180508GC TCF150512GP 46,00–56,99mm 1.813–2.219"			TCF210608HC TCF180614HP 57,00–68,00mm 2.250–2.500"				
Material Group	Condition	Pocket Seat	Geometry	Grade	min	Start	max	min	Start	max	min	Start	max	min	Start	max		
P	1	S	P	V36	WU25CH	0,13	0,14	0,18	0,15	0,17	0,20	0,16	0,23	0,27	0,17	0,24	0,29	
			C	V36	WU40PH													
		U	P	V36	WU40PH	0,06	0,08	0,10	0,08	0,10	0,13	0,10	0,12	0,15	0,11	0,13	0,16	
			C	V36	WU40PH													
		I	P	V36	WU40PH	0,06	0,08	0,10	0,08	0,10	0,13	0,10	0,12	0,15	0,11	0,13	0,16	
			C	V36	WU40PH													
	2	S	P	V34	WPK10CH	0,06	0,08	0,10	0,08	0,12	0,15	0,10	0,13	0,16	0,11	0,14	0,17	
			C	V34	WU40PH													
		U	P	V34	WU25CH	0,06	0,08	0,10	0,08	0,12	0,15	0,10	0,13	0,16	0,11	0,14	0,17	
			C	V34	WU40PH													
		I	P	V34	WU40PH	0,06	0,08	0,10	0,08	0,12	0,15	0,10	0,13	0,16	0,11	0,14	0,17	
			C	V34	WU40PH													
	3	S	P	V34	WPK10CH	0,08	0,11	0,15	0,10	0,12	0,16	0,11	0,14	0,18	0,12	0,15	0,20	
			C	V34	WU40PH													
		U	P	V34	WU25CH	0,08	0,11	0,14	0,10	0,12	0,15	0,11	0,14	0,16	0,12	0,15	0,18	
			C	V34	WU40PH													
		I	P	V34	WU40PH	0,08	0,11	0,14	0,10	0,12	0,15	0,11	0,14	0,16	0,12	0,15	0,18	
			C	V34	WU40PH													
	4	S	P	V34	WPK10CH	0,08	0,11	0,15	0,10	0,12	0,16	0,11	0,14	0,18	0,12	0,15	0,20	
			C	V34	WU40PH													
		U	P	V34	WU25CH	0,08	0,11	0,14	0,10	0,12	0,15	0,11	0,14	0,16	0,12	0,15	0,18	
			C	V34	WU40PH													
		I	P	V34	WU40PH	0,08	0,11	0,14	0,10	0,12	0,15	0,11	0,14	0,16	0,12	0,15	0,18	
			C	V34	WU40PH													
5	S	P	V36	WU25CH	0,06	0,08	0,10	0,08	0,10	0,14	0,10	0,12	0,15	0,11	0,13	0,16		
		C	V36	WU40PH														
	U	P	V36	WU40PH	0,06	0,08	0,10	0,08	0,10	0,14	0,10	0,12	0,15	0,11	0,13	0,16		
		C	V36	WU40PH														
	I	P	V36	WU40PH	0,06	0,08	0,10	0,08	0,10	0,14	0,10	0,12	0,15	0,11	0,13	0,16		
		C	V36	WU40PH														
6	S	P	V36	WU25CH	0,06	0,08	0,10	0,08	0,10	0,14	0,10	0,12	0,15	0,11	0,13	0,16		
		C	V36	WU40PH														
	U	P	V36	WU40PH	0,06	0,08	0,10	0,08	0,10	0,14	0,10	0,12	0,15	0,11	0,13	0,16		
		C	V36	WU40PH														
	I	P	V36	WU40PH	0,06	0,08	0,10	0,08	0,10	0,14	0,10	0,12	0,15	0,11	0,13	0,16		
		C	V36	WU40PH														

NOTE: For 4 x D, it is highly recommended to start with feed and speed values reduced by 10% less than above recommendations.
 For 5 x D, diameter range .473–.938" (12–23,99mm) (insert sizes A to C), it is highly recommended to start with feed and speed values reduced by 20% less than above recommendations.
 For 5 x D, diameter range .969–2.5" (24–68mm) (insert sizes D to H), it is highly recommended to start with feed and speed values reduced by 15% less than above recommendations.
 For 4 x D and 5 x D, it is recommended to reduce the feed rate during entry and exit by 30–50%.

Condition: S = stable conditions,
 U = unstable cutting conditions,
 I = interrupted cutting conditions
 Pocket Seat: P = periphery insert,
 C = center insert

Indexable Drills

■ Top Cut 4 • Steel • 2 x D/3 x D • Speed Chart • Metric

Top Cut 4					Recommended Cutting Speed by Diameter (m/min)													
					Insert Size E			Insert Size F			Insert Size G			Insert Size H				
					TCF120405EC TCF100408EP 30,00–36,99mm 1.188–1.438"			TCF150406FC TCF120412FP 37,00–45,99mm 1.469–1.750"			TCF180508GC TCF150512GP 46,00–56,99mm 1.813–2.219"			TCF210608HC TCF180614HP 57,00–68,00mm 2.250–2.500"				
Material Group	Condition	Pocket Seat	Geometry	Grade	min	Start	max	min	Start	max	min	Start	max	min	Start	max		
P	1	S	P	V36	WU25CH	160	180	260	160	180	260	160	180	260	160	180	260	
			C	V36	WU40PH													
		U	P	V36	WU40PH	140	170	250	140	170	250	140	170	250	140	170	250	
			C	V36	WU40PH													
		I	P	V36	WU40PH	140	170	240	140	170	240	140	170	240	140	170	240	
			C	V36	WU40PH													
	2	S	P	V34	WPK10CH	160	190	280	160	190	280	160	190	280	160	190	280	
			C	V34	WU40PH													
		U	P	V34	WU25CH	150	180	260	150	180	260	150	180	260	150	180	260	
			C	V34	WU40PH													
		I	P	V34	WU40PH	140	170	240	140	170	240	140	170	240	140	170	240	
			C	V34	WU40PH													
	3	S	P	V34	WPK10CH	160	200	310	160	200	310	160	200	310	160	200	310	
			C	V34	WU40PH													
		U	P	V34	WU25CH	150	200	280	150	200	280	150	200	280	150	200	280	
			C	V34	WU40PH													
		I	P	V34	WU40PH	140	180	260	140	180	260	140	180	260	140	180	260	
			C	V34	WU40PH													
	4	S	P	V34	WPK10CH	160	200	310	160	200	310	160	200	310	160	200	310	
			C	V34	WU40PH													
		U	P	V34	WU25CH	150	200	280	150	200	280	150	200	280	150	200	280	
			C	V34	WU40PH													
		I	P	V34	WU40PH	140	180	260	140	180	260	140	180	260	140	180	260	
			C	V34	WU40PH													
5	S	P	V36	WU25CH	160	180	250	160	180	250	160	180	250	160	180	250		
		C	V36	WU40PH														
	U	P	V36	WU40PH	150	170	240	150	170	240	150	170	240	150	170	240		
		C	V36	WU40PH														
	I	P	V36	WU40PH	140	160	220	140	160	220	140	160	220	140	160	220		
		C	V36	WU40PH														
6	S	P	V36	WU25CH	150	170	210	150	170	210	150	170	210	150	170	210		
		C	V36	WU40PH														
	U	P	V36	WU40PH	140	160	200	140	160	200	140	160	200	140	160	200		
		C	V36	WU40PH														
	I	P	V36	WU40PH	120	140	190	120	140	190	120	140	190	120	140	190		
		C	V36	WU40PH														

NOTE: For 4 x D, it is highly recommended to start with feed and speed values reduced by 10% less than above recommendations.
 For 5 x D, diameter range .473–.938" (12–23,99mm) (insert sizes A to C), it is highly recommended to start with feed and speed values reduced by 20% less than above recommendations.
 For 5 x D, diameter range .969–2.5" (24–68mm) (insert sizes D to H), it is highly recommended to start with feed and speed values reduced by 15% less than above recommendations.
 For 4 x D and 5 x D, it is recommended to reduce the feed rate during entry and exit by 30–50%.

Condition: S = stable conditions,
 U = unstable cutting conditions,
 I = interrupted cutting conditions
 Pocket Seat: P = periphery insert,
 C = center insert

■ Top Cut 4 • Stainless Steel • 2 x D/3 x D • Feed Chart • Inch

Top Cut 4					Recommended Feed Rate by Diameter (IPR)												
					Insert Size A			Insert Size B			Insert Size C			Insert Size D			
					TCF040203AC TCF040204AP 12,00–13,99mm .473–.531"			TCF060203BC TCF050204BP 14,00–18,99mm .563–.734"			TCF070304CC TCF070306CP 19,00–23,99mm .750–.938"			TCF090305DC TCF080308DP 24,00–29,99mm .969–1.156"			
Material Group	Condition	Pocket Seat	Geometry	Grade	min	Start	max	min	Start	max	min	Start	max	min	Start	max	
M	1	S	P	V36	WU40PH	0.0024	0.0031	0.0047	0.0028	0.0039	0.0051	0.0031	0.0039	0.0059	0.0039	0.0047	0.0063
			C	V36	WU40PH												
		U	P	V36	WU40PH	0.0024	0.0031	0.0047	0.0028	0.0039	0.0047	0.0031	0.0039	0.0055	0.0039	0.0047	0.0059
			C	V36	WU40PH												
		I	P	V36	WU40PH	0.0024	0.0031	0.0043	0.0028	0.0039	0.0043	0.0031	0.0039	0.0055	0.0039	0.0047	0.0059
			C	V36	WU40PH												
	2	S	P	V36	WU40PH	0.0024	0.0031	0.0047	0.0028	0.0039	0.0051	0.0031	0.0039	0.0059	0.0039	0.0047	0.0063
			C	V36	WU40PH												
		U	P	V36	WU40PH	0.0024	0.0031	0.0047	0.0028	0.0039	0.0047	0.0031	0.0039	0.0055	0.0039	0.0047	0.0059
			C	V36	WU40PH												
		I	P	V36	WU40PH	0.0024	0.0031	0.0043	0.0028	0.0039	0.0043	0.0031	0.0039	0.0055	0.0039	0.0047	0.0059
			C	V36	WU40PH												
3	S	P	V36	WU40PH	0.0024	0.0031	0.0047	0.0028	0.0039	0.0051	0.0031	0.0039	0.0059	0.0039	0.0047	0.0063	
		C	V36	WU40PH													
	U	P	V36	WU40PH	0.0024	0.0031	0.0047	0.0028	0.0039	0.0047	0.0031	0.0039	0.0055	0.0039	0.0047	0.0059	
		C	V36	WU40PH													
	I	P	V36	WU40PH	0.0024	0.0031	0.0043	0.0028	0.0039	0.0043	0.0031	0.0039	0.0055	0.0039	0.0047	0.0059	
		C	V36	WU40PH													

NOTE: For 4 x D, it is highly recommended to start with feed and speed values reduced by 10% less than above recommendations.
 For 5 x D, diameter range .473–.938" (12–23,99mm) (insert sizes A to C), it is highly recommended to start with feed and speed values reduced by 20% less than above recommendations.
 For 5 x D, diameter range .969–2.5" (24–68mm) (insert sizes D to H), it is highly recommended to start with feed and speed values reduced by 15% less than above recommendations.
 For 4 x D and 5 x D, it is recommended to reduce the feed rate during entry and exit by 30–50%.

Condition: S = stable conditions,
 U = unstable cutting conditions,
 I = interrupted cutting conditions
 Pocket Seat: P = periphery insert,
 C = center insert

Indexable Drills

■ Top Cut 4 • Stainless Steel • 2 x D/3 x D • Speed Chart • Inch

Top Cut 4					Recommended Cutting Speed by Diameter (SFM)												
					Insert Size A			Insert Size B			Insert Size C			Insert Size D			
					TCF040203AC TCF040204AP 12,00–13,99mm .473–.531"			TCF060203BC TCF050204BP 14,00–18,99mm .563–.734"			TCF070304CC TCF070306CP 19,00–23,99mm .750–.938"			TCF090305DC TCF080308DP 24,00–29,99mm .969–1.156"			
Material Group	Condition	Pocket Seat	Geometry	Grade	min	Start	max	min	Start	max	min	Start	max	min	Start	max	
M	1	S	P	V36	WU40PH	394	459	525	459	525	754	492	558	787	492	558	787
			C	V36	WU40PH												
		U	P	V36	WU40PH	361	394	459	426	492	689	426	525	689	426	525	689
			C	V36	WU40PH												
		I	P	V36	WU40PH	295	328	394	426	492	656	426	525	656	426	525	656
			C	V36	WU40PH												
	2	S	P	V36	WU40PH	394	459	525	459	525	656	492	558	689	492	558	689
			C	V36	WU40PH												
		U	P	V36	WU40PH	361	394	459	426	492	590	426	525	656	426	525	656
			C	V36	WU40PH												
		I	P	V36	WU40PH	295	328	394	394	459	558	426	492	590	426	492	590
			C	V36	WU40PH												
3	S	P	V36	WU40PH	361	394	459	426	492	590	459	525	656	459	525	656	
		C	V36	WU40PH													
	U	P	V36	WU40PH	295	361	394	394	426	525	426	459	590	426	459	590	
		C	V36	WU40PH													
	I	P	V36	WU40PH	262	328	361	328	394	492	361	426	525	361	426	525	
		C	V36	WU40PH													

NOTE: For 4 x D, it is highly recommended to start with feed and speed values reduced by 10% less than above recommendations.
 For 5 x D, diameter range .473–.938" (12–23,99mm) (insert sizes A to C), it is highly recommended to start with feed and speed values reduced by 20% less than above recommendations.
 For 5 x D, diameter range .969–2.5" (24–68mm) (insert sizes D to H), it is highly recommended to start with feed and speed values reduced by 15% less than above recommendations.
 For 4 x D and 5 x D, it is recommended to reduce the feed rate during entry and exit by 30–50%.

Condition: S = stable conditions,
 U = unstable cutting conditions,
 I = interrupted cutting conditions
 Pocket Seat: P = periphery insert,
 C = center insert

■ **Top Cut 4 • Stainless Steel • 2 x D/3 x D • Feed Chart • Inch**

Top Cut 4					Recommended Feed Rate by Diameter (IPR)													
					Insert Size E			Insert Size F			Insert Size G			Insert Size H				
					TCF120405EC TCF100408EP 30,00–36,99mm 1.188–1.438"			TCF150406FC TCF120412FP 37,00–45,99mm 1.469–1.750"			TCF180508GC TCF150512GP 46,00–56,99mm 1.813–2.219"			TCF210608HC TCF180614HP 57,00–68,00mm 2.250–2.500"				
Material Group	Condition	Pocket Seat	Geometry	Grade	min	Start	max	min	Start	max	min	Start	max	min	Start	max		
M	1	S	P	V36	WU40PH	0.0047	0.0055	0.0079	0.0055	0.0063	0.0098	0.0063	0.0071	0.0110	0.0063	0.0079	0.0118	
			C	V36	WU40PH													
		U	P	V36	WU40PH	0.0043	0.0051	0.0071	0.0047	0.0055	0.0087	0.0055	0.0063	0.0098	0.0055	0.0071	0.0102	
			C	V36	WU40PH													
		I	P	V36	WU40PH	0.0043	0.0051	0.0071	0.0047	0.0055	0.0087	0.0055	0.0063	0.0098	0.0055	0.0071	0.0102	
			C	V36	WU40PH													
	2	S	P	V36	WU40PH	0.0047	0.0055	0.0079	0.0055	0.0063	0.0098	0.0063	0.0071	0.0110	0.0063	0.0079	0.0118	
			C	V36	WU40PH													
		U	P	V36	WU40PH	0.0043	0.0051	0.0071	0.0047	0.0055	0.0087	0.0055	0.0063	0.0098	0.0055	0.0071	0.0102	
			C	V36	WU40PH													
		I	P	V36	WU40PH	0.0043	0.0051	0.0071	0.0047	0.0055	0.0087	0.0055	0.0063	0.0098	0.0055	0.0071	0.0102	
			C	V36	WU40PH													
3	S	P	V36	WU40PH	0.0047	0.0055	0.0079	0.0055	0.0063	0.0098	0.0063	0.0071	0.0110	0.0063	0.0079	0.0118		
		C	V36	WU40PH														
	U	P	V36	WU40PH	0.0043	0.0051	0.0071	0.0047	0.0055	0.0087	0.0055	0.0063	0.0098	0.0055	0.0071	0.0102		
		C	V36	WU40PH														
	I	P	V36	WU40PH	0.0043	0.0051	0.0071	0.0047	0.0055	0.0087	0.0055	0.0063	0.0098	0.0055	0.0071	0.0102		
		C	V36	WU40PH														

NOTE: For 4 x D, it is highly recommended to start with feed and speed values reduced by 10% less than above recommendations.
 For 5 x D, diameter range .473–.938" (12–23,99mm) (insert sizes A to C), it is highly recommended to start with feed and speed values reduced by 20% less than above recommendations.
 For 5 x D, diameter range .969–2.5" (24–68mm) (insert sizes D to H), it is highly recommended to start with feed and speed values reduced by 15% less than above recommendations.
 For 4 x D and 5 x D, it is recommended to reduce the feed rate during entry and exit by 30–50%.

Condition: S = stable conditions,
 U = unstable cutting conditions,
 I = interrupted cutting conditions
 Pocket Seat: P = periphery insert,
 C = center insert

Indexable Drills

■ Top Cut 4 • Stainless Steel • 2 x D/3 x D • Speed Chart • Inch

Top Cut 4					Recommended Cutting Speed by Diameter (SFM)													
					Insert Size E			Insert Size F			Insert Size G			Insert Size H				
					TCF120405EC TCF100408EP 30,00–36,99mm 1.188–1.438"			TCF150406FC TCF120412FP 37,00–45,99mm 1.469–1.750"			TCF180508GC TCF150512GP 46,00–56,99mm 1.813–2.219"			TCF210608HC TCF180614HP 57,00–68,00mm 2.250–2.500"				
Material Group	Condition	Pocket Seat	Geometry	Grade	min	Start	max	min	Start	max	min	Start	max	min	Start	max		
M	1	S	P	V36	WU40PH	492	558	787	492	558	787	492	558	787	492	558	787	
			C	V36	WU40PH													
		U	P	V36	WU40PH	426	525	689	426	525	689	426	525	689	426	525	689	
			C	V36	WU40PH													
		I	P	V36	WU40PH	426	525	656	426	525	656	426	525	656	426	525	656	
			C	V36	WU40PH													
	2	S	P	V36	WU40PH	492	558	689	492	558	689	492	558	689	492	558	689	
			C	V36	WU40PH													
		U	P	V36	WU40PH	426	525	656	426	525	656	426	525	656	426	525	656	
			C	V36	WU40PH													
		I	P	V36	WU40PH	426	492	590	426	492	590	426	492	590	426	492	590	
			C	V36	WU40PH													
	3	S	P	V36	WU40PH	459	525	656	459	525	656	459	525	656	459	525	656	
			C	V36	WU40PH													
		U	P	V36	WU40PH	426	459	590	426	459	590	426	459	590	426	459	590	
C			V36	WU40PH														
I		P	V36	WU40PH	361	426	525	361	426	525	361	426	525	361	426	525		
		C	V36	WU40PH														

NOTE: For 4 x D, it is highly recommended to start with feed and speed values reduced by 10% less than above recommendations.
 For 5 x D, diameter range .473–.938" (12–23,99mm) (insert sizes A to C), it is highly recommended to start with feed and speed values reduced by 20% less than above recommendations.
 For 5 x D, diameter range .969–2.5" (24–68mm) (insert sizes D to H), it is highly recommended to start with feed and speed values reduced by 15% less than above recommendations.
 For 4 x D and 5 x D, it is recommended to reduce the feed rate during entry and exit by 30–50%.

Condition: S = stable conditions,
 U = unstable cutting conditions,
 I = interrupted cutting conditions
 Pocket Seat: P = periphery insert,
 C = center insert

■ **Top Cut 4 • Stainless Steel • 2 x D/3 x D • Feed Chart • Metric**

Top Cut 4					Recommended Feed Rate by Diameter (mm/r)													
					Insert Size A			Insert Size B			Insert Size C			Insert Size D				
					TCF040203AC TCF040204AP 12,00–13,99mm .473–.531"			TCF060203BC TCF050204BP 14,00–18,99mm .563–.734"			TCF070304CC TCF070306CP 19,00–23,99mm .750–.938"			TCF090305DC TCF080308DP 24,00–29,99mm .969–1.156"				
Material Group	Condition	Pocket Seat	Geometry	Grade	min	Start	max	min	Start	max	min	Start	max	min	Start	max		
M	1	S	P	V36	WU40PH	0,06	0,08	0,12	0,07	0,10	0,13	0,08	0,10	0,15	0,10	0,12	0,16	
			C	V36	WU40PH													
		U	P	V36	WU40PH	0,06	0,08	0,12	0,07	0,10	0,12	0,08	0,10	0,14	0,10	0,12	0,15	
			C	V36	WU40PH													
		I	P	V36	WU40PH	0,06	0,08	0,11	0,07	0,10	0,11	0,08	0,10	0,14	0,10	0,12	0,15	
			C	V36	WU40PH													
	2	S	P	V36	WU40PH	0,06	0,08	0,12	0,07	0,10	0,13	0,08	0,10	0,15	0,10	0,12	0,16	
			C	V36	WU40PH													
		U	P	V36	WU40PH	0,06	0,08	0,12	0,07	0,10	0,12	0,08	0,10	0,14	0,10	0,12	0,15	
			C	V36	WU40PH													
		I	P	V36	WU40PH	0,06	0,08	0,11	0,07	0,10	0,11	0,08	0,10	0,14	0,10	0,12	0,15	
			C	V36	WU40PH													
3	S	P	V36	WU40PH	0,06	0,08	0,12	0,07	0,10	0,13	0,08	0,10	0,15	0,10	0,12	0,16		
		C	V36	WU40PH														
	U	P	V36	WU40PH	0,06	0,08	0,12	0,07	0,10	0,12	0,08	0,10	0,14	0,10	0,12	0,15		
		C	V36	WU40PH														
	I	P	V36	WU40PH	0,06	0,08	0,11	0,07	0,10	0,11	0,08	0,10	0,14	0,10	0,12	0,15		
		C	V36	WU40PH														

NOTE: For 4 x D, it is highly recommended to start with feed and speed values reduced by 10% less than above recommendations.
 For 5 x D, diameter range .473–.938" (12–23,99mm) (insert sizes A to C), it is highly recommended to start with feed and speed values reduced by 20% less than above recommendations.
 For 5 x D, diameter range .969–2.5" (24–68mm) (insert sizes D to H), it is highly recommended to start with feed and speed values reduced by 15% less than above recommendations.
 For 4 x D and 5 x D, it is recommended to reduce the feed rate during entry and exit by 30–50%.

Condition: S = stable conditions,
 U = unstable cutting conditions,
 I = interrupted cutting conditions
 Pocket Seat: P = periphery insert,
 C = center insert



■ Top Cut 4 • Stainless Steel • 2 x D/3 x D • Speed Chart • Metric

Top Cut 4					Recommended Cutting Speed by Diameter (m/min)												
					Insert Size A			Insert Size B			Insert Size C			Insert Size D			
					TCF040203AC TCF040204AP 12,00–13,99mm .473–.531"			TCF060203BC TCF050204BP 14,00–18,99mm .563–.734"			TCF070304CC TCF070306CP 19,00–23,99mm .750–.938"			TCF090305DC TCF080308DP 24,00–29,99mm .969–1.156"			
Material Group	Condition	Pocket Seat	Geometry	Grade	min	Start	max	min	Start	max	min	Start	max	min	Start	max	
M	1	S	P	V36	WU40PH	120	140	160	140	160	230	150	170	240	150	170	240
			C	V36	WU40PH												
		U	P	V36	WU40PH	110	120	140	130	150	210	130	160	210	130	160	210
			C	V36	WU40PH												
		I	P	V36	WU40PH	90	100	120	130	150	200	130	160	200	130	160	200
			C	V36	WU40PH												
	2	S	P	V36	WU40PH	120	140	160	140	160	200	150	170	210	150	170	210
			C	V36	WU40PH												
		U	P	V36	WU40PH	110	120	140	130	150	180	130	160	200	130	160	200
			C	V36	WU40PH												
		I	P	V36	WU40PH	90	100	120	120	140	170	130	150	180	130	150	180
			C	V36	WU40PH												
	3	S	P	V36	WU40PH	110	120	140	130	150	180	140	160	200	140	160	200
			C	V36	WU40PH												
		U	P	V36	WU40PH	90	110	120	120	130	160	130	140	180	130	140	180
C			V36	WU40PH													
I		P	V36	WU40PH	80	100	110	100	120	150	110	130	160	110	130	160	
		C	V36	WU40PH													

NOTE: For 4 x D, it is highly recommended to start with feed and speed values reduced by 10% less than above recommendations.
 For 5 x D, diameter range .473–.938" (12–23,99mm) (insert sizes A to C), it is highly recommended to start with feed and speed values reduced by 20% less than above recommendations.
 For 5 x D, diameter range .969–2.5" (24–68mm) (insert sizes D to H), it is highly recommended to start with feed and speed values reduced by 15% less than above recommendations.
 For 4 x D and 5 x D, it is recommended to reduce the feed rate during entry and exit by 30–50%.

Condition: S = stable conditions,
 U = unstable cutting conditions,
 I = interrupted cutting conditions
 Pocket Seat: P = periphery insert,
 C = center insert

■ **Top Cut 4 • Stainless Steel • 2 x D/3 x D • Feed Chart • Metric**

Top Cut 4					Recommended Feed Rate by Diameter (mm/r)												
					Insert Size E			Insert Size F			Insert Size G			Insert Size H			
					TCF120405EC TCF100408EP 30,00–36,99mm 1.188–1.438"			TCF150406FC TCF120412FP 37,00–45,99mm 1.469–1.750"			TCF180508GC TCF150512GP 46,00–56,99mm 1.813–2.219"			TCF210608HC TCF180614HP 57,00–68,00mm 2.250–2.500"			
Material Group	Condition	Pocket Seat	Geometry	Grade	min	Start	max	min	Start	max	min	Start	max	min	Start	max	
M	1	S	P	V36	WU40PH	0,12	0,14	0,20	0,14	0,16	0,25	0,16	0,18	0,28	0,16	0,20	0,30
			C	V36	WU40PH												
		U	P	V36	WU40PH	0,11	0,13	0,18	0,12	0,14	0,22	0,14	0,16	0,25	0,14	0,18	0,26
			C	V36	WU40PH												
		I	P	V36	WU40PH	0,11	0,13	0,18	0,12	0,14	0,22	0,14	0,16	0,25	0,14	0,18	0,26
			C	V36	WU40PH												
	2	S	P	V36	WU40PH	0,12	0,14	0,20	0,14	0,16	0,25	0,16	0,18	0,28	0,16	0,20	0,30
			C	V36	WU40PH												
		U	P	V36	WU40PH	0,11	0,13	0,18	0,12	0,14	0,22	0,14	0,16	0,25	0,14	0,18	0,26
			C	V36	WU40PH												
		I	P	V36	WU40PH	0,11	0,13	0,18	0,12	0,14	0,22	0,14	0,16	0,25	0,14	0,18	0,26
			C	V36	WU40PH												
3	S	P	V36	WU40PH	0,12	0,14	0,20	0,14	0,16	0,25	0,16	0,18	0,28	0,16	0,20	0,30	
		C	V36	WU40PH													
	U	P	V36	WU40PH	0,11	0,13	0,18	0,12	0,14	0,22	0,14	0,16	0,25	0,14	0,18	0,26	
		C	V36	WU40PH													
	I	P	V36	WU40PH	0,11	0,13	0,18	0,12	0,14	0,22	0,14	0,16	0,25	0,14	0,18	0,26	
		C	V36	WU40PH													

NOTE: For 4 x D, it is highly recommended to start with feed and speed values reduced by 10% less than above recommendations.
 For 5 x D, diameter range .473–.938" (12–23,99mm) (insert sizes A to C), it is highly recommended to start with feed and speed values reduced by 20% less than above recommendations.
 For 5 x D, diameter range .969–2.5" (24–68mm) (insert sizes D to H), it is highly recommended to start with feed and speed values reduced by 15% less than above recommendations.
 For 4 x D and 5 x D, it is recommended to reduce the feed rate during entry and exit by 30–50%.

Condition: S = stable conditions,
 U = unstable cutting conditions,
 I = interrupted cutting conditions
 Pocket Seat: P = periphery insert,
 C = center insert



■ Top Cut 4 • Stainless Steel • 2 x D/3 x D • Speed Chart • Metric

Top Cut 4					Recommended Cutting Speed by Diameter (m/min)												
					Insert Size E			Insert Size F			Insert Size G			Insert Size H			
					TCF120405EC TCF100408EP 30,00–36,99mm 1.188–1.438"			TCF150406FC TCF120412FP 37,00–45,99mm 1.469–1.750"			TCF180508GC TCF150512GP 46,00–56,99mm 1.813–2.219"			TCF210608HC TCF180614HP 57,00–68,00mm 2.250–2.500"			
Material Group	Condition	Pocket Seat	Geometry	Grade	min	Start	max	min	Start	max	min	Start	max	min	Start	max	
M	1	S	P	V36	WU40PH	150	170	240	150	170	240	150	170	240	150	170	240
			C	V36	WU40PH												
		U	P	V36	WU40PH	130	160	210	130	160	210	130	160	210	130	160	210
			C	V36	WU40PH												
		I	P	V36	WU40PH	130	160	200	130	160	200	130	160	200	130	160	200
			C	V36	WU40PH												
	2	S	P	V36	WU40PH	150	170	210	150	170	210	150	170	210	150	170	210
			C	V36	WU40PH												
		U	P	V36	WU40PH	130	160	200	130	160	200	130	160	200	130	160	200
			C	V36	WU40PH												
		I	P	V36	WU40PH	130	150	180	130	150	180	130	150	180	130	150	180
			C	V36	WU40PH												
	3	S	P	V36	WU40PH	140	160	200	140	160	200	140	160	200	140	160	200
			C	V36	WU40PH												
		U	P	V36	WU40PH	130	140	180	130	140	180	130	140	180	130	140	180
			C	V36	WU40PH												
		I	P	V36	WU40PH	110	130	160	110	130	160	110	130	160	110	130	160
			C	V36	WU40PH												

NOTE: For 4 x D, it is highly recommended to start with feed and speed values reduced by 10% less than above recommendations.
 For 5 x D, diameter range .473–.938" (12–23,99mm) (insert sizes A to C), it is highly recommended to start with feed and speed values reduced by 20% less than above recommendations.
 For 5 x D, diameter range .969–2.5" (24–68mm) (insert sizes D to H), it is highly recommended to start with feed and speed values reduced by 15% less than above recommendations.
 For 4 x D and 5 x D, it is recommended to reduce the feed rate during entry and exit by 30–50%.

Condition: S = stable conditions,
 U = unstable cutting conditions,
 I = interrupted cutting conditions
 Pocket Seat: P = periphery insert,
 C = center insert

■ Top Cut 4 • Cast Iron • 2 x D/3 x D • Feed Chart • Inch

Top Cut 4					Recommended Feed Rate by Diameter (IPR)												
					Insert Size A			Insert Size B			Insert Size C			Insert Size D			
					TCF040203AC TCF040204AP 12,00–13,99mm .473–.531"			TCF060203BC TCF050204BP 14,00–18,99mm .563–.734"			TCF070304CC TCF070306CP 19,00–23,99mm .750–.938"			TCF090305DC TCF080308DP 24,00–29,99mm .969–1.156"			
Material Group	Condition	Pocket Seat	Geometry	Grade	min	Start	max	min	Start	max	min	Start	max	min	Start	max	
K	1	S	P	V34	WPK10CH	0.0031	0.0039	0.0055	0.0031	0.0039	0.0063	0.0039	0.0051	0.0071	0.0047	0.0063	0.0094
			C	V34	WU25CH												
		U	P	V34	WU25CH	0.0031	0.0039	0.0055	0.0031	0.0039	0.0063	0.0039	0.0051	0.0071	0.0047	0.0063	0.0094
			C	V34	WU40PH												
		I	P	V34	WU40PH	0.0031	0.0039	0.0055	0.0031	0.0039	0.0063	0.0039	0.0051	0.0071	0.0047	0.0063	0.0094
			C	V34	WU40PH												
	2	S	P	V34	WPK10CH	0.0031	0.0039	0.0055	0.0031	0.0039	0.0063	0.0039	0.0051	0.0071	0.0047	0.0063	0.0094
			C	V34	WU25CH												
		U	P	V34	WU25CH	0.0031	0.0039	0.0055	0.0031	0.0039	0.0063	0.0039	0.0051	0.0071	0.0047	0.0063	0.0094
			C	V34	WU40PH												
		I	P	V34	WU40PH	0.0031	0.0039	0.0055	0.0031	0.0039	0.0063	0.0039	0.0051	0.0071	0.0047	0.0063	0.0094
			C	V34	WU40PH												
3	S	P	V34	WPK10CH	0.0031	0.0039	0.0055	0.0031	0.0039	0.0063	0.0039	0.0051	0.0071	0.0047	0.0063	0.0094	
		C	V34	WU25CH													
	U	P	V34	WU25CH	0.0031	0.0039	0.0055	0.0031	0.0039	0.0063	0.0039	0.0051	0.0071	0.0047	0.0063	0.0094	
		C	V34	WU40PH													
	I	P	V34	WU40PH	0.0031	0.0039	0.0055	0.0031	0.0039	0.0063	0.0039	0.0051	0.0071	0.0047	0.0063	0.0094	
		C	V34	WU40PH													

NOTE: For 4 x D, it is highly recommended to start with feed and speed values reduced by 10% less than above recommendations.
 For 5 x D, diameter range .473–.938" (12–23,99mm) (insert sizes A to C), it is highly recommended to start with feed and speed values reduced by 20% less than above recommendations.
 For 5 x D, diameter range .969–2.5" (24–68mm) (insert sizes D to H), it is highly recommended to start with feed and speed values reduced by 15% less than above recommendations.
 For 4 x D and 5 x D, it is recommended to reduce the feed rate during entry and exit by 30–50%.

Condition: S = stable conditions,
 U = unstable cutting conditions,
 I = interrupted cutting conditions
 Pocket Seat: P = periphery insert,
 C = center insert



■ Top Cut 4 • Cast Iron • 2 x D/3 x D • Speed Chart • Inch

Top Cut 4					Recommended Cutting Speed by Diameter (SFM)													
					Insert Size A			Insert Size B			Insert Size C			Insert Size D				
					TCF040203AC TCF040204AP 12,00–13,99mm .473–.531"			TCF060203BC TCF050204BP 14,00–18,99mm .563–.734"			TCF070304CC TCF070306CP 19,00–23,99mm .750–.938"			TCF090305DC TCF080308DP 24,00–29,99mm .969–1.156"				
Material Group	Condition	Pocket Seat	Geometry	Grade	min	Start	max	min	Start	max	min	Start	max	min	Start	max		
K	1	S	P	V34	WPK10CH	394	459	590	459	558	820	492	590	853	525	656	918	
			C	V34	WU25CH													
		U	P	V34	WU25CH	361	394	525	426	525	787	459	558	820	492	590	853	
			C	V34	WU40PH													
		I	P	V34	WU40PH	328	361	459	394	492	754	426	525	787	459	558	853	
			C	V34	WU40PH													
	2	S	P	V34	WPK10CH	394	459	590	426	525	787	459	590	820	492	590	853	
			C	V34	WU25CH													
		U	P	V34	WU25CH	361	394	525	394	492	754	426	525	787	459	525	820	
			C	V34	WU40PH													
		I	P	V34	WU40PH	328	361	459	394	492	722	426	525	787	459	525	820	
			C	V34	WU40PH													
	3	S	P	V34	WPK10CH	394	459	525	426	525	787	459	558	787	492	558	820	
			C	V34	WU25CH													
		U	P	V34	WU25CH	361	394	459	394	492	754	426	525	754	459	525	787	
C			V34	WU40PH														
I		P	V34	WU40PH	295	328	394	394	492	754	426	525	754	459	525	722		
		C	V34	WU40PH														

NOTE: For 4 x D, it is highly recommended to start with feed and speed values reduced by 10% less than above recommendations.
 For 5 x D, diameter range .473–.938" (12–23,99mm) (insert sizes A to C), it is highly recommended to start with feed and speed values reduced by 20% less than above recommendations.
 For 5 x D, diameter range .969–2.5" (24–68mm) (insert sizes D to H), it is highly recommended to start with feed and speed values reduced by 15% less than above recommendations.
 For 4 x D and 5 x D, it is recommended to reduce the feed rate during entry and exit by 30–50%.

Condition: S = stable conditions,
 U = unstable cutting conditions,
 I = interrupted cutting conditions
 Pocket Seat: P = periphery insert,
 C = center insert

■ Top Cut 4 • Cast Iron • 2 x D/3 x D • Feed Chart • Inch

Top Cut 4					Recommended Feed Rate by Diameter (IPR)												
					Insert Size E			Insert Size F			Insert Size G			Insert Size H			
					TCF120405EC TCF100408EP 30,00–36,99mm 1.188–1.438"			TCF150406FC TCF120412FP 37,00–45,99mm 1.469–1.750"			TCF180508GC TCF150512GP 46,00–56,99mm 1.813–2.219"			TCF210608HC TCF180614HP 57,00–68,00mm 2.250–2.500"			
Material Group	Condition	Pocket Seat	Geometry	Grade	min	Start	max	min	Start	max	min	Start	max	min	Start	max	
K	1	S	P	V34	WPK10CH	0.0055	0.0063	0.0102	0.0063	0.0079	0.0118	0.0071	0.0087	0.0126	0.0079	0.0094	0.0142
			C	V34	WU25CH												
		U	P	V34	WU25CH	0.0055	0.0063	0.0102	0.0063	0.0079	0.0118	0.0071	0.0087	0.0126	0.0079	0.0094	0.0142
			C	V34	WU40PH												
		I	P	V34	WU40PH	0.0055	0.0063	0.0102	0.0063	0.0079	0.0118	0.0071	0.0087	0.0126	0.0079	0.0094	0.0142
			C	V34	WU40PH												
	2	S	P	V34	WPK10CH	0.0055	0.0063	0.0102	0.0063	0.0079	0.0118	0.0071	0.0087	0.0126	0.0079	0.0094	0.0142
			C	V34	WU25CH												
		U	P	V34	WU25CH	0.0055	0.0063	0.0102	0.0063	0.0079	0.0118	0.0071	0.0087	0.0126	0.0079	0.0094	0.0142
			C	V34	WU40PH												
		I	P	V34	WU40PH	0.0055	0.0063	0.0102	0.0063	0.0079	0.0118	0.0071	0.0087	0.0126	0.0079	0.0094	0.0142
			C	V34	WU40PH												
3	S	P	V34	WPK10CH	0.0055	0.0063	0.0102	0.0063	0.0079	0.0118	0.0071	0.0087	0.0126	0.0079	0.0094	0.0142	
		C	V34	WU25CH													
	U	P	V34	WU25CH	0.0055	0.0063	0.0102	0.0063	0.0079	0.0118	0.0071	0.0087	0.0126	0.0079	0.0094	0.0142	
		C	V34	WU40PH													
	I	P	V34	WU40PH	0.0055	0.0063	0.0102	0.0063	0.0079	0.0118	0.0071	0.0087	0.0126	0.0079	0.0094	0.0142	
		C	V34	WU40PH													

NOTE: For 4 x D, it is highly recommended to start with feed and speed values reduced by 10% less than above recommendations.
 For 5 x D, diameter range .473–.938" (12–23,99mm) (insert sizes A to C), it is highly recommended to start with feed and speed values reduced by 20% less than above recommendations.
 For 5 x D, diameter range .969–2.5" (24–68mm) (insert sizes D to H), it is highly recommended to start with feed and speed values reduced by 15% less than above recommendations.
 For 4 x D and 5 x D, it is recommended to reduce the feed rate during entry and exit by 30–50%.

Condition: S = stable conditions,
 U = unstable cutting conditions,
 I = interrupted cutting conditions
 Pocket Seat: P = periphery insert,
 C = center insert

Indexable Drills

■ Top Cut 4 • Cast Iron • 2 x D/3 x D • Speed Chart • Inch

Top Cut 4					Recommended Cutting Speed by Diameter (SFM)												
					Insert Size E			Insert Size F			Insert Size G			Insert Size H			
					TCF120405EC TCF100408EP 30,00–36,99mm 1.188–1.438"			TCF150406FC TCF120412FP 37,00–45,99mm 1.469–1.750"			TCF180508GC TCF150512GP 46,00–56,99mm 1.813–2.219"			TCF210608HC TCF180614HP 57,00–68,00mm 2.250–2.500"			
Material Group	Condition	Pocket Seat	Geometry	Grade	min	Start	max	min	Start	max	min	Start	max	min	Start	max	
K	1	S	P	V34	WPK10CH	525	656	918	525	656	918	525	656	918	525	656	918
			C	V34	WU25CH												
		U	P	V34	WU25CH	492	590	853	492	590	853	492	590	853	492	590	853
			C	V34	WU40PH												
		I	P	V34	WU40PH	459	558	853	459	558	853	459	558	853	459	558	853
			C	V34	WU40PH												
	2	S	P	V34	WPK10CH	492	590	853	492	590	853	492	590	853	492	590	853
			C	V34	WU25CH												
		U	P	V34	WU25CH	459	525	820	459	525	820	459	525	820	459	525	820
			C	V34	WU40PH												
		I	P	V34	WU40PH	459	525	820	459	525	820	459	525	820	459	525	820
			C	V34	WU40PH												
	3	S	P	V34	WPK10CH	492	558	820	492	558	820	492	558	820	492	558	820
			C	V34	WU25CH												
		U	P	V34	WU25CH	459	525	787	459	525	787	459	525	787	459	525	787
C			V34	WU40PH													
I		P	V34	WU40PH	459	525	722	459	525	722	459	525	722	459	525	722	
		C	V34	WU40PH													

NOTE: For 4 x D, it is highly recommended to start with feed and speed values reduced by 10% less than above recommendations.
 For 5 x D, diameter range .473–.938" (12–23,99mm) (insert sizes A to C), it is highly recommended to start with feed and speed values reduced by 20% less than above recommendations.
 For 5 x D, diameter range .969–2.5" (24–68mm) (insert sizes D to H), it is highly recommended to start with feed and speed values reduced by 15% less than above recommendations.
 For 4 x D and 5 x D, it is recommended to reduce the feed rate during entry and exit by 30–50%.

Condition: S = stable conditions,
 U = unstable cutting conditions,
 I = interrupted cutting conditions
 Pocket Seat: P = periphery insert,
 C = center insert

■ Top Cut 4 • Cast Iron • 2 x D/3 x D • Feed Chart • Metric

Top Cut 4					Recommended Feed Rate by Diameter (mm/r)												
					Insert Size A			Insert Size B			Insert Size C			Insert Size D			
					TCF040203AC TCF040204AP 12,00–13,99mm .473–.531"			TCF060203BC TCF050204BP 14,00–18,99mm .563–.734"			TCF070304CC TCF070306CP 19,00–23,99mm .750–.938"			TCF090305DC TCF080308DP 24,00–29,99mm .969–1.156"			
Material Group	Condition	Pocket Seat	Geometry	Grade	min	Start	max	min	Start	max	min	Start	max	min	Start	max	
K	1	S	P	V34	WPK10CH	0,08	0,10	0,14	0,08	0,10	0,16	0,10	0,13	0,18	0,12	0,16	0,24
			C	V34	WU25CH												
		U	P	V34	WU25CH	0,08	0,10	0,14	0,08	0,10	0,16	0,10	0,13	0,18	0,12	0,16	0,24
			C	V34	WU40PH												
		I	P	V34	WU40PH	0,08	0,10	0,14	0,08	0,10	0,16	0,10	0,13	0,18	0,12	0,16	0,24
			C	V34	WU40PH												
	2	S	P	V34	WPK10CH	0,08	0,10	0,14	0,08	0,10	0,16	0,10	0,13	0,18	0,12	0,16	0,24
			C	V34	WU25CH												
		U	P	V34	WU25CH	0,08	0,10	0,14	0,08	0,10	0,16	0,10	0,13	0,18	0,12	0,16	0,24
			C	V34	WU40PH												
		I	P	V34	WU40PH	0,08	0,10	0,14	0,08	0,10	0,16	0,10	0,13	0,18	0,12	0,16	0,24
			C	V34	WU40PH												
3	S	P	V34	WPK10CH	0,08	0,10	0,14	0,08	0,10	0,16	0,10	0,13	0,18	0,12	0,16	0,24	
		C	V34	WU25CH													
	U	P	V34	WU25CH	0,08	0,10	0,14	0,08	0,10	0,16	0,10	0,13	0,18	0,12	0,16	0,24	
		C	V34	WU40PH													
	I	P	V34	WU40PH	0,08	0,10	0,14	0,08	0,10	0,16	0,10	0,13	0,18	0,12	0,16	0,24	
		C	V34	WU40PH													

NOTE: For 4 x D, it is highly recommended to start with feed and speed values reduced by 10% less than above recommendations.
 For 5 x D, diameter range .473–.938" (12–23,99mm) (insert sizes A to C), it is highly recommended to start with feed and speed values reduced by 20% less than above recommendations.
 For 5 x D, diameter range .969–2.5" (24–68mm) (insert sizes D to H), it is highly recommended to start with feed and speed values reduced by 15% less than above recommendations.
 For 4 x D and 5 x D, it is recommended to reduce the feed rate during entry and exit by 30–50%.

Condition: S = stable conditions,
 U = unstable cutting conditions,
 I = interrupted cutting conditions
 Pocket Seat: P = periphery insert,
 C = center insert



■ Top Cut 4 • Cast Iron • 2 x D/3 x D • Speed Chart • Metric

Top Cut 4					Recommended Cutting Speed by Diameter (m/min)												
					Insert Size A			Insert Size B			Insert Size C			Insert Size D			
					TCF040203AC TCF040204AP 12,00–13,99mm .473–.531"			TCF060203BC TCF050204BP 14,00–18,99mm .563–.734"			TCF070304CC TCF070306CP 19,00–23,99mm .750–.938"			TCF090305DC TCF080308DP 24,00–29,99mm .969–1.156"			
Material Group	Condition	Pocket Seat	Geometry	Grade	min	Start	max	min	Start	max	min	Start	max	min	Start	max	
K	1	S	P	V34	WPK10CH	120	140	180	140	170	250	150	180	260	160	200	280
			C	V34	WU25CH												
		U	P	V34	WU25CH	110	120	160	130	160	240	140	170	250	150	180	260
			C	V34	WU40PH												
		I	P	V34	WU40PH	100	110	140	120	150	230	130	160	240	140	170	260
			C	V34	WU40PH												
	2	S	P	V34	WPK10CH	120	140	180	130	160	240	140	180	250	150	180	260
			C	V34	WU25CH												
		U	P	V34	WU25CH	110	120	160	120	150	230	130	160	240	140	160	250
			C	V34	WU40PH												
		I	P	V34	WU40PH	100	110	140	120	150	220	130	160	240	140	160	250
			C	V34	WU40PH												
	3	S	P	V34	WPK10CH	120	140	160	130	160	240	140	170	240	150	170	250
			C	V34	WU25CH												
		U	P	V34	WU25CH	110	120	140	120	150	230	130	160	230	140	160	240
C			V34	WU40PH													
I		P	V34	WU40PH	90	100	120	120	150	230	130	160	230	140	160	220	
		C	V34	WU40PH													

NOTE: For 4 x D, it is highly recommended to start with feed and speed values reduced by 10% less than above recommendations.
 For 5 x D, diameter range .473–.938" (12–23,99mm) (insert sizes A to C), it is highly recommended to start with feed and speed values reduced by 20% less than above recommendations.
 For 5 x D, diameter range .969–2.5" (24–68mm) (insert sizes D to H), it is highly recommended to start with feed and speed values reduced by 15% less than above recommendations.
 For 4 x D and 5 x D, it is recommended to reduce the feed rate during entry and exit by 30–50%.

Condition: S = stable conditions,
 U = unstable cutting conditions,
 I = interrupted cutting conditions
 Pocket Seat: P = periphery insert,
 C = center insert

■ Top Cut 4 • Cast Iron • 2 x D/3 x D • Feed Chart • Metric

Top Cut 4					Recommended Feed Rate by Diameter (mm/r)												
					Insert Size E			Insert Size F			Insert Size G			Insert Size H			
					TCF120405EC TCF100408EP 30,00–36,99mm 1.188–1.438"			TCF150406FC TCF120412FP 37,00–45,99mm 1.469–1.750"			TCF180508GC TCF150512GP 46,00–56,99mm 1.813–2.219"			TCF210608HC TCF180614HP 57,00–68,00mm 2.250–2.500"			
Material Group	Condition	Pocket Seat	Geometry	Grade	min	Start	max	min	Start	max	min	Start	max	min	Start	max	
K	1	S	P	V34	WPK10CH	0,14	0,16	0,26	0,16	0,20	0,3	0,18	0,22	0,32	0,20	0,24	0,36
			C	V34	WU25CH												
		U	P	V34	WU25CH	0,14	0,16	0,26	0,16	0,20	0,3	0,18	0,22	0,32	0,20	0,24	0,36
			C	V34	WU40PH												
		I	P	V34	WU40PH	0,14	0,16	0,26	0,16	0,20	0,3	0,18	0,22	0,32	0,20	0,24	0,36
			C	V34	WU40PH												
	2	S	P	V34	WPK10CH	0,14	0,16	0,26	0,16	0,20	0,3	0,18	0,22	0,32	0,20	0,24	0,36
			C	V34	WU25CH												
		U	P	V34	WU25CH	0,14	0,16	0,26	0,16	0,20	0,3	0,18	0,22	0,32	0,20	0,24	0,36
			C	V34	WU40PH												
		I	P	V34	WU40PH	0,14	0,16	0,26	0,16	0,20	0,3	0,18	0,22	0,32	0,20	0,24	0,36
			C	V34	WU40PH												
3	S	P	V34	WPK10CH	0,14	0,16	0,26	0,16	0,20	0,3	0,18	0,22	0,32	0,20	0,24	0,36	
		C	V34	WU25CH													
	U	P	V34	WU25CH	0,14	0,16	0,26	0,16	0,20	0,3	0,18	0,22	0,32	0,20	0,24	0,36	
		C	V34	WU40PH													
	I	P	V34	WU40PH	0,14	0,16	0,26	0,16	0,20	0,3	0,18	0,22	0,32	0,20	0,24	0,36	
		C	V34	WU40PH													

NOTE: For 4 x D, it is highly recommended to start with feed and speed values reduced by 10% less than above recommendations.
 For 5 x D, diameter range .473–.938" (12–23,99mm) (insert sizes A to C), it is highly recommended to start with feed and speed values reduced by 20% less than above recommendations.
 For 5 x D, diameter range .969–2.5" (24–68mm) (insert sizes D to H), it is highly recommended to start with feed and speed values reduced by 15% less than above recommendations.
 For 4 x D and 5 x D, it is recommended to reduce the feed rate during entry and exit by 30–50%.

Condition: S = stable conditions,
 U = unstable cutting conditions,
 I = interrupted cutting conditions
 Pocket Seat: P = periphery insert,
 C = center insert

Indexable Drills

■ Top Cut 4 • Cast Iron • 2 x D/3 x D • Speed Chart • Metric

Top Cut 4					Recommended Cutting Speed by Diameter (m/min)												
					Insert Size E			Insert Size F			Insert Size G			Insert Size H			
					TCF120405EC TCF100408EP 30,00–36,99mm 1.188–1.438"			TCF150406FC TCF120412FP 37,00–45,99mm 1.469–1.750"			TCF180508GC TCF150512GP 46,00–56,99mm 1.813–2.219"			TCF210608HC TCF180614HP 57,00–68,00mm 2.250–2.500"			
Material Group	Condition	Pocket Seat	Geometry	Grade	min	Start	max	min	Start	max	min	Start	max	min	Start	max	
K	1	S	P	V34	WPK10CH	160	200	280	160	200	280	160	200	280	160	200	280
			C	V34	WU25CH												
		U	P	V34	WU25CH	150	180	260	150	180	260	150	180	260	150	180	260
			C	V34	WU40PH												
		I	P	V34	WU40PH	140	170	260	140	170	260	140	170	260	140	170	260
			C	V34	WU40PH												
	2	S	P	V34	WPK10CH	150	180	260	150	180	260	150	180	260	150	180	260
			C	V34	WU25CH												
		U	P	V34	WU25CH	140	160	250	140	160	250	140	160	250	140	160	250
			C	V34	WU40PH												
		I	P	V34	WU40PH	140	160	250	140	160	250	140	160	250	140	160	250
			C	V34	WU40PH												
	3	S	P	V34	WPK10CH	150	170	250	150	170	250	150	170	250	150	170	250
			C	V34	WU25CH												
		U	P	V34	WU25CH	140	160	240	140	160	240	140	160	240	140	160	240
C			V34	WU40PH													
I		P	V34	WU40PH	140	160	220	140	160	220	140	160	220	140	160	220	
		C	V34	WU40PH													

NOTE: For 4 x D, it is highly recommended to start with feed and speed values reduced by 10% less than above recommendations.
 For 5 x D, diameter range .473–.938" (12–23,99mm) (insert sizes A to C), it is highly recommended to start with feed and speed values reduced by 20% less than above recommendations.
 For 5 x D, diameter range .969–2.5" (24–68mm) (insert sizes D to H), it is highly recommended to start with feed and speed values reduced by 15% less than above recommendations.
 For 4 x D and 5 x D, it is recommended to reduce the feed rate during entry and exit by 30–50%.

Condition: S = stable conditions,
 U = unstable cutting conditions,
 I = interrupted cutting conditions
 Pocket Seat: P = periphery insert,
 C = center insert

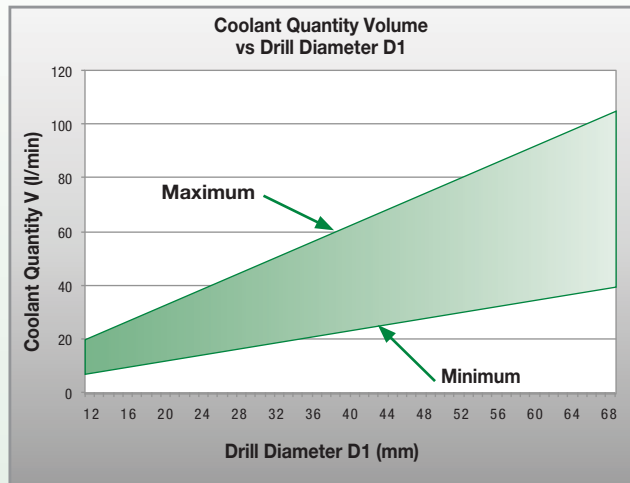
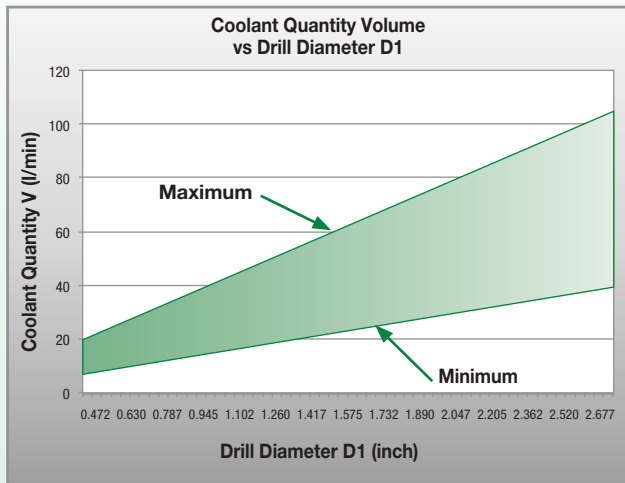
■ **Top Cut 4 • Drill Depth • 2 x D/3 x D • Hole Tolerance Table**

Insert size	Diameter Range (mm)	Diameter Range (inch)	Hole Tolerance (mm)	Hole Tolerance (inch)
A	12,00–13,99	.473–.531"	+/- 0,20	+/- 0.008
B	14,00–18,99	.563–.734"	+/- 0,20	+/- 0.008
C	19,00–23,99	.750–.938"	+/- 0,20	+/- 0.008
D	24,00–29,99	.969–1.156"	+/- 0,20	+/- 0.008
E	30,00–36,99	1.188–1.438"	+/- 0,20	+/- 0.008
F	37,00–45,99	1.469–1.750"	+/- 0,25	+/- 0.010
G	46,00–56,99	1.813–2.219"	+/- 0,25	+/- 0.010
H	57,00–68,00	2.250–2.500"	+/- 0,28	+/- 0.011

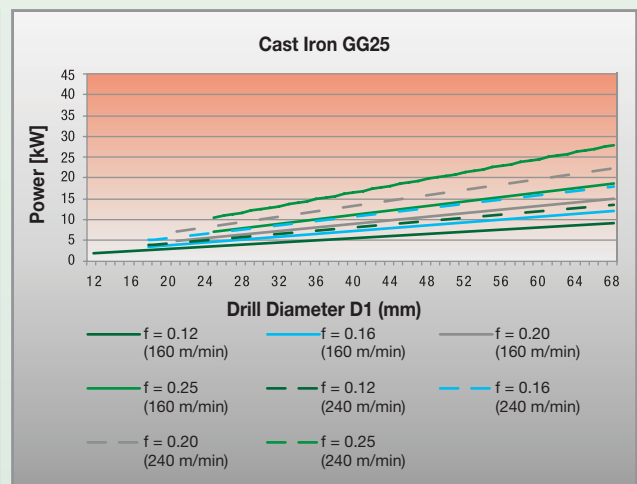
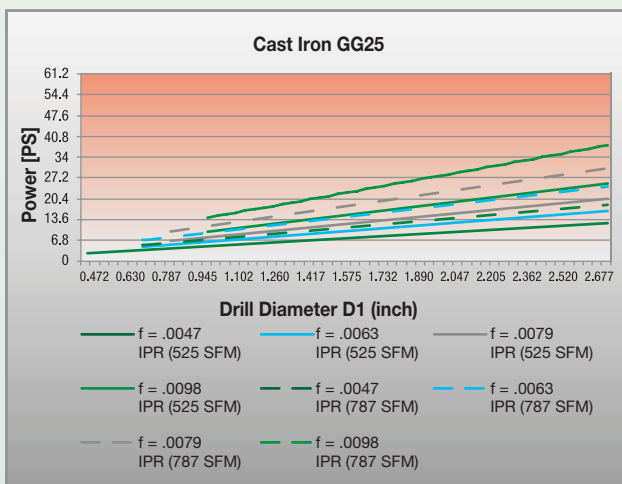
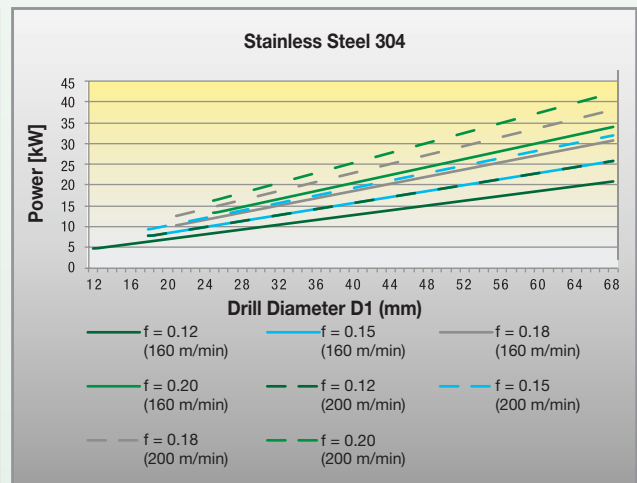
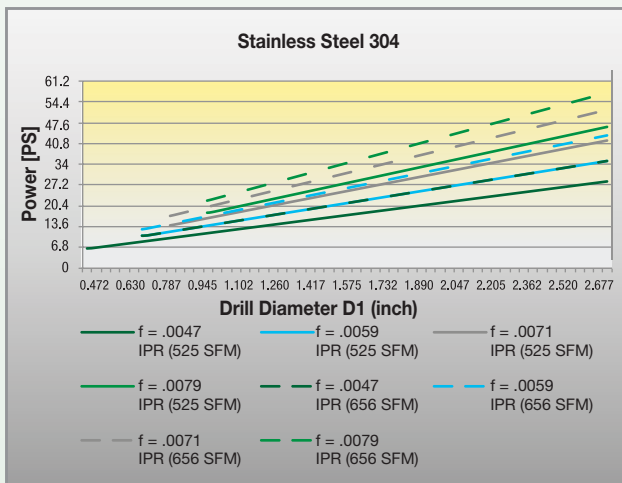
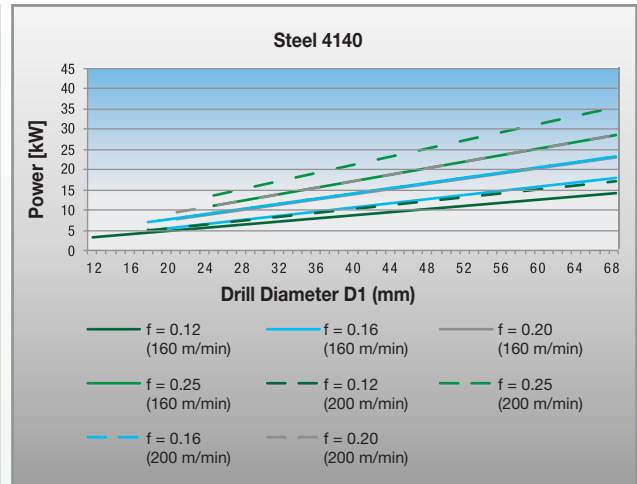
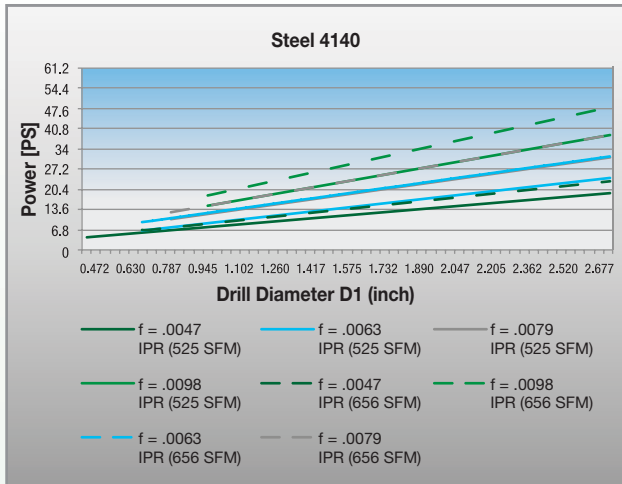
■ **Top Cut 4 • Drill Depth • 4 x D/5 x D • Hole Tolerance Table**

Insert size	Diameter Range (mm)	Diameter Range (inch)	Hole Tolerance (mm)	Hole Tolerance (inch)
A	12,00–13,99	.473–.531"	+/- 0,35	+/- 0.014
B	14,00–18,99	.563–.734"	+/- 0,35	+/- 0.014
C	19,00–23,99	.750–.938"	+/- 0,35	+/- 0.014
D	24,00–29,99	.969–1.156"	+/- 0,35	+/- 0.014
E	30,00–36,99	1.188–1.438"	+/- 0,35	+/- 0.014
F	37,00–45,99	1.469–1.750"	+/- 0,38	+/- 0.015
G	46,00–56,99	1.813–2.219"	+/- 0,38	+/- 0.015
H	57,00–68,00	2.250–2.500"	+/- 0,42	+/- 0.017

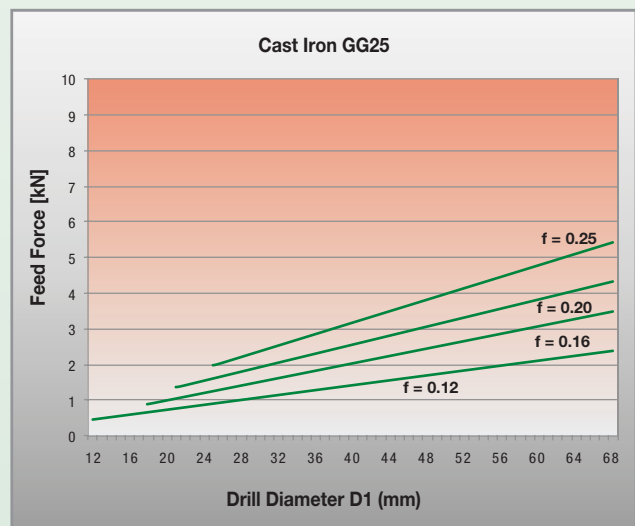
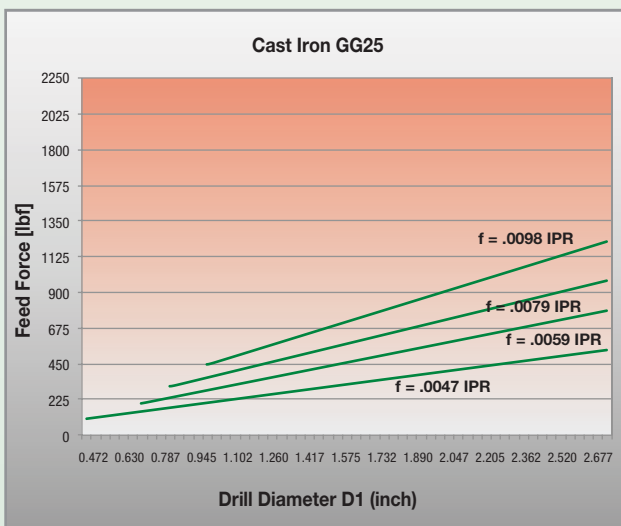
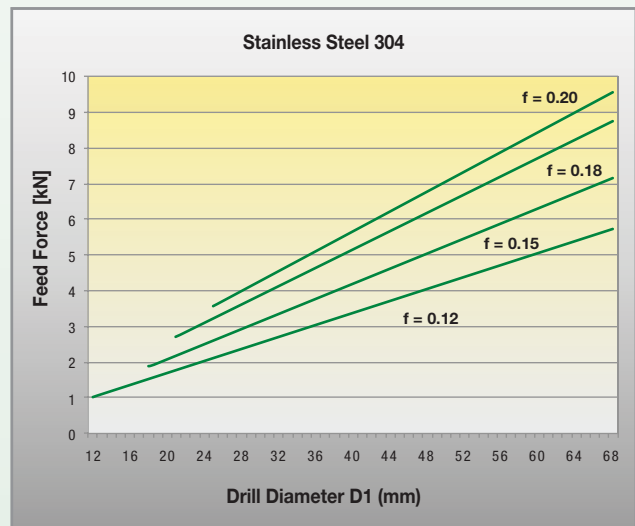
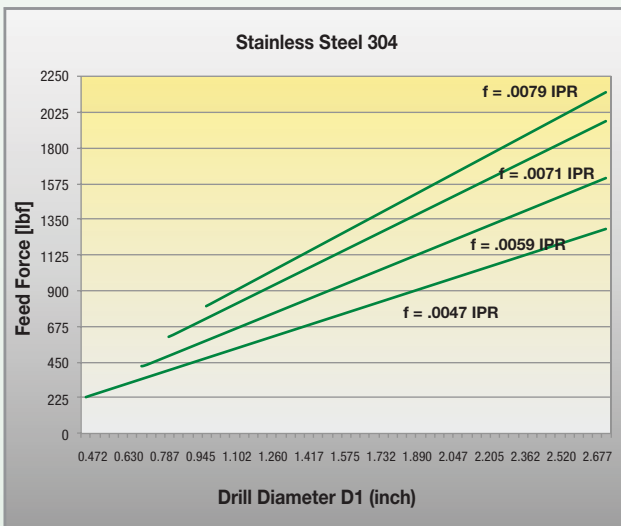
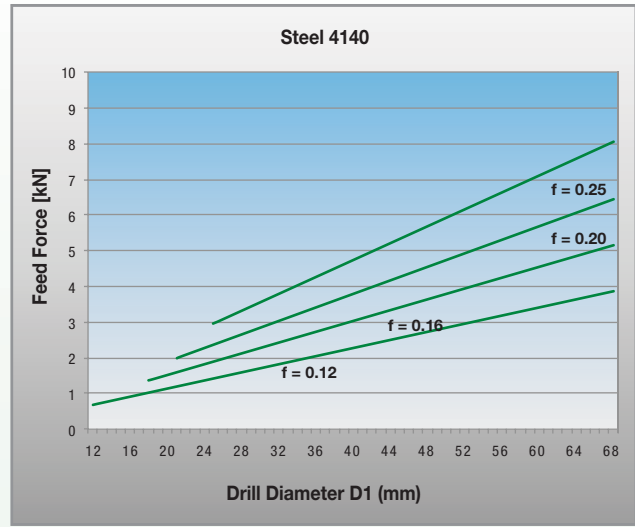
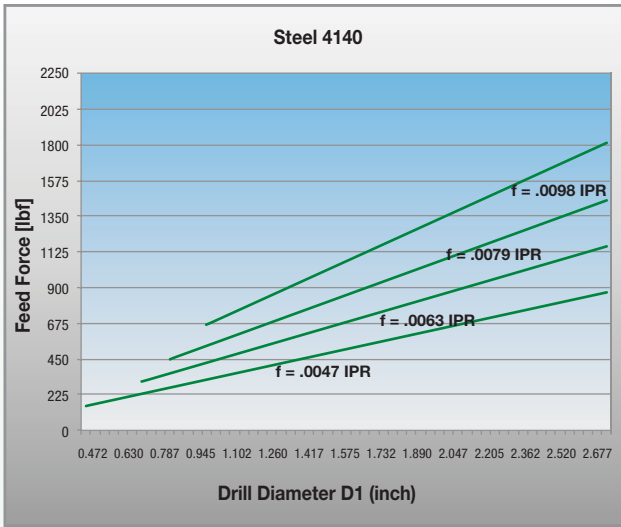
■ **Coolant Requirement/Recommendation**



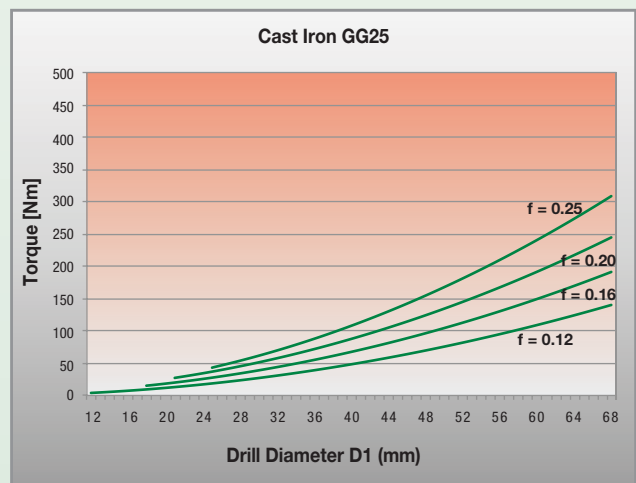
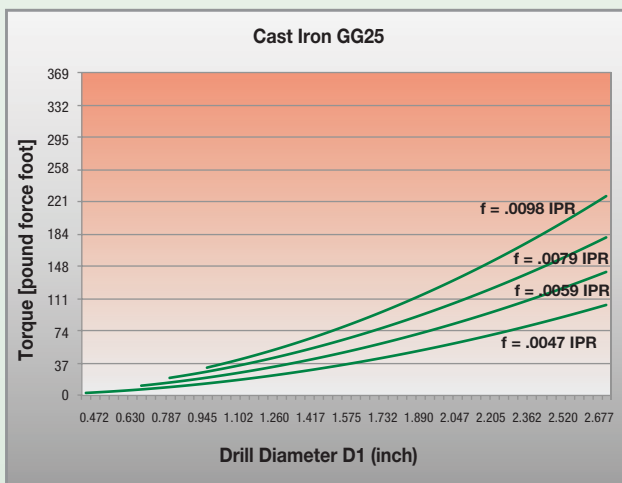
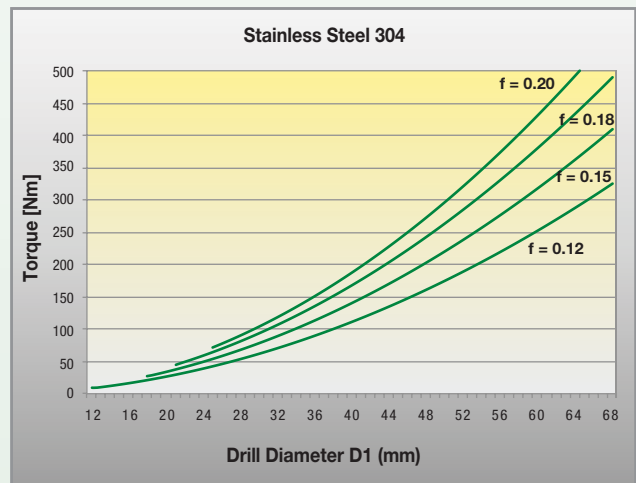
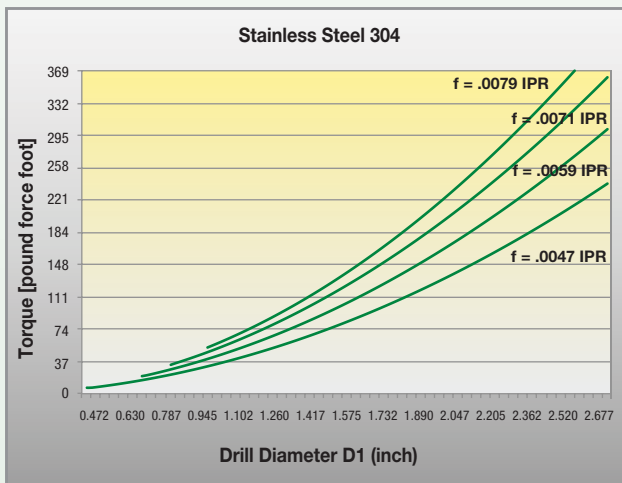
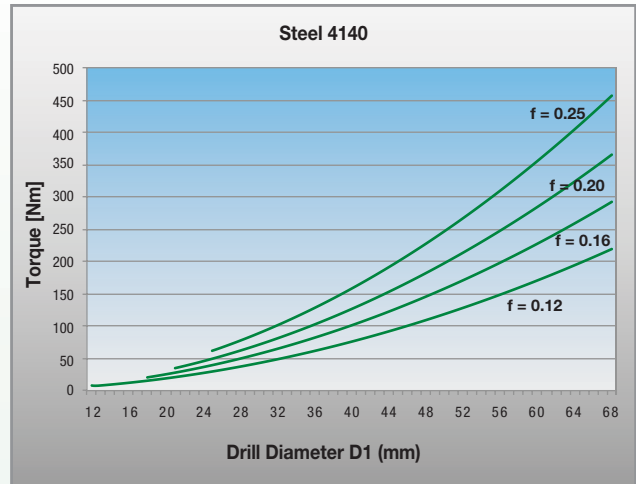
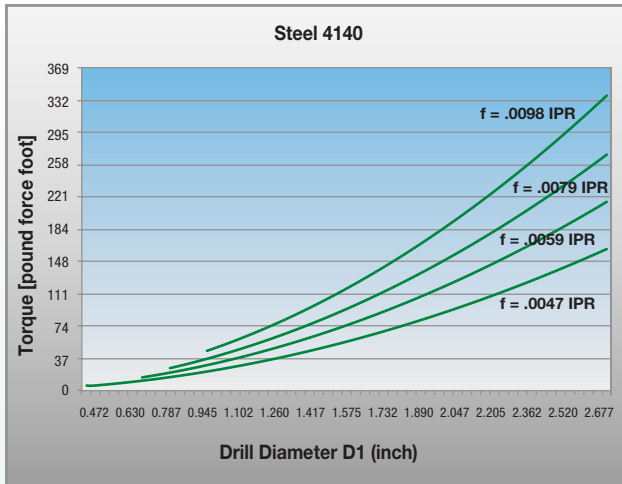
■ Power Requirement



Feed Force Requirement



■ Torque Requirement



■ X-Offset Capabilities • Inch

Insert size	Diameter Range (inch)	2 x D and 3 x D		4 x D		5 x D	
		X-offset value max. in Inch	D1 max value	X-offset value max. in Inch	D1 max value	X-offset value max.	D1 max value
A	.473–.531	0.020	D1 + 0.039"	0.020	D1 + 0.039"	—	—
B	.563–.734	0.020	D1 + 0.039"	0.020	D1 + 0.039"	—	—
C	.750–.938	0.020	D1 + 0.039"	0.020	D1 + 0.039"	—	—
D	.969–1.156	0.031	D1 + 0.063"	0.031	D1 + 0.039"	—	—
E	1.188–1.438	0.031	D1 + 0.063"	0.031	D1 + 0.039"	—	—
F	1.469–1.750	0.031	D1 + 0.063"	0.031	D1 + 0.039"	—	—
G	1.813–2.219	0.039	D1 + 0.079"	0.031	D1 + 0.039"	—	—
H	2.250–2.500	0.039	D1 + 0.079"	0.031	D1 + 0.039"	—	—

■ X-Offset Capabilities • Metric

Insert size	Diameter Range (mm)	2 x D and 3 x D		4 x D		5 x D	
		X-offset value max. in mm	D1 max value	X-offset value max. in mm	D1 max value	X-offset value max.	D1 max value
A	12,00–13,99	0,5	D1 + 1mm	0,5	D1 + 1mm	—	—
B	14,00–18,99	0,5	D1 + 1mm	0,5	D1 + 1mm	—	—
C	19,00–23,99	0,5	D1 + 1mm	0,5	D1 + 1mm	—	—
D	24,00–29,99	0,8	D1 + 1,6mm	0,8	D1 + 1mm	—	—
E	30,00–36,99	0,8	D1 + 1,6mm	0,8	D1 + 1mm	—	—
F	37,00–45,99	0,8	D1 + 1,6mm	0,8	D1 + 1mm	—	—
G	46,00–56,99	1	D1 + 2mm	0,8	D1 + 1mm	—	—
H	57,00–68,00	1	D1 + 2mm	0,8	D1 + 1mm	—	—

Unmatched Versatility Meets Powerful Performance



EXTREME **CHALLENGES.**
EXTREME **RESULTS.**

Top Cut 4™

Specifically designed for versatility — Top Cut 4 offers outstanding flexibility, increased productivity, and is the one tool to apply to a variety of drilling applications and different workpiece materials.

- High tool life at accelerated speeds.
- Efficient chip evacuation.
- Increased coolant supply.
- Up to 5 x D.

To learn more about the benefits of **WIDIA™ Top Cut 4**, contact your local distributor.

WIDIA 



Reconditioning Services

WIDIA™ Reconditioning Services Optimize the Total Value of Metalcutting Tools Throughout Their Entire Life

WIDIA Reconditioning Services optimize the value of metalcutting tools throughout their entire lifecycle by giving like-new performance — with rapid turnaround time — so tools are always on hand and perform just like new.

- Local support you can trust.
- Rapid turnaround to minimize inventory.
- Like-new performance continues delivering productivity.
- Application support throughout the tool lifecycle.
- WIDIA proprietary geometry specifications after each regrind.
- WIDIA certified coatings.
- Easy logistics through the reconditioning process.

Simple Logistics

Our unique reconditioning program simplifies sending and receiving reconditioned tools to reduce shipping time and increase on-hand inventory.

To use WIDIA tool reconditioning services, contact your authorized WIDIA distributor to get started.



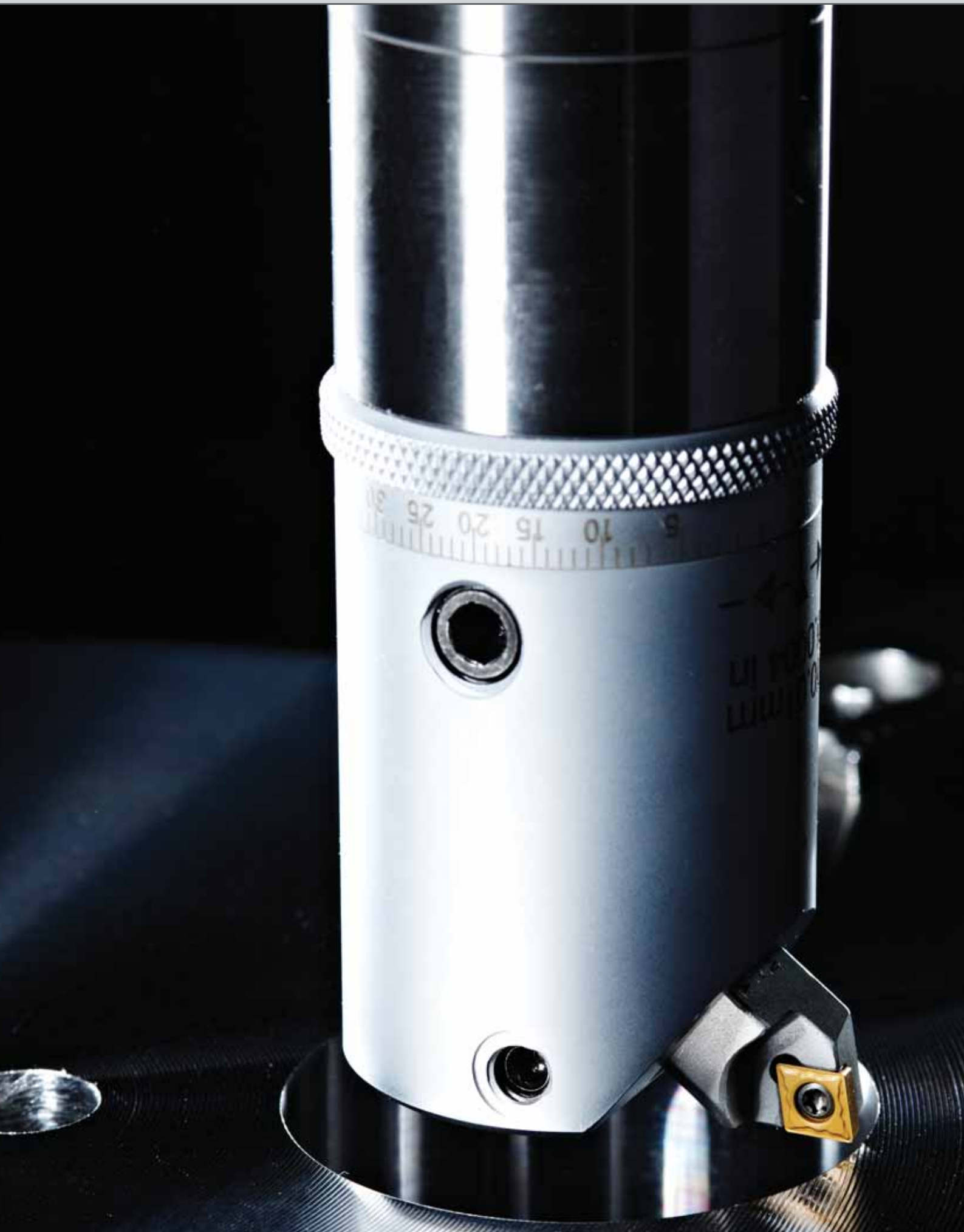


Global Reconditioning Network



To locate a reconditioning center near you, visit widia.com/services.





Hole Finishing

Introduction..... U2-U5

HSR Reaming Tools U6-U43

WIDIA TRM U44-U47

ROTAFLEX U48-U85

Custom Solutions U86-U95



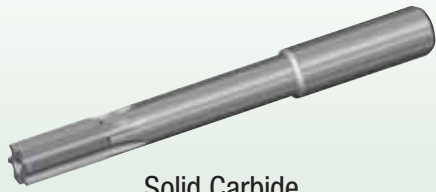
Hole Finishing with WIDIA™



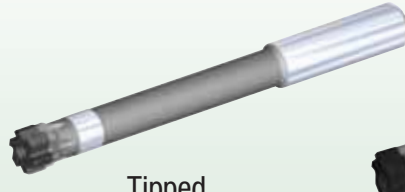
Hole Finishing with WIDIA

WIDIA is one of the only sources in the metalworking industry that offers all types of hole finishing tooling — from reaming and fine boring to motion tooling. By owning the entire process chain — from raw materials to reconditioning — WIDIA offers customized solutions to meet any imaging challenge, regardless of portfolio or capacity.

REAMING



Solid Carbide



Tipped



Modular

BORING



Roughing



Finishing

COUNTERSINKING



Countersinkers



Porting
Fluid Power

PCD ROUND TOOLS



Steel-based



Carbide-based

								standard diameter		engineered solution diameter			
		P	M	K	N	S	H	range	accuracy	range	accuracy		
reaming tools	HSR™ – Solid Carbide High-Speed Reamer Carbide	●	●	●	●	○		.196–.551" 5–14mm	IT7	.056–1.00" 1,4–25,4mm	IT6 >.39" >10mm	.0004" 10 μm	.0003" 7 μm
	HSR – Carbide Tipped High-Speed Reamer Carbide/Cermet	●	●	●	●	○		.551–1.26" 14–32mm	IT7	.551–2.55" 14–65mm	IT6	.0004" 10 μm	.0003" 7 μm
boring/fine-boring tools	ROTAFLEX™ FBHBB Fine-Boring Carbide/Cermet/PCD/CBN	●	●	●	●	○		.236–.866" 6–22mm	IT7	–	–	.0002" 5 μm	.0002– .0004" 5–10 μm
	ROTAFLEX FBH Fine-Boring Carbide/Cermet/PCD/CBN	●	●	●	●	○		.866–4.25" 22–115mm	IT7	–	–	.0002" 5 μm	.0002– .0004" 5–10 μm
	ROTAFLEX TCHS Roughing Carbide/Cermet/PCD/CBN	●	●	●	●	●		.886–4.52" 22,5–115mm	IT7	–	–	.0004" 10 μm	>.0008" >20 μm
	ROTAFLEX Small Bridge Tools Roughing Carbide/Cermet/PCD/CBN	●	●	●	●	●		3.425–7.87" 87–200mm	IT7	–	–	.0004" 10 μm	>.0008" >20 μm
	ROTAFLEX Large Bridge Tools Roughing Carbide/Cermet/PCD/CBN	●	●	●	●	●		7.87–20.47" 200–520mm	IT7	–	–	.0004" 10 μm	>.0008" >20 μm
	Fine-Boring Cartridges Fine-Boring Carbide/Cermet/PCD/CBN	●	○	●	●	○		3.425–20.47" 87–520mm	IT7	–	–	.0002" 5 μm	.0002– .0004" 5–10 μm
countersinking	Countersinking Round Tools Steel Base				●			–	–	–	IT7	.0004" 10 μm	.0004" 10 μm
	Port Cutters Carbide/Cermet Steel Base				●			for standard ports SAE, BSPP, ISO	–	–	IT7	.0004" 10 μm	.0004" 10 μm
PCD	PCD Round Tools Steel Base CBN				●			–	–	.394–4.00" 10–100mm	IT6	.0004" 10 μm	.0004" 10 μm
	PCD Round Tools Carbide Base				●			–	–	.197–1.00" 5–25mm	IT6	.0002" 5 μm	.0003" 7 μm

● first choice
○ alternate choice



Cylindricity
NOTE: Process- and application-dependent.
Highly dependent on the pre-machine hole accuracy.
Use of high-performance drilling/pre-machining tools
mandatory to reach values.



Position
NOTE: Process- and application-dependent.
Highly dependent on the pre-machine hole accuracy.
Use of high-performance drilling/pre-machining tools
mandatory to reach values.

achievable surface quality Ra						capability				cost/part	cycle time	required operator experience	page(s)
P	M	K	N	S	H								
20-40 μ-in 0,5-1,0 μm	20-40 μ-in 0,5-1,0 μm	20-60 μ-in 0,5-1,5 μm	-	20-40 μ-in 0,5-1,0 μm	-					moderate	low	low	U8-U10, U13-U14
20-40 μ-in 0,5-1,0 μm	20-40 μ-in 0,5-1,0 μm	20-60 μ-in 0,5-1,5 μm	-	20-40 μ-in 0,5-1,0 μm	-			carbide only	carbide only	moderate	low	low	U11-U12, U15-U16
32-80 μ-in 0,8-2,0 μm	32-80 μ-in 0,8-2,0 μm	32-80 μ-in 0,8-2,0 μm	32-80 μ-in 0,8-2,0 μm	32-80 μ-in 0,8-2,0 μm	<48 μ-in <1,2 μm					low	moderate	low- moderate	U63-U65
32-80 μ-in 0,8-2,0 μm	32-80 μ-in 0,8-2,0 μm	32-80 μ-in 0,8-2,0 μm	32-80 μ-in 0,8-2,0 μm	32-80 μ-in 0,8-2,0 μm	<48 μ-in <1,2 μm					low	moderate	low- moderate	U66-U67
40-200 μ-in 1,0-5,0 μm	40-200 μ-in 1,0-5,0 μm	40-200 μ-in 1,0-5,0 μm	40-80 μ-in 1,0-2,0 μm	40-200 μ-in 1,0-5,0 μm	-					low	moderate	low- moderate	U50-U51
40-200 μ-in 1,0-5,0 μm	40-200 μ-in 1,0-5,0 μm	40-200 μ-in 1,0-5,0 μm	40-80 μ-in 1,0-2,0 μm	40-200 μ-in 1,0-5,0 μm	-					low	low	low- moderate	U52-U53
40-200 μ-in 1,0-5,0 μm	40-200 μ-in 1,0-5,0 μm	40-200 μ-in 1,0-5,0 μm	40-80 μ-in 1,0-2,0 μm	40-200 μ-in 1,0-5,0 μm	-					low	moderate	low- moderate	U54-U59
32-80 μ-in 0,8-2,0 μm	32-80 μ-in 0,8-2,0 μm	32-80 μ-in 0,8-2,0 μm	32-80 μ-in 0,8-2,0 μm	32-80 μ-in 0,8-2,0 μm	-					low	moderate	low- moderate	U60-U62
32-80 μ-in -2,0 μm	32-80 μ-in -2,0 μm	32-80 μ-in -2,0 μm	32-80 μ-in 0,8-2,0 μm	-	-					very low	very low	moderate	U90-U91
32-80 μ-in -2,0 μm	32-80 μ-in -2,0 μm	32-80 μ-in -2,0 μm	32-80 μ-in 0,8-2,0 μm	-	-					very low	very low	moderate	U88-U89
-	-	-	4-32 μ-in 0,1-0,8 μm	-	-					low	very low	moderate	U94-U95
-	-	-	4-32 μ-in 0,1-0,8 μm	-	-					low	very low	moderate	U94-U95

Ra Surface roughness

NOTE: Surface roughness values are guidelines and depend on the application, coolant situation, machine, and cutting data applied.

HSR™ Reaming Tools combine high-performance micrograin substrates, specific coatings, and extremely unequal flutes for outstanding machining results. Increase your productivity with the HSR leads and lapped grinding surface of rake, clearance, and relief angle.



HSR Reaming Tools

HSR Solid Carbide Reaming Tools

- Diameters starting at .055" (1,40mm) with internal coolant supply available as standard.
- Ground to H7 tolerance class for use in most applications.
- Specific coatings and lead configurations available for high-speed machining of steel, stainless steel, and cast iron.
- Uncoated micrograin substrates for machining stainless steel and non-ferrous materials at accelerated speeds.

Features and Benefits

- Lapped ground leads for high-speed cutting.
- Long tool life with increased hole and surface quality.
- High Metal Removal Rates (MRR) at increased speeds and feeds.
- Radial coolant supply for through hole applications and axial coolant supply for blind holes to achieve higher feed rates.
- Decreased runout and improved straightness due to unequal flutes.

Customization

- Diameters starting at .055" (1,40mm) up to .557" (14,15mm) available with and without internal coolant in 0,001mm steps.
- Solid cermet reaming tools and tooling for heat-resistant materials are available on request.

HSR™ Carbide- and Cermet-Tipped Reaming Tools

- Achieve solid carbide and solid cermet metal removal rates from .551–1.26" (14–32mm) with no customization required.
- Ground to H7 tolerance class to accommodate most applications.
- Specific coatings and lead configuration for high-speed machining of steel, stainless steel, cast iron, and non-ferrous materials at accelerated speeds.
- Coated and uncoated micrograin substrate carbide and coated cermet specifically engineered for reaming.

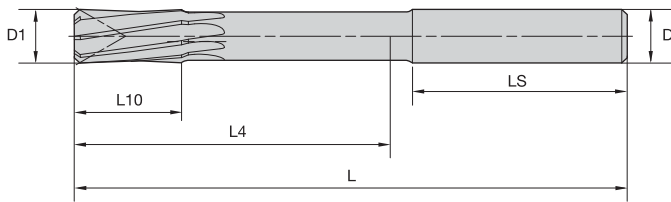
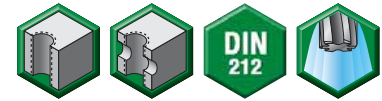
Features and Benefits

- Lapped ground leads for high-speed cutting.
- Long tool life with increased hole and surface quality.
- High metal removal rates at higher speeds and feeds.
- Decreased runout and improved straightness due to unequal flutes.
- Adjustment screw at straight-fluted HSR reamers to change internal coolant supply from axial to radial.
- Optimized coolant options for blind holes and blind hole applications with interrupted cut.

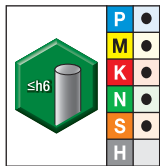
Customization

- Diameters up to 1.968" (50mm) available with and without internal coolant in 0,001mm steps.
- HSR tooling for machining heat-resistant materials is available on request.





■ HSR Reamers with Helical Flutes for Through Holes • K10™ • .055–.394" (1,4–10mm)



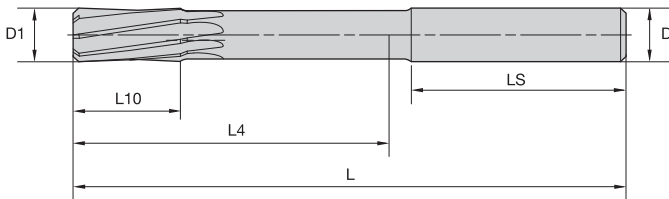
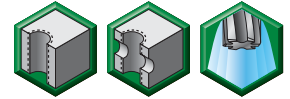
grade K10
uncoated

● first choice
○ alternate choice

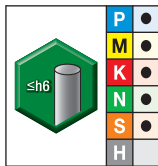
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		mm	in	mm	in					
2293636	050221-000014	1,40	.055	1,40	.055	1.575	.708	.315	.866	3
2293637	050221-000015	1,50	.059	1,50	.059	1.575	.708	.315	.866	3
2293638	050221-000016	1,60	.063	1,60	.063	1.693	.787	.354	.906	3
2283423	050221-000020	2,00	.079	2,00	.079	1.929	.944	.433	.984	4
2283424	050221-000022	2,20	.087	2,20	.087	2.087	1.023	.472	1.063	4
2283426	050221-000025	2,50	.098	2,50	.098	2.244	1.102	.551	1.142	4
2283427	050221-000028	2,80	.110	2,80	.110	2.402	1.259	.591	1.142	4
2283428	050221-000030	3,00	.118	3,00	.118	2.402	1.259	.591	1.142	6
2283429	050221-000032	3,20	.126	3,20	.126	2.559	1.377	.630	1.181	6
2283430	050221-000035	3,50	.138	3,50	.138	2.756	1.574	.709	1.181	6
2283431	050221-000040	4,00	.157	4,00	.158	2.953	1.614	.748	1.260	6
2293640	050221-000045	4,50	.177	4,50	.177	3.150	1.732	.827	1.299	6
2283445	050221-000050	5,00	.197	5,00	.197	3.386	2.007	.906	1.339	6
2293641	050221-000055	5,50	.217	5,60	.221	3.661	2.244	1.024	1.417	6
2293642	050221-000060	6,00	.236	5,60	.221	3.661	2.086	1.024	1.417	6
2293643	050221-000065	6,50	.256	6,30	.248	3.976	2.480	1.102	1.496	6
2293644	050221-000070	7,00	.276	7,10	.280	4.291	2.716	1.221	1.575	6
2283450	050221-000075	7,50	.295	7,10	.280	4.291	2.716	1.221	1.575	6
2283451	050221-000080	8,00	.315	8,00	.315	4.606	2.952	1.299	1.654	6
2283463	050221-000085	8,50	.335	8,00	.315	4.606	2.952	1.299	1.654	6
2283464	050221-000090	9,00	.354	9,00	.354	4.921	3.188	1.417	1.732	6
2283465	050221-000095	9,50	.374	9,00	.354	4.921	3.188	1.417	1.732	6
2283466	050221-000100	10,00	.394	10,00	.394	5.236	3.425	1.496	1.811	6

Hole Finishing

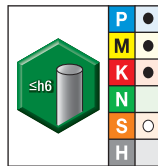
- Standard reamers listed are ground to achieve an H7 tolerance hole. IT6 hole tolerance capability starting at diameter .394" (10mm) is available as a Custom Solution. Additional diameters and lengths made to order.



■ HSR Reamers with Helical Flutes for Through Holes • K10F™/K10F-DCFD™ • .079-.551" (2-114mm)



grade K10F uncoated

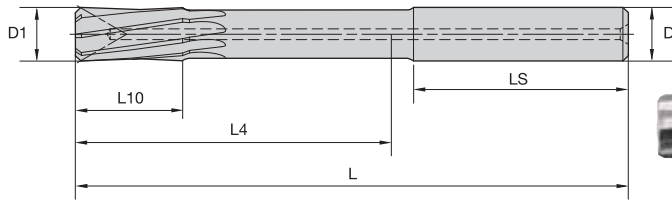
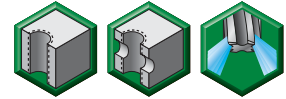


grade K10F-DCFD TiAlN

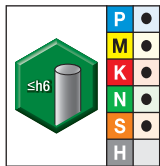
- first choice
- alternate choice

order #	catalog #	order #	catalog #	D1		D		L	L4	L10	LS	Z
				mm	in	mm	in					
2436494	050227-000200	2441162	450227-000200	2,00	.079	3,00	.118	1.890	.591	.236	1.102	4
2436871	050227-000300	2441253	450227-000300	3,00	.118	3,00	.118	1.890	.591	.236	1.102	4
2436872	050227-000400	2441254	450227-000400	4,00	.158	4,00	.158	2.126	.827	.315	1.102	4
2436913	050227-000500	2441256	450227-000500	5,00	.197	6,00	.236	2.913	1.260	.472	1.417	4
2436914	050227-000600	2441257	450227-000600	6,00	.236	6,00	.236	2.913	1.299	.472	1.417	4
2436916	050227-000800	2441260	450227-000800	8,00	.315	8,00	.315	3.583	1.969	.630	1.417	6
2436919	050227-001000	2441261	450227-001000	10,00	.394	10,00	.394	4.055	2.284	.787	1.575	6
2436922	050227-001200	2441284	450227-001200	12,00	.472	12,00	.472	4.646	2.677	.945	1.772	6
2436946	050227-001400	2441285	450227-001400	14,00	.551	14,00	.551	5.197	3.189	1.102	1.772	6

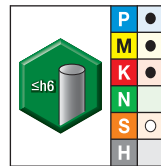
- Standard reamers listed are ground to achieve an H7 tolerance hole. IT6 hole tolerance capability starting at diameter .394" (10mm) is available as a Custom Solution. Additional diameters and lengths made to order.



■ HSR Reamers with Helical Flutes for Through Holes • K10F™/K10F-DCFD™ • .197–.551" (5–14mm)



grade K10F
uncoated

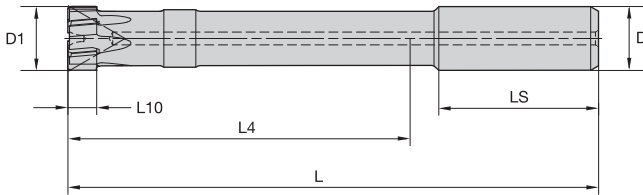
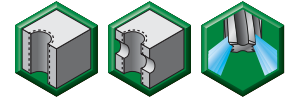


grade K10F-DCFD
TiAlN

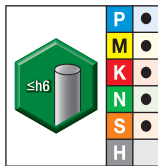
- first choice
- alternate choice

				D1		D						
order #	catalog #	order #	catalog #	mm	in	mm	in	L	L4	L10	LS	Z
2437425	050271-000500	2441380	450271-000500	5,00	.197	6,00	.236	2.913	1.260	.472	1.417	4
2437426	050271-000600	2441381	450271-000600	6,00	.236	6,00	.236	2.913	1.299	.472	1.417	4
2437428	050271-000800	2441453	450271-000800	8,00	.315	8,00	.315	3.583	1.969	.630	1.417	6
2437430	050271-001000	2441455	450271-001000	10,00	.394	10,00	.394	4.055	2.284	.787	1.575	6
2437432	050271-001200	2441457	450271-001200	12,00	.472	12,00	.472	4.646	2.677	.945	1.772	6
2437468	050271-001400	2441494	450271-001400	14,00	.551	14,00	.551	5.197	3.189	1.102	1.772	6

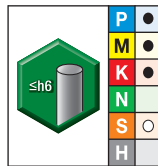
- Standard reamers listed are ground to achieve an H7 tolerance hole. IT6 capability is available. Additional diameters and lengths made to order.



■ HSR Reamers with Helical Flutes for Through Holes • K10F™/K10F-DCFD™ • .551–1.259" (14–32mm)



grade K10F uncoated

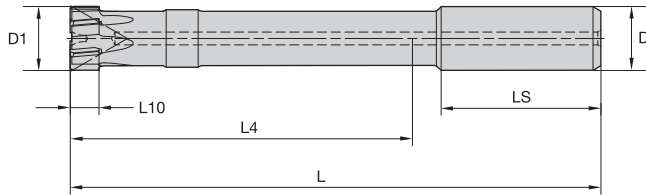
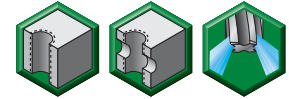


grade K10F-DCFD TiAlN

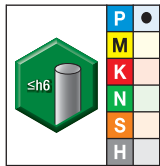
- first choice
- alternate choice

order #	catalog #	order #	catalog #	D1		D		L	L4	L10	LS	Z
				mm	in	mm	in					
3084978	050281-001400	3084312	450281-001400	14,00	.551	16,00	.630	5.709	3.543	.354	1.890	6
3084983	050281-001600	3084317	450281-001600	16,00	.630	20,00	.787	6.181	3.937	.354	1.969	6
3084992	050281-001800	3084321	450281-001800	18,00	.709	20,00	.787	6.732	4.488	.354	1.969	6
3085083	050281-002000	3084319	450281-002000	20,00	.787	20,00	.787	7.874	5.630	.354	1.969	6
3085084	050281-002200	3084322	450281-002200	22,00	.866	20,00	.787	8.268	6.024	.433	1.969	6
3085087	050281-002400	3084323	450281-002400	24,00	.945	20,00	.787	8.268	6.024	.433	1.969	6
3085089	050281-002500	3084324	450281-002500	25,00	.984	20,00	.787	8.268	6.024	.433	1.969	6
3085090	050281-002600	3084325	450281-002600	26,00	1.024	25,00	.984	9.449	6.969	.433	2.205	8
3085092	050281-002800	3084327	450281-002800	28,00	1.102	25,00	.984	9.449	6.969	.433	2.205	8
3085104	050281-003000	3084320	450281-003000	30,00	1.181	25,00	.984	10.630	8.150	.433	2.205	8
3085106	050281-003200	3084328	450281-003200	32,00	1.260	25,00	.984	10.630	8.150	.433	2.205	8

- Standard reamers listed are ground to achieve an H7 tolerance hole. IT6 capability is available. Additional diameters and lengths made to order.



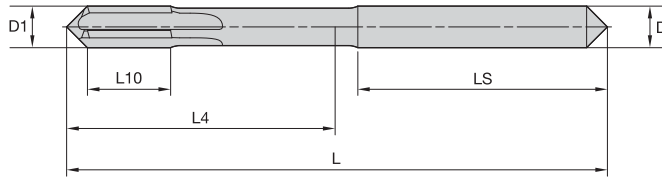
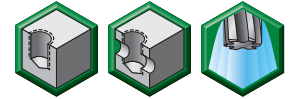
■ HSR Reamers with Helical Flutes for Through Holes • CERMET-DCFD™ • .551–.787" (14–20mm)



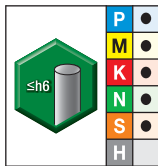
- first choice
- alternate choice

grade CERMET-DCFD TiAIN		D1		D		L	L4	L10	LS	Z
order #	catalog #	mm	in	mm	in					
3888130	456681-001400	14,00	.551	16,00	.630	5.710	2.992	.315	1.929	6
3888131	456681-001500	15,00	.591	16,00	.630	5.710	2.992	.315	1.929	6
3888132	456681-001600	16,00	.630	20,00	.787	6.180	3.386	.315	2.008	6
3888403	456681-001700	17,00	.669	20,00	.787	6.180	3.386	.394	2.008	6
3888404	456681-001800	18,00	.709	20,00	.787	6.730	3.937	.394	2.008	6
3888405	456681-001900	19,00	.748	20,00	.787	6.730	3.937	.394	2.008	6
3888406	456681-002000	20,00	.787	20,00	.787	7.870	5.079	.394	2.008	6

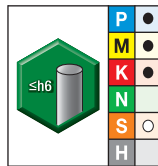
- Standard reamers listed are ground to achieve an H7 tolerance hole.
Additional diameters and lengths made to order.



■ HSR Reamers with Straight Flutes for Blind Holes • K10F™/K10F-DCFD™ • .079-.158" (2-4mm)



grade K10F
uncoated



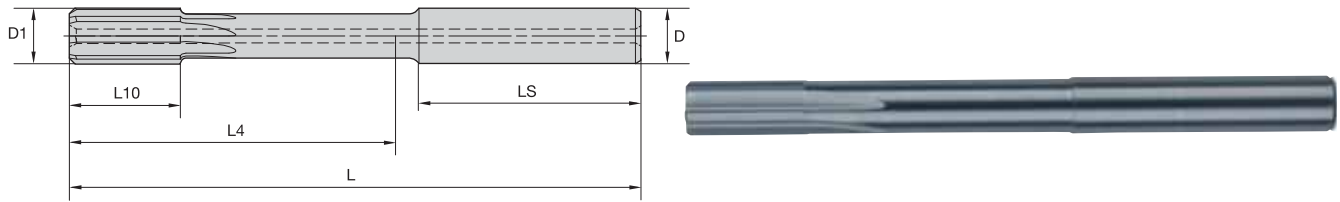
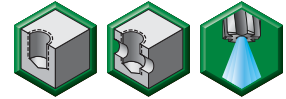
grade K10F-DCFD
TiAlN

- first choice
- alternate choice

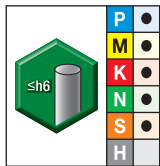
				D1		D						
order #	catalog #	order #	catalog #	mm	in	mm	in	L	L4	L10	LS	Z
2446025	050222-000200	2446371	450222-000200	2,00	.079	3,00	.118	1.890	.591	.236	1.102	4
2446029	050222-000300	2446372	450222-000300	3,00	.118	3,00	.118	1.890	.591	.315	1.102	4
2446031	050222-000400	2446415	450222-000400	4,00	.158	4,00	.158	2.126	.827	.315	1.102	4



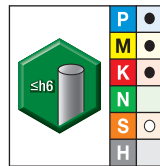
- Standard reamers listed are ground to achieve an H7 tolerance hole. IT6 hole tolerance capability starting at diameter .394" (10mm) is available as a Custom Solution. Additional diameters and lengths made to order.



■ HSR Reamers with Straight Flutes for Blind Holes • K10F™/K10F-DCFD™ • .197–.551" (5–14mm)



grade K10F
uncoated

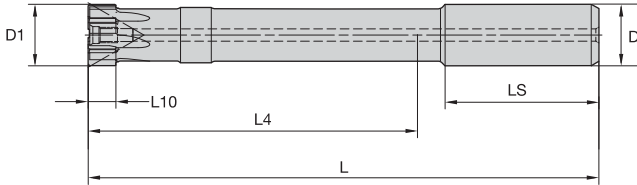
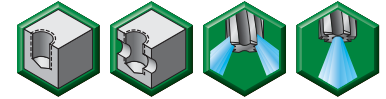


grade K10F-DCFD
TiAlN

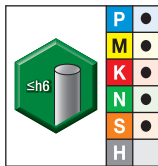
- first choice
- alternate choice

order #	catalog #	order #	catalog #	D1		D		L	L4	L10	LS	Z
				mm	in	mm	in					
2437472	050270-000500	2441337	450270-000500	5,00	.197	6,00	.236	2.913	1.260	.472	1.417	4
2437523	050270-000600	2441339	450270-000600	6,00	.236	6,00	.236	2.913	1.299	.472	1.417	4
2437525	050270-000800	2441341	450270-000800	8,00	.315	8,00	.315	3.583	1.969	.630	1.417	6
2437526	050270-001000	2441342	450270-001000	10,00	.394	10,00	.394	4.055	2.284	.787	1.575	6
2437527	050270-001200	2441353	450270-001200	12,00	.472	12,00	.472	4.646	2.677	.945	1.772	6
2437529	050270-001400	2441354	450270-001400	14,00	.551	14,00	.551	5.197	3.189	1.102	1.772	6

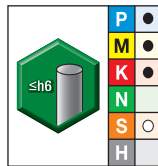
- Standard reamers listed are ground to achieve an H7 tolerance hole. IT6 capability is available. Additional diameters and lengths made to order.
- Coolant direction can be altered between axial and radial by using the set screw (included).



■ HSR Reamers with Straight Flutes for Blind Holes • K10F™/K10F-DCFD™ • .551–1.259" (14–32mm)



grade K10F uncoated

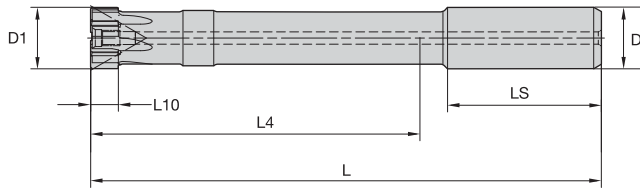


grade K10F-DCFD TiAlN

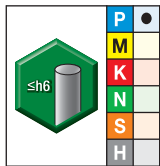
● first choice
○ alternate choice

order #	catalog #	order #	catalog #	D1		D		L	L4	L10	LS	Z
				mm	in	mm	in					
3055655	050280-001400	3084512	450280-001400	14,00	.551	16,00	.630	5.709	3.543	.354	1.890	6
3055656	050280-001600	3084526	450280-001600	16,00	.630	20,00	.787	6.181	3.937	.354	1.969	6
3055657	050280-001800	3084528	450280-001800	18,00	.709	20,00	.787	6.732	4.488	.354	1.969	6
3056095	050280-002000	3077292	450280-002000	20,00	.787	20,00	.787	7.874	5.630	.354	1.969	6
3056096	050280-002200	3084529	450280-002200	22,00	.866	20,00	.787	8.268	6.024	.433	1.969	6
3056097	050280-002400	3084530	450280-002400	24,00	.945	20,00	.787	8.268	6.024	.433	1.969	6
3056098	050280-002500	3084531	450280-002500	25,00	.984	20,00	.787	8.268	6.024	.433	1.969	6
3056099	050280-002600	3084532	450280-002600	26,00	1.024	25,00	.984	9.449	6.969	.433	2.205	8
3056100	050280-002800	3084593	450280-002800	28,00	1.102	25,00	.984	9.449	6.969	.433	2.205	8
3056102	050280-003000	3084594	450280-003000	30,00	1.181	25,00	.984	10.630	8.150	.433	2.205	8
3056273	050280-003200	3084595	450280-003200	32,00	1.260	25,00	.984	10.630	8.150	.433	2.205	8

- Standard reamers listed are ground to achieve an H7 tolerance hole. IT6 capability is available. Additional diameters and lengths made to order.
- Coolant direction can be altered between axial and radial by using the set screw (included).



■ HSR Reamers with Straight Flutes for Blind Holes • CERMET-DCFD™ • .551-.787" (14-20mm)



grade CERMET-DCFD
TiAIN

- first choice
- alternate choice

order #	catalog #	D1		D		L	L4	L10	LS	Z
		mm	in	mm	in					
3888407	456680-001400	14,00	.551	16,00	.630	5.710	2.992	.315	1.929	6
3888408	456680-001500	15,00	.591	16,00	.630	5.710	2.992	.315	1.929	6
3888409	456680-001600	16,00	.630	20,00	.787	6.180	3.386	.315	2.008	6
3888410	456680-001700	17,00	.669	20,00	.787	6.180	3.386	.394	2.008	6
3888411	456680-001800	18,00	.709	20,00	.787	6.730	3.937	.394	2.008	6
3888412	456680-001900	19,00	.748	20,00	.787	6.730	3.937	.394	2.008	6
3888413	456680-002000	20,00	.787	20,00	.787	7.870	5.079	.394	2.008	6

■ Series 050221 • Solid Carbide • Helical Flute • Grade K10™ • Inch

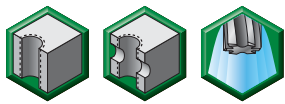
Material Group											
		Cutting Speed – vc Range – SFM			Recommended Feed Rate per Rev						
		min		max	Tool Diameter	0.055–0.124	0.124–0.189	0.189–0.281	0.282–0.378	0.378–0.5	
P	1	50	–	80	IPR	0.002–0.004	0.004–0.007	0.004–0.008	0.004–0.009	0.006–0.010	
	2	50	–	70	IPR	0.002–0.004	0.004–0.007	0.004–0.008	0.004–0.009	0.006–0.010	
	3	30	–	70	IPR	0.002–0.004	0.004–0.007	0.004–0.008	0.004–0.009	0.006–0.010	
	4	20	–	30	IPR	0.002–0.004	0.004–0.007	0.004–0.008	0.004–0.009	0.006–0.010	
	5	20	–	30	IPR	0.002–0.004	0.004–0.007	0.004–0.008	0.004–0.009	0.006–0.010	
	6	10	–	30	IPR	0.002–0.004	0.002–0.004	0.004–0.007	0.004–0.008	0.004–0.009	
M	1	10	–	30	IPR	0.002–0.004	0.004–0.007	0.004–0.008	0.004–0.009	0.006–0.010	
	2	10	–	30	IPR	0.002–0.004	0.004–0.007	0.004–0.008	0.004–0.009	0.006–0.010	
	3	10	–	30	IPR	0.002–0.004	0.004–0.007	0.004–0.008	0.004–0.009	0.006–0.010	
K	1	30	–	50	IPR	0.004–0.008	0.006–0.012	0.008–0.012	0.008–0.016	0.010–0.018	
	2	30	–	50	IPR	0.004–0.008	0.006–0.012	0.008–0.012	0.008–0.016	0.010–0.018	
	3	20	–	50	IPR	0.004–0.008	0.006–0.012	0.008–0.012	0.008–0.016	0.010–0.018	
N	1	80	–	100	IPR	0.004–0.008	0.006–0.012	0.008–0.012	0.008–0.016	0.010–0.018	
	2	80	–	110	IPR	0.004–0.008	0.006–0.012	0.008–0.012	0.008–0.016	0.010–0.018	
	3	80	–	110	IPR	0.004–0.008	0.006–0.012	0.008–0.012	0.008–0.016	0.010–0.018	
	4	80	–	100	IPR	0.004–0.008	0.006–0.012	0.008–0.012	0.008–0.016	0.010–0.018	
	5	70	–	80	IPR	0.004–0.008	0.006–0.012	0.008–0.012	0.008–0.016	0.010–0.018	
	6	80	–	110	IPR	0.004–0.008	0.006–0.012	0.008–0.012	0.008–0.016	0.010–0.018	
S	1	10	–	30	IPR	0.002–0.004	0.004–0.007	0.004–0.008	0.004–0.009	0.006–0.010	
	2	10	–	20	IPR	0.002–0.004	0.004–0.007	0.004–0.008	0.004–0.009	0.006–0.010	
	3	20	–	50	IPR	0.002–0.004	0.004–0.007	0.004–0.008	0.004–0.009	0.006–0.010	
	4	20	–	50	IPR	0.002–0.004	0.004–0.007	0.004–0.008	0.004–0.009	0.006–0.010	

■ Series 050221 • Solid Carbide • Helical Flute • Grade K10™ • Metric

Material Group											
		Cutting Speed – vc Range – m/min			Recommended Feed Rate per Rev						
		min		max	Tool Diameter	1,40–3,15	3,16–4,80	4,81–7,15	7,16–9,59	9,60–12,70	
P	1	20	–	30	mm/r	0,07–0,13	0,08–0,16	0,10–0,20	0,13–0,23	0,15–0,25	
	2	20	–	20	mm/r	0,07–0,13	0,08–0,16	0,10–0,20	0,13–0,23	0,15–0,25	
	3	10	–	20	mm/r	0,07–0,13	0,08–0,16	0,10–0,20	0,13–0,23	0,15–0,25	
	4	10	–	10	mm/r	0,07–0,13	0,08–0,16	0,10–0,20	0,13–0,23	0,15–0,25	
	5	10	–	10	mm/r	0,07–0,13	0,08–0,16	0,10–0,20	0,13–0,23	0,15–0,25	
	6	10	–	10	mm/r	0,06–0,10	0,07–0,13	0,08–0,16	0,10–0,20	0,13–0,23	
M	1	10	–	10	mm/r	0,07–0,13	0,08–0,16	0,10–0,20	0,13–0,23	0,15–0,25	
	2	10	–	10	mm/r	0,07–0,13	0,08–0,16	0,10–0,20	0,13–0,23	0,15–0,25	
	3	10	–	10	mm/r	0,07–0,13	0,08–0,16	0,10–0,20	0,13–0,23	0,15–0,25	
K	1	10	–	20	mm/r	0,10–0,20	0,15–0,30	0,20–0,30	0,20–0,40	0,25–0,45	
	2	10	–	20	mm/r	0,10–0,20	0,15–0,30	0,20–0,30	0,20–0,40	0,25–0,45	
	3	10	–	20	mm/r	0,10–0,20	0,15–0,30	0,20–0,30	0,20–0,40	0,25–0,45	
N	1	30	–	30	mm/r	0,10–0,20	0,15–0,30	0,20–0,30	0,20–0,40	0,25–0,45	
	2	30	–	40	mm/r	0,10–0,20	0,15–0,30	0,20–0,30	0,20–0,40	0,25–0,45	
	3	30	–	40	mm/r	0,10–0,20	0,15–0,30	0,20–0,30	0,20–0,40	0,25–0,45	
	4	30	–	30	mm/r	0,10–0,20	0,15–0,30	0,20–0,30	0,20–0,40	0,25–0,45	
	5	20	–	30	mm/r	0,10–0,20	0,15–0,30	0,20–0,30	0,20–0,40	0,25–0,45	
	6	30	–	40	mm/r	0,10–0,20	0,15–0,30	0,20–0,30	0,20–0,40	0,25–0,45	
S	1	10	–	10	mm/r	0,07–0,13	0,08–0,16	0,10–0,20	0,13–0,23	0,15–0,25	
	2	10	–	10	mm/r	0,07–0,13	0,08–0,16	0,10–0,20	0,13–0,23	0,15–0,25	
	3	10	–	20	mm/r	0,07–0,13	0,08–0,16	0,10–0,20	0,13–0,23	0,15–0,25	
	4	10	–	20	mm/r	0,07–0,13	0,08–0,16	0,10–0,20	0,13–0,23	0,15–0,25	

■ Series 050227 • Solid Carbide • Helical Flute Grade K10F™ • Inch

Material Group		Cutting Speed – vc Range – SFM			Recommended Feed Rate per Rev							
		min	–	max	Tool Diameter	0.055–0.124	0.124–0.189	0.189 – 0.281	0.282–0.378	0.378–0.5	0.5–0.590	
		P		1	100	–	130	IPR	0.008–0.013	0.008–0.016	0.011–0.021	0.016–0.028
2	80			–	110	IPR	0.008–0.013	0.008–0.016	0.011–0.021	0.016–0.028	0.016–0.031	0.020–0.035
M		3	80	–	100	IPR	0.008–0.013	0.008–0.016	0.011–0.021	0.016–0.028	0.016–0.031	0.020–0.035
		4	50	–	80	IPR	0.008–0.013	0.008–0.016	0.011–0.021	0.016–0.028	0.016–0.031	0.020–0.035
K		5	30	–	70	IPR	0.008–0.013	0.008–0.016	0.011–0.021	0.016–0.028	0.016–0.031	0.020–0.035
		6	30	–	50	IPR	0.006–0.012	0.008–0.012	0.008–0.016	0.012–0.020	0.012–0.024	0.014–0.026
N		1	20	–	50	IPR	0.006–0.012	0.008–0.012	0.008–0.016	0.012–0.020	0.012–0.024	0.014–0.026
		2	20	–	50	IPR	0.006–0.012	0.008–0.012	0.008–0.016	0.012–0.020	0.012–0.024	0.014–0.026
S		3	20	–	30	IPR	0.006–0.012	0.008–0.012	0.008–0.016	0.012–0.020	0.012–0.024	0.014–0.026
		1	70	–	100	IPR	0.010–0.018	0.014–0.026	0.016–0.031	0.020–0.035	0.024–0.041	0.024–0.047
N		2	70	–	80	IPR	0.010–0.018	0.014–0.026	0.016–0.031	0.020–0.035	0.024–0.041	0.024–0.047
		3	230	–	290	IPR	0.010–0.018	0.014–0.026	0.016–0.031	0.020–0.035	0.024–0.041	0.024–0.047
S		1	260	–	330	IPR	0.010–0.018	0.014–0.026	0.016–0.031	0.020–0.035	0.024–0.041	0.024–0.047
		2	260	–	330	IPR	0.010–0.018	0.014–0.026	0.016–0.031	0.020–0.035	0.024–0.041	0.024–0.047
S		3	230	–	290	IPR	0.010–0.018	0.014–0.026	0.016–0.031	0.020–0.035	0.024–0.041	0.024–0.047
		4	200	–	260	IPR	0.010–0.018	0.014–0.026	0.016–0.031	0.020–0.035	0.024–0.041	0.024–0.047
S		5	280	–	340	IPR	0.010–0.018	0.014–0.026	0.016–0.031	0.020–0.035	0.024–0.041	0.024–0.047
		6	30	–	50	IPR	0.010–0.018	0.014–0.026	0.016–0.031	0.020–0.035	0.024–0.041	0.024–0.047
S		1	20	–	30	IPR	0.004–0.008	0.006–0.012	0.008–0.012	0.008–0.016	0.010–0.018	0.012–0.020
		2	50	–	80	IPR	0.004–0.008	0.006–0.012	0.008–0.012	0.008–0.016	0.010–0.018	0.012–0.020
S		3	50	–	80	IPR	0.006–0.012	0.008–0.012	0.008–0.016	0.012–0.020	0.012–0.024	0.014–0.026
		4	20	–	50	IPR	0.006–0.012	0.008–0.012	0.008–0.016	0.012–0.020	0.012–0.024	0.014–0.026



■ Series 050227 • Solid Carbide • Helical Flute • Grade K10F™ • Metric

Material Group												
		Cutting Speed – vc Range – m/min			Recommended Feed Rate per Rev							
		min		max	Tool Diameter	1,40–3,15	3,16–4,80	4,81–7,15	7,16–9,59	9,60–12,70	12,70–15,00	
P	1	30	–	40	mm/r	0,20–0,30	0,20–0,40	0,30–0,50	0,40–0,70	0,40–0,80	0,50–0,90	
	2	30	–	40	mm/r	0,20–0,30	0,20–0,40	0,30–0,50	0,40–0,70	0,40–0,80	0,50–0,90	
	3	30	–	30	mm/r	0,20–0,30	0,20–0,40	0,30–0,50	0,40–0,70	0,40–0,80	0,50–0,90	
	4	20	–	30	mm/r	0,20–0,30	0,20–0,40	0,30–0,50	0,40–0,70	0,40–0,80	0,50–0,90	
	5	10	–	20	mm/r	0,20–0,30	0,20–0,40	0,30–0,50	0,40–0,70	0,40–0,80	0,50–0,90	
	6	10	–	20	mm/r	0,15–0,30	0,20–0,30	0,20–0,40	0,30–0,50	0,30–0,60	0,35–0,65	
M	1	10	–	20	mm/r	0,15–0,30	0,20–0,30	0,20–0,40	0,30–0,50	0,30–0,60	0,35–0,65	
	2	10	–	20	mm/r	0,15–0,30	0,20–0,30	0,20–0,40	0,30–0,50	0,30–0,60	0,35–0,65	
	3	10	–	10	mm/r	0,15–0,30	0,20–0,30	0,20–0,40	0,30–0,50	0,30–0,60	0,35–0,65	
K	1	20	–	30	mm/r	0,25–0,45	0,35–0,65	0,40–0,80	0,50–0,90	0,60–1,05	0,60–1,20	
	2	20	–	30	mm/r	0,25–0,45	0,35–0,65	0,40–0,80	0,50–0,90	0,60–1,05	0,60–1,20	
	3	20	–	30	mm/r	0,25–0,45	0,35–0,65	0,40–0,80	0,50–0,90	0,60–1,05	0,60–1,20	
N	1	70	–	90	mm/r	0,25–0,45	0,35–0,65	0,40–0,80	0,50–0,90	0,60–1,05	0,60–1,20	
	2	80	–	100	mm/r	0,25–0,45	0,35–0,65	0,40–0,80	0,50–0,90	0,60–1,05	0,60–1,20	
	3	80	–	100	mm/r	0,25–0,45	0,35–0,65	0,40–0,80	0,50–0,90	0,60–1,05	0,60–1,20	
	4	70	–	90	mm/r	0,25–0,45	0,35–0,65	0,40–0,80	0,50–0,90	0,60–1,05	0,60–1,20	
	5	60	–	80	mm/r	0,25–0,45	0,35–0,65	0,40–0,80	0,50–0,90	0,60–1,05	0,60–1,20	
	6	90	–	110	mm/r	0,25–0,45	0,35–0,65	0,40–0,80	0,50–0,90	0,60–1,05	0,60–1,20	
S	1	10	–	20	mm/r	0,10–0,20	0,15–0,30	0,20–0,30	0,20–0,40	0,25–0,45	0,30–0,50	
	2	10	–	10	mm/r	0,10–0,20	0,15–0,30	0,20–0,30	0,20–0,40	0,25–0,45	0,30–0,50	
	3	20	–	30	mm/r	0,15–0,30	0,20–0,30	0,20–0,40	0,30–0,50	0,30–0,60	0,35–0,65	
	4	20	–	30	mm/r	0,15–0,30	0,20–0,30	0,20–0,40	0,30–0,50	0,30–0,60	0,35–0,65	



■ Series 450227 • Solid Carbide • Helical Flute • Grade K10F-DCFD™ • Inch

Material Group											
		Cutting Speed – vc Range – SFM			Recommended Feed Rate per Rev						
		min		max	Tool Diameter	0.055–0.124	0.124–0.189	0.189–0.281	0.282–0.378	0.378–0.5	0.5–0.590
P	1	200	–	260	IPR	0.008–0.013	0.008–0.016	0.011–0.021	0.016–0.028	0.016–0.031	0.020–0.035
	2	180	–	250	IPR	0.008–0.013	0.008–0.016	0.011–0.021	0.016–0.028	0.016–0.031	0.020–0.035
	3	180	–	230	IPR	0.008–0.013	0.008–0.016	0.011–0.021	0.016–0.028	0.016–0.031	0.020–0.035
	4	130	–	200	IPR	0.008–0.013	0.008–0.016	0.011–0.021	0.016–0.028	0.016–0.031	0.020–0.035
	5	70	–	100	IPR	0.008–0.013	0.008–0.016	0.011–0.021	0.016–0.028	0.016–0.031	0.020–0.035
	6	50	–	80	IPR	0.006–0.012	0.008–0.012	0.008–0.016	0.012–0.020	0.012–0.024	0.014–0.026
M	1	30	–	70	IPR	0.006–0.012	0.008–0.012	0.008–0.016	0.012–0.020	0.012–0.024	0.014–0.026
	2	30	–	70	IPR	0.006–0.012	0.008–0.012	0.008–0.016	0.012–0.020	0.012–0.024	0.014–0.026
	3	30	–	50	IPR	0.006–0.012	0.008–0.012	0.008–0.016	0.012–0.020	0.012–0.024	0.014–0.026
K	1	160	–	250	IPR	0.010–0.018	0.014–0.026	0.016–0.031	0.020–0.035	0.024–0.041	0.024–0.047
	2	150	–	210	IPR	0.010–0.018	0.014–0.026	0.016–0.031	0.020–0.035	0.024–0.041	0.024–0.047
	3	150	–	210	IPR	0.010–0.018	0.014–0.026	0.016–0.031	0.020–0.035	0.024–0.041	0.024–0.047
S	1	20	–	30	IPR	0.004–0.008	0.006–0.012	0.008–0.012	0.008–0.016	0.010–0.018	0.012–0.020
	2	50	–	80	IPR	0.004–0.008	0.006–0.012	0.008–0.012	0.008–0.016	0.010–0.018	0.012–0.020

■ Series 450227 • Solid Carbide • Helical Flute • Grade K10F-DCFD™ • Metric

Material Group												
		Cutting Speed – vc Range – m/min			Recommended Feed Rate per Rev							
		min		max	Tool Diameter	1,40–3,15	3,16–4,80	4,81–7,15	7,16–9,59	9,60–12,70	12,70–15,00	
P	1	60	–	80	mm/r	0,20–0,30	0,20–0,40	0,30–0,50	0,40–0,70	0,40–0,80	0,50–0,90	
	2	60	–	80	mm/r	0,20–0,30	0,20–0,40	0,30–0,50	0,40–0,70	0,40–0,80	0,50–0,90	
	3	60	–	70	mm/r	0,20–0,30	0,20–0,40	0,30–0,50	0,40–0,70	0,40–0,80	0,50–0,90	
	4	40	–	60	mm/r	0,20–0,30	0,20–0,40	0,30–0,50	0,40–0,70	0,40–0,80	0,50–0,90	
	5	20	–	30	mm/r	0,20–0,30	0,20–0,40	0,30–0,50	0,40–0,70	0,40–0,80	0,50–0,90	
	6	20	–	30	mm/r	0,15–0,30	0,20–0,30	0,20–0,40	0,30–0,50	0,30–0,60	0,35–0,65	
M	1	10	–	20	mm/r	0,15–0,30	0,20–0,30	0,20–0,40	0,30–0,50	0,30–0,60	0,35–0,65	
	2	10	–	20	mm/r	0,15–0,30	0,20–0,30	0,20–0,40	0,30–0,50	0,30–0,60	0,35–0,65	
	3	10	–	20	mm/r	0,15–0,30	0,20–0,30	0,20–0,40	0,30–0,50	0,30–0,60	0,35–0,65	
K	1	50	–	70	mm/r	0,25–0,45	0,35–0,65	0,40–0,80	0,50–0,90	0,60–1,05	0,60–1,20	
	2	50	–	70	mm/r	0,25–0,45	0,35–0,65	0,40–0,80	0,50–0,90	0,60–1,05	0,60–1,20	
	3	50	–	70	mm/r	0,25–0,45	0,35–0,65	0,40–0,80	0,50–0,90	0,60–1,05	0,60–1,20	
S	1	10	–	20	mm/r	0,10–0,20	0,15–0,30	0,20–0,30	0,20–0,40	0,25–0,45	0,30–0,50	
	2	10	–	20	mm/r	0,10–0,20	0,15–0,30	0,20–0,30	0,20–0,40	0,25–0,45	0,30–0,50	



■ Series 050271 • Solid Carbide • Helical Flute • Grade K10F™ • Inch

Material Group											
		Cutting Speed – vc Range – SFM			Recommended Feed Rate per Rev						
		min		max	Tool Diameter	0.124–0.189	0.189–0.281	0.282–0.378	0.378–0.5	0.5–0.590	
P	1	150	–	210	IPR	0.008–0.016	0.011–0.021	0.014–0.026	0.016–0.031	0.020–0.035	
	2	130	–	200	IPR	0.008–0.016	0.011–0.021	0.014–0.026	0.016–0.031	0.020–0.035	
	3	110	–	180	IPR	0.008–0.016	0.011–0.021	0.014–0.026	0.016–0.031	0.020–0.035	
	4	80	–	110	IPR	0.008–0.016	0.011–0.021	0.014–0.026	0.016–0.031	0.020–0.035	
	5	50	–	80	IPR	0.008–0.016	0.011–0.021	0.014–0.026	0.016–0.031	0.020–0.035	
	6	30	–	70	IPR	0.008–0.012	0.008–0.016	0.012–0.020	0.012–0.024	0.014–0.026	
M	1	30	–	70	IPR	0.008–0.012	0.008–0.016	0.012–0.020	0.012–0.024	0.014–0.026	
	2	30	–	70	IPR	0.008–0.012	0.008–0.016	0.012–0.020	0.012–0.024	0.014–0.026	
	3	20	–	50	IPR	0.008–0.012	0.008–0.016	0.012–0.020	0.012–0.024	0.014–0.026	
K	1	100	–	160	IPR	0.014–0.026	0.016–0.031	0.020–0.035	0.024–0.041	0.024–0.047	
	2	100	–	160	IPR	0.014–0.026	0.016–0.031	0.020–0.035	0.024–0.041	0.024–0.047	
	3	80	–	150	IPR	0.014–0.026	0.016–0.031	0.020–0.035	0.024–0.041	0.024–0.047	
N	1	420	–	470	IPR	0.014–0.026	0.016–0.031	0.020–0.035	0.024–0.041	0.024–0.047	
	2	460	–	520	IPR	0.014–0.026	0.016–0.031	0.020–0.035	0.024–0.041	0.024–0.047	
	3	460	–	520	IPR	0.014–0.026	0.016–0.031	0.020–0.035	0.024–0.041	0.024–0.047	
	4	420	–	490	IPR	0.014–0.026	0.016–0.031	0.020–0.035	0.024–0.041	0.024–0.047	
	5	390	–	460	IPR	0.014–0.026	0.016–0.031	0.020–0.035	0.024–0.041	0.024–0.047	
	6	470	–	540	IPR	0.014–0.026	0.016–0.031	0.020–0.035	0.024–0.041	0.024–0.047	
S	1	30	–	70	IPR	0.006–0.012	0.008–0.012	0.008–0.016	0.010–0.018	0.012–0.020	
	2	20	–	50	IPR	0.006–0.012	0.008–0.012	0.008–0.016	0.010–0.018	0.012–0.020	
	3	80	–	110	IPR	0.008–0.012	0.008–0.016	0.012–0.020	0.012–0.024	0.014–0.026	
	4	80	–	110	IPR	0.008–0.012	0.008–0.016	0.012–0.020	0.012–0.024	0.014–0.026	

■ Series 050271 • Solid Carbide • Helical Flute • Grade K10F™ • Metric

Material Group											
		Cutting Speed – vc Range – m/min			Recommended Feed Rate per Rev						
		min		max	Tool Diameter	3,16–4,80	4,81–7,15	7,16–9,59	9,60–12,70	12,70–15,00	
P	1	50	–	70	mm/r	0,20–0,40	0,30–0,50	0,35–0,65	0,40–0,80	0,50–0,90	
	2	40	–	60	mm/r	0,20–0,40	0,30–0,50	0,35–0,65	0,40–0,80	0,50–0,90	
	3	40	–	60	mm/r	0,20–0,40	0,30–0,50	0,35–0,65	0,40–0,80	0,50–0,90	
	4	30	–	40	mm/r	0,20–0,40	0,30–0,50	0,35–0,65	0,40–0,80	0,50–0,90	
	5	20	–	30	mm/r	0,20–0,40	0,30–0,50	0,35–0,65	0,40–0,80	0,50–0,90	
	6	10	–	20	mm/r	0,20–0,30	0,20–0,40	0,30–0,50	0,30–0,60	0,35–0,65	
M	1	10	–	20	mm/r	0,20–0,30	0,20–0,40	0,30–0,50	0,30–0,60	0,35–0,65	
	2	10	–	20	mm/r	0,20–0,30	0,20–0,40	0,30–0,50	0,30–0,60	0,35–0,65	
	3	10	–	20	mm/r	0,20–0,30	0,20–0,40	0,30–0,50	0,30–0,60	0,35–0,65	
K	1	30	–	50	mm/r	0,35–0,65	0,40–0,80	0,50–0,90	0,60–1,05	0,60–1,20	
	2	30	–	50	mm/r	0,35–0,65	0,40–0,80	0,50–0,90	0,60–1,05	0,60–1,20	
	3	30	–	50	mm/r	0,35–0,65	0,40–0,80	0,50–0,90	0,60–1,05	0,60–1,20	
N	1	130	–	150	mm/r	0,35–0,65	0,40–0,80	0,50–0,90	0,60–1,05	0,60–1,20	
	2	140	–	160	mm/r	0,35–0,65	0,40–0,80	0,50–0,90	0,60–1,05	0,60–1,20	
	3	140	–	160	mm/r	0,35–0,65	0,40–0,80	0,50–0,90	0,60–1,05	0,60–1,20	
	4	130	–	150	mm/r	0,35–0,65	0,40–0,80	0,50–0,90	0,60–1,05	0,60–1,20	
	5	120	–	140	mm/r	0,35–0,65	0,40–0,80	0,50–0,90	0,60–1,05	0,60–1,20	
	6	150	–	170	mm/r	0,35–0,65	0,40–0,80	0,50–0,90	0,60–1,05	0,60–1,20	
S	1	10	–	20	mm/r	0,15–0,30	0,20–0,30	0,20–0,40	0,25–0,45	0,30–0,50	
	2	10	–	20	mm/r	0,15–0,30	0,20–0,30	0,20–0,40	0,25–0,45	0,30–0,50	
	3	30	–	40	mm/r	0,20–0,30	0,20–0,40	0,30–0,50	0,30–0,60	0,35–0,65	
	4	30	–	40	mm/r	0,20–0,30	0,20–0,40	0,30–0,50	0,30–0,60	0,35–0,65	

■ Series 450271 • Solid Carbide • Helical Flute • Grade K10F-DCFD™ • Inch

Material Group										
		Cutting Speed – vc Range – SFM			Recommended Feed Rate per Rev					
		min		max	Tool Diameter	0.124–0.189	0.189–0.281	0.282–0.378	0.378–0.5	0.5–0.590
P	1	360	–	420	IPR	0.008–0.016	0.011–0.021	0.014–0.026	0.016–0.031	0.020–0.035
	2	340	–	410	IPR	0.008–0.016	0.011–0.021	0.014–0.026	0.016–0.031	0.020–0.035
	3	310	–	380	IPR	0.008–0.016	0.011–0.021	0.014–0.026	0.016–0.031	0.020–0.035
	4	200	–	260	IPR	0.008–0.016	0.011–0.021	0.014–0.026	0.016–0.031	0.020–0.035
	5	100	–	160	IPR	0.008–0.016	0.011–0.021	0.014–0.026	0.016–0.031	0.020–0.035
	6	100	–	130	IPR	0.008–0.012	0.008–0.016	0.012–0.020	0.012–0.024	0.014–0.026
M	1	100	–	130	IPR	0.008–0.012	0.008–0.016	0.012–0.020	0.012–0.024	0.014–0.026
	2	100	–	130	IPR	0.008–0.012	0.008–0.016	0.012–0.020	0.012–0.024	0.014–0.026
	3	70	–	100	IPR	0.008–0.012	0.008–0.016	0.012–0.020	0.012–0.024	0.014–0.026
K	1	250	–	310	IPR	0.014–0.026	0.016–0.031	0.020–0.035	0.024–0.041	0.024–0.047
	2	250	–	310	IPR	0.014–0.026	0.016–0.031	0.020–0.035	0.024–0.041	0.024–0.047
	3	230	–	290	IPR	0.014–0.026	0.016–0.031	0.020–0.035	0.024–0.041	0.024–0.047
S	1	100	–	130	IPR	0.006–0.012	0.008–0.012	0.008–0.016	0.010–0.018	0.012–0.020
	2	70	–	100	IPR	0.006–0.012	0.008–0.012	0.008–0.016	0.010–0.018	0.012–0.020

■ Series 450271 • Solid Carbide • Helical Flute • Grade K10F-DCFD™ • Metric

Material Group											
		Cutting Speed – vc Range – m/min			Recommended Feed Rate per Rev						
		min		max	Tool Diameter	3,16–4,80	4,81–7,15	7,16–9,59	9,60–12,70	12,70–15,00	
P	1	110	–	130	mm/r	0,20–0,40	0,30–0,50	0,35–0,65	0,40–0,80	0,50–0,90	
	2	110	–	130	mm/r	0,20–0,40	0,30–0,50	0,35–0,65	0,40–0,80	0,50–0,90	
	3	100	–	120	mm/r	0,20–0,40	0,30–0,50	0,35–0,65	0,40–0,80	0,50–0,90	
	4	60	–	80	mm/r	0,20–0,40	0,30–0,50	0,35–0,65	0,40–0,80	0,50–0,90	
	5	30	–	50	mm/r	0,20–0,40	0,30–0,50	0,35–0,65	0,40–0,80	0,50–0,90	
	6	30	–	40	mm/r	0,20–0,30	0,20–0,40	0,30–0,50	0,30–0,60	0,35–0,65	
M	1	30	–	40	mm/r	0,20–0,30	0,20–0,40	0,30–0,50	0,30–0,60	0,35–0,65	
	2	30	–	40	mm/r	0,20–0,30	0,20–0,40	0,30–0,50	0,30–0,60	0,35–0,65	
	3	20	–	30	mm/r	0,20–0,30	0,20–0,40	0,30–0,50	0,30–0,60	0,35–0,65	
K	1	80	–	100	mm/r	0,35–0,65	0,40–0,80	0,50–0,90	0,60–1,05	0,60–1,20	
	2	80	–	100	mm/r	0,35–0,65	0,40–0,80	0,50–0,90	0,60–1,05	0,60–1,20	
	3	70	–	90	mm/r	0,35–0,65	0,40–0,80	0,50–0,90	0,60–1,05	0,60–1,20	
S	1	30	–	40	mm/r	0,15–0,30	0,20–0,30	0,20–0,40	0,25–0,45	0,30–0,50	
	2	20	–	30	mm/r	0,15–0,30	0,20–0,30	0,20–0,40	0,25–0,45	0,30–0,50	

■ Series 050281 • Uncoated • Carbide-Tipped • Helical Flute • Grade K10F™ • Inch

Material Group								
		Cutting Speed – vc Range – SFM			Recommended Feed Rate per Rev			
		min		max	Tool Diameter	0.5–0.590	0.590–0.787	0.787–1.181
P	1	150	–	210	IPR	0.020–0.035	0.024–0.041	0.024–0.043
	2	130	–	200	IPR	0.020–0.035	0.024–0.041	0.024–0.043
	3	110	–	180	IPR	0.020–0.035	0.024–0.041	0.024–0.043
	4	80	–	110	IPR	0.020–0.035	0.024–0.041	0.024–0.043
	5	50	–	80	IPR	0.020–0.035	0.024–0.041	0.024–0.043
	6	30	–	70	IPR	0.014–0.026	0.016–0.031	0.020–0.035
M	1	30	–	70	IPR	0.014–0.026	0.016–0.031	0.020–0.035
	2	30	–	70	IPR	0.014–0.026	0.016–0.031	0.020–0.035
	3	20	–	50	IPR	0.014–0.026	0.016–0.031	0.020–0.035
K	1	100	–	160	IPR	0.024–0.047	0.028–0.051	0.031–0.055
	2	100	–	160	IPR	0.024–0.047	0.028–0.051	0.031–0.055
	3	100	–	130	IPR	0.024–0.047	0.028–0.051	0.031–0.055
N	1	420	–	490	IPR	0.024–0.047	0.028–0.051	0.031–0.055
	2	460	–	520	IPR	0.024–0.047	0.028–0.051	0.031–0.055
	3	460	–	520	IPR	0.024–0.047	0.028–0.051	0.031–0.055
	4	420	–	490	IPR	0.024–0.047	0.028–0.051	0.031–0.055
	5	390	–	460	IPR	0.024–0.047	0.028–0.051	0.031–0.055
	6	470	–	540	IPR	0.024–0.047	0.028–0.051	0.031–0.055
S	1	30	–	70	IPR	0.012–0.020	0.012–0.024	0.014–0.026
	2	20	–	50	IPR	0.012–0.020	0.012–0.024	0.014–0.026
	3	80	–	110	IPR	0.014–0.026	0.016–0.031	0.020–0.035
	4	80	–	110	IPR	0.014–0.026	0.016–0.031	0.020–0.035

■ Series 050281 • Uncoated • Carbide-Tipped • Helical Flute • Grade K10F™ • Metric

Material Group								
		Cutting Speed – vc Range – m/min			Recommended Feed Rate per Rev			
		min		max	Tool Diameter	12,70–15,00	15,00–20,00	20,00–32,00
P	1	50	–	70	mm/r	0,50–0,90	0,60–1,05	0,60–1,10
	2	40	–	60	mm/r	0,50–0,90	0,60–1,05	0,60–1,10
	3	40	–	60	mm/r	0,50–0,90	0,60–1,05	0,60–1,10
	4	30	–	40	mm/r	0,50–0,90	0,60–1,05	0,60–1,10
	5	20	–	30	mm/r	0,50–0,90	0,60–1,05	0,60–1,10
	6	10	–	20	mm/r	0,35–0,65	0,40–0,80	0,50–0,90
M	1	10	–	20	mm/r	0,35–0,65	0,40–0,80	0,50–0,90
	2	10	–	20	mm/r	0,35–0,65	0,40–0,80	0,50–0,90
	3	10	–	20	mm/r	0,35–0,65	0,40–0,80	0,50–0,90
K	1	30	–	50	mm/r	0,60–1,20	0,70–1,30	0,80–1,40
	2	30	–	50	mm/r	0,60–1,20	0,70–1,30	0,80–1,40
	3	30	–	40	mm/r	0,60–1,20	0,70–1,30	0,80–1,40
N	1	130	–	150	mm/r	0,60–1,20	0,70–1,30	0,80–1,40
	2	140	–	160	mm/r	0,60–1,20	0,70–1,30	0,80–1,40
	3	140	–	160	mm/r	0,60–1,20	0,70–1,30	0,80–1,40
	4	130	–	150	mm/r	0,60–1,20	0,70–1,30	0,80–1,40
	5	120	–	140	mm/r	0,60–1,20	0,70–1,30	0,80–1,40
	6	150	–	170	mm/r	0,60–1,20	0,70–1,30	0,80–1,40
S	1	10	–	20	mm/r	0,30–0,50	0,30–0,60	0,35–0,65
	2	10	–	20	mm/r	0,30–0,50	0,30–0,60	0,35–0,65
	3	30	–	40	mm/r	0,35–0,65	0,40–0,80	0,50–0,90
	4	30	–	40	mm/r	0,35–0,65	0,40–0,80	0,50–0,90




■ Series 450281 • Coated • Carbide-Tipped • Helical Flute • Grade K10F-DCFD™ • Inch

Material Group								
		Cutting Speed – vc Range – SFM			Recommended Feed Rate per Rev			
		min		max	Tool Diameter	0.5–0.590	0.590–0.787	0.787–1.181
P	1	360	–	420	IPR	0.020–0.035	0.024–0.041	0.024–0.043
	2	340	–	410	IPR	0.020–0.035	0.024–0.041	0.024–0.043
	3	310	–	380	IPR	0.020–0.035	0.024–0.041	0.024–0.043
	4	200	–	260	IPR	0.020–0.035	0.024–0.041	0.024–0.043
	5	100	–	160	IPR	0.020–0.035	0.024–0.041	0.024–0.043
	6	100	–	130	IPR	0.014–0.026	0.016–0.031	0.020–0.035
M	1	100	–	130	IPR	0.014–0.026	0.016–0.031	0.020–0.035
	2	100	–	130	IPR	0.014–0.026	0.016–0.031	0.020–0.035
	3	70	–	100	IPR	0.014–0.026	0.016–0.031	0.020–0.035
K	1	250	–	310	IPR	0.024–0.047	0.028–0.051	0.031–0.055
	2	250	–	310	IPR	0.024–0.047	0.028–0.051	0.031–0.055
	3	230	–	290	IPR	0.024–0.047	0.028–0.051	0.031–0.055
S	1	100	–	130	IPR	0.012–0.020	0.012–0.024	0.014–0.026
	2	70	–	100	IPR	0.012–0.020	0.012–0.024	0.014–0.026




■ Series 450281 • Coated • Carbide-Tipped • Helical Flute • Grade K10F-DCFD™ • Metric

Material Group								
		Cutting Speed – vc Range – m/min			Recommended Feed Rate per Rev			
		min		max	Tool Diameter	12,70–15,00	15,00–20,00	20,00–32,00
P	1	110	–	130	mm/r	0,50–0,90	0,60–1,05	0,60–1,10
	2	110	–	130	mm/r	0,50–0,90	0,60–1,05	0,60–1,10
	3	100	–	120	mm/r	0,50–0,90	0,60–1,05	0,60–1,10
	4	60	–	80	mm/r	0,50–0,90	0,60–1,05	0,60–1,10
	5	30	–	50	mm/r	0,50–0,90	0,60–1,05	0,60–1,10
	6	30	–	40	mm/r	0,35–0,65	0,40–0,80	0,50–0,90
M	1	30	–	40	mm/r	0,35–0,65	0,40–0,80	0,50–0,90
	2	30	–	40	mm/r	0,35–0,65	0,40–0,80	0,50–0,90
	3	20	–	30	mm/r	0,35–0,65	0,40–0,80	0,50–0,90
K	1	80	–	100	mm/r	0,60–1,20	0,70–1,30	0,80–1,40
	2	80	–	100	mm/r	0,60–1,20	0,70–1,30	0,80–1,40
	3	70	–	90	mm/r	0,60–1,20	0,70–1,30	0,80–1,40
S	1	30	–	40	mm/r	0,30–0,50	0,30–0,60	0,35–0,65
	2	20	–	30	mm/r	0,30–0,50	0,30–0,60	0,35–0,65

■ Series 456681 • Cermet-Tipped • Helical Flute • Grade CERMET-DCFD™ • Inch

Material Group		 					
		Cutting Speed – vc Range – SFM		Recommended Feed Rate per Rev			
		min	max	Tool Diameter	0.5–0.590	0.590–0.787	
P	1	360	–	420	IPR	0.020–0.035	0.024–0.041
	2	340	–	410	IPR	0.020–0.035	0.024–0.041
	3	310	–	380	IPR	0.020–0.035	0.024–0.041
	4	200	–	260	IPR	0.020–0.035	0.024–0.041
	5	100	–	160	IPR	0.020–0.035	0.024–0.041
	6	100	–	130	IPR	0.014–0.026	0.016–0.031

■ Series 456681 • Cermet-Tipped • Helical Flute • Grade CERMET-DCFD™ • Metric

Material Group		 					
		Cutting Speed – vc Range – m/min		Recommended Feed Rate per Rev			
		min	max	Tool Diameter	12,70–15,00	15,00–20,00	
P	1	110	–	130	mm/r	0,50–0,90	0,60–1,05
	2	110	–	130	mm/r	0,50–0,90	0,60–1,05
	3	100	–	120	mm/r	0,50–0,90	0,60–1,05
	4	60	–	80	mm/r	0,50–0,90	0,60–1,05
	5	30	–	50	mm/r	0,50–0,90	0,60–1,05
	6	30	–	40	mm/r	0,35–0,65	0,40–0,80

Hole Finishing

■ Series 050222 • Solid Carbide • Straight Flute • Grade K10F™ • Inch

Material Group							
		Cutting Speed – vc Range – SFM			Recommended Feed Rate per Rev		
		min	–	max	Tool Diameter	0.055–0.124	0.124–0.189
P	1	100	–	130	IPR	0.008–0.013	0.008–0.016
	2	80	–	110	IPR	0.008–0.013	0.008–0.016
	3	80	–	100	IPR	0.008–0.013	0.008–0.016
	4	50	–	80	IPR	0.008–0.013	0.008–0.016
	5	30	–	70	IPR	0.008–0.013	0.008–0.016
	6	30	–	50	IPR	0.006–0.012	0.008–0.012
M	1	20	–	50	IPR	0.006–0.012	0.008–0.012
	2	20	–	50	IPR	0.006–0.012	0.008–0.012
	3	20	–	30	IPR	0.006–0.012	0.008–0.012
K	1	70	–	100	IPR	0.010–0.018	0.014–0.026
	2	70	–	80	IPR	0.010–0.018	0.014–0.026
	3	70	–	80	IPR	0.010–0.018	0.014–0.026
N	1	230	–	290	IPR	0.010–0.018	0.014–0.026
	2	260	–	330	IPR	0.010–0.018	0.014–0.026
	3	260	–	330	IPR	0.010–0.018	0.014–0.026
	4	230	–	290	IPR	0.010–0.018	0.014–0.026
	5	200	–	260	IPR	0.010–0.018	0.014–0.026
	6	280	–	340	IPR	0.010–0.018	0.014–0.026
S	1	30	–	50	IPR	0.004–0.008	0.006–0.012
	2	20	–	30	IPR	0.004–0.008	0.006–0.012
	3	50	–	80	IPR	0.006–0.012	0.008–0.012
	4	50	–	80	IPR	0.006–0.012	0.008–0.012

■ Series 050222 • Solid Carbide • Straight Flute • Grade K10F™ • Metric

Material Group							
		Cutting Speed – vc Range – m/min			Recommended Feed Rate per Rev		
		min	–	max	Tool Diameter	1,40–3,15	3,16–4,80
P	1	30	–	40	mm/r	0,20–0,30	0,20–0,40
	2	30	–	40	mm/r	0,20–0,30	0,20–0,40
	3	30	–	30	mm/r	0,20–0,30	0,20–0,40
	4	20	–	30	mm/r	0,20–0,30	0,20–0,40
	5	10	–	20	mm/r	0,20–0,30	0,20–0,40
	6	10	–	20	mm/r	0,15–0,30	0,20–0,30
M	1	10	–	20	mm/r	0,15–0,30	0,20–0,30
	2	10	–	20	mm/r	0,15–0,30	0,20–0,30
	3	10	–	10	mm/r	0,15–0,30	0,20–0,30
K	1	20	–	30	mm/r	0,25–0,45	0,35–0,65
	2	20	–	30	mm/r	0,25–0,45	0,35–0,65
	3	20	–	30	mm/r	0,25–0,45	0,35–0,65
N	1	70	–	90	mm/r	0,25–0,45	0,35–0,65
	2	80	–	100	mm/r	0,25–0,45	0,35–0,65
	3	80	–	100	mm/r	0,25–0,45	0,35–0,65
	4	70	–	90	mm/r	0,25–0,45	0,35–0,65
	5	60	–	80	mm/r	0,25–0,45	0,35–0,65
	6	90	–	110	mm/r	0,25–0,45	0,35–0,65
S	1	10	–	20	mm/r	0,10–0,20	0,15–0,30
	2	10	–	10	mm/r	0,10–0,20	0,15–0,30
	3	20	–	30	mm/r	0,15–0,30	0,20–0,30
	4	20	–	30	mm/r	0,15–0,30	0,20–0,30

■ Series 450222 • Solid Carbide • Straight Flute • Grade K10F-DCFD™ • Inch

Material Group							
		Cutting Speed – vc Range – SFM			Recommended Feed Rate per Rev		
		min		max	Tool Diameter	0.055–0.124	0.124–0.189
P	1	200	–	260	IPR	0.008–0.013	0.008–0.016
	2	180	–	250	IPR	0.008–0.013	0.008–0.016
	3	160	–	230	IPR	0.008–0.013	0.008–0.016
	4	130	–	200	IPR	0.008–0.013	0.008–0.016
	5	70	–	100	IPR	0.008–0.013	0.008–0.016
	6	50	–	80	IPR	0.006–0.012	0.008–0.012
M	1	30	–	70	IPR	0.006–0.012	0.008–0.012
	2	30	–	70	IPR	0.006–0.012	0.008–0.012
	3	30	–	50	IPR	0.006–0.012	0.008–0.012
K	1	160	–	230	IPR	0.010–0.018	0.014–0.026
	2	150	–	210	IPR	0.010–0.018	0.014–0.026
	3	150	–	210	IPR	0.010–0.018	0.014–0.026
S	1	30	–	70	IPR	0.004–0.008	0.006–0.012
	2	30	–	50	IPR	0.004–0.008	0.006–0.012

■ Series 450222 • Solid Carbide • Straight Flute • Grade K10F-DCFD™ • Metric

Material Group							
		Cutting Speed – vc Range – m/min			Recommended Feed Rate per Rev		
		min	–	max	Tool Diameter	1,40–3,15	3,16–4,80
P	1	60	–	80	mm/r	0,20–0,30	0,20–0,40
	2	60	–	80	mm/r	0,20–0,30	0,20–0,40
	3	50	–	70	mm/r	0,20–0,30	0,20–0,40
	4	40	–	60	mm/r	0,20–0,30	0,20–0,40
	5	20	–	30	mm/r	0,20–0,30	0,20–0,40
	6	20	–	30	mm/r	0,15–0,30	0,20–0,30
M	1	10	–	20	mm/r	0,15–0,30	0,20–0,30
	2	10	–	20	mm/r	0,15–0,30	0,20–0,30
	3	10	–	20	mm/r	0,15–0,30	0,20–0,30
K	1	50	–	70	mm/r	0,25–0,45	0,35–0,65
	2	50	–	70	mm/r	0,25–0,45	0,35–0,65
	3	50	–	70	mm/r	0,25–0,45	0,35–0,65
S	1	10	–	20	mm/r	0,10–0,20	0,15–0,30
	2	10	–	20	mm/r	0,10–0,20	0,15–0,30

■ Series 050270 • Solid Carbide • Straight Flute • Grade K10F™ • Inch

Material Group										
		Cutting Speed – vc Range – SFM			Recommended Feed Rate per Rev					
		min		max	Tool Diameter	0.124–0.189	0.189–0.281	0.282–0.378	0.378–0.5	0.5–0.590
P	1	150	–	210	IPR	0.008–0.016	0.011–0.021	0.014–0.026	0.016–0.031	0.020–0.035
	2	130	–	200	IPR	0.008–0.016	0.011–0.021	0.014–0.026	0.016–0.031	0.020–0.035
	3	110	–	180	IPR	0.008–0.016	0.011–0.021	0.014–0.026	0.016–0.031	0.020–0.035
	4	80	–	110	IPR	0.008–0.016	0.011–0.021	0.014–0.026	0.016–0.031	0.020–0.035
	5	50	–	80	IPR	0.008–0.016	0.011–0.021	0.014–0.026	0.016–0.031	0.020–0.035
	6	30	–	70	IPR	0.008–0.012	0.008–0.016	0.012–0.020	0.012–0.024	0.014–0.026
M	1	30	–	70	IPR	0.008–0.012	0.008–0.016	0.012–0.020	0.012–0.024	0.014–0.026
	2	30	–	70	IPR	0.008–0.012	0.008–0.016	0.012–0.020	0.012–0.024	0.014–0.026
	3	20	–	50	IPR	0.008–0.012	0.008–0.016	0.012–0.020	0.012–0.024	0.014–0.026
K	1	100	–	160	IPR	0.014–0.026	0.016–0.031	0.020–0.035	0.024–0.041	0.024–0.047
	2	100	–	160	IPR	0.014–0.026	0.016–0.031	0.020–0.035	0.024–0.041	0.024–0.047
	3	80	–	150	IPR	0.014–0.026	0.016–0.031	0.020–0.035	0.024–0.041	0.024–0.047
N	1	420	–	470	IPR	0.014–0.026	0.016–0.031	0.020–0.035	0.024–0.041	0.024–0.047
	2	460	–	520	IPR	0.014–0.026	0.016–0.031	0.020–0.035	0.024–0.041	0.024–0.047
	3	460	–	520	IPR	0.014–0.026	0.016–0.031	0.020–0.035	0.024–0.041	0.024–0.047
	4	420	–	490	IPR	0.014–0.026	0.016–0.031	0.020–0.035	0.024–0.041	0.024–0.047
	5	390	–	460	IPR	0.014–0.026	0.016–0.031	0.020–0.035	0.024–0.041	0.024–0.047
	6	470	–	540	IPR	0.014–0.026	0.016–0.031	0.020–0.035	0.024–0.041	0.024–0.047
S	1	30	–	70	IPR	0.006–0.012	0.008–0.012	0.008–0.016	0.010–0.018	0.012–0.020
	2	20	–	50	IPR	0.006–0.012	0.008–0.012	0.008–0.016	0.010–0.018	0.012–0.020
	3	80	–	110	IPR	0.008–0.012	0.008–0.016	0.012–0.020	0.012–0.024	0.014–0.026
	4	80	–	110	IPR	0.008–0.012	0.008–0.016	0.012–0.020	0.012–0.024	0.014–0.026

■ Series 050270 • Solid Carbide • Straight Flute • Grade K10F™ • Metric

Material Group										
		Cutting Speed – vc Range – m/min			Recommended Feed Rate per Rev					
		min		max	Tool Diameter	3,16–4,80	4,81–7,15	7,16–9,59	9,60–12,70	12,70–15,00
P	1	50	–	70	mm/r	0,20–0,40	0,30–0,50	0,35–0,65	0,40–0,80	0,50–0,90
	2	40	–	60	mm/r	0,20–0,40	0,30–0,50	0,35–0,65	0,40–0,80	0,50–0,90
	3	40	–	60	mm/r	0,20–0,40	0,30–0,50	0,35–0,65	0,40–0,80	0,50–0,90
	4	30	–	40	mm/r	0,20–0,40	0,30–0,50	0,35–0,65	0,40–0,80	0,50–0,90
	5	20	–	30	mm/r	0,20–0,40	0,30–0,50	0,35–0,65	0,40–0,80	0,50–0,90
	6	10	–	20	mm/r	0,20–0,30	0,20–0,40	0,30–0,50	0,30–0,60	0,35–0,65
M	1	10	–	20	mm/r	0,20–0,30	0,20–0,40	0,30–0,50	0,30–0,60	0,35–0,65
	2	10	–	20	mm/r	0,20–0,30	0,20–0,40	0,30–0,50	0,30–0,60	0,35–0,65
	3	10	–	20	mm/r	0,20–0,30	0,20–0,40	0,30–0,50	0,30–0,60	0,35–0,65
K	1	30	–	50	mm/r	0,35–0,65	0,40–0,80	0,50–0,90	0,60–1,05	0,60–1,20
	2	30	–	50	mm/r	0,35–0,65	0,40–0,80	0,50–0,90	0,60–1,05	0,60–1,20
	3	30	–	50	mm/r	0,35–0,65	0,40–0,80	0,50–0,90	0,60–1,05	0,60–1,20
N	1	130	–	150	mm/r	0,35–0,65	0,40–0,80	0,50–0,90	0,60–1,05	0,60–1,20
	2	140	–	160	mm/r	0,35–0,65	0,40–0,80	0,50–0,90	0,60–1,05	0,60–1,20
	3	140	–	160	mm/r	0,35–0,65	0,40–0,80	0,50–0,90	0,60–1,05	0,60–1,20
	4	130	–	150	mm/r	0,35–0,65	0,40–0,80	0,50–0,90	0,60–1,05	0,60–1,20
	5	120	–	140	mm/r	0,35–0,65	0,40–0,80	0,50–0,90	0,60–1,05	0,60–1,20
	6	150	–	170	mm/r	0,35–0,65	0,40–0,80	0,50–0,90	0,60–1,05	0,60–1,20
S	1	10	–	20	mm/r	0,15–0,30	0,20–0,30	0,20–0,40	0,25–0,45	0,30–0,50
	2	10	–	20	mm/r	0,15–0,30	0,20–0,30	0,20–0,40	0,25–0,45	0,30–0,50
	3	30	–	40	mm/r	0,20–0,30	0,20–0,40	0,30–0,50	0,30–0,60	0,35–0,65
	4	30	–	40	mm/r	0,20–0,30	0,20–0,40	0,30–0,50	0,30–0,60	0,35–0,65

■ Series 450270 • Solid Carbide • Straight Flute • Grade K10F-DCFD™ • Inch

Material Group										
		Cutting Speed – vc Range – SFM			Recommended Feed Rate per Rev					
		min		max	Tool Diameter	0.124–0.189	0.189–0.281	0.282–0.378	0.378–0.5	0.5–0.590
P	1	360	–	420	IPR	0.008–0.016	0.011–0.021	0.014–0.026	0.016–0.031	0.020–0.035
	2	340	–	410	IPR	0.008–0.016	0.011–0.021	0.014–0.026	0.016–0.031	0.020–0.035
	3	310	–	380	IPR	0.008–0.016	0.011–0.021	0.014–0.026	0.016–0.031	0.020–0.035
	4	200	–	260	IPR	0.008–0.016	0.011–0.021	0.014–0.026	0.016–0.031	0.020–0.035
	5	100	–	160	IPR	0.008–0.016	0.011–0.021	0.014–0.026	0.016–0.031	0.020–0.035
	6	100	–	130	IPR	0.008–0.012	0.008–0.016	0.012–0.020	0.012–0.024	0.014–0.026
M	1	100	–	130	IPR	0.008–0.012	0.008–0.016	0.012–0.020	0.012–0.024	0.014–0.026
	2	100	–	130	IPR	0.008–0.012	0.008–0.016	0.012–0.020	0.012–0.024	0.014–0.026
	3	70	–	100	IPR	0.008–0.012	0.008–0.016	0.012–0.020	0.012–0.024	0.014–0.026
K	1	250	–	310	IPR	0.014–0.026	0.016–0.031	0.020–0.035	0.024–0.041	0.024–0.047
	2	250	–	310	IPR	0.014–0.026	0.016–0.031	0.020–0.035	0.024–0.041	0.024–0.047
	3	230	–	290	IPR	0.014–0.026	0.016–0.031	0.020–0.035	0.024–0.041	0.024–0.047
S	1	30	–	70	IPR	0.006–0.012	0.008–0.012	0.008–0.016	0.010–0.018	0.012–0.020
	2	20	–	50	IPR	0.006–0.012	0.008–0.012	0.008–0.016	0.010–0.018	0.012–0.020

■ Series 450270 • Solid Carbide • Straight Flute • Grade K10F-DCFD™ • Metric

Material Group										
		Cutting Speed – vc Range – m/min			Recommended Feed Rate per Rev					
		min		max	Tool Diameter	3,16–4,80	4,81–7,15	7,16–9,59	9,60–12,70	12,70–15,00
P	1	110	–	130	mm/r	0,20–0,40	0,30–0,50	0,35–0,65	0,40–0,80	0,50–0,90
	2	110	–	130	mm/r	0,20–0,40	0,30–0,50	0,35–0,65	0,40–0,80	0,50–0,90
	3	100	–	120	mm/r	0,20–0,40	0,30–0,50	0,35–0,65	0,40–0,80	0,50–0,90
	4	60	–	80	mm/r	0,20–0,40	0,30–0,50	0,35–0,65	0,40–0,80	0,50–0,90
	5	30	–	50	mm/r	0,20–0,40	0,30–0,50	0,35–0,65	0,40–0,80	0,50–0,90
	6	30	–	40	mm/r	0,20–0,30	0,20–0,40	0,30–0,50	0,30–0,60	0,35–0,65
M	1	30	–	40	mm/r	0,20–0,30	0,20–0,40	0,30–0,50	0,30–0,60	0,35–0,65
	2	30	–	40	mm/r	0,20–0,30	0,20–0,40	0,30–0,50	0,30–0,60	0,35–0,65
	3	20	–	30	mm/r	0,20–0,30	0,20–0,40	0,30–0,50	0,30–0,60	0,35–0,65
K	1	80	–	100	mm/r	0,35–0,65	0,40–0,80	0,50–0,90	0,60–1,05	0,60–1,20
	2	80	–	100	mm/r	0,35–0,65	0,40–0,80	0,50–0,90	0,60–1,05	0,60–1,20
	3	70	–	90	mm/r	0,35–0,65	0,40–0,80	0,50–0,90	0,60–1,05	0,60–1,20
S	1	30	–	40	mm/r	0,15–0,30	0,20–0,30	0,20–0,40	0,25–0,45	0,30–0,50
	2	20	–	30	mm/r	0,15–0,30	0,20–0,30	0,20–0,40	0,25–0,45	0,30–0,50



■ Series 050280 • Uncoated • Carbide-Tipped • Straight Flute • Grade K10F™ • Inch

Material Group								
	Cutting Speed – vc Range – SFM			Recommended Feed Rate per Rev				
	min		max	Tool Diameter	0.5–0.590	0.590–0.787	0.787–1.181	
P	1	150	–	210	IPR	0.020–0.035	0.024–0.041	0.024–0.043
	2	130	–	200	IPR	0.020–0.035	0.024–0.041	0.024–0.043
	3	110	–	180	IPR	0.020–0.035	0.024–0.041	0.024–0.043
	4	80	–	110	IPR	0.020–0.035	0.024–0.041	0.024–0.043
	5	50	–	80	IPR	0.020–0.035	0.024–0.041	0.024–0.043
	6	30	–	70	IPR	0.014–0.026	0.016–0.031	0.020–0.035
M	1	30	–	70	IPR	0.014–0.026	0.016–0.031	0.020–0.035
	2	30	–	70	IPR	0.014–0.026	0.016–0.031	0.020–0.035
	3	20	–	50	IPR	0.014–0.026	0.016–0.031	0.020–0.035
K	1	100	–	160	IPR	0.024–0.047	0.028–0.051	0.031–0.055
	2	100	–	160	IPR	0.024–0.047	0.028–0.051	0.031–0.055
	3	100	–	130	IPR	0.024–0.047	0.028–0.051	0.031–0.055
N	1	420	–	490	IPR	0.024–0.047	0.028–0.051	0.031–0.055
	2	460	–	520	IPR	0.024–0.047	0.028–0.051	0.031–0.055
	3	460	–	520	IPR	0.024–0.047	0.028–0.051	0.031–0.055
	4	420	–	490	IPR	0.024–0.047	0.028–0.051	0.031–0.055
	5	390	–	460	IPR	0.024–0.047	0.028–0.051	0.031–0.055
	6	470	–	540	IPR	0.024–0.047	0.028–0.051	0.031–0.055
S	1	30	–	70	IPR	0.012–0.020	0.012–0.024	0.014–0.026
	2	20	–	50	IPR	0.012–0.020	0.012–0.024	0.014–0.026
	3	80	–	110	IPR	0.014–0.026	0.016–0.031	0.020–0.035
	4	80	–	110	IPR	0.014–0.026	0.016–0.031	0.020–0.035



■ Series 050280 • Uncoated • Carbide-Tipped • Straight Flute • Grade K10F™ • Metric

Material Group								
	Cutting Speed – vc Range – m/min			Recommended Feed Rate per Rev				
	min		max	Tool Diameter	12,70–15,00	15,00–20,00	20,00–32,00	
P	1	50	–	70	mm/r	0,50–0,90	0,60–1,05	0,60–1,20
	2	40	–	60	mm/r	0,50–0,90	0,60–1,05	0,60–1,20
	3	40	–	60	mm/r	0,50–0,90	0,60–1,05	0,60–1,20
	4	30	–	40	mm/r	0,50–0,90	0,60–1,05	0,60–1,20
	5	20	–	30	mm/r	0,50–0,90	0,60–1,05	0,60–1,20
	6	10	–	20	mm/r	0,35–0,65	0,40–0,80	0,50–0,90
M	1	10	–	20	mm/r	0,35–0,65	0,40–0,80	0,50–0,90
	2	10	–	20	mm/r	0,35–0,65	0,40–0,80	0,50–0,90
	3	10	–	20	mm/r	0,35–0,65	0,40–0,80	0,50–0,90
K	1	30	–	50	mm/r	0,60–1,20	0,70–1,30	0,80–1,40
	2	30	–	50	mm/r	0,60–1,20	0,70–1,30	0,80–1,40
	3	30	–	40	mm/r	0,60–1,20	0,70–1,30	0,80–1,40
N	1	130	–	150	mm/r	0,60–1,20	0,70–1,30	0,80–1,40
	2	140	–	160	mm/r	0,60–1,20	0,70–1,30	0,80–1,40
	3	140	–	160	mm/r	0,60–1,20	0,70–1,30	0,80–1,40
	4	130	–	150	mm/r	0,60–1,20	0,70–1,30	0,80–1,40
	5	120	–	140	mm/r	0,60–1,20	0,70–1,30	0,80–1,40
	6	150	–	170	mm/r	0,60–1,20	0,70–1,30	0,80–1,40
S	1	10	–	20	mm/r	0,30–0,50	0,30–0,60	0,35–0,65
	2	10	–	20	mm/r	0,30–0,50	0,30–0,60	0,35–0,65
	3	30	–	40	mm/r	0,35–0,65	0,40–0,80	0,50–0,90
	4	30	–	40	mm/r	0,35–0,65	0,40–0,80	0,50–0,90

■ Series 450280 • Coated • Carbide-Tipped • Straight Flute • Grade K10F-DCFD™ • Inch




Material Group		Cutting Speed – vc Range – SFM		Recommended Feed Rate per Rev				
		min	max	Tool Diameter	0.5–0.590	0.590–0.787	0.787–1.181	
								
P	1	360	–	420	IPR	0.020–0.035	0.024–0.041	0.024–0.043
	2	340	–	410	IPR	0.020–0.035	0.024–0.041	0.024–0.043
	3	310	–	380	IPR	0.020–0.035	0.024–0.041	0.024–0.043
	4	200	–	260	IPR	0.020–0.035	0.024–0.041	0.024–0.043
	5	100	–	160	IPR	0.020–0.035	0.024–0.041	0.024–0.043
	6	100	–	130	IPR	0.014–0.026	0.016–0.031	0.020–0.035
M	1	100	–	130	IPR	0.014–0.026	0.016–0.031	0.020–0.035
	2	100	–	130	IPR	0.014–0.026	0.016–0.031	0.020–0.035
	3	70	–	100	IPR	0.014–0.026	0.016–0.031	0.020–0.035
K	1	250	–	310	IPR	0.024–0.047	0.028–0.051	0.031–0.055
	2	250	–	310	IPR	0.024–0.047	0.028–0.051	0.031–0.055
	3	230	–	290	IPR	0.024–0.047	0.028–0.051	0.031–0.055
S	1	100	–	130	IPR	0.012–0.020	0.012–0.024	0.014–0.026
	2	70	–	100	IPR	0.012–0.020	0.012–0.024	0.014–0.026

■ Series 450280 • Coated • Carbide-Tipped • Straight Flute • Grade K10F-DCFD™ • Metric




Material Group		Cutting Speed – vc Range – m/min		Recommended Feed Rate per Rev				
		min	max	Tool Diameter	12,70–15,00	15,00–20,00	20,00–32,00	
								
P	1	110	–	130	mm/r	0,50–0,90	0,60–1,05	0,60–1,10
	2	110	–	130	mm/r	0,50–0,90	0,60–1,05	0,60–1,10
	3	100	–	120	mm/r	0,50–0,90	0,60–1,05	0,60–1,10
	4	60	–	80	mm/r	0,50–0,90	0,60–1,05	0,60–1,10
	5	30	–	50	mm/r	0,50–0,90	0,60–1,05	0,60–1,10
	6	30	–	40	mm/r	0,35–0,65	0,40–0,80	0,50–0,90
M	1	30	–	40	mm/r	0,35–0,65	0,40–0,80	0,50–0,90
	2	30	–	40	mm/r	0,35–0,65	0,40–0,80	0,50–0,90
	3	20	–	30	mm/r	0,35–0,65	0,40–0,80	0,50–0,90
K	1	80	–	100	mm/r	0,60–1,20	0,70–1,30	0,80–1,40
	2	80	–	100	mm/r	0,60–1,20	0,70–1,30	0,80–1,40
	3	70	–	90	mm/r	0,60–1,20	0,70–1,30	0,80–1,40
S	1	30	–	40	mm/r	0,30–0,50	0,30–0,60	0,35–0,65
	2	20	–	30	mm/r	0,30–0,50	0,30–0,60	0,35–0,65

Hole Finishing

■ Series 456680 • Cermet-Tipped • Straight Flute • Grade CERMET-DCFD™ • Inch

Material Group		Cutting Speed – vc Range – SFM			Recommended Feed Rate per Rev		
		min		max	Tool Diameter	0.5–0.590	0.590–0.787
							
P	1	360	–	420	IPR	0.020–0.035	0.024–0.041
	2	340	–	410	IPR	0.020–0.035	0.024–0.041
	3	310	–	380	IPR	0.020–0.035	0.024–0.041
	4	200	–	260	IPR	0.020–0.035	0.024–0.041
	5	100	–	160	IPR	0.020–0.035	0.024–0.041
	6	100	–	130	IPR	0.014–0.026	0.016–0.031

■ Series 456680 • Cermet-Tipped • Straight Flute • Grade CERMET-DCFD™ • Metric

Material Group		Cutting Speed – vc Range – m/min			Recommended Feed Rate per Rev		
		min		max	Tool Diameter	12,70–15,00	15,00–20,00
							
P	1	110	–	130	mm/r	0,50–0,90	0,60–1,05
	2	110	–	130	mm/r	0,50–0,90	0,60–1,05
	3	100	–	120	mm/r	0,50–0,90	0,60–1,05
	4	60	–	80	mm/r	0,50–0,90	0,60–1,05
	5	30	–	50	mm/r	0,50–0,90	0,60–1,05
	6	30	–	40	mm/r	0,35–0,65	0,40–0,80

WIDIA™ TRM •

Top Ream Modular (Available as Semi-Standards)



WIDIA TRM

Primary Application

- Achieve solid carbide metal removal rates.
- Five sizes of standard straight shank bodies available to couple reaming heads from .787–1.653" (20–42mm).

Features and Benefits

- High-speed and high-performance ready.
- Unique proprietary coupling system enables same runout accuracy as monoblock systems (<3 microns).
- Comfortable radial clamping for quick exchanging even in narrow situations in the machine.
- No fixture for clamping or dismounting necessary.

Customization

- Heads fully customizable as simple specials with different lead geometries, grades, coatings, and edge hones.
- Semi-finished heads on stock for shorter lead times.

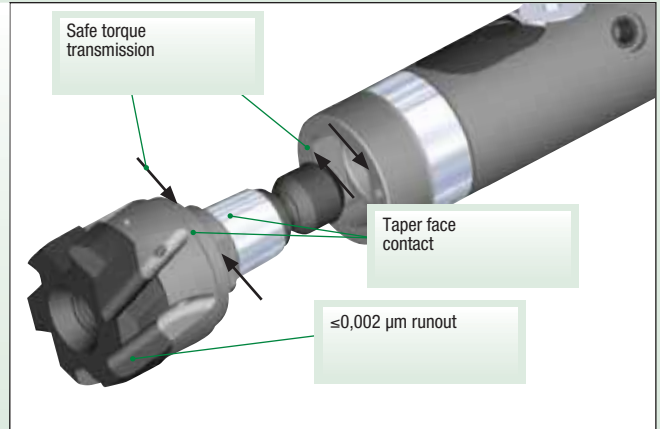
Ordering Process

- Please contact your local Authorized Distributor for a quote.

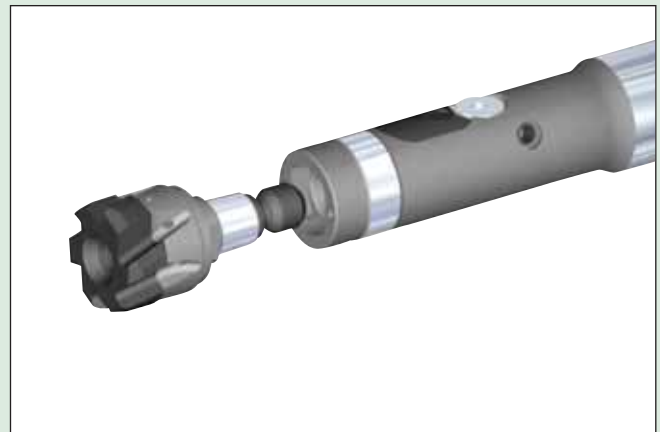
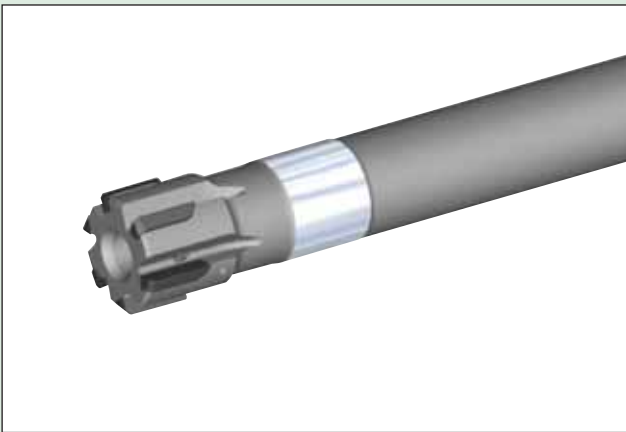


WST™ — WIDIA™ Short Taper

- Easy to handle.
- Fewer vibrations due to safe torque transmission.
- No head-to-body orientation adjustment necessary.
- Higher hole quality due to minimal runout and taper face contact.
- Easy to disassemble due to push out effect of head.



Special Design — Top Ream Tipped Tools



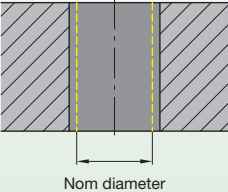
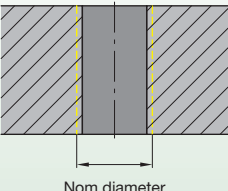
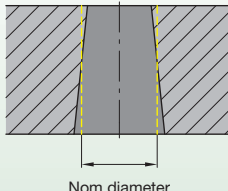
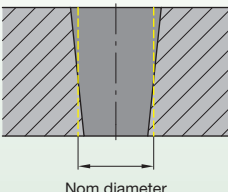
Regular Tipped

- 4–8 brazing joints depending on diameter (number of teeth).
- Less stiffness.
- More vibrations.
- Higher runout after thermal influence (e.g., coating, reconditioning, etc.).

WIDIA Top Ream

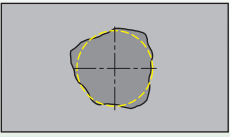
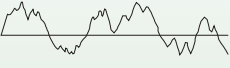
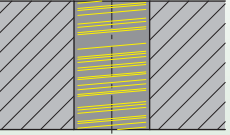
- Min 4x reconditionable.
- New reaming grade WU05PR™ holds bore surface finish more than 2x longer.
- Stronger brazing joint than conventional tipped reamers.
- Less influence of coating process on runout.

Reamer Troubleshooting

Problem	Cause	Possible Remedy
<p>Hole diameter too large</p>  <p>Nom diameter</p>	<ol style="list-style-type: none"> 1. Reaming tool running out of center. 2. Concentricity of pilot hole and ream machining unsatisfactory. 3. Built-up edge. 4. Unsuitable cooling lubricant. 5. Reaming tool diameter too large. 	<ul style="list-style-type: none"> • Use equalizing adapter. • Re-align, use floating head. • Change cooling lubricant. • Change cutting speed. • Measure reamers and send for repairs.
<p>Hole diameter too small</p>  <p>Nom diameter</p>	<ol style="list-style-type: none"> 1. Reamer worn. 2. Unsuitable cooling lubricant. 3. Reaming allowance too small. 	<ul style="list-style-type: none"> • Replace and refit tool. • Change cooling lubricant. • Increase reaming allowance.
<p>Conical hole profile wider towards drill runout</p>  <p>Nom diameter</p>	<ol style="list-style-type: none"> 1. Concentricity of pilot hole and reaming unsatisfactory. 2. Positioning accuracy of pilot hole to reaming. 	<ul style="list-style-type: none"> • Re-align, use equalizing adapter. • Correct positioning accuracy.
<p>Conical hole profile wider at drill entry point</p>  <p>Nom diameter</p>	<ol style="list-style-type: none"> 1. Concentricity of pilot hole and reaming unsatisfactory. 2. Reaming tool skim cutting with ledger. 	<ul style="list-style-type: none"> • Re-align, use floating head. • Securely clamp reaming tool axially.

(continued)

Reamer Troubleshooting *(continued)*

Problem	Cause	Possible Remedy
<p>Conical hole profile wider at drill entry point</p> 	<ol style="list-style-type: none"> 1. Reaming tool running out of center. 2. Slanted cutting surface/ asymmetrical cutting. 3. Workpiece twisted. 	<ul style="list-style-type: none"> • Use equalizing adapter. • Spot face as drilling preparation. • Take the direction of impact into account when clamping the workpiece.
<p>Surface quality does not meet specification</p> 	<ol style="list-style-type: none"> 1. Tool cutters worn. 2. Reaming tool running out of center. 3. Incorrect technology data (cutting parameters). 4. Inadequate chip evacuation. 	<ul style="list-style-type: none"> • Use equalizing adapter. • Re-align, use floating head. • Change cooling lubricant. • Change cutting speed. • Measure reamers and send for repairs.
<p>Feed grooves</p> 	<ol style="list-style-type: none"> 1. Built-up edge. 	<ul style="list-style-type: none"> • Change cooling lubricant. • Change cutting speed.

Precision Hole Finishing •
ROTAFLEX™

ROTAFLEX



The WIDIA™ line of Precision Hole Finishing ensures decreased vibration, increased productivity, and reduced calls for scheduled maintenance. You can count on consistent hole diameters, high speed and feed rates, and good surface quality at a great price.

- Easy adjustments and low initial investment.
- Roughing and precision finishing heads available.
- For roughing and fine finishing operations over a broad diameter range.

The newly developed RFX coupling eases assembly and disassembly and enhances stability

- Increased machine tool productivity and less vibration.
- Standard micro-adjustable cartridges for fine finishing operations.
- Internal coolant and spacious chip flutes.



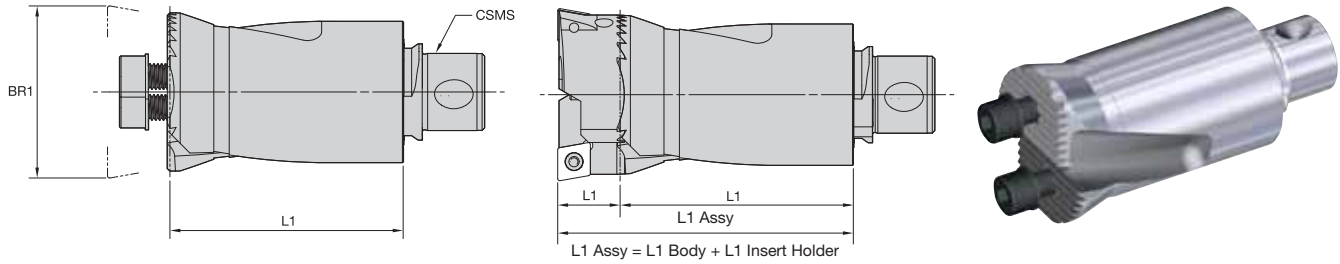
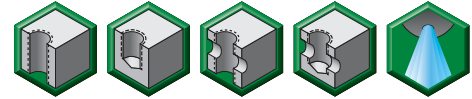
EXTREME **CHALLENGES.** EXTREME **RESULTS.**

Advanced system uses the progressive RFX coupling and the latest technology WIDIA™ Victory™ ISO turning inserts

- High feed rates due to the proprietary front serration of the TCHS twin cutters.
- Internal coolant and spacious chip flutes ensure secure chip evacuation.
- High-precision adjustment of FBH and FBHBB Fine-Boring Heads with the axial and radial pre-loaded eccentric bushing instead of a threaded spindle.
- Higher rigidity with the new RFX bayonet-type coupling.
- Achieve unmatched tool life with WIDIA Victory grades.

WIDIA 



- Basic body shipped without insert holders.
- Order insert holder, slides, or micro-adjustable cartridges separately.



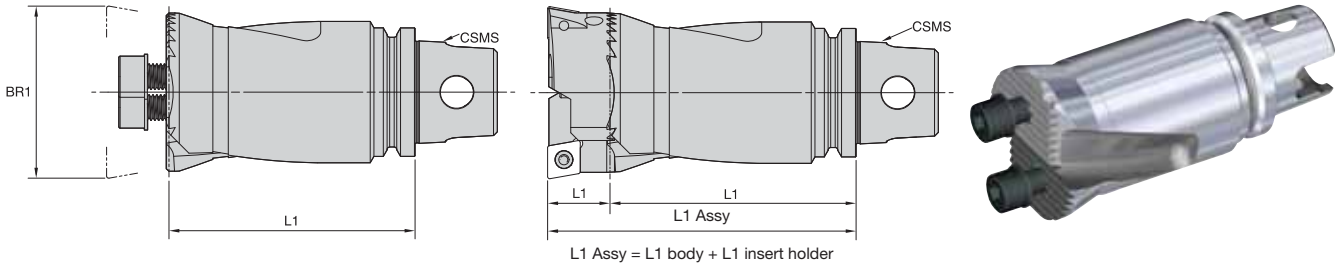
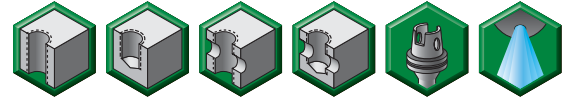
■ TCHS • RFX Shank Series

order number	catalog number	BR1 bore range		L1		CSMS system size	kg	lbs
		mm	in	mm	in			
3861179	RFX185TCHS022030	22,500-30,000	0.8858-1.1811	27,7	1.089	RFX185	0,20	.40
3861180	RFX245TCHS030039	30,000-39,000	1.1811-1.5354	37,7	1.482	RFX245	0,20	.40
3861181	RFX320TCHS039050	39,000-50,000	1.5354-1.9685	48,7	1.917	RFX320	0,50	1.10
3861182	RFX420TCHS050067	50,000-67,000	1.9685-2.6378	68,2	2.685	RFX420	1,00	2.20
3861183	RFX550TCHS067088	67,000-88,000	2.6378-3.4646	90,7	3.571	RFX550	2,00	4.40
3861184	RFX720TCHS088115	88,000-115,000	3.4646-4.5276	113,7	4.476	RFX720	4,00	8.80

■ Spare Parts

catalog number	 fixing screw	 disc washer
RFX185TCHS022030	12147602700	12147600100
RFX245TCHS030039	12147602300	12147603900
RFX320TCHS039050	12147602400	12147600200
RFX420TCHS050067	12147602500	12147604000
RFX550TCHS067088	12147602600	12147600300
RFX720TCHS088115	12147602800	12147600400

- Basic body shipped without insert holders.
- Order insert holder, slides, or micro-adjustable cartridges separately.



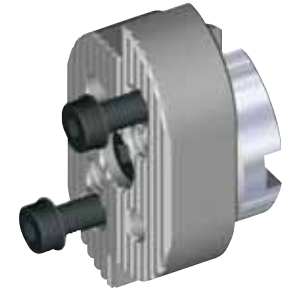
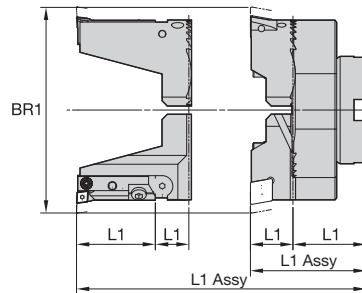
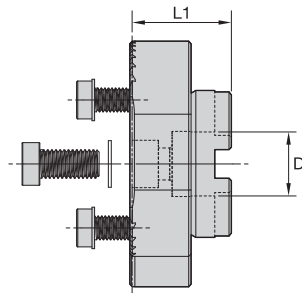
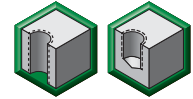
■ TCHS • KM-TS™ Shank Series

order number	catalog number	BR1 bore range		L1		CSMS system size	kg	lbs
		mm	in	mm	in			
3861149	KM32TSTCHS022030	22,000-30,000	0.8661-1.1811	52,7	2.073	KM32TS	0,30	.70
3861150	KM32TSTCHS030039	30,000-39,000	1.1811-1.5354	67,7	2.663	KM32TS	0,50	1.10
3861151	KM32TSTCHS039050	39,000-50,000	1.5354-1.9685	63,7	2.508	KM32TS	0,70	1.50
3861152	KM40TSTCHS030039	30,000-39,000	1.1811-1.5354	87,7	3.451	KM40TS	0,60	1.30
3861173	KM40TSTCHS039050	39,000-50,000	1.5354-1.9685	83,7	3.295	KM40TS	1,00	2.20
3861174	KM40TSTCHS050067	50,000-67,000	1.9685-2.6378	78,2	3.079	KM40TS	1,10	2.40
3861175	KM50TSTCHS050067	50,000-67,000	1.9685-2.6378	88,2	3.472	KM50TS	1,20	2.60
3861176	KM50TSTCHS067088	67,000-88,000	2.6378-3.4646	95,7	3.768	KM50TS	1,40	3.10
3861177	KM63TSTCHS067088	67,000-88,000	2.6378-3.4646	95,7	3.768	KM63TS	1,80	4.00
3861178	KM63TSTCHS088115	88,000-115,000	3.4646-4.5276	93,7	3.689	KM63TS	2,40	5.30

■ Spare Parts

catalog number	fixing screw	disc washer
KM32TSTCHS022030	12147602700	12147600100
KM32TSTCHS030039	12147602300	12147603900
KM32TSTCHS039050	12147602400	12147600200
KM40TSTCHS030039	12147602300	12147603900
KM40TSTCHS039050	12147602400	12147600200
KM40TSTCHS050067	12147602500	12147604000
KM50TSTCHS050067	12147602500	12147604000
KM50TSTCHS067088	12147602600	12147600300
KM63TSTCHS067088	12147602600	12147600300
KM63TSTCHS088115	12147602800	12147600400

- For use with shell mill adapters; please order separately.
- Bridge body shipped without insert holder, slides, or micro-adjustable cartridges.
- Order insert holder separately for rough boring and slides for fine boring.
- Order micro-adjustable cartridges separately for fine boring.



L1 Assy = L1 bridge + L1 insert holder
 L1 Assy = L1 bridge + L1 slide + L1 cartridge

■ Bridge Tool • Small

order number	catalog number	BR1 bore range		D		L1		kg	lbs
		mm	in	mm	in	mm	in		
2006019	12600208800	87,000-110,000	3.4252-4.3307	27,0	1.063	40,3	1.587	1,70	3.7
2005500	12600210900	109,000-133,000	4.2913-5.2362	27,0	1.063	40,3	1.587	1,90	4.2
2005553	12600213200	132,000-156,000	5.1969-6.1417	27,0	1.063	40,3	1.587	2,10	4.6
2005556	12600215500	155,000-179,000	6.1024-7.0472	27,0	1.063	40,3	1.587	2,30	5.1
2005560	12600217800	178,000-202,000	7.0079-7.9528	27,0	1.063	40,3	1.587	2,50	5.5

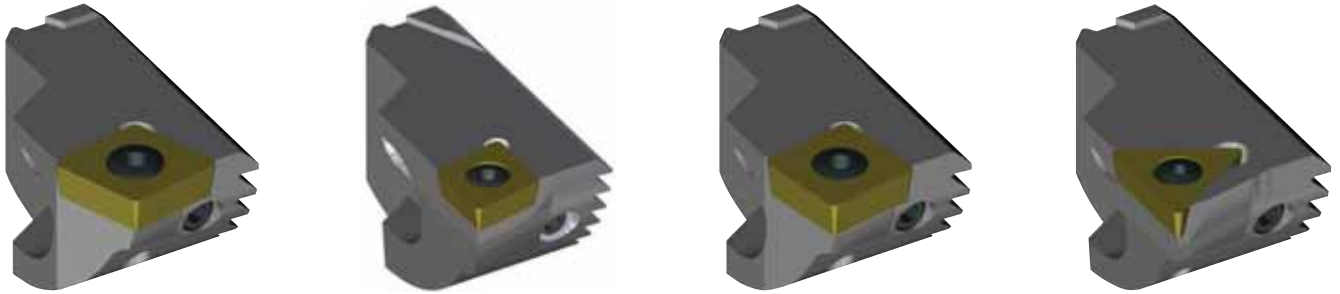
NOTE: Use of ISO cartridges SCLCL12CA12, STGCL12CA16, or SSRCL12CA12 are recommended.

■ Spare Parts

catalog number	fixing screw	fixing screw	fixing screw	disc washer	disc washer
12600208800	—	12346233000	12147519100	12147600300	—
12600210900	12147613500	—	12147519100	12147600300	12147740200
12600213200	12147613500	—	12147519100	12147600300	12147740200
12600215500	12147613500	—	12147519100	12147600300	12147740200
12600217800	12147613500	—	12147519100	12147600300	12147740200

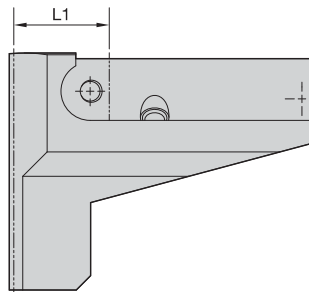
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■ **Insert Holder Reference Chart**

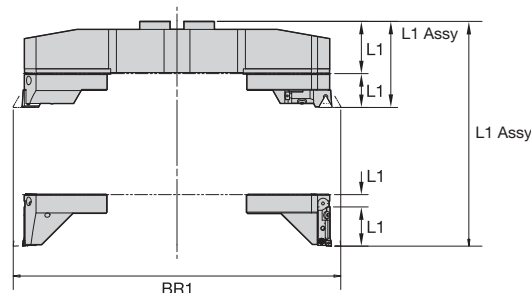
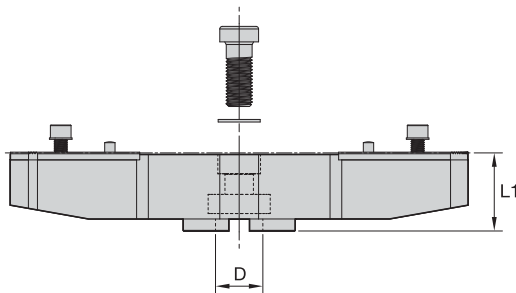
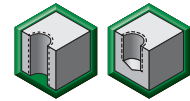
C-Style 70°	C-Style 90°	S-Style 80°	T-Style 90°
12625906700	12625706700	12626006700	12625806800



■ **Slide for Micro-Adjustable Cartridges**

order number	catalog number	L1		adjusting screw	fixing screw	hex wrench
		mm	in			
3864647	SMAC087	19,2	.8	12147665000	12147519100	12148041100

- For use with shell mill adapters; please order separately.
- Bridge body shipped without ISO cartridges, slides, or micro-adjustable cartridges.
- Order ISO cartridges separately for rough boring.
- Order micro-adjustable cartridges separately for fine boring.



L1 Assy = L1 Bridge + L1 Insert Holder
L1 Assy = L1 Bridge + L1 Slide + L1 Cartridge

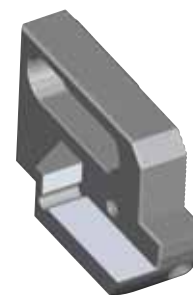
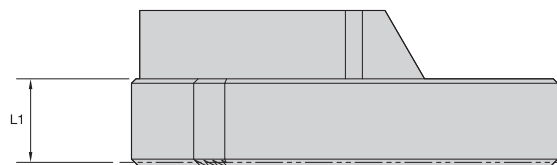
■ Bridge Tool • Large

order number	catalog number	BR1 bore range		D		L1		kg	lbs
		mm	in	mm	in	mm	in		
2005574	12600020000	200,000-280,000	7.8740-11.0236	40,0	1.575	50,6	1.992	2,0	4.40
2005602	12600027800	278,000-360,000	10.9449-14.1732	40,0	1.575	50,6	1.992	2,8	6.20
2005656	12600035800	358,000-440,000	14.0945-17.3228	40,0	1.575	61,6	2.425	2,5	5.50
2005722	12600043800	438,000-520,000	17.2441-20.4724	40,0	1.575	61,6	2.425	3,5	7.70

NOTE: Use of ISO cartridges SCLCL12CA12, STGCL12CA16, or SSRCL12CA12 is recommended.

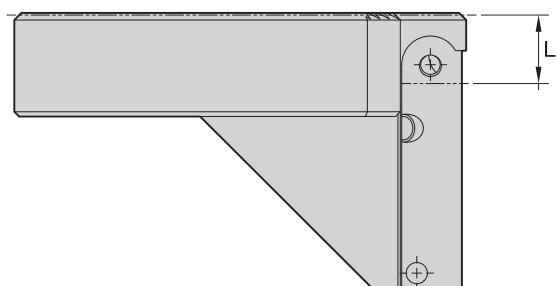
■ Spare Parts

catalog number	fixing screw	fixing screw	disc washer	hex wrench
12600020000	12147739900	12147625400	12147600300	12147666700
12600027800	12147739900	12147625400	12147600300	12147666700
12600035800	12147739900	12147625400	12147600300	12147666700
12600043800	12147739900	12147625400	12147600300	12147666700



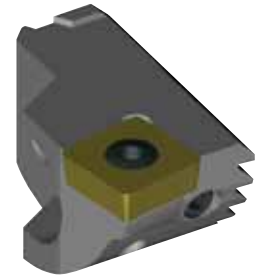
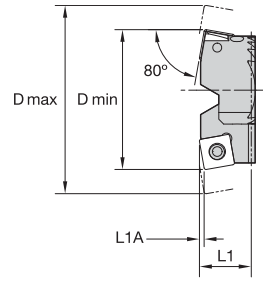
■ Slide for ISO Cartridges

order number	catalog number	L1		fixing screw	adjusting screw	hex wrench	hex wrench
		mm	in				
2005576	12614020100	19,4	.764	12147625200	12147739800	12148041300	12148041200



■ Slide for Micro-Adjustable Cartridges

order number	catalog number	L1		fixing screw	adjusting screw	hex wrench
		mm	in			
3860905	SMAC200	13,9	.547	12147519100	12147739800	12148041200



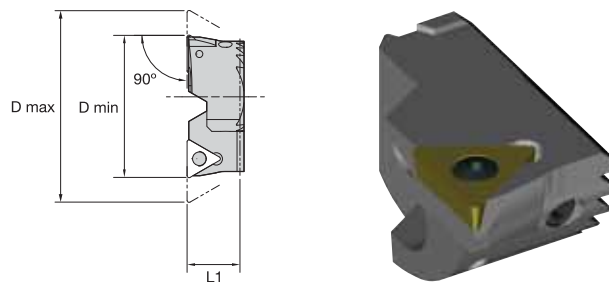
■ 80° Lead Insert Holder • S-Style

order number	catalog number	D min		D max		L1		L1A		gage insert
		mm	in	mm	in	mm	in	mm	in	
2005620	12626003000	30,00	1.181	39,00	1.535	12,4	.486	1,30	.051	SP..0703..
2005676	12626004000	39,00	1.535	50,00	1.969	16,3	.642	1,50	.059	SC../SP..09T3..
2005814	12626005000	50,00	1.969	67,00	2.638	21,8	.858	2,10	.083	SC../SP..1204..
2005941	12626006700	67,00	2.638	88,00	3.465	24,3	.957	2,10	.083	SC../SP..1204..

NOTE: Order two for a complete set.

■ Spare Parts

catalog number							
				Nm	ft. lbs.		
12626003000	12148067200	12148069600	—	1,0	.74	12148086600	12148040900
12626004000	12148038800	12148069600	—	3,0	2.20	12148082400	12148040900
12626005000	12148007200	12147602200	—	3,5	2.58	12148099400	12148041000
12626006700	12148007200	—	12147665000	3,5	2.58	12148099400	12148041100





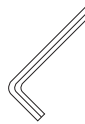


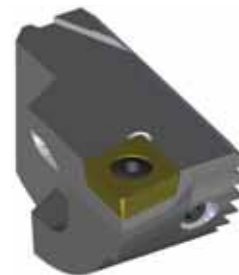
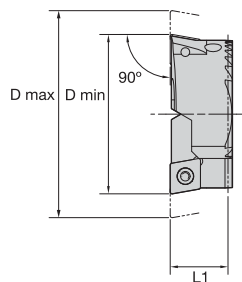
■ 90° Lead Insert Holder • T-Style

order number	catalog number	D min		D max		L1		gage insert
		mm	in	mm	in	mm	in	
2005674	12625804000	39,00	1.535	50,00	1.969	16,3	.642	TC../TP..1102..
2005802	12625805100	50,00	1.969	67,00	2.638	21,8	.858	TC../TP..16T3..
2005939	12625806800	67,00	2.638	88,00	3.465	24,3	.957	TC../TP..16T3..

NOTE: Order two for a complete set.

■ Spare Parts

catalog number	 clamping screw	 adjusting screw	 adjusting screw	Nm	ft. lbs.	 Torx wrench	 hex wrench
12625804000	12148068700	12148069600	—	1,0	.74	12148086600	12148040900
12625805100	12148038800	12147602200	—	3,0	2.21	12148099400	12148041000
12625806800	12148038800	—	12147665000	3,5	2.58	12148099400	12148041100



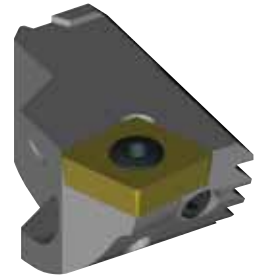
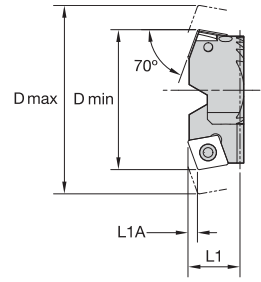
■ 90° Lead Insert Holder • C-Style

order number	catalog number	D min		D max		L1		gage insert
		mm	in	mm	in	mm	in	
2005580	12625702200	22,50	.886	30,00	1.181	12,1	.474	CC../CP..0602..
2005618	12625703000	30,00	1.181	39,00	1.535	12,4	.486	CC../CP..0602..
2005673	12625704000	39,00	1.535	50,00	1.969	16,3	.642	CC../CP..09T3..
2005801	12625705000	50,00	1.969	67,00	2.638	21,8	.858	CC../CP..1204..
2005938	12625706700	67,00	2.638	88,00	3.465	24,3	.957	CC../CP..1204..
2006041	12625708986	88,00	3.465	115,00	4.528	36,3	1.429	CC../CP..1204..

NOTE: Order two for a complete set.

■ Spare Parts

catalog number	clamping screw	adjusting screw	adjusting screw			Torx wrench	hex wrench
				Nm	ft. lbs.		
12625702200	12148086600	12147579300	—	1,0	.74	12148086600	12148046000
12625703000	12148086600	12148069600	—	1,0	.74	12148086600	12148040900
12625704000	12148082400	12148069600	—	3,0	2.21	12148082400	12148040900
12625705000	12148099400	12147602200	—	3,5	2.58	12148099400	12148041000
12625706700	12148099400	—	12147665000	3,5	2.58	12148099400	12148041100
12625708900	12148099400	12148541600	—	3,5	2.58	12148099400	12148041100








■ 70° Lead Insert Holder • C-Style

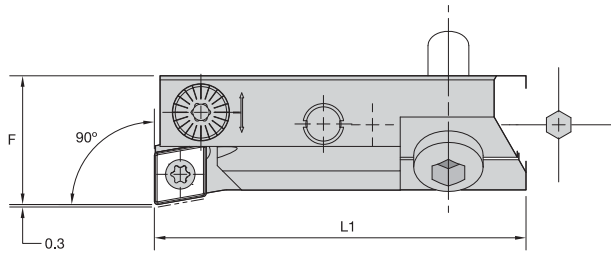
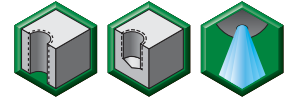
order number	catalog number	D min		D max		L1		L1A		gage insert
		mm	in	mm	in	mm	in	mm	in	
2005581	12625902200	22,50	.886	30,00	1.181	12,4	.486	1,60	.063	CC../CP..0602..
2005619	12625903000	30,00	1.181	39,00	1.535	12,4	.486	1,60	.063	CC../CP..0602..
2005675	12625904000	39,00	1.535	50,00	1.969	16,3	.642	2,30	.091	CC../CP..09T3..
2005813	12625905000	50,00	1.969	67,00	2.638	21,8	.858	3,10	.122	CC../CP..1204..
2005940	12625906700	67,00	2.638	88,00	3.465	24,3	.957	3,10	.122	CC../CP..1204..
2006054	12625908986	88,00	3.465	115,00	4.528	36,3	1.429	3,10	.122	CC../CP..1204..

NOTE: Order two for a complete set.

■ Spare Parts

catalog number	 clamping screw	 adjusting screw	 adjusting screw			 Torx wrench	 hex wrench
				Nm	ft. lbs.		
12625902200	12148086600	12147579300	—	1,0	.74	12148086600	12148046000
12625903000	12148086600	12148069600	—	1,0	.74	12148086600	12148040900
12625904000	12148082400	12148069600	—	3,0	2.21	12148082400	12148040900
12625905000	12148099400	12147602200	—	3,5	2.58	12148099400	12148041000
12625906700	12148099400	—	12147665000	3,5	2.58	12148099400	12148041100
12625908900	12148099400	12147602200	—	3,5	2.58	12148099400	12148041100

- All cartridges have internal coolant supply directed to the cutting edge.
- .0004" (0,01mm) diameter adjustment within a range of .0118" (0,3mm).
- Radial adjustment without influence on axial position.
- Axial adjustment range of .039" (1mm).

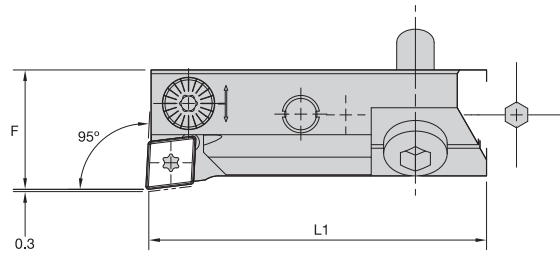
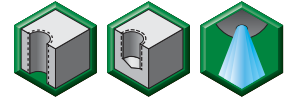


■ 90° Lead Micro-Adjustable Cartridge • C-Style

order number	catalog number	F		L1		gage insert	insert clamping screw	Torx wrench	Nm	ft. lbs.
		mm	in	mm	in					
3860908	MASCFCR09CA06F	16,00	.630	45,50	1.791	CC..0602..	12148068700	12148086600	1,0	.74



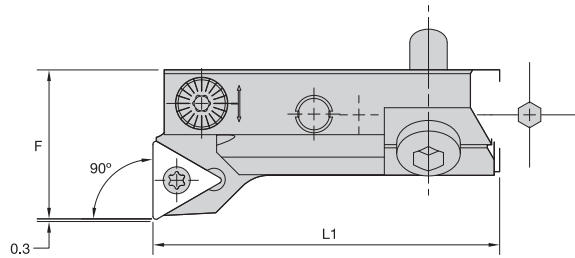
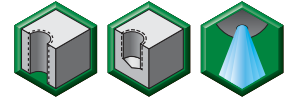
- All cartridges have internal coolant supply directed to the cutting edge.
- .0004" (0,01mm) diameter adjustment within a range of .0118" (0,3mm).
- Radial adjustment without influence on axial position.
- Axial adjustment range of .039" (1mm).



■ 95° Lead Micro-Adjustable Cartridge • C-Style

order number	catalog number	F		L1		gage insert	insert clamping screw	Torx wrench	Nm	ft. lbs.
		mm	in	mm	in					
3860909	MASCLCR09CA06F	16,00	.630	45,50	1.791	CC..0602..	12148068700	12148086600	1,0	.74

- All cartridges have internal coolant supply directed to the cutting edge.
- .0004" (0,01mm) diameter adjustment within a range of .0118" (0,3mm).
- Radial adjustment without influence on axial position.
- Axial adjustment range of .039" (1mm).

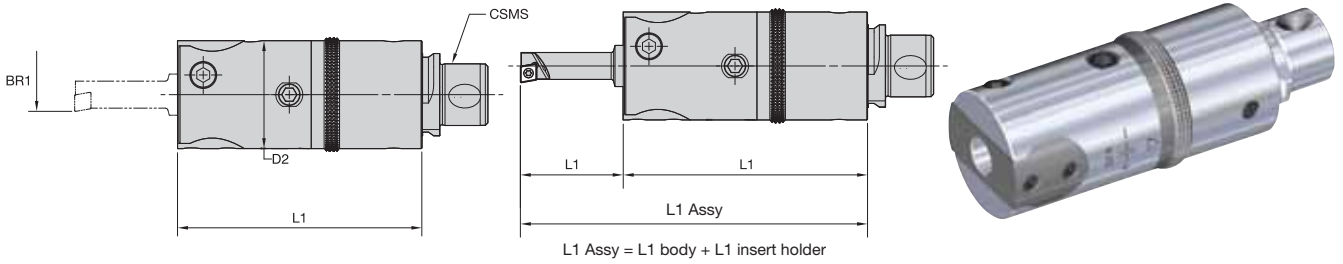
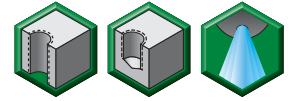


■ 90° Lead Micro-Adjustable Cartridge • T-Style

order number	catalog number	F		L1		gage insert	insert clamping screw	Torx wrench	Nm	ft. lbs.
		mm	in	mm	in					
3860910	MASTFCR09CA11F	20,00	.787	45,50	1.791	TC..1102..	12148068700	12148086600	1,0	.74






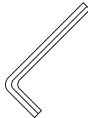
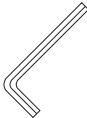
- .0004" (0,01mm) diameter adjustment.
- Basic body shipped without boring bars.



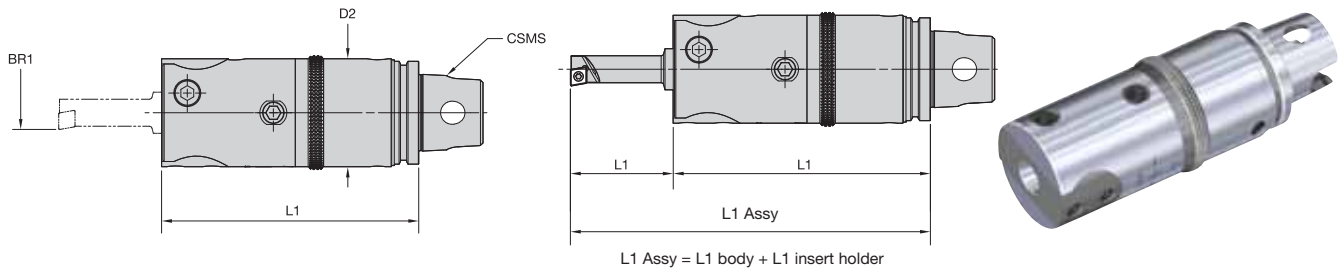
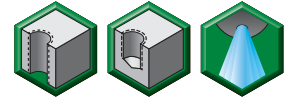
■ **FBHBB • RFX Series Shank**

order number	catalog number	BR1 bore range		D2		L1		CSMS system size	kg	lbs
		mm	in	mm	in	mm	in			
3860906	RFX420FBHBB006022	6,000-22,000	0.2362-0.8661	42,00	1.654	95,00	3.740	RFX420	1,10	2.40

■ **Spare Parts**

catalog number					
	front clamping screw 1	front clamping screw 2	adjustment locking screw	hex wrench	hex wrench
RFX420FBHBB006022	12148068700	12148042400	12147680500	12148041100	12148041300

- .0004" (0,01mm) diameter adjustment.
- Basic body shipped without boring bars.



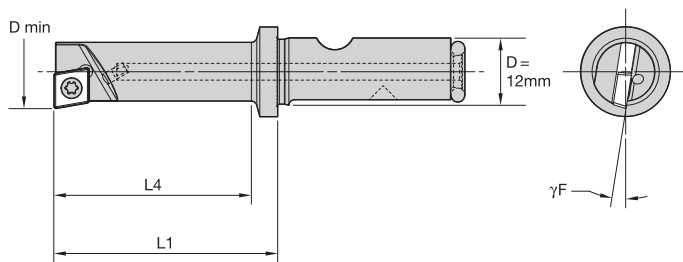
■ FBHBB KM-TS™ Series Shank

order number	catalog number	BR1 bore range		D2		L1		CSMS system size	kg	lbs
		mm	in	mm	in	mm	in			
3860907	KM40TSFBHBB006022	6,000-22,000	0.2362-0.8661	42,00	1.654	105,00	4.134	KM40TS	1,10	2.40

■ Spare Parts

catalog number	front clamping screw 1	front clamping screw 2	adjustment locking screw	hex wrench	hex wrench
KM40TSFBHBB006022	12147617400	12148042400	12147680500	12148041100	12148041300

- All boring bars have internal coolant supply directed to the cutting edge.



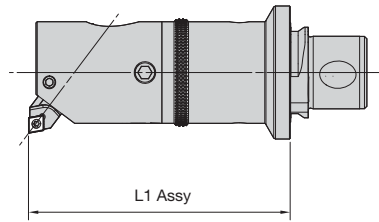
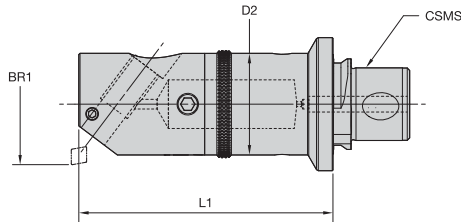
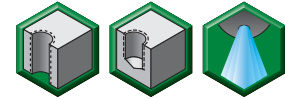
■ Boring Bars for Precision Fine Boring Heads (FBHBB)

order number	catalog number	D min		D max		L1		L4		γF°	kg	lbs
		mm	in	mm	in	mm	in	mm	in			
2005954	12627006200	6,00	.236	8,00	.315	30,00	1.181	24,00	.945	-5.0°	0,1	.22
2006015	12627008200	8,00	.315	10,00	.394	30,00	1.181	25,00	.984	-3.0°	0,1	.22
2005499	12627010200	10,00	.394	13,00	.512	35,00	1.378	30,00	1.181	-11.0°	0,1	.22
2005542	12627013200	13,00	.512	16,00	.630	40,00	1.575	35,00	1.378	-9.0°	0,1	.22
2005558	12627016200	16,00	.630	19,00	.748	45,00	1.772	40,00	1.575	-6.0°	0,1	.22
2005573	12627019300	19,00	.748	22,00	.866	55,00	2.165	55,00	2.165	-6.0°	0,2	.44

■ Spare Parts

catalog number	gage insert	clamping screw	Torx wrench	Nm
12627006200	CP..04T1..	12148005800	12148005900	0,3
12627008200	CP..04T1..	12148005800	12148005900	0,3
12627010200	CC../CP..0602..	12148068700	12148086600	1,0
12627013200	CC../CP..0602..	12148068700	12148086600	1,0
12627016200	CC../CP..0602..	12148068700	12148086600	1,0
12627019300	CC../CP..0602..	12148068700	12148086600	1,0

- .0004" (0,01mm) diameter adjustment.
- Basic body shipped without boring bars.



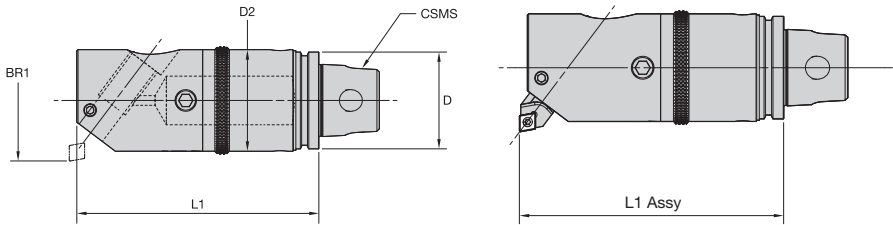
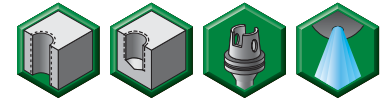
■ FBH • RFX Series Shank

order number	catalog number	BR1 bore range		D2		L1		L1 Assy		CSMS system size	kg	lbs
		mm	in	mm	in	mm	in	mm	in			
3861143	RFX185FBH022029	22,000-29,000	0.8661-1.1417	18,50	.728	55,00	2.165	56,00	2.200	RFX185	0,20	.40
3861144	RFX245FBH029038	29,000-38,000	1.1417-1.4961	24,50	.965	60,00	2.362	62,00	2.440	RFX245	0,20	.40
3861145	RFX320FBH038050	38,000-50,000	1.4961-1.9385	32,00	1.260	75,00	2.953	77,00	3.030	RFX320	0,50	1.10
3861146	RFX420FBH050065	50,000-65,000	1.9685-2.5591	42,00	1.654	95,00	3.740	98,00	3.860	RFX420	1,10	2.40
3861147	RFX550FBH065088	65,000-88,000	2.5591-3.4646	55,00	2.165	115,00	4.528	120,00	4.720	RFX550	2,10	4.60
3861148	RFX720FBH088115	88,000-115,000	3.4646-4.5276	72,00	2.835	155,00	6.102	160,00	6.300	RFX720	4,90	10.80

■ Spare Parts

catalog number	adjusting screw	adjustment locking screw	fixing screw	wedge	hex wrench	hex wrench
RFX185FBH022029	12147620000	12147680200	12346292100	12147621100	12148041100	12148040900
RFX245FBH029038	12147620000	12147680300	12346292200	12147621200	12148041100	12148040900
RFX320FBH038050	12147620300	12147680400	12147622300	12147621300	12148041200	12148041000
RFX420FBH050065	12147620400	12147680500	12148575900	12147621400	12148041300	12148041100
RFX550FBH065088	12147620500	12147680600	12148087100	12147621500	12148041400	12148041100
RFX720FBH088115	12147620600	12147680700	12148087100	12147621600	12148079000	—

- .0004" (0,01mm) diameter adjustment.
- Basic body shipped without boring bars.

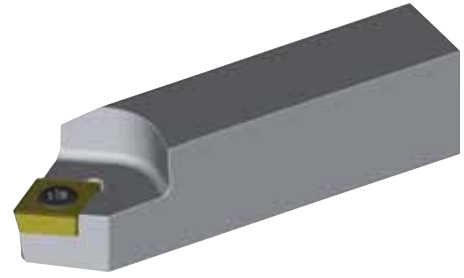
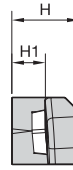
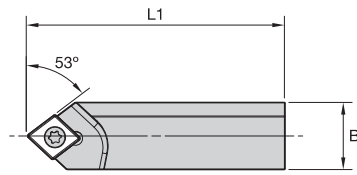


■ FBH • KM™ Series Shank

order number	catalog number	BR1 bore range		D2		L1		L1 Assy		CSMS system size	kg	lbs
		mm	in	mm	in	mm	in	mm	in			
3861123	KM32TSFBH022029	22,000-29,000	0.8661-1.1417	18,50	.728	60,00	2.362	62,00	2.440	KM32TS	0,20	.40
3861124	KM32TSFBH029038	29,000-38,000	1.1417-1.4961	24,50	.965	70,00	2.756	72,00	2.830	KM32TS	0,20	.40
3861125	KM32TSFBH038050	38,000-50,000	1.4961-1.9385	32,00	1.260	80,00	3.150	82,00	3.230	KM32TS	0,50	1.10
3861126	KM40TSFBH029038	29,000-38,000	1.1417-1.4961	24,50	.965	90,00	3.543	92,00	3.620	KM40TS	0,50	1.10
3861127	KM40TSFBH038050	38,000-50,000	1.4961-1.9385	32,00	1.260	100,00	3.937	103,00	4.060	KM40TS	0,90	2.00
3861128	KM40TSFBH050065	50,000-65,000	1.9685-2.5591	42,00	1.654	105,00	4.134	108,00	4.252	KM40TS	1,10	2.40
3861129	KM50TSFBH050065	50,000-65,000	1.9685-2.5591	42,00	1.654	110,00	4.331	115,00	4.530	KM50TS	1,20	2.60
3861130	KM50TSFBH065088	65,000-88,000	2.5591-3.4646	55,00	2.165	125,00	4.920	130,00	5.118	KM50TS	1,70	3.70
3861131	KM63TSFBH065088	65,000-88,000	2.5591-3.4646	55,00	2.165	130,00	5.118	135,00	5.310	KM63TS	2,50	5.50
3861132	KM63TSFBH088115	88,000-115,000	3.4646-4.5276	63,00	2.480	130,00	5.118	135,00	5.310	KM63TS	2,00	4.40

■ Spare Parts

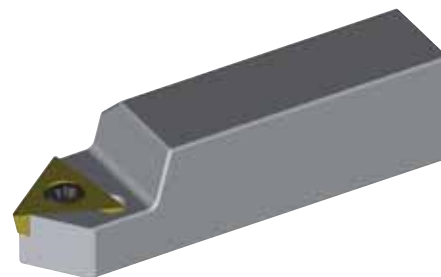
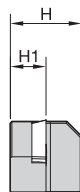
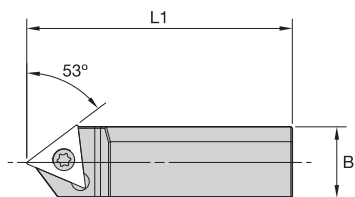
catalog number	adjusting screw	adjustment locking screw	fixing screw	wedge	hex wrench	hex wrench
KM32TSFBH022029	12147620000	12147680200	12346292100	12147621100	12148041100	12148040900
KM32TSFBH029038	12147620000	12147680300	12346292200	12147621200	12148041100	12148040900
KM32TSFBH038050	12147620300	12147680400	12147622300	12147621300	12148041200	12148041000
KM40TSFBH029038	12147620000	12147680300	12346292200	12147621200	12148041100	12148040900
KM40TSFBH038050	12147620300	12147680400	12147622300	12147621300	12148041200	12148041000
KM40TSFBH050065	12147620400	12147680500	12148575900	12147621400	12148041100	12148041300
KM50TSFBH050065	12147620400	12147680500	12148575900	12147621400	12148041100	12148041300
KM50TSFBH065088	12147620500	12147680600	12148087100	12147621500	12148041200	12148041400
KM63TSFBH065088	12147620500	12147680600	12148087100	12147621500	12148041200	12148041400
KM63TSFBH088115	12147620600	12147680700	12148087100	12147621600	12148041200	12148079000



■ Precision Head Insert Holder • C-Style

order number	catalog number	D min		D max		L1	H	H1	B	gage insert	clamping screw	Torx wrench	Nm	ft. lbs.
		mm	in	mm	in									
2004781	12627270300	22,00	.866	29,00	1.142	.748	.315	.177	.315	CC../CP..0602..	12148068700	12148086600	1,0	.74
2004782	12627275300	29,00	1.142	38,00	1.496	1.063	.315	.177	.315	CC../CP..0602..	12148068700	12148086600	1,0	.74
2004133	12627270700	38,00	1.496	50,00	1.969	1.378	.394	.217	.394	CC../CP..0602..	12148068700	12148086600	1,0	.74
2004140	12627276500	50,00	1.969	65,00	2.559	1.811	.472	.256	.472	CC../CP..0602..	12148068700	12148086600	1,0	.74
2004161	12627277700	65,00	2.559	88,00	3.465	2.362	.630	.315	.630	CC../CP..09T3..	12148038800	12148082400	3,0	2.21
2004177	12627278700	88,00	3.465	115,00	4.528	3.307	.630	.315	.630	CC../CP..09T3..	12148038800	12148082400	3,0	2.21

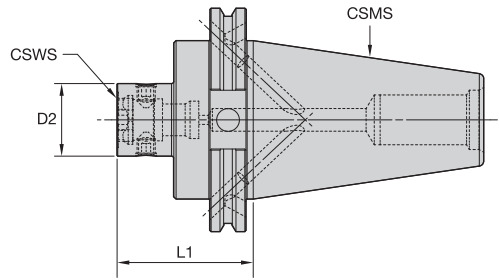




■ Precision Head Insert Holder • T-Style

order number	catalog number	D min		D max		L1	H	H1	B	gage insert	clamping screw	Torx wrench	Nm	ft. lbs.
		mm	in	mm	in									
2004134	12627270800	38,00	1.496	50,00	1.969	1.378	.394	.217	.394	TC../TP..1102..	12148068700	12148086600	1,0	.74
2004141	12627276800	50,00	1.969	65,00	2.559	1.811	.472	.256	.472	TC../TP..1102..	12148068700	12148086600	1,0	.74
2004162	12627277800	65,00	2.559	88,00	3.465	2.362	.630	.315	.630	TC../TP..1102..	12148038800	12148082400	3,0	2.21
2004178	12627278800	86,00	3.386	115,00	4.528	3.307	.630	.315	.630	TC../TP..1102..	12148038800	12148082400	3,0	2.21

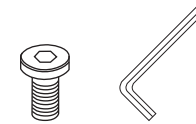




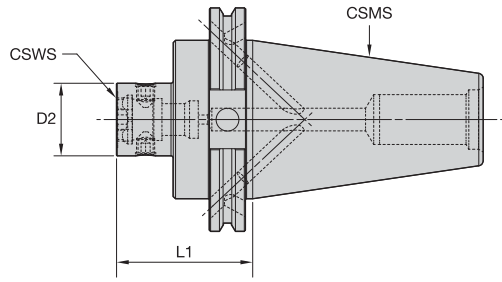
■ RFX • CV40 Taper Shank Form B/AD

order number	catalog number	CSMS system size	CSWS system size	D2		L1		kg	lbs	lock screw	hex wrench	Nm	ft. lbs.
				mm	in	mm	in						
3860896	CV40BRFX185236	CV40	RFX185	18,5	.728	60,0	2.362	1,1	2.40	RFX185LS	12148041100	6,0	4.43
3860897	CV40BRFX245236	CV40	RFX245	24,5	.965	60,0	2.362	1,1	2.40	RFX245LS	12148041100	8,0	5.90
3860898	CV40BRFX320236	CV40	RFX320	32,0	1.260	60,0	2.362	1,1	2.40	RFX320LS	12148041200	14,0	10.33
3860899	CV40BRFX420236	CV40	RFX420	42,0	1.654	60,0	2.362	1,1	2.40	RFX420LS	12148041300	16,0	11.80
3860900	CV40BRFX550256	CV40	RFX550	55,0	2.165	65,0	2.559	1,2	2.60	RFX550LS	12148041400	20,0	14.75

NOTE: Lock screws included. Order retention knobs separately.



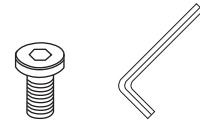
	Form AD					
	Form B			40	(2x) MS2221S	2,5mm
				50	(2x) MS1296S	3mm

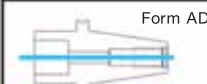










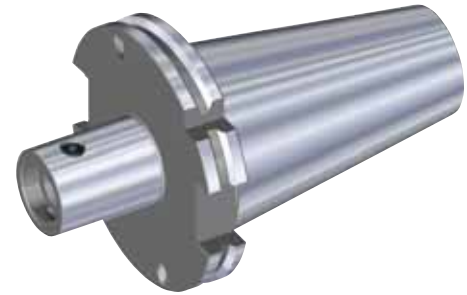
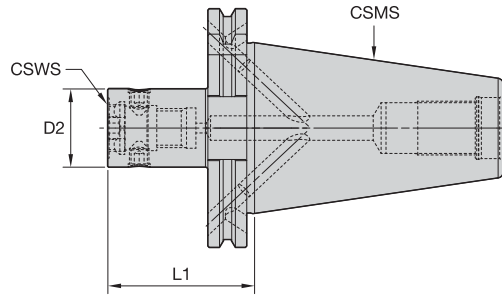
■ **RFX • CV50 Taper Shank Form B/AD**

order number	catalog number	CSMS system size	CSWS system size	D2		L1		kg	lbs	lock screw	hex wrench	Nm	ft. lbs.
				mm	in	mm	in						
3860901	CV50BRFX320236	CV50	RFX320	32,0	1.260	60,0	2.362	3,1	6.80	RFX320LS	12148041200	12,0	10.33
3860902	CV50BRFX420236	CV50	RFX420	42,0	1.654	60,0	2.362	3,2	7.00	RFX420LS	12148041300	20,0	11.80
3860903	CV50BRFX550236	CV50	RFX550	55,0	2.165	60,0	2.362	3,4	7.50	RFX550LS	12148041400	25,0	14.75
3860904	CV50BRFX720276	CV50	RFX720	72,0	2.835	70,0	2.756	3,6	7.90	RFX720LS	12148041400	25,0	14.75

NOTE: Lock screws included. Order retention knobs separately.



	Form AD					
	Form B			40	(2x) MS2221S	2,5mm
				50	(2x) MS1296S	3mm

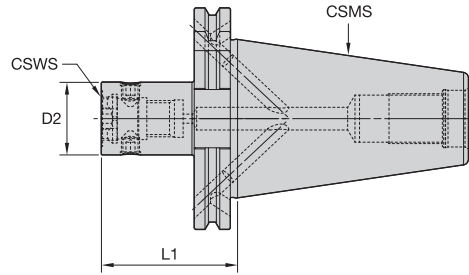


■ RFX • DV40 Taper Shank Form B/AD

order number	catalog number	CSMS system size	CSWS system size	D2		L1		kg	lbs	lock screw	hex wrench	Nm	ft. lbs.
				mm	in	mm	in						
3860696	DV40BRFX185060M	DV40	RFX185	18,5	.728	60,0	2.362	1,1	2.40	RFX185LS	12148041100	6,0	4.43
3860697	DV40BRFX245060M	DV40	RFX245	24,5	.965	60,0	2.362	1,1	2.40	RFX245LS	12148041100	8,0	5.90
3860698	DV40BRFX320060M	DV40	RFX320	32,0	1.260	60,0	2.362	1,1	2.40	RFX320LS	12148041200	14,0	10.33
3860699	DV40BRFX420060M	DV40	RFX420	42,0	1.654	60,0	2.362	1,1	2.40	RFX420LS	12148041300	16,0	11.80
3860700	DV40BRFX550065M	DV40	RFX550	55,0	2.165	65,0	2.559	1,2	2.60	RFX550LS	12148041400	20,0	14.75

NOTE: Lock screws included. Order retention knobs separately.

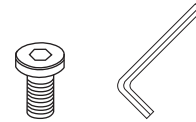
	Form AD					
	Form B			40	(2x) MS2221S	2,5mm
				50	(2x) MS1296S	3mm






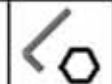





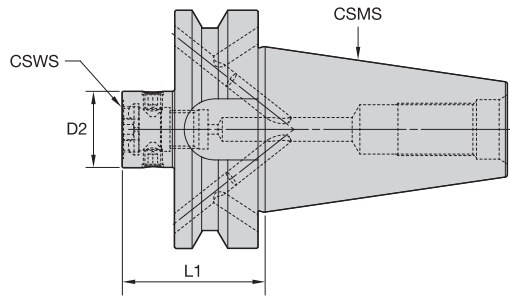
■ RFX • DV50 Taper Shank Form B/AD

order number	catalog number	CSMS system size	CSWS system size	D2		L1		kg	lbs	lock screw	hex wrench	Nm	ft. lbs.
				mm	in	mm	in						
3860701	DV50BRFX320060M	DV50	RFX320	32,0	1.260	60,0	2.362	3,1	6.80	RFX320LS	12148041200	14,0	10.33
3860702	DV50BRFX420060M	DV50	RFX420	42,0	1.654	60,0	2.362	3,2	7.00	RFX420LS	12148041300	16,0	11.80
3860853	DV50BRFX550060M	DV50	RFX550	55,0	2.165	60,0	2.362	3,4	7.50	RFX550LS	12148041400	20,0	14.75
3860854	DV50BRFX720065M	DV50	RFX720	72,0	2.835	65,0	2.559	3,6	7.90	RFX720LS	12148041400	20,0	14.75

NOTE: Lock screws included. Order retention knobs separately.



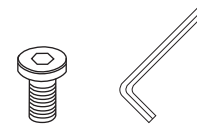
 <p>Form AD</p>					
 <p>Form B</p>			<p>40</p>	<p>(2x) MS2221S</p>	<p>2,5mm</p>
			<p>50</p>	<p>(2x) MS1296S</p>	<p>3mm</p>



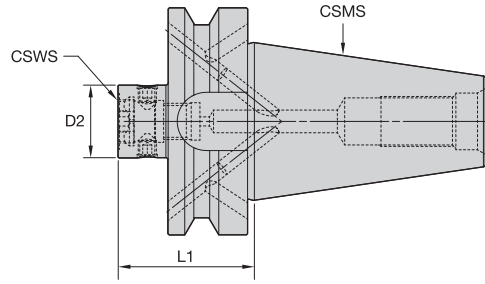
■ RFX • BT40 Taper Shank Form B/AD

order number	catalog number	CSMS system size	CSWS system size	D2		L1		kg	lbs	lock screw	hex wrench	Nm	ft. lbs.
				mm	in	mm	in						
3860676	BT40BRFX185060M	BT40	RFX185	18,5	.728	60,0	2.362	1,0	2.20	RFX185LS	12148041100	8,0	4.43
3860677	BT40BRFX245060M	BT40	RFX245	24,5	.965	60,0	2.362	1,1	2.40	RFX245LS	12148041100	8,0	5.90
3860678	BT40BRFX320060M	BT40	RFX320	32,0	1.260	60,0	2.362	1,1	2.40	RFX320LS	12148041200	12,0	10.33
3860679	BT40BRFX420060M	BT40	RFX420	42,0	1.654	60,0	2.362	1,2	2.60	RFX420LS	12148041300	20,0	11.80
3860680	BT40BRFX550065M	BT40	RFX550	55,0	2.165	65,0	2.559	1,3	2.90	RFX550LS	12148041400	25,0	14.75

NOTE: Lock screws included. Order retention knobs separately.



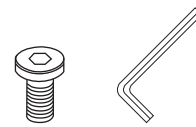
	Form AD					
	Form B			40	(2x) MS2221S	2,5mm
				50	(2x) MS1296S	3mm

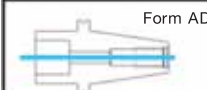





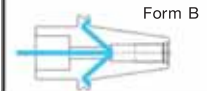




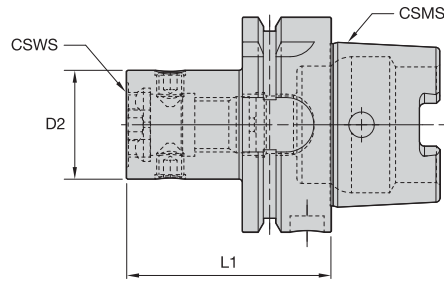
■ RFX • BT50 Taper Shank Form B/AD

order number	catalog number	CSMS system size	CSWS system size	D2		L1		kg	lbs	lock screw	hex wrench	Nm	ft. lbs.
				mm	in	mm	in						
3860681	BT50BRFX320060M	BT50	RFX320	32,0	1.260	60,0	2.362	3,5	7.70	RFX320LS	12148041200	14,0	10.33
3860682	BT50BRFX420060M	BT50	RFX420	42,0	1.654	60,0	2.362	3,9	8.60	RFX420LS	12148041300	16,0	11.80
3860693	BT50BRFX550065M	BT50	RFX550	55,0	2.165	65,0	2.559	4,2	9.50	RFX550LS	12148041400	25,0	18.44
3860694	BT50BRFX720070M	BT50	RFX720	72,0	2.835	70,0	2.756	4,5	9.90	RFX720LS	12148041400	25,0	18.44

NOTE: Lock screws included. Order retention knobs separately.



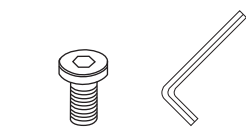
	Form AD					
	Form B			40	(2x) MS2221S	2,5mm
				50	(2x) MS1296S	3mm

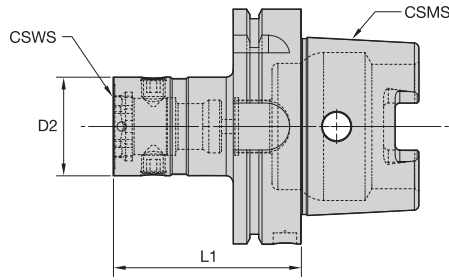


■ RFX • HSK63 Form A

order number	catalog number	CSMS system size	CSWS system size	D2		L1		kg	lbs	lock screw	hex wrench	Nm	ft. lbs.
				mm	in	mm	in						
3860549	HSK63ARFX185060M	HSK63A	RFX185	18,5	.728	60,0	2.362	0,7	1.50	RFX185LS	12148041100	6,0	4.43
3860550	HSK63ARFX245060M	HSK63A	RFX245	24,5	.965	60,0	2.362	0,7	1.50	RFX245LS	12148041100	8,0	5.90
3860551	HSK63ARFX320060M	HSK63A	RFX320	32,0	1.260	60,0	2.362	0,8	1.80	RFX320LS	12148041200	14,0	10.33
3860552	HSK63ARFX420070M	HSK63A	RFX420	42,0	1.654	70,0	2.756	1,0	2.20	RFX420LS	12148041300	16,0	11.80
3860623	HSK63ARFX550080M	HSK63A	RFX550	55,0	2.165	80,0	3.150	1,4	3.10	RFX550LS	12148041400	20,0	14.75
3860624	HSK63ARFX720095M	HSK63A	RFX720	72,0	2.835	95,0	3.740	2,0	4.40	RFX720LS	12148041400	20,0	14.75

NOTE: Lock screws included. HSK coolant unit and wrench are available but must be ordered separately.

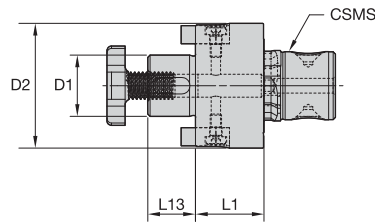




■ RFX • HSK100 Form A

order number	catalog number	CSMS system size	CSWS system size	D2		L1		kg	lbs	lock screw	hex wrench	Nm	ft. lbs.
				mm	in	mm	in						
3881208	HSK100ARFX420080M	HSK100A	RFX420	42,0	1.654	80,0	3.150	1,0	2.20	RFX420LS	12148041300	20,0	17.75
3881209	HSK100ARFX550090M	HSK100A	RFX550	55,0	2.165	90,0	3.543	2,2	4.85	RFX550LS	12148041400	25,0	18.44
3881210	HSK100ARFX720105M	HSK100A	RFX720	72,0	2.835	105,0	4.134	2,5	5.51	RFX720LS	12148041400	25,0	18.44

NOTE: Lock screws included. HSK coolant unit and wrench are available but must be ordered separately.



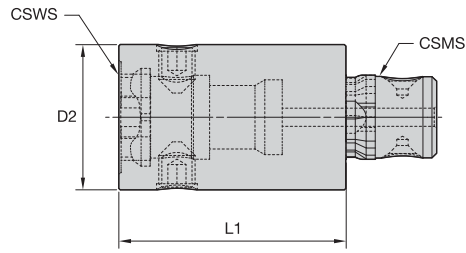
■ CS-RFX Adapter • Lock Screw Design

order number	catalog number	CSMS system size	D1		D2		L1		L13		kg	lbs
			mm	in	mm	in	mm	in	mm	in		
3860547	RFX550CS27030M	RFX550	27,0	1.060	55,0	2.165	30,0	1.181	21,0	.827	0,9	2.00
3860548	RFX720CS40035M	RFX720	40,0	1.570	72,0	2.835	35,0	1.378	27,0	1.063	1,8	4.00

■ Spare Parts

catalog number	lock screw
RFX550CS27030M	12147522400
RFX720CS40035M	KLS40M

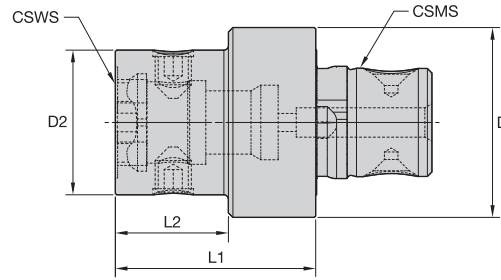




■ RFX Extensions

order number	catalog number	CSMS system size	CSWS system size	D2		L1		kg	lbs	lock screw	hex wrench	Nm	ft. lbs.
				mm	in	mm	in						
3860450	RFX185RFX185030M	RFX185	RFX185	18,5	.728	30,0	1.181	0,1	.20	RFX185LS	12148041100	6,0	4.43
3860451	RFX245RFX245035M	RFX245	RFX245	24,5	.965	35,0	1.378	0,2	.40	RFX245LS	12148041100	8,0	5.90
3860452	RFX320RFX320050M	RFX320	RFX320	32,0	1.260	50,0	1.969	0,3	.70	RFX320LS	12148041200	14,0	10.33
3860473	RFX420RFX420060M	RFX420	RFX420	42,0	1.654	60,0	2.362	0,8	1.80	RFX420LS	12148041300	16,0	11.80
3860474	RFX550RFX550090M	RFX550	RFX550	55,0	2.165	90,0	3.543	1,6	3.50	RFX550LS	12148041400	20,0	14.75
3860475	RFX720RFX720100M	RFX720	RFX720	72,0	2.835	100,0	3.937	3,1	6.80	RFX720LS	12148041400	25,0	18.44

NOTE: Lock screws included. HSK coolant unit and wrench are available but must be ordered separately.



■ RFX Reducers

order number	catalog number	CSMS system size	CSWS system size	D		D2		L1		L2		kg	lbs	lock screw	hex wrench	Nm ft. lbs.	
				mm	in	mm	in	mm	in	mm	in						
3860419	RFX320RFX185030M	RFX320	RFX185	32,0	1.260	18,5	.728	30,0	1.181	15,0	.591	0,2	.40	RFX185LS	12148041100	6,0	4.43
3860420	RFX320RFX245040M	RFX320	RFX245	32,0	1.260	24,5	.965	40,0	1.575	25,0	.984	0,2	.40	RFX245LS	12148041100	8,0	5.90
3860421	RFX420RFX185035M	RFX420	RFX185	42,0	1.654	18,5	.728	35,0	1.378	15,0	.591	0,4	.90	RFX185LS	12148041100	6,0	4.43
3860422	RFX420RFX245045M	RFX420	RFX245	42,0	1.654	24,5	.965	45,0	1.772	25,0	.984	0,4	.90	RFX245LS	12148041100	8,0	5.90
3860443	RFX420RFX320045M	RFX420	RFX320	42,0	1.654	32,0	1.260	45,0	1.772	25,0	.984	0,6	1.30	RFX320LS	12148041200	14,0	10.33
3860444	RFX550RFX185040M	RFX550	RFX185	55,0	2.165	18,5	.728	40,0	1.575	15,0	.591	0,7	1.50	RFX185LS	12148041100	6,0	4.43
3860445	RFX550RFX245050M	RFX550	RFX245	55,0	2.165	24,5	.965	50,0	1.969	25,0	.984	0,8	1.80	RFX245LS	12148041100	8,0	5.90
3860446	RFX550RFX320050M	RFX550	RFX320	55,0	2.165	32,0	1.260	50,0	1.969	25,0	.984	0,8	1.80	RFX320LS	12148041200	14,0	10.33
3860447	RFX550RFX420055M	RFX550	RFX420	55,0	2.165	42,0	1.654	55,0	2.165	30,0	1.181	0,9	2.00	RFX420LS	12148041300	16,0	11.80
3860448	RFX720RFX420060M	RFX720	RFX420	72,0	2.835	42,0	1.654	60,0	2.362	30,0	1.181	1,6	3.50	RFX420LS	12148041300	16,0	11.80
3860449	RFX720RFX550060M	RFX720	RFX550	72,0	2.835	55,0	2.165	60,0	2.362	30,0	1.181	1,8	4.00	RFX550LS	12148041400	20,0	14.75

NOTE: Lock screws included. HSK coolant unit and wrench are available but must be ordered separately.

Easy Access to Proven Metalworking Expertise!

WIDIA™ Customer Application Engineers assist customers and engineering groups throughout the world with expert tool selection and application recommendations for the entire range of WIDIA tooling.

Customer Application Support (CAS)

EXTREME **CHALLENGES.**
EXTREME **RESULTS.**

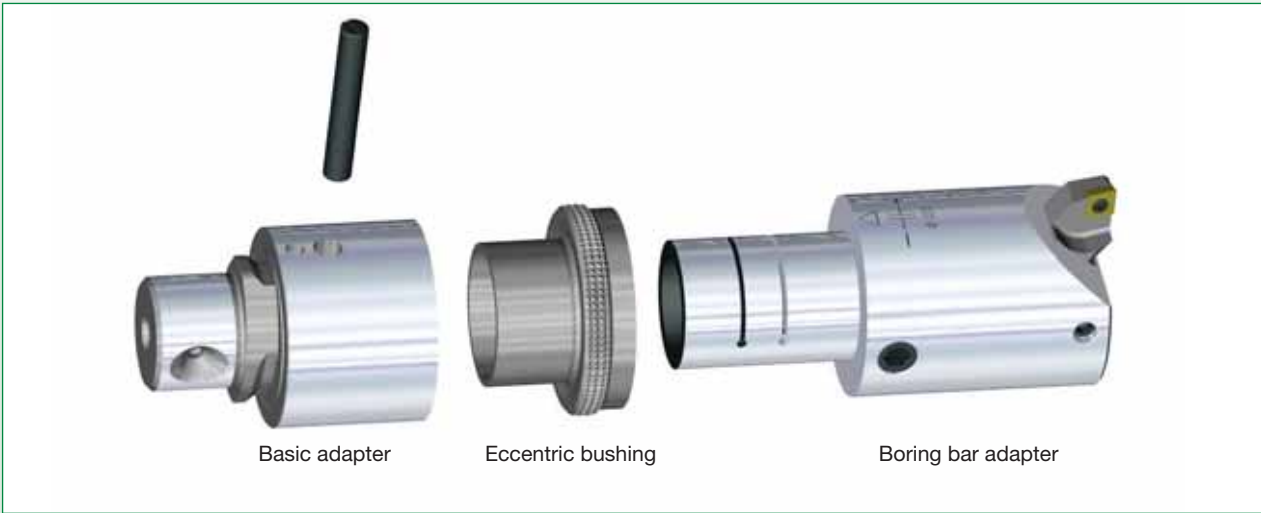
ORIGINATING COUNTRY	LANGUAGE	TEL	FAX	EMAIL
Australia	English	+61 001 724 539 6921 *	001 724 539 6830 *	ap.techsupport@widia.com
Austria	German	0800 291630	0049 911 9735 429*	eu.techsupport@widia.com
Belgium	English / French	0800 80410	0049 911 9735 429*	eu.techsupport@widia.com
China	Chinese	+86 400 889 2237	+86 21 58999985 *	w-cn.techsupport@widia.com
Denmark	English	+45 808 89295	001 724 539 6830 *	na.techsupport@widia.com
Finland	English	0800 919413	001 724 539 6830 *	na.techsupport@widia.com
France	French	+33 080 5540 379	0049 911 9735 429*	eu.techsupport@widia.com
Germany	German	0800 1015774	0911 9735 429*	eu.techsupport@widia.com
India	English	+91 001 724539 6921 *	001 724 539 6830 *	ap.techsupport@widia.com
Israel	English	+972 1809 449907	001 724 539 6830 *	na.techsupport@widia.com
Italy	Italian	800 916568	02 89512146 *	eu.techsupport@widia.com
Japan	English	+81 001 724539 6921 *	001 724 539 6830 *	ap.techsupport@widia.com
Korea (South)	English	+82 001 724539 6921 *	001 724 539 6830 *	ap.techsupport@widia.com
Malaysia	English	+60 001 724539 6921 *	001 724 539 6830 *	ap.techsupport@widia.com
Netherlands	English	0800 0201131	001 724 539 6830 *	na.techsupport@widia.com
New Zealand	English	+64 001 724539 6921 *	001 724 539 6830 *	ap.techsupport@widia.com
Norway	English	800 10081	001 724 539 6830 *	na.techsupport@widia.com
Poland	Polish	00800 4411943	06166 56504*	eu.techsupport@widia.com
Russia (landline)	Russian	+7 8800 5556395	0048 6166 56504*	eu.techsupport@widia.com
Russia (cell phone)	Russian	+7 8005556395	0048 6166 56504*	eu.techsupport@widia.com
Singapore	English	+65 001 724539 6921 *	001 724 539 6830 *	ap.techsupport@widia.com
South Africa	English	+27 0800 981644	001 724 539 6830 *	na.techsupport@widia.com
Sweden	English	+46 020798794	001 724 539 6830 *	na.techsupport@widia.com
Taiwan	English	+886 001 724539 6921 *	001 724 539 6830 *	ap.techsupport@widia.com
Thailand	English	+66 001 724539 6921 *	001 724 539 6830 *	ap.techsupport@widia.com
United Kingdom	English	+44 0800 028 2996	001 724 539 6830 *	na.techsupport@widia.com
Ukraine	Russian	+380 0800502665	0048 6166 56504*	eu.techsupport@widia.com
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Authorized Distributor or visit widia.com/services.

WIDIA 

Design Principle



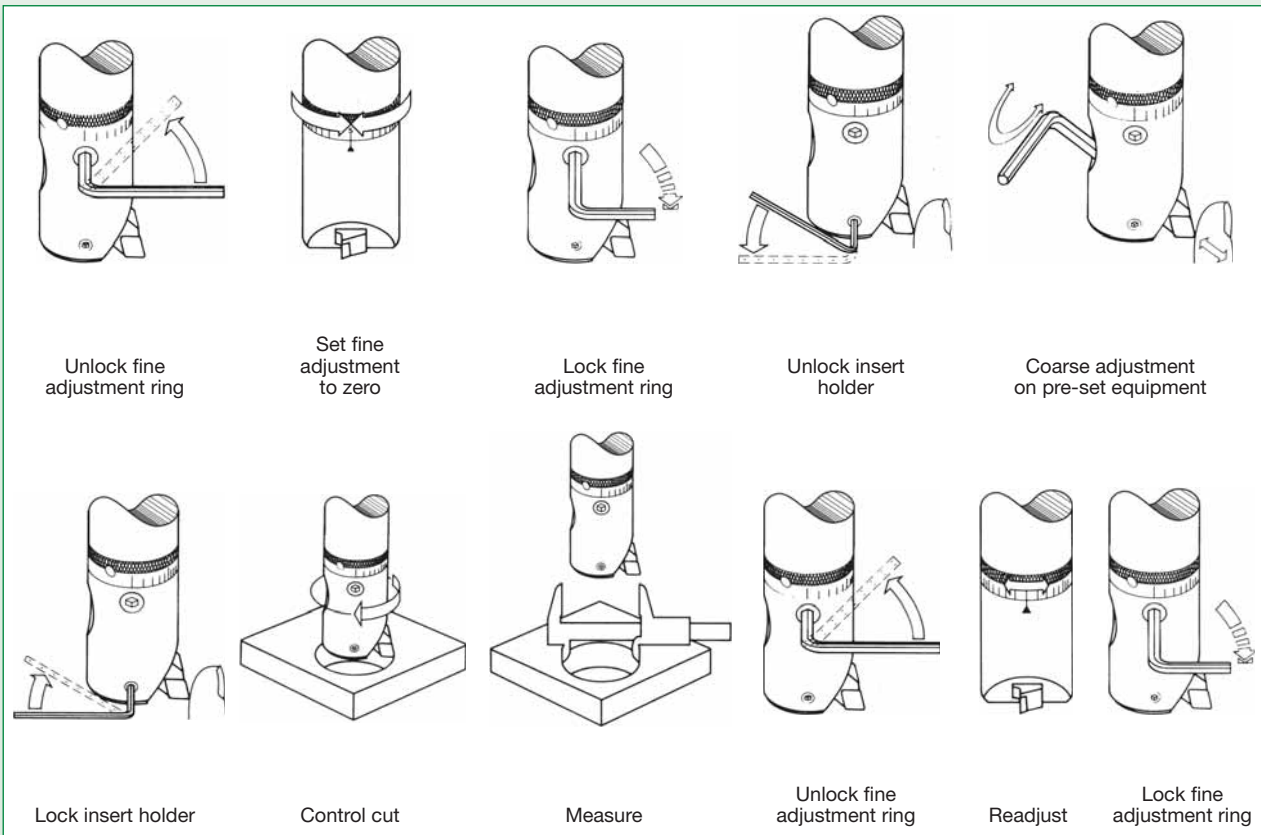
Eccentric bushing for fine adjustment

Regular fine boring heads have a threaded spindle as an adjustment mechanism. In this situation, spindle inaccuracy can cause backlash and require extra effort during setup. The ROTAFLEX eccentric bushing is easy to use, and machining forces are transmitted via a larger surface, ensuring a consistent diameter during machining.

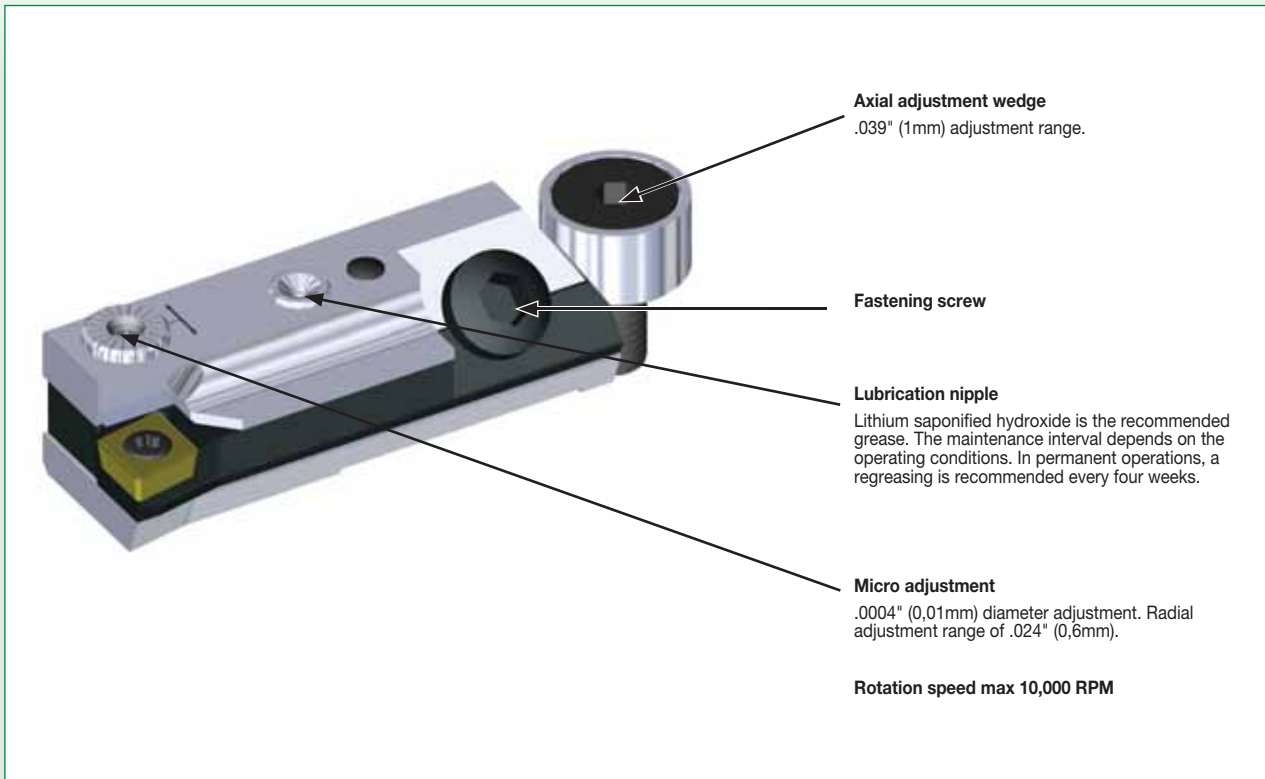


After rough adjustment of the insert holder, the easy-to-read scale enables fine adjustment to reach precisely the diameter needed. Here, no parallax errors occur when reading the scale.

Adjustment

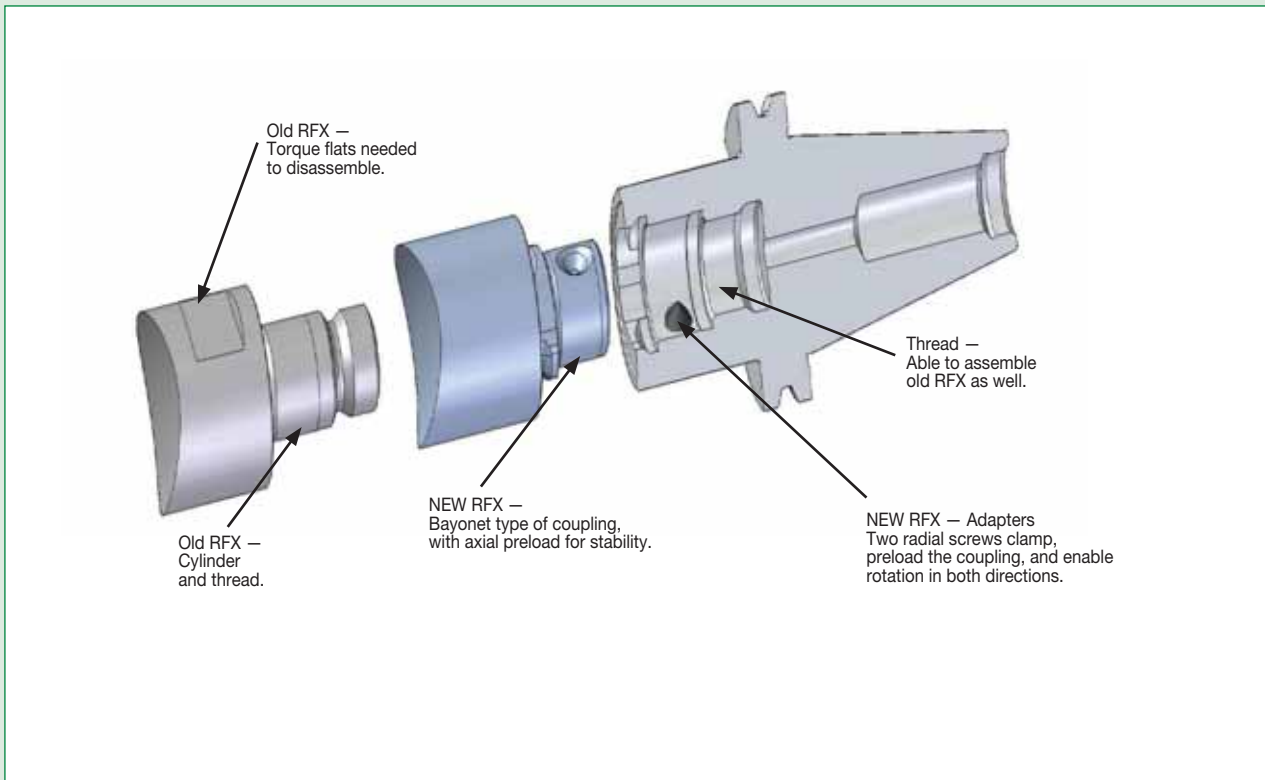


Application Hints • Micro-Adjustable Cartridges



Application Hints • RFX Coupling

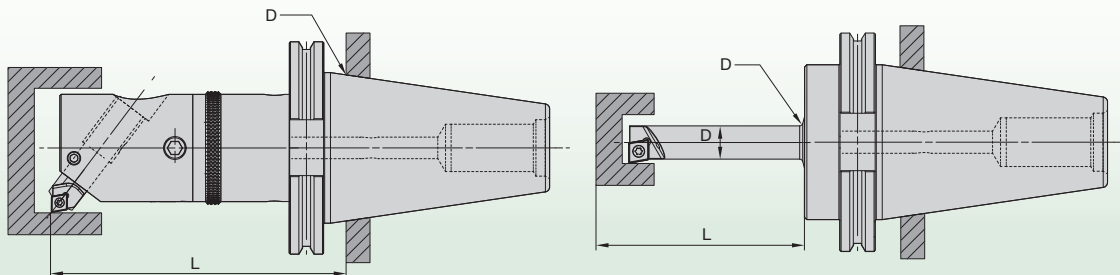
Old RFX screw-type coupling can be mounted into new RFX bayonet-type adapters as well.



General Application Hints

- Identify your critical diameter (D).
- Identify the maximum distance cutting edge (L) to critical diameter.

Here are some examples:



Refer to this table for first investigation of application:

Type of Tooling	Stable	Unstable	Tests Necessary
Twin Cutter Solid Tools	<3,5 x D	3,5–6,5 x D	>6,5 x D
Twin Cutter Bridge Tools	<3,5 x D	3,5–6,5 x D	>6,5 x D
Fine-Boring Heads with Boring Bar (FBHBB)	<3,5 x D	3,5–5,0 x D	>5,0 x D
Fine-Boring Heads (FBH)	<3,5 x D	3,5–5,0 x D	>5,0 x D
Fine-Boring Bridge Tools	<3,5 x D	3,5–5,0 x D	>5,0 x D
	Function of the tool is expected without issues within recommended cutting data.	Application may require reduced feeds and/or speeds compared to stable conditions.	Machining test may be required to identify cutting data.

Causes of and remedies for rough and fine boring problems

It is generally assumed that the tools have been properly mounted as per the technical recommendations in this catalog.

Problem	Cause	Possible Remedy
Vibration tendency	<ol style="list-style-type: none"> 1. Overhang 2. Choice of insert 3. Cutting data 	<ul style="list-style-type: none"> • Adjust L/D ratio • Select 90° lead angle on rough boring tools • Select inserts with positive geometry • Select inserts with smaller corner radius • Reduce depth of cut • Increase feed
Slight chatter marks on surface	<ol style="list-style-type: none"> 1. Choice of insert 2. Cutting data 3. Machining environment 	<ul style="list-style-type: none"> • Select 90° lead angle • Select ground inserts with small edge preparation • Select inserts with smaller corner radius • Increase feed • Increase coolant
Conical bores	<ol style="list-style-type: none"> 1. Choice of insert 2. Cutting data 3. Machining environment 	<ul style="list-style-type: none"> • Select a more wear-resistant insert grade • Increase cutting speed • Check whether all screws have been tightened to recommended torque

Inserts Overview

Geometry	Application	ANSI catalog number	ISO catalog number	P			M		K		S	
				WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WK05CT	WK20CT	WS10PT	WS25PT
	CCMT-FP • Fine Finishing	CCMT2151FP	CCMT060204FP	•	•		•	•		•	•	•
		CCMT3251FP	CCMT09T304FP	•	•		•	•		•	•	•
	CCMT-MU • Medium to Finishing	CCMT2152MU	CCMT060208MU					•		•		
		CCMT3251MU	CCMT09T304MU	•	•			•	•	•	•	•
		CCMT3252MU	CCMT09T308MU	•	•	•		•		•	•	•
		CCMT432MU	CCMT120408MU	•	•			•		•		•
	CCMT-MP • Roughing to Medium	CCMT2151MP	CCMT060204MP	•	•		•	•		•	•	
		CCMT3251MP	CCMT09T304MP	•	•		•	•		•	•	
		CCMT3252MP	CCMT09T308MP	•	•		•	•		•	•	
		CCMT432MP	CCMT120408MP	•	•		•	•		•	•	
		CCMT433MP	CCMT120412MP		•			•	•		•	

Hole Finishing Capabilities and Custom Solutions



With our state-of-the-art CNC equipment and engineering processes, we can design complex geometries for reaming and countersinking. Special countersinks for pre-working and finishing operations minimize machine time and rationalize production. Our custom solution reamers deliver proven performance in applications that demand high surface qualities, narrow fit, alignment tolerances, and long tool life.

Hole Finishing Custom Solution Tool Styles:

- Reaming
- Boring
- Countersinking
- PCD Round Tools

Hole Finishing Capabilities and Custom Solution Services

- Development, design, and production of different types of cutting tools for reaming, boring, and countersinking.
- Services provided by one engineering department fully integrated with all WIDIA™ focused factories.
- Capabilities with all common cutting materials such as high-speed steel (HSS-E), powdered metal, solid carbide, carbide-tipped, cermet, and PCD, with or without internal coolant.
- Complete tool competence from one source, from construction, application engineering, development, and production through tool reconditioning services.

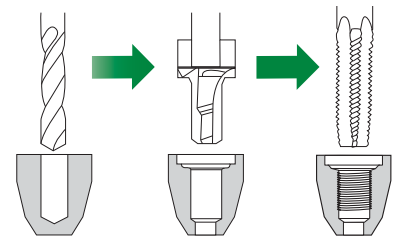


Port Contour Cutters •
For Fluid-Powered Standard Ports

Port Contour Cutters



- Each component has entry and exit points for the fluid involved called ports.
- Port shapes and forms are standardized.
- WIDIA™ offers porting tools to finish these ports in one-shot operations.



Standard Port	Available Cutters
JDS-G173.1	169-0XXX WITH GROOVE & 169-1XXX WITHOUT GROOVE & 269-0XXX WITH GROOVE & 269-1XXX WITHOUT GROOVE
AS5202	169-0XXX WITH GROOVE & 169-1XXX WITHOUT GROOVE & 269-0XXX WITH GROOVE & 269-1XXX WITHOUT GROOVE
ISO-6149-1	169-0XXX WITH GROOVE & 169-1XXX WITHOUT GROOVE & 269-0XXX WITH GROOVE & 269-1XXX WITHOUT GROOVE
SAE J2241/1	169-0XXX WITH GROOVE & 169-1XXX WITHOUT GROOVE & 269-0XXX WITH GROOVE & 269-1XXX WITHOUT GROOVE
NPTF/NPT	186, 187 & 287
MS 16142	163, 253, 263, 267, 367 & 467
CAT.IE2554	163, 253, 263, 267, 367 & 467
SAE J1926-1	163, 253, 263, 267, 367 & 467
BSPP/BSPPF	265
AS1300	RCT SERIES/CUSTOM SOLUTION
MS33659	164, 264 & 268
AND10050	164, 264 & 268
ISO-1179-1	255 STD. LGHT. & 265 EXT. LGTH. REAMER
DIN-3852-2	225 SMALL, 235 LARGE & 245 EXT. LGTH. REAMER

Port Contour Cutters

- Dura-bar 65-45-12.
- Component: General cavity.
- Ream SAE#8.
- Surface finish below Ra 32 (inch).

CHALLENGE

- Cermet-tipped port cutting tool.

SOLUTION

- 2100 RPM–20 IPM.
- Flood coolant.
- Machining center.

CUTTING DATA

- Surface finish of 7–15 RA (inch).

RESULT

- Increase productivity by one-shot finishing of port.

BENEFIT



Custom Solutions •
Countersinking and Reaming

Reamer Custom Solutions



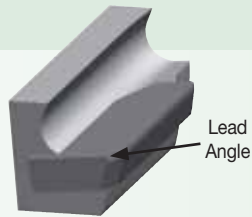
With our state-of-the-art equipment and engineering processes, we can design complex geometries for reaming and countersinking. Special countersinks for pre-working and finishing operations minimize machining time and rationalize production. Our custom solution reamers deliver proven performance in applications that demand high surface qualities, narrow fit, alignment tolerances, and long tool life.



Diameter

- .055–1.968" (1,4–50mm).
- Up to tolerance IT6 depending on application.
- Diameter steps.

Leads

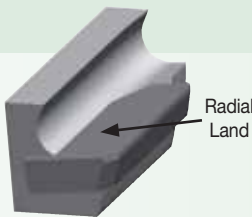


- 25–90° leads for smoother cutting or better positioning.
- Double leads for better surface quality.
- Radius leads for optimal CI machining.

Grades

- Various grades available tailored to your specific application.

Radial Land



- Cylindrical for better guiding and form.
- Upsharp (no land) for best surface finishes and less passive forces.
- Narrow land to reduce forces.

TRM — TOP REAM MODULAR

- Tube holes \varnothing .994" (25,25mm).
- Tolerance range 100 μ m.
- Alloy steel, long-chipping.
- Machining center with internal coolant.

CHALLENGE

- Six cutting edges.
- Coated cermet.
- Standard 5 x D body clamped into hydraulic chuck.

SOLUTION

- $vc = 295$ SFM (90 m/min).
- $f = .019$ IPR (0,48 mm/rev).

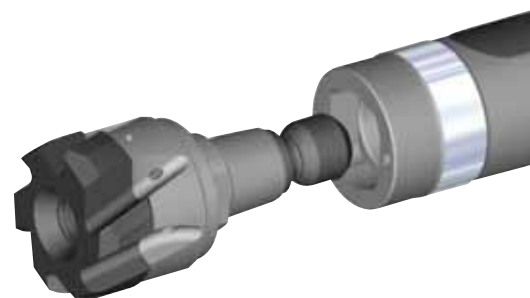
CUTTING DATA

- After more than 30 minutes only minor wear visible.

RESULT

- Reduction of machining time in total to less than 60 minutes per plate with 180 holes.
- Predictable tool life as only 2 μ m diameter deviation after 30 minutes tool life.

BENEFIT



PCD STEP REAMER

- Bearing bore Ø 130mm.
- Tolerance range 25 µm S6.
- Aluminum AlSi8Cu3.
- Varying depth of cut ca. 0,5–5mm.
- Machining center with internal coolant.

CHALLENGE

- PCD tipped, steel-based tool with HSK interface and internal coolant.
- Six effective cutting and chamfering teeth in positive cutting position.

SOLUTION

- $vc = 1.148$ SFM (350 m/min).
- $f = .024$ IPR (0,60 mm/rev).

CUTTING DATA

- Tool life increase versus previous solution.
- Surface finish Ra 0.2 µm.

RESULT

- Secure process.
- Most productive solution at large diameter.
- Very long tool life.
- Reconditionable.

BENEFIT

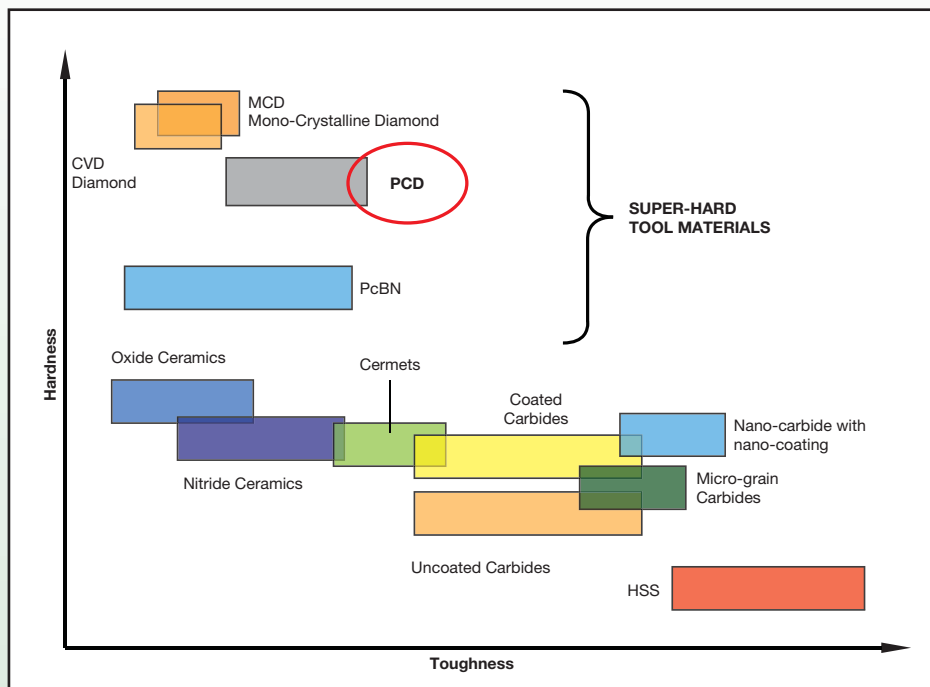


Highly uneven flute design reduces vibrations.



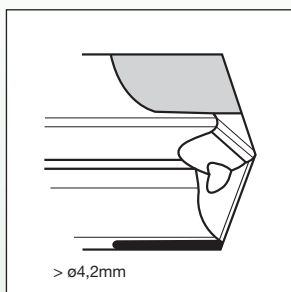
PCD • Round Tools for Holemaking

Cutting Materials • Hardness vs. Toughness



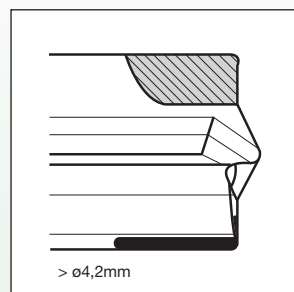
WIDIA™ PCD Drill-Pointed Geometries

Type: **CT**
Corner tipped



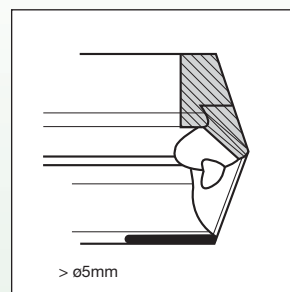
For general applications.

Type: **CTE**
Corner tipped with center point



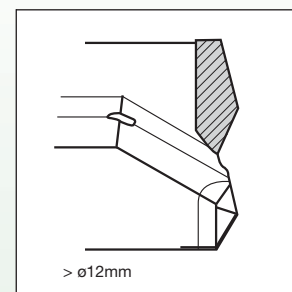
For precasted bores.

Type: **SW**
Sandwich



For highly abrasive materials.

Type: **MT**
For body = steel

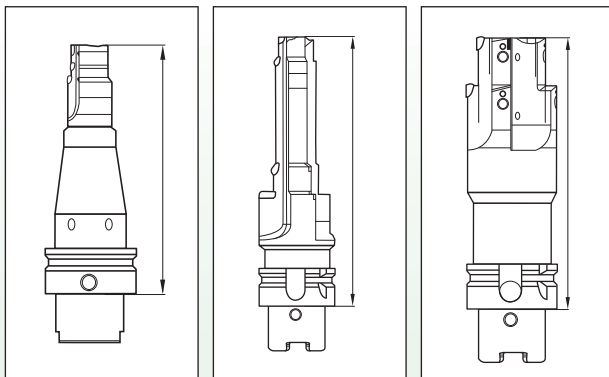


For breaking through the casting skin.

Non-Ferrous Materials

N2	Low-Silicon Aluminum Alloys (Hypoeutectic <12.2% Si) and Magnesium Alloys
N3	High-Silicon Aluminum Alloys (Hypereutectic >12.2% Si) and Magnesium Alloys
N4	Copper, Brass, Zinc-Based Materials
N5	Nylon, Plastics, Rubber, Phenolics, Resins, Fiberglass, Glass
N6	Carbon and Graphite Composites: Brush Alloys, Kevlar, Graphite
N7	MMCs — Aluminum-Based Metal Matrix Composites

WIDIA™ PCD Styles for Reamers/CS



PKD ST —
Steel Shank

PKD STM —
Monoblock

PKD STMJ —
Adjustable
Cutting Edges

PKD SC —
Solid Carbide
Shank

Material	Coolant Style Grade	Coolant Style Grade	Coolant Style Grade
Al <7%	MQL, Emulsion	PCD SC PCD STM PCD STMU	WBK45U
Al <12%	MQL, Emulsion		WBK45U
Al <12%	Emulsion	PCD SC	WBK45U
Mg Alloys	Emulsion	PCD SC	WBK45U
CFK	Dry	PCD SC	WBK45U



WIDIA™ Repair Services

WIDIA tooling products are produced to the highest specifications and manufactured from premium materials. However, like all mechanical devices, they wear and require repair.

Milling cutters

Boring bars — standard, tunable, and de-vibe

Indexable drills

Line boring bars

Feed-out heads

Motion tools

Standard indexable tooling

Eccentric toolholders

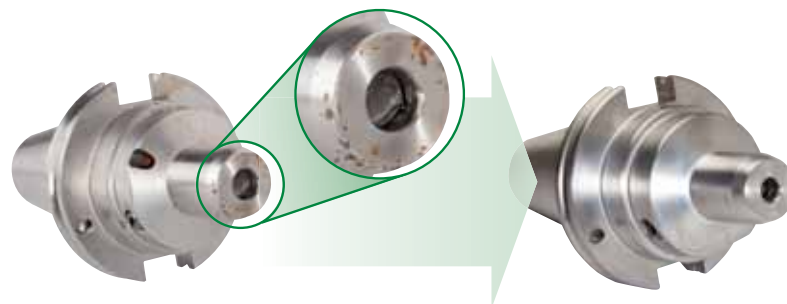
Floating toolholders

Hydraulic chucks

KM™ clamping units (manual and spring packs)

KM-LOC™ and KM-LOC II™ clamping units

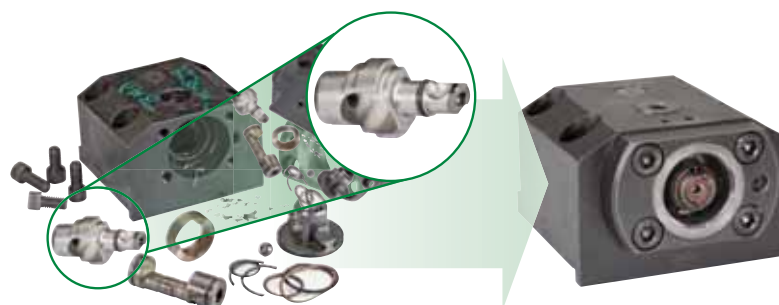
Hydraulic Chucks



Damaged WIDIA Tools

Repaired WIDIA Tools

KM-LOC™



Damaged WIDIA Tools

Repaired WIDIA Tools

Tools Are Valuable. Protect Them and Get the Most from Your Investment.



EXTREME CHALLENGES. EXTREME RESULTS.

Live/driven tooling

When your WIDIA™ advanced tooling products need to be serviced, the WIDIA Service and Repair Department has the highly trained staff to provide expert assistance.

Milling chucks

For about half the cost of a new WIDIA tool purchase, your existing damaged WIDIA tools can be repaired to like-new condition. In certain circumstances, it is not cost effective to repair some tooling. Contact the WIDIA Service and Repair Department with any questions about your requirements.

Right-angle heads

Tapping holders (excluding tap adapters)

Integral tapping tools (excluding tap adapters)

Tuned tooling units

For more information, contact your local WIDIA
Authorized Distributor or visit widia.com/services.

WIDIA 