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ADVANCES

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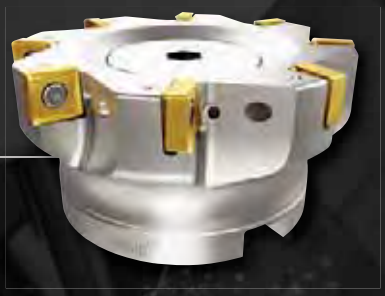
INTRODUCING...

NEW PRODUCTS



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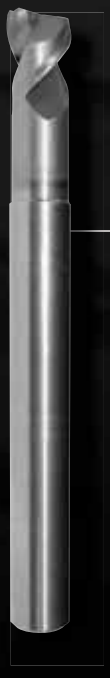

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COMING SOON!

AN ALL-INCLUSIVE CATALOG SHOWCASING WIDIA™ TOOLING AND MACHINING STRATEGIES THAT REDUCE CYCLE TIME AND INCREASE TOOLING COST SAVINGS.

WIDIA™

MACHINING **BRILLIANCE**

2019

AEROSPACE

FEATURING THE BEST AEROSPACE COMPONENT MACHINING SOLUTIONS FROM WIDIA™

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MACHINING BRILLIANCE

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VSM890™-12

UNIQUE 8-EDGED SOLUTION FOR SHOULDER AND FACE MILLING

GENERAL ENGINEERING

TRANSPORTATION

VSM890™-12

Weldon® End Mills: 1.25" and 1.5"

Shell Mills: 2–10"

8-Edged, Double-Sided True 0° Victory™ Shoulder-Face Mill (VSM)

Superior Metal Removal Rates (MRR) delivered through high-performance grades and chipbreakers.

Coarse, medium, and fine pitch cutter density to perfectly translate machining capability into higher productivity.

New pocket seat design for improved insert seating and great stability at roughing applications.

Applicable in a wide range of workpiece materials: aluminum, steel, cast iron, titanium, stainless steel, and high-temp alloys.

Comprehensive standard offering for cutter bodies and inserts to address light machining to heavy roughing jobs.

NEW! Available in the new WU10PM and WS40PM grades.

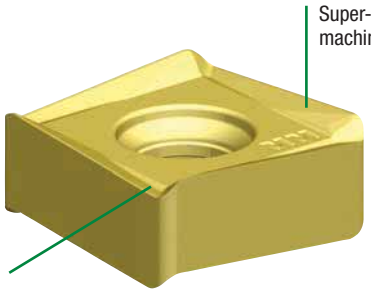
WIDIA™

widia.com

VSM890™-12

8-Edged, Double-Sided True 0° Victory™ Shoulder-Face Mill

- True 0° wall and stepping down capability.
- Axial depth of cut capability; Ap1 max up to .386".
- Optimized chip gash design for proper chip evacuation.
- User-friendly pocket numbering system.
- Cutter bodies with internal coolant supply.
- Less bur creation on the workpiece.



Unique insert rake design to reduce and perfectly balance axial and radial cutting forces. Engineered for light machining to heavy roughing in all material groups.

-ALP

N

First choice for Non-Ferrous materials.

-ML

P M S

First choice for Stainless Steel, light machining, and finishing jobs.

-MM

P M K S H

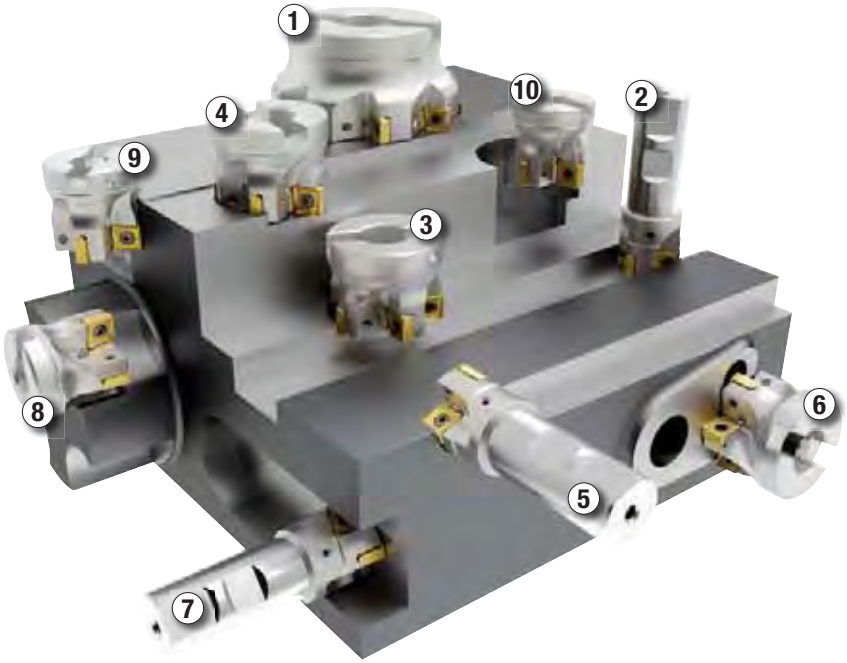
First choice for general purpose in all workpiece materials. Engineered for high-feed rates.

Finishing Capabilities/Lower Cutting Forces

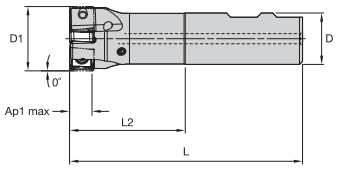
Geometry Strengthening/Stronger Cutting Edge Protection

Applications

1. Face milling.
2. Full slotting with 100% radial engagement.
3. Shoulder milling with stepping down and great wall finish.
4. Shoulder milling with low axial and high radial engagement.
5. Shoulder milling with low radial and high axial engagement.
6. HPC face milling. First choice to clean up castings.
7. Dynamic/trochoidal slot milling.
8. Z-axis plunge milling.
9. Z-axis contour plunge milling.
10. Z-axis zig-zag slot plunge milling.

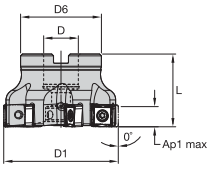


Victory™ Shoulder-Face Mills • VSM890™-12 Series



▼ Weldon® End Mills

order number	catalog number	D1	D	L	L2	Ap1 max	Z	max RPM	coolant supply	lbs
6596129	VSM890D125Z03W100SN12	1.250	1.000	4.530	2.250	.387	3	33400	Yes	.89
6596130	VSM890D150Z04W100SN12	1.500	1.000	4.530	2.250	.387	4	29100	Yes	1.18



▼ Shell Mills

order number	catalog number	D1	D	D6	L	Ap1 max	Z	max RPM	coolant supply	lbs
6596131	VSM890D200Z04S075SN12	2.000	.750	1.750	1.575	.387	4	23800	Yes	.73
6596132	VSM890D200Z05S075SN12	2.000	.750	1.750	1.575	.387	5	23800	Yes	.70
6596133	VSM890D250Z05S075SN12	2.500	.750	1.750	1.575	.387	5	20700	Yes	1.06
6596134	VSM890D250Z07S075SN12	2.500	.750	1.750	1.575	.387	7	20700	Yes	.99
6596135	VSM890D300Z05S100SN12	3.000	1.000	2.190	1.750	.387	5	18500	Yes	1.63
6596136	VSM890D300Z07S100SN12	3.000	1.000	2.190	1.750	.387	7	18500	Yes	1.73
6596137	VSM890D300Z09S100SN12	3.000	1.000	2.190	1.750	.387	9	18500	Yes	1.69
6596138	VSM890D400Z06S150SN12	4.000	1.500	3.810	2.000	.387	6	15700	Yes	3.51
6596139	VSM890D400Z08S150SN12	4.000	1.500	3.810	2.000	.387	8	15700	Yes	3.76
6596151	VSM890D400Z11S150SN12	4.000	1.500	3.810	2.000	.387	11	15700	Yes	3.67
6596152	VSM890D500Z07S150SN12	5.000	1.500	3.810	2.380	.387	7	13800	Yes	6.06
6596153	VSM890D500Z10S150SN12	5.000	1.500	3.810	2.380	.387	10	13800	Yes	6.44
6596154	VSM890D500Z14S150SN12	5.000	1.500	3.810	2.380	.387	14	13800	Yes	6.18
6596155	VSM890D600Z08S200SN12	6.000	2.000	4.875	2.380	.387	8	12500	Yes	11.19
6596156	VSM890D600Z12S200SN12	6.000	2.000	4.875	2.380	.387	12	12500	Yes	9.49
6596157	VSM890D600Z16S200SN12	6.000	2.000	4.875	2.380	.387	16	12500	Yes	9.70
6596158	VSM890D800Z10S250SN12	8.000	2.500	5.118	2.380	.387	10	10700	Yes	12.08
6596159	VSM890D800Z14S250SN12	8.000	2.500	5.118	2.380	.387	14	10700	Yes	12.60
6596160	VSM890D800Z22S250SN12	8.000	2.500	5.118	2.380	.387	22	10700	Yes	12.45
6613696	VSM890D1000Z16S250SN12	10.000	2.500	5.118	2.380	.387	16	9500	Yes	18.01

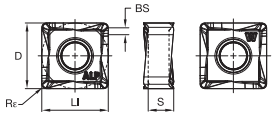
▼ Spare Parts

D1	insert screw	in. lbs.	wrench
1.250–10.000	MS-2071	35	DT151P

NOTE: Please order Torx Plus driver separately.

VSM890™-12

Victory™ Shoulder-Face Mills • VSM890-12 Series

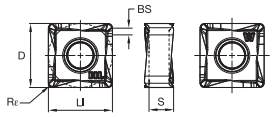


● first choice
○ alternate choice

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

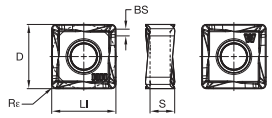
▼ SNHX-ALP • For Aluminum and Other Non-Ferrous Alloys

ISO catalog number	ANSI catalog number	cutting edges	LI mm	LI in	S mm	S in	D mm	D in	BS mm	BS in	Rε mm	Rε in	WK15CM	WK15PM	WN25PM	WP25PM	WP35CM	WP40PM	WS40PM	WU10PM
SNHX120408PNERALP	SNHX1202PNERALP	8	12,00	.472	4,61	.181	12,00	.472	1,34	.053	0,80	.032	■	■	6596397	■	■	■	■	■



▼ SNHX-ML • Precision Finishing and Light Machining

ISO catalog number	ANSI catalog number	cutting edges	LI mm	LI in	S mm	S in	D mm	D in	BS mm	BS in	Rε mm	Rε in	WK15CM	WK15PM	WN25PM	WP25PM	WP35CM	WP40PM	WS40PM	WU10PM
SNHX120408PNERML	SNHX1202PNERML	8	12,00	.472	4,61	.181	12,00	.472	1,34	.053	0,80	.032	■	■	■	6596398	■	■	6596399	■



▼ SNHX-MM • Universal Geometry for Medium Machining

ISO catalog number	ANSI catalog number	cutting edges	LI mm	LI in	S mm	S in	D mm	D in	BS mm	BS in	Rε mm	Rε in	WK15CM	WK15PM	WN25PM	WP25PM	WP35CM	WP40PM	WS40PM	WU10PM
SNHX120408PNSRMM	SNHX1202PNSRMM	8	12,00	.472	4,61	.181	12,00	.472	1,34	.053	0,80	.032	■	■	■	6596431	■	6596432	6596433	6596400

▼ SNPX-MM • Universal Geometry for Heavy Roughing

ISO catalog number	ANSI catalog number	cutting edges	LI mm	LI in	S mm	S in	D mm	D in	BS mm	BS in	Rε mm	Rε in	WK15CM	WK15PM	WN25PM	WP25PM	WP35CM	WP40PM	WS40PM	WU10PM
SNPX120408PNSRMM	SNPX1202PNSRMM	8	12,00	.472	4,61	.181	12,00	.472	1,34	.053	0,80	.032	6595550	6595546	■	6595547	6595571	6595548	6595549	■

Victory™ Shoulder-Face Mills • VSM890™-12 Series

▼ Insert Selection Guide

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	SNHX-ML	WS40PM	**SNPX-MM**	**WP40PM**	SNPX-MM	WP40PM
P3–P4	SNHX-ML	WS40PM	**SNPX-MM**	**WP40PM**	SNPX-MM	WP40PM
P5–P6	SNHX-ML	WP25PM	**SNPX-MM**	**WP35CM**	SNPX-MM	WP40PM
M1–M2	SNHX-ML	WS40PM	**SNHX-ML**	**WS40PM**	SNPX-MM	WS40PM
M3	SNHX-ML	WS40PM	**SNHX-ML**	**WS40PM**	SNPX-MM	WS40PM
K1–K2	SNPX-MM	WK15PM	**SNPX-MM**	**WK15CM**	SNPX-MM	WK15CM
K3	SNPX-MM	WK15PM	**SNPX-MM**	**WP35CM**	SNPX-MM	WP35CM
N1–N2	SNHX-ALP	WN25PM	**SNHX-ALP**	**WN25PM**	SNHX-ALP	WN25PM
N3	SNHX-ALP	WN25PM	**SNHX-ALP**	**WN25PM**	SNHX-ALP	WN25PM
S1–S2	SNHX-ML	WP25PM	**SNHX-ML**	**WS40PM**	SNPX-MM	WS40PM
S3	SNHX-ML	WS40PM	**SNHX-ML**	**WS40PM**	SNPX-MM	WS40PM
S4	SNHX-ML	WS40PM	**SNHX-ML**	**WS40PM**	SNPX-MM	WS40PM
H1	SNHX-MM	WU10PM	**SNHX-MM**	**WU10PM**	–	–

▼ Recommended Starting Speeds [SFM]*

Material Group		WK15CM			WK15PM			WN25PM			WP25PM			WP35CM			WP40PM			WS40PM			WU10PM		
P	1	–	–	–	–	–	–	–	–	–	1085	**935**	885	1495	**1295**	1215	970	**855**	805	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	900	**785**	655	920	**835**	755	820	**705**	590	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	835	**705**	575	835	**755**	675	755	**640**	525	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	740	**605**	490	625	**575**	525	675	**560**	445	–	–	–	–	–	–
	5	–	–	–	–	–	–	–	–	–	605	**560**	490	855	**755**	690	560	**510**	445	560	**475**	395	–	–	–
	6	–	–	–	–	–	–	–	–	–	540	**410**	330	525	**445**	360	490	**375**	295	490	**360**	260	–	–	–
M	1	–	–	–	–	–	–	–	–	–	675	**590**	540	675	**605**	510	640	**560**	510	690	**560**	460	–	–	–
	2	–	–	–	–	–	–	–	–	–	605	**525**	425	605	**525**	460	575	**490**	410	590	**475**	395	–	–	–
	3	–	–	–	–	–	–	–	–	–	460	**395**	310	475	**425**	375	425	**375**	295	475	**360**	280	–	–	–
K	1	1380	**1265**	1115	885	**805**	705	–	–	–	755	**675**	605	970	**870**	785	–	–	–	–	–	–	970	**870**	785
	2	1100	**970**	900	690	**625**	575	–	–	–	590	**525**	490	770	**690**	625	–	–	–	–	–	–	755	**675**	625
	3	920	**820**	755	575	**525**	475	–	–	–	490	**445**	395	640	**575**	525	–	–	–	–	–	–	640	**575**	525
N	1	–	–	–	–	–	–	3525	**3100**	2870	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	3100	**2870**	2495	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	3100	**2870**	2495	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	–	–	–	130	**115**	80	–	–	–	–	–	–	130	**115**	80	–	–	–
	2	–	–	–	–	–	–	–	–	–	130	**115**	80	–	–	–	–	–	–	130	**115**	80	–	–	–
	3	–	–	–	–	–	–	–	–	–	165	**130**	80	–	–	–	–	–	–	165	**130**	80	–	–	–
	4	–	–	–	–	–	–	–	–	–	230	**165**	115	–	–	–	–	–	–	195	**165**	100	–	–	–
H	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	525	**425**	295

*NOTE: FIRST choice starting speeds are in **bold** type. As the average chip thickness increases, the speed should be decreased.*
**Material groups P, M, K, and H show recommended starting speeds for dry machining. For wet machining, reduce speed by 20%.*
**Material groups N and S show recommended starting speeds for wet machining. Not recommended for dry machining.*

Light Machining	General Purpose	Heavy Machining

▼ Recommended Starting Feeds [IPT]

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..ALP	.005	**.010**	.015	.003	**.007**	.011	.003	**.005**	.008	.002	**.005**	.007	.002	**.004**	.006	.E..ALP
.E..ML	.007	**.012**	.023	.005	**.009**	.017	.004	**.007**	.012	.003	**.006**	.011	.003	**.005**	.010	.E..ML
.S..MM	.009	**.014**	.032	.007	**.010**	.023	.005	**.008**	.017	.004	**.007**	.015	.004	**.006**	.014	.S..MM

NOTE: Use "Light Machining" values as starting feed rate.

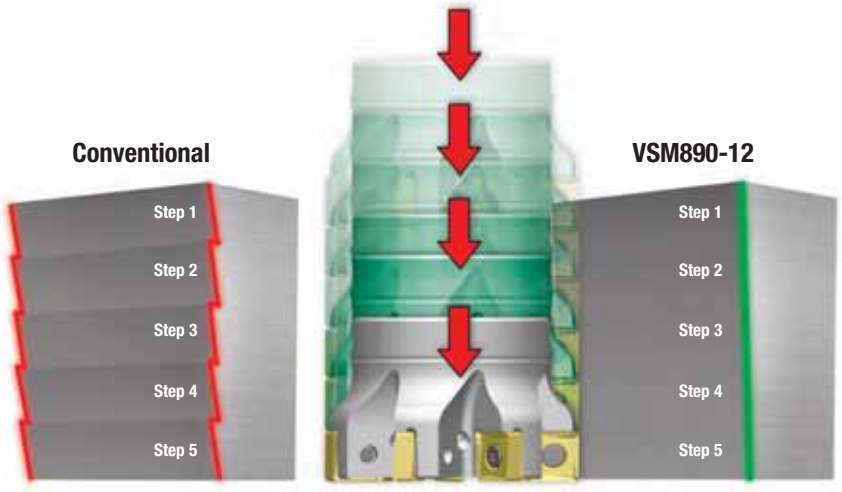
VSM890™-12

Victory™ Shoulder-Face Mills • VSM890-12 Series

Best Practices

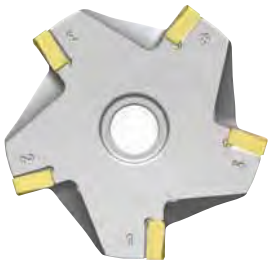
True 0° roughing tool with embedded finishing capabilities all in one tool.

Best-in-class wall finish with VSM890-12 in axial stepping-down jobs. For many shop floor setups, no additional finishing is required resulting in shorter machining time and lower tooling cost.



Excellent wall finish with VSM890-12

Coarse Pitch



- Unstable setup.
- Low spindle power.
- High axial depth of cut Ap1.
- Low feed rate.
- Machining aluminum.
- Driven tools.

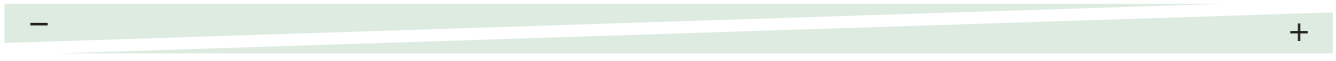
Medium Pitch

- Regular setup.
- Regular spindle power.
- Medium feed rate.

Fine Pitch

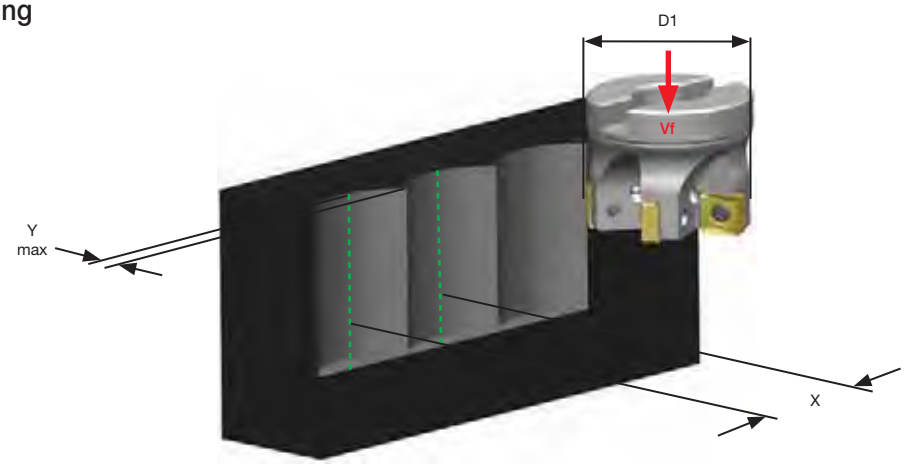
- Rigid setup.
- High spindle power.
- Low axial depth of cut Ap1.
- High feed rate.
- Boost productivity and cut into cycle time.

Machining Stability



▼ VSM890-12 Z-Axis Plunge Milling

cutting diameter (D1)	Y max	X
1.25	0.3504	1.1228
1.5	0.3504	1.2693
2	0.3504	1.5205
2.5	0.3504	1.7358
3	0.3504	1.9272
4	0.3504	2.2618
5	0.3504	2.5528
6	0.3504	2.8138
8	0.3504	3.2744
10	0.3504	3.6776



VSM890-12 Cartridge for M4000

M4000CA-SNHX12
(MM6602179)

VXF™

VICTORY™ X-FEED™

NEXT LEVEL OF HIGH-FEED MILLING

AEROSPACE

GENERAL ENGINEERING

TRANSPORTATION

VXF™-12 Series

VXF-12: Ap1 max: .098"
VXF-12: fz max: .078" IPT

16.5° lead angle redistributes cutting forces in the spindle z-axis direction.

Feed rates up to .078" IPT significantly reduce machining cycle times.

Optimized cutter body and chip gash design perfectly serves high-feed requirements.

PSTS inserts for powerful low cost per edge high-feed milling.

Cutters with internal coolant supply.

Nickel-plated surface protection.

VXF is a high-feed productivity booster designed to establish new industry standards with market-leading milling grades like WS40PM.

WIDIA™

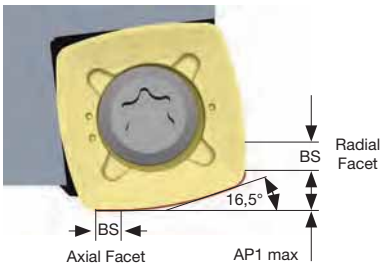
widia.com

VXF™-12

4-Edged, Victory™ X-Feed™ Mills

- 16.5° lead angle redistributes cutting forces in the spindle z-axis direction.
- Greatly reduces tool deflection and vibrations for improved tool life.
- Suitable for long tool reach.
- Unique integrated radial wiping facet to achieve a nice wall finish at pocket and helical interpolation milling.
- Durable cutting edges qualified to machine a wide range of materials.
- WS40PM — best-in-class milling grade for machining stainless steel and HTA.

Perfect combination of round and square insert style.



FEED

Specifically engineered chipbreakers for powerful high-feed milling.

-MM

P M S

First choice for Soft Steel, Stainless Steel, and High-Temp Alloys. Best fit for pocketing and profiling operations.

-MH

P

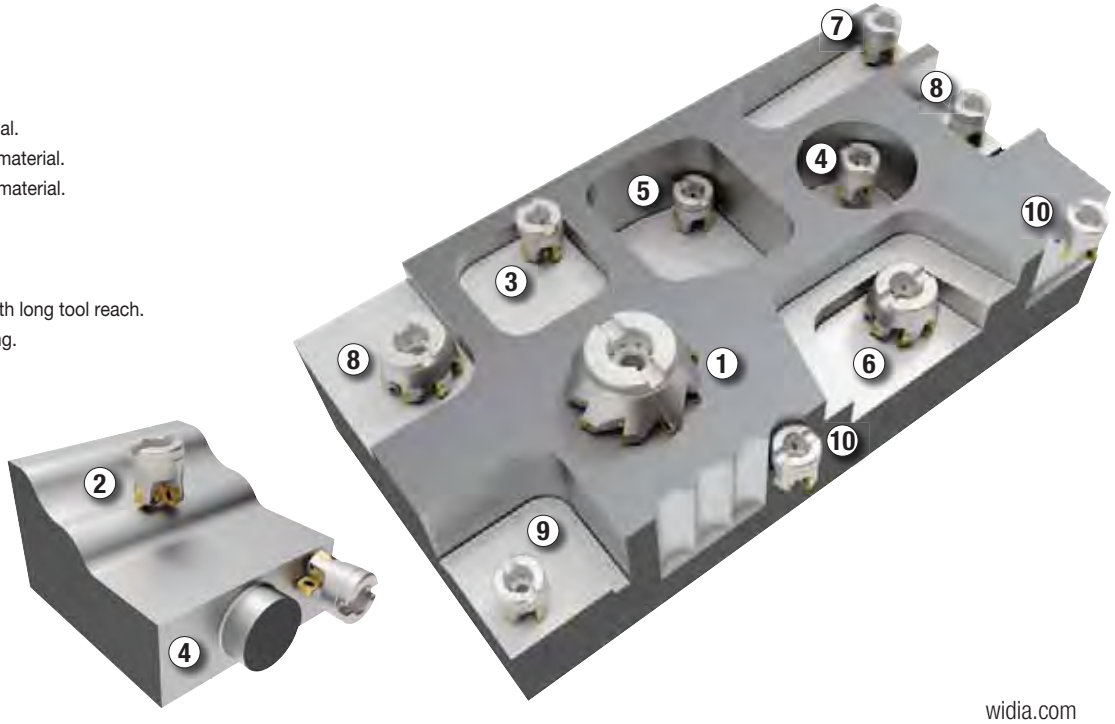
First choice for P3 and P4 materials. Stronger edge protection for heavy roughing jobs.

Lower Cutting Forces

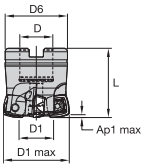
Geometry Strengthening/Stronger Cutting Edge Protection

Applications

1. Face milling.
2. 3D profile milling.
3. Pocket milling into full material.
4. Helical interpolation into full material.
5. Deep pocket milling into full material.
6. Dynamic/trochoidal milling.
7. Aggressive ramp milling.
8. Contour Milling.
9. Face milling deep cavities with long tool reach.
10. Z-axis contour plunge milling.



Victory™ High-Feed Mills • VXF™-12 Series



▼ Shell Mills

order number	catalog number	D1 max	D1	D	D6	L	Ap1 max	Z	max ramp angle	max RPM	coolant supply	lbs
6596763	**VXF150Z04S075XD12**	1.500	.785	.750	1.417	1.575	.098	4	1.0°	27500	Yes	.39
6596764	**VXF200Z05S075XD12**	2.000	1.284	.750	1.811	1.575	.098	5	.9°	22500	Yes	.70
6596765	**VXF200Z06S075XD12**	2.000	1.284	.750	1.811	1.575	.098	6	.9°	22500	Yes	.71
6596766	**VXF250Z05S100XD12**	2.500	1.784	1.000	1.969	1.575	.098	5	.6°	19500	Yes	.96
6596767	**VXF250Z07S100XD12**	2.500	1.784	1.000	1.969	1.575	.098	7	.6°	19500	Yes	1.12
6596768	**VXF300Z05S100XD12**	3.000	2.283	1.000	2.087	1.969	.098	5	.5°	17500	Yes	1.62
6596769	**VXF300Z08S100XD12**	3.000	2.283	1.000	2.087	1.969	.098	8	.5°	17500	Yes	1.86
6596770	**VXF400Z06S125XD12**	4.000	3.283	1.250	2.559	1.969	.098	6	.3°	14500	Yes	3.20
6596780	**VXF400Z09S125XD12**	4.000	3.283	1.250	2.559	1.969	.098	9	.3°	14500	Yes	3.34
6596781	**VXF500Z08S150XD12**	5.000	4.283	1.500	3.150	2.480	.098	8	.2°	13000	Yes	6.77

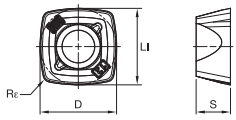
▼ Spare Parts

D1 max	insert screw	in. lbs.	wrench
1.500 - 5.000	**12148007200**	34	**12148099400**

NOTE: Please order wrench separately.

VXF™-12

Victory™ High-Feed Mills • VXF-12 Series

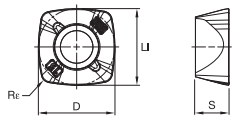


● first choice
○ alternate choice

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

▼ XDPT-MM • Best Fit for Pocketing and Profiling Operations

ISO catalog number	ANSI catalog number	cutting edges	LI mm	LI in	S mm	S in	D mm	D in	Rε mm	Rε in	WP25PM	WP40PM	WS40PM
XDPT120512ERMM	XDPT120512ERMM	4	12,70	.500	5,56	.219	12,70	.500	1,20	.047	6596438	-	6596439



▼ XDPT-MH • Dedicated Geometry for Heavy Roughing

ISO catalog number	ANSI catalog number	cutting edges	LI mm	LI in	S mm	S in	D mm	D in	Rε mm	Rε in	WP25PM	WP40PM	WS40PM
XDPT120515SRMH	XDPT120515SRMH	4	12,70	.500	5,56	.219	12,70	.500	1,50	.059	-	6596440	-

▼ Insert Selection Guide

Material Group	Light Machining Geometry	Light Machining Grade	General Purpose Geometry	General Purpose Grade	Heavy Machining Geometry	Heavy Machining Grade
P1–P2	XDPT-MM	WP25PM	**XDPT-MM**	**WS40PM**	XDPT-MH	WP40PM
P3–P4	XDPT-MM	WP25PM	**XDPT-MM**	**WS40PM**	XDPT-MH	WP40PM
P5–P6	XDPT-MM	WP25PM	**XDPT-MM**	**WS40PM**	XDPT-MH	WP40PM
M1–M2	XDPT-MM	WS40PM	**XDPT-MM**	**WS40PM**	XDPT-MH	WP40PM
M3	XDPT-MM	WS40PM	**XDPT-MM**	**WS40PM**	XDPT-MH	WP40PM
S1–S2	XDPT-MM	WP25PM	**XDPT-MM**	**WS40PM**	XDPT-MH	WP40PM
S3	XDPT-MM	WS40PM	**XDPT-MM**	**WS40PM**	XDPT-MH	WP40PM
S4	XDPT-MM	WS40PM	**XDPT-MM**	**WS40PM**	XDPT-MH	WP40PM

▼ Recommended Starting Speeds [SFM]*

Material Group		WP25PM			WP40PM			WS40PM		
P	1	1295	**1115**	1065	1165	**1015**	970	–	**–**	–
	2	1085	**950**	785	985	**855**	705	–	**–**	–
	3	1000	**855**	690	900	**770**	625	–	**–**	–
	4	885	**720**	590	805	**675**	525	–	**–**	–
	5	720	**675**	590	675	**605**	525	675	**575**	475
	6	655	**490**	395	590	**460**	360	590	**425**	310
M	1	805	**705**	655	770	**675**	605	820	**675**	560
	2	720	**625**	510	690	**590**	490	705	**575**	475
	3	560	**475**	375	510	**460**	360	575	**425**	330
S	1	165	**130**	100	165	**130**	115	165	**130**	100
	2	165	**130**	100	165	**130**	115	165	**130**	100
	3	195	**165**	100	195	**165**	115	195	**165**	100
	4	280	**195**	130	260	**195**	130	230	**195**	115

*NOTE: FIRST choice starting speeds are in **bold** type. As the average chip thickness increases, the speed should be decreased.*
**Material groups P, M, K, and H show recommended starting speeds for dry machining. For wet machining, reduce speed by 20%.*
**Material groups N and S show recommended starting speeds for wet machining. Not recommended for dry machining.*

▼ Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

At .020 Axial Depth of Cut (AP1)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..MM	.020	**.058**	.109	.014	**.039**	.067	.010	**.028**	.047	.009	**.025**	.041	.008	**.022**	.037	.E..MM
.S..MH	.036	**.080**	.141	.025	**.052**	.080	.019	**.037**	.056	.016	**.032**	.048	.015	**.029**	.043	.S..MH

At .025 Axial Depth of Cut (AP1)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..MM	.018	**.051**	.094	.013	**.035**	.059	.009	**.025**	.042	.008	**.022**	.037	.007	**.020**	.033	.E..MM
.S..MH	.032	**.070**	.118	.023	**.046**	.071	.017	**.033**	.050	.014	**.029**	.043	.013	**.026**	.039	.S..MH

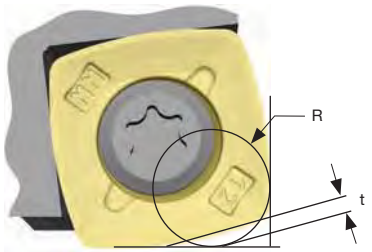
At .035 Axial Depth of Cut (AP1)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..MM	.015	**.043**	.076	.011	**.029**	.050	.008	**.022**	.036	.007	**.019**	.031	.006	**.017**	.028	.E..MM
.S..MH	.027	**.058**	.093	.019	**.039**	.059	.014	**.028**	.042	.012	**.024**	.036	.011	**.022**	.033	.S..MH

NOTE: Use "Light Machining" values as starting feed rate.

▼ CAM Programming

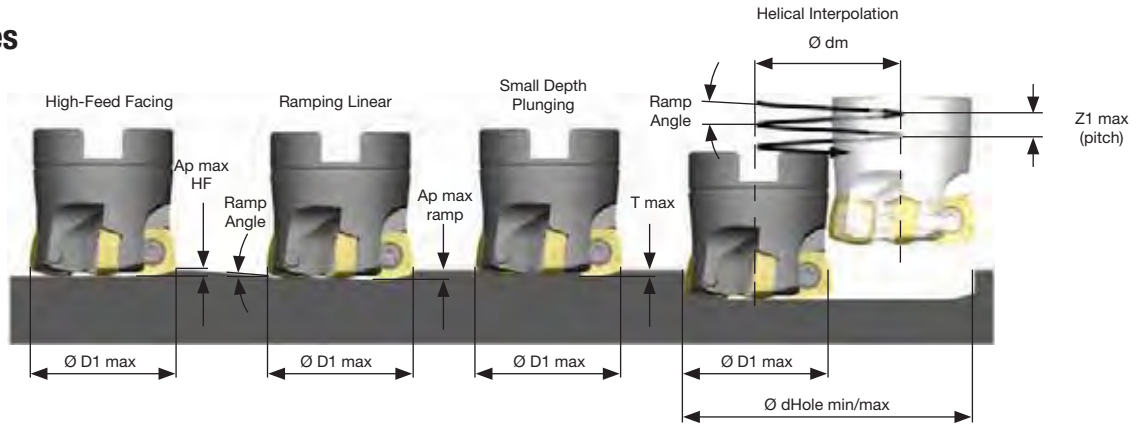
Programming Data			
insert size	insert radius	R (to be programmed)	t
12	3/64	0.106	0.038
	1.5	0.110	0.037



VXF™-12

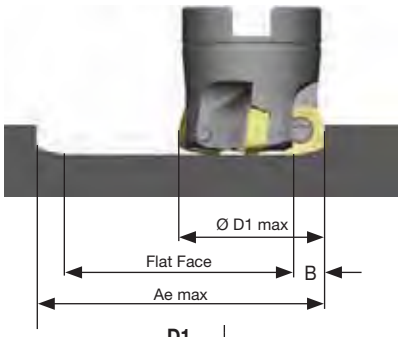
Victory™ High-Feed Mills • VXF-12 Series

Best Practices



D1 max	High-feed Facing	Ramping Linear		Helical Interpolation				Small Depth Plunging
	Ap max HF	Ramp Angle max	Ap max Ramp	Ramp Angle max	d Hole min	d Hole max	Z1 max Helical	T max
1.5	.050	0.95	.070	0.95	2.130	2.920	.070	.031
2.0	.050	0.90	.070	0.90	3.370	3.920	.070	.031
2.5	.050	0.60	.070	0.60	4.130	4.920	.070	.031
3.0	.050	0.45	.070	0.45	5.130	5.920	.070	.031
4.0	.050	0.31	.070	0.31	7.130	7.920	.070	.031
5.0	.050	0.24	.070	0.24	9.130	9.920	.070	.031

Ødm = ØHole–ØD1 max
Z1 = Ødm x 3,14 x tan ramp angle. Z1 ≤ Z1 max and ≤ ramp angle max
Ramp angle = arc tan x ((Z1)/Ødm x 3,14))

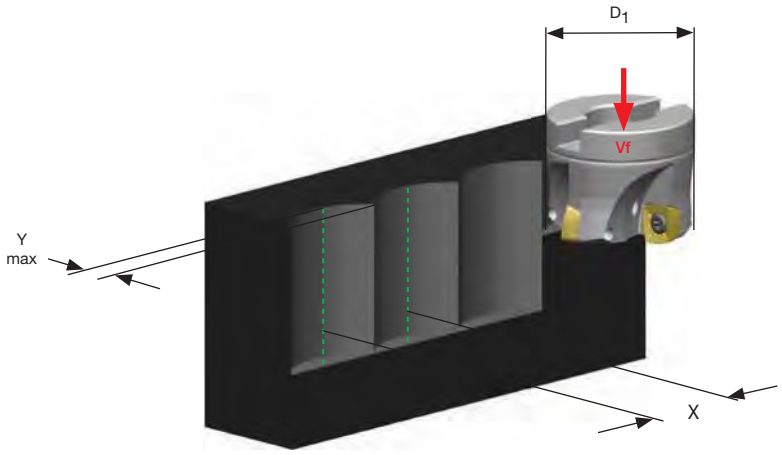


D1 max	B
1.5 to 5.0	.358

Ae max ≤ 2 x ØD1 max–2 x B
Flat Face = Ae max–2 x B

▼ Z-Axis Plunge Milling

cutting diameter (D1)	Y max	X
1.5	0.354	1.274
2	0.354	1.527
2.5	0.354	1.743
3	0.354	1.936
4	0.354	2.272
5	0.354	2.565



▼ Feed Rate Guide • Z-Axis Plunge Milling • fz (mm/tooth)

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz)			Insert Geometry	Y max
.E..MM	.003	**.008**	.012	.E..MM	.358
.S..MH	.004	**.010**	.014	.S..MH	.358

Designed to Make Your Workplace More Productive

WIDIA™ X-Feed™

WIDIA-branded X-Feed tooling was created as an application-specific portfolio to remove as much material as possible in the shortest amount of time, using a shallow depth of cut to achieve higher MRR and boost productivity.

X-FEED → HIGH-FEED MILLING → BOOST PRODUCTIVITY

Victory™ X-Feed For Machining Stainless Steel and Titanium

AEROSPACE

7FNS Series

Designed for circular plunging and ramping, 3D machining, face milling, and pocketing applications.

Victory X-Feed To Speed Up High-Feed Machining

VXF™-12 Series

VXF is a high-feed productivity booster designed to establish new industry standards with market-leading milling grades like WS40PM.

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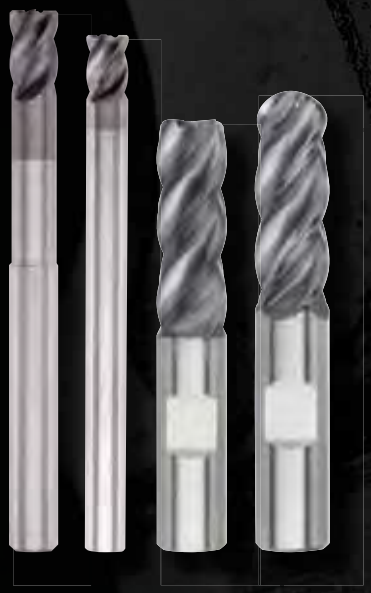
A SOLID FOUNDATION **THE VARIMILL™ FAMILY**

The WIDIA-Hanita VariMill family continues to provide leading-edge solutions for some of the most advanced applications in the general engineering, aerospace, and defense industries. These industries require complex machining techniques in some of the most exotic materials.



VariMill I™

This 4-flute geometry is designed with unequal flute spacing for plunging, slotting, and profiling at the highest possible feed rates for a wide range of materials.

VariMill II™

This 5-flute geometry is designed with unequal flute spacing for advanced milling jobs in a wide range of materials.

VariMill III™

This 7-flute geometry is designed with unequal flute spacing and is designed to provide the highest Metal Removal Rates (MRR) and extended tool life in the most demanding materials in the aerospace industry.

COMING SOON!

See the entire VariMill™ platform in the 2019 VariMill Family Catalog coming soon!

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7FNS

VICTORY™ X-FEED™

PRODUCTIVITY IMPROVED IN HIGH-FEED MILLING OF STAINLESS STEEL AND TITANIUM MATERIALS

AEROSPACE

NEW!

FEED

7FNS Series

Designed for high-feed rates.

6 flutes and 3 x D diameter neck reach.

Designed for circular plunging and ramping, 3D machining, face milling, and pocketing applications.

Stainless steel and high-temp alloys.

Improved tool life due to reduced radial forces.

Larger radial engagement vs. standard ball nose end mills.

5–10%
Radial engagement

55%
Radial engagement

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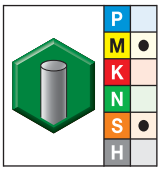
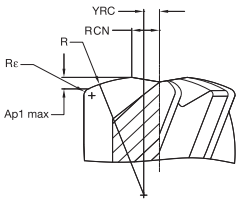
X-Feed™

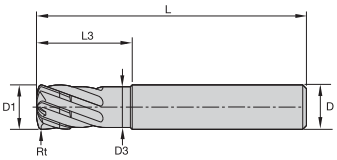
7FNS Series • Stainless Steel/High-Temp • X-Feed

▼ 7FNS Series • X-Feed



● first choice
○ alternate choice





grade AlTiN-MT AlTiN						length		
order #	catalog #	D1	D	D3	L3	L	Rε	Rt
6441876	7FNS07002	1/4	1/4	.21	.73	2 1/2	.016	.027
6441877	7FNS10004	3/8	3/8	.34	1.23	3 1/2	.023	.040
6441878	7FNS13005	1/2	1/2	.46	1.48	4	.031	.054
6441879	7FNS16006	5/8	5/8	.59	1.98	4 1/2	.039	.067
6441880	7FNS19007	3/4	3/4	.71	2.48	5	.047	.080
6441881	7FNS25008	1	1	.96	2.98	5 1/2	.063	.106

NOTE: YRC = distance from center line to the crown of the R radius.
RCN = distance from center line to the start of the cutting edge. This dimension can also help determine the minimum circle size when helical ramping.
R = the head radius size.
Rε = the shoulder radius or radius at the corner of the cutter.

End Mill Tolerances

D1	tolerance	D	tolerance h6 + / -
All	+.000/-.002	< 1/8"	0/.00024
–	–	1/8–7/32"	0/.00031
–	–	1/4–3/8"	0/.00035
–	–	13/32–11/16"	0/.00043
–	–	23/32–1 3/16"	0/.00051

▼ Programming Data

7FNS Inch																
Geometrical Parameters									Ramping Guide for Circular and Linear Interpolation							
									Circular Interpolation		Linear Interpolation					
									Allowed Range of Hole Diameter		Calculated Length (mm) per Ramp Angle					
diameter	Ap1 max	Rfm	Rt	Rc	Xfm	Yfm	YD	Number			Ramp Angle (degree)					
[inch]	[inch]	[inch]	[inch]	[inch]	[inch]	[inch]	[inch]	flutes	Smallest	Largest	1	2	3	4	5	
1/4	0.0133	1/4	0.0269	0.0160	0.0133	0.0313	0.0525	6	0.355	0.5	0.76	0.38	0.25	0.19	0.15	
3/8	0.0200	3/8	0.0399	0.0235	0.0200	0.0469	0.0788	6	0.5325	0.75	1.14	0.57	0.38	0.29	0.23	
1/2	0.0266	1/2	0.0538	0.0320	0.0266	0.0625	0.1050	6	0.71	1	1.52	0.76	0.51	0.38	0.30	
5/8	0.0333	5/8	0.0672	0.0400	0.0333	0.0781	0.1313	6	0.8875	1.25	1.91	0.95	0.63	0.48	0.38	
3/4	0.0399	3/4	0.0798	0.0470	0.0399	0.0938	0.1575	6	1.065	1.5	2.29	1.14	0.76	0.57	0.46	
1	0.0532	1	0.1059	0.0620	0.0532	0.1250	0.2100	6	1.42	2	3.05	1.52	1.02	0.76	0.61	
Recommended Feed											30%	30%	30%	30%	10%	

▼ 7FNS Series • X-Feed

Material Group		Profile Milling		AlTiN-MT			Recommended feed per tooth (IPT = inch/th) for 3D milling/profiling (A)						
		A		Cutting Speed — Vc SFM				D1 — Diameter					
							frac.	1/4	5/16	3/8	1/2	5/8	3/4	1
		ap	ae	min		max	dec.	.2500	.3125	.3750	.5000	.6250	.7500	1.000
M	1	0.5 x D	0.55 x D	290	–	375	IPT	.0118	.0156	.0188	.0213	.0281	.0338	.0450
	2	0.5 x D	0.55 x D	190	–	260	IPT	.0094	.0125	.0150	.0189	.0250	.0300	.0400
	3	0.5 x D	0.55 x D	190	–	230	IPT	.0094	.0125	.0150	.0189	.0250	.0300	.0400
S	1	0.5 x D	0.55 x D	165	–	295	IPT	.0106	.0141	.0169	.0197	.0254	.0300	.0400
	2	0.5 x D	0.55 x D	165	–	260	IPT	.0094	.0125	.0150	.0189	.0234	.0263	.0360
	3	0.5 x D	0.55 x D	80	–	130	IPT	.0071	.0094	.0113	.0138	.0168	.0188	.0240
	4	0.5 x D	0.55 x D	165	–	190	IPT	.0083	.0109	.0131	.0165	.0219	.0263	.0350

NOTE: Lower value of cutting speed is used for high-stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
For smaller taper machining centers, please adjust parameters accordingly on diameters greater than 1/2".

4U50 & 4U80

AEROSPACE ROUGHING

AEROSPACE

NEW!

4U50

Shallow pitch rougher.

4–6 flutes with variable spacing.

Short length of cut and 3 x D diameter neck length.

Stainless steel and high-temp alloys.

Center cutting.

4U80

Shallow pitch rougher.

4–6 flutes with variable spacing.

Regular length of cut.

Stainless steel and high-temp alloys.

Center cutting.

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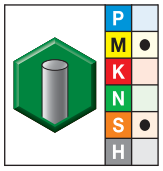
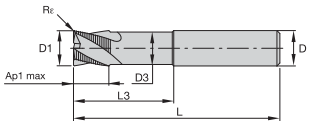
High-Performance Roughers

4U50 Series

▼ 4U50 Series



● first choice
○ alternate choice



order #	catalog #	D1	D	D3	length of cut Ap1 max	L3	length L	Rε	ZU
	grade AlTiN-MT AlTiN								
6441870	4U50E0700R2BT	1/4	1/4	.24	3/8	.75	2 1/2	.030	4
6441871	4U50E1000R4BT	3/8	3/8	.35	1/2	1.13	3	.030	4
6441872	4U50E1300R5BT	1/2	1/2	.47	5/8	1.50	3 1/2	.030	4
6441873	4U50E1601R6BT	5/8	5/8	.59	5/8	1.88	4	.030	6
6441874	4U50E1901R7XT	3/4	3/4	.71	3/4	2.25	4 1/2	.050	6
6441875	4U50E2501R8XT	1	1	.94	1	3.00	5 1/2	.050	6

End Mill Tolerances

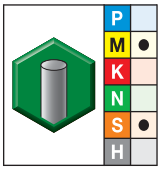
D1	tolerance d11	D	tolerance h6 + / -
< 1/8"	-.0008/-.0031	< 1/8"	0/.00024
1/8–7/32"	-.0012/-.0041	1/8–7/32"	0/.00031
1/4–3/8"	-.0016/-.0051	1/4–3/8"	0/.00035
13/32–11/16"	-.002/-.0063	13/32–11/16"	0/.00043
23/32–1-3/16"	-.0026/-.0077	23/32–1 3/16"	0/.00051

▼ 4U50 Series

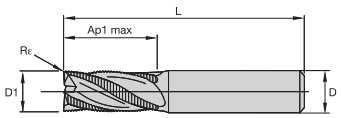
Material Group		A ap	A ae	B ap	Cutting Speed — Vc SFM min		max	frac.	D1 — Diameter 1/4	5/16	3/8	1/2	5/8	3/4	1
		Side Milling (A) and Slotting (B)			AlTiN-MT			Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.							
								dec.	.2500	.3125	.3750	.5000	.6250	.7500	1.0000
M	1	1 x D	0.5 x D	0.75 x D	297	–	379.5	IPT	.0015	.0020	.0023	.0029	.0034	.0038	.0046
	2	1 x D	0.5 x D	0.75 x D	198	–	264	IPT	.0012	.0016	.0018	.0023	.0027	.0030	.0036
	3	1 x D	0.5 x D	0.75 x D	198	–	231	IPT	.0010	.0013	.0015	.0019	.0022	.0024	.0028
S	1	1 x D	0.3 x D	0.75 x D	165	–	297	IPT	.0015	.0020	.0023	.0029	.0034	.0038	.0046
	2	1 x D	0.3 x D	0.3 x D	82.5	–	132	IPT	.0008	.0010	.0012	.0016	.0018	.0020	.0025
	3	1 x D	0.4 x D	0.75 x D	198	–	264	IPT	.0012	.0016	.0018	.0023	.0027	.0030	.0036
	4	1 x D	0.4 x D	0.75 x D	165	–	198	IPT	.0011	.0014	.0017	.0022	.0025	.0028	.0033

NOTE: Lower value of cutting speed is used for high-stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on diameters greater than 1/2".

▼ 4U80 Series



● first choice
○ alternate choice



order #	catalog #	D1	D	length of cut Ap1 max	length L	Rε	ZU
		grade AlTiN-MT AlTiN					
6441861	4U80E0700R2BT	1/4	1/4	3/4	2 1/2	.030	4
6441862	4U80E0800R3BT	5/16	5/16	13/16	2 1/2	.030	4
6441863	4U80E1000R4BT	3/8	3/8	7/8	2 1/2	.030	4
6441864	4U80E1300R5BT	1/2	1/2	1 1/4	3	.030	4
6441865	4U80E1600R6BT	5/8	5/8	1 7/8	4	.030	6
6441866	4U80E1900R7XT	3/4	3/4	1 1/2	4	.050	4
6441867	4U80E1901R7XT	3/4	3/4	1 1/2	4	.050	6
6441868	4U80E2500R8XT	1	1	1 1/2	4	.050	4
6441869	4U80E2501R8XT	1	1	1 1/2	4	.050	6

End Mill Tolerances

D1	tolerance d11	D	tolerance h6 + / -
< 1/8"	-.0008/-.0031	< 1/8"	0/.00024
1/8–7/32"	-.0012/-.0041	1/8–7/32"	0/.00031
1/4–3/8"	-.0016/-.0051	1/4–3/8"	0/.00035
13/32–11/16"	-.002/-.0063	13/32–11/16"	0/.00043
23/32–1-3/16"	-.0026/-.0077	23/32–1 3/16"	0/.00051

▼ 4U80 Series

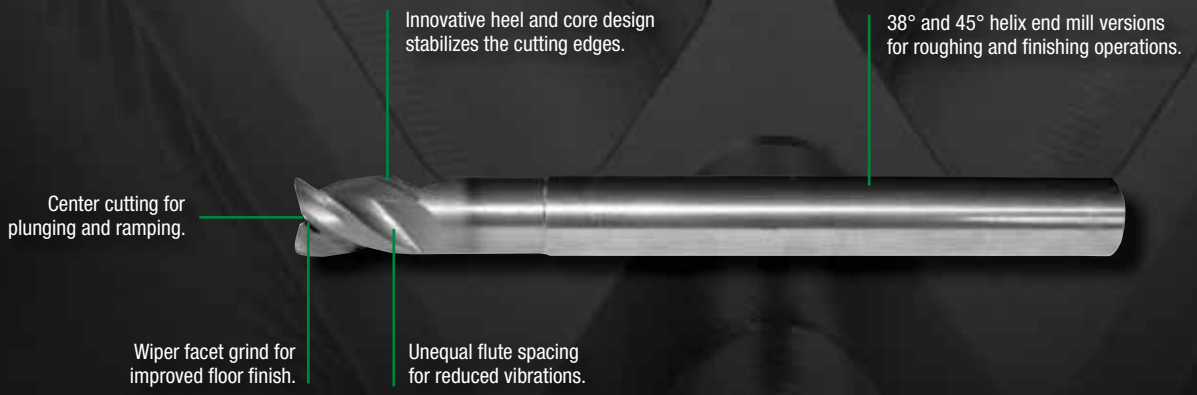
Material Group		Side Milling (A) and Slotting (B) A ap	A ae	B ap	AlTiN-MT Cutting Speed — Vc SFM min		max	Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%. frac.	D1 — Diameter 1/4	5/16	3/8	1/2	5/8	3/4	1
								dec.	.2500	.3125	.3750	.5000	.6250	.7500	1.0000
M	1	1 x D	0.5 x D	0.75 x D	290	–	380	IPT	.0015	.0020	.0023	.0029	.0034	.0038	.0046
	2	1 x D	0.5 x D	0.75 x D	200	–	265	IPT	.0012	.0016	.0018	.0023	.0027	.0030	.0036
	3	1 x D	0.5 x D	0.75 x D	200	–	230	IPT	.0010	.0013	.0015	.0019	.0022	.0024	.0028
S	1	1 x D	0.3 x D	0.75 x D	160	–	300	IPT	.0015	.0020	.0023	.0029	.0034	.0038	.0046
	2	1 x D	0.3 x D	0.3 x D	80	–	130	IPT	.0008	.0010	.0012	.0016	.0018	.0020	.0025
	3	1 x D	0.4 x D	0.75 x D	200	–	265	IPT	.0012	.0016	.0018	.0023	.0027	.0030	.0036
	4	1 x D	0.4 x D	0.75 x D	165	–	200	IPT	.0011	.0014	.0017	.0022	.0025	.0028	.0033

NOTE: Lower value of cutting speed is used for high-stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on diameters greater than 1/2".

ALUSURF™ 5AN2

LINE EXPANSION

AluSurf end mills provide extraordinary Metal Removal Rates (MRR) by combining roughing and finishing operations for any aluminum plunging, slotting, and profiling application. Its proprietary flute geometry is designed for rigidity and improved chip evacuation generating exceptional wall-to-floor perpendicularity, even in thin wall applications. To ensure a superior floor surface finish, the AluSurf front geometry is equipped with a wiper facet grind.



AEROSPACE

GENERAL ENGINEERING

TRANSPORTATION

AluSurf™ 5AN2 Series

One tool for roughing and finishing operations.

Slotting depths up to 1 x D and peripheral milling up to 1.5 x D axial at .5 x D radially.

Unequal flute spacing for chatter-free performance (3-flute series only).

Multiple corner radii and extended neck configurations available as standard.

Increase your output due to less tool changes and increased Metal Removal Rates (MRR).

No specific tools for roughing and finishing necessary.

Less passes due to 1 x D slotting capability.

Perfect for MQL (Minimum Quantity Lubrication) methods.

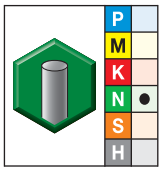
WIDIA™

widia.com

AluSurf™

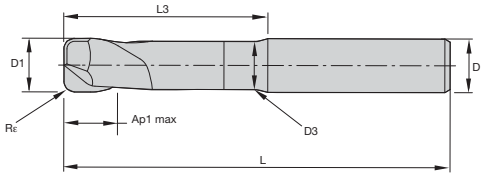
5AN2 Series

▼ 5AN2 Series • AluSurf



grade UNCOATED

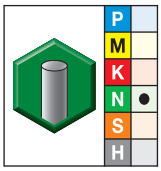
● first choice
○ alternate choice



order #	catalog #	D1	D	D3	length of cut Ap1 max	L3	length L	Rε
3336000	5AN203042A	1/8	1/4	.12	3/16	1/2	3	.015
3336001	5AN205042A	3/16	1/4	.18	1/4	9/16	3	.015
3336002	5AN207042A	1/4	1/4	.23	5/16	3/4	3	.015
3659287	5AN207042	1/4	1/4	.23	5/16	3/4	3	—
3683906	5AN207012B	1/4	1/4	.23	3/8	2 1/4	4	.030
3659288	5AN207012	1/4	1/4	.23	3/8	2 1/4	4	—
3336083	5AN208043B	5/16	5/16	.29	3/8	1	4	.030
3659289	5AN208023	5/16	5/16	.29	3/8	2	4	—
3336084	5AN210044B	3/8	3/8	.35	7/16	1 1/8	4	.030
3683910	5AN210014C	3/8	3/8	.35	7/16	2 1/4	4	.060
3474843	5AN210014	3/8	3/8	.35	7/16	2 1/4	4	—
3683911	5AN213045C	1/2	1/2	.47	9/16	1 1/2	5	.060
6457780	5AN213045E	1/2	1/2	.47	9/16	1 1/2	5	.120
3659292	5AN213045	1/2	1/2	.47	9/16	1 1/2	5	—
3683913	5AN213005B	1/2	1/2	.47	9/16	2 1/4	5	.030
3683914	5AN213005C	1/2	1/2	.47	9/16	2 1/4	5	.060
6457801	5AN213005E	1/2	1/2	.47	9/16	2 1/4	5	.120
3474844	5AN213005	1/2	1/2	.47	9/16	2 1/4	5	—
3683916	5AN213015B	1/2	1/2	.47	9/16	3 1/4	6	.030
6457802	5AN213015E	1/2	1/2	.47	9/16	3 1/4	6	.120
3659487	5AN213015	1/2	1/2	.47	9/16	3 1/4	6	—
3683919	5AN216016B	5/8	5/8	.59	3/4	3 1/4	6	.030
3659488	5AN216016	5/8	5/8	.59	3/4	3 1/4	6	—
3683922	5AN219057B	3/4	3/4	.70	1	1 1/2	6	.030
3683923	5AN219057C	3/4	3/4	.70	1	1 1/2	6	.060
3659489	5AN219057	3/4	3/4	.70	1	1 1/2	6	—
6457803	5AN219057E	3/4	3/4	.71	1	1 1/2	6	.120
3683925	5AN219077B	3/4	3/4	.70	1	2 1/4	6	.030
3683926	5AN219077C	3/4	3/4	.70	1	2 1/4	6	.060
6457804	5AN219077E	3/4	3/4	.71	1	2 1/4	6	.120
3683928	5AN219017B	3/4	3/4	.70	1	3 1/4	6	.030
3683929	5AN219017C	3/4	3/4	.70	1	3 1/4	6	.060

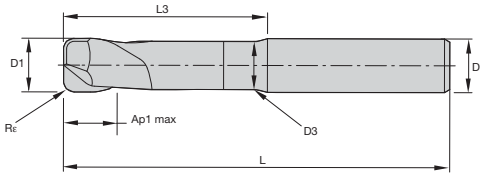
(continued)

(5AN2 Series • AluSurf™ — continued)



grade UNCOATED

● first choice
○ alternate choice

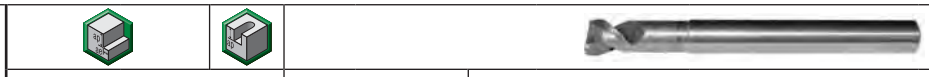


order #	catalog #	D1	D	D3	length of cut Ap1 max	L3	length L	Rε
3683930	**5AN219017D**	3/4	3/4	.70	1	3 1/4	6	.090
3659491	**5AN219017**	3/4	3/4	.70	1	3 1/4	6	—
6457805	**5AN219017E**	3/4	3/4	.71	1	3 1/4	6	.120
3683931	**5AN225048B**	1	1	.94	1 1/8	3	5 1/2	.030
3336088	**5AN225048C**	1	1	.94	1 1/8	3	5 1/2	.060
6457806	**5AN225048E**	1	1	.94	1 1/2	3	5 1/2	.120
3659492	**5AN225048**	1	1	.94	1 1/8	3	5 1/2	—
3683933	**5AN225028C**	1	1	.94	1 1/8	4 1/4	7	.060
6457807	**5AN225028E**	1	1	.94	1 1/2	4 1/4	7	.120

End Mill Tolerances

D1	tolerance	D	tolerance h6 + / -
< 1/8"	0/.00024	< 1/8"	0/.00024
1/8–7/32"	0/.00031	1/8–7/32"	0/.00031
1/4–3/8"	0/.00035	1/4–3/8"	0/.00035
13/32–11/16"	0/.00043	13/32–11/16"	0/.00043
23/32–1 3/16"	0/.00051	23/32–1 3/16"	0/.00051

▼ 5AN2 Series • AluSurf



Material Group		Side Milling (A) and Slotting (B) A ap	A ae	B ap	Uncoated Cutting Speed — vc SFM min		max	Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%. frac.	D1 — Diameter 1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1
								dec.	.1250	.1880	.2500	.3130	.3750	.5000	.6250	.7500	1.000
N	1	1 x D	0.5 x D	1 x D	1640	–	6560	IPT	.0013	.0019	.0025	.0031	.0038	.0050	.0063	.0075	.0100
	2	1 x D	0.5 x D	1 x D	1640	–	4920	IPT	.0010	.0015	.0020	.0025	.0030	.0040	.0050	.0060	.0080
	3	1 x D	0.5 x D	1 x D	1640	–	4920	IPT	.0009	.0013	.0018	.0022	.0026	.0035	.0044	.0053	.0070
	4	1 x D	0.5 x D	1 x D	1310	–	2460	IPT	.0009	.0013	.0018	.0022	.0026	.0035	.0044	.0053	.0070
	4	1 x D	0.5 x D	1 x D	820	–	3280	IPT	.0011	.0017	.0023	.0028	.0034	.0045	.0056	.0068	.0090

NOTE: Side milling applications — For longest reach (L3) tools, reduce ae by 30%.
Slot milling applications — For longest reach (L3) tools, reduce ap by 30%.
For cutting aluminum with high silicon, coating is recommended.
For spindles with ceramic bearings, multiply ap by 0.5.
For better surface finish, reduce feed per tooth.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on diameters greater than 1/2".

TDMX

TOP DRILL™ MODULAR X

STABILITY AND RELIABILITY COMBINED INTO ONE MODULAR DRILL SYSTEM

GENERAL ENGINEERING

ENERGY

TRANSPORTATION

Platform

Standard cutter bodies in 3 x D, 5 x D, and 8 x D lengths.

Insert diameter range from .629" up to 1.574".

One geometry and grade to cover steel and cast iron applications.

Easy to Apply

Front clamping design. No need to disassemble the body from the holder to change insert.

Easy insert nomenclature logic to identify the targeted material group.

Increased Stability and Performance

Highly engineered pocket seat design to ensure maximum stability, even in challenging applications like cross hole, inclined entry/exit, and interrupted cuts.

Suitable for high feed rates.

Flanged shank for higher rigidity.

Polished flutes for improved chip evacuation.

Brand new WP40PD grade for longer tool life in steel and cast iron applications.

WIDIA™ TOP DRILL™ Modular X (TDMX) is the ultimate choice for high-demanding drilling applications when stability and reliability are required.

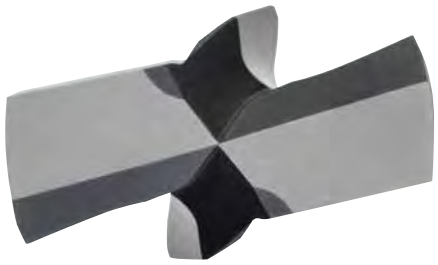
WIDIA™

widia.com

TDMX — TOP DRILL™ Modular X

Extra-Stable Modular Drill up to 1.574" Diameter

- Augmented insert stability thanks to the highly engineered pocket seat design.
- Front clamping for an easy insert change, without disassembling the holder from the machine spindle.
- Diameter range from .629" up to 1.574".
- L/D ratio of 3 x D, 5 x D, and 8 x D.



One geometry to cover two material groups in modular drilling.

PK

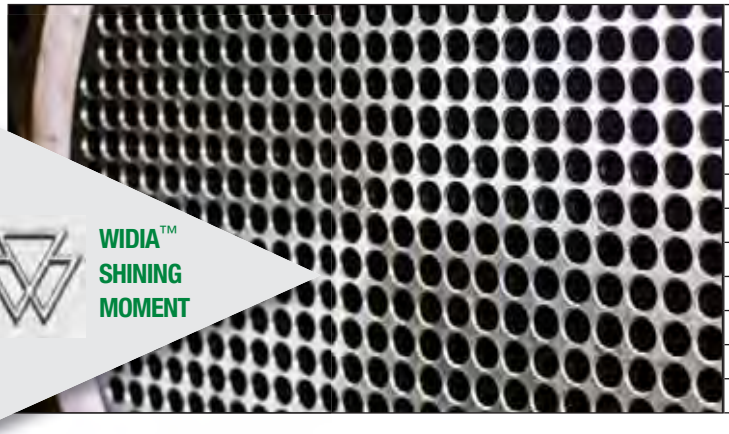
P K

First choice for Steel and Cast Iron drilling.

TDMX — Tube Sheet Drilling

P Steel

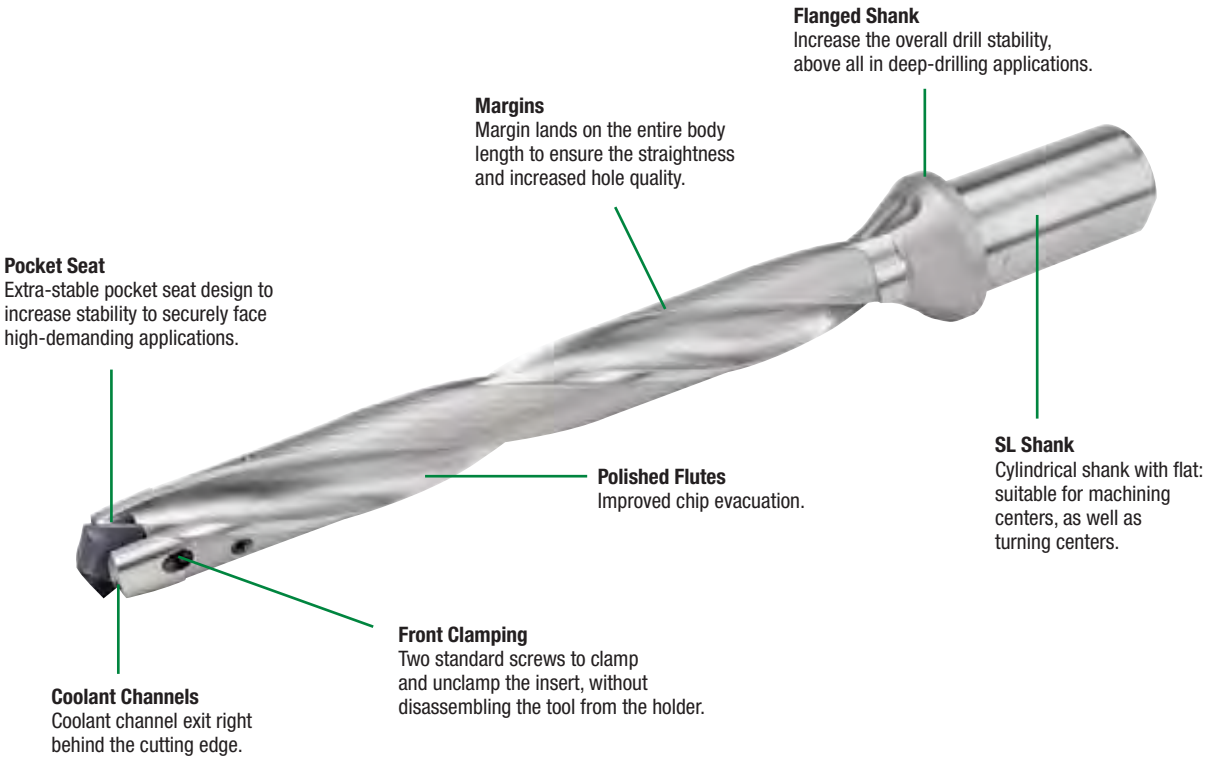
Material: Fe510/1.0553/A441
Condition: rough surface



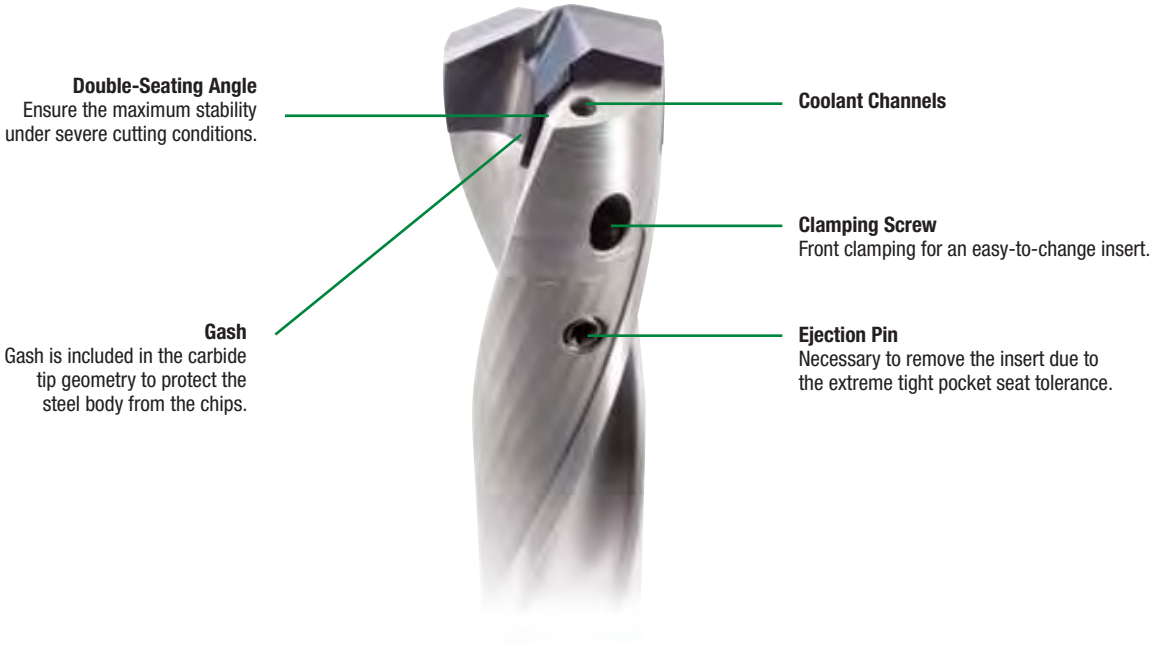
WIDIA™ SHINING MOMENT

Specifications	Competitor	WIDIA
Diameter (Inch)	1.00"	1.00"
Grade	–	WP40PD
Geometry	–	PK
Vc (SFM)	300	300
n (rev/min)	1.247	1.247
f (IPR)	0.013	0.014
Vf (in/min)	15.7	17.2
LOC (in)	2	2
Coolant	Internal Emulsion	Internal Emulsion
Tool Life (ft)	98.4	157.4

▼ TDMX Body — Technical Details

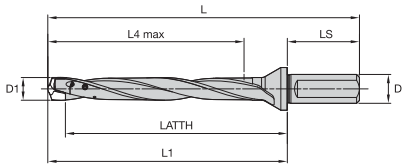


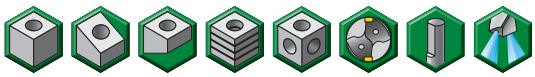
▼ TDMX Pocket Seat — Technical Details



TDMX — TOP DRILL™ Modular X

Modular Drill System • TDMX





▼ TOP DRILL Modular X • 3 x D/ 5 x D/ 8 x D • Side Lock Shank • Inch

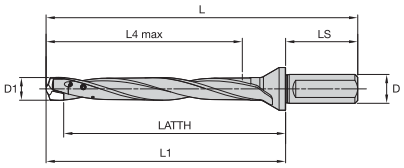
3 x D		5 x D		8 x D			D1		clamping	
order #	catalog #	order #	catalog #	order #	catalog #	SSC	min	max	screw	wrench
6572186	TDMX0630R3SL075	6572206	TDMX0630R5SL075	6572247	TDMX0630R8SL075	A	.6300	.6692	193.537	12148086600
6572187	TDMX0670R3SL075	6572207	TDMX0670R5SL075	6572248	TDMX0670R8SL075	B	.6693	.7086	193.537	12148086600
6572188	TDMX0709R3SL100	6572208	TDMX0709R5SL100	6572249	TDMX0709R8SL100	C	.7087	.7480	193.537	12148086600
6572189	TDMX0749R3SL100	6572210	TDMX0749R5SL100	6572250	TDMX0749R8SL100	D	.7481	.7874	193.537	12148086600
6572190	TDMX0788R3SL100	6572231	TDMX0788R5SL100	6572251	TDMX0788R8SL100	E	.7875	.8267	193.523	170.0240
6572191	TDMX0827R3SL100	6572232	TDMX0827R5SL100	6572252	TDMX0827R8SL100	F	.8268	.8661	193.523	170.0240
6572192	TDMX0867R3SL100	6572233	TDMX0867R5SL100	6572253	TDMX0867R8SL100	G	.8662	.9055	193.523	170.0240
6572193	TDMX0906R3SL100	6572234	TDMX0906R5SL100	6572254	TDMX0906R8SL100	H	.9056	.9448	193.523	170.0240
6572194	TDMX0945R3SL125	6572235	TDMX0945R5SL125	6572255	TDMX0945R8SL125	I	.9449	.9842	193.524	12148082400
6572195	TDMX0985R3SL125	6572236	TDMX0985R5SL125	6572256	TDMX0985R8SL125	J	.9843	1.0236	193.524	12148082400
6572196	TDMX1024R3SL125	6572237	TDMX1024R5SL125	6572257	TDMX1024R8SL125	K	1.0237	1.0629	193.524	12148082400
6572197	TDMX1063R3SL125	6572238	TDMX1063R5SL125	6572258	TDMX1063R8SL125	L	1.0630	1.1023	193.524	12148082400
6572198	TDMX1103R3SL125	6572239	TDMX1103R5SL125	6572259	TDMX1103R8SL125	M	1.1024	1.1417	193.525	TT15
6572199	TDMX1142R3SL125	6572240	TDMX1142R5SL125	6572260	TDMX1142R8SL125	N	1.1418	1.1811	193.525	TT15
6572200	TDMX1182R3SL125	6572241	TDMX1182R5SL125	6572261	TDMX1182R8SL125	O	1.1812	1.2204	193.525	TT15
6572201	TDMX1221R3SL125	6572242	TDMX1221R5SL125	6572262	TDMX1221R8SL125	P	1.2205	1.2598	193.525	TT15
6572202	TDMX1260R3SL150	6572243	TDMX1260R5SL150	6572263	TDMX1260R8SL150	Q	1.2599	1.3385	193.525	TT15
6572203	TDMX1339R3SL150	6572244	TDMX1339R5SL150	6572264	TDMX1339R8SL150	R	1.3386	1.4173	193.525	TT15
6572204	TDMX1418R3SL150	6572245	TDMX1418R5SL150	6572265	TDMX1418R8SL150	S	1.4174	1.4960	193.585	TT15
6572205	TDMX1497R3SL150	6572246	TDMX1497R5SL150	6572266	TDMX1497R8SL150	T	1.4961	1.5748	193.585	TT15

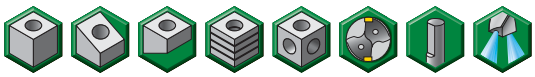
NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the inserts.

▼ Dimensions

	in Ø				SHORT ~3 x D				LONG ~5 x D				EXTRA LONG ~8 x D			
SSC	D1 min	D1 max	LS	D	LATTH	L	L1	L4 max	LATTH	L	L1	L4 max	LATTH	L	L1	L4 max
A	.6300	.6692	1.97	.75	2.71	5.16	3.19	2.01	4.05	6.50	4.53	3.35	6.06	8.50	6.54	5.35
B	.6693	.7086	1.97	.75	2.91	5.35	3.39	2.13	4.32	6.77	4.80	3.54	6.45	8.90	6.93	5.67
C	.7087	.7480	2.20	1.00	3.02	5.75	3.54	2.24	4.52	7.24	5.04	3.74	6.76	9.49	7.28	5.98
D	.7481	.7874	2.20	1.00	3.22	5.94	3.74	2.36	4.79	7.52	5.31	3.94	7.15	9.88	7.68	6.30
E	.7875	.8267	2.20	1.00	3.33	6.10	3.90	2.48	4.98	7.76	5.55	4.13	7.46	10.24	8.03	6.61
F	.8268	.8661	2.20	1.00	3.53	6.30	4.09	2.60	5.26	8.03	5.83	4.33	7.86	10.63	8.43	6.93
G	.8662	.9055	2.20	1.00	3.64	6.46	4.25	2.72	5.45	8.27	6.06	4.53	8.17	10.98	8.78	7.24
H	.9056	.9448	2.20	1.00	3.84	6.65	4.45	2.83	5.73	8.54	6.34	4.72	8.56	11.38	9.17	7.56
I	.9449	.9842	2.36	1.25	3.95	6.97	4.61	2.95	5.92	8.94	6.57	4.92	8.87	11.89	9.53	7.87
J	.9843	1.0236	2.36	1.25	4.15	7.17	4.80	3.07	6.20	9.21	6.85	5.12	9.27	12.28	9.92	8.19
K	1.0237	1.0629	2.36	1.25	4.26	7.32	4.96	3.19	6.39	9.45	7.09	5.31	9.58	12.64	10.28	8.50
L	1.0630	1.1023	2.36	1.25	4.46	7.52	5.16	3.31	6.67	9.72	7.36	5.51	9.97	13.03	10.67	8.82
M	1.1024	1.1417	2.36	1.25	4.57	7.68	5.31	3.43	6.86	9.96	7.60	5.71	10.28	13.39	11.02	9.13
N	1.1418	1.1811	2.36	1.25	4.77	7.87	5.51	3.54	7.13	10.24	7.87	5.91	10.68	13.78	11.42	9.45
O	1.1812	1.2204	2.36	1.25	4.89	8.03	5.67	3.66	7.33	10.47	8.11	6.10	10.99	14.13	11.77	9.76
P	1.2205	1.2598	2.36	1.25	5.08	8.23	5.87	3.78	7.60	10.75	8.39	6.30	11.38	14.53	12.17	10.08
Q	1.2599	1.3385	2.76	1.50	5.35	8.98	6.22	4.02	8.03	11.65	8.90	6.69	12.05	15.67	12.91	10.71
R	1.3386	1.4173	2.76	1.50	5.71	9.33	6.57	4.25	8.54	12.17	9.41	7.09	12.80	16.42	13.66	11.34
S	1.4174	1.4960	2.76	1.50	5.98	9.69	6.93	4.49	8.97	12.68	9.92	7.48	13.46	17.17	14.41	11.97
T	1.4961	1.5748	2.76	1.50	6.33	10.04	7.28	4.72	9.48	13.19	10.43	7.87	14.20	17.91	15.16	12.60

Modular Drill System • TDMX





▼ TOP DRILL Modular X • 3 x D/ 5 x D/ 8 x D • Side Lock Shank • Metric

3 x D		5 x D		8 x D			D1		clamping	
order #	catalog #	order #	catalog #	order #	catalog #	SSC	min	max	screw	wrench
6572091	TDMX160R3SL20M	6572125	TDMX160R5SL20M	6572155	TDMX160R8SL20M	A	16,000	16,999	193.537	12148086600
6572092	TDMX170R3SL20M	6572126	TDMX170R5SL20M	6572156	TDMX170R8SL20M	B	17,000	17,999	193.537	12148086600
6572093	TDMX180R3SL25M	6572127	TDMX180R5SL25M	6572157	TDMX180R8SL25M	C	18,000	18,999	193.537	12148086600
6572094	TDMX190R3SL25M	6572128	TDMX190R5SL25M	6572158	TDMX190R8SL25M	D	19,000	19,999	193.537	12148086600
6572096	TDMX200R3SL25M	6572129	TDMX200R5SL25M	6572159	TDMX200R8SL25M	E	20,000	20,999	193.523	170.0240
6572097	TDMX210R3SL25M	6572130	TDMX210R5SL25M	6572160	TDMX210R8SL25M	F	21,000	21,999	193.523	170.0240
6572098	TDMX220R3SL25M	6572141	TDMX220R5SL25M	6572171	TDMX220R8SL25M	G	22,000	22,999	193.523	170.0240
6572099	TDMX230R3SL25M	6572142	TDMX230R5SL25M	6572172	TDMX230R8SL25M	H	23,000	23,999	193.523	170.0240
6572100	TDMX240R3SL32M	6572143	TDMX240R5SL32M	6572173	TDMX240R8SL32M	I	24,000	24,999	193.524	12148082400
6572101	TDMX250R3SL32M	6572144	TDMX250R5SL32M	6572174	TDMX250R8SL32M	J	25,000	25,999	193.524	12148082400
6572102	TDMX260R3SL32M	6572145	TDMX260R5SL32M	6572175	TDMX260R8SL32M	K	26,000	26,999	193.524	12148082400
6572104	TDMX270R3SL32M	6572146	TDMX270R5SL32M	6572176	TDMX270R8SL32M	L	27,000	27,999	193.524	12148082400
6572105	TDMX280R3SL32M	6572147	TDMX280R5SL32M	6572177	TDMX280R8SL32M	M	28,000	28,999	193.525	TT15
6572106	TDMX290R3SL32M	6572148	TDMX290R5SL32M	6572178	TDMX290R8SL32M	N	29,000	29,999	193.525	TT15
6572107	TDMX300R3SL32M	6572149	TDMX300R5SL32M	6572179	TDMX300R8SL32M	O	30,000	30,999	193.525	TT15
6572108	TDMX310R3SL32M	6572150	TDMX310R5SL32M	6572180	TDMX310R8SL32M	P	31,000	31,999	193.525	TT15
6572109	TDMX320R3SL40M	6572151	TDMX320R5SL40M	6572181	TDMX320R8SL40M	Q	32,000	33,999	193.525	TT15
6572110	TDMX340R3SL40M	6572152	TDMX340R5SL40M	6572182	TDMX340R8SL40M	R	34,000	35,999	193.525	TT15
6572121	TDMX360R3SL40M	6572153	TDMX360R5SL40M	6572183	TDMX360R8SL40M	S	36,000	37,999	193.585	TT15
6572122	TDMX380R3SL40M	6572154	TDMX380R5SL40M	6572184	TDMX380R8SL40M	T	38,000	40,000	193.585	TT15

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the inserts.

▼ Dimensions

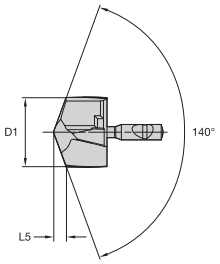
	mm Ø				SHORT ~3 x D				LONG ~5 x D				EXTRA LONG ~8 x D			
SSC	D1 min	D1 max	LS	D	LATTH	L	L1	L4 max	LATTH	L	L1	L4 max	LATTH	L	L1	L4 max
A	16,000	16,999	50	20	68,8	131	81	51	102,8	165	115	85	153,8	216	166	136
B	17,000	17,999	50	20	73,8	136	86	54	109,8	172	122	90	163,8	226	176	144
C	18,000	18,999	56	25	76,7	146	90	57	114,7	184	128	95	171,7	241	185	152
D	19,000	19,999	56	25	81,7	151	95	60	121,7	191	135	100	181,7	251	195	160
E	20,000	20,999	56	25	84,6	155	99	63	126,6	197	141	105	189,6	260	204	168
F	21,000	21,999	56	25	89,6	160	104	66	133,6	204	148	110	199,6	270	214	176
G	22,000	22,999	56	25	92,5	164	108	69	138,5	210	154	115	207,5	279	223	184
H	23,000	23,999	56	25	97,5	169	113	72	145,5	217	161	120	217,5	289	233	192
I	24,000	24,999	60	32	100,4	177	117	75	150,4	227	167	125	225,4	302	242	200
J	25,000	25,999	60	32	105,4	182	122	78	157,4	234	174	130	235,4	312	252	208
K	26,000	26,999	60	32	108,3	186	126	81	162,3	240	180	135	243,3	321	261	216
L	27,000	27,999	60	32	113,3	191	131	84	169,3	247	187	140	253,3	331	271	224
M	28,000	28,999	60	32	116,2	195	135	87	174,2	253	193	145	261,2	340	280	232
N	29,000	29,999	60	32	121,2	200	140	90	181,2	260	200	150	271,2	350	290	240
O	30,000	30,999	60	32	124,1	204	144	93	186,1	266	206	155	279,1	359	299	248
P	31,000	31,999	60	32	129,1	209	149	96	193,1	273	213	160	289,1	369	309	256
Q	32,000	33,999	70	40	136,0	228	158	102	204,0	296	226	170	306,0	398	328	272
R	34,000	35,999	70	40	145,0	237	167	108	217,0	309	239	180	325,0	417	347	288
S	36,000	37,999	70	40	151,8	246	176	114	227,8	322	252	190	341,8	436	366	304
T	38,000	40,000	70	40	160,8	255	185	120	240,8	335	265	200	360,8	455	385	320

TDMX — TOP DRILL™ Modular X

Modular Drill System • TDMX

▼ TOP DRILL Modular X • PK(M)

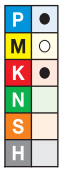
● first choice
○ alternate choice



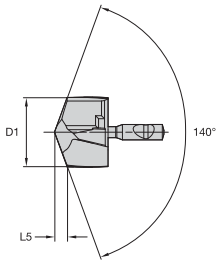
grade WP40PD TiAlN		D1		L5		
order #	catalog #	mm	in	mm	in	SSC
6568446	TDMX16000PKM	16,00	.630	3,21	.126	A
6568447	TDMX16200PKM	16,20	.638	3,25	.128	A
6568448	TDMX06410PK	16,28	.641	3,26	.128	A
6568449	TDMX16500PKM	16,50	.650	3,30	.130	A
6568450	TDMX06562PK	16,67	.656	3,33	.131	A
6568461	TDMX17000PKM	17,00	.669	3,39	.134	B
6568462	TDMX06718PK	17,06	.672	3,41	.134	B
6568464	TDMX06875PK	17,46	.688	3,48	.137	B
6568465	TDMX17500PKM	17,50	.689	3,49	.137	B
6568467	TDMX17600PKM	17,60	.693	3,50	.138	B
6568471	TDMX17800PKM	17,80	.701	3,54	.139	B
6568472	TDMX07031PK	17,86	.703	3,55	.140	B
6568473	TDMX18000PKM	18,00	.709	3,58	.141	C
6568474	TDMX07187PK	18,26	.719	3,64	.143	C
6568475	TDMX18500PKM	18,50	.728	3,68	.145	C
6568476	TDMX07343PK	18,65	.734	3,71	.146	C
6568477	TDMX18800PKM	18,80	.740	3,74	.147	C
6568478	TDMX19000PKM	19,00	.748	3,78	.149	D
6568479	TDMX07500PK	19,05	.750	3,78	.149	D
6568480	TDMX19200PKM	19,20	.756	3,81	.150	D
6568481	TDMX19270PKM	19,27	.759	3,82	.150	D
6568482	TDMX19450PKM	19,45	.766	3,86	.152	D
6568483	TDMX19500PKM	19,50	.768	3,87	.152	D
6568484	TDMX19700PKM	19,70	.776	3,90	.154	D
6568485	TDMX19840PKM	19,84	.781	3,93	.155	D
6568813	TDMX20000PKM	20,00	.787	3,97	.156	E
6568814	TDMX20100PKM	20,10	.791	3,99	.157	E
6568815	TDMX20200PKM	20,20	.795	4,01	.158	E
6568816	TDMX07968PK	20,24	.797	4,02	.158	E
6568817	TDMX20300PKM	20,30	.799	4,03	.159	E
6568818	TDMX20400PKM	20,40	.803	4,05	.159	E
6568819	TDMX20500PKM	20,50	.807	4,06	.160	E
6568820	TDMX20600PKM	20,60	.811	4,08	.161	E
6568841	TDMX08130PK	20,65	.813	4,09	.161	E
6568842	TDMX20700PKM	20,70	.815	4,10	.161	E
6568843	TDMX20800PKM	20,80	.819	4,12	.162	E
6568844	TDMX20900PKM	20,90	.823	4,14	.163	E
6568845	TDMX21000PKM	21,00	.827	4,16	.164	F
6568846	TDMX08437PK	21,43	.844	4,23	.167	F
6568847	TDMX21500PKM	21,50	.847	4,25	.167	F
6568848	TDMX22000PKM	22,00	.866	4,35	.171	G
6568849	TDMX08750PK	22,23	.875	4,39	.173	G
6568850	TDMX22450PKM	22,45	.884	4,44	.175	G
6568851	TDMX22500PKM	22,50	.886	4,44	.175	G
6568852	TDMX23000PKM	23,00	.906	4,54	.179	H
6568853	TDMX23500PKM	23,50	.925	4,63	.182	H
6568854	TDMX09375PK	23,81	.938	4,68	.184	H
6568856	TDMX24000PKM	24,00	.945	4,73	.186	I
6568857	TDMX24500PKM	24,50	.965	4,82	.190	I
6568858	TDMX09687PK	24,61	.969	4,84	.191	I
6568859	TDMX25000PKM	25,00	.984	4,91	.193	J
6568860	TDMX10000PK	25,40	1.000	4,99	.197	J
6568861	TDMX25500PKM	25,50	1.004	5,01	.197	J
6568862	TDMX25670PKM	25,67	1.011	5,04	.198	J
6568863	TDMX25700PKM	25,70	1.012	5,04	.198	J
6568864	TDMX25760PKM	25,76	1.014	5,05	.199	J

(continued)

(TOP DRILL Modular X • PK(M) — continued)



● first choice
○ alternate choice



grade WP40PD TiAlN		D1		L5		
order #	catalog #	mm	in	mm	in	SSC
6568865	TDMX10156PK	25,80	1.016	5,06	.199	J
6568866	TDMX26000PKM	26,00	1.024	5,11	.201	K
6568867	TDMX10312PK	26,19	1.031	5,15	.203	K
6568868	TDMX26400PKM	26,40	1.039	5,18	.204	K
6568869	TDMX26500PKM	26,50	1.043	5,20	.205	K
6568870	TDMX10468PK	26,59	1.047	5,22	.206	K
6568871	TDMX27000PKM	27,00	1.063	5,29	.208	L
6568872	TDMX27500PKM	27,50	1.083	5,38	.212	L
6568873	TDMX10937PK	27,78	1.094	5,43	.214	L
6568874	TDMX28000PKM	28,00	1.102	5,49	.216	M
6568875	TDMX11093PK	28,18	1.109	5,52	.217	M
6568876	TDMX28500PKM	28,50	1.122	5,58	.220	M
6568877	TDMX11250PK	28,58	1.125	5,59	.220	M
6568878	TDMX29000PKM	29,00	1.142	5,67	.223	N
6568879	TDMX11562PK	29,37	1.156	5,74	.226	N
6568880	TDMX29500PKM	29,50	1.161	5,76	.227	N
6568891	TDMX11718PK	29,76	1.172	5,81	.229	N
6568892	TDMX30000PKM	30,00	1.181	5,87	.231	O
6568893	TDMX11875PK	30,16	1.188	5,90	.232	O
6568896	TDMX30500PKM	30,50	1.201	5,96	.235	O
6568897	TDMX12187PK	30,96	1.219	6,04	.238	O
6568898	TDMX31000PKM	31,00	1.221	6,05	.238	P
6568899	TDMX31500PKM	31,50	1.240	6,14	.242	P
6568900	TDMX12500PK	31,75	1.250	6,18	.243	P
6568901	TDMX32000PKM	32,00	1.260	6,25	.246	Q
6568902	TDMX32500PKM	32,50	1.280	6,34	.250	Q
6568903	TDMX33000PKM	33,00	1.299	6,43	.253	Q
6568904	TDMX13125PK	33,34	1.313	6,49	.256	Q
6568905	TDMX34000PKM	34,00	1.339	6,61	.260	R
6568906	TDMX13437PK	34,13	1.344	6,64	.261	R
6568907	TDMX13750PK	34,93	1.375	6,78	.267	R
6568908	TDMX35000PKM	35,00	1.378	6,79	.267	R
6568909	TDMX35500PKM	35,50	1.398	6,89	.271	R
6568910	TDMX36000PKM	36,00	1.417	7,00	.276	S
6568911	TDMX36500PKM	36,50	1.437	7,09	.279	S
6568912	TDMX37000PKM	37,00	1.457	7,18	.283	S
6568913	TDMX37500PKM	37,50	1.476	7,27	.286	S
6568914	TDMX38000PKM	38,00	1.496	7,36	.290	T
6568915	TDMX15000PK	38,10	1.500	7,38	.291	T
6568916	TDMX38500PKM	38,50	1.516	7,46	.294	T
6568917	TDMX39000PKM	39,00	1.535	7,55	.297	T
6568918	TDMX15468PK	39,29	1.547	7,60	.299	T
6568919	TDMX39500PKM	39,50	1.555	7,64	.301	T
6568920	TDMX40000PKM	40,00	1.575	7,73	.304	T

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the toolholder.

Inch tolerance	
D1	tolerance k8
.3125–.3906	.000/+.0009
>.3906–.6250	.000/+.0011
>.6692–.7090	.000/+.0010
>.7090–.8228	.000/+.0013

TDMX — TOP DRILL™ Modular X

Modular Drill System • TDMX

▼ TOP DRILL™ Modular X • PK(M) • WP40PD • Speed and Feed Chart • Metric

Material Group		Cutting Speed — Vc Range — m/min			Recommended Feed Rate (f) by Diameter					
		min	Starting Value	max	Tool Diameter (mm)	16,0	20,0	25,0	32,0	40,0
P	1	90	**125**	170	mm/r	0,19–0,45	0,25–0,48	0,25–0,52	0,28–0,57	0,29–0,60
	2	105	**140**	180	mm/r	0,23–0,46	0,28–0,50	0,30–0,52	0,33–0,57	0,35–0,60
	3	50	**75**	100	mm/r	0,23–0,46	0,28–0,50	0,30–0,52	0,33–0,57	0,35–0,60
	4	50	**75**	100	mm/r	0,19–0,45	0,22–0,48	0,25–0,50	0,28–0,55	0,29–0,58
	5	50	**65**	80	mm/r	0,16–0,32	0,18–0,36	0,22–0,42	0,24–0,46	0,25–0,48
	6	50	**65**	80	mm/r	0,16–0,32	0,18–0,36	0,22–0,42	0,24–0,46	0,25–0,48
M	1	40	**80**	110	mm/r	0,11–0,26	0,13–0,28	0,13–0,32	0,14–0,35	0,15–0,37
	2	35	**55**	75	mm/r	0,11–0,26	0,13–0,28	0,13–0,32	0,14–0,35	0,15–0,37
	3	20	**35**	50	mm/r	0,11–0,26	0,13–0,28	0,13–0,32	0,14–0,35	0,15–0,37
K	1	60	**95**	170	mm/r	0,25–0,48	0,28–0,52	0,32–0,56	0,35–0,62	0,37–0,65
	2	60	**75**	90	mm/r	0,25–0,48	0,28–0,52	0,32–0,56	0,35–0,62	0,37–0,65
	3	40	**65**	90	mm/r	0,21–0,44	0,23–0,48	0,25–0,50	0,28–0,55	0,29–0,58

NOTE: Through coolant recommended for greater than 3 x D applications.
Material group M is recommended for secondary applications.

▼ TOP DRILL Modular X • PK(M) • WP40PD • Speed and Feed Chart • Inch

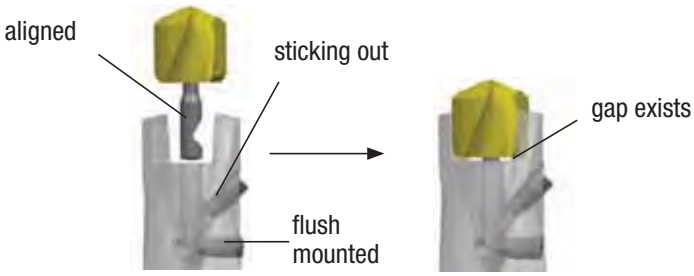
Material Group		Cutting Speed — Vc Range — SFM			Recommended Feed Rate (f) by Diameter					
		min	Starting Value	max	Tool Diameter (inch)	.630	.787	1.000	1.260	1.575
P	1	295	**410**	558	IPR	.007–.018	.010–.019	.010–.020	.011–.022	.011–.024
	2	344	**459**	590	IPR	.009–.018	.011–.020	.012–.020	.013–.022	.014–.024
	3	164	**246**	328	IPR	.009–.018	.011–.020	.012–.020	.013–.022	.014–.024
	4	164	**246**	328	IPR	.007–.018	.009–.019	.010–.020	.011–.022	.011–.023
	5	164	**213**	262	IPR	.006–.013	.007–.014	.009–.017	.009–.018	.010–.019
	6	164	**213**	262	IPR	.006–.013	.007–.014	.009–.017	.009–.018	.010–.019
M	1	131	**262**	361	IPR	.004–.010	.005–.012	.005–.013	.006–.014	.006–.015
	2	115	**180**	246	IPR	.004–.010	.005–.012	.005–.013	.006–.014	.006–.015
	3	66	**115**	164	IPR	.004–.010	.005–.012	.005–.013	.006–.014	.006–.015
K	1	197	**312**	558	IPR	.010–.019	.011–.020	.013–.022	.014–.024	.015–.026
	2	197	**246**	295	IPR	.010–.019	.011–.020	.013–.022	.014–.024	.015–.026
	3	131	**213**	295	IPR	.008–.017	.009–.019	.010–.020	.011–.022	.011–.023

NOTE: Through coolant recommended for greater than 3 x D applications.
Material group M is recommended for secondary applications.

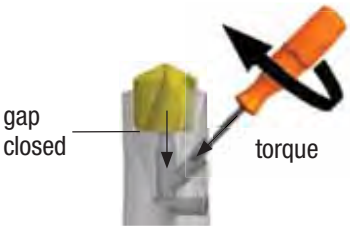
Assembling and Disassembling Instructions

▼ Assembly

1 Insert positioning



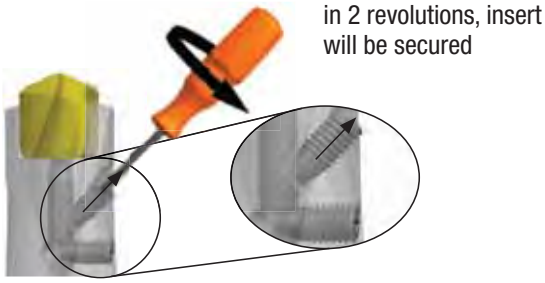
2 Insert clamping



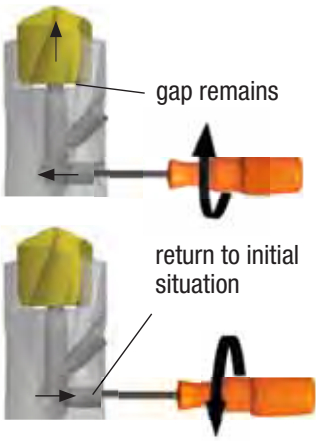
Drill diameter	Torque
ø .6300–.7874"	1.1 ft. lbs.
ø .7875–.9448"	1.5 ft. lbs.
ø .9449–1.1023"	2.2 ft. lbs.
ø 1.1024–1.5748"	3.3 ft. lbs.

▼ Disassembly

1 Clamping screw loosening



2 Insert pushing out



3 Further clamping screw loosening

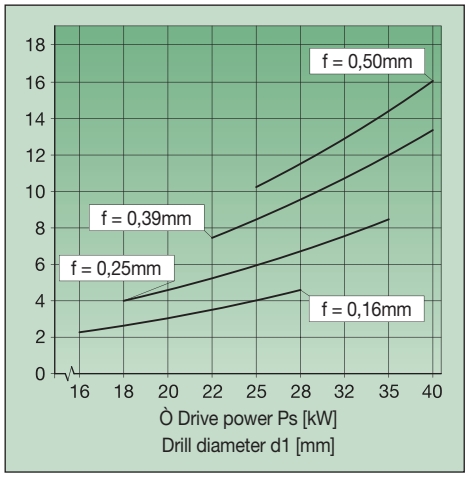
4 Insert removal

TDMX — TOP DRILL™ Modular X

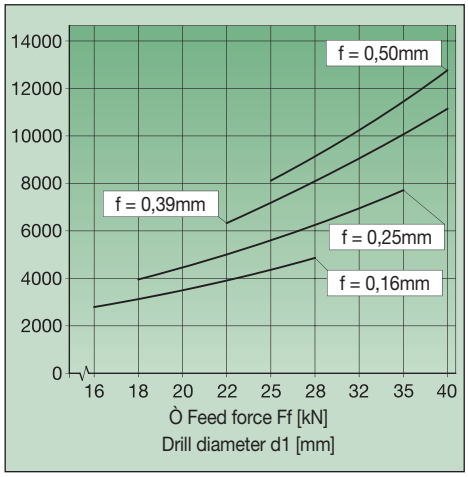
Modular Drill System • TDMX

TDMX Application Notes • Power and Coolant Requirements

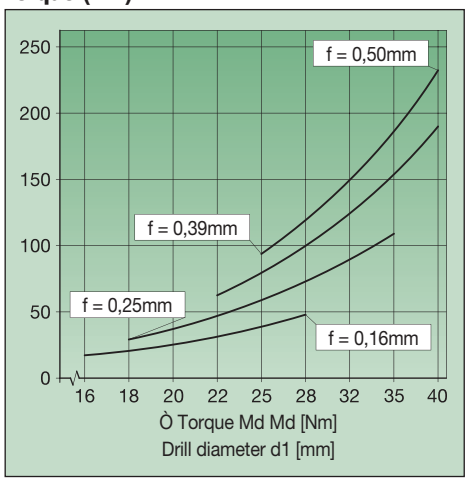
Drive Power (kW)



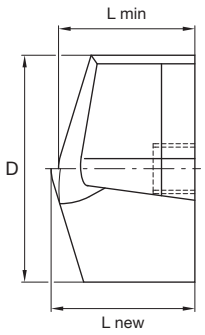
Feed Force (kN)



Torque (Nm)



NOTE: The diagrams above are used to determine the drive power, feed force, and torque. They are based on cutting force measurement in tempered steels in Cgr. 6. Tensile strength: Rm = 600 N/mm². The base cutting speed used is: vc = 80 m/min.



The following coolant pressure is recommended:

relative drilling depth	coolant pressure
1–3 x D	8 bars
5 x D	12 bars
7 x D	20 bars
10 x D	30 bars

SSC	diameter range D (inch)	L min. (inch)	L new (inch)
A	0.63–0.6692	0.4409	0.4921
B	0.6693–0.7086	0.4409	0.4921
C	0.7087–0.748	0.4803	0.5354
D	0.7481–0.7874	0.4803	0.5354
E	0.7875–0.8267	0.5197	0.5787
F	0.8268–0.8661	0.5197	0.5787
G	0.8662–0.9055	0.5591	0.622
H	0.9056–0.9448	0.5591	0.622
I	0.9449–0.9842	0.5984	0.6654
J	0.9843–1.0236	0.5984	0.6654
K	1.0237–1.0629	0.6378	0.7087
L	1.063–1.1023	0.6378	0.7087
M	1.1024–1.1417	0.6772	0.752
N	1.1418–1.1811	0.6772	0.752
O	1.1812–1.2204	0.7165	0.7953
P	1.2205–1.2598	0.7165	0.7953
Q	1.2599–1.3385	0.7913	0.878
R	1.3386–1.4173	0.7913	0.878
S	1.4174–1.496	0.8701	0.9646
T	1.4961–1.5748	0.8701	0.9646

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the inserts.

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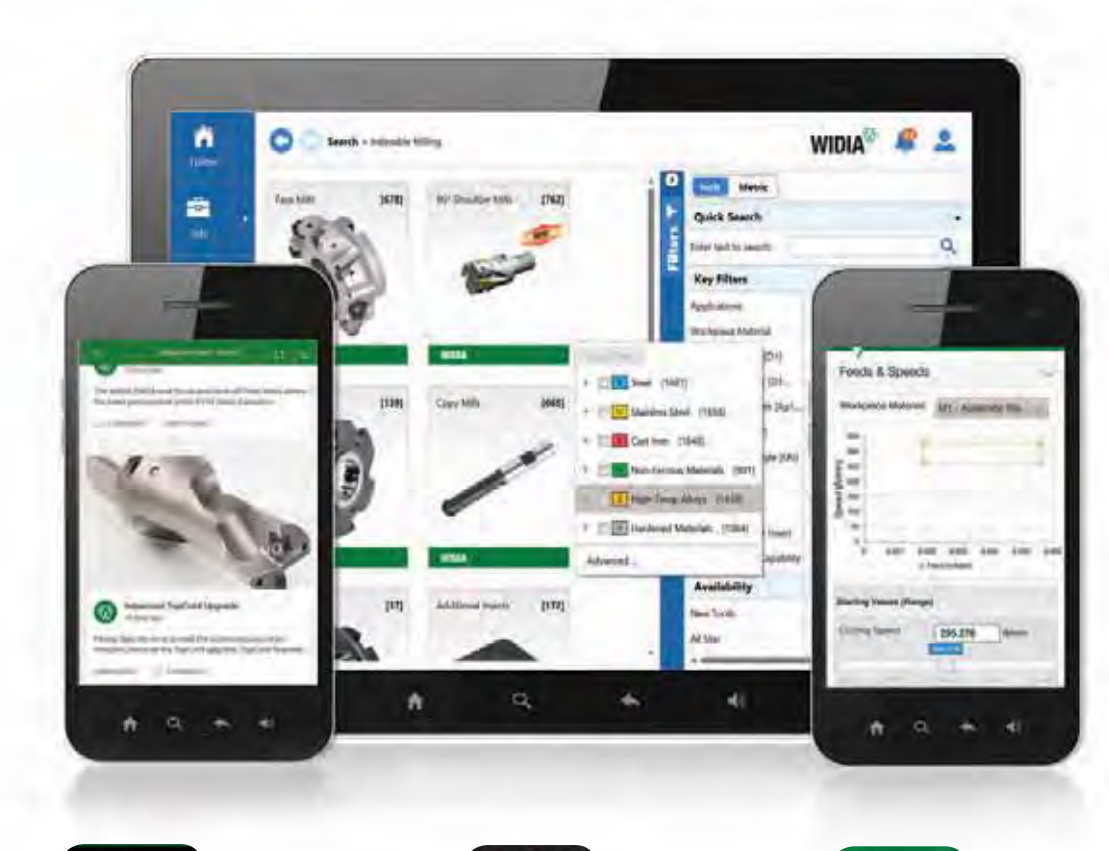

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- Feeds and Speeds
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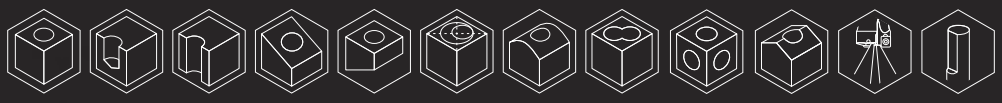
TOP CUT 4™



THE NEXT GENERATION OF INDEXABLE DRILLING

AEROSPACE

GENERAL ENGINEERING

One Comprehensive Platform

Standard diameter range covering .473–2.677" in 2 x D, 3 x D, 4 x D, and 5 x D.

Four real cutting edges on each insert 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, 45º corner, half cylindrical, concave, or chain drilling.

Various geometries and grades available.

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

WIDIA™

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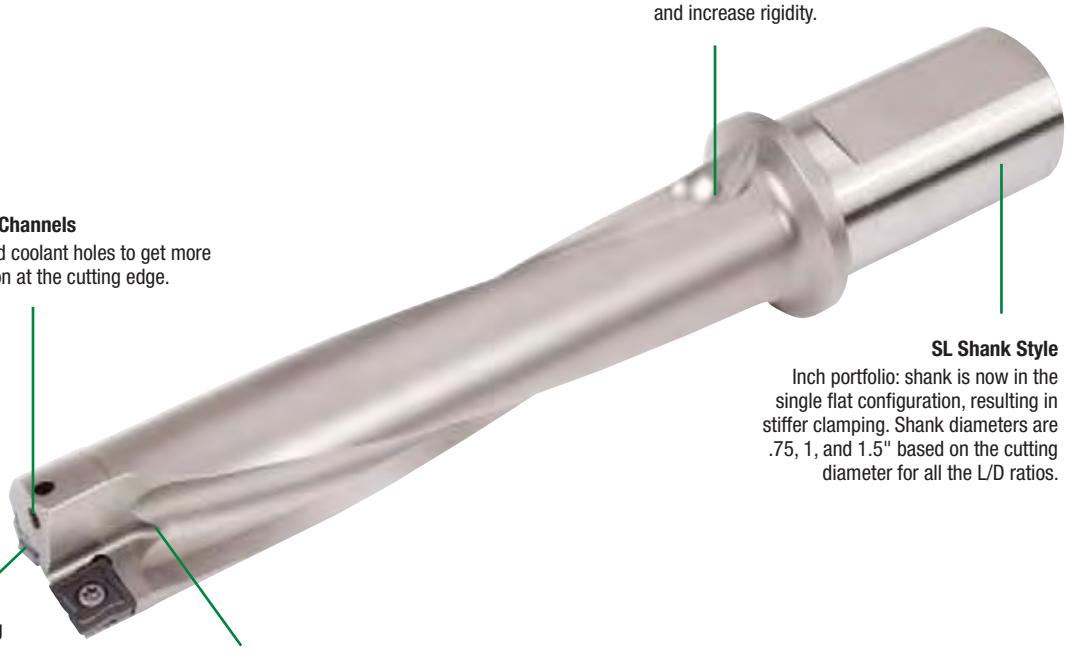
Top Cut 4™

New Generation Indexable Drilling System

- 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.
- Four 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.
  — WN10PH grade specific for aluminum and other non-ferrous materials.

Chip Flute Exit
Steeper chip flute exit to reduce the overall length and increase rigidity.

Coolant Channels
Enhanced coolant holes to get more lubrication at the cutting edge.



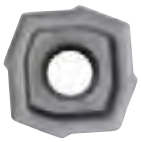
SL Shank Style
Inch portfolio: shank is now in the single flat configuration, resulting in stiffer clamping. Shank diameters are .75, 1, and 1.5" based on the cutting diameter for all the L/D ratios.

Insert Positioning
Optimized insert positioning to achieve the maximum drill stability, hole tolerance, and surface quality, above all in deep-drilling applications.

Gash
Improved gash design on both insert pocket seats for a better chip evacuation.

Top Cut 4 Inserts Expansion — Long Chip Materials — Non-Ferrous Materials.

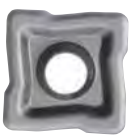
-V34



P K

First choice for machining Steel, Cast Iron, and short chipping materials. Suitable for severe cutting conditions.

-V36



P M K

First choice for Stainless Steel. Suitable for deep drilling and where low power consumption is required.

-V36 WN10PH

NEW!

N

First choice for Non-Ferrous materials.

-V38

NEW!

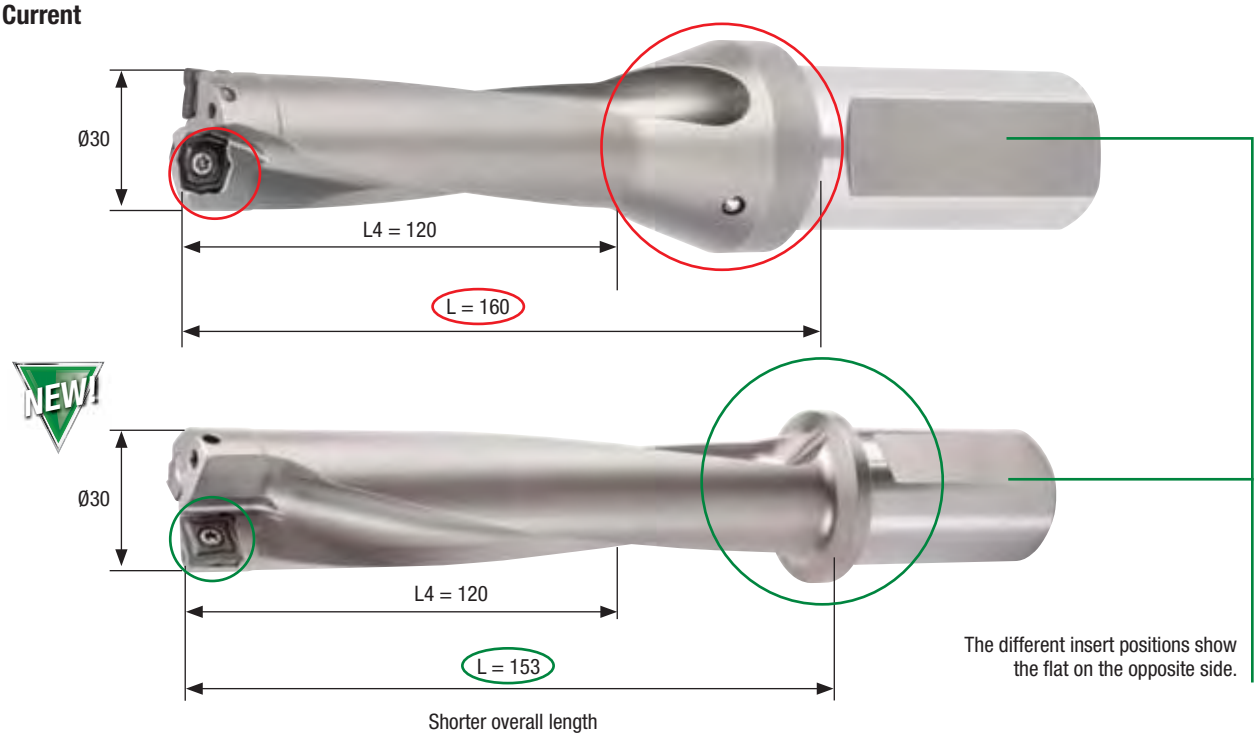
P M S

Ideal for long chipping materials.

Top Cut 4™ Bodies Upgrade

Diameter 30mm, 4 x D example

Current



Gash
Optimized gash for improved chip flow and more precise **insert pocket seat positioning**.

Shank
The SSF style shank (double flat) will be moved to SL style with inch dimensions (industry standard).

Current

Top Cut 4™

Geometry and Grade Expansion for Augmented Versatility

-V36 WN10PH for Non-Ferrous Materials

Productivity

- Perfect combination of edge preparation and grade for aluminum machining.
- TiB_2 based coating specific for non-ferrous materials.
- Optimal chip control and no built-up edge, even in very soft aluminums.

Performance

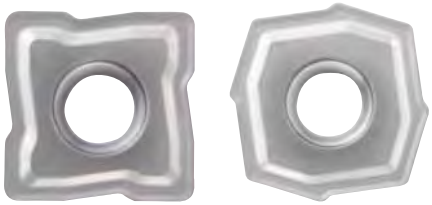
- High cutting speed capability thanks to the state-of-the-art TiB_2 coating.
- The WN10PH grade geometry is available on the inboard insert, as well as on the outboard insert.
- Better general hole quality (surface and dimension) thanks to edge preparation and coating combination when compared to a standard universal insert.
- Longer and predictable tool life leads to avoiding the generation of built-up edge.

Technical Details

- PSTS inserts.
- Positive and sharp cutting edge.
- First choice for aluminum and other non-ferrous materials.
- Periphery insert with wiper land.

Top Cut 4 Inserts Expansion — Non-Ferrous Materials.

-V36 WN10PH



N

First choice for Non-Ferrous materials.

Hole Quality — Surface Finish

Diameter: 1,1811" 4 x D hole
Material: GAlSi 7 Mg

-V36 WN10PH

Standard multipurpose grade and geometry

Geometry and Grade Expansion for Augmented Versatility

-V38 Chipbreaker

Productivity

- Eliminates the formation of bird-nesting on the tool in long chip materials drilling.
- Improves the chip formation dramatically to guarantee a smooth chip flow.
- No machine stops due to bad chip evacuation on low carbon steels, stainless steels, and titanium — high process reliability.

Performance

- Larger feed rate window compared to the -V36 geometry when applied to low carbon steels and stainless steel.
- -V38 geometry is available on the inboard insert, as well as on the outboard insert.
- Better general hole quality (surface and dimension) thanks to the improved chip flow:
  — No drifting of the tool body causing deviation in the hole size.
  — No contact of the chips with the hole surface causing bad finishing.

Technical Details

- PSTS inserts.
- Special edge geometry for more effective chipbreaking action.
- First choice for low carbon steel, stainless steel, and super alloys.
- Periphery insert with wiper land.

-V38 Chipbreaker Application Areas

The new -V38 geometry is the first choice when:

- The drilling application with Top Cut 4™ platform bodies and inserts is applied to:
  — Low carbon steel (typically P0 and P1).
  — Stainless steels, such as AISI304, AISI316, and similar materials.
  — Titanium alloys, like Grade 2 and Grade 5.
- Bird-nesting on the tool body is an issue.
- Vibrations are generated due to a bad chip flow. Chip can't evacuate from the hole and generates big noise during machining.
- Bad surface quality caused by the chip in contact with the hole.
- Bigger hole size. Bad chip flow can generate tool drifting.
- Lower power consumption and less torque are needed.

Top Cut 4 Inserts Expansion — Long Chip Materials.

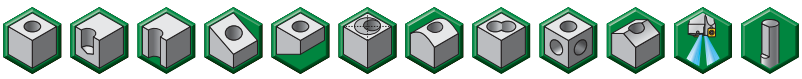
-V38

P M S

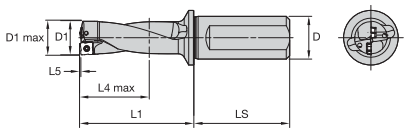
Ideal for long chip materials.

Top Cut 4™

Top Cut 4 Shanks



▼ Top Cut 4 Drill • Inch • 2 x D • SLR Shanks



For information on LS, see the table on page 53.

order number	catalog number	D1	D1 max	D	L1	L4 max	L5	SSC	periphery insert	center insert
5537879	TCF0473R2SLR075A	.473	.493	.75	1.688	.963	.017	A	TCF040204AP	TCF040203AC
5537880	TCF0500R2SLR075A	.500	.520	.75	1.776	1.018	.018	A	TCF040204AP	TCF040203AC
5537881	TCF0531R2SLR075A	.531	.551	.75	1.876	1.081	.019	A	TCF040204AP	TCF040203AC
5578226	TCF0563R2SLR075B	.563	.583	.75	1.923	1.146	.020	B	TCF050204BP	TCF060203BC
5578227	TCF0594R2SLR075B	.594	.614	.75	2.021	1.210	.022	B	TCF050204BP	TCF060203BC
5578228	TCF0625R2SLR075B	.625	.645	.75	2.118	1.273	.023	B	TCF050204BP	TCF060203BC
5578229	TCF0656R2SLR075B	.656	.676	.75	2.215	1.336	.024	B	TCF050204BP	TCF060203BC
5578300	TCF0688R2SLR075B	.688	.708	.75	2.315	1.401	.025	B	TCF050204BP	TCF060203BC
5578301	TCF0703R2SLR075B	.703	.723	.75	2.362	1.431	.025	B	TCF050204BP	TCF060203BC
5578302	TCF0719R2SLR075B	.719	.739	.75	2.412	1.463	.026	B	TCF050204BP	TCF060203BC
5578303	TCF0734R2SLR075B	.734	.754	.75	2.459	1.494	.026	B	TCF050204BP	TCF060203BC
5578379	TCF0750R2SLR100C	.750	.770	1.00	2.510	1.527	.027	C	TCF070306CP	TCF070304CC
5578400	TCF0781R2SLR100C	.781	.801	1.00	2.607	1.590	.028	C	TCF070306CP	TCF070304CC
5578401	TCF0813R2SLR100C	.813	.833	1.00	2.707	1.655	.029	C	TCF070306CP	TCF070304CC
5578402	TCF0844R2SLR100C	.844	.864	1.00	2.804	1.718	.030	C	TCF070306CP	TCF070304CC
5578403	TCF0875R2SLR100C	.875	.895	1.00	2.901	1.781	.031	C	TCF070306CP	TCF070304CC
5578404	TCF0906R2SLR100C	.906	.926	1.00	2.998	1.844	.032	C	TCF070306CP	TCF070304CC
5578405	TCF0938R2SLR100C	.938	.958	1.00	3.097	1.908	.032	C	TCF070306CP	TCF070304CC
5537845	TCF0969R2SLR100D	.969	1.008	1.00	3.100	1.973	.035	D	TCF080308DP	TCF090305DC
5537846	TCF0984R2SLR100D	.984	1.023	1.00	3.146	2.004	.036	D	TCF080308DP	TCF090305DC
5537847	TCF1000R2SLR100D	1.000	1.039	1.00	3.194	2.036	.036	D	TCF080308DP	TCF090305DC
5537848	TCF1031R2SLR125D	1.031	1.070	1.25	3.327	2.099	.037	D	TCF080308DP	TCF090305DC
5537849	TCF1063R2SLR125D	1.063	1.102	1.25	3.424	2.164	.038	D	TCF080308DP	TCF090305DC
5537910	TCF1094R2SLR125D	1.094	1.133	1.25	3.518	2.227	.039	D	TCF080308DP	TCF090305DC
5537911	TCF1125R2SLR125D	1.125	1.164	1.25	3.612	2.290	.040	D	TCF080308DP	TCF090305DC
5537912	TCF1156R2SLR125D	1.156	1.195	1.25	3.706	2.353	.041	D	TCF080308DP	TCF090305DC
5537965	TCF1188R2SLR125E	1.188	1.227	1.25	3.685	2.419	.043	E	TCF100408EP	TCF120405EC
5537966	TCF1210R2SLR125E	1.210	1.249	1.25	3.750	2.464	.044	E	TCF100408EP	TCF120405EC
5537967	TCF1219R2SLR125E	1.219	1.258	1.25	3.776	2.482	.044	E	TCF100408EP	TCF120405EC
5537968	TCF1250R2SLR125E	1.250	1.289	1.25	3.867	2.545	.045	E	TCF100408EP	TCF120405EC
5537969	TCF1280R2SLR125E	1.281	1.320	1.25	3.958	2.608	.046	E	TCF100408EP	TCF120405EC
5538060	TCF1313R2SLR125E	1.313	1.352	1.25	4.052	2.673	.047	E	TCF100408EP	TCF120405EC
5538061	TCF1375R2SLR125E	1.375	1.414	1.25	4.233	2.799	.049	E	TCF100408EP	TCF120405EC
5538062	TCF1406R2SLR150E	1.406	1.445	1.50	4.364	2.862	.050	E	TCF100408EP	TCF120405EC
5538063	TCF1438R2SLR150E	1.438	1.438	1.50	4.457	2.926	.050	E	TCF100408EP	TCF120405EC
5578651	TCF1469R2SLR150F	1.469	1.508	1.50	4.550	2.991	.054	F	TCF120412FP	TCF150406FC
5578652	TCF1500R2SLR150F	1.500	1.539	1.50	4.641	3.055	.055	F	TCF120412FP	TCF150406FC
5578653	TCF1531R2SLR150F	1.531	1.570	1.50	4.732	3.118	.056	F	TCF120412FP	TCF150406FC
5578654	TCF1563R2SLR150F	1.563	1.602	1.50	4.826	3.183	.057	F	TCF120412FP	TCF150406FC
5578655	TCF1625R2SLR150F	1.625	1.664	1.50	5.007	3.308	.058	F	TCF120412FP	TCF150406FC
5578656	TCF1656R2SLR150F	1.656	1.695	1.50	5.098	3.371	.059	F	TCF120412FP	TCF150406FC
5578657	TCF1688R2SLR150F	1.688	1.727	1.50	5.192	3.436	.060	F	TCF120412FP	TCF150406FC
5578658	TCF1750R2SLR150F	1.750	1.789	1.50	5.373	3.562	.062	F	TCF120412FP	TCF150406FC
5578765	TCF1813R2SLR150G	1.813	1.852	1.50	5.379	3.692	.066	G	TCF150512GP	TCF180508GC
5578766	TCF1875R2SLR150G	1.875	1.914	1.50	5.554	3.818	.068	G	TCF150512GP	TCF180508GC
5578767	TCF1938R2SLR150G	1.938	1.977	1.50	5.732	3.945	.069	G	TCF150512GP	TCF180508GC
5578768	TCF2000R2SLR150G	2.000	2.039	1.50	5.907	4.071	.071	G	TCF150512GP	TCF180508GC
5578769	TCF2125R2SLR150G	2.125	2.164	1.50	6.261	4.324	.075	G	TCF150512GP	TCF180508GC
5578790	TCF2219R2SLR150G	2.219	2.258	1.50	6.527	4.515	.077	G	TCF150512GP	TCF180508GC
5538500	TCF2250R2SLR150H	2.250	2.289	1.50	6.392	4.581	.081	H	TCF180614HP	TCF210608HC
5538501	TCF2375R2SLR150H	2.375	2.414	1.50	6.734	4.835	.085	H	TCF180614HP	TCF210608HC
5538502	TCF2500R2SLR150H	2.500	2.539	1.50	7.074	5.088	.088	H	TCF180614HP	TCF210608HC

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the inserts.

(continued)

Top Cut 4™ Shanks

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

▼ Spare Parts

SSC	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	**1138455**	2,00	1.475
F	TCF120412FP	TCF150406FC	**1756815**	T15	**2029596**	4,00	2.950
G	TCF150512GP	TCF180508GC	**1099645**	T20	**1138455**	6,30	4.646
H	TCF180614HP	TCF210608HC	**1823871**	T25	**2585812**	8,80	6.490

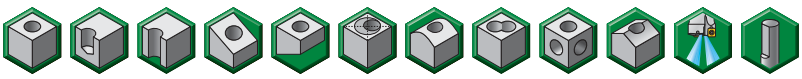
NOTE: Drilling in stacked plates possible in certain applications. Ask for technical support.
Drill shipped with insert screws and Torx wrench.
See pages 68–71 for inserts.
SSC = Pocket Seat Reference.
SLR = Side Lock.
D1 max is an achievable diameter using x-offset.

	LS	
D	mm	in
.75	50	1.9685
1.00	56	2.2047
1.25	60	2.3622
1.50	70	2.7559

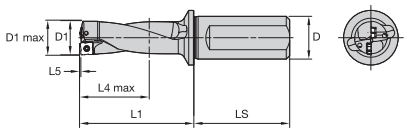
WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

Top Cut 4™

Top Cut 4 Shanks



▼ Top Cut 4 Drill • Metric • 2 x D • SLR Shanks



For information on LS, see the table on page 55.

order number	catalog number	D1	D1 max	D	L1	L4 max	L5	SSC	periphery insert	center insert
5537778	TCF120R2SLR20MA	12,00	12,50	20	43,4	24,4	0,43	A	TCF040204AP	TCF040203AC
5537779	TCF125R2SLR20MA	12,50	13,00	20	44,5	25,5	0,45	A	TCF040204AP	TCF040203AC
5537860	TCF127R2SLR20MA	12,70	13,20	20	45,9	25,9	0,46	A	TCF040204AP	TCF040203AC
5537861	TCF130R2SLR20MA	13,00	13,50	20	46,5	26,5	0,47	A	TCF040204AP	TCF040203AC
5537862	TCF135R2SLR20MA	13,50	14,00	20	48,5	27,5	0,48	A	TCF040204AP	TCF040203AC
5577828	TCF140R2SLR25MB	14,00	14,50	25	48,5	28,5	0,49	B	TCF050204BP	TCF060203BC
5577829	TCF145R2SLR25MB	14,50	15,00	25	49,5	29,5	0,52	B	TCF050204BP	TCF060203BC
5577920	TCF150R2SLR25MB	15,00	15,50	25	51,5	30,5	0,55	B	TCF050204BP	TCF060203BC
5577921	TCF155R2SLR25MB	15,50	16,00	25	53,6	31,6	0,56	B	TCF050204BP	TCF060203BC
5577922	TCF160R2SLR25MB	16,00	16,50	25	54,6	32,6	0,58	B	TCF050204BP	TCF060203BC
5577923	TCF165R2SLR25MB	16,50	17,00	25	56,6	33,6	0,60	B	TCF050204BP	TCF060203BC
5577924	TCF170R2SLR25MB	17,00	17,50	25	57,6	34,6	0,61	B	TCF050204BP	TCF060203BC
5577925	TCF175R2SLR25MB	17,50	18,00	25	59,6	35,6	0,63	B	TCF050204BP	TCF060203BC
5577926	TCF180R2SLR25MB	18,00	18,50	25	60,6	36,6	0,64	B	TCF050204BP	TCF060203BC
5577927	TCF185R2SLR25MB	18,50	19,00	25	62,7	37,7	0,65	B	TCF050204BP	TCF060203BC
5578820	TCF190R2SLR25MC	19,00	19,50	25	63,7	38,7	0,68	C	TCF070306CP	TCF070304CC
5578821	TCF195R2SLR25MC	19,50	20,00	25	65,7	39,7	0,71	C	TCF070306CP	TCF070304CC
5578822	TCF200R2SLR25MC	20,00	20,50	25	66,7	40,7	0,72	C	TCF070306CP	TCF070304CC
5578823	TCF205R2SLR25MC	20,50	21,00	25	68,7	41,7	0,74	C	TCF070306CP	TCF070304CC
5578824	TCF210R2SLR25MC	21,00	21,50	25	70,8	42,8	0,75	C	TCF070306CP	TCF070304CC
5578825	TCF220R2SLR25MC	22,00	22,50	25	73,8	44,8	0,78	C	TCF070306CP	TCF070304CC
5578826	TCF225R2SLR25MC	22,50	23,00	25	74,8	45,8	0,79	C	TCF070306CP	TCF070304CC
5578827	TCF230R2SLR25MC	23,00	23,50	25	76,8	46,8	0,80	C	TCF070306CP	TCF070304CC
5537167	TCF240R2SLR25MD	24,00	25,00	25	76,9	48,9	0,87	D	TCF080308DP	TCF090305DC
5537168	TCF250R2SLR32MD	25,00	26,00	32	80,9	50,9	0,91	D	TCF080308DP	TCF090305DC
5537169	TCF260R2SLR32MD	26,00	27,00	32	83,9	52,9	0,94	D	TCF080308DP	TCF090305DC
5537820	TCF265R2SLR32MD	26,50	27,50	32	86,0	54,0	0,95	D	TCF080308DP	TCF090305DC
5537821	TCF270R2SLR32MD	27,00	28,00	32	87,0	55,0	0,97	D	TCF080308DP	TCF090305DC
5537822	TCF280R2SLR32MD	28,00	29,00	32	90,0	57,0	0,99	D	TCF080308DP	TCF090305DC
5537823	TCF290R2SLR32MD	29,00	30,00	32	93,0	59,0	1,02	D	TCF080308DP	TCF090305DC
5537937	TCF300R2SLR32ME	30,00	31,00	32	93,1	61,1	1,09	E	TCF100408EP	TCF120405EC
5537938	TCF310R2SLR32ME	31,00	32,00	32	96,1	63,1	1,12	E	TCF100408EP	TCF120405EC
5537939	TCF320R2SLR32ME	32,00	33,00	32	99,2	65,2	1,15	E	TCF100408EP	TCF120405EC
5537940	TCF330R2SLR40ME	33,00	34,00	40	103,2	67,2	1,18	E	TCF100408EP	TCF120405EC
5537941	TCF340R2SLR40ME	34,00	35,00	40	106,2	69,2	1,21	E	TCF100408EP	TCF120405EC
5537942	TCF350R2SLR40ME	35,00	36,00	40	109,2	71,2	1,24	E	TCF100408EP	TCF120405EC
5537943	TCF360R2SLR40ME	36,00	37,00	40	112,3	73,3	1,27	E	TCF100408EP	TCF120405EC
5578539	TCF370R2SLR40MF	37,00	38,00	40	115,3	75,3	1,35	F	TCF120412FP	TCF150406FC
5578600	TCF375R2SLR40MF	37,50	38,50	40	116,4	76,4	1,36	F	TCF120412FP	TCF150406FC
5578601	TCF380R2SLR40MF	38,00	39,00	40	118,4	77,4	1,38	F	TCF120412FP	TCF150406FC
5578602	TCF390R2SLR40MF	39,00	40,00	40	121,4	79,4	1,41	F	TCF120412FP	TCF150406FC
5578603	TCF400R2SLR40MF	40,00	41,00	40	123,4	81,4	1,45	F	TCF120412FP	TCF150406FC
5578604	TCF410R2SLR40MF	41,00	42,00	40	126,5	83,5	1,48	F	TCF120412FP	TCF150406FC
5578605	TCF420R2SLR40MF	42,00	43,00	40	129,5	85,5	1,51	F	TCF120412FP	TCF150406FC
5578606	TCF430R2SLR40MF	43,00	44,00	40	132,5	87,5	1,53	F	TCF120412FP	TCF150406FC
5578607	TCF440R2SLR40MF	44,00	45,00	40	135,6	89,6	1,56	F	TCF120412FP	TCF150406FC
5578608	TCF450R2SLR40MF	45,00	46,00	40	138,6	91,6	1,59	F	TCF120412FP	TCF150406FC
5578694	TCF460R2SLR40MG	46,00	47,00	40	136,7	93,7	1,67	G	TCF150512GP	TCF180508GC
5578695	TCF470R2SLR40MG	47,00	48,00	40	139,7	95,7	1,70	G	TCF150512GP	TCF180508GC
5578696	TCF480R2SLR40MG	48,00	49,00	40	142,7	97,7	1,73	G	TCF150512GP	TCF180508GC
5578697	TCF490R2SLR40MG	49,00	50,00	40	145,8	99,8	1,76	G	TCF150512GP	TCF180508GC
5578698	TCF500R2SLR40MG	50,00	51,00	40	147,8	101,8	1,79	G	TCF150512GP	TCF180508GC

(continued)

Top Cut 4™ Shanks

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

order number	catalog number	D1	D1 max	D	L1	L4 max	L5	SSC	periphery insert	center insert
5578699	**TCF505R2SLR40MG**	50,50	51,50	40	149,8	102,8	1,80	G	**TCF150512GP**	**TCF180508GC**
5578710	**TCF510R2SLR40MG**	51,00	52,00	40	150,8	103,8	1,81	G	**TCF150512GP**	**TCF180508GC**
5578711	**TCF520R2SLR40MG**	52,00	53,00	40	153,8	105,8	1,84	G	**TCF150512GP**	**TCF180508GC**
5578712	**TCF530R2SLR40MG**	53,00	54,00	40	156,9	107,9	1,87	G	**TCF150512GP**	**TCF180508GC**
5578713	**TCF540R2SLR40MG**	54,00	55,00	40	159,9	109,9	1,89	G	**TCF150512GP**	**TCF180508GC**
5578714	**TCF550R2SLR40MG**	55,00	56,00	40	161,9	111,9	1,92	G	**TCF150512GP**	**TCF180508GC**
5578715	**TCF560R2SLR40MG**	56,00	57,00	40	164,9	113,9	1,94	G	**TCF150512GP**	**TCF180508GC**
5538613	**TCF570R2SLR40MH**	57,00	58,00	40	162,1	116,1	2,06	H	**TCF180614HP**	**TCF210608HC**
5538614	**TCF580R2SLR40MH**	58,00	59,00	40	165,1	118,1	2,09	H	**TCF180614HP**	**TCF210608HC**
5538615	**TCF590R2SLR40MH**	59,00	60,00	40	168,1	120,1	2,12	H	**TCF180614HP**	**TCF210608HC**
5538616	**TCF600R2SLR40MH**	60,00	61,00	40	170,1	122,1	2,15	H	**TCF180614HP**	**TCF210608HC**
5538617	**TCF610R2SLR40MH**	61,00	62,00	40	173,2	124,2	2,18	H	**TCF180614HP**	**TCF210608HC**
5538618	**TCF620R2SLR40MH**	62,00	63,00	40	176,2	126,2	2,20	H	**TCF180614HP**	**TCF210608HC**
5538619	**TCF630R2SLR40MH**	63,00	64,00	40	179,2	128,2	2,23	H	**TCF180614HP**	**TCF210608HC**
5538630	**TCF640R2SLR40MH**	64,00	65,00	40	181,3	130,3	2,26	H	**TCF180614HP**	**TCF210608HC**
5538631	**TCF650R2SLR40MH**	65,00	66,00	40	184,3	132,3	2,28	H	**TCF180614HP**	**TCF210608HC**
5538632	**TCF660R2SLR40MH**	66,00	67,00	40	187,3	134,3	2,31	H	**TCF180614HP**	**TCF210608HC**
5538633	**TCF670R2SLR40MH**	67,00	68,00	40	189,3	136,3	2,33	H	**TCF180614HP**	**TCF210608HC**
5538634	**TCF680R2SLR40MH**	68,00	69,00	40	192,4	138,4	2,36	H	**TCF180614HP**	**TCF210608HC**

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the inserts.

▼ Spare Parts

SSC	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	**1138455**	4,00	2.950
G	TCF150512GP	TCF180508GC	**1099645**	T20	**1138455**	6,30	4.646
H	TCF180614HP	TCF210608HC	**1823871**	T25	**1022519**	8,80	6.490
H	TCF180614HP	TCF210608HC	**1823871**	T25	**1138455**	8,80	6.490

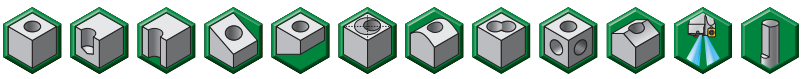
NOTE: Drilling in stacked plates possible in certain applications. Ask for technical support.
Drill shipped with insert screws and Torx wrench.
See pages 68–71 for inserts.
SSC = Pocket Seat Reference.
SLR = Side Lock.
D1 max is an achievable diameter using x-offset.

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

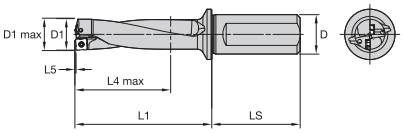
WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

Top Cut 4™

Top Cut 4 Shanks



▼ Top Cut 4 Drill • Inch • 3 x D • SLR Shanks



For information on LS, see the table on page 57.

order number	catalog number	D1	D1 max	D	L1	L4 max	L5	SSC	periphery insert	center insert
5537882	TCF0473R3SLR075A	.473	.493	.75	2.161	1.436	.017	A	TCF040204AP	TCF040203AC
5537883	TCF0500R3SLR075A	.500	.520	.75	2.276	1.518	.018	A	TCF040204AP	TCF040203AC
5537884	TCF0531R3SLR075A	.531	.551	.75	2.407	1.612	.019	A	TCF040204AP	TCF040203AC
5578304	TCF0563R3SLR075B	.563	.583	.75	2.486	1.709	.020	B	TCF050204BP	TCF060203BC
5578305	TCF0594R3SLR075B	.594	.614	.75	2.615	1.804	.022	B	TCF050204BP	TCF060203BC
5578306	TCF0625R3SLR075B	.625	.645	.75	2.743	1.898	.023	B	TCF050204BP	TCF060203BC
5578307	TCF0656R3SLR075B	.656	.676	.75	2.871	1.992	.024	B	TCF050204BP	TCF060203BC
5578308	TCF0688R3SLR075B	.688	.708	.75	3.003	2.089	.025	B	TCF050204BP	TCF060203BC
5578309	TCF0703R3SLR075B	.703	.723	.75	3.065	2.134	.025	B	TCF050204BP	TCF060203BC
5578310	TCF0719R3SLR075B	.719	.739	.75	3.131	2.182	.026	B	TCF050204BP	TCF060203BC
5578311	TCF0734R3SLR075B	.734	.754	.75	3.193	2.228	.026	B	TCF050204BP	TCF060203BC
5578406	TCF0750R3SLR100C	.750	.770	1.00	3.260	2.277	.027	C	TCF070306CP	TCF070304CC
5578407	TCF0781R3SLR100C	.781	.801	1.00	3.388	2.371	.028	C	TCF070306CP	TCF070304CC
5578408	TCF0813R3SLR100C	.813	.833	1.00	3.520	2.468	.029	C	TCF070306CP	TCF070304CC
5578409	TCF0844R3SLR100C	.844	.864	1.00	3.648	2.562	.030	C	TCF070306CP	TCF070304CC
5578410	TCF0875R3SLR100C	.875	.895	1.00	3.776	2.656	.031	C	TCF070306CP	TCF070304CC
5578411	TCF0906R3SLR100C	.906	.926	1.00	3.904	2.750	.032	C	TCF070306CP	TCF070304CC
5578412	TCF0938R3SLR100C	.938	.958	1.00	4.035	2.846	.032	C	TCF070306CP	TCF070304CC
5537913	TCF0969R3SLR100D	.969	1.008	1.00	4.069	2.942	.035	D	TCF080308DP	TCF090305DC
5537914	TCF0984R3SLR100D	.984	1.023	1.00	4.130	2.988	.036	D	TCF080308DP	TCF090305DC
5537915	TCF1000R3SLR100D	1.000	1.039	1.00	4.194	3.036	.036	D	TCF080308DP	TCF090305DC
5537916	TCF1031R3SLR125D	1.031	1.070	1.25	4.358	3.130	.037	D	TCF080308DP	TCF090305DC
5537917	TCF1063R3SLR125D	1.063	1.102	1.25	4.487	3.227	.038	D	TCF080308DP	TCF090305DC
5537918	TCF1094R3SLR125D	1.094	1.133	1.25	4.612	3.321	.039	D	TCF080308DP	TCF090305DC
5537919	TCF1125R3SLR125D	1.125	1.164	1.25	4.737	3.415	.040	D	TCF080308DP	TCF090305DC
5537920	TCF1156R3SLR125D	1.156	1.195	1.25	4.862	3.509	.041	D	TCF080308DP	TCF090305DC
5538064	TCF1188R3SLR125E	1.188	1.227	1.25	4.873	3.607	.043	E	TCF100408EP	TCF120405EC
5538065	TCF1210R3SLR125E	1.210	1.249	1.25	4.960	3.674	.044	E	TCF100408EP	TCF120405EC
5538066	TCF1219R3SLR125E	1.219	1.258	1.25	4.995	3.701	.044	E	TCF100408EP	TCF120405EC
5538067	TCF1250R3SLR125E	1.250	1.289	1.25	5.117	3.795	.045	E	TCF100408EP	TCF120405EC
5538068	TCF1280R3SLR125E	1.281	1.320	1.25	5.239	3.889	.046	E	TCF100408EP	TCF120405EC
5538069	TCF1313R3SLR125E	1.313	1.352	1.25	5.365	3.986	.047	E	TCF100408EP	TCF120405EC
5538080	TCF1375R3SLR125E	1.375	1.414	1.25	5.608	4.174	.049	E	TCF100408EP	TCF120405EC
5538081	TCF1406R3SLR150E	1.406	1.445	1.50	5.770	4.268	.050	E	TCF100408EP	TCF120405EC
5538082	TCF1438R3SLR150E	1.438	1.477	1.50	5.895	4.364	.050	E	TCF100408EP	TCF120405EC
5578659	TCF1469R3SLR150F	1.469	1.508	1.50	6.019	4.460	.054	F	TCF120412FP	TCF150406FC
5578670	TCF1500R3SLR150F	1.500	1.539	1.50	6.141	4.555	.055	F	TCF120412FP	TCF150406FC
5578671	TCF1531R3SLR150F	1.531	1.570	1.50	6.263	4.649	.056	F	TCF120412FP	TCF150406FC
5578672	TCF1563R3SLR150F	1.563	1.602	1.50	6.389	4.746	.057	F	TCF120412FP	TCF150406FC
5578673	TCF1625R3SLR150F	1.625	1.664	1.50	6.632	4.933	.058	F	TCF120412FP	TCF150406FC
5578674	TCF1656R3SLR150F	1.656	1.695	1.50	6.754	5.027	.059	F	TCF120412FP	TCF150406FC
5578675	TCF1688R3SLR150F	1.688	1.727	1.50	6.880	5.124	.060	F	TCF120412FP	TCF150406FC
5578676	TCF1750R3SLR150F	1.750	1.789	1.50	7.123	5.312	.062	F	TCF120412FP	TCF150406FC
5578791	TCF1813R3SLR150G	1.813	1.852	1.50	7.192	5.505	.066	G	TCF150512GP	TCF180508GC
5578792	TCF1875R3SLR150G	1.875	1.914	1.50	7.429	5.693	.068	G	TCF150512GP	TCF180508GC
5578793	TCF1938R3SLR150G	1.938	1.977	1.50	7.670	5.883	.069	G	TCF150512GP	TCF180508GC
5578794	TCF2000R3SLR150G	2.000	2.039	1.50	7.836	7.836	.071	G	TCF150512GP	TCF180508GC
5578795	TCF2125R3SLR150G	2.125	2.164	1.50	8.311	8.311	.075	G	TCF150512GP	TCF180508GC
5578796	TCF2219R3SLR150G	2.219	2.258	1.50	8.669	8.669	.077	G	TCF150512GP	TCF180508GC
5538503	TCF2250R3SLR150H	2.250	2.289	1.50	8.642	6.831	.081	H	TCF180614HP	TCF210608HC
5538504	TCF2375R3SLR150H	2.375	2.414	1.50	9.109	7.210	.085	H	TCF180614HP	TCF210608HC
5538505	TCF2500R3SLR150H	2.500	2.539	1.50	9.574	7.588	.088	H	TCF180614HP	TCF210608HC

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the inserts.

(continued)

Top Cut 4™ Shanks

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

▼ Spare Parts


SSC	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
E	TCF100408EP	TCF120405EC	**2018194**	T9	**1138455**	2,00	1.475
F	TCF120412FP	TCF150406FC	**1756815**	T15	**2029596**	4,00	2.950
G	TCF150512GP	TCF180508GC	**1099645**	T20	**1138455**	6,30	4.646
H	TCF180614HP	TCF210608HC	**1823871**	T25	**2585812**	8,80	6.490

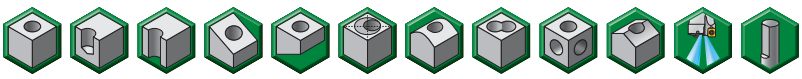
NOTE: Drilling in stacked plates possible in certain applications. Ask for technical support.
Drill shipped with insert screws and Torx wrench.
See pages 68–71 for inserts.
SSC = Pocket Seat Reference.
SLR = Side Lock.
D1 max is an achievable diameter using x-offset.

	LS	
D	**mm**	**in**
.75	50	1.9685
1.00	56	2.2047
1.25	60	2.3622
1.50	70	2.7559

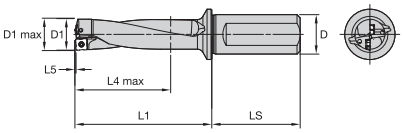
WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

Top Cut 4™

Top Cut 4 Shanks



▼ Top Cut 4 Drill • Metric • 3 x D • SLR Shanks



For information on LS, see the table on page 59.

order number	catalog number	D1	D1 max	D	L1	L4 max	L5	SSC	periphery insert	center insert
5537863	TCF120R3SLR20MA	12,00	12,50	20	55,4	36,4	0,43	A	TCF040204AP	TCF040203AC
5537864	TCF125R3SLR20MA	12,50	13,00	20	57,0	38,0	0,45	A	TCF040204AP	TCF040203AC
5537866	TCF127R3SLR20MA	12,70	13,20	20	58,6	38,6	0,46	A	TCF040204AP	TCF040203AC
5537867	TCF130R3SLR20MA	13,00	13,50	20	59,5	39,5	0,47	A	TCF040204AP	TCF040203AC
5537868	TCF135R3SLR20MA	13,50	14,00	20	61,0	41,0	0,48	A	TCF040204AP	TCF040203AC
5577928	TCF140R3SLR25MB	14,00	14,50	25	62,5	42,5	0,49	B	TCF050204BP	TCF060203BC
5577929	TCF145R3SLR25MB	14,50	15,00	25	64,0	44,0	0,52	B	TCF050204BP	TCF060203BC
5577930	TCF150R3SLR25MB	15,00	15,50	25	66,5	45,5	0,55	B	TCF050204BP	TCF060203BC
5577931	TCF155R3SLR25MB	15,50	16,00	25	69,1	47,1	0,56	B	TCF050204BP	TCF060203BC
5577932	TCF160R3SLR25MB	16,00	16,50	25	70,6	48,6	0,58	B	TCF050204BP	TCF060203BC
5577933	TCF165R3SLR25MB	16,50	17,00	25	73,1	50,1	0,60	B	TCF050204BP	TCF060203BC
5577934	TCF170R3SLR25MB	17,00	17,50	25	74,6	51,6	0,61	B	TCF050204BP	TCF060203BC
5577935	TCF175R3SLR25MB	17,50	18,00	25	77,1	53,1	0,63	B	TCF050204BP	TCF060203BC
5577936	TCF180R3SLR25MB	18,00	18,50	25	78,6	54,6	0,64	B	TCF050204BP	TCF060203BC
5577937	TCF185R3SLR25MB	18,50	19,00	25	81,2	56,2	0,65	B	TCF050204BP	TCF060203BC
5578828	TCF190R3SLR25MC	19,00	19,50	25	82,7	57,7	0,68	C	TCF070306CP	TCF070304CC
5578829	TCF195R3SLR25MC	19,50	20,00	25	85,2	59,2	0,71	C	TCF070306CP	TCF070304CC
5578830	TCF200R3SLR25MC	20,00	20,50	25	86,7	60,7	0,72	C	TCF070306CP	TCF070304CC
5578831	TCF205R3SLR25MC	20,50	21,00	25	89,2	62,2	0,74	C	TCF070306CP	TCF070304CC
5578832	TCF210R3SLR25MC	21,00	21,50	25	91,8	63,8	0,75	C	TCF070306CP	TCF070304CC
5578833	TCF220R3SLR25MC	22,00	22,50	25	95,8	66,8	0,78	C	TCF070306CP	TCF070304CC
5578834	TCF225R3SLR25MC	22,50	23,00	25	97,3	68,3	0,79	C	TCF070306CP	TCF070304CC
5578835	TCF230R3SLR25MC	23,00	23,50	25	99,8	69,8	0,80	C	TCF070306CP	TCF070304CC
5537824	TCF240R3SLR25MD	24,00	25,00	25	100,9	72,9	0,87	D	TCF080308DP	TCF090305DC
5537825	TCF250R3SLR32MD	25,00	26,00	32	105,9	75,9	0,91	D	TCF080308DP	TCF090305DC
5537826	TCF260R3SLR32MD	26,00	27,00	32	109,9	78,9	0,94	D	TCF080308DP	TCF090305DC
5537827	TCF265R3SLR32MD	26,50	27,50	32	112,5	80,5	0,95	D	TCF080308DP	TCF090305DC
5537828	TCF270R3SLR32MD	27,00	28,00	32	114,0	82,0	0,97	D	TCF080308DP	TCF090305DC
5537829	TCF280R3SLR32MD	28,00	29,00	32	118,0	85,0	0,99	D	TCF080308DP	TCF090305DC
5537830	TCF290R3SLR32MD	29,00	30,00	32	122,0	88,0	1,02	D	TCF080308DP	TCF090305DC
5537944	TCF300R3SLR32ME	30,00	31,00	32	123,1	91,1	1,09	E	TCF100408EP	TCF120405EC
5537945	TCF310R3SLR32ME	31,00	32,00	32	127,1	94,1	1,12	E	TCF100408EP	TCF120405EC
5537946	TCF320R3SLR32ME	32,00	33,00	32	131,2	97,2	1,15	E	TCF100408EP	TCF120405EC
5537947	TCF330R3SLR40ME	33,00	34,00	40	136,2	100,2	1,18	E	TCF100408EP	TCF120405EC
5537948	TCF340R3SLR40ME	34,00	35,00	40	140,2	103,2	1,21	E	TCF100408EP	TCF120405EC
5537949	TCF350R3SLR40ME	35,00	36,00	40	144,2	106,2	1,24	E	TCF100408EP	TCF120405EC
5537950	TCF360R3SLR40ME	36,00	37,00	40	148,3	109,3	1,27	E	TCF100408EP	TCF120405EC
5578609	TCF370R3SLR40MF	37,00	38,00	40	152,3	112,3	1,35	F	TCF120412FP	TCF150406FC
5578610	TCF375R3SLR40MF	37,50	38,50	40	153,9	113,9	1,36	F	TCF120412FP	TCF150406FC
5578611	TCF380R3SLR40MF	38,00	39,00	40	156,4	115,4	1,38	F	TCF120412FP	TCF150406FC
5578612	TCF390R3SLR40MF	39,00	40,00	40	160,4	118,4	1,41	F	TCF120412FP	TCF150406FC
5578613	TCF400R3SLR40MF	40,00	41,00	40	163,4	121,4	1,45	F	TCF120412FP	TCF150406FC
5578614	TCF410R3SLR40MF	41,00	42,00	40	167,5	124,5	1,48	F	TCF120412FP	TCF150406FC
5578615	TCF420R3SLR40MF	42,00	43,00	40	171,5	127,5	1,51	F	TCF120412FP	TCF150406FC
5578616	TCF430R3SLR40MF	43,00	44,00	40	175,5	130,5	1,53	F	TCF120412FP	TCF150406FC
5578617	TCF440R3SLR40MF	44,00	45,00	40	179,6	133,6	1,56	F	TCF120412FP	TCF150406FC
5578618	TCF450R3SLR40MF	45,00	46,00	40	183,6	136,6	1,59	F	TCF120412FP	TCF150406FC
5578716	TCF460R3SLR40MG	46,00	47,00	40	182,7	139,7	1,67	G	TCF150512GP	TCF180508GC
5578717	TCF470R3SLR40MG	47,00	48,00	40	186,7	142,7	1,70	G	TCF150512GP	TCF180508GC
5578718	TCF480R3SLR40MG	48,00	49,00	40	190,7	145,7	1,73	G	TCF150512GP	TCF180508GC
5578719	TCF490R3SLR40MG	49,00	50,00	40	194,8	148,8	1,76	G	TCF150512GP	TCF180508GC
5578720	TCF500R3SLR40MG	50,00	51,00	40	197,8	151,8	1,79	G	TCF150512GP	TCF180508GC

(continued)

Top Cut 4™ Shanks

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

order number	catalog number	D1	D1 max	D	L1	L4 max	L5	SSC	periphery insert	center insert
5578721	**TCF505R3SLR40MG**	50,50	51,50	40	200,3	153,3	1,80	G	**TCF150512GP**	**TCF180508GC**
5578722	**TCF510R3SLR40MG**	51,00	52,00	40	201,8	154,8	1,81	G	**TCF150512GP**	**TCF180508GC**
5578723	**TCF520R3SLR40MG**	52,00	53,00	40	205,8	157,8	1,84	G	**TCF150512GP**	**TCF180508GC**
5578724	**TCF530R3SLR40MG**	53,00	54,00	40	209,9	160,9	1,87	G	**TCF150512GP**	**TCF180508GC**
5578726	**TCF540R3SLR40MG**	54,00	55,00	40	213,9	163,9	1,89	G	**TCF150512GP**	**TCF180508GC**
5578727	**TCF550R3SLR40MG**	55,00	56,00	40	216,9	166,9	1,92	G	**TCF150512GP**	**TCF180508GC**
5578728	**TCF560R3SLR40MG**	56,00	57,00	40	220,9	169,9	1,94	G	**TCF150512GP**	**TCF180508GC**
5538635	**TCF570R3SLR40MH**	57,00	58,00	40	219,1	173,1	2,06	H	**TCF180614HP**	**TCF210608HC**
5538636	**TCF580R3SLR40MH**	58,00	59,00	40	223,1	176,1	2,09	H	**TCF180614HP**	**TCF210608HC**
5538637	**TCF590R3SLR40MH**	59,00	60,00	40	227,1	179,1	2,12	H	**TCF180614HP**	**TCF210608HC**
5538638	**TCF600R3SLR40MH**	60,00	61,00	40	230,1	182,1	2,15	H	**TCF180614HP**	**TCF210608HC**
5538639	**TCF610R3SLR40MH**	61,00	62,00	40	234,2	185,2	2,18	H	**TCF180614HP**	**TCF210608HC**
5538640	**TCF620R3SLR40MH**	62,00	63,00	40	238,2	188,2	2,20	H	**TCF180614HP**	**TCF210608HC**
5538641	**TCF630R3SLR40MH**	63,00	64,00	40	242,2	191,2	2,23	H	**TCF180614HP**	**TCF210608HC**
5538642	**TCF640R3SLR40MH**	64,00	65,00	40	245,3	194,3	2,26	H	**TCF180614HP**	**TCF210608HC**
5538643	**TCF650R3SLR40MH**	65,00	66,00	40	249,3	197,3	2,28	H	**TCF180614HP**	**TCF210608HC**
5538644	**TCF660R3SLR40MH**	66,00	67,00	40	253,3	200,3	2,31	H	**TCF180614HP**	**TCF210608HC**
5538645	**TCF670R3SLR40MH**	67,00	68,00	40	256,3	203,3	2,33	H	**TCF180614HP**	**TCF210608HC**
5538646	**TCF680R3SLR40MH**	68,00	69,00	40	260,4	206,4	2,36	H	**TCF180614HP**	**TCF210608HC**

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the inserts.

▼ Spare Parts

SSC	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	**1138455**	4,00	2.950
F	TCF120412FP	TCF150406FC	**1756815**	T15	**2029596**	4,00	2.950
G	TCF150512GP	TCF180508GC	**1099645**	T20	**1138455**	6,30	4.646
H	TCF180614HP	TCF210608HC	**1823871**	T25	**1022519**	8,80	6.490
H	TCF180614HP	TCF210608HC	**1823871**	T25	**1138455**	8,80	6.490

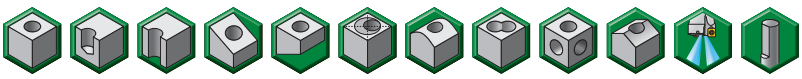
NOTE: Drilling in stacked plates possible in certain applications. Ask for technical support.
Drill shipped with insert screws and Torx wrench.
See pages 68–71 for inserts.
SSC = Pocket Seat Reference.
SLR = Side Lock.
D1 max is an achievable diameter using x-offset.

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

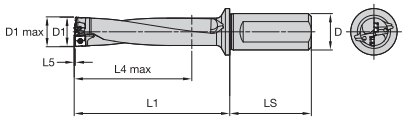
WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

Top Cut 4™

Top Cut 4 Shanks



▼ Top Cut 4 Drill • Inch • 4 x D • SLR Shanks



For information on LS, see the table on page 61.

order number	catalog number	D1	D1 max	D	L1	L4 max	L5	SSC	periphery insert	center insert
5537885	TCF0473R4SLR075A	.473	.493	.75	2.634	1.909	.017	A	TCF040204AP	TCF040203AC
5537886	TCF0500R4SLR075A	.500	.520	.75	2.776	2.018	.018	A	TCF040204AP	TCF040203AC
5537887	TCF0531R4SLR075A	.531	.551	.75	2.938	2.143	.019	A	TCF040204AP	TCF040203AC
5578312	TCF0563R4SLR075B	.563	.583	.75	3.049	2.272	.020	B	TCF050204BP	TCF060203BC
5578313	TCF0594R4SLR075B	.594	.614	.75	3.209	2.398	.022	B	TCF050204BP	TCF060203BC
5578314	TCF0625R4SLR075B	.625	.645	.75	3.368	2.523	.023	B	TCF050204BP	TCF060203BC
5578315	TCF0656R4SLR075B	.656	.676	.75	3.527	2.648	.024	B	TCF050204BP	TCF060203BC
5578316	TCF0688R4SLR075B	.688	.708	.75	3.691	2.777	.025	B	TCF050204BP	TCF060203BC
5578317	TCF0703R4SLR075B	.703	.723	.75	3.768	2.837	.025	B	TCF050204BP	TCF060203BC
5578318	TCF0719R4SLR075B	.719	.739	.75	3.850	2.901	.026	B	TCF050204BP	TCF060203BC
5578319	TCF0734R4SLR075B	.734	.754	.75	3.927	2.962	.026	B	TCF050204BP	TCF060203BC
5578413	TCF0750R4SLR100C	.750	.770	1.00	4.010	3.027	.027	C	TCF070306CP	TCF070304CC
5578414	TCF0781R4SLR100C	.781	.801	1.00	4.169	3.152	.028	C	TCF070306CP	TCF070304CC
5578415	TCF0813R4SLR100C	.813	.833	1.00	4.333	3.281	.029	C	TCF070306CP	TCF070304CC
5578416	TCF0844R4SLR100C	.844	.864	1.00	4.492	3.406	.030	C	TCF070306CP	TCF070304CC
5578417	TCF0875R4SLR100C	.875	.895	1.00	4.651	3.531	.031	C	TCF070306CP	TCF070304CC
5578418	TCF0906R4SLR100C	.906	.926	1.00	4.810	3.656	.032	C	TCF070306CP	TCF070304CC
5578419	TCF0938R4SLR100C	.938	.958	1.00	4.973	3.784	.032	C	TCF070306CP	TCF070304CC
5537921	TCF0969R4SLR100D	.969	1.008	1.00	5.038	3.911	.035	D	TCF080308DP	TCF090305DC
5537922	TCF0984R4SLR100D	.984	1.023	1.00	5.114	3.972	.036	D	TCF080308DP	TCF090305DC
5537923	TCF1000R4SLR100D	1.000	1.039	1.00	5.194	4.036	.036	D	TCF080308DP	TCF090305DC
5537924	TCF1031R4SLR125D	1.031	1.070	1.25	5.389	4.161	.037	D	TCF080308DP	TCF090305DC
5537925	TCF1063R4SLR125D	1.063	1.102	1.25	5.550	4.290	.038	D	TCF080308DP	TCF090305DC
5537926	TCF1094R4SLR125D	1.094	1.133	1.25	5.706	4.415	.039	D	TCF080308DP	TCF090305DC
5537927	TCF1125R4SLR125D	1.125	1.164	1.25	5.862	4.540	.040	D	TCF080308DP	TCF090305DC
5537928	TCF1156R4SLR125D	1.156	1.195	1.25	6.018	4.665	.041	D	TCF080308DP	TCF090305DC
5538083	TCF1188R4SLR125E	1.188	1.227	1.25	6.061	4.795	.043	E	TCF100408EP	TCF120405EC
5538084	TCF1210R4SLR125E	1.210	1.249	1.25	6.170	4.884	.044	E	TCF100408EP	TCF120405EC
5538085	TCF1219R4SLR125E	1.219	1.258	1.25	6.214	4.920	.044	E	TCF100408EP	TCF120405EC
5538086	TCF1250R4SLR125E	1.250	1.289	1.25	6.367	5.045	.045	E	TCF100408EP	TCF120405EC
5538087	TCF1280R4SLR125E	1.281	1.320	1.25	6.520	5.170	.046	E	TCF100408EP	TCF120405EC
5538088	TCF1313R4SLR125E	1.313	1.352	1.25	6.678	5.299	.047	E	TCF100408EP	TCF120405EC
5538089	TCF1375R4SLR125E	1.375	1.414	1.25	6.983	5.549	.049	E	TCF100408EP	TCF120405EC
5538090	TCF1406R4SLR150E	1.406	1.445	1.50	7.176	5.674	.050	E	TCF100408EP	TCF120405EC
5538091	TCF1438R4SLR150E	1.438	1.477	1.50	7.333	5.802	.050	E	TCF100408EP	TCF120405EC
5578677	TCF1469R4SLR150F	1.469	1.508	1.50	7.488	5.929	.054	F	TCF120412FP	TCF150406FC
5578678	TCF1500R4SLR150F	1.500	1.539	1.50	7.641	6.054	.055	F	TCF120412FP	TCF150406FC
5578679	TCF1531R4SLR150F	1.531	1.570	1.50	7.794	6.180	.056	F	TCF120412FP	TCF150406FC
5578680	TCF1563R4SLR150F	1.563	1.602	1.50	7.952	6.309	.057	F	TCF120412FP	TCF150406FC
5578681	TCF1625R4SLR150F	1.625	1.664	1.50	8.257	6.558	.058	F	TCF120412FP	TCF150406FC
5578682	TCF1656R4SLR150F	1.656	1.695	1.50	8.410	6.683	.059	F	TCF120412FP	TCF150406FC
5578683	TCF1688R4SLR150F	1.688	1.727	1.50	8.568	6.812	.060	F	TCF120412FP	TCF150406FC
5578684	TCF1750R4SLR150F	1.750	1.789	1.50	8.873	7.062	.062	F	TCF120412FP	TCF150406FC
5578797	TCF1813R4SLR150G	1.813	1.852	1.50	9.005	7.318	.066	G	TCF150512GP	TCF180508GC
5578798	TCF1875R4SLR150G	1.875	1.914	1.50	9.304	7.568	.068	G	TCF150512GP	TCF180508GC
5578799	TCF1938R4SLR150G	1.938	1.977	1.50	9.608	7.821	.069	G	TCF150512GP	TCF180508GC
5578800	TCF2000R4SLR150G	2.000	2.039	1.50	9.907	8.071	.071	G	TCF150512GP	TCF180508GC
5578801	TCF2125R4SLR150G	2.125	2.164	1.50	10.511	8.574	.075	G	TCF150512GP	TCF180508GC
5578802	TCF2219R4SLR150G	2.219	2.258	1.50	10.965	8.953	.077	G	TCF150512GP	TCF180508GC
5538506	TCF2250R4SLR150H	2.250	2.289	1.50	10.892	9.081	.081	H	TCF180614HP	TCF210608HC
5538507	TCF2375R4SLR150H	2.375	2.414	1.50	11.484	9.585	.085	H	TCF180614HP	TCF210608HC
5538508	TCF2500R4SLR150H	2.500	2.539	1.50	12.074	10.088	.088	H	TCF180614HP	TCF210608HC

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the inserts.

(continued)

Top Cut 4™ Shanks

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

▼ Spare Parts

SSC	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
E	TCF100408EP	TCF120405EC	**2018194**	T9	**1138455**	2,00	1.475
F	TCF120412FP	TCF150406FC	**1756815**	T15	**2029596**	4,00	2.950
G	TCF150512GP	TCF180508GC	**1099645**	T20	**1138455**	6,30	4.646
H	TCF180614HP	TCF210608HC	**1823871**	T25	**2585812**	8,80	6.490

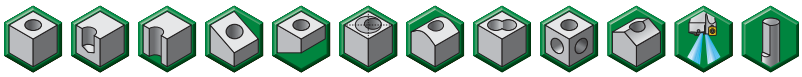
NOTE: Drilling in stacked plates possible in certain applications. Ask for technical support.
Drill shipped with insert screws and Torx wrench.
See pages 68–71 for inserts.
SSC = Pocket Seat Reference.
SLR = Side Lock.
D1 max is an achievable diameter using x-offset.

	LS	
D	**mm**	**in**
.75	50	1.9685
1.00	56	2.2047
1.25	60	2.3622
1.50	70	2.7559

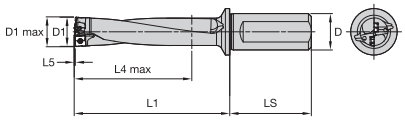
WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

Top Cut 4™

Top Cut 4 Shanks



▼ Top Cut 4 Drill • Metric • 4 x D • SLR Shanks



For information on LS, see the table on page 63.

order number	catalog number	D1	D1 max	D	L1	L4 max	L5	SSC	periphery insert	center insert
5537869	TCF120R4SLR20MA	12,00	12,50	20	67,4	48,4	0,43	A	TCF040204AP	TCF040203AC
5537870	TCF125R4SLR20MA	12,50	13,00	20	69,5	50,5	0,45	A	TCF040204AP	TCF040203AC
5537871	TCF127R4SLR20MA	12,70	13,20	20	71,3	51,3	0,46	A	TCF040204AP	TCF040203AC
5537872	TCF130R4SLR20MA	13,00	13,50	20	72,5	52,5	0,47	A	TCF040204AP	TCF040203AC
5537873	TCF135R4SLR20MA	13,50	14,00	20	75,5	54,5	0,48	A	TCF040204AP	TCF040203AC
5577938	TCF140R4SLR25MB	14,00	14,50	25	76,5	56,5	0,49	B	TCF050204BP	TCF060203BC
5577939	TCF145R4SLR25MB	14,50	15,00	25	78,5	58,5	0,52	B	TCF050204BP	TCF060203BC
5577940	TCF150R4SLR25MB	15,00	15,50	25	81,5	60,5	0,55	B	TCF050204BP	TCF060203BC
5577941	TCF155R4SLR25MB	15,50	16,00	25	84,6	62,6	0,56	B	TCF050204BP	TCF060203BC
5577942	TCF160R4SLR25MB	16,00	16,50	25	86,6	64,6	0,58	B	TCF050204BP	TCF060203BC
5577943	TCF165R4SLR25MB	16,50	17,00	25	89,6	66,6	0,60	B	TCF050204BP	TCF060203BC
5577944	TCF170R4SLR25MB	17,00	17,50	25	91,6	68,6	0,61	B	TCF050204BP	TCF060203BC
5577945	TCF175R4SLR25MB	17,50	18,00	25	94,6	70,6	0,63	B	TCF050204BP	TCF060203BC
5577946	TCF180R4SLR25MB	18,00	18,50	25	96,6	72,6	0,64	B	TCF050204BP	TCF060203BC
5577947	TCF185R4SLR25MB	18,50	19,00	25	99,7	74,7	0,65	B	TCF050204BP	TCF060203BC
5578836	TCF190R4SLR25MC	19,00	19,50	25	101,7	76,7	0,68	C	TCF070306CP	TCF070304CC
5578837	TCF195R4SLR25MC	19,50	20,00	25	104,7	78,7	0,71	C	TCF070306CP	TCF070304CC
5578838	TCF200R4SLR25MC	20,00	20,50	25	106,7	80,7	0,72	C	TCF070306CP	TCF070304CC
5578839	TCF205R4SLR25MC	20,50	21,00	25	109,7	82,7	0,74	C	TCF070306CP	TCF070304CC
5578840	TCF210R4SLR25MC	21,00	21,50	25	112,8	84,8	0,75	C	TCF070306CP	TCF070304CC
5578841	TCF220R4SLR25MC	22,00	22,50	25	117,8	88,8	0,78	C	TCF070306CP	TCF070304CC
5578842	TCF225R4SLR25MC	22,50	23,00	25	119,8	90,8	0,79	C	TCF070306CP	TCF070304CC
5578843	TCF230R4SLR25MC	23,00	23,50	25	122,8	92,8	0,80	C	TCF070306CP	TCF070304CC
5537831	TCF240R4SLR25MD	24,00	25,00	25	124,9	96,9	0,87	D	TCF080308DP	TCF090305DC
5537832	TCF250R4SLR32MD	25,00	26,00	32	130,9	100,9	0,91	D	TCF080308DP	TCF090305DC
5537833	TCF260R4SLR32MD	26,00	27,00	32	135,9	104,9	0,94	D	TCF080308DP	TCF090305DC
5537834	TCF265R4SLR32MD	26,50	27,50	32	139,0	107,0	0,95	D	TCF080308DP	TCF090305DC
5537835	TCF270R4SLR32MD	27,00	28,00	32	141,0	109,0	0,97	D	TCF080308DP	TCF090305DC
5537836	TCF280R4SLR32MD	28,00	29,00	32	146,0	113,0	0,99	D	TCF080308DP	TCF090305DC
5537837	TCF290R4SLR32MD	29,00	30,00	32	151,0	117,0	1,02	D	TCF080308DP	TCF090305DC
5537951	TCF300R4SLR32ME	30,00	31,00	32	153,1	121,1	1,09	E	TCF100408EP	TCF120405EC
5537952	TCF310R4SLR32ME	31,00	32,00	32	158,1	125,1	1,12	E	TCF100408EP	TCF120405EC
5537953	TCF320R4SLR32ME	32,00	33,00	32	163,2	129,2	1,15	E	TCF100408EP	TCF120405EC
5537954	TCF330R4SLR40ME	33,00	34,00	40	165,2	133,2	1,18	E	TCF100408EP	TCF120405EC
5537955	TCF340R4SLR40ME	34,00	35,00	40	174,2	137,2	1,21	E	TCF100408EP	TCF120405EC
5537956	TCF350R4SLR40ME	35,00	36,00	40	179,2	141,2	1,24	E	TCF100408EP	TCF120405EC
5537957	TCF360R4SLR40ME	36,00	37,00	40	184,3	145,3	1,27	E	TCF100408EP	TCF120405EC
5578619	TCF370R4SLR40MF	37,00	38,00	40	189,3	149,3	1,35	F	TCF120412FP	TCF150406FC
5578620	TCF375R4SLR40MF	37,50	38,50	40	191,4	151,4	1,36	F	TCF120412FP	TCF150406FC
5578621	TCF380R4SLR40MF	38,00	39,00	40	194,4	153,4	1,38	F	TCF120412FP	TCF150406FC
5578622	TCF390R4SLR40MF	39,00	40,00	40	199,4	157,4	1,41	F	TCF120412FP	TCF150406FC
5578623	TCF400R4SLR40MF	40,00	41,00	40	203,4	161,4	1,45	F	TCF120412FP	TCF150406FC
5578624	TCF410R4SLR40MF	41,00	42,00	40	208,5	165,5	1,48	F	TCF120412FP	TCF150406FC
5578625	TCF420R4SLR40MF	42,00	43,00	40	213,5	169,5	1,51	F	TCF120412FP	TCF150406FC
5578626	TCF430R4SLR40MF	43,00	44,00	40	218,5	173,5	1,53	F	TCF120412FP	TCF150406FC
5578627	TCF440R4SLR40MF	44,00	45,00	40	223,6	177,6	1,56	F	TCF120412FP	TCF150406FC
5578628	TCF450R4SLR40MF	45,00	46,00	40	228,6	181,6	1,59	F	TCF120412FP	TCF150406FC
5578729	TCF460R4SLR40MG	46,00	47,00	40	228,7	185,7	1,67	G	TCF150512GP	TCF180508GC
5578730	TCF470R4SLR40MG	47,00	48,00	40	233,7	189,7	1,70	G	TCF150512GP	TCF180508GC
5578731	TCF480R4SLR40MG	48,00	49,00	40	238,7	193,7	1,73	G	TCF150512GP	TCF180508GC
5578732	TCF490R4SLR40MG	49,00	50,00	40	243,8	197,8	1,76	G	TCF150512GP	TCF180508GC
5578733	TCF500R4SLR40MG	50,00	51,00	40	247,8	201,8	1,79	G	TCF150512GP	TCF180508GC

(continued)

Top Cut 4™ Shanks

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

order number	catalog number	D1	D1 max	D	L1	L4 max	L5	SSC	periphery insert	center insert
5578734	**TCF505R4SLR40MG**	50,50	51,50	40	250,8	203,8	1,80	G	**TCF150512GP**	**TCF180508GC**
5578735	**TCF510R4SLR40MG**	51,00	52,00	40	252,8	205,8	1,81	G	**TCF150512GP**	**TCF180508GC**
5578736	**TCF520R4SLR40MG**	52,00	53,00	40	257,8	209,8	1,84	G	**TCF150512GP**	**TCF180508GC**
5578737	**TCF530R4SLR40MG**	53,00	54,00	40	262,9	213,9	1,87	G	**TCF150512GP**	**TCF180508GC**
5578738	**TCF540R4SLR40MG**	54,00	55,00	40	267,9	217,9	1,89	G	**TCF150512GP**	**TCF180508GC**
5578739	**TCF550R4SLR40MG**	55,00	56,00	40	271,9	221,9	1,92	G	**TCF150512GP**	**TCF180508GC**
5578750	**TCF560R4SLR40MG**	56,00	57,00	40	276,9	225,9	1,94	G	**TCF150512GP**	**TCF180508GC**
5538647	**TCF570R4SLR40MH**	57,00	58,00	40	276,1	230,1	2,06	H	**TCF180614HP**	**TCF210608HC**
5538648	**TCF580R4SLR40MH**	58,00	59,00	40	281,1	234,1	2,09	H	**TCF180614HP**	**TCF210608HC**
5538649	**TCF590R4SLR40MH**	59,00	60,00	40	286,1	238,1	2,12	H	**TCF180614HP**	**TCF210608HC**
5538650	**TCF600R4SLR40MH**	60,00	61,00	40	290,1	242,1	2,15	H	**TCF180614HP**	**TCF210608HC**
5538651	**TCF610R4SLR40MH**	61,00	62,00	40	295,2	246,2	2,18	H	**TCF180614HP**	**TCF210608HC**
5538652	**TCF620R4SLR40MH**	62,00	63,00	40	300,2	250,2	2,20	H	**TCF180614HP**	**TCF210608HC**
5538653	**TCF630R4SLR40MH**	63,00	64,00	40	305,2	254,2	2,23	H	**TCF180614HP**	**TCF210608HC**
5538654	**TCF640R4SLR40MH**	64,00	65,00	40	309,3	258,3	2,26	H	**TCF180614HP**	**TCF210608HC**
5538655	**TCF650R4SLR40MH**	65,00	66,00	40	314,3	262,3	2,28	H	**TCF180614HP**	**TCF210608HC**
5538656	**TCF660R4SLR40MH**	66,00	67,00	40	319,3	266,3	2,31	H	**TCF180614HP**	**TCF210608HC**
5538657	**TCF670R4SLR40MH**	67,00	68,00	40	323,3	270,3	2,33	H	**TCF180614HP**	**TCF210608HC**
5538658	**TCF680R4SLR40MH**	68,00	69,00	40	328,4	274,4	2,36	H	**TCF180614HP**	**TCF210608HC**

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the inserts.

▼ Spare Parts

SSC	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	**1138455**	4,00	2.950
F	TCF120412FP	TCF150406FC	**1756815**	T15	**2029596**	4,00	2.950
G	TCF150512GP	TCF180508GC	**1099645**	T20	**1138455**	6,30	4.646
H	TCF180614HP	TCF210608HC	**1823871**	T25	**1022519**	8,80	6.490
H	TCF180614HP	TCF210608HC	**1823871**	T25	**1138455**	8,80	6.490

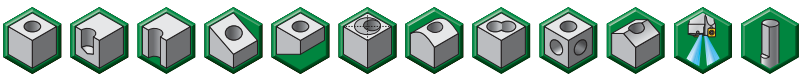
NOTE: Drilling in stacked plates possible in certain applications. Ask for technical support.
Drill shipped with insert screws and Torx wrench.
See pages 68–71 for inserts.
SSC = Pocket Seat Reference.
SLR = Side Lock.
D1 max is an achievable diameter using x-offset.

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

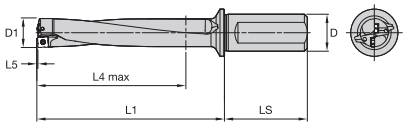
WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

Top Cut 4™

Top Cut 4 Shanks



▼ Top Cut 4 Drill • Inch • 5 x D • SLR Shanks



For information on LS, see the table on page 65.

order number	catalog number	D1	D	L1	L4 max	L5	SSC	periphery insert	center insert
5537888	TCF0473R5SLR075A	.473	.75	3.107	2.382	.017	A	TCF040204AP	TCF040203AC
5537889	TCF0500R5SLR075A	.500	.75	3.276	2.518	.018	A	TCF040204AP	TCF040203AC
5537890	TCF0531R5SLR075A	.531	.75	3.469	2.674	.019	A	TCF040204AP	TCF040203AC
5578320	TCF0563R5SLR075B	.563	.75	3.612	2.835	.020	B	TCF050204BP	TCF060203BC
5578321	TCF0594R5SLR075B	.594	.75	3.803	2.992	.022	B	TCF050204BP	TCF060203BC
5578322	TCF0625R5SLR075B	.625	.75	3.993	3.148	.023	B	TCF050204BP	TCF060203BC
5578323	TCF0656R5SLR075B	.656	.75	4.183	3.304	.024	B	TCF050204BP	TCF060203BC
5578324	TCF0688R5SLR075B	.688	.75	4.379	3.465	.025	B	TCF050204BP	TCF060203BC
5578325	TCF0703R5SLR075B	.703	.75	4.471	3.540	.025	B	TCF050204BP	TCF060203BC
5578326	TCF0719R5SLR075B	.719	.75	4.569	3.620	.026	B	TCF050204BP	TCF060203BC
5578327	TCF0734R5SLR075B	.734	.75	4.661	3.696	.026	B	TCF050204BP	TCF060203BC
5578420	TCF0750R5SLR100C	.750	1.00	4.760	3.777	.027	C	TCF070306CP	TCF070304CC
5578421	TCF0781R5SLR100C	.781	1.00	4.950	3.933	.028	C	TCF070306CP	TCF070304CC
5578422	TCF0813R5SLR100C	.813	1.00	5.146	4.094	.029	C	TCF070306CP	TCF070304CC
5578423	TCF0844R5SLR100C	.844	1.00	5.336	4.250	.030	C	TCF070306CP	TCF070304CC
5578424	TCF0875R5SLR100C	.875	1.00	5.526	4.406	.031	C	TCF070306CP	TCF070304CC
5578425	TCF0906R5SLR100C	.906	1.00	5.716	4.562	.032	C	TCF070306CP	TCF070304CC
5578426	TCF0938R5SLR100C	.938	1.00	5.911	4.722	.032	C	TCF070306CP	TCF070304CC
5537929	TCF0969R5SLR100D	.969	1.00	6.007	4.880	.035	D	TCF080308DP	TCF090305DC
5537930	TCF0984R5SLR100D	.984	1.00	6.098	4.956	.036	D	TCF080308DP	TCF090305DC
5537931	TCF1000R5SLR100D	1.000	1.00	6.194	5.036	.036	D	TCF080308DP	TCF090305DC
5537932	TCF1031R5SLR125D	1.031	1.25	6.420	5.192	.037	D	TCF080308DP	TCF090305DC
5537933	TCF1063R5SLR125D	1.063	1.25	6.613	5.353	.038	D	TCF080308DP	TCF090305DC
5537934	TCF1094R5SLR125D	1.094	1.25	6.800	5.509	.039	D	TCF080308DP	TCF090305DC
5537935	TCF1125R5SLR125D	1.125	1.25	6.987	5.665	.040	D	TCF080308DP	TCF090305DC
5537936	TCF1156R5SLR125D	1.156	1.25	7.174	5.821	.041	D	TCF080308DP	TCF090305DC
5538092	TCF1188R5SLR125E	1.188	1.25	7.249	5.983	.043	E	TCF100408EP	TCF120405EC
5538093	TCF1210R5SLR125E	1.210	1.25	7.380	6.094	.044	E	TCF100408EP	TCF120405EC
5538094	TCF1219R5SLR125E	1.219	1.25	7.433	6.139	.044	E	TCF100408EP	TCF120405EC
5538095	TCF1250R5SLR125E	1.250	1.25	7.617	6.295	.045	E	TCF100408EP	TCF120405EC
5538096	TCF1280R5SLR125E	1.281	1.25	7.801	6.451	.046	E	TCF100408EP	TCF120405EC
5538097	TCF1313R5SLR125E	1.313	1.25	7.991	6.612	.047	E	TCF100408EP	TCF120405EC
5538098	TCF1375R5SLR125E	1.375	1.25	8.358	6.924	.049	E	TCF100408EP	TCF120405EC
5538099	TCF1406R5SLR150E	1.406	1.50	8.582	7.080	.050	E	TCF100408EP	TCF120405EC
5538100	TCF1438R5SLR150E	1.438	1.50	8.771	7.240	.050	E	TCF100408EP	TCF120405EC
5578685	TCF1469R5SLR150F	1.469	1.50	8.957	7.398	.054	F	TCF120412FP	TCF150406FC
5578686	TCF1500R5SLR150F	1.500	1.50	9.141	7.554	.055	F	TCF120412FP	TCF150406FC
5578687	TCF1531R5SLR150F	1.531	1.50	9.325	7.711	.056	F	TCF120412FP	TCF150406FC
5578688	TCF1563R5SLR150F	1.563	1.50	9.515	7.872	.057	F	TCF120412FP	TCF150406FC
5578689	TCF1625R5SLR150F	1.625	1.50	9.882	8.183	.058	F	TCF120412FP	TCF150406FC
5578690	TCF1656R5SLR150F	1.656	1.50	10.066	8.339	.059	F	TCF120412FP	TCF150406FC
5578691	TCF1688R5SLR150F	1.688	1.50	10.256	8.500	.060	F	TCF120412FP	TCF150406FC
5578693	TCF1750R5SLR150F	1.750	1.50	10.623	8.812	.062	F	TCF120412FP	TCF150406FC
5578803	TCF1813R5SLR150G	1.813	1.50	10.818	9.131	.066	G	TCF150512GP	TCF180508GC
5578804	TCF1875R5SLR150G	1.875	1.50	11.179	9.443	.068	G	TCF150512GP	TCF180508GC
5578805	TCF1938R5SLR150G	1.938	1.50	11.546	9.759	.069	G	TCF150512GP	TCF180508GC
5578806	TCF2000R5SLR150G	2.000	1.50	11.907	10.071	.071	G	TCF150512GP	TCF180508GC
5578807	TCF2125R5SLR150G	2.125	1.50	12.636	10.699	.075	G	TCF150512GP	TCF180508GC
5578808	TCF2219R5SLR150G	2.219	1.50	13.184	11.172	.077	G	TCF150512GP	TCF180508GC
5538509	TCF2250R5SLR150H	2.250	1.50	13.142	11.331	.081	H	TCF180614HP	TCF210608HC
5538510	TCF2375R5SLR150H	2.375	1.50	13.859	11.960	.085	H	TCF180614HP	TCF210608HC
5538511	TCF2500R5SLR150H	2.500	1.50	14.574	12.588	.088	H	TCF180614HP	TCF210608HC

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the inserts.

(continued)

Top Cut 4™ Shanks

(Top Cut 4 Drill • Inch • 5 x D • SLR Shank — continued)

▼ Spare Parts


SSC	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
E	TCF100408EP	TCF120405EC	**2018194**	T9	**1138455**	2,00	1.475
F	TCF120412FP	TCF150406FC	**1756815**	T15	**2029596**	4,00	2.950
G	TCF150512GP	TCF180508GC	**1099645**	T20	**1138455**	6,30	4.646
H	TCF180614HP	TCF210608HC	**1823871**	T25	**2585812**	8,80	6.490

NOTE: Drill shipped with insert screws and Torx wrench.
See pages 68–71 for inserts.
SSC = Pocket Seat Reference.
SLR = Side Lock.

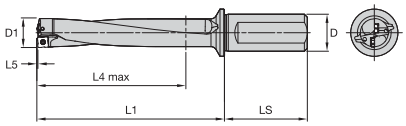
	LS	
D	mm	in
.75	50	1.9685
1.00	56	2.2047
1.25	60	2.3622
1.50	70	2.7559

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™

Top Cut 4 Shanks

▼ Top Cut 4 Drill • Metric • 5 x D • SLR Shanks



For information on LS, see the table on page 67.

order number	catalog number	D1	D	L1	L4 max	L5	SSC	periphery insert	center insert
5537874	TCF120R5SLR20MA	12,00	20	79,4	60,4	0,43	A	TCF040204AP	TCF040203AC
5537875	TCF125R5SLR20MA	12,50	20	82,0	63,0	0,45	A	TCF040204AP	TCF040203AC
5537876	TCF127R5SLR20MA	12,70	20	84,0	64,0	0,46	A	TCF040204AP	TCF040203AC
5537877	TCF130R5SLR20MA	13,00	20	85,5	65,5	0,47	A	TCF040204AP	TCF040203AC
5537878	TCF135R5SLR20MA	13,50	20	89,0	68,0	0,48	A	TCF040204AP	TCF040203AC
5577948	TCF140R5SLR25MB	14,00	25	90,5	70,5	0,49	B	TCF050204BP	TCF060203BC
5577949	TCF145R5SLR25MB	14,50	25	93,0	73,0	0,52	B	TCF050204BP	TCF060203BC
5577950	TCF150R5SLR25MB	15,00	25	96,5	75,5	0,55	B	TCF050204BP	TCF060203BC
5577951	TCF155R5SLR25MB	15,50	25	100,1	78,1	0,56	B	TCF050204BP	TCF060203BC
5577952	TCF160R5SLR25MB	16,00	25	102,6	80,6	0,58	B	TCF050204BP	TCF060203BC
5577953	TCF165R5SLR25MB	16,50	25	106,1	83,1	0,60	B	TCF050204BP	TCF060203BC
5577954	TCF170R5SLR25MB	17,00	25	108,6	85,6	0,61	B	TCF050204BP	TCF060203BC
5577955	TCF175R5SLR25MB	17,50	25	112,1	88,1	0,63	B	TCF050204BP	TCF060203BC
5577956	TCF180R5SLR25MB	18,00	25	114,6	90,6	0,64	B	TCF050204BP	TCF060203BC
5577957	TCF185R5SLR25MB	18,50	25	118,2	93,2	0,65	B	TCF050204BP	TCF060203BC
5578844	TCF190R5SLR25MC	19,00	25	120,7	95,7	0,68	C	TCF070306CP	TCF070304CC
5578845	TCF195R5SLR25MC	19,50	25	124,2	98,2	0,71	C	TCF070306CP	TCF070304CC
5578846	TCF200R5SLR25MC	20,00	25	126,7	100,7	0,72	C	TCF070306CP	TCF070304CC
5578847	TCF205R5SLR25MC	20,50	25	130,2	103,2	0,74	C	TCF070306CP	TCF070304CC
5578848	TCF210R5SLR25MC	21,00	25	133,8	105,8	0,75	C	TCF070306CP	TCF070304CC
5578849	TCF220R5SLR25MC	22,00	25	139,8	110,8	0,78	C	TCF070306CP	TCF070304CC
5578850	TCF225R5SLR25MC	22,50	25	142,3	113,3	0,79	C	TCF070306CP	TCF070304CC
5578851	TCF230R5SLR25MC	23,00	25	145,8	115,8	0,80	C	TCF070306CP	TCF070304CC
5537838	TCF240R5SLR25MD	24,00	25	148,9	120,9	0,87	D	TCF080308DP	TCF090305DC
5537839	TCF250R5SLR32MD	25,00	32	155,9	125,9	0,91	D	TCF080308DP	TCF090305DC
5537840	TCF260R5SLR32MD	26,00	32	161,9	130,9	0,94	D	TCF080308DP	TCF090305DC
5537841	TCF265R5SLR32MD	26,50	32	165,5	133,5	0,95	D	TCF080308DP	TCF090305DC
5537842	TCF270R5SLR32MD	27,00	32	168,0	136,0	0,97	D	TCF080308DP	TCF090305DC
5537843	TCF280R5SLR32MD	28,00	32	174,0	141,0	0,99	D	TCF080308DP	TCF090305DC
5537844	TCF290R5SLR32MD	29,00	32	180,0	146,0	1,02	D	TCF080308DP	TCF090305DC
5537958	TCF300R5SLR32ME	30,00	32	183,1	151,1	1,09	E	TCF100408EP	TCF120405EC
5537959	TCF310R5SLR32ME	31,00	32	189,1	156,1	1,12	E	TCF100408EP	TCF120405EC
5537960	TCF320R5SLR32ME	32,00	32	195,2	161,2	1,15	E	TCF100408EP	TCF120405EC
5537961	TCF330R5SLR40ME	33,00	40	202,2	166,2	1,18	E	TCF100408EP	TCF120405EC
5537962	TCF340R5SLR40ME	34,00	40	208,2	171,2	1,21	E	TCF100408EP	TCF120405EC
5537963	TCF350R5SLR40ME	35,00	40	214,2	176,2	1,24	E	TCF100408EP	TCF120405EC
5537964	TCF360R5SLR40ME	36,00	40	220,3	181,3	1,27	E	TCF100408EP	TCF120405EC
5578629	TCF370R5SLR40MF	37,00	40	226,3	186,3	1,35	F	TCF120412FP	TCF150406FC
5578640	TCF375R5SLR40MF	37,50	40	228,9	188,9	1,36	F	TCF120412FP	TCF150406FC
5578641	TCF380R5SLR40MF	38,00	40	232,4	191,4	1,38	F	TCF120412FP	TCF150406FC
5578642	TCF390R5SLR40MF	39,00	40	238,4	196,4	1,41	F	TCF120412FP	TCF150406FC
5578643	TCF400R5SLR40MF	40,00	40	243,4	201,4	1,45	F	TCF120412FP	TCF150406FC
5578644	TCF410R5SLR40MF	41,00	40	249,5	206,5	1,48	F	TCF120412FP	TCF150406FC
5578645	TCF420R5SLR40MF	42,00	40	255,5	211,5	1,51	F	TCF120412FP	TCF150406FC
5578646	TCF430R5SLR40MF	43,00	40	261,5	216,5	1,53	F	TCF120412FP	TCF150406FC
5578647	TCF440R5SLR40MF	44,00	40	267,6	221,6	1,56	F	TCF120412FP	TCF150406FC
5578648	TCF450R5SLR40MF	45,00	40	273,6	226,6	1,59	F	TCF120412FP	TCF150406FC
5578751	TCF460R5SLR40MG	46,00	40	274,7	231,7	1,67	G	TCF150512GP	TCF180508GC
5578752	TCF470R5SLR40MG	47,00	40	280,7	236,7	1,70	G	TCF150512GP	TCF180508GC
5578753	TCF480R5SLR40MG	48,00	40	286,7	241,7	1,73	G	TCF150512GP	TCF180508GC
5578754	TCF490R5SLR40MG	49,00	40	292,8	246,8	1,76	G	TCF150512GP	TCF180508GC
5578755	TCF500R5SLR40MG	50,00	40	297,8	251,8	1,79	G	TCF150512GP	TCF180508GC

(continued)

Top Cut 4™ Shanks

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

order number	catalog number	D1	D	L1	L4 max	L5	SSC	periphery insert	center insert
5578756	**TCF505R5SLR40MG**	50,50	40	301,3	254,3	1,80	G	**TCF150512GP**	**TCF180508GC**
5578757	**TCF510R5SLR40MG**	51,00	40	303,8	256,8	1,81	G	**TCF150512GP**	**TCF180508GC**
5578758	**TCF520R5SLR40MG**	52,00	40	309,8	261,8	1,84	G	**TCF150512GP**	**TCF180508GC**
5578759	**TCF530R5SLR40MG**	53,00	40	315,9	266,9	1,87	G	**TCF150512GP**	**TCF180508GC**
5578760	**TCF540R5SLR40MG**	54,00	40	321,9	271,9	1,89	G	**TCF150512GP**	**TCF180508GC**
5578761	**TCF550R5SLR40MG**	55,00	40	326,9	276,9	1,92	G	**TCF150512GP**	**TCF180508GC**
5578762	**TCF560R5SLR40MG**	56,00	40	332,9	281,9	1,94	G	**TCF150512GP**	**TCF180508GC**
5538659	**TCF570R5SLR40MH**	57,00	40	333,1	287,1	2,06	H	**TCF180614HP**	**TCF210608HC**
5538680	**TCF580R5SLR40MH**	58,00	40	339,1	292,1	2,09	H	**TCF180614HP**	**TCF210608HC**
5538681	**TCF590R5SLR40MH**	59,00	40	345,1	297,1	2,12	H	**TCF180614HP**	**TCF210608HC**
5538682	**TCF600R5SLR40MH**	60,00	40	350,1	302,1	2,15	H	**TCF180614HP**	**TCF210608HC**
5538683	**TCF610R5SLR40MH**	61,00	40	356,2	307,2	2,18	H	**TCF180614HP**	**TCF210608HC**
5538684	**TCF620R5SLR40MH**	62,00	40	362,2	312,2	2,20	H	**TCF180614HP**	**TCF210608HC**
5538685	**TCF630R5SLR40MH**	63,00	40	368,2	317,2	2,23	H	**TCF180614HP**	**TCF210608HC**
5538686	**TCF640R5SLR40MH**	64,00	40	373,3	322,3	2,26	H	**TCF180614HP**	**TCF210608HC**
5538687	**TCF650R5SLR40MH**	65,00	40	379,3	327,3	2,28	H	**TCF180614HP**	**TCF210608HC**
5538688	**TCF660R5SLR40MH**	66,00	40	385,3	332,3	2,31	H	**TCF180614HP**	**TCF210608HC**
5538689	**TCF670R5SLR40MH**	67,00	40	390,3	337,3	2,33	H	**TCF180614HP**	**TCF210608HC**
5538700	**TCF680R5SLR40MH**	68,00	40	396,4	342,4	2,36	H	**TCF180614HP**	**TCF210608HC**

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the inserts.

▼ Spare Parts

SSC	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	**1138455**	4,00	2.950
F	TCF120412FP	TCF150406FC	**1756815**	T15	**2029596**	4,00	2.950
G	TCF150512GP	TCF180508GC	**1099645**	T20	**1138455**	6,30	4.646
H	TCF180614HP	TCF210608HC	**1823871**	T25	**1022519**	8,80	6.490
H	TCF180614HP	TCF210608HC	**1823871**	T25	**1138455**	8,80	6.490

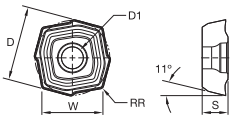
NOTE: Drilling in stacked plates possible in certain applications. Ask for technical support.
Drill shipped with insert screws and Torx wrench.
See pages 68–71 for inserts.
SSC = Pocket Seat Reference.
SLR = Side Lock.

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

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™

Top Cut 4 Drill • Center Inserts • Aluminum V36



● first choice
○ alternate choice

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

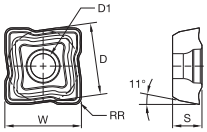
NEW!

▼ Top Cut 4 Drill • Center Inserts • Aluminum V36

catalog number	D mm	D in	D1 mm	D1 in	W mm	W in	S mm	S in	RR mm	RR in	SSC	WPK10CH	WU25CH	WU40PH	WN10PH
TCF040203ACV36	4,47	.176	2,10	.083	3,65	.144	2,00	.079	0,300	.011	A	'	'	'	6407887
TCF060203BCV36	6,00	.236	2,40	.094	4,90	.193	2,40	.095	0,300	.011	B	'	'	'	6372041
TCF070304CCV36	7,59	.299	2,60	.102	6,20	.244	2,80	.110	0,400	.015	C	'	'	'	6372042
TCF090305DCV36	9,55	.376	2,80	.110	7,80	.307	3,00	.118	0,500	.019	D	'	'	'	6372045
TCF120405ECV36	12,00	.473	3,40	.134	9,80	.386	3,60	.142	0,500	.019	E	'	'	'	6372047
TCF150406FCV36	14,94	.588	4,80	.189	12,20	.480	4,20	.165	0,600	.023	F	'	'	'	6346757
TCF180508GCV36	17,88	.704	6,00	.236	14,60	.575	5,40	.213	0,800	.031	G	'	'	'	6407890
TCF210608HCV36	21,68	.853	7,50	.295	17,70	.697	6,50	.256	0,800	.031	H	'	'	'	6372049

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the toolholder.

Top Cut 4™ Drill • Periphery Inserts • Aluminum V36



● first choice
○ alternate choice

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

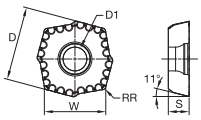
▼ Top Cut 4 Drill • Periphery Inserts • Aluminum V36

catalog number	D mm	D in	D1 mm	D1 in	W mm	W in	S mm	S in	RR mm	RR in	SSC	WPK10CH	WU25CH	WU40PH	WN10PH NEW!
TCF040204APV36	4,14	.163	2,10	.083	4,40	.173	2,00	.079	0,400	.015	A	ı	ı	ı	6407888
TCF050204BPV36	5,07	.200	2,40	.094	5,40	.213	2,40	.094	0,400	.015	B	ı	ı	ı	6371850
TCF070306CPV36	6,67	.263	2,60	.102	7,10	.280	2,80	.110	0,600	.023	C	ı	ı	ı	6372043
TCF080308DPV36	8,08	.318	2,80	.110	8,60	.339	3,00	.118	0,800	.031	D	ı	ı	ı	6372044
TCF100408EPV36	9,96	.392	3,40	.134	10,60	.417	3,60	.142	0,800	.031	E	ı	ı	ı	6372046
TCF120412FPV36	12,59	.496	4,80	.189	13,40	.528	4,20	.165	1,200	.046	F	ı	ı	ı	6348893
TCF150512GPV36	15,13	.596	6,00	.236	16,10	.634	5,40	.213	1,200	.046	G	ı	ı	ı	6407889
TCF180614HPV36	18,04	.710	7,50	.295	19,20	.756	6,50	.256	1,400	.054	H	ı	ı	ı	6372048

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the toolholder.

Top Cut 4™

Top Cut 4 Drill • Center Inserts • Long Chip Materials V38



● first choice
○ alternate choice

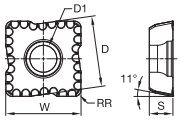
P	●	●	●
M		●	●
K	●	●	●
N			
S			
H			

▼ Top Cut 4 Drill • Center Inserts • Long Chip Materials V38

catalog number	D mm	D in	D1 mm	D1 in	W mm	W in	S mm	S in	RR mm	RR in	SSC	WPK10CH	WU25CH	WU40PH
TCF040203ACV38	4,47	.176	2,10	.083	3,65	.144	2,00	.079	0,300	.012	A	●	●	6429458
TCF060203BCV38	6,00	.236	2,40	.094	4,90	.193	2,40	.095	0,300	.012	B	●	●	6429459
TCF070304CCV38	7,59	.299	2,60	.102	6,20	.244	2,80	.110	0,400	.015	C	●	●	6429460
TCF090305DCV38	9,55	.376	2,80	.110	7,80	.307	3,00	.118	0,500	.019	D	●	●	6429461
TCF120405ECV38	12,00	.473	3,40	.134	9,80	.386	3,60	.142	0,500	.019	E	●	●	6429462
TCF150406FCV38	14,94	.588	4,80	.189	12,20	.480	4,20	.165	0,600	.023	F	●	●	6429463
TCF180508GCV38	17,88	.704	6,00	.236	14,60	.575	5,40	.213	0,800	.031	G	●	●	6324383
TCF210608HCV38	21,68	.853	7,50	.295	17,70	.697	6,50	.256	0,800	.031	H	●	●	6429464

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the toolholder.
Refer to the WIDIA™ 2017 Master Catalog (A-15-04580EN_in) or the NOVO™ application for the complete geometry offering.

Top Cut 4™ Drill • Periphery Inserts • Long Chip Materials V38



● first choice
○ alternate choice

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

▼ Top Cut 4 Drill • Periphery Inserts • Long Chip Materials V38

catalog number	D mm	D in	D1 mm	D1 in	W mm	W in	S mm	S in	RR mm	RR in	SSC	WPK10CH	WU25CH	WU40PH
TCF040204APV38	4,14	.163	2,10	.083	4,40	.173	2,00	.079	0,400	.015	A	1	6429424	6429425
TCF050204BPV38	5,07	.200	2,40	.094	5,40	.213	2,40	.094	0,400	.015	B	1	6429426	6429427
TCF070306CPV38	6,67	.263	2,60	.102	7,10	.280	2,80	.110	0,600	.023	C	1	6429466	6429428
TCF080308DPV38	8,08	.318	2,80	.110	8,60	.339	3,00	.118	0,800	.031	D	1	6429429	6429430
TCF100408EPV38	9,96	.392	3,40	.134	10,60	.417	3,60	.142	0,800	.031	E	1	6429451	6429452
TCF120412FPV38	12,59	.496	4,80	.189	13,40	.528	4,20	.165	1,200	.046	F	1	6429453	6429454
TCF150512GPV38	15,13	.596	6,00	.236	16,10	.634	5,40	.213	1,200	.046	G	1	6429455	6324381
TCF180614HPV38	18,04	.710	7,50	.295	19,20	.756	6,50	.256	1,400	.054	H	1	6429456	6429457

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the toolholder.
Refer to the WIDIA™ 2017 Master Catalog (A-15-04580EN_in) or the NOVO™ application for the complete geometry offering.

Top Cut 4™

New Generation Indexable Drilling System

▼ Top Cut 4 • Insert Selection Guide

Material Group	Geometry	Stable Cutting Conditions		Unstable Cutting Conditions		Interrupted Cutting Conditions	
		periphery insert	center insert	periphery insert	center insert	periphery insert	center insert
P1 NEW!	V38	WU25CH	WU40PH	**WU40PH**	**WU40PH**	WU40PH	WU40PH
P2–P4	V34	WPK10CH	WU40PH	**WU25CH**	**WU40PH**	WU40PH	WU40PH
P5–P6	V36	WU25CH	WU40PH	**WU40PH**	**WU40PH**	WU40PH	WU40PH
M1–M3	V36	WU25CH	WU40PH	**WU40PH**	**WU40PH**	WU40PH	WU40PH
K1–K3	V34	WPK10CH	WU40PH	**WU40PH**	**WU40PH**	WU40PH	WU40PH
N1–N4 NEW!	V36	WN10PH	WN10PH	**WN10PH**	**WN10PH**	WN10PH	WN10PH
S1–S4	V38	WU40PH	WU40PH	**WU40PH**	**WU40PH**	WU40PH	WU40PH

▼ Top Cut 4 • Cutting Data • Inch

Material Group	Geometry	Grade		Cutting Speed — Vc SFM			Tool Diameter	Inch — Recommended Feed Rate per Revolution			
		center	periphery	min	Start	max		.473–.531" Insert Size A	.563–.734" Insert Size B	.750–.938" Insert Size C	.969–1.156" Insert Size D
P0	-V38	WU40PH	WU25CH	360	**540**	780	IPR	0.0024–0.0031	0.0031–0.0043	0.0039–0.0051	0.0043–0.0055
P1	-V38	WU40PH	WU25CH	360	**540**	780	IPR	0.0024–0.0039	0.0031–0.0051	0.0039–0.0059	0.0043–0.0063
P2	-V34	WU40PH	WU25CH	360	**570**	840	IPR	0.0024–0.0039	0.0031–0.0059	0.0039–0.0063	0.0043–0.0067
P3	-V34	WU40PH	WPK10CH	360	**600**	930	IPR	0.0031–0.0059	0.0039–0.0063	0.0043–0.0071	0.0047–0.0079
P4	-V34	WU40PH	WPK10CH	360	**570**	930	IPR	0.0031–0.0059	0.0039–0.0063	0.0043–0.0071	0.0047–0.0079
P5	-V36	WU40PH	WU25CH	360	**540**	750	IPR	0.0024–0.0039	0.0031–0.0055	0.0039–0.0059	0.0043–0.0063
P6	-V36	WU40PH	WU25CH	360	**480**	630	IPR	0.0024–0.0039	0.0031–0.0055	0.0039–0.0059	0.0043–0.0063
M1	-V38	WU40PH	WU40PH	360	**480**	720	IPR	0.0024–0.0047	0.0028–0.0051	0.0031–0.0059	0.0039–0.0063
M2	-V36	WU40PH	WU40PH	330	**420**	630	IPR	0.0024–0.0047	0.0028–0.0051	0.0031–0.0059	0.0039–0.0063
M3	-V36	WU40PH	WU40PH	300	**360**	600	IPR	0.0024–0.0047	0.0028–0.0051	0.0031–0.0059	0.0039–0.0063
K1	-V34	WU25CH	WPK10CH	360	**600**	840	IPR	0.0031–0.0055	0.0031–0.0063	0.0039–0.0071	0.0047–0.0094
K2	-V34	WU40PH	WPK10CH	300	**540**	780	IPR	0.0031–0.0055	0.0031–0.0063	0.0039–0.0071	0.0047–0.0094
K3	-V34	WU40PH	WPK10CH	300	**510**	720	IPR	0.0031–0.0055	0.0031–0.0063	0.0039–0.0071	0.0047–0.0094
N1	-V36	WN10PH	WN10PH	750	**1050**	1500	IPR	0.0024–0.0039	0.0031–0.0055	0.0039–0.0059	0.0043–0.0063
N2	-V36	WN10PH	WN10PH	450	**900**	1350	IPR	0.0024–0.0039	0.0031–0.0055	0.0039–0.0059	0.0043–0.0063
N3	-V36	WN10PH	WN10PH	240	**360**	450	IPR	0.0024–0.0039	0.0028–0.0043	0.0031–0.0047	0.0039–0.0055
S3	-V38	WU40PH	WU40PH	60	**90**	135	IPR	0.0031–0.0047	0.0031–0.0051	0.0039–0.0059	0.0047–0.0075
S4	-V38	WU40PH	WU40PH	105	**120**	195	IPR	0.0031–0.0047	0.0031–0.0051	0.0039–0.0059	0.0047–0.0075

Material Group	Geometry	Grade		Cutting Speed — Vc SFM			Tool Diameter	1.188–1.438" Insert Size E	1.469–1.750" Insert Size F	1.813–2.219" Insert Size G	2.250–2.500" Insert Size H
		center	periphery	min	Start	max					
P0	-V38	WU40PH	WU25CH	360	**540**	780	IPR	0.0051–0.0063	0.0059–0.0071	0.0063–0.0091	0.0067–0.0094
P1	-V38	WU40PH	WU25CH	360	**540**	780	IPR	0.0051–0.0071	0.0059–0.0079	0.0063–0.0106	0.0067–0.0114
P2	-V34	WU40PH	WU25CH	360	**570**	840	IPR	0.0051–0.0079	0.0059–0.0083	0.0063–0.0110	0.0067–0.0118
P3	-V34	WU40PH	WPK10CH	360	**600**	930	IPR	0.0053–0.0094	0.0063–0.0094	0.0071–0.0118	0.0075–0.0126
P4	-V34	WU40PH	WPK10CH	360	**570**	930	IPR	0.0055–0.0087	0.0063–0.0094	0.0071–0.0118	0.0075–0.0126
P5	-V36	WU40PH	WU25CH	360	**540**	750	IPR	0.0051–0.0071	0.0059–0.0079	0.0063–0.0110	0.0067–0.0118
P6	-V36	WU40PH	WU25CH	360	**480**	630	IPR	0.0051–0.0071	0.0059–0.0079	0.0063–0.0110	0.0067–0.0114
M1	-V38	WU40PH	WU40PH	360	**480**	720	IPR	0.0047–0.0079	0.0055–0.0098	0.0063–0.0110	0.0063–0.0118
M2	-V36	WU40PH	WU40PH	330	**420**	630	IPR	0.0047–0.0079	0.0055–0.0098	0.0063–0.0110	0.0063–0.0118
M3	-V36	WU40PH	WU40PH	300	**360**	600	IPR	0.0047–0.0079	0.0055–0.0098	0.0063–0.0110	0.0063–0.0118
K1	-V34	WU25CH	WPK10CH	360	**600**	840	IPR	0.0055–0.0102	0.0063–0.0118	0.0071–0.0126	0.0079–0.0142
K2	-V34	WU40PH	WPK10CH	300	**540**	780	IPR	0.0055–0.0102	0.0063–0.0118	0.0071–0.0126	0.0079–0.0142
K3	-V34	WU40PH	WPK10CH	300	**510**	720	IPR	0.0055–0.0102	0.0063–0.0118	0.0071–0.0126	0.0079–0.0142
N1	-V36	WN10PH	WN10PH	750	**1050**	1500	IPR	0.0051–0.0071	0.0059–0.0079	0.0063–0.0110	0.0067–0.0118
N2	-V36	WN10PH	WN10PH	450	**900**	1350	IPR	0.0051–0.0071	0.0059–0.0079	0.0063–0.0110	0.0067–0.0118
N3	-V36	WN10PH	WN10PH	240	**360**	450	IPR	0.0047–0.0067	0.0055–0.0083	0.0063–0.0091	0.0063–0.0094
S3	-V38	WU40PH	WU40PH	60	**90**	135	IPR	0.0055–0.0083	0.0063–0.0094	0.0071–0.0102	0.0079–0.0118
S4	-V38	WU40PH	WU40PH	105	**120**	195	IPR	0.0055–0.0083	0.0063–0.0094	0.0071–0.0102	0.0079–0.0118

NOTE: All speed conditions are for stable conditions. For unstable conditions, it is suggested to reduce starting speeds by 10%. For interrupted cuts, reduce by 20%.
For 4 x D, it is highly recommended to start with feed and speed values reduced by 10% less than above data.
For 5 x D, diameter range .473–.938" (insert sizes A to C), it is highly recommended to start with feed and speed values reduced by 20% less than above data.
For 5 x D, diameter range .969–2.5" (inserts sizes D to H), it is highly recommended to start with feed and speed values reduced by 15% less than above data.
For 4 x D and 5 x D, it is recommended to reduce feed rate during entry and exit by 30–50%.

▼ Top Cut 4™ • Cutting Data • Metric

Material Group	Geometry	Grade		Cutting Speed — Vc m/min			Metric				
							Recommended Feed Rate per Revolution				
		center	periphery	min	Start	max	Tool Diameter	12,00–13,99 Insert Size A	14,00–18,99 Insert Size B	19,00–23,99 Insert Size C	24,00–29,99 Insert Size D
P0	-V38	WU40PH	WU25CH	120	**180**	260	mm/rev	0,06–0,08	0,08–0,11	0,10–0,13	0,11–0,14
P1	-V38	WU40PH	WU25CH	120	**180**	260	mm/rev	0,06–0,10	0,08–0,13	0,10–0,15	0,11–0,16
P2	-V34	WU40PH	WU25CH	120	**190**	280	mm/rev	0,06–0,10	0,08–0,15	0,10–0,16	0,11–0,17
P3	-V34	WU40PH	WPK10CH	120	**200**	310	mm/rev	0,08–0,15	0,10–0,16	0,11–0,18	0,12–0,20
P4	-V34	WU40PH	WPK10CH	120	**190**	310	mm/rev	0,08–0,15	0,10–0,16	0,11–0,18	0,12–0,20
P5	-V36	WU40PH	WU25CH	120	**180**	250	mm/rev	0,06–0,10	0,08–0,14	0,10–0,15	0,11–0,16
P6	-V36	WU40PH	WU25CH	120	**160**	210	mm/rev	0,06–0,10	0,08–0,14	0,10–0,15	0,11–0,16
M1	-V38	WU40PH	WU40PH	120	**160**	240	mm/rev	0,06–0,11	0,07–0,11	0,08–0,12	0,10–0,14
M2	-V36	WU40PH	WU40PH	110	**140**	210	mm/rev	0,06–0,10	0,07–0,11	0,08–0,12	0,10–0,14
M3	-V36	WU40PH	WU40PH	100	**120**	200	mm/rev	0,06–0,10	0,07–0,11	0,08–0,12	0,10–0,14
K1	-V34	WU25CH	WPK10CH	120	**200**	280	mm/rev	0,08–0,14	0,08–0,16	0,10–0,18	0,12–0,24
K2	-V34	WU40PH	WPK10CH	100	**180**	260	mm/rev	0,08–0,14	0,08–0,16	0,10–0,18	0,12–0,24
K3	-V34	WU40PH	WPK10CH	100	**170**	240	mm/rev	0,08–0,14	0,08–0,16	0,10–0,18	0,12–0,24
N1	-V36	WN10PH	WN10PH	250	**350**	500	mm/rev	0,06–0,10	0,08–0,14	0,10–0,15	0,11–0,16
N2	-V36	WN10PH	WN10PH	150	**300**	450	mm/rev	0,06–0,10	0,08–0,14	0,10–0,15	0,11–0,16
N3	-V36	WN10PH	WN10PH	80	**120**	150	mm/rev	0,06–0,10	0,07–0,11	0,08–0,12	0,10–0,14
S3	-V38	WU40PH	WU40PH	20	**30**	45	mm/rev	0,08–0,12	0,08–0,13	0,10–0,15	0,12–0,19
S4	-V38	WU40PH	WU40PH	35	**40**	65	mm/rev	0,08–0,12	0,08–0,13	0,10 –0,15	0,12–0,19

Material Group	Geometry	Grade		Cutting Speed — Vc m/min			Tool Diameter	30,00–36,99 Insert Size E	37,00–45,99 Insert Size F	46,00–56,99 Insert Size G	57,00–68,00 Insert Size H
		center	periphery	min	Start	max					
P0	-V38	WU40PH	WU25CH	120	**180**	260	mm/rev	0,13–0,16	0,15–0,18	0,16–0,23	0,17–0,24
P1	-V38	WU40PH	WU25CH	120	**180**	260	mm/rev	0,13–0,17	0,15–0,19	0,16–0,24	0,17–0,25
P2	-V34	WU40PH	WU25CH	120	**190**	280	mm/rev	0,13–0,20	0,15–0,21	0,16–0,28	0,17–0,30
P3	-V34	WU40PH	WPK10CH	120	**200**	310	mm/rev	0,16–0,24	0,16–0,24	0,18–0,30	0,19–0,32
P4	-V34	WU40PH	WPK10CH	120	**190**	310	mm/rev	0,14–0,22	0,16–0,24	0,18–0,30	0,19–0,32
P5	-V36	WU40PH	WU25CH	120	**180**	250	mm/rev	0,13–0,18	0,15–0,20	0,16–0,28	0,17–0,30
P6	-V36	WU40PH	WU25CH	120	**160**	210	mm/rev	0,13–0,18	0,15–0,20	0,16–0,28	0,17–0,29
M1	-V38	WU40PH	WU40PH	120	**160**	240	mm/rev	0,12–0,17	0,14–0,21	0,16–0,23	0,16–0,24
M2	-V36	WU40PH	WU40PH	110	**140**	210	mm/rev	0,12–0,17	0,14–0,21	0,16–0,23	0,16–0,24
M3	-V36	WU40PH	WU40PH	100	**120**	200	mm/rev	0,12–0,17	0,14–0,21	0,16–0,23	0,16–0,24
K1	-V34	WU25CH	WPK10CH	120	**200**	280	mm/rev	0,14–0,26	0,16–0,30	0,18–0,32	0,20–0,36
K2	-V34	WU40PH	WPK10CH	100	**180**	260	mm/rev	0,14–0,26	0,16–0,30	0,18–0,32	0,20–0,36
K3	-V34	WU40PH	WPK10CH	100	**170**	240	mm/rev	0,14–0,26	0,16–0,30	0,18–0,32	0,20–0,36
N1	-V36	WN10PH	WN10PH	250	**350**	500	mm/rev	0,13–0,18	0,15–0,20	0,16–0,28	0,17–0,30
N2	-V36	WN10PH	WN10PH	150	**300**	450	mm/rev	0,13–0,18	0,15–0,20	0,16–0,28	0,17–0,30
N3	-V36	WN10PH	WN10PH	80	**120**	150	mm/rev	0,12–0,17	0,14–0,21	0,16–0,23	0,16–0,24
S3	-V38	WU40PH	WU40PH	20	**30**	45	mm/rev	0,14–0,21	0,16–0,24	0,18–0,26	0,20–0,30
S4	-V38	WU40PH	WU40PH	35	**40**	65	mm/rev	0,14–0,21	0,16–0,24	0,18–0,26	0,20–0,30

NOTE: All speed conditions are for stable conditions. For unstable conditions, it is suggested to reduce starting speeds by 10%. For interrupted cuts, reduce by 20%.
For 4 x D, it is highly recommended to start with feed and speed values reduced by 10% less than above data.
For 5 x D, diameter range 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 data.
For 5 x D, diameter range 25–68mm (inserts sizes D to H), it is highly recommended to start with feed and speed values reduced by 15% less than above data.
For 4 x D and 5 x D, it is recommended to reduce feed rate during entry and exit by 30–50%.

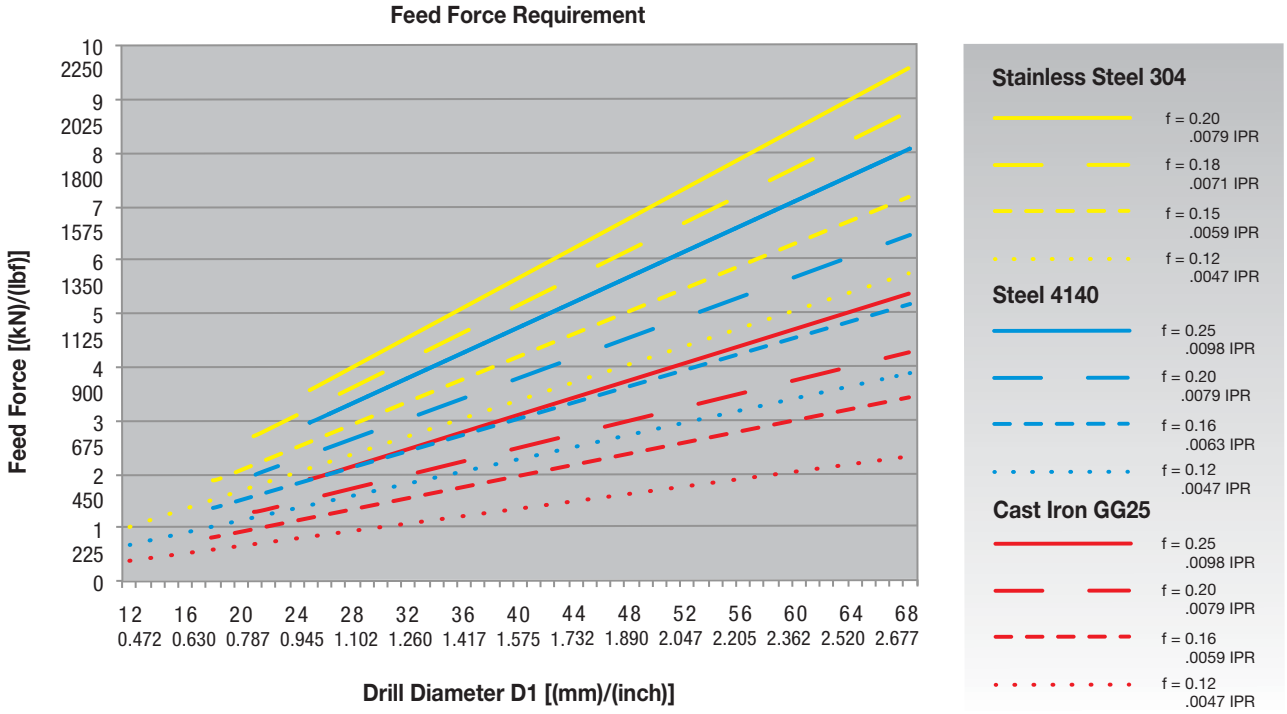
Top Cut 4™

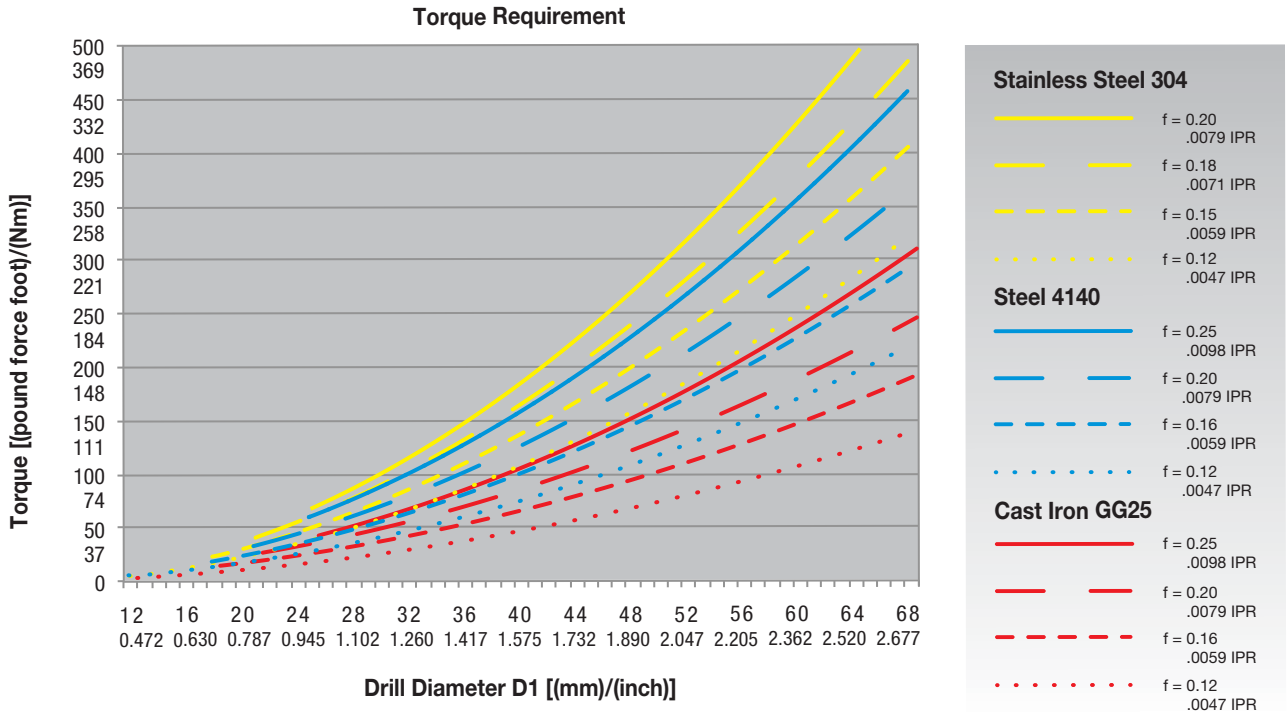
New Generation Indexable Drilling System

▼ Top Cut 4 • Drill Depth • X-Offset Capabilities • Hole Tolerance

Insert size	Diameter range mm (in)	2 x D/3 x D			4 x D			5 x D		
		X-offset value max. in mm (max. in inch)	D1 max value mm (in)	Hole tolerance mm (in)	X-offset value max. in mm (max. in inch)	D1 max value mm (in)	Hole tolerance mm (in)	X-offset value max. in mm (max. in inch)	D1 max value mm (in)	Hole tolerance mm (in)
A	12,00–13,99 (.473–.531)	0,5 (0.020)	D1 + 1mm (D1 + 0.039")	+/- 0,20 (+/- 0.008)	0,5 (0.020)	D1 + 1mm (D1 + 0.039")	+/- 0,35 (+/- 0.014)	–	–	+/- 0,35 (+/- 0.014)
B	14,00–18,99 (.563–.734)	0,5 (0.020)	D1 + 1mm (D1 + 0.039")	+/- 0,20 (+/- 0.008)	0,5 (0.020)	D1 + 1mm (D1 + 0.039")	+/- 0,35 (+/- 0.014)	–	–	+/- 0,35 (+/- 0.014)
C	19,00–23,99 (.750–.938)	0,5 (0.020)	D1 + 1mm (D1 + 0.039")	+/- 0,20 (+/- 0.008)	0,5 (0.020)	D1 + 1mm (D1 + 0.039")	+/- 0,35 (+/- 0.014)	–	–	+/- 0,35 (+/- 0.014)
D	24,00–29,99 (.969–1.156)	0,8 (0.031)	D1 + 1,6mm (D1 + 0.063")	+/- 0,20 (+/- 0.008)	0,8 (0.031)	D1 + 1mm (D1 + 0.039")	+/- 0,35 (+/- 0.014)	–	–	+/- 0,35 (+/- 0.014)
E	30,00–36,99 (1.188–1.438)	0,8 (0.031)	D1 + 1,6mm (D1 + 0.063")	+/- 0,20 (+/- 0.008)	0,8 (0.031)	D1 + 1mm (D1 + 0.039")	+/- 0,35 (+/- 0.014)	–	–	+/- 0,35 (+/- 0.014)
F	37,00–45,99 (1.469–1.750)	0,8 (0.031)	D1 + 1,6mm (D1 + 0.063")	+/- 0,25 (+/- 0.010)	0,8 (0.031)	D1 + 1mm (D1 + 0.039")	+/- 0,38 (+/- 0.015)	–	–	+/- 0,38 (+/- 0.015)
G	46,00–56,99 (1.813–2.219)	1 (0.039)	D1 + 2mm (D1 + 0.079")	+/- 0,25 (+/- 0.010)	0,8 (0.031)	D1 + 1mm (D1 + 0.039")	+/- 0,38 (+/- 0.015)	–	–	+/- 0,38 (+/- 0.015)
H	57,00–68,00 (2.250–2.500)	1 (0.039)	D1 + 2mm (D1 + 0.079")	+/- 0,28 (+/- 0.011)	0,8 (0.031)	D1 + 1mm (D1 + 0.039")	+/- 0,42 (+/- 0.017)	–	–	+/- 0,42 (+/- 0.017)

New Generation Indexable Drilling System

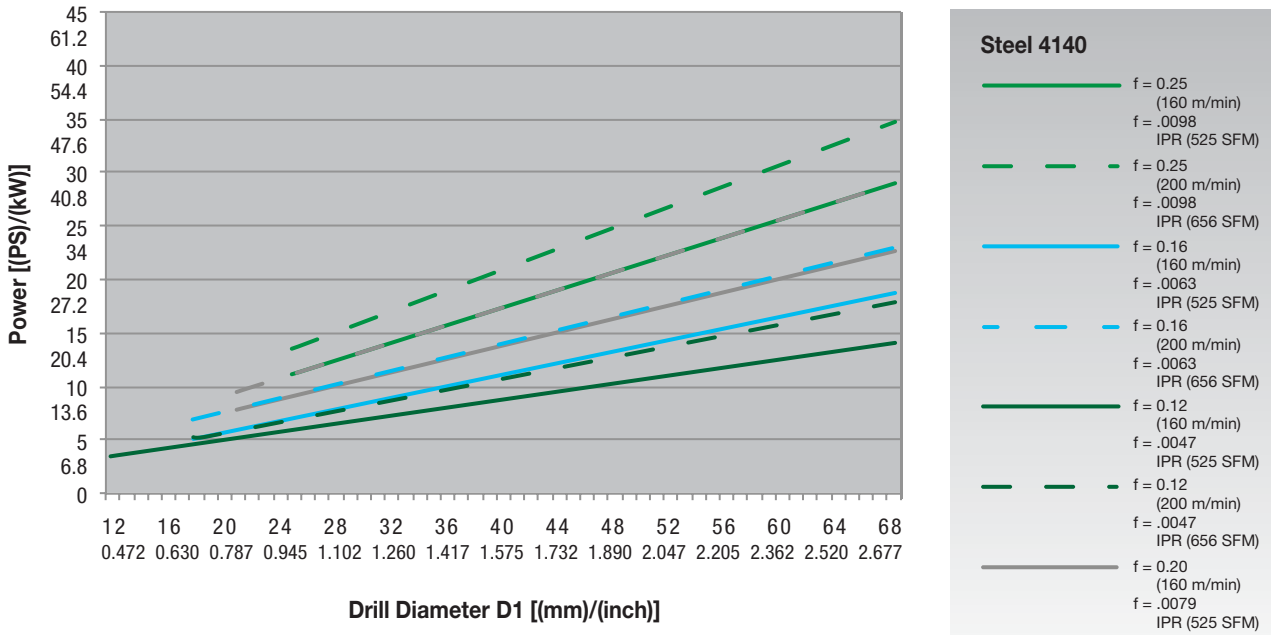




(continued)

(continued)

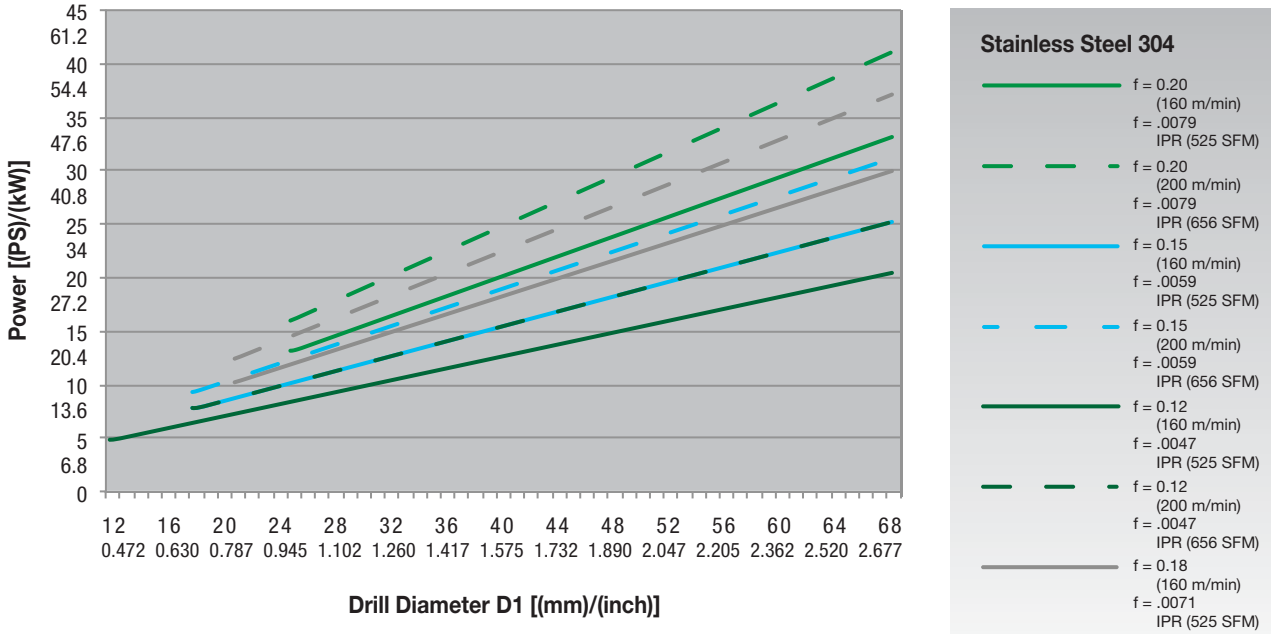
Power Requirement — Steel



Steel 4140

- f = 0.25 (160 m/min) f = .0098 IPR (525 SFM)
- f = 0.25 (200 m/min) f = .0098 IPR (656 SFM)
- f = 0.16 (160 m/min) f = .0063 IPR (525 SFM)
- f = 0.16 (200 m/min) f = .0063 IPR (656 SFM)
- f = 0.12 (160 m/min) f = .0047 IPR (525 SFM)
- f = 0.12 (200 m/min) f = .0047 IPR (656 SFM)
- f = 0.20 (160 m/min) f = .0079 IPR (525 SFM)
- f = 0.20 (200 m/min) f = .0079 IPR (656 SFM)

Power Requirement — Stainless Steel

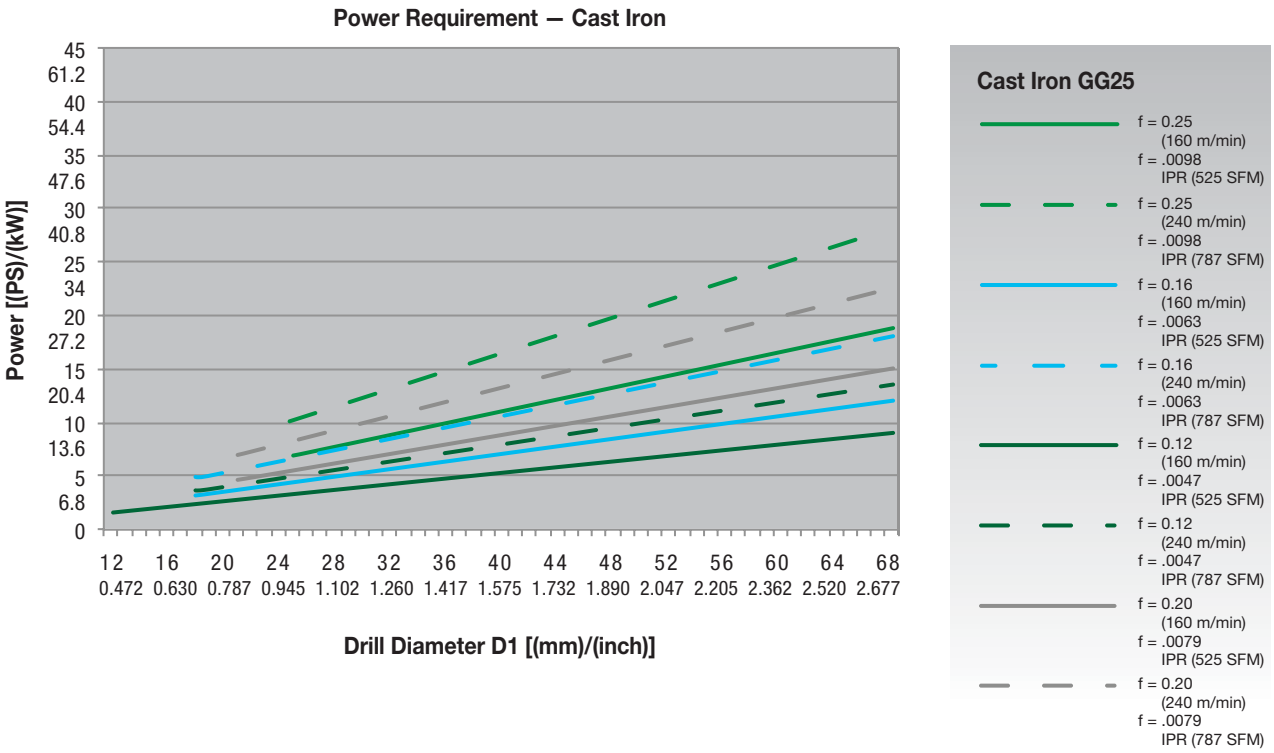


Stainless Steel 304

- f = 0.20 (160 m/min) f = .0079 IPR (525 SFM)
- f = 0.20 (200 m/min) f = .0079 IPR (656 SFM)
- f = 0.15 (160 m/min) f = .0059 IPR (525 SFM)
- f = 0.15 (200 m/min) f = .0059 IPR (656 SFM)
- f = 0.12 (160 m/min) f = .0047 IPR (525 SFM)
- f = 0.12 (200 m/min) f = .0047 IPR (656 SFM)
- f = 0.18 (160 m/min) f = .0071 IPR (525 SFM)
- f = 0.18 (200 m/min) f = .0071 IPR (656 SFM)

(continued)

(continued)


Power Requirement — Cast Iron
Power [(PS)/(kW)]
45
61.2
40
54.4
35
47.6
30
40.8
25
34
20
27.2
15
20.4
10
13.6
5
6.8
0
12 16 20 24 28 32 36 40 44 48 52 56 60 64 68
0.472 0.630 0.787 0.945 1.102 1.260 1.417 1.575 1.732 1.890 2.047 2.205 2.362 2.520 2.677
Drill Diameter D1 [(mm)/(inch)]
Cast Iron GG25
f = 0.25 (160 m/min) f = .0098 IPR (525 SFM)
f = 0.25 (240 m/min) f = .0098 IPR (787 SFM)
f = 0.16 (160 m/min) f = .0063 IPR (525 SFM)
f = 0.16 (240 m/min) f = .0063 IPR (787 SFM)
f = 0.12 (160 m/min) f = .0047 IPR (525 SFM)
f = 0.12 (240 m/min) f = .0047 IPR (787 SFM)
f = 0.20 (160 m/min) f = .0079 IPR (525 SFM)
f = 0.20 (240 m/min) f = .0079 IPR (787 SFM)

VT-AFT

VT-AFT AERO FASTENER TAPS

HIGH-PERFORMANCE TAPS FOR AEROSPACE FASTENERS

AEROSPACE

HSS-E Aerospace Fastener Taps

High vanadium for higher wear resistance.

Patented geometry for low cutting forces.

Optimized geometry for a specific application.

Increased chamfer length to reduce chip load.

Improved tool life.

Increased process security.

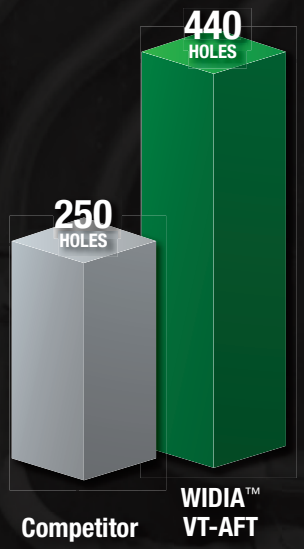
Improved productivity.

Application support.

+76% Increased Number of Holes

Field Test

Application Details	
Tool	VT-AFT
Material	A286
Component	Collar
Operation	Through Hole
Machine	CNC Rigid
Tap Size	10–32 UNF 2B
Toolholder	Rigid
Pre-Hole Diameter	.164"
RPM-WIDIA	900
SFM (Vc m/min)	47 (14)
RPM-Competitor	900
SFM (Vc m/min)	47 (14)
Coolant	External Cutting Oil



Results: Cost Saving $14,682.00 per year

Increased number of holes by 76%

WIDIA™

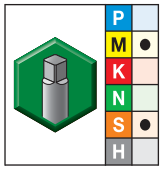
widia.com

VT-AFT Aero Fastener Taps

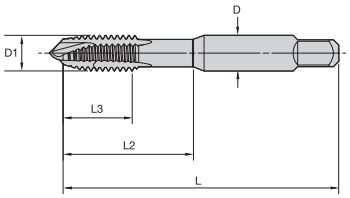
High-Vanadium Spiral-Point HSS-E Taps

WIDIA GTD

▼ VT-AFT • Inch



● first choice
○ alternate choice

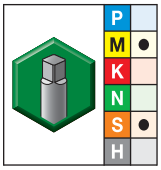


grade WN44EG TiN+CrC/C								
order #	catalog #	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
6474960	VTAFT5040	4 - 40	1.88	.51	.69	.141	3	H3
6474971	VTAFT5041	4 - 40	1.88	.51	.69	.141	3	H4
6474972	VTAFT5042	4 - 40	1.88	.51	.69	.141	3	H5
6474973	VTAFT5043	4 - 40	1.88	.51	.69	.141	3	H6
6474974	VTAFT5044	4 - 40	1.88	.51	.69	.141	3	H7
6474975	VTAFT5050	4 - 48	1.88	.51	.69	.141	3	H3
6474976	VTAFT5051	4 - 48	1.88	.51	.69	.141	3	H4
6474977	VTAFT5052	4 - 48	1.88	.51	.69	.141	3	H5
6474978	VTAFT5053	4 - 48	1.88	.51	.69	.141	3	H6
6474979	VTAFT5054	4 - 48	1.88	.51	.69	.141	3	H7
6474980	VTAFT5060	6 - 32	2.03	.38	.71	.141	3	H3
6474981	VTAFT5061	6 - 32	2.03	.38	.71	.141	3	H4
6474982	VTAFT5062	6 - 32	2.03	.38	.71	.141	3	H5
6474983	VTAFT5063	6 - 32	2.03	.38	.71	.141	3	H6
6474984	VTAFT5064	6 - 32	2.03	.38	.71	.141	3	H7
6474985	VTAFT5065	6 - 32	2.03	.38	.71	.141	3	H8
6474986	VTAFT5072	6 - 40	2.02	.38	.71	.141	3	H5
6474987	VTAFT5073	6 - 40	2.02	.38	.71	.141	3	H6
6474988	VTAFT5074	6 - 40	2.02	.38	.71	.141	3	H7
6474989	VTAFT5080	8 - 32	2.16	.38	.76	.168	3	H3
6274214	VTAFT5081	8 - 32	2.12	.38	.76	.168	3	H4
6274215	VTAFT5082	8 - 32	2.12	.38	.76	.168	3	H5
6274216	VTAFT5083	8 - 32	2.12	.38	.76	.168	3	H6
6474990	VTAFT5084	8 - 32	2.16	.38	.76	.168	3	H7
6474991	VTAFT5085	8 - 32	2.16	.38	.76	.168	3	H8
6474992	VTAFT5092	8 - 36	2.16	.38	.76	.168	3	H5
6474993	VTAFT5093	8 - 36	2.16	.38	.76	.168	3	H6
6474994	VTAFT5094	8 - 36	2.16	.38	.76	.168	3	H7
6496033	VTAFT5100	10 - 24	2.42	.50	.91	.194	3	H3
6496034	VTAFT5101	10 - 24	2.42	.50	.91	.194	3	H4
6496035	VTAFT5102	10 - 24	2.42	.50	.91	.194	3	H5
6496036	VTAFT5103	10 - 24	2.42	.50	.91	.194	3	H6
6496037	VTAFT5104	10 - 24	2.42	.50	.91	.194	3	H7
6496038	VTAFT5109	10 - 32	2.41	.50	.91	.194	3	H3
6087704	VTAFT5110	10 - 32	2.36	.50	.91	.194	3	H5
6087705	VTAFT5111	10 - 32	2.36	.50	.91	.194	3	H5
6496039	VTAFT5112	10 - 32	2.41	.50	.91	.194	3	H6
6496040	VTAFT5113	10 - 32	2.41	.50	.91	.194	3	H7
6496081	VTAFT5114	10 - 32	2.41	.50	.91	.194	3	H8
6496082	VTAFT5130	1/4 - 20	2.50	.63	1.00	.255	3	H3

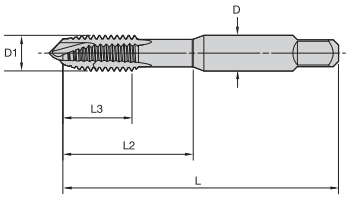
(continued)

High-Vanadium Spiral-Point HSS-E Taps

(VT-AFT • Inch — continued)



● first choice
○ alternate choice



grade WN44EG TiN+CrC/C								
order #	catalog #	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
6496083	VTAFT5131	1/4 - 20	2.50	.63	1.00	.255	3	H4
6496084	VTAFT5132	1/4 - 20	2.50	.63	1.00	.255	3	H5
6496086	VTAFT5133	1/4 - 20	2.50	.63	1.00	.255	3	H6
6496087	VTAFT5134	1/4 - 20	2.50	.63	1.00	.255	3	H7
6496088	VTAFT5135	1/4 - 20	2.50	.63	1.00	.255	3	H8
6496089	VTAFT5140	1/4 - 28	2.49	.62	1.00	.255	3	H3
6496090	VTAFT5141	1/4 - 28	2.49	.62	1.00	.255	3	H4
6496091	VTAFT5142	1/4 - 28	2.49	.62	1.00	.255	3	H5
6496092	VTAFT5143	1/4 - 28	2.49	.62	1.00	.255	3	H6
6496093	VTAFT5144	1/4 - 28	2.49	.62	1.00	.255	3	H7
6496095	VTAFT5145	1/4 - 28	2.49	.62	1.00	.255	3	H8
6496096	VTAFT5146	1/4 - 28	2.49	.62	1.00	.255	3	H9
6496097	VTAFT5160	5/16 - 24	2.71	.69	1.12	.318	3	H3
6496098	VTAFT5161	5/16 - 24	2.71	.69	1.12	.318	3	H4
6496099	VTAFT5162	5/16 - 24	2.71	.69	1.12	.318	3	H5
6496100	VTAFT5163	5/16 - 24	2.71	.69	1.12	.318	3	H6
6496111	VTAFT5164	5/16 - 24	2.71	.69	1.12	.318	3	H7
6496112	VTAFT5165	5/16 - 24	2.71	.69	1.12	.318	3	H8
6496113	VTAFT5166	5/16 - 24	2.71	.69	1.12	.318	3	H9
6496114	VTAFT5180	3/8 - 24	2.92	.75	1.25	.381	3	H3
6496115	VTAFT5181	3/8 - 24	2.92	.75	1.25	.381	3	H4
6445486	VTAFT5182	3/8 - 24	2.94	.75	1.27	.381	3	H5
6496116	VTAFT5183	3/8 - 24	2.92	.75	1.25	.381	3	H6
6445487	VTAFT5184	3/8 - 24	2.94	.75	1.27	.381	3	H7
6496117	VTAFT5185	3/8 - 24	2.92	.75	1.25	.381	3	H8
6496118	VTAFT5186	3/8 - 24	2.92	.75	1.25	.381	3	H9
6496119	VTAFT5222	1/2 - 20	3.38	.94	1.74	.367	3	H5
6496120	VTAFT5223	1/2 - 20	3.38	.94	1.74	.367	3	H6
6439284	VTAFT5224	1/2 - 20	3.38	.94	1.74	.367	3	H7
6439283	VTAFT5225	1/2 - 20	3.38	.94	1.74	.367	3	H8
6496121	VTAFT5226	1/2 - 20	3.38	.94	1.74	.367	3	H9

Shank Tolerance

D inch	tolerance
0.141–0.635	+0, -.0015
>0.635–1.51	+0, -.0020
>1.51–2.01	+0, -.0030

VT-AFT Aero Fastener Taps

Application Data

WIDIA GTD

▼ VT-AFT • Inch

Material Group		 Aerospace Fastener Taps VT-AFT Cutting Speed — Vc SFM Range		
		min	Starting Value	max
M	1	30	**40**	50
	2	13	**16**	23
S	1	20	**26**	40
	4	13	**16**	20

Metalworking's Oldest and Most Trusted Brand

WIDIA™

Tap into the Power of the Original

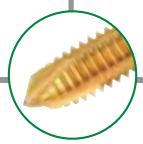
WIDIA-GTD™ represents the powerful combination of speed and precision matched with high performance, consistent quality, and relentless innovation.

1872
Wiley and Russell started to produce taps

1912
Greenfield Tap & Die (GTD) is formed

1917
GTD GUN™ tap patented

1982
Launched first PVD TiN coated taps (VTD)



2005
Launched new generation HP carbide tap line (GX series)

2009
GTD brand becomes part of WIDIA™ Products Group

2013
New VariTap™ series launched

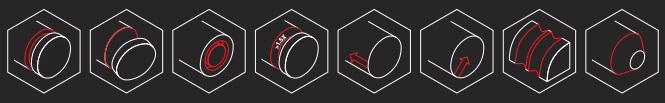
2018
WIDIA-GTD™ celebrates 146 years of excellence

COMING SOON!
High-Performance Taps for Aerospace Fasteners

Original GTD GREENFIELD TAP & DIE 1912

THEN & NOW WIDIA™ GTD™

WGC



THE MOST VERSATILE TOOL ON THE MARKET IN GROOVING, PROFILING, AND CUT-OFF OPERATIONS

4 BENEFITS IN 1

VERSATILE
GROOVING, PROFILING, AND CUT-OFF OPERATIONS

SIMPLE
EASY TO SELECT AND APPLY

STABLE
TRIPLE-V SEATING FOR SECURE CLAMPING

PRODUCTIVE
LOW CUTTING FORCES IN THROUGH COOLANT FOR BETTER CHIP EVACUATION

GENERAL ENGINEERING

ENERGY

Grooving

First choice for external grooving applications in most workpiece materials.

Through coolant capability and efficient coolant delivery for enhanced productivity.

Available in integral and modular style toolholders.

Groove width: 0.0787–0.394".

Cut-Off

Specially engineered chipbreakers for effective parting/cut-off and deep grooving.

Positive geometry for lower forces.

Secure seating offers greatest stability.

Groove width: 0.055–0.315".

Profiling

Full radius chipbreaker for multi-directional turning and generating complex profiles.

Rigid design ensures smooth surface finish.

Groove width: 0.118–0.315".

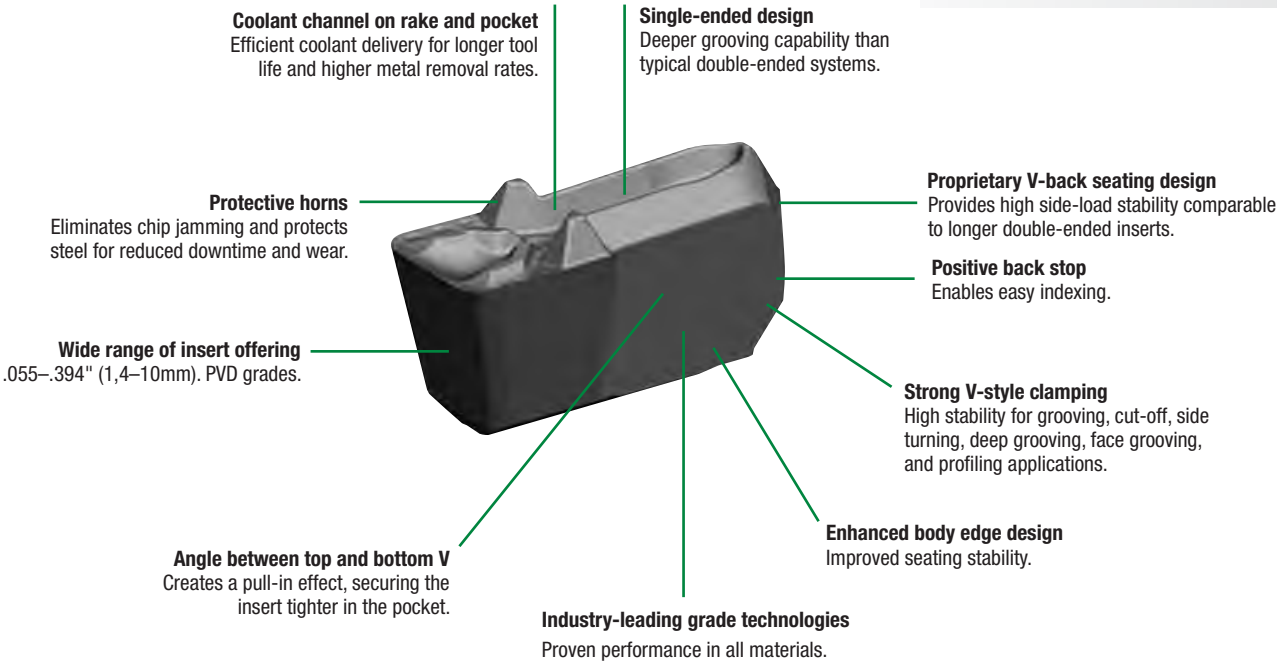
WIDIA™

widia.com

WGC

Grooving, Cut-Off, and Profiling

Proprietary negative chip geometry
Added chip control in steel, cast, stainless, and hardened materials.



Grooving Precision Molded

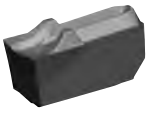
P M N S

PT-Positive Rake

P M K H

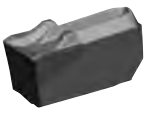
PN-Negative Rake

Cut-Off Precision Molded



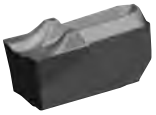
P M N S

F-Fine



P K

M-Medium



P M

R-Rough

Profiling Precision Molded

P M N S

PR-Full Radius

NOTE: Use the NOVO™ software to select appropriate tooholder and insert.

Our Solution to CPC Reduction

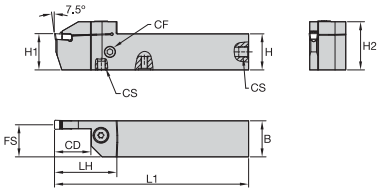
K Cast Iron

Holder: WGC-WG0612M06U08PN WU25PT
Grade: WU10PT
Diameter (ØT): 28mm
No. of Edges: 1 (2 for competition)

Specifications	Competitor	WIDIA WGC
Cutting Diameter	28	28
Cutting Edges	2	1
Grade	P10	WU25PT
Cutting Speed (Vc)	125	125
Spindle Speed (n)	1421	1421
Feed (mm/rev)	0.1	0.1
Cutting Depth (ap)	4	4
Turning Length (l)	17	17
Total Time/Piece	0.12	0.12
Pieces/Edge	100	125
Life/Edge (min)	11.96	14.95
MRR (cm^3/min/in^3/min)	50	50

WIDIA™ SHINING MOMENT

▼ Integral Straight • Inch



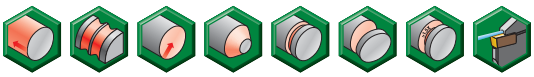
order number	catalog number	SSC	CD	H1	H	B	H2	L1	FS	LH	CF	CS	Torx clamp screw	Torx
right hand														
6461884	**WGCSMR120216**	2	.63	.750	.750	.750	1.03	4.50	.71	1.22	—	—	**MS1160**	T20
6461885	**WGCSMR160216**	2	.63	1.000	1.000	1.000	1.28	6.00	.96	1.22	—	—	**MS1160**	T20
6461886	**WGCSMR120222**	2	.87	.750	.750	.750	1.10	4.50	.71	1.50	—	—	**MS2091**	25 IP
6461887	**WGCSMR160226**	2	1.02	1.000	1.000	1.000	1.35	6.00	.96	1.65	—	—	**MS2091**	25 IP
6461922	**WGCSMR120316C**	3	.63	.750	.750	.750	—	4.50	.69	1.46	M8X1	M8X1	**MS1595**	T30
6461923	**WGCSMR160316C**	3	.63	1.000	1.000	1.000	1.35	6.00	.94	1.46	G1/8-28	G1/8-28	**MS1595**	T30
6461924	**WGCSMR120322C**	3	.87	.750	.750	.750	1.12	4.50	.69	1.69	M8X1	M8X1	**MS1595**	T30
6461925	**WGCSMR160326C**	3	1.02	1.000	1.000	1.000	1.39	6.00	.94	1.85	G1/8-28	G1/8-28	**MS1595**	T30
6461926	**WGCSMR120416C**	4	.63	.750	.750	.750	1.10	4.50	.68	1.46	M8X1	M8X1	**MS1595**	T30
6461927	**WGCSMR160416C**	4	.63	1.000	1.000	1.000	1.34	6.00	.93	1.46	G1/8-28	G1/8-28	**MS1595**	T30
6461928	**WGCSMR120422C**	4	.87	.750	.750	.750	1.10	4.50	.68	1.69	M8X1	M8X1	**MS1595**	T30
6461929	**WGCSMR160426C**	4	1.02	1.000	1.000	1.000	1.38	6.00	.93	1.85	G1/8-28	G1/8-28	**MS1595**	T30
6461930	**WGCSMR200426C**	4	1.02	1.250	1.250	1.250	1.60	6.00	1.18	1.85	G1/8-28	G1/8-28	**MS1970**	T30
6461941	**WGCSMR200432C**	4	1.26	1.250	1.250	1.250	1.70	6.00	1.18	2.09	G1/8-28	G1/8-28	**MS1970**	T30
6461942	**WGCSMR160516C**	5	.63	1.000	1.000	1.000	1.40	6.00	.91	1.46	G1/8-28	G1/8-28	**MS1970**	T30
6461943	**WGCSMR160526C**	5	1.02	1.000	1.000	1.000	1.40	6.00	.91	1.85	G1/8-28	G1/8-28	**MS1970**	T30
6461944	**WGCSMR200526C**	5	1.02	1.250	1.250	1.250	1.60	6.00	1.16	1.85	G1/8-28	G1/8-28	**MS1970**	T30
6461945	**WGCSMR200532C**	5	1.26	1.250	1.250	1.250	1.70	6.00	1.16	2.09	G1/8-28	G1/8-28	**MS1970**	T30
6461947	**WGCSMR160616C**	6	.63	1.000	1.000	1.000	1.40	6.00	.89	1.46	G1/8-28	G1/8-28	**MS1970**	T30
6461949	**WGCSMR160626C**	6	1.02	1.000	1.000	1.000	1.40	6.00	.89	1.85	G1/8-28	G1/8-28	**MS1970**	T30
6461951	**WGCSMR200626C**	6	1.02	1.250	1.250	1.250	1.60	6.00	1.14	1.85	G1/8-28	G1/8-28	**MS1970**	T30
6461953	**WGCSMR200632C**	6	1.26	1.250	1.250	1.250	1.70	6.00	1.14	2.17	G1/8-28	G1/8-28	**MS1490**	T45
6461955	**WGCSMR240640C**	6	1.58	1.500	1.500	1.500	2.00	7.00	1.39	2.48	G1/8-28	G1/8-28	**MS1490**	T45
6461957	**WGCSMR160826C**	8	1.02	1.000	1.000	1.000	1.40	6.00	.86	1.93	G1/8-28	G1/8-28	**MS1490**	T45
6461959	**WGCSMR200826C**	8	1.02	1.250	1.250	1.250	1.70	6.00	1.11	1.93	G1/8-28	G1/8-28	**MS1490**	T45
6461961	**WGCSMR200832C**	8	1.26	1.250	1.250	1.250	1.70	6.00	1.11	2.17	G1/8-28	G1/8-28	**MS1490**	T45
6461962	**WGCSMR240840C**	8	1.58	1.500	1.500	1.500	2.00	7.00	1.36	2.48	G1/8-28	G1/8-28	**MS1490**	T45
6461963	**WGCSMR201032C**	10	1.26	1.250	1.250	1.250	1.70	6.00	1.08	2.17	G1/8-28	G1/8-28	**MS1490**	T45
6461964	**WGCSMR241040C**	10	1.58	1.500	1.500	1.500	2.00	7.00	1.33	2.48	G1/8-28	G1/8-28	**MS1490**	T45
left hand														
6461888	**WGCSML120216**	2	.63	.750	.750	.750	—	4.50	.71	1.22	—	—	**MS1160**	T20
6461889	**WGCSML160216**	2	.63	1.000	1.000	1.000	1.28	6.00	.96	1.22	—	—	**MS1160**	T20
6461890	**WGCSML120222**	2	.87	.750	.750	.750	1.10	4.50	.71	1.50	—	—	**MS2091**	25 IP
6461921	**WGCSML160226**	2	1.02	1.000	1.000	1.000	1.35	6.00	.96	1.65	—	—	**MS2091**	25 IP
6461965	**WGCSML120316C**	3	.63	.750	.750	.750	1.10	4.50	.69	1.46	M8X1	M8X1	**MS1595**	T30
6461966	**WGCSML160316C**	3	.63	1.000	1.000	1.000	1.35	6.00	.94	1.46	G1/8-28	G1/8-28	**MS1595**	T30
6461967	**WGCSML120322C**	3	.87	.750	.750	.750	1.12	4.50	.69	1.69	M8X1	M8X1	**MS1595**	T30
6461968	**WGCSML160326C**	3	1.02	1.000	1.000	1.000	1.39	6.00	.94	1.85	G1/8-28	G1/8-28	**MS1595**	T30
6461969	**WGCSML120416C**	4	.63	.750	.750	.750	1.10	4.50	.68	1.46	M8X1	M8X1	**MS1595**	T30

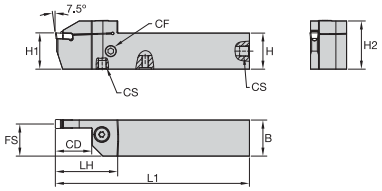
(continued)

WGC

WGC Integral Toolholders

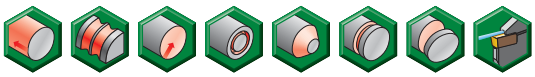
(Integral Straight • Inch — continued)



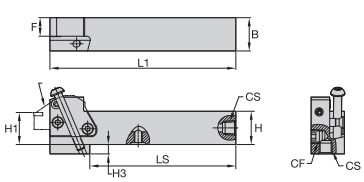


order number	catalog number	SSC	CD	H1	H	B	H2	L1	FS	LH	CF	CS	Torx clamp screw	Torx
6461970	**WGCSML160416C**	4	.63	1.000	1.000	1.000	1.34	6.00	.93	1.46	G1/8-28	G1/8-28	**MS1595**	T30
6461971	**WGCSML120422C**	4	.87	.750	.750	.750	1.10	4.50	.68	1.69	M8X1	M8X1	**MS1595**	T30
6461972	**WGCSML160426C**	4	1.02	1.000	1.000	1.000	1.38	6.00	.93	1.85	G1/8-28	G1/8-28	**MS1595**	T30
6461973	**WGCSML200426C**	4	1.02	1.250	1.250	1.250	1.60	6.00	1.18	1.85	G1/8-28	G1/8-28	**MS1970**	T30
6461974	**WGCSML200432C**	4	1.26	1.250	1.250	1.250	1.70	6.00	1.18	2.09	G1/8-28	G1/8-28	**MS1970**	T30
6461975	**WGCSML160516C**	5	.63	1.000	1.000	1.000	1.40	6.00	.91	1.46	G1/8-28	G1/8-28	**MS1970**	T30
6461976	**WGCSML160526C**	5	1.02	1.000	1.000	1.000	1.10	6.00	.91	1.85	G1/8-28	G1/8-28	**MS1970**	T30
6461977	**WGCSML200526C**	5	1.02	1.250	1.250	1.250	1.60	6.00	1.16	1.85	G1/8-28	G1/8-28	**MS1970**	T30
6461978	**WGCSML200532C**	5	1.26	1.250	1.250	1.250	1.70	6.00	1.16	2.09	G1/8-28	G1/8-28	**MS1970**	T30
6461979	**WGCSML160616C**	6	.63	1.000	1.000	1.000	1.40	6.00	.89	1.46	G1/8-28	G1/8-28	**MS1970**	T30
6461980	**WGCSML160626C**	6	1.02	1.000	1.000	1.000	1.40	6.00	.89	1.85	G1/8-28	G1/8-28	**MS1970**	T30
6461991	**WGCSML200626C**	6	1.02	1.250	1.250	1.250	1.60	6.00	1.14	1.85	G1/8-28	G1/8-28	**MS1970**	T30
6461992	**WGCSML200632C**	6	1.26	1.250	1.250	1.250	1.70	6.00	1.14	2.17	G1/8-28	G1/8-28	**MS1490**	T45
6461993	**WGCSML240640C**	6	1.58	1.500	1.500	1.500	2.00	7.00	1.39	2.48	G1/8-28	G1/8-28	**MS1490**	T45
6461994	**WGCSML160826C**	8	1.02	1.000	1.000	1.000	1.40	6.00	.86	1.93	G1/8-28	G1/8-28	**MS1490**	T45
6461995	**WGCSML200826C**	8	1.02	1.250	1.250	1.250	1.70	6.00	1.11	1.93	G1/8-28	G1/8-28	**MS1490**	T45
6461996	**WGCSML200832C**	8	1.26	1.250	1.250	1.250	1.70	6.00	1.11	2.17	G1/8-28	G1/8-28	**MS1490**	T45
6461997	**WGCSML240840C**	8	1.58	1.500	1.500	1.500	2.00	7.00	1.36	2.48	G1/8-28	G1/8-28	**MS1490**	T45
6461998	**WGCSML201032C**	10	1.26	1.250	1.250	1.250	1.70	6.00	1.08	2.17	G1/8-28	G1/8-28	**MS1490**	T45
6461999	**WGCSML241040C**	10	1.58	1.500	1.500	1.500	2.00	7.00	1.33	2.48	G1/8-28	G1/8-28	**MS1490**	T45

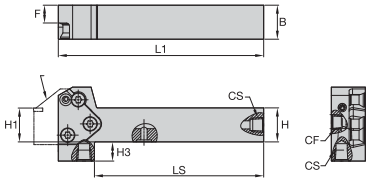
NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the insert.



▼ WGCMS-C • Inch



M50 Blade



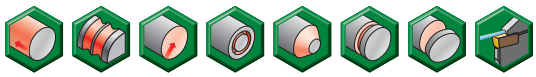
M65 Blade

order number	catalog number	H	H1	B	L1	LS	F	CS	CF	H3	blade size	blade screw	Torx	clamp screw	Torx
right hand															
6499230	**WGCMSR1650C**	1.00	1.00	1.00	5.5	4.33	.56	G 1/8-28	G 1/8-28	.25	50	—	T25	—	T25
6499271	**WGCMSR1665C**	1.00	1.00	1.00	6.0	4.90	.53	G 1/8-28	G 1/8-28	—	65	**MS1163**	T30	—	—
6499272	**WGCMSR2050C**	1.25	1.25	1.25	5.5	4.52	.81	G 1/8-28	G 1/8-28	—	50	**MS1162**	T25	**MS2002**	T25
6499273	**WGCMSR2065C**	1.25	1.25	1.25	6.0	4.90	.78	G 1/8-28	G 1/8-28	—	65	**MS1163**	T30	—	—
6499274	**WGCMSR2450C**	1.50	1.50	1.50	5.5	4.52	1.06	G 1/8-28	G 1/8-28	—	50	**MS1162**	T25	**MS2002**	T25
6499275	**WGCMSR2465C**	1.50	1.50	1.50	7.0	5.90	1.03	G 1/8-28	G 1/8-28	—	65	**MS1163**	T30	—	—
left hand															
6499276	**WGCMSL1650C**	1.00	1.00	1.00	5.5	4.33	.56	G 1/8-28	G 1/8-28	.25	50	—	T25	—	T25
6499277	**WGCMSL1665C**	1.00	1.00	1.00	6.0	4.90	.53	G 1/8-28	G 1/8-28	—	65	**MS1163**	T30	—	—
6499278	**WGCMSL2050C**	1.25	1.25	1.25	5.5	4.52	.81	G 1/8-28	G 1/8-28	—	50	**MS1162**	T25	**MS2002**	T25
6499279	**WGCMSL2065C**	1.25	1.25	1.25	6.0	4.90	.78	G 1/8-28	G 1/8-28	—	65	**MS1163**	T30	—	—
6499280	**WGCMSL2450C**	1.50	1.50	1.50	5.5	4.52	1.06	G 1/8-28	G 1/8-28	—	50	**MS1162**	T25	**MS2002**	T25
6499281	**WGCMSL2465C**	1.50	1.50	1.50	7.0	5.90	1.03	G 1/8-28	G 1/8-28	—	65	**MS1163**	T30	—	—

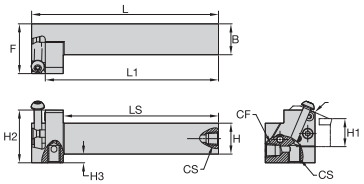
NOTE: WGCMS..: Right-hand holder uses right-hand blades.
WGCME..: Right-hand holder uses left-hand blades.
M50 blade and clamp screw torque equals 71–88 in. lbs. (8–10 Nm).
M65 blade and clamp screw torque equals 159–177 in. lbs. (18–20 Nm).

WGC

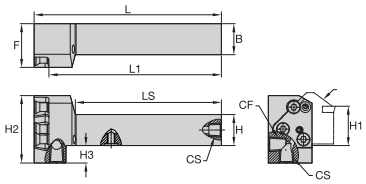
WGC Modular Toolholders



▼ WGCME-C • Inch



M50 Blade

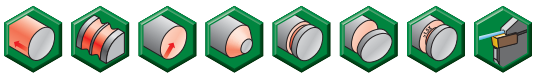


M65 Blade

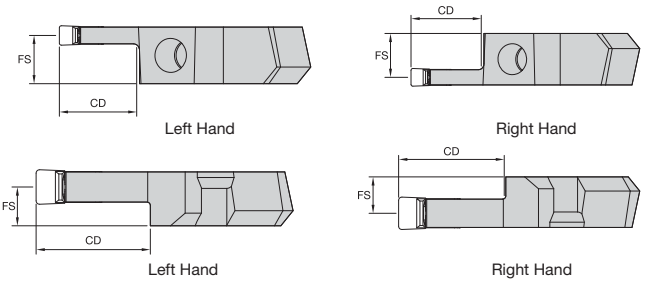
order number	catalog number	B	H	H1	L	L1	LS	F	CS	CF	H2	H3	blade size	blade screw	Torx	clamp screw	Torx
right hand																	
6498941	**WGCMER1650C**	1.00	1.00	1.00	6.0	5.5	4.96	1.57	G 1/8-28	G 1/8-28	1.67	.25	50	**–**	T25	**–**	T25
6498942	**WGCMER1665C**	1.00	1.00	1.00	6.0	5.5	4.70	1.38	G 1/8-28	G 1/8-28	2.09	.50	65	**MS1163**	T30	**–**	–
6498943	**WGCMER2050C**	1.25	1.25	1.25	6.0	5.5	4.96	1.57	G 1/8-28	G 1/8-28	1.67	–	50	**–**	T25	**–**	T25
6498944	**WGCMER2065C**	1.25	1.25	1.25	6.0	5.5	4.70	1.38	G 1/8-28	G 1/8-28	2.09	.25	65	**MS1163**	T30	**–**	–
6498945	**WGCMER2450C**	1.50	1.50	1.50	6.0	5.5	4.96	1.57	G 1/8-28	G 1/8-28	1.92	–	50	**MS1162**	T25	**MS2002**	T25
6498946	**WGCMER2465C**	1.50	1.50	1.50	7.0	6.5	5.70	1.49	G 1/8-28	G 1/8-28	2.09	–	65	**MS1163**	T30	**–**	–
left hand																	
6498947	**WGCMEL1650C**	1.00	1.00	1.00	6.0	5.5	4.96	1.57	G 1/8-28	G 1/8-28	1.67	.25	50	**–**	T25	**–**	T25
6498948	**WGCMEL1665C**	1.00	1.00	1.00	6.0	5.5	4.70	1.38	G 1/8-28	G 1/8-28	2.09	.50	65	**MS1163**	T30	**–**	–
6498949	**WGCMEL2050C**	1.25	1.25	1.25	6.0	5.5	4.96	1.57	G 1/8-28	G 1/8-28	1.67	–	50	**–**	T25	**–**	T25
6498950	**WGCMEL2065C**	1.25	1.25	1.25	6.0	5.5	4.70	1.38	G 1/8-28	G 1/8-28	2.09	.25	65	**MS1163**	T30	**–**	–
6498951	**WGCMEL2450C**	1.50	1.50	1.50	6.0	5.5	4.96	1.57	G 1/8-28	G 1/8-28	1.92	–	50	**MS1162**	T25	**MS2002**	T25
6498952	**WGCMEL2465C**	1.50	1.50	1.50	7.0	6.5	5.70	1.49	G 1/8-28	G 1/8-28	2.09	–	65	**MS1163**	T30	**–**	–

NOTE: WGCMS..: Right-hand holder uses right-hand blades.
WGCME..: Right-hand holder uses left-hand blades.
M50 blade and clamp screw torque equals 71–88 in. lbs. (8–10 Nm).
M65 blade and clamp screw torque equals 159–177 in. lbs. (18–20 Nm).

WGC Modular Blades



▼ Modular Straight Blade with Coolant



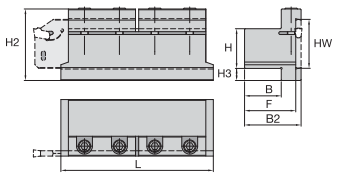
order number	catalog number	SSC	CD	FS	blade size
right hand					
6498457	**WGCM50R1F12M**	1F	12,0	11,00	50
6498458	**WGCM50R0212M**	2	12,0	10,88	50
6498459	**WGCM50R0216M**	2	16,0	10,88	50
6498460	**WGCM50R0312MC**	3	12,0	10,43	50
6498861	**WGCM50R0322MC**	3	22,0	10,43	50
6498862	**WGCM50R0412MC**	4	12,0	9,93	50
6498863	**WGCM50R0422MC**	4	22,0	9,93	50
6498864	**WGCM50R0432MC**	4	32,0	9,93	50
6498865	**WGCM50R0512MC**	5	12,0	9,43	50
6498866	**WGCM50R0516MC**	5	16,0	9,43	50
6498867	**WGCM50R0526MC**	5	26,0	9,43	50
6498868	**WGCM50R0532MC**	5	32,0	9,43	50
6498869	**WGCM65R0616MC**	6	16,0	9,88	65
6498870	**WGCM65R0626MC**	6	26,0	9,88	65
6498881	**WGCM65R0632MC**	6	32,0	9,88	65
6498882	**WGCM65R0816MC**	8	16,0	9,00	65
6498883	**WGCM65R0826MC**	8	26,0	9,00	65
left hand					
6498884	**WGCM50L1F12M**	1F	12,0	11,00	50
6498885	**WGCM50L0212M**	2	12,0	10,88	50
6498886	**WGCM50L0216M**	2	16,0	10,88	50
6498887	**WGCM50L0312MC**	3	12,0	10,43	50
6498888	**WGCM50L0322MC**	3	22,0	10,43	50
6498889	**WGCM50L0412MC**	4	12,0	9,93	50
6498890	**WGCM50L0422MC**	4	22,0	9,93	50
6498891	**WGCM50L0432MC**	4	32,0	9,93	50
6498892	**WGCM50L0512MC**	5	12,0	9,43	50
6498893	**WGCM50L0516MC**	5	16,0	9,43	50
6498894	**WGCM50L0526MC**	5	26,0	9,43	50
6498895	**WGCM50L0532MC**	5	32,0	9,43	50
6498896	**WGCM65L0616MC**	6	16,0	9,88	65
6498897	**WGCM65L0626MC**	6	26,0	9,88	65
6498898	**WGCM65L0632MC**	6	32,0	9,88	65
6498899	**WGCM65L0816MC**	8	16,0	9,00	65
6498900	**WGCM65L0826MC**	8	26,0	9,00	65

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the insert.
Through the pocket coolant available in seat sizes 3 and higher.

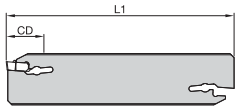
WGC

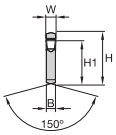
WGC Blade Holders and Blades

Blade Holders • Inch

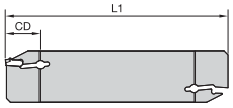


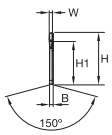
order number	catalog number	HW	H	B	F	H2	B2	H3	L	cap screw	wrench
2968845	**32251221200**	1.024	.750	.750	1.161	1.57	1.34	.32	3.39	**125.625**	**12148041300**
2968846	**32251221600**	1.260	1.000	1.000	1.417	1.89	1.63	.30	4.33	**125.630**	**12148041300**
2968847	**32251222000**	1.260	1.250	1.250	1.673	1.97	1.89	.13	4.33	**125.630**	**12148041300**



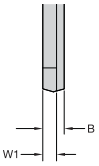


Straight





Reinforced



Double-Ended Cut-Off Blade

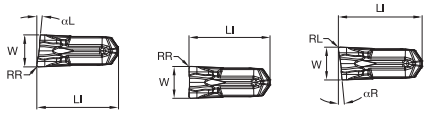
order number	catalog number	SSC	H	W	W1	H1	L1	B	CD	assembly wrench
neutral hand										
6498987	**WGCBSN19G1B14**	1B	19	1,4	1,15	15,5	90	1,80	14	**SCW5E**
6498988	**WGCBSN26J1B15**	1B	26	1,4	1,15	21,5	110	1,80	15	**SCW5E**
6498989	**WGCBSN19G1F16**	1F	19	1,6	1,30	15,5	90	1,80	16	**SCW5E**
6498990	**WGCBSN26J1F17**	1F	26	1,6	1,30	21,5	110	1,80	17	**SCW5E**
6499211	**WGCBSN19G0220**	2	19	2,0	–	15,5	90	1,65	–	**SCW5E**
6499212	**WGCBSN26J0230**	2	26	2,0	–	21,5	110	1,65	–	**SCW5E**
6499213	**WGCBSN32M0250**	2	32	2,0	–	25,1	150	1,65	–	**SCW5E**
6499215	**WGCBSN32M0350**	3	32	3,0	–	25,1	150	2,40	–	**SCW5E**
6499214	**WGCBSN26J0340**	3	36	3,0	–	21,5	110	2,40	–	**SCW5E**
6499216	**WGCBSN26J0440**	4	26	4,0	–	21,5	110	3,40	–	**SCW5E**
6499217	**WGCBSN32M0450**	4	32	4,0	–	25,1	150	3,40	–	**SCW5E**
6499218	**WGCBSN32M0560**	5	32	5,0	–	25,1	150	4,40	–	**SCW5E**
6499219	**WGCBSN32M0660**	6	32	6,0	–	25,1	150	5,40	–	**SCW8E**
6499220	**WGCBSN32M0860**	8	32	8,0	–	25,1	150	7,00	–	**SCW8E**
6499221	**WGCBSN52X08120**	8	53	8,0	–	45,3	260	7,00	–	**SCW8E**

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the insert.

Spare Parts

screw	screw	torque				wrench	wrench
catalog number	order number	Nm	in. lbs.	thread	socket	catalog number	order number
MS1160	**1099645**	**7**	**62**	**M5**	**T20**	**KT20**	**1022703**
MS1162	**1127019**	**9**	**80**	**M6**	**T25**	**KT25**	**1022725**
MS1163	**1124104**	**18**	**159**	**M8**	**T30**	**KT30L**	**1099676**
MS1273	**1020977**	**4**	**35.4**	**M4**	**T15**	**KT15**	**1022701**
MS1490	**2263299**	**17**	**151**	**M8**	**T45**	**KT45**	**1018227**
MS1595	**1094300**	**12**	**106**	**M6**	**T30**	**KT30**	**1099676**
MS1970	**1106668**	**12**	**106**	**M6**	**T30**	**KT30**	**1099676**
MS2002	**1621087**	**9**	**80**	**M6**	**T25**	**KT25**	**1022725**
MS2091	**1931147**	**9**	**80**	**M5**	**25IP**	**K25IP**	**2050113**

WGC Cut-Off Inserts



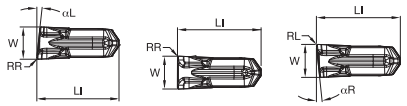
Left Hand Neutral Right Hand

● first choice
○ alternate choice

P		●
M		●
K		○
N		○
S		●
H		

▼ F Precision Molded • Metric

		W		W tol ±		LI				RR		RL		
catalog number	SSC	mm	in	mm	in	mm	in	αR	αL	mm	in	mm	in	WU25PT
WC014M1BL06F01	1B	1,40	.055	0,050	.002	9,00	.355	–	6	0,15	.006	–	–	6470544
WC014M1BN00F01	1B	1,40	.055	0,050	.002	9,00	.355	–	–	0,15	.006	0,15	.006	6470545
WC014M1BR06F01	1B	1,40	.055	0,050	.002	9,02	.355	6	–	–	–	0,15	.006	6470546
WC020M02L06F02	2	2,00	.079	0,050	.002	9,00	.353	–	6	0,20	.008	–	–	6470547
WC020M02N00F02	2	2,00	.079	0,050	.002	9,00	.353	–	–	0,20	.008	0,20	.008	6470548
WC020M02R06F02	2	2,00	.079	0,050	.002	9,00	.353	6	–	–	–	0,20	.008	6470549
WC030M03L06F02	3	3,00	.118	0,075	.003	9,60	.378	–	6	0,20	.008	–	–	6470550
WC030M03N00F02	3	3,00	.118	0,075	.003	9,60	.378	–	–	0,20	.008	0,20	.008	6470561
WC030M03R06F02	3	3,00	.118	0,075	.003	9,60	.378	6	–	–	–	–	–	6470562
WC040M04L06F02	4	4,00	.157	0,075	.003	10,19	.401	–	6	0,20	.008	–	–	6470563
WC040M04N00F02	4	4,00	.157	0,075	.003	10,19	.401	–	–	0,20	.008	0,20	.008	6470564
WC040M04R06F02	4	4,00	.157	0,075	.003	10,19	.401	6	–	–	–	0,20	.008	6470565
WC050M05N00F03	5	5,00	.197	0,075	.003	12,24	.482	–	–	0,30	.012	0,30	.012	6470566



Left Hand Neutral Right Hand

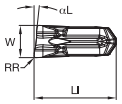
▼ M Precision Molded • Metric

		W		W tol ±		LI				RR		RL		
catalog number	SSC	mm	in	mm	in	mm	in	αR	αL	mm	in	mm	in	WU25PT
WC014M1BL06M02	1B	1,40	.055	0,050	.002	9,02	.355	–	6	–	–	0,20	.008	6461828
WC014M1BN00M01	1B	1,40	.055	0,050	.002	9,01	.355	–	–	0,15	.006	0,15	.006	6461829
WC014M1BR06M02	1B	1,40	.055	0,050	.002	9,02	.355	6	–	–	–	0,20	.008	6461830
WC020M02L06M02	2	2,00	.079	0,050	.002	8,97	.353	–	6	–	–	0,20	.008	6461861
WC020M02N00M02	2	2,00	.079	0,050	.002	8,98	.353	–	–	0,20	.008	0,20	.008	6461862
WC020M02R06M02	2	2,00	.079	0,050	.002	9,00	.353	6	–	–	–	0,20	.009	6461863
WC030M03L06M02	3	3,00	.118	0,075	.003	9,61	.378	–	6	–	–	0,20	.008	6461864
WC030M03N00M02	3	3,00	.118	0,075	.003	9,60	.378	–	–	0,20	.008	0,20	.008	6461865
WC030M03R06M02	3	3,00	.118	0,075	.003	9,61	.378	6	–	–	–	0,20	.008	6461866
WC040M04L06M02	4	4,00	.157	0,075	.003	10,19	.401	–	6	0,20	.008	–	–	6461867
WC040M04N00M02	4	4,00	.157	0,075	.003	10,20	.402	–	–	0,20	.008	0,20	.008	6461868
WC040M04R06M02	4	4,00	.158	0,050	.002	10,20	.401	6	–	–	–	0,20	.008	6461869
WC050M05N00M03	5	5,00	.197	0,075	.003	12,25	.482	–	–	0,30	.012	0,30	.012	6461870
WC060M06N00M03	6	6,00	.236	0,075	.003	14,59	.574	–	–	0,30	.012	0,30	.012	6461881
WC080M08N00M04	8	8,00	.315	0,075	.003	17,46	.688	–	–	0,40	.016	0,40	.016	6461882

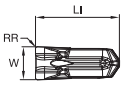
NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the toolholder.

WGC

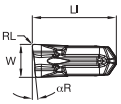
WGC Cut-Off Inserts



Left Hand



Neutral



Right Hand

● first choice
○ alternate choice

P		●
M		●
K		○
N		○
S		●
H		

▼ R Precision Molded • Metric

		W		W tol ±		LI				RR		RL		
catalog number	SSC	mm	in	mm	in	mm	in	αR	αL	mm	in	mm	in	WU25PT
WC020M02L06R02	2	2,00	.079	0,050	.002	8,97	.353	–	6	0,20	.008	–	–	6470426
WC020M02N00R02	2	2,00	.079	0,050	.002	8,98	.353	–	–	0,20	.008	0,20	.008	6470427
WC020M02R06R02	2	2,00	.079	0,050	.002	8,97	.353	6	–	–	–	0,20	.008	6470428
WC030M03L06R02	3	3,00	.118	0,075	.003	9,61	.378	–	6	0,20	.008	–	–	6470429
WC030M03N00R02	3	3,00	.118	0,075	.003	9,60	.378	–	–	0,20	.008	0,20	.008	6470430
WC030M03R06R02	3	3,00	.118	0,075	.003	9,61	.378	6	–	–	–	0,20	.008	6470461
WC040M04N00R02	4	4,00	.158	0,075	.003	10,20	.402	–	–	0,20	.008	0,20	.008	6470462
WC050M05N00R03	5	5,00	.197	0,075	.003	12,25	.482	–	–	0,30	.012	0,30	.012	6470463
WC060M06N00R03	6	6,00	.236	0,075	.003	14,59	.574	–	–	0,30	.012	0,30	.012	6470464
WC080M08N00R04	8	8,00	.315	0,075	.003	17,46	.687	–	–	0,40	.016	0,40	.016	6470465

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the toolholder.

P M K N S

WU25PT™

Advanced Universal Grade with Hard PVD AlTiN Coating and Fine-Grain Substrate

This new and improved coating improves edge stability with wide range speed and feed capabilities.

The WU25PT grade is ideal for general machining of most steels, stainless steels, high-temp alloys, titanium, irons, and non-ferrous materials in a wide range of speeds and feeds with improved edge toughness for interrupted cuts and high feed rates.

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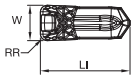
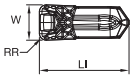


● first choice
○ alternate choice

P	●
M	●
K	○
N	○
S	●
H	

▼ PT Precision Molded • Metric

		W		W tol ±		RR		LI		
catalog number	SSC	mm	in	mm	in	mm	in	mm	in	WU25PT
WG0212M02U02PT	2	2,13	.084	0,050	.002	0,20	.008	8,97	.353	**6461734**
WG0251M02U02PT	2	2,51	.099	0,050	.002	0,20	.008	8,97	.353	**6461735**
WG0312M03U02PT	3	3,13	.123	0,075	.003	0,20	.008	9,60	.378	**6461736**
WG0312M03U04PT	3	3,13	.123	0,075	.003	0,40	.016	9,60	.378	**6461737**
WG0412M04U04PT	4	4,13	.162	0,075	.003	0,40	.016	10,19	.401	**6461738**
WG0412M04U08PT	4	4,13	.162	0,075	.003	0,80	.031	10,19	.401	**6461739**
WG0512M05U04PT	5	5,13	.202	0,075	.003	0,40	.016	12,25	.482	**6461740**
WG0512M05U08PT	5	5,13	.202	0,075	.003	0,80	.032	12,25	.482	**6461821**
WG0612M06U04PT	6	6,13	.241	0,075	.003	0,40	.016	14,59	.575	**6461822**
WG0612M06U08PT	6	6,13	.241	0,075	.003	0,80	.032	14,59	.574	**6461823**
WG0712M06U08PT	6	7,13	.281	0,075	.003	0,80	.032	14,59	.574	**6461824**
WG0812M08U08PT	8	8,13	.320	0,075	.003	0,80	.032	17,45	.687	**6461825**
WG0812M08U12PT	8	8,13	.320	0,075	.003	1,20	.046	17,45	.687	**6461826**
WG1012M10U12PT	10	10,13	.399	0,075	.003	1,20	.047	20,75	.817	**6461827**



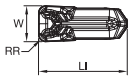
▼ PT Precision Molded • Inch

		W		W tol ±		RR		LI		
catalog number	SSC	mm	in	mm	in	mm	in	mm	in	WU25PT
WG130I03U1PT	3	3,30	.130	0,075	.003	0,40	.016	9,60	.378	**6470487**
WG130I03U05PT	3	3,30	.130	0,075	.003	0,20	.008	9,60	.378	**6470486**
WG192I04U1PT	4	4,88	.192	0,075	.003	0,40	.016	10,19	.401	**6470488**
WG192I04U2PT	4	4,88	.192	0,075	.003	0,78	.031	10,19	.401	**6470489**
WG255I06U1PT	6	6,48	.255	0,075	.003	0,40	.016	14,58	.574	**6470490**
WG255I06U2PT	6	6,48	.255	0,075	.003	0,80	.031	14,58	.574	**6470541**
WG317I08U3PT	8	8,05	.317	0,075	.003	1,19	.047	17,46	.687	**6470542**
WG380I10U3PT	10	9,65	.380	0,075	.003	1,19	.047	20,75	.817	**6470543**

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the toolholder.

WGC

WGC Grooving Inserts

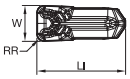


● first choice
○ alternate choice

P	●
M	●
K	○
N	○
S	●
H	

▼ PN Precision Molded • Metric

		W		W tol ±		RR		LI		
catalog number	SSC	mm	in	mm	in	mm	in	mm	in	WU25PT
WG0212M02U02PN	2	2,13	.084	0,050	.002	0,20	.008	8,97	.353	6470850
WG0251M02U02PN	2	2,51	.099	0,050	.002	0,20	.008	8,97	.353	6471041
WG0312M03U02PN	3	3,13	.123	0,075	.003	0,20	.008	9,60	.378	6471042
WG0312M03U04PN	3	3,13	.123	0,075	.003	0,40	.016	9,60	.378	6471043
WG0412M04U04PN	4	4,13	.162	0,075	.003	0,40	.016	10,20	.401	6471044
WG0412M04U08PN	4	4,13	.162	0,075	.003	0,80	.031	10,20	.401	6471045
WG0512M05U04PN	5	5,13	.202	0,075	.003	0,40	.016	12,24	.482	6471046
WG0512M05U08PN	5	5,13	.202	0,075	.003	0,80	.031	12,24	.482	6471047
WG0612M06U04PN	6	6,13	.241	0,075	.003	0,40	.016	14,59	.575	6471048
WG0612M06U08PN	6	6,13	.241	0,075	.003	0,80	.031	14,59	.574	6471049
WG0812M08U08PN	8	8,13	.320	0,075	.003	0,80	.031	17,46	.687	6471050
WG0812M08U12PN	8	8,13	.320	0,075	.003	1,20	.047	17,46	.687	6471062
WG1012M10U12PN	10	10,13	.399	0,075	.003	1,20	.047	20,75	.817	6471064

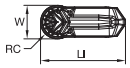


▼ PN Precision Molded • Inch

		W		W tol ±		RR		LI		
catalog number	SSC	mm	in	mm	in	mm	in	mm	in	WU25PT
WG125I03U1PN	3	3,18	.125	0,075	.003	0,40	.016	9,60	.378	6470834
WG125I03U05PN	3	3,18	.125	0,075	.003	0,20	.008	9,60	.378	6470833
WG130I03U1PN	3	3,30	.130	0,075	.003	0,40	.016	9,60	.378	6470836
WG130I03U05PN	3	3,30	.130	0,075	.003	0,20	.008	9,60	.378	6470835
WG187I04U1PN	4	4,75	.187	0,075	.003	0,40	.016	10,19	.401	6470837
WG187I04U2PN	4	4,75	.187	0,075	.003	0,80	.032	10,20	.401	6470838
WG192I04U1PN	4	4,88	.192	0,075	.003	0,40	.016	10,20	.401	6470839
WG192I04U2PN	4	4,88	.192	0,075	.003	0,80	.031	10,20	.401	6470840
WG250I06U1PN	6	6,35	.250	0,075	.003	0,40	.016	14,58	.574	6470841
WG250I06U2PN	6	6,35	.250	0,075	.003	0,80	.032	14,58	.574	6470842
WG255I06U1PN	6	6,48	.255	0,075	.003	0,40	.016	14,58	.574	6470843
WG255I06U2PN	6	6,48	.255	0,075	.003	0,80	.031	14,58	.574	6470844
WG312I08U3PN	8	7,93	.312	0,075	.003	1,20	.047	17,46	.687	6470845
WG317I08U3PN	8	8,05	.317	0,075	.003	1,19	.047	17,46	.687	6470846
WG375I10U3PN	10	9,53	.375	0,075	.003	1,20	.047	20,75	.817	6470847
WG380I10U3PN	10	9,65	.380	0,075	.003	1,20	.047	20,70	.815	6470848

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the toolholder.

WGC Grooving Inserts

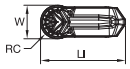


● first choice
○ alternate choice

P	●
M	●
K	○
N	○
S	●
H	

▼ PR Full Radius Precision Ground • Metric

		W		W tol ±		RC		LI		
catalog number	SSC	mm	in	mm	in	mm	in	mm	in	WU25PT
WR0200M02P00PC	2	2,00	.079	0,025	.001	1,00	.039	8,91	.351	**6470467**
WR0300M03P00PC	3	3,00	.118	0,025	.001	1,50	.059	9,54	.376	**6470468**
WR0400M04P00PC	4	4,00	.158	0,025	.001	2,00	.079	10,13	.399	**6470469**
WR0500M05P00PC	5	5,00	.197	0,025	.001	2,50	.098	12,18	.480	**6470470**
WR0600M06P00PC	6	6,00	.236	0,025	.001	3,00	.118	14,52	.572	**6470481**
WR0800M08P00PC	8	8,00	.315	0,025	.001	4,00	.158	17,41	.685	**6470482**



▼ PR Full Radius Precision Ground • Inch

		W		W tol ±		RC		LI		
catalog number	SSC	mm	in	mm	in	mm	in	mm	in	WU25PT
WR125I03P00PC	3	3,18	.125	0,025	.001	1,59	.062	9,54	.376	**6470263**
WR187I04P00PC	4	4,76	.188	0,025	.001	2,38	.094	10,13	.399	**6470264**
WR250I06P00PC	6	6,35	.250	0,025	.001	3,18	.125	14,54	.572	**6470265**
WR312I08P00PC	8	7,92	.312	0,025	.001	3,96	.156	17,40	.685	**6470266**

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the toolholder.

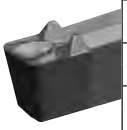
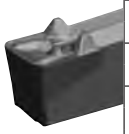
WGC

WGC Feed Rates

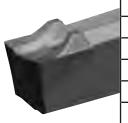
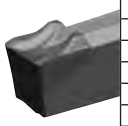
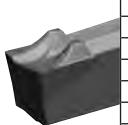
Plunge feed rates

● first choice
○ alternate choice

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

Chip Control	Description	Insert Geometry	Seat Size (SSC)	Corner Radius in (mm)	Starting Conditions in (mm)	Plunge Feed Rates inch/rev (mm/rev) .0020 (0,05)	.0040 (0,10)	.0060 (0,15)	.0080 (0,20)	.0100 (0,25)	.0120 (0,30)	.0140 (0,35)
-PT	Positive rake angle for lower cutting forces.		1F	.008 (0,2)	.0024 (0,06)	◇						
			2	.008 (0,2)	.0031 (0,08)	◇						
			3	.008 (0,2)	.0035 (0,09)	◇						
				.016 (0,4)	.0043 (0,11)		◇					
			4	.016 (0,4)	.0047 (0,12)		◇					
				.031 (0,8)	.0059 (0,15)			◇				
			5	.016 (0,4)	.0059 (0,15)			◇				
				.031 (0,8)	.0059 (0,16)			◇				
			6	.016 (0,4)	.0059 (0,15)			◇				
				.031 (0,8)	.0071 (0,18)			◇				
				.047 (1,2)	.0079 (0,20)				◇			
			8	.031 (0,8)	.0079 (0,20)				◇			
				.047 (1,2)	.0087 (0,22)					◇		
			10	.047 (1,2)	.0094 (0,24)					◇		
-PN	Stable negative cutting edge allowing for more aggressive applications.		1F	.008 (0,2)	.0024 (0,06)	◇						
			2	.008 (0,2)	.0031 (0,08)	◇						
			3	.008 (0,2)	.0035 (0,09)	◇						
				.016 (0,4)	.0043 (0,11)		◇					
			4	.016 (0,4)	.0047 (0,12)		◇					
				.031 (0,8)	.0059 (0,15)			◇				
			5	.016 (0,4)	.0059 (0,15)			◇				
				.031 (0,8)	.0059 (0,16)			◇				
			6	.016 (0,4)	.0059 (0,15)			◇				
				.031 (0,8)	.0071 (0,18)			◇				
				.047 (1,2)	.0079 (0,20)				◇			
			8	.031 (0,8)	.0079 (0,20)				◇			
				.047 (1,2)	.0087 (0,22)					◇		
			10	.047 (1,2)	.0094 (0,24)					◇		

Cut-Off Feed Rates

Geometry	Description	Insert Geometry	Seat Size (SSC)	Starting Conditions in (mm)	Cut-Off Feed Rates inch/rev (mm/rev) .0020 (0,05)	.0040 (0,10)	.0060 (0,15)	.0080 (0,20)	.0100 (0,25)	.0120 (0,30)	.0140 (0,35)	.0160 (0,40)
-F	Positive geometry for reduced cutting forces.		1B	.0024 (0,06)	◇							
			2	.0028 (0,07)	◇							
			3	.0035 (0,09)		◇						
			4	.0043 (0,11)		◇						
			5	.0051 (0,13)			◇					
-M	Stable cutting edge for aggressive feed rates. Primarily in cast iron.		1B	.0024 (0,06)	◇							
			2	.0028 (0,07)	◇							
			3	.0035 (0,09)		◇						
			4	.0043 (0,11)		◇						
			5	.0055 (0,14)			◇					
			6	.0063 (0,16)				◇				
			8	.0067 (0,17)				◇				
-R	Most stable cutting edge for steel.		2	.0039 (0,10)		◇						
			3	.0055 (0,14)			◇					
			4	.0063 (0,16)			◇					
			5	.0075 (0,19)				◇				
			6	.0083 (0,21)					◇			
			8	.0090 (0,23)						◇		

NOTE: For cut-off inserts with a lead angle, maximum feed rate should be reduced by up to 40%.

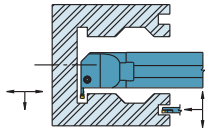
Maximum Feed Rate Values

Data above is for P and K material groups. **Maximum** feed rates should be adjusted by multiplying max feed rate values by following factors for shown material groups.

Material Group	Feed Factor
M	0.8
N	1.2
S	0.8
H	0.5

I.D. and Face Grooving

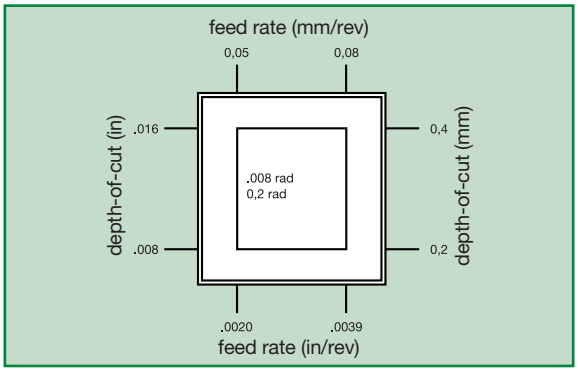
For I.D. and face grooving applications, reduce feed rate by 20%.



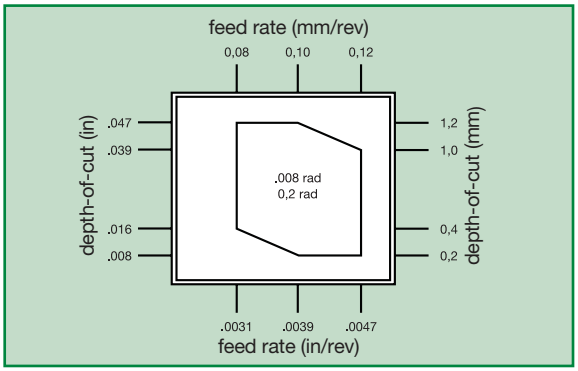
WGC Feed Rates

▼ Turn and profile feed rates

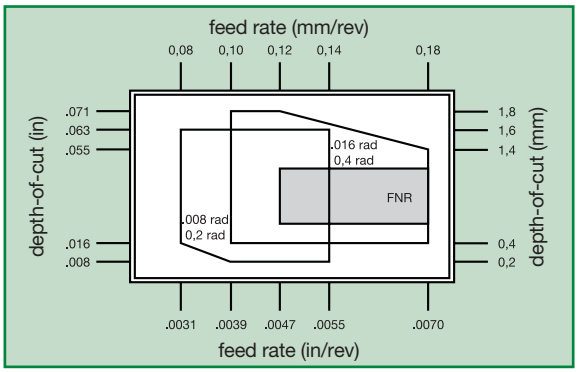
Seat Size 1F



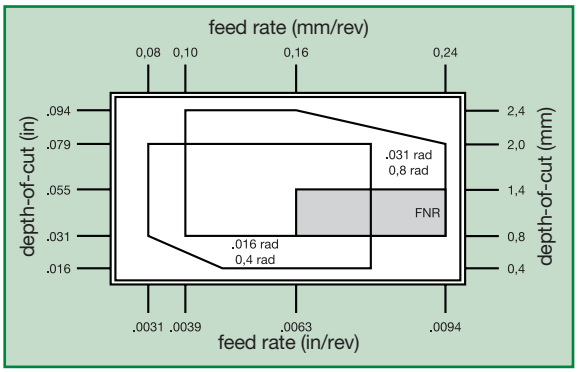
Seat Size 2



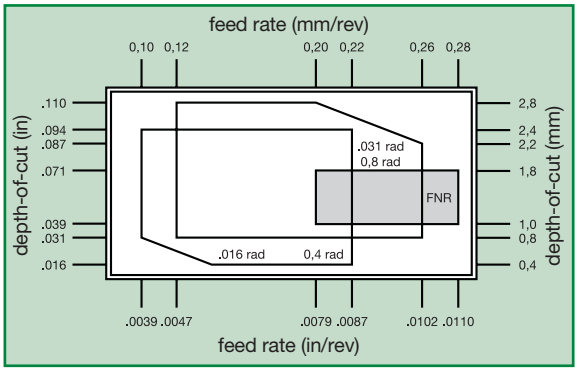
Seat Size 3



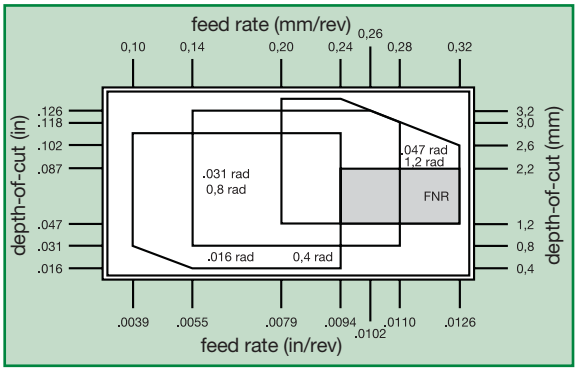
Seat Size 4



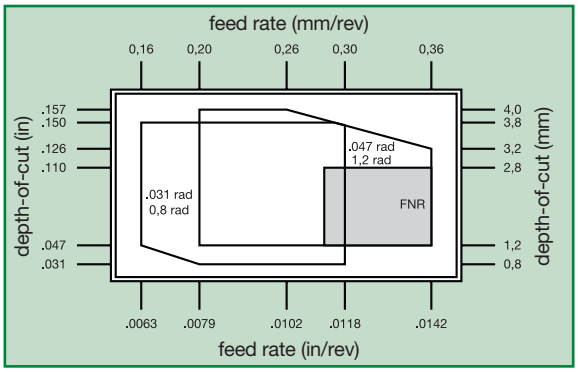
Seat Size 5



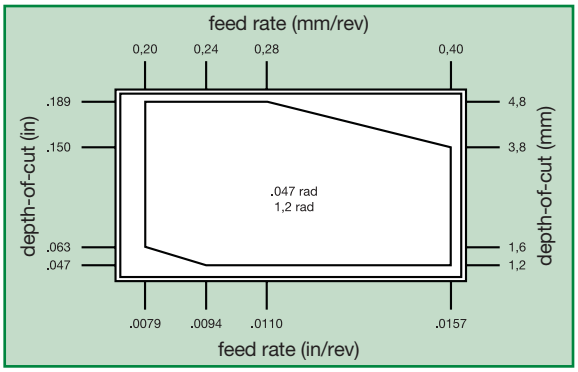
Seat Size 6



Seat Size 8



Seat Size 10



** FNR = Full Nose Radius*

WGC

Recommended Starting Speeds • Grooving and Cut-Off

Maximum Feed Rate Values

Data above is for P and K material groups. **Maximum** feed rates should be adjusted by multiplying max feed rate values by following factors for shown material groups.	Material Group	Feed Factor
	M	0.8
	N	1.2
	S	0.8
	H	0.5

▼ Recommended Starting Speeds • Inch and Metric

Material Group		WU25PT					
		Inch			Metric		
P	0–1	360	**740**	880	110	**225**	270
	2	360	**520**	880	110	**160**	260
	3	360	**410**	800	110	**125**	235
	4	200	**290**	540	60	**90**	160
	5	320	**530**	680	100	**160**	210
	6	280	**400**	600	85	**120**	185
M	1	300	**550**	800	90	**170**	245
	2	300	**500**	800	90	**150**	245
	3	300	**450**	700	90	**140**	210
K	1	320	**480**	760	100	**145**	225
	2	240	**400**	560	70	**120**	170
	3	160	**280**	400	50	**85**	120
N	1–2	400	**1440**	2560	120	**440**	780
	3	–	**–**	–	–	**–**	–
	4	320	**960**	1600	100	**290**	490
	5	240	**440**	640	70	**135**	195
	6	320	**560**	800	100	**170**	245
S	1	25	**125**	200	8	**40**	60
	2	25	**100**	250	8	**30**	75
	3	50	**125**	250	15	**40**	75
	4	25	**175**	350	8	**50**	110

*NOTE: FIRST choice starting speeds are in **bold** type.*
As the average chip thickness increases, the speed should be decreased.

Internal Coolant Delivery

Geometry placement is a key factor to coolant delivery!

Engineers positioned WGC geometry in the perfect position to spread the coolant across the cutting edge for maximum performance.

Coolant parameters

WGC is capable of both low and high pressure coolant up 350 bar (5076 psi) with no lower limit.
Tech Tip — If performance is not being achieved due to the machine pump's inability to provide pressure, even if volume is acceptable, flood coolant should also be applied.

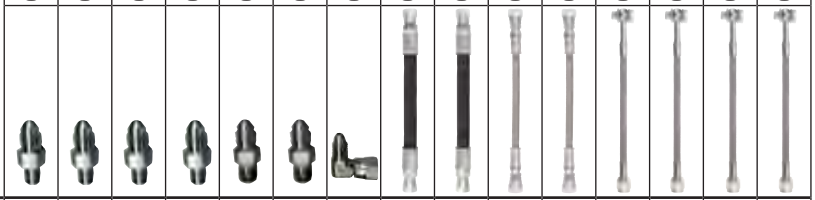
Performance

Internal tests have shown up to 30% increased tool life.
Tech Tip — Regular maintenance of coolant filtration system required to achieve maximum performance.

Coolant entry

WGC offers multiple coolant ports for convenience.

▼ Coolant Kit

				Component Description														
				1/16 NPTF MALE TO JIC MALE	1/8 NPTF MALE TO JIC MALE	M8 X 1.25 MALE TO JIC MALE	M8 X 1.0 MALE TO JIC MALE	G1/8 MALE TO JIC MALE	M10 MALE TO JIC MALE	MALE JIC TO FEMALE JIC ELBOW	HEAVY DUTY 200MM COOLANT HOSE	HEAVY DUTY 300MM COOLANT HOSE	UNIV 200MM FLEX COOLANT HOSE	UNIV 300MM FLEX COOLANT HOSE	M8X1.0 BANJO 200MM FLEX HOSE	G1/8 BANJO 200MM FLEX HOSE	M8X1.0 BANJO 300MM FLEX HOSE	G1/8 BANJO 300MM FLEX HOSE
				Component Order Number														
				6145374	6145375	6145378	6475041	6145376	6145377	6145379	6145380	6145381	6432549	6432550	6475043	6475045	6475047	6475049
																		
Kit Description	**Order Number**	**Shank Size**	**Coolant Pressure**															
Universal 200mm flex hose coolant kit	**6475019**	12–40mm 1/2–1-1/2"	200 Bar 2,901 psi		●	●	●	●	●	●			●					
Universal 300mm flex hose coolant kit	**6475021**	12–40mm 1/2–1-1/2"	200 Bar 2,901 psi	●	●	●	●	●	●	●				●				
M8x1.0 banjo 200mm flex hose coolant kit	**6475023**	12–20mm 1/2–3/4"	200 Bar 2,901 psi					●	●	●					●			
M8x1.0 banjo 300mm flex hose coolant kit	**6475025**	12–20mm 1/2–3/4"	200 Bar 2,901 psi					●	●	●							●	
G 1/8 banjo 200mm flex hose coolant kit	**6475027**	25–40mm 1–1-1/2"	200 Bar 2,901 psi					●	●	●						●		
G 1/8 banjo 300mm flex hose coolant kit	**6475029**	25–40mm 1–1-1/2"	200 Bar 2,901 psi					●	●	●								●
Universal 200mm heavy-duty coolant kit	**6145372**	25–40mm 1–1-1/2"	350 Bar* 5,076 psi*	●	●			●	●	●	●							
Universal 300mm heavy-duty coolant kit	**6145373**	25–40mm 1–1-1/2"	350 Bar* 5,076 psi*	●	●			●	●	●		●						

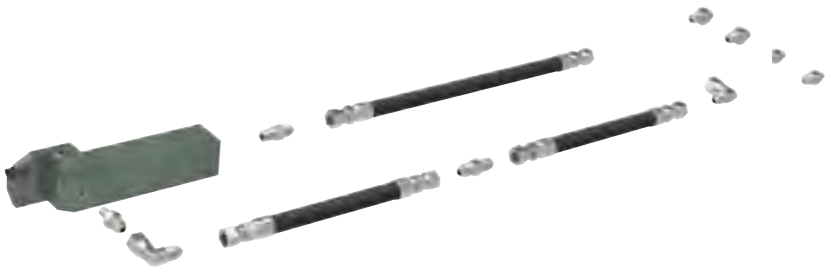
** Max pressure for seat size 02 holders is 200 bar/2901 psi.*

WGC

WGC Coolant Supply

Individual Kit Component List

order number	catalog number	description
6145374	1-16NPTF-JIC	Straight fitting, 1/16 NPTF male thread to JIC male thread
6145375	1-8NPTF-JIC	Straight fitting, 1/8 NPTF male thread to JIC male thread
6145378	M8X1.25-JIC	Straight fitting, M8 x 1.25 male thread to JIC male thread
6475041	M8X1-JIC	Straight fitting, M8 x 1.0 male thread to JIC male thread
6145376	G18-JIC	Straight fitting, G 1/8 male thread to JIC male thread
6145377	M10X1.5-JIC	Straight fitting, M10 x 1.5 male thread to JIC male thread
6145379	JICM-JICF-ELB	Elbow fitting, male JIC thread to female JIC thread
6145380	COOL-HOSE-200-HD	Heavy Duty 200mm Coolant hose with JIC female fitting both ends
6145381	COOL-HOSE-300-HD	Heavy Duty 300mm Coolant hose with JIC female fitting both ends
6432549	COOL-HOSE-200-FLEX	Flexible braided 200mm Coolant hose with JIC female fitting both ends
6432550	COOL-HOSE-300-FLEX	Flexible braided 300mm Coolant hose with JIC female fitting both ends
6475043	M8X1-BAN-JIC-HOSE-200	Flexible braided 200mm Coolant hose, M8 x 1.0 male thread to JIC female thread. Contains (1) M8x1.0 banjo bolt and (2) M8 bonded washers
6475045	G18-BAN-JIC-HOSE-200	Flexible braided 200mm Coolant hose, G 1/8 male thread to JIC female thread. Contains (1) G 1/8 banjo bolt and (2) G 1/8 bonded washers
6475047	M8X1-BAN-JIC-HOSE-300	Flexible braided 300mm Coolant hose, M8 x 1.0 male thread to JIC female thread. Contains (1) M8x1.0 banjo bolt and (2) M8 bonded washers
6475049	G18-BAN-JIC-HOSE-300	Flexible braided 300mm Coolant hose, G 1/8 male thread to JIC female thread. Contains (1) G 1/8 banjo bolt and (2) G 1/8 bonded washers



Coolant Accessories

The items shown below are not part of any coolant kits shown on previous pages.

order number	catalog number	description
6145382	M6X1-JIC	Straight fitting, M6 x 1.0 male thread to JIC male thread
6145383	JICM-JICM-STR	Straight fitting, JIC male thread to JIC male thread
6145386	G14-G18-RED	Straight fitting, G 1/4 male thread to G 1/8th male thread
6475058	R18-JIC	Straight fitting, 1/8 BSPT male thread to JIC male thread
6475059	R14-JIC	Straight fitting, 1/4 BSPT male thread to JIC male thread

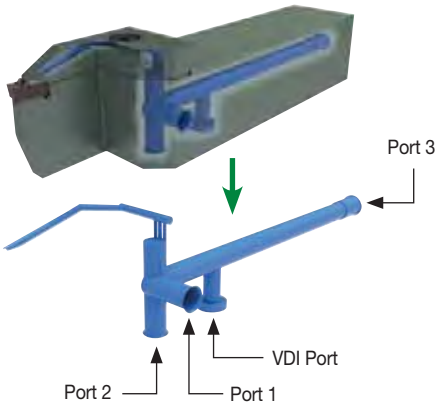
Coolant Spare Parts

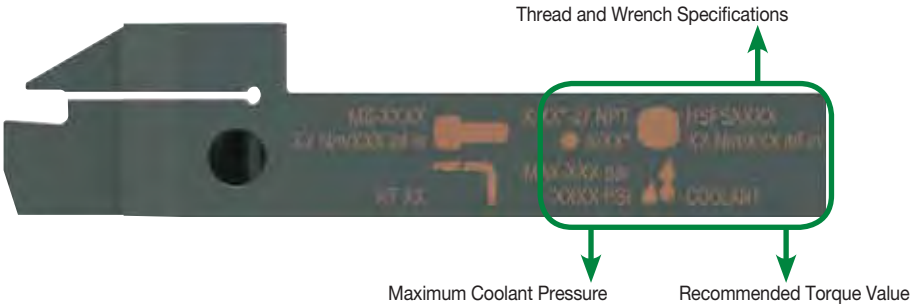
Included in kits; part of components.

order number	catalog number	description
6475051	M8X1-BAN-BOLT	Banjo bolt, M8 x 1.0 male thread
6475053	G18-BAN-BOLT	Banjo bolt, G1/8 male thread
6475060	M6-BON-WASHER	M6 bonded washer
6475055	M8-BON-WASHER	M8 bonded washer
6475061	M10-BON-WASHER	M10 bonded washer
6475056	G18-BON-WASHER	G 1/8 bonded washer

Internal Coolant Delivery Guidelines

1. WGC system capable of 5076 psi (350 bar).
2. Toolholder delivered with four entry holes.
3. A quality filtration system is necessary to prevent blockages in the toolholder that will affect coolant flow and performance.
4. Machines without a proper filtering system may require modification or an inline filter.
    - For pressure >1015 psi [70 bar], use 10–20 µm filter.
    - For pressure <1015 psi [70 bar], 50–100 µm.
    - Using fine filters in low-pressure applications may affect flow rate.





General Safety Guidelines

1. All safety doors and mechanisms must be in place before trying out the internal coolant to avoid any danger to the operator in the event of a failure.
2. Use the correct pipe fittings to connect the holders to the system. Ensure the maximum pressure recommended for the fittings are not exceeded.
3. While implementing pressure >1160 psi [80 bar], increase the pressure in steps to ensure proper functioning of insert clamping and leak-free joints.
4. While indexing inserts, ensure the pocket is free from chips and/or dirt. Also, inspect the insert and make sure there are no blockages in the coolant canal.
5. Periodically check all hoses and fittings for damage and wear for proper functioning of the system. This check should also include filters.

Internal Coolant Delivery Performance

Internal coolant offers a clear advantage in tool life and chip forming/evacuation vs. external coolant in difficult conditions and in high-pressure coolant.

Example: Chipbreaking in plunging of steel.

Flood Coolant	Internal Coolant	
		
Material steel ST52; Insert size 6mm; f = 0,25 mm/U	1,087 psi (75 bar)	2,900 psi (200 bar)

Low Pressure — If performance is at risk due to low coolant pressure, apply internal coolant in combination with external coolant to increase volume.

Recommendation to improve tool life and/or productivity: Apply high pressure coolant: 80–350 bar recommended.

VDI Assemblies

The WGC internal coolant delivery can be leveraged with VDI holding systems with both traditional or Quick-Change coolant connections.

Informational Icons Guide

Indexable Milling Icons

 Counterboring	 Spiral Circular	 Face Milling	 Helical Milling	 Plunge Milling
 Ramping	 Slotting: Square End	 Side Milling/ Shoulder Milling: Square End	 3D Profiling: Inclined Square End Mill	 Pocketing
 Weldon® Shank	 Shell Mill	 Through Coolant		

Solid End Milling Icons

 Ramping: Blank	 Slotting: Square End	 Slotting: Square End with AP Dimension	 Side Milling/ Shoulder Milling: Square End	 Side Milling/ Shoulder Milling: Square End with AE/AP Dimension
 3D Profiling	 3D Profiling: 3D Profiling with AE/AP Dimensions	 Corner Style: Corner Radius	 Corner Style: Square End	 Corner Style: Torus
 Cylindrical/Plain Shank	 Helix Angle: 20°	 Helix Angle: 45°	 Tool Dimensions: Flute Configuration: X (Variable)	 Tool Dimensions: Flute Configuration: 2
 Tool Dimensions: Flute Configuration: 6				

Holemaking Icons

 Drilling	 Drilling: Inclined Entry	 Drilling: Inclined Exit	 Drilling: X-Offset	 Drilling: Stacked Plates
 Drilling: Convex	 Drilling: Blind	 Chain Drilling	 Drilling: Cross Hole	 Drilling: Half Cylinder
 Drilling: Corner Drilling 45°	 Drilling Depth: 3x	 Drilling Depth: 5x	 Drilling Depth: 8x	 Flat Shank
 SSF Shank	 Through Coolant: Radial: Drilling	 Through Coolant: Radial: Indexable Drilling	 Tool Dimensions: 2-Flute/2-Margin/ Coolant	

Informational Icons Guide

Turning Icons

 Turning	 Profiling	 Facing	 Face Grooving	 Chamfering
 Grooving	 Cut-off	 Deep Grooving	 Through Coolant: Grooving	

Tapping Icons

 Threading: Through Hole	 HSS-E: High-Speed Steel with Cobalt Alloy for Materials with Higher Hardness	 Chamfer Form B (3.5–5.5)	 Multipurpose Taps: Spiral Point	 Unified Fine Thread
 Unified Course Thread	 ANSI	 Flood Coolant: Tapping		

DIN — German Institute for Standardization
ISO — International Standardization Organization

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Germany	German	0800 1015774	0911-9735-429*	eu.techsupport@widia.com
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USA	English	888 539 5145	001-724-539-6830 *	na.techsupport@widia.com

*Noted phone and fax numbers are not toll free.

Material Overview • ANSI

ANSI

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

material group	description	content	tensile strength RM (MPa)*	hardness (HB)	hardness (HRC)	material number
P0	Low-Carbon Steels, Long Chipping	C <0,25%	<530	<125	–	A36, 1008, 1010, 1018 through 1029; 1108, 1117
P1	Low-Carbon Steels, Short Chipping, Free Machining	C <0,25%	<530	<125	–	10L18, 1200 Series, 1213, 12L14
P2	Medium- and High-Carbon Steels	C >0,25%	>530	<220	<25	1035, 1045, 10L45, 1050, 10L50, 1080, 1137, 1144, 11L44, 1525, 1545, 1572
P3	Alloy Steels and Tool Steels	C >0,25%	600–850	<330	<35	1300, 2000, 3000, 4000, 5000, 8000, P20, SAE: A, D, H, O, S, M, T
P4	Alloy Steels and Tool Steels	C >0,25%	850–1400	340–450	35–48	1300, 2000, 3000, 4000, 5000, 8000, P20, SAE: A, D, H, O, S, M, T
P5	Ferritic, Martensitic, and PH Stainless Steels	–	600–900	<330	<35	15–5 PH, 13–8 PH, 17–4 PH, 400 and 500 Series
P6	High-Strength Ferritic, Martensitic, and PH Stainless Steels	–	900–1350	350–450	35–48	15–5 PH, 13–8 PH, 17–4 PH, 400 and 500 Series
M1	Austenitic Stainless Steel	–	<600	130–200	–	200 Series, 301, 302, 304, 304L, 309
M2	High-Strength Austenitic Stainless and Cast Stainless Steels	–	600–800	150–230	<25	310, 316, 316L, 321, 347, 384 ASTM Cast XM-1, XM-5, XM-7, XM-21
M3	Duplex Stainless Steel	–	<800	135–275	<30	323, 329, F55, 2205, S329000
K1	Gray Cast Iron	–	125–500	120–290	<32	class 20, 25, 30, 35, 40, 45, 50, 55, 60, G1800, G3000, G3500, G4000
K2	Low- and Medium-Strength Ductile Irons (Nodular Irons) and Compacted Graphite Irons (CGI)	–	<600	130–260	<28	60-40-18, 65-45-12, 80-55-06, SAE J434:D4018, D4512, D5506, ASTM A47: Grade 32510, 35018, SAE J158: Grade M3210, M4504, M5003, M5503, M7002, ASTMA842: Grade 250, 300, 350, 400, 450
K3	High-Strength Ductile Irons and Austempered Ductile Iron (ADI)	–	>600	180–350	<43	ASTM A536:100-70-03, 120-90-02, SAE J434: D7003, SAE J158: Grade M8501AST A897: 125-80-10, 150-100-7, 175-125-4, 200-150-1, 230-185
N1	Wrought Aluminum	–	–	–	–	2025, 5050, 7050, 1000, 2017
N2	Low-Silicon Aluminum Alloys and Magnesium Alloys	Si <12,2%	–	–	–	2024, 6061, 7075
N3	High-Silicon Aluminum Alloys and Magnesium Alloys	Si >12,2%	–	–	–	–
N4	Copper-, Brass-, Zinc-Based on Machinability Index Range of 70–100	–	–	–	–	C81500
N5	Nylon, Plastics, Rubbers, Phenolics, Resins, Fiberglass	–	–	–	–	–
N6	Carbon, Graphite Composites, CFRP	–	–	–	–	Graphite, CFK, CFRP
N7	Metal Matrix Composites (MMC)	–	–	–	–	C63000
S1	Iron-Based, Heat-Resistant Alloys	–	500–1200	160–260	25–48	A-286, INCOLOY® 800 Series, A608, A567, Discaloy™, INVAR®, N-155, 16-25-6, 19-9 DL; Cast: ASTM A-297, A-351, A-567, A-608
S2	Cobalt-Based, Heat-Resistant Alloys	–	1000–1450	250–450	25–48	Haynes® 25 (L605), Haynes 188, J-1570, Stellite®, AiResist 213; Cast: AiResist 13, Haynes 21, MAR-M302, MAR-M509, NASA Co-W-Re, WI-52
S3	Nickel-Based, Heat-Resistant Alloys	–	600–1700	160–450	<48	Astroloy™, Hastelloy® B/C/ C-276 /X, INCONEL® 600 and 700 Series, IN102, INCOLOY 900 Series, Rene 41, Waspalloy®, Monel®, K-500, MAR-M20, NIMONIC®, UDIMET®
S4	Titanium and Titanium Alloys	–	900–1600	300–400	33–48	Pure: Ti 98.8, Ti 98.9,Ti 99.9; Alloyed: Ti 5Al-2.5Sn, Ti6Al-4V, Ti6Al-2Sn-4Zr-2Mo, Ti-3Al-8V-6Cr-4Mo-4Zr, Ti-10V-2Fe-3Al, Ti-13V-11Cr-3Al
H1	Hardened Materials	–	–	–	44–48	Tool Steel H10, H11, H13, D2, D3, 4340, P20
H2	Hardened Materials	–	–	–	48–55	Tool Steel H10, H11, H13, D2, D3, 4340, P20
H3	Hardened Materials	–	–	–	56–60	Tool Steel H10, H11, H13, D2, D3, 4340, P20
H4	Hardened Materials	–	–	–	>60	Tool Steel H10, H11, H13, D2, D3, 4340, P20

Material Overview • DIN

DIN

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

material group	description	content	tensile strength RM (MPa)*	hardness (HB)	hardness (HRC)	material number
P0	Low-Carbon Steels, Long Chipping	C <0,25%	<530	<125	–	–
P1	Low-Carbon Steels, Short Chipping, Free Machining	C <0,25%	<530	<125	–	C15, Ck22, ST37-2, S235JR, 9SMnPb28, GS38
P2	Medium- and High-Carbon Steels	C >0,25%	>530	<220	<25	ST52, S355JR, C35, GS60, Cf53
P3	Alloy Steels and Tool Steels	C >0,25%	600–850	<330	<35	16MnCr5, Ck45, 21CrMoV5-7, 38SMn28
P4	Alloy Steels and Tool Steels	C >0,25%	850–1400	340–450	35–48	100Cr6, 30CrNiMo8, 42CrMo4, C70W2, S6525, X120Mn12
P5	Ferritic, Martensitic, and PH Stainless Steels	–	600–900	<330	<35	100Cr6, 30CrNiMo8, 42CrMo4, C70W2, S6525, X120Mn12
P6	High-Strength Ferritic, Martensitic, and PH Stainless Steels	–	900–1350	350–450	35–48	X102CrMo17, G-X120Cr29
M1	Austenitic Stainless Steel	–	<600	130–200	–	X5CrNi 18 10, X2CrNiMo 17 13 2, G-X25CrNiSi18 9, X15CrNiSi 20 12
M2	High-Strength Austenitic Stainless and Cast Stainless Steels	–	600–800	150–230	<25	X2CrNiMo 13 4, X5NiCr 32 21, X5CrNiNb 18 10, G-X15CrNi 25-20
M3	Duplex Stainless Steel	–	<800	135–275	<30	X8CrNiMo27 5, X2CrNiMoN22 5 3, X20CrNiSi25 4, G-X40CrNiSi27 4
K1	Gray Cast Iron	–	125–500	120–290	<32	GG15, GG25, GG30, GG40, GTW40
K2	Low- and Medium-Strength Ductile Irons (Nodular Irons) and Compacted Graphite Irons (CGI)	–	<600	130–260	<28	GGG40, GTS35
K3	High-Strength Ductile Irons and Austempered Ductile Iron (ADI)	–	>600	180–350	<43	GGG60, GTW55, GTS65
N1	Wrought Aluminum	–	–	–	–	AlMg1, Al99.5, AlCuMg1, AlCuBiPb, AlMgSi1, ALMgSiPb
N2	Low-Silicon Aluminum Alloys and Magnesium Alloys	Si <12,2%	–	–	–	GAlSiCu4, GDAlSi10Mg
N3	High-Silicon Aluminum Alloys and Magnesium Alloys	Si >12,2%	–	–	–	G-ALSi12, G-AlSi17Cu4, G-AlSi21CuNiMg
N4	Copper-, Brass-, Zinc-Based on Machinability Index Range of 70–100	–	–	–	–	CuZn40, Ms60, G-CuSn5ZnPb, CuZn37, CuSi3Mn
N5	Nylon, Plastics, Rubbers, Phenolics, Resins, Fiberglass	–	–	–	–	Lexan®, Hostalen™, Polystyrol, Makralon®
N6	Carbon, Graphite Composites, CFRP	–	–	–	–	CFK, GFK
N7	Metal Matrix Composites (MMC)	–	–	–	–	–
S1	Iron-Based, Heat-Resistant Alloys	–	500–1200	160–260	25–48	X1NiCrMoCu32 28 7, X12NiCrSi36 16, X5NiCrAlTi31 20, X40CoCrNi20 20
S2	Cobalt-Based, Heat-Resistant Alloys	–	1000–1450	250–450	25–48	Haynes® 188, Stellite® 6,21,31
S3	Nickel-Based, Heat-Resistant Alloys	–	600–1700	160–450	<48	INCONEL® 690, INCONEL 625, Hastelloy®, Nimonic® 75
S4	Titanium and Titanium Alloys	–	900–1600	300–400	33–48	Ti1, TiAl5Sn2, TiAl6V4, TiAl4Mo4Sn2
H1	Hardened Materials	–	–	–	44–48	GX260NiCr42, GX330NiCr42, GX300CrNiSi952, GX300CrMo153, Hardox® 400
H2	Hardened Materials	–	–	–	48–55	–
H3	Hardened Materials	–	–	–	56–60	–
H4	Hardened Materials	–	–	–	>60	–

Notes

Notes

Notes

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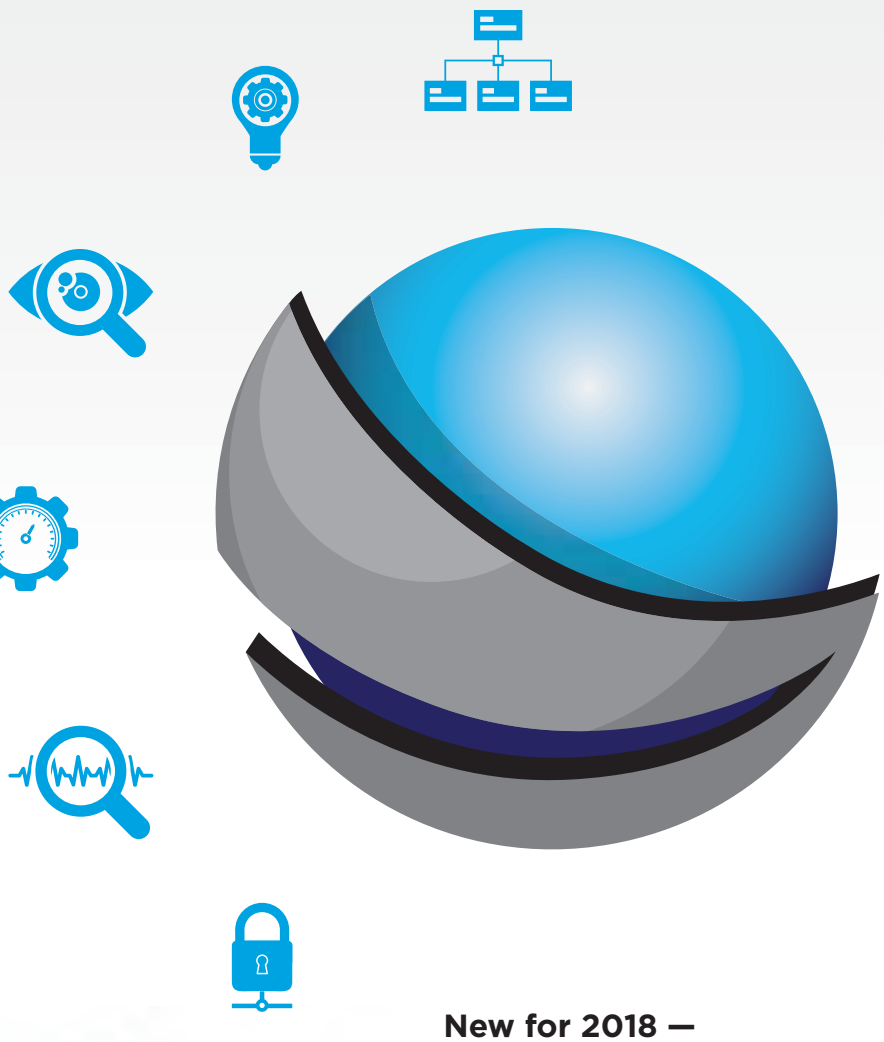

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IMPORTANT SAFETY INSTRUCTIONS: READ BEFORE USING THE TOOLS IN THIS CATALOG

METALCUTTING SAFETY

Projectile and Fragmentation Hazards

Modern metalcutting operations involve high spindle and cutter speeds and high temperatures and cutting forces. Hot metal chips may fly off the workpiece during metalcutting. Although cutting tools are designed and manufactured to withstand high cutting forces and temperatures, they can sometimes fragment, particularly if they are subjected to over-stress, severe impact, or other abuse.

To avoid injury:

- Always wear appropriate personal protective equipment, including safety goggles, when operating metalcutting machines or working nearby.
- Always make sure all machine guards are in place.

Breathing and Skin Contact Hazards

Grinding carbide or other advanced cutting tool materials produces dust or mist containing metallic particles. Breathing this dust or mist — especially over an extended period — can cause temporary or permanent lung disease or make existing medical conditions worse. Contact with this dust or mist can irritate eyes, skin, and mucous membranes and may make existing skin conditions worse.

To avoid injury:

- Always wear breathing protection and safety goggles when grinding.
- Provide ventilation control and collect and properly dispose of dust, mist, or sludge from grinding.
- Avoid skin contact with dust or mist.

For more information, read the applicable Material Safety Data Sheet provided by WIDIA and consult General Industry Safety and Health Regulations, Part 1910, Title 29 of the Code of Federal Regulations.

These safety instructions are general guidelines. Many variables affect machining operations. It is impossible to cover every specific situation. The technical information included in this catalog and recommendations on machining practices may not apply to your particular operation.

For more information, consult the WIDIA Metalcutting Safety booklet, available free from WIDIA at +1 724 539 5747 or fax +1 724 539 5439. For specific product safety and environmental questions, contact our Corporate Environmental Health and Safety Office at +1 724 539 5066 or fax +1 724 539 5372.

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