WIDIA

GTD

Holemaking

New Products

Our latest metalcutting advances are designed to deliver higher productivity, longer tool life, and increased application versatility compared with your current tooling.

VICTORY

Victory™ GX Series Taps

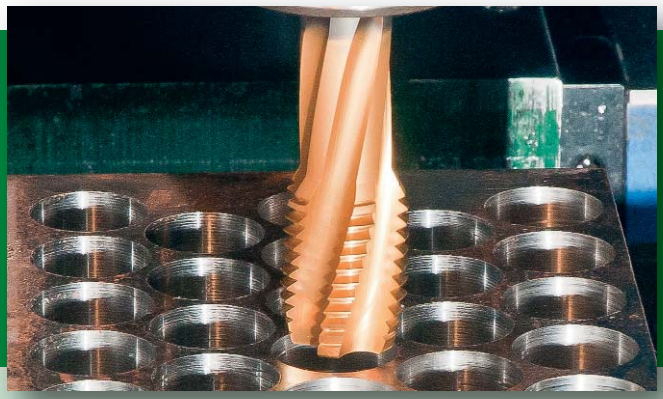
- Our best-performing, high-precision solid carbide taps.
- Run up to 4x faster and last up to 4x longer than conventional high-speed steel taps.
- Precision design delivers more accurately tapped holes.
- Cutting taps can be factory reconditioned to original patented specifications and tolerances.

VICTORY

Victory GT Series Taps

- New generation of high-performance, high-speed steel powdered-metal taps for material-specific tapping applications.
- Optimum combination of grades, geometries, and coatings to deliver higher quality threads and longer tool life.
- Boost your productivity with our unique, highly wear-resistant powder-metal substrate, modified with a higher than standard cobalt content for greater heat resistance.

For more information about the latest products and services from WIDIA, please contact your WIDIA Representative or Authorized WIDIA Distributor, or visit www.widia.com.



VICTORY

Victory™ GT Series Wind Taps

- New high-performance, large-sized HSS-E-PM taps.
- Developed for manufacturing important wind turbine components like hubs, rings, and gearbox housing.
- For both conventional non-rigid and CNC-synchronous tapping machines.
- Can be used with precision round- or square-drive toolholders.
- An extra-long version is also available.

VICTORY

Victory GTM Series Thread Mills

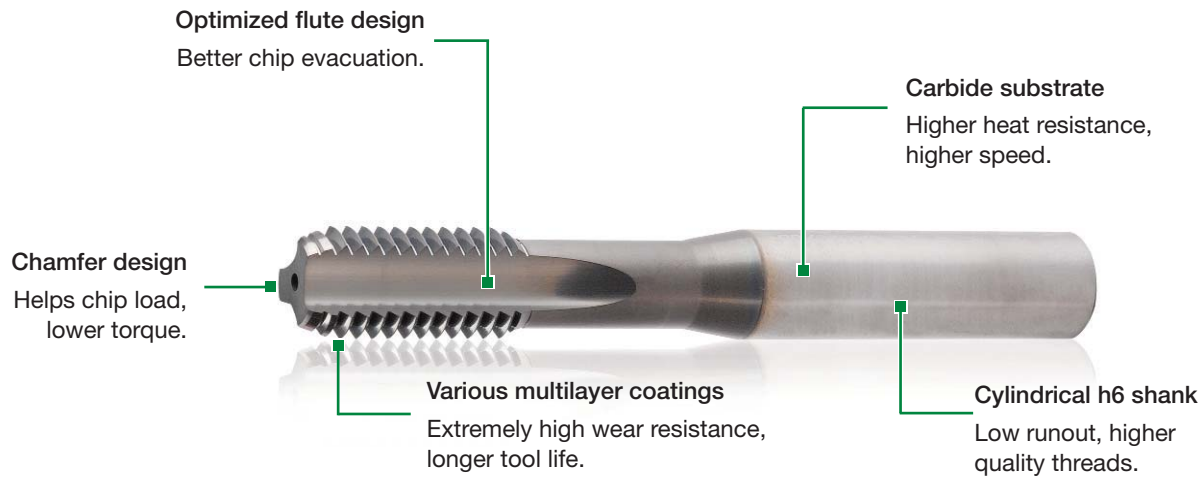
- The new high-performance solid thread mills program is designed for maximum performance and reliability.
- Internal or external thread on 3-axis CNC machining.
- Produce thread on broad range of materials up to 63 HRC.
- GTM31 and GTM41 can drill the hole, countersink the hole, and cut the thread all at the same time, resulting in shorter cycle time and fewer tool changes.
- Short chips enable better evacuation and secure performance.

High-Performance Solid Carbide Taps

Solid carbide taps for high productivity and outstanding performance in a wide range of workpiece materials.

WIDIA-GTD™

- High performance to surpass competitive taps.
- More production from a single tool.
- Available in various specifications.



Advanced WIDIA™ Technology

- Manufactured with fine-grain micrograin carbide for exceptional wear life.
- Ideal for long production runs where fewer tool changes mean greater productivity.
- Designed for outstanding tool life in steel, cast iron, aluminum, and hardened materials.

Features

- Runs 5x faster and lasts 4x longer than conventional taps.
- Enhanced tap precision and design.
- Tap runout less than 10 microns (.0004").
- PVD nanolayer TiAlN/TiN coated carbide grade.
- Custom solutions available upon request.

Benefits

- Superior accuracy of product thread.
- Excellent thread quality and tap performance.
- High edge strength and wear resistance.
- Maximum chip control and free cutting in through holes.
- Can be factory reconditioned to original specifications and tolerances.

Application Information

- For use on CNC machines with synchronous or rigid tapping control and precision toolholders.
- Straight-flute taps for sizes M16 and larger for ductile or cast iron.
- Use with machining centers equipped with precise and rigid hydraulic, shrink fit, or precision collet toolholders.

Victory™ GX Series HP Solid Carbide Taps and Solid Carbide Forming Taps • Metric

★ Good
★★ Better
★★★ Best

GX Series High-Performance Solid Carbide Taps	series	size range (inch and metric) size min - max	hole	chamfer form	coolant	grade	shank
	GX32	M6 - M16	★★★	★★★	★★★	GP4535	6535 HA
	GX33	M6 - M16	★★★	★★	★★★	GP4535	6535 HA
	GX34	M4 - M20	★★★	★★	★★★	GP4535	6535 HA
	GX35	M4 - M16	★★★	★★	★★★	GP4535	6535 HA
	GX46	M6 - M16	★★★	★★★	★★★	GN1515	6535 HA
	GX47	M6 - M16	★★★	★★	★★★	GN1515	6535 HA
	GX10	M3 - M16	★★★	★★	★★★	WH16PG	DIN371,374,376
GX Series High-Performance Solid Carbide Forming Taps							
	GX38	M4 - M10	★★★	★★★	★★★	GP4535	6535 HA
	GX48	M4 - M12	★★★	★★★	★★★	GN1515	6535 HA
	GX39	M4 - M10	★★★	★★	★★★	GP4535	6535 HA
	GX49	M4 - M12	★★★	★★	★★★	GN1515	6535 HA

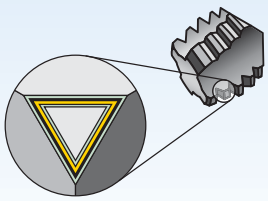
Victory GX Series HP Solid Carbide Taps and Solid Carbide Forming Taps • Inch

★ Good
★★ Better
★★★ Best

GX Series High-Performance Solid Carbide Taps	series	size range (inch and metric) size min - max	hole	chamfer form	coolant	grade	shank
	GX32	1/4" - 5/8"	★★★	★★★	★★★	GP4535	6535 HA
	GX33	1/4" - 5/8"	★★★	★★	★★★	GP4535	6535 HA
	GX34	#6 - 3/4"	★★★	★★	★★★	GP4535	6535 HA
	GX35	#6 - 3/4"	★★★	★★	★★★	GP4535	6535 HA
	GX46	1/4" - 5/8"	★★★	★★★	★★★	GN1515	6535 HA
	GX47	1/4" - 5/8"	★★★	★★	★★★	GN1515	6535 HA
GX Series High-Performance Solid Carbide Forming Taps							
	GX38	#6 - 3/8"	★★★	★★★	★★★	GP4535	6535 HA
	GX48	#6 - 1/2"	★★★	★★★	★★★	GN1515	6535 HA
	GX39	#6 - 3/8"	★★★	★★	★★★	GP4535	6535 HA
	GX49	#6 - 1/2"	★★★	★★	★★★	GN1515	6535 HA

P				M	K		N			S				H		Page	Recommended Cutting Parameters
1, 2, 3, 4, 6, 7	5, 9, 10, 11	12, 13.1	13.2	14.1, 14.2, 14.3, 14.4	15, 16, 17, 18, 19	20	21	22, 23, 24, 25	26, 27, 28	31, 32	33, 34, 35	36	37	38.1, 38.2, 40.1, 40.2, 41.1	39.1, 41.2		
Steel <35 HRC	Steel 36–48 HRC	PH & Ferritic Stainless Steel <35 HRC	PH & Ferritic Stainless Steel >35 HRC	Stainless Steel	Cast Iron		Wrought Aluminum	Cast Aluminum	Copper, Copper Alloys	Iron Based	Cobalt Based	Nickel Based	Titanium & Alloys	Hardened Steel 49–55 HRC	Hardened Steel 56–68 HRC		
★★★					★	★										A12	A23
★★★					★	★										A13	A23
					★★★	★★★										A14	A23
					★★★	★★★										A15	A23
								★★★								A18	A23
								★★★								A19	A23
															★★★	A22	A23
★★★																A16	A23
							★★★	★★								A20	A23
★★★																A17	A23
							★★★	★★								A21	A23

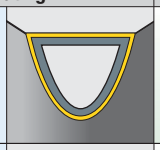
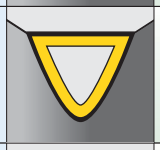
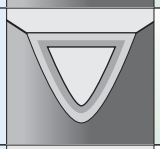
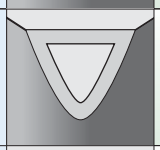
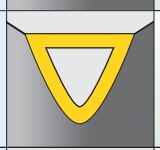
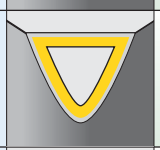
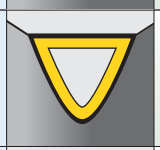
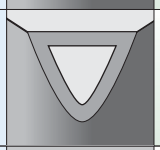
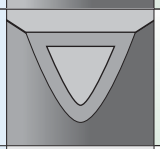
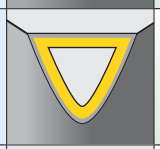
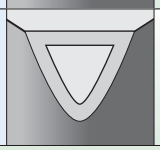
P				M	K		N			S				H		Page	Recommended Cutting Parameters
1, 2, 3, 4, 6, 7	5, 9, 10, 11	12, 13.1	13.2	14.1, 14.2, 14.3, 14.4	15, 16, 17, 18, 19	20	21	22, 23, 24, 25	26, 27, 28	31, 32	33, 34, 35	36	37	38.1, 38.2, 40.1, 40.2, 41.1	39.1, 41.2		
Steel <35 HRC	Steel 36–48 HRC	PH & Ferritic Stainless Steel <35 HRC	PH & Ferritic Stainless Steel >35 HRC	Stainless Steel	Cast Iron		Wrought Aluminum	Cast Aluminum	Copper, Copper Alloys	Iron Based	Cobalt Based	Nickel Based	Titanium & Alloys	Hardened Steel 49–55 HRC	Hardened Steel 56–68 HRC		
★★★					★	★										A12	A23
★★★					★	★										A13	A23
					★★★	★★★										A14	A23
					★★★	★★★										A15	A23
								★★★								A18	A23
								★★★								A19	A23
★★★																A16	A23
							★★★	★★								A20	A23
★★★																A17	A23
							★★★	★★								A21	A23



Coatings are designed for optimized tapping performance in specific materials.

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

wear resistance ⟷ toughness

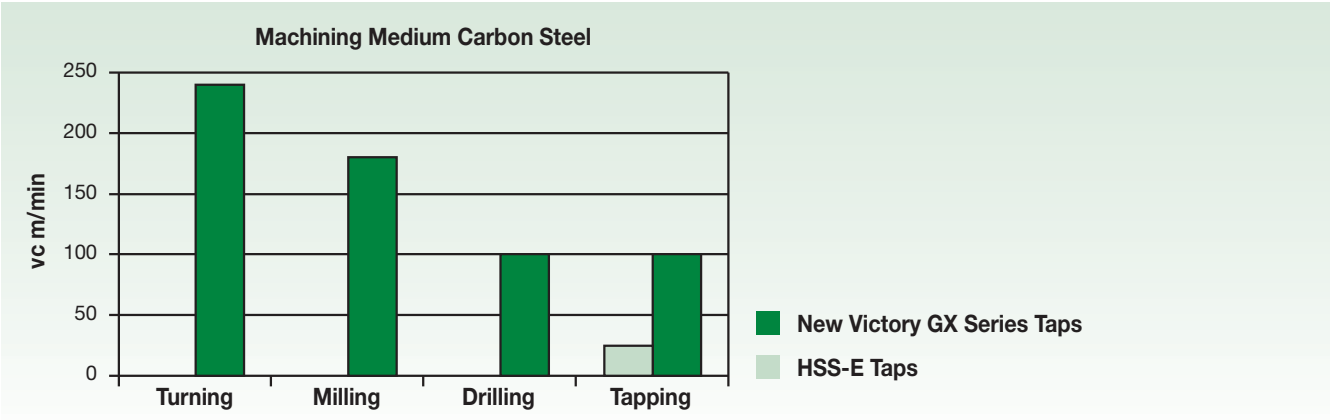
Coating	Grade	Grade Description	05	10	15	20	25	30	35	40	45
	GP4535	Coated carbide, PVD multilayer coating with TiAlN and TiN over a high-strength carbide substrate specifically designed for tap application. Use in steel up to 32 HRC and cast iron at four times faster speeds than HSS-E-PM taps.	P, K	P, K	P, K						
	GN1515	Coated carbide, PVD two-layer coating over fine-grain carbide. Coating consists of low-friction CrC/C over wear-resistant TiN. CrC/C resists galling of non-ferrous materials to the tap. Provides superior perfomance for tapping cast aluminum and other non-ferrous materials.	N	N	N						
NEW! 	WH16PG	Coated carbide, PVD two-layer coating with heat-resistant TiAlN base layer and low-friction MoS_2 top layer over carbide substrate. Use in hardened steel 55–63 HRC.				H	H	H			
NEW! 	GP6520	Coated HSS-E-PM, PVD heat- and wear-resistant high-vanadium cobalt powder metal HSS substrate coated with wear-resistant TiCN base layer. Use in steel, cast iron, and cast aluminum with silicon.	P, K	P, K	P, K	P	P, K	P, K	P, K		
NEW! 	WP31MG	Coated HSS-E-PM, PVD powder metal HSS-E substrate with TiN coating. Use for tapping steel 32–44 HRC and for forming threads in steel to 32 HRC.						P	P	P	
NEW! 	WH36MG	Coated HSS-E-PM, PVD powder metal HSS-E substrate coated with TiN base layer and low-friction MoS_2 top layer. Use in deep blind steel holes, 32–44 HRC.						P	P	P	
NEW! 	GM6515	Coated HSS-E-PM, PVD heat- and wear-resistant high-vanadium cobalt powder metal HSS substrate. Coating consists of low-friction CrC/C over wear-resistant TiN base layer. Use for tapping stainless steel and non-ferrous materials.	M, N	M, N	M, N	M	M	M, N	M, N	M, N	
NEW! 	WN38MG	Coated HSS-E-PM, PVD powder metal HSS-E substrate with DLC coating. Use for form tapping aluminum. Not recommended for steel.					N	N	N		
NEW! 	WN48EG	Coated HSS-E, PVD lower vanadium HSS-E substrate with DLC coating. Use for tapping non-ferrous materials with low cutting temperatures like wrought aluminum. Not recommended for steel.						N	N	N	
NEW! 	WN35MG	Coated HSS-E-PM, PVD powder metal HSS-E substrate with two-layer coating. TiN base layer and DLC top layer that resists galling of non-ferrous materials to the tap. Use for tapping titanium. Not recommended for steel.				S	S	S			
NEW! 	WS32MG	Coated HSS-E-PM, PVD heat- and wear-resistant high-vanadium cobalt powder metal HSS substrate with high-hardness TiCN coating. Use when tapping heat-treated steel 44–55 HRC and cobalt- or nickel-based heat-resistant alloys.						S, H	S, H	S, H	

WIN WITH WIDIA™

Victory™ GX HP Solid Carbide for the Ultimate High-Performance Tapping Line

Run up to 4x faster and last up to 4x longer than conventional high-speed steel taps.

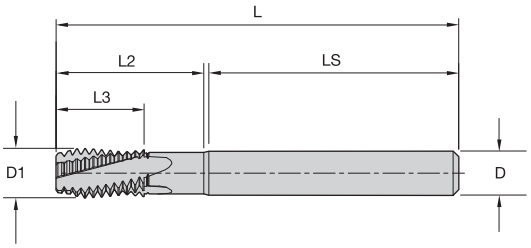
- Enhanced precision design delivers more accurately tapped holes.
- A full range of styles and grades for blind hole and through hole applications in ferrous and non-ferrous materials.
- After use, cutting taps can be factory reconditioned to original patented specifications and tolerances.



To learn more about our innovations, contact your local Authorized Distributor or visit **www.widia.com**.

WIDIA™

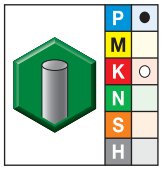
• GP4535 TiAlN + TiN for steel.



VICTORY

● first choice
○ alternate choice

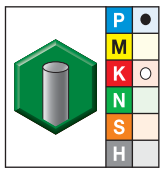
GX32 • Form D Plug Chamfer • Inch



Shank Tolerance	
D	Tolerance h6
.250–.375	+0, -.0004
.438–.625	+0, -.0004

GP4535	D1 size	L	L3	L2	LS	D	number of flutes	class of fit
12200	1/4 - 20	2.76	.59	.91	1.67	.2500	3	3BX
12201	1/4 - 28	2.76	.59	.91	1.67	.2500	3	3BX
12202	5/16 - 18	3.15	.67	1.10	1.85	.3125	3	3BX
12203	5/16 - 24	3.15	.67	1.10	1.85	.3125	3	3BX
12204	3/8 - 16	3.54	.75	1.30	2.01	.3750	4	3BX
12205	3/8 - 24	3.54	.75	1.30	2.01	.3750	4	3BX
12206	7/16 - 14	3.94	.87	1.42	2.26	.4375	4	3BX
12207	1/2 - 13	3.94	.94	1.58	2.08	.5000	4	3BX
12208	1/2 - 20	3.94	.94	1.58	2.08	.5000	4	3BX
12209	9/16 - 12	4.33	1.02	1.85	2.35	.5000	4	3BX
12210	5/8 - 11	4.33	1.10	2.09	2.09	.5625	5	3BX

GX32 • Form D Plug Chamfer • Metric

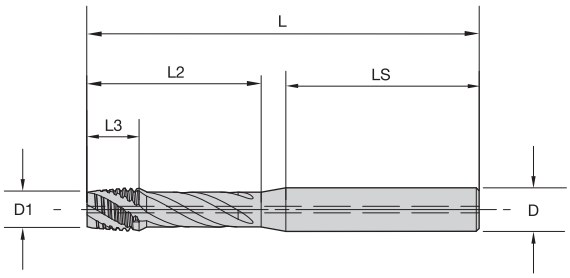


Shank Tolerance	
D	Tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

GP4535	D1 size	L	L3	L2	LS	D	number of flutes	class of fit
12225	M6 X 1	70	12	23	43	6,0	3	6HX
12226	M8 X 1,25	80	15	28	47	8,0	3	6HX
12227	M10 X 1,5	90	18	33	51	10,0	4	6HX
12228	M12 X 1,75	100	21	40	54	12,0	4	6HX
12229	M14 X 2	110	24	47	61	12,0	4	6HX
12230	M16 X 2	110	24	53	55	14,0	4	6HX

Proprietary technology.

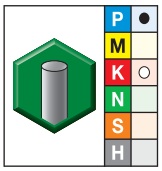
• GP4535 TiAlN + TiN for steel.



VICTORY

● first choice
○ alternate choice

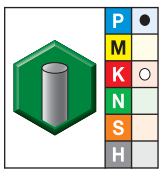
GX33 • Form C Semi-Bottoming Chamfer • Through Coolant • Inch



Shank Tolerance	
D	Tolerance h6
0.250–0.375	+0, -0.0004
0.438–0.625	+0, -0.0004

GP4535	D1 size	L	L3	L2	LS	D	number of flutes	class of fit
12761	1/4 - 20	2.76	.39	.94	1.63	.2500	3	3BX
12762	1/4 - 28	2.76	.39	.94	1.63	.2500	3	3BX
12763	5/16 - 18	3.15	.47	1.26	1.69	.3125	3	3BX
12764	3/8 - 16	3.54	.51	1.57	1.74	.3750	4	3BX
12765	7/16 - 14	3.94	.59	1.73	1.94	.4375	4	3BX
12766	1/2 - 13	3.94	.63	1.89	1.76	.5000	4	3BX
12767	9/16 - 12	4.33	.67	2.20	2.00	.5000	4	3BX
12768	5/8 - 11	4.33	.75	2.52	1.66	.5625	4	3BX

GX33 • Form C Semi-Bottoming Chamfer • Through Coolant • Metric

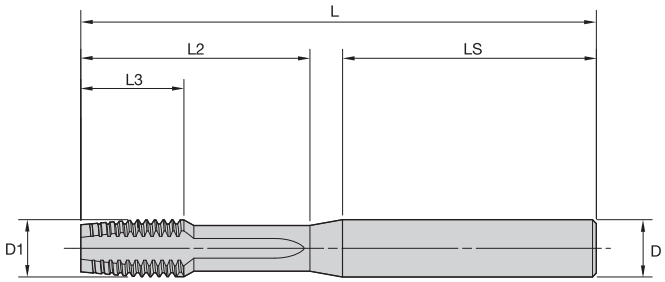


Shank Tolerance	
D	Tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

GP4535	D1 size	L	L3	L2	LS	D	number of flutes	class of fit
12781	M6 X 1	70	8	24	42	6,0	3	6HX
12782	M8 X 1,25	80	10	32	43	8,0	3	6HX
12783	M10 X 1,5	90	12	40	44	10,0	4	6HX
12784	M10 X 1	90	12	40	44	10,0	4	6HX
12786	M12 X 1,5	100	14	48	46	12,0	4	6HX
12785	M12 X 1,75	100	14	48	46	12,0	4	6HX
12788	M14 X 1,5	110	16	56	52	12,0	4	6HX
12787	M14 X 2	110	16	56	52	12,0	4	6HX
12789	M16 X 2	110	16	64	44	14,0	4	6HX

Proprietary technology.

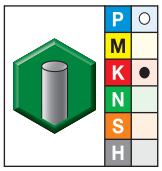
• GP4535 TiAlN + TiN for cast iron.



VICTORY

● first choice
○ alternate choice

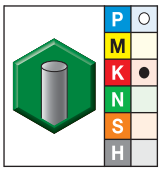
GX34 • Form D Plug Chamfer • Inch



Shank Tolerance	
D	Tolerance h6
0.250–0.375	+0, -0.0004
0.438–0.625	+0, -0.0004

GP4535	D1 size	L	L3	L2	LS	D	number of flutes	class of fit
12713	6 - 32	2.36	.28	.55	1.37	.2500	3	3BX
12714	8 - 32	2.36	.28	.63	1.37	.2500	3	3BX
12715	10 - 24	2.36	.35	.79	1.25	.2500	3	3BX
12716	10 - 32	2.36	.35	.79	1.25	.2500	3	3BX
12717	1/4 - 20	2.76	.59	.91	1.67	.2500	4	3BX
12718	1/4 - 28	2.76	.59	.91	1.67	.2500	4	3BX
12719	5/16 - 18	3.15	.67	1.10	1.85	.3125	4	3BX
12404	3/8 - 16	3.54	.75	1.30	2.01	.3750	4	3BX
12405	3/8 - 24	3.54	.75	1.30	2.01	.3750	4	3BX
12406	7/16 - 14	3.94	.87	1.42	2.26	.4375	4	3BX
12407	1/2 - 13	3.94	.94	1.58	2.08	.5000	4	3BX
12408	1/2 - 20	3.94	.94	1.58	2.08	.5000	4	3BX
12409	9/16 - 12	4.33	1.02	1.85	2.35	.5000	4	3BX
12410	5/8 - 11	4.33	1.10	2.09	2.09	.5625	5	3B
12411	3/4 - 10	4.92	1.22	2.48	2.42	.6250	5	3BX

GX34 • Form D Plug Chamfer • Metric

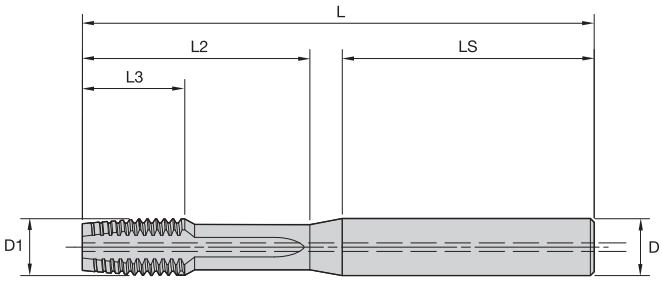


Shank Tolerance	
D	Tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

GP4535	D1 size	L	L3	L2	LS	D	number of flutes	class of fit
12742	M4 X 0,7	60	6	16	36	6,0	3	6HX
12743	M5 X 0,8	60	7	20	34	6,0	3	6HX
12744	M6 X 1	70	12	23	43	6,0	4	6HX
12745	M8 X 1,25	80	15	28	47	8,0	4	6HX
12427	M10 X 1,5	90	18	33	51	10,0	4	6HX
12746	M10 X 1	90	18	33	51	10,0	4	6HX
12747	M12 X 1,5	100	21	40	54	12,0	4	6HX
12428	M12 X 1,75	100	21	40	54	12,0	4	6HX
12429	M14 X 2	110	24	47	61	12,0	4	6HX
12748	M14 X 1,5	110	24	47	61	12,0	4	6HX
12430	M16 X 2	110	24	53	55	14,0	4	6HX
12431	M18 X 2,5	125	30	59	62	16,0	5	6HX
12432	M20 X 2,5	140	30	66	—	18,0	5	6HX

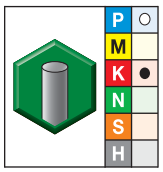
Proprietary technology.

• GP4535 TiAlN + TiN for tapping cast iron.



● first choice
○ alternate choice

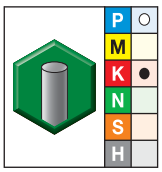
GX35 • Form E Bottoming Chamfer • Through Coolant 1/4" and Larger • Inch



Shank Tolerance	
D	Tolerance h6
.250–.375	+0, -.0004
.438–.625	+0, -.0004

GP4535	D1 size	L	L3	L2	LS	D	number of flutes	class of fit
12700	6 - 32	2.36	.28	.55	1.37	.2500	3	3BX
12701	8 - 32	2.36	.28	.63	1.37	.2500	3	3BX
12702	10 - 24	2.36	.35	.79	1.25	.2500	3	3BX
12703	10 - 32	2.36	.35	.79	1.25	.2500	3	3BX
12704	1/4 - 20	2.76	.59	.91	1.67	.2500	4	3BX
12705	1/4 - 28	2.76	.59	.91	1.67	.2500	4	3BX
12706	5/16 - 18	3.15	.67	1.10	1.85	.3125	4	3BX
12707	3/8 - 16	3.54	.75	1.30	2.01	.3750	4	3BX
12708	7/16 - 14	3.94	.87	1.42	2.26	.4375	4	3BX
12709	1/2 - 13	3.94	.94	1.57	2.08	.5000	4	3BX
12710	9/16 - 12	4.33	1.02	1.85	2.35	.5000	4	3BX
12711	5/8 - 11	4.33	1.10	2.09	2.09	.5625	5	3BX
12712	3/4 - 10	4.92	1.22	2.48	2.42	.6250	5	3BX

GX35 • Form E Bottoming Chamfer • Through Coolant M6 and Larger • Metric

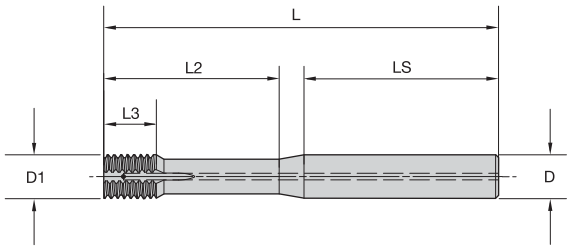


Shank Tolerance	
D	Tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

GP4535	D1 size	L	L3	L2	LS	D	number of flutes	class of fit
12731	M4 X 0,7	60	6	16	36	6,0	3	6HX
12732	M5 X 0,8	60	7	20	34	6,0	3	6HX
12733	M6 X 1	70	12	23	43	6,0	4	6HX
12734	M8 X 1,25	80	15	28	47	8,0	4	6HX
12736	M10 X 1	90	18	33	51	10,0	4	6HX
12735	M10 X 1,5	90	18	33	51	10,0	4	6HX
12738	M12 X 1,5	100	21	40	54	12,0	4	6HX
12737	M12 X 1,75	100	21	40	54	12,0	4	6HX
12740	M14 X 1,5	110	24	47	61	12,0	4	6HX
12739	M14 X 2	110	24	47	61	12,0	4	6HX
12741	M16 X 2	110	24	53	55	14,0	4	6HX

Proprietary technology.

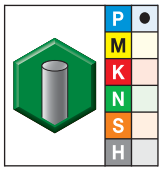
• GP4535 TiAlN + TiN for tapping steel.



VICTORY

● first choice
○ alternate choice

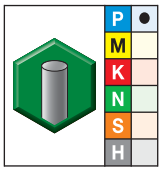
■ GX38 • Form D Plug Entry Taper • Through Coolant 1/4" and Larger • Inch



Shank Tolerance	
D	Tolerance h6
.250–.375	+0, -.0004
.438–.625	+0, -.0004

GP4535	D1 size	L	L3	L2	LS	D	number of lube grooves	class of fit
12809	6 - 32	2.36	.28	.55	1.37	.2500	2	3BX
12810	8 - 32	2.36	.28	.63	1.37	.2500	2	3BX
12811	10 - 24	2.36	.35	.79	1.25	.2500	2	3BX
12812	10 - 32	2.36	.35	.79	1.25	.2500	2	3BX
12813	1/4 - 20	2.76	.39	.95	1.63	.2500	2	3BX
12814	1/4 - 28	2.76	.39	.95	1.63	.2500	2	3BX
12815	5/16 - 18	3.15	.47	1.26	1.69	.3125	2	3BX
12816	3/8 - 16	3.54	.51	1.58	1.74	.3750	3	3BX

■ GX38 • Form D Plug Entry Taper • Coolant M6 and Larger • Metric

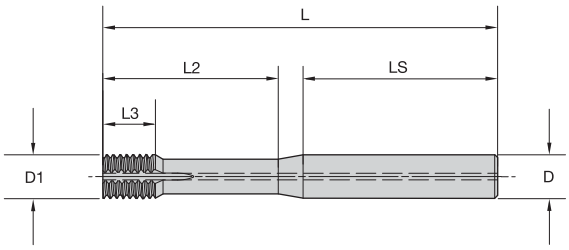


Shank Tolerance	
D	Tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

GP4535	D1 size	L	L3	L2	LS	D	number of lube grooves	class of fit
12831	M4 X 0,7	60	6	16	36	6,0	2	6HX
12832	M5 X 0,8	60	7	20	34	6,0	2	6HX
12833	M6 X 1	70	8	24	42	6,0	2	6HX
12834	M8 X 1,25	80	10	32	43	8,0	2	6HX
12835	M10 X 1,5	90	12	40	44	10,0	3	6HX

Proprietary technology.
Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps.

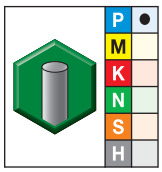
• GP4535 TiAlN + TiN for tapping steel.



VICTORY

● first choice
○ alternate choice

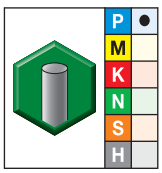
GX39 • Form E Bottoming Entry Taper • Through Coolant 1/4" and Larger • Inch



Shank Tolerance	
D	Tolerance h6
.250–.375	+0, -.0004
.438–.625	+0, -.0004

GP4535	D1 size	L	L3	L2	LS	D	number of lube grooves	class of fit
12801	6 - 32	2.36	.28	.55	1.37	.2500	2	3BX
12802	8 - 32	2.36	.28	.63	1.37	.2500	2	3BX
12803	10 - 24	2.36	.35	.79	1.25	.2500	2	3BX
12804	10 - 32	2.36	.35	.79	1.25	.2500	2	3BX
12805	1/4 - 20	2.76	.39	.95	1.63	.2500	2	3BX
12806	1/4 - 28	2.76	.39	.95	1.63	.2500	2	3BX
12807	5/16 - 18	3.15	.47	1.26	1.69	.3125	2	3BX
12808	3/8 - 16	3.54	.51	1.58	1.74	.3750	3	3BX

GX39 • Form E Bottoming Entry Taper • Through Coolant M6 and Larger • Metric

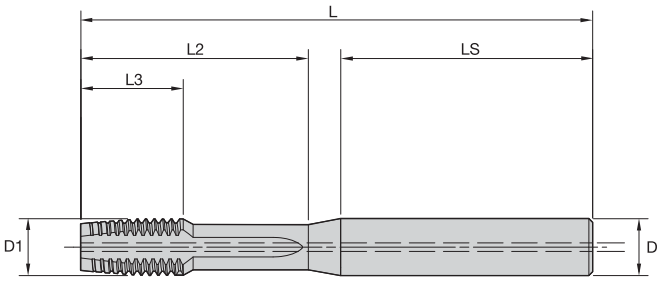


Shank Tolerance	
D	Tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

GP4535	D1 size	L	L3	L2	LS	D	number of lube grooves	class of fit
12826	M4 X 0,7	60	6	16	36	6,0	2	6HX
12827	M5 X 0,8	60	7	20	34	6,0	2	6HX
12828	M6 X 1	70	8	24	42	6,0	2	6HX
12829	M8 X 1,25	80	10	32	43	8,0	2	6HX
12830	M10 X 1,5	90	12	40	44	10,0	3	6HX

Proprietary technology.
Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps.

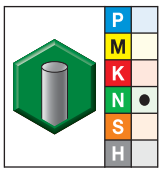
• GN1515 TiN + CrC/C for aluminum.



VICTORY

● first choice
○ alternate choice

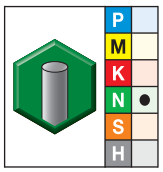
GX46 • Form D Plug Chamfer • Through Coolant 1/4" and Larger • Inch



Shank Tolerance	
D	Tolerance h6
.250–.375	+0, -.0004
.438–.625	+0, -.0004

GN1515	D1 size	L	L3	L2	LS	D	number of flutes	class of fit
12836	1/4 - 20	2.76	.59	.94	1.63	.2500	3	3BX
12838	1/4 - 28	2.76	.59	.94	1.63	.2500	3	3BX
12839	5/16 - 18	3.15	.67	1.26	1.69	.3125	3	3BX
12840	3/8 - 16	3.54	.75	1.57	1.74	.3750	3	3BX
12841	7/16 - 14	3.94	.87	1.73	1.94	.4375	3	3BX
12843	1/2 - 13	3.94	.94	1.89	1.76	.5000	3	3BX
12844	9/16 - 12	4.33	1.02	2.20	2.00	.5000	4	3BX
12845	5/8 - 11	4.33	1.10	2.52	1.66	.5625	4	3BX

GX46 • Form D Plug Chamfer • Through Coolant M6 and Larger • Metric

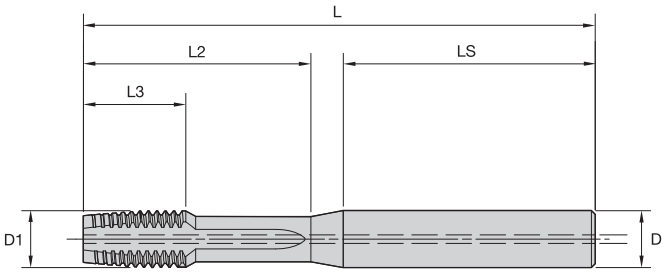


Shank Tolerance	
D	Tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

GN1515	D1 size	L	L3	L2	LS	D	number of flutes	class of fit
12846	M6 X 1	70	12	24	42	6,0	3	6HX
12847	M8 X 1,25	80	15	32	43	8,0	3	6HX
12848	M10 X 1,5	90	18	40	44	10,0	3	6HX
12850	M10 X 1	90	18	40	44	10,0	3	6HX
12852	M12 X 1,5	100	21	48	46	12,0	3	6HX
12851	M12 X 1,75	100	21	48	46	12,0	3	6HX
12854	M14 X 1,5	110	24	56	52	12,0	4	6HX
12853	M14 X 2	110	24	56	52	12,0	4	6HX
12856	M16 X 1,5	110	24	64	44	14,0	4	6HX
12855	M16 X 2	110	24	64	44	14,0	4	6HX

Proprietary technology.

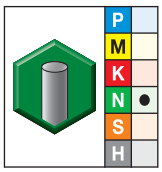
• GN1515 TiN + CrC/C for aluminum.



VICTORY

● first choice
○ alternate choice

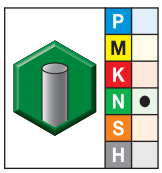
GX47 • Form E Bottoming Chamfer • Through Coolant • Inch



Shank Tolerance	
D	Tolerance h6
.250–.375	+0, -.0004
.438–.625	+0, -.0004

GN1515	D1 size	L	L3	L2	LS	D	number of flutes	class of fit
12858	1/4 - 20	2.76	.59	.94	1.63	.2500	3	3BX
12859	1/4 - 28	2.76	.59	.94	1.63	.2500	3	3BX
12860	5/16 - 18	3.15	.67	1.26	1.69	.3125	3	3BX
12861	3/8 - 16	3.54	.75	1.57	1.74	.3750	3	3BX
12862	7/16 - 14	3.94	.87	1.73	1.94	.4375	3	3BX
12863	1/2 - 13	3.94	.94	1.89	1.76	.5000	3	3BX
12864	9/16 - 12	4.33	1.02	2.20	2.00	.5000	4	3BX
12865	5/8 - 11	4.33	1.10	2.52	1.66	.5625	4	3BX

GX47 • Form E Bottoming Chamfer • Through Coolant • Metric

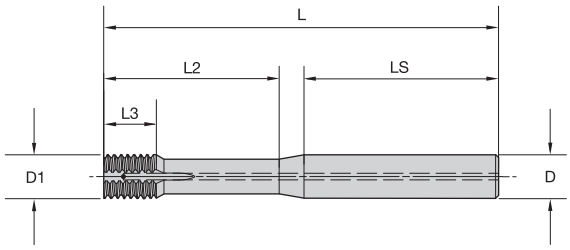


Shank Tolerance	
D	Tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

GN1515	D1 size	L	L3	L2	LS	D	number of flutes	class of fit
12866	M6 X 1	70	12	24	42	6,0	3	6HX
12867	M8 X 1,25	80	15	32	43	8,0	3	6HX
12868	M10 X 1,5	90	18	40	44	10,0	3	6HX
12869	M10 X 1	90	18	40	44	10,0	3	6HX
12872	M12 X 1,5	100	21	48	46	12,0	3	6HX
12870	M12 X 1,75	100	21	48	46	12,0	3	6HX
12874	M14 X 1,5	110	24	56	52	12,0	4	6HX
12873	M14 X 2	110	24	56	52	12,0	4	6HX
12876	M16 X 1,5	110	24	64	44	14,0	4	6HX
12875	M16 X 2	110	24	64	44	14,0	4	6HX

Proprietary technology.

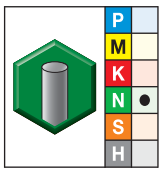
• GN1515 TiN + CrC/C for aluminum.



VICTORY

● first choice
○ alternate choice

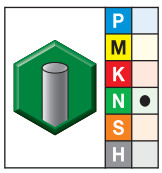
GX48 • Form D Plug Entry Taper • Through Coolant 1/4" and Larger • Inch



Shank Tolerance	
D	Tolerance h6
.250–.375	+0, -.0004
.438–.625	+0, -.0004

GN1515	D1 size	L	L3	L2	LS	D	number of lube grooves	class of fit
12877	6 - 32	2.36	.28	.55	1.37	.2500	2	3BX
12878	8 - 32	2.36	.28	.63	1.37	.2500	2	3BX
12879	10 - 24	2.36	.35	.79	1.25	.2500	2	3BX
12880	10 - 32	2.36	.35	.79	1.25	.2500	2	3BX
12881	1/4 - 20	2.76	.39	.94	1.63	.2500	2	3BX
12882	1/4 - 28	2.76	.39	.94	1.63	.2500	2	3BX
12883	5/16 - 18	3.15	.47	1.26	1.69	.3125	2	3BX
12884	3/8 - 16	3.54	.51	1.57	1.74	.3750	3	3BX
12885	7/16 - 14	3.94	.59	1.73	1.94	.4375	3	3BX
12886	1/2 - 13	3.94	.63	1.89	1.76	.5000	3	3BX

GX48 • Form D Plug Entry Taper • Coolant M6 and Larger • Metric

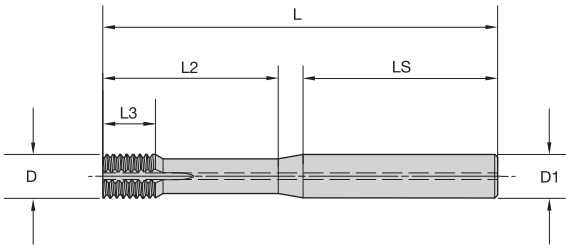


Shank Tolerance	
D	Tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

GN1515	D1 size	L	L3	L2	LS	D	number of lube grooves	class of fit
12887	M4 X 0,7	60	6	16	36	6,0	2	6HX
12888	M5 X 0,8	60	7	20	34	6,0	2	6HX
12889	M6 X 1	70	8	24	42	6,0	2	6HX
12890	M8 X 1,25	80	10	32	43	8,0	2	6HX
12891	M10 X 1,5	90	12	40	44	10,0	3	6HX
12892	M10 X 1	90	12	40	44	10,0	3	6HX
12894	M12 X 1,5	100	14	48	46	12,0	3	6HX
12893	M12 X 1,75	100	14	48	46	12,0	3	6HX

Proprietary technology.
Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps.

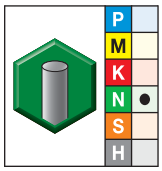
• GN1515 TiN + CrC/C for aluminum.



VICTORY

● first choice
○ alternate choice

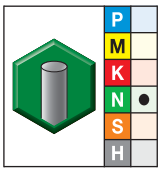
GX49 • Form E Bottoming Entry Taper • Through Coolant 1/4" and Larger • Inch



Shank Tolerance	
D	Tolerance h6
.250–.375	+0, -.0004
.438–.625	+0, -.0004

GN1515	D1 size	L	L3	L2	LS	D	number of lube grooves	class of fit
12895	6 - 32	2.36	.28	.55	1.37	.2500	2	3BX
12896	8 - 32	2.36	.28	.63	1.37	.2500	2	3BX
12897	10 - 24	2.36	.35	.79	1.25	.2500	2	3BX
12898	10 - 32	2.36	.35	.79	1.25	.2500	2	3BX
12899	1/4 - 20	2.76	.39	.94	1.63	.2500	2	3BX
12901	1/4 - 28	2.76	.39	.94	1.63	.2500	2	3BX
12902	5/16 - 18	3.15	.47	1.26	1.69	.3125	2	3BX
12903	3/8 - 16	3.54	.51	1.57	1.74	.3750	3	3BX
12904	7/16 - 14	3.94	.59	1.73	1.94	.4375	3	3BX
12905	1/2 - 13	3.94	.63	1.89	1.76	.5000	3	3BX

GX49 • Form E Bottoming Entry Taper • Through Coolant M6 and Larger • Metric

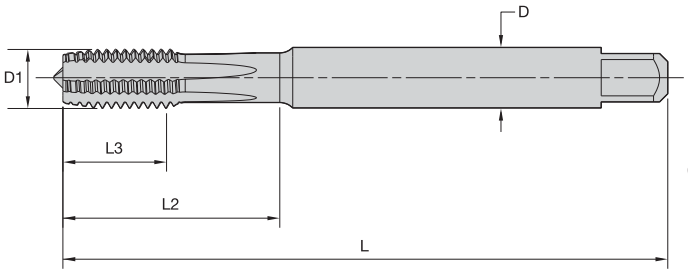


Shank Tolerance	
D	Tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

GN1515	D1 size	L	L3	L2	LS	D	number of lube grooves	class of fit
12906	M4 X 0,7	60	6	16	36	6,0	2	6HX
12907	M5 X 0,8	60	7	20	34	6,0	2	6HX
12908	M6 X 1	70	8	24	42	6,0	2	6HX
12909	M8 X 1,25	80	10	32	43	8,0	2	6HX
12911	M10 X 1,5	90	12	40	44	10,0	3	6HX
12912	M10 X 1	90	12	40	44	10,0	3	6HX
12915	M12 X 1,5	100	14	48	46	12,0	3	6HX
12914	M12 X 1,75	100	14	48	46	12,0	3	6HX

Proprietary technology.
Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps.

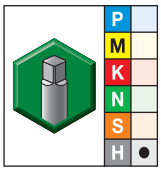
• WH16PG TiAlN/MoS_2 for steel 55–63 HRC.



VICTORY

● first choice
○ alternate choice

GX10 • Form C Semi-Bottoming Chamfer • Metric DIN 371, 374, and 376



Shank Tolerance	
D	Tolerance h9
1–3	+0, -0,025
3,5–6	+0, -0,030
7–10	+0, -0,036
11–18	+0, -0,043

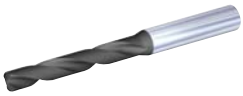
WH16PG	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
GX105001	M3 X 0,5	63	6	18	4,5	4	DIN 371	6HX
GX105002	M4 X 0,7	63	8	20	4,5	4	DIN 371	6HX
GX105003	M5 X 0,8	70	10	26	6,0	4	DIN 371	6HX
GX105004	M6 X 1	80	12	28	6,0	4	DIN 371	6HX
GX105009	M8 X 1	90	15	35	8,0	5	DIN 374	6HX
GX105005	M8 X 1,25	90	15	35	8,0	5	DIN 371	6HX
GX105010	M10 X 1	100	18	38	10,0	5	DIN 374	6HX
GX105006	M10 X 1,5	100	18	38	10,0	5	DIN 371	6HX
GX105011	M12 X 1,5	110	21	41	12,0	5	DIN 374	6HX
GX105007	M12 X 1,75	110	21	41	12,0	5	DIN 376	6HX
GX105012	M14 X 1,5	110	24	44	14,0	5	DIN 374	6HX
GX105008	M14 X 2	110	24	44	14,0	6	DIN 376	6HX
GX105013	M16 X 1,5	110	24	44	16,0	5	DIN 374	6HX

		Through Holes					Blind Holes				
				Range — m/min					Range — m/min		
	Group	Tap Style	Grade	min	Starting Value	max	Tap Style	Grade	min	Starting Value	max
P	1	GX32, GX38	GP4535	80	**100**	130	GX33,GX39	GP4535	50	**70**	90
P	2	GX32, GX38	GP4535	70	**90**	120	GX33,GX39	GP4535	50	**60**	80
P	3, 4, 6, 7	GX32, GX38	GP4535	60	**80**	100	GX33,GX39	GP4535	50	**60**	80
K	15, 16	GX34	GP4535	80	**105**	140	GX35	GP4535	50	**70**	90
K	17, 18, 19	GX34	GP4535	80	**100**	130	GX35	GP4535	50	**70**	90
K	20	GX34	GP4535	70	**90**	120	GX35	GP4535	50	**60**	80
N	21	GX46, GX48	GN1515	90	**120**	160	GX47, GX49	GN1515	60	**80**	100
N	22, 23, 24	GX46, GX48	GN1515	80	**100**	130	GX47, GX49	GN1515	50	**70**	90
N	25	GX46, GX48	GN1515	70	**85**	110	GX47, GX49	GN1515	50	**60**	80
H	39.1, 41.2	GX10	WH16PG	1,2	**1,5**	2,0	GX10	WH16PG	0,8	**1,1**	1,4
H	39.1	GX10	WH16PG	0,6	**0,8**	1,0	GX10	WH16PG	0,4	**0,5**	0,7

		Through Holes					Blind Holes				
				Range — SFM					Range — SFM		
	Group	Tap Style	Grade	min	Starting Value	max	Tap Style	Grade	min	Starting Value	max
P	1	GX32, GX38	GP4535	260	**330**	430	GX33, GX39	GP4535	160	**230**	300
P	2	GX32, GX38	GP4535	230	**300**	390	GX33, GX39	GP4535	160	**200**	260
P	3, 4, 6, 7	GX32, GX38	GP4535	200	**260**	330	GX33, GX39	GP4535	160	**200**	260
K	15, 16	GX34	GP4535	260	**340**	460	GX34	GP4535	160	**230**	300
K	17, 18, 19	GX34	GP4535	260	**330**	430	GX34	GP4535	160	**230**	300
K	20	GX34	GP4535	230	**300**	390	GX34	GP4535	160	**200**	260
N	21	GX46, GX48	GN1515	300	**390**	520	GX47, GX49	GN1515	200	**260**	330
N	22, 23, 24	GX46, GX48	GN1515	260	**330**	430	GX47, GX49	GN1515	160	**230**	300
N	25	GX46, GX48	GN1515	230	**280**	360	GX47, GX49	GN1515	160	**200**	260
H	39.1, 41.2	GX10	WH16PG	4	**5**	6	GX10	WH16PG	3	**3**	4
H	39.1	GX10	WH16PG	2	**2**	3	GX10	WH16PG	1	**2**	2

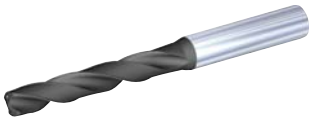
Steel

typical thread sizes				required tap drill diameter				P		
								Solid Carbide Taps		Solid Carbide Taps
										
cutting taps metric	cutting taps inch	forming taps metric	forming taps inch	mm	inch	fraction	wire	blind hole with coolant GX33_GP4535	through hole GX32_GP4535	forming blind hole with coolant GX39_GP4535
–	–	–	6-32	3,175	.1250	1/8	–	–	–	12801
M4,5 x 0,75	–	M4 x 0,70	–	3,700	.1457	–	–	–	–	12826
–	–	–	8-32	3,797	.1495	–	25	–	–	12802
–	–	–	10-24	4,366	.1719	11/64	–	–	–	12803
–	12-24	–	10-32	4,496	.1770	–	16	–	–	12804
–	–	M5 x 0,80	–	4,700	.1850	–	13	–	–	12827
M6 x 1,00	–	–	–	5,000	.1969	–	–	12781	12225	–
–	1/4-20	–	12-28	5,106	.2010	–	7	12761	12200	–
–	1/4-28	–	–	5,410	.2130	–	3	12762	12201	–
–	–	M6 x 1,00	–	5,600	.2205	–	–	–	–	12828
–	–	–	1/4-20	5,791	.2280	–	1	–	–	12805
–	–	–	1/4-28	5,944	.2340	–	A	–	–	12806
–	5/16-18	–	–	6,528	.2570	–	F	12763	12202	–
M8 x 1,25	–	–	–	6,700	.2638	–	–	12782	12226	–
–	5/16-24	–	–	6,909	.2720	–	I	–	12203	–
–	–	–	5/16-18	7,366	.2900	–	L	–	–	12807
–	–	M8 x 1,25	–	7,400	.2913	–	–	–	–	12829
–	3/8-16	–	–	7,938	.3125	5/16	–	12764	12204	–
–	3/8-24	–	–	8,433	.3320	–	Q	–	12205	–
M10 x 1,50	–	–	–	8,500	.3346	–	–	12783	12227	–
M10 x 1,00	–	–	–	9,000	.3543	–	–	12784	–	–
–	–	–	3/8-16	8,839	.3480	–	S	–	–	12808
–	7/16-14	–	3/8-24	9,093	.3580	–	T	12765	12206	–
–	–	M10 x 1,50	–	9,400	.3701	–	–	–	–	12830
M12 x 1,75	–	–	–	10,200	.4016	–	–	12785	12228	–
M12 x 1,50	–	–	–	10,500	.4134	–	–	12786		–
–	1/2-13	–	–	10,716	.4219	27/64	–	12766	12207	–
–	1/2-20	–	–	11,509	.4531	29/64	–	–	12208	–
M14 x 2,00	–	–	–	12,000	.4724	–	–	12787	12229	–
–	9/16-12	–	–	12,304	.4844	31/64	–	12767	12209	–
M14 x 1,50	–	–	–	12,500	.4921	–	–	12788		–
–	5/8-11	–	9/16-12	13,495	.5313	17/32	–	12768	12210	–
M16 x 2,00	–	–	–	14,000	.5512	–	–	12789	12230	–

P	P		All Materials	
Solid Carbide Taps	Recommended SC Drill		Alternate Tap Drill	
				
forming through hole with coolant GX38_GP4535	approximately 5 x D with coolant TDS402 WP20PD	approximately 5 x D non-coolant TDS202 WP20PD	approximately 5 x D with coolant VDS402A WU25PD	approximately 5 x D non-coolant VDS202A WU25PD
12809	TDS402A03175	TDS202A03175	VDS402A03175	VDS202A03175
12831	TDS402A03700	TDS202A03700	VDS402A03700	VDS202A03700
12810	TDS402A03797	TDS202A03797	VDS402A03797	VDS202A03797
12811	TDS402A04219	TDS202A04219	VDS402A04219	VDS202A04219
12812	TDS402A04496	TDS202A04496	VDS402A04496	VDS202A04496
12832	TDS402A04700	TDS202A04700	VDS402A04700	VDS202A04700
–	TDS402A05000	TDS202A05000	VDS402A05000	VDS202A05000
–	TDS402A05106	TDS202A05106	VDS402A05106	VDS202A05106
–	TDS402A05410	TDS202A05410	VDS402A05410	VDS202A05410
12833	TDS402A05600	TDS202A05600	VDS402A05600	VDS202A05600
12813	TDS402A05791	TDS202A05791	VDS402A05791	VDS202A05791
12814	TDS402A05944	TDS202A05944	VDS402A05944	VDS202A05944
–	TDS402A06528	TDS202A06528	VDS402A06528	VDS202A06528
–	TDS402A06700	TDS202A06700	VDS412A06700	VDS212A06700
–	TDS402A06906	TDS202A06906	VDS412A06906	VDS212A06906
12815	TDS402A07366	TDS202A07366	VDS412A07366	VDS212A07366
12834	TDS402A07400	TDS202A07400	VDS412A07400	VDS212A07400
–	TDS402A07938	TDS202A07938	VDS412A07938	VDS212A07938
–	TDS402A08433	TDS202A08433	VDS412A08433	VDS212A08433
–	TDS402A08500	TDS202A08500	VDS412A08500	VDS212A08500
–	TDS402A09000	TDS202A09000	VDS412A09000	VDS212A09000
12816	TDS402A08839	TDS202A08839	VDS412A08839	VDS212A08839
–	TDS402A09093	TDS202A09093	VDS412A09093	VDS212A09093
12835	TDS402A09400	TDS202A09400	VDS412A09400	VDS212A09400
–	TDS402A10200	TDS202A10200	VDS412A10200	VDS212A10200
–	TDS402A10500	TDS202A10500	VDS412A10500	VDS212A10500
–	TDS402A10716	TDS202A10716	VDS412A10716	VDS212A10716
–	TDS402A11509	TDS202A11509	VDS412A11509	VDS212A11509
–	TDS402A12000	TDS202A12000	VDS412A12000	VDS212A12000
–	TDS402A12304	TDS202A12304	VDS412A12304	VDS212A12304
–	TDS402A12500	TDS202A12500	VDS412A12500	VDS212A12500
–	TDS402A13495	TDS202A13495	VDS412A13495	VDS212A13495
–	TDS402A14000	TDS202A14000	VDS412A14000	VDS212A14000

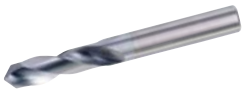
Cast Iron

typical thread sizes		required tap drill diameter				K		
						Solid Carbide Taps		Recommended SC Drill
								
cutting taps metric	inch	mm	inch	fraction	wire	blind hole with coolant GX35_GP4535	through hole GX34_GP4535	approximately 3 x D with coolant TDS411 WK15PD
–	6-32	2,705	.1065	–	36	12700	12713	TDS401A02705
M4 x 0,70	–	3,300	.1299	–	–	12731	12742	TDS401A03300
–	8-32 /8-36	3,454	.1360	–	29	12701	12714	TDS401A03454
–	10-24	3,734	.1470	–	26	12702	12715	TDS401A03734
–	10-32	4,039	.1590	–	21	12703	12716	TDS401A04039
M5 x 0,80	–	4,200	.1654	–	–	12732	12743	TDS401A04200
M6 x 1,00	–	5,000	.1969	–	–	12733	12744	TDS401A05000
–	1/4-20	5,106	.2010	–	7	12704	12717	TDS401A05106
–	1/4-28	5,410	.2130	–	3	12705	12718	TDS401A05410
–	5/16-18	6,528	.2570	–	F	12706	12719	TDS401A06528
M8 x 1,25	–	6,700	.2638	–	–	12734	12745	TDS411A06700
–	3/8-16	7,938	.3125	5/16	–	12707	12404	TDS411A07938
–	3/8-24	8,433	.3320	–	Q	–	12405	TDS411A08433
M10 x 1,50	–	8,500	.3346	–	–	12735	12427	TDS411A08500
M10 x 1,00	–	9,000	.3543	–	–	12736	12746	TDS411A09000
–	7/16-14	9,093	.3580	–	T	12708	12406	TDS411A09093
M12 x 1,75	–	10,200	.4016	–	–	12737	12428	TDS411A10200
M12 x 1,50	–	10,500	.4134	–	–	12738	12747	TDS411A10500
–	1/2-13	10,716	.4219	27/64	–	12709	12407	TDS411A10716
–	1/2-20	11,509	.4531	29/64	–	–	12408	TDS411A11509
M14 x 2,00	–	12,000	.4724	–	–	12739	12429	TDS411A12000
–	9/16-12	12,304	.4844	31/64	–	12710	12409	TDS411A12304
M14 x 1,50	–	12,500	.4921	–	–	12740	12748	TDS411A12500
–	5/8-11	13,495	.5313	17/32	–	12711	12410	TDS411A13495
M16 x 2,00	–	14,000	.5512	–	–	12741	12430	TDS411A14000
M18 x 2,50	–	15,500	.6102	–	–	–	12431	TDS411A15500
–	3/4-10	16,670	.6563	21/32	–	12712	12411	TDS411A16670
M20 x 2,50	–	17,500	.6890	–	–	–	12432	TDS411A17500

K		All Materials	
Recommended SC Drill		Alternate Tap Drill	
			
approximately 5 x D with coolant TDS412 WK15PD	approximately 5 x D non-coolant TDS212 WK15PD	approximately 5 x D with coolant VDS402A WU25PD	approximately 5 x D non-coolant VDS202A WU25PD
TDS402A02705	TDS212A02705	VDS402A02705	VDS202A02705
TDS402A03300	TDS212A03300	VDS402A03300	VDS202A03300
TDS402A03454	TDS212A03454	VDS402A03454	VDS202A03454
TDS402A03734	TDS212A03734	VDS402A03734	VDS202A03734
TDS402A04039	TDS212A04039	VDS402A04039	VDS202A04039
TDS402A04200	TDS212A04200	VDS402A04200	VDS202A04200
TDS402A05000	TDS212A05000	VDS402A05000	VDS202A05000
TDS402A05106	TDS212A05106	VDS402A05106	VDS202A05106
TDS402A05410	TDS212A05410	VDS402A05410	VDS202A05410
TDS402A06528	TDS212A06528	VDS402A06528	VDS202A06528
TDS412A06700	TDS212A06700	VDS412A06700	VDS212A06700
TDS412A07938	TDS212A07938	VDS412A07938	VDS212A07938
TDS412A08433	TDS212A08433	VDS412A08433	VDS212A08433
TDS412A08500	TDS212A08500	VDS412A08500	VDS212A08500
TDS412A09000	TDS212A09000	VDS412A09000	VDS212A09000
TDS412A09093	TDS212A09093	VDS412A09093	VDS212A09093
TDS412A10200	TDS212A10200	VDS412A10200	VDS212A10200
TDS412A10500	TDS212A10500	VDS412A10500	VDS212A10500
TDS412A10716	TDS212A10716	VDS412A10716	VDS212A10716
TDS412A11509	TDS212A11509	VDS412A11509	VDS212A11509
TDS412A12000	TDS212A12000	VDS412A12000	VDS212A12000
TDS412A12304	TDS212A12304	VDS412A12304	VDS212A12304
TDS412A12500	TDS212A12500	VDS412A12500	VDS212A12500
TDS412A13495	TDS212A13495	VDS412A13495	VDS212A13495
TDS412A14000	TDS212A14000	VDS412A14000	VDS212A14000
TDS412A15500	TDS212A15500	VDS412A15500	VDS212A15500
TDS412A16670	TDS212A16670	VDS412A16670	VDS212A16670
TDS412A17500	TDS212A17500	VDS412A17500	VDS212A17500

Aluminum

typical thread sizes				required tap drill diameter				N		
								Solid Carbide Taps		Solid Carbide Taps
										
cutting taps metric	cutting taps inch	forming taps metric	forming taps inch	mm	inch	fraction	wire	blind hole with coolant GX47_GN1515	through hole with coolant GX46_GN1515	forming blind hole with coolant GX49_GN1515
–	–	–	6-32	3,175	.1250	1/8	–	–	–	12895
M4,5 x 0,75	–	M4 x 0,70	–	3,700	.1457	–	–	–	–	12906
–	–	–	8-32	3,797	.1495	–	25	–	–	12896
–	–	–	10-24	4,366	.1719	11/64	–	–	–	12897
12-24	–	–	10-32	4,496	.1770	–	16	–	–	12898
–	–	M5 x 0,80	–	4,700	.1850	–	13	–	–	12907
M6 x 1,00	–	–	–	5,000	.1969	–	–	12866	12846	–
–	1/4-20	–	12-28	5,106	.2010	–	7	12858	12836	–
–	1/4-28	–	–	5,410	.2130	–	3	12859	12838	–
–	–	M6 x 1,00	–	5,600	.2205	–	–	–	–	12908
–	–	–	1/4-20	5,791	.2280	–	1	–	–	12899
–	–	–	1/4-28	5,944	.2340	–	A	–	–	12901
–	5/16-18	–	–	6,528	.2570	–	F	12860	12839	–
M8 x 1,25	–	–	–	6,700	.2638	–	–	12867	12847	–
–	–	–	5/16-18	7,366	.2900	–	L	–	–	12902
–	–	M8 x 1,25	–	7,400	.2913	–	–	–	–	12909
–	3/8-16	–	–	7,938	.3125	5/16	–	12861	12840	–
M10 x 1,50	–	–	–	8,500	.3346	–	–	12868	12848	–
M10 x 1,00	–	–	–	9,000	.3543	–	–	12869	12850	–
–	–	–	3/8-16	8,839	.3480	–	S	–	–	12903
7/16-14	–	–	3/8-24	9,093	.3580	–	T	12862	12841	–
–	–	M10 x 1,50	–	9,400	.3701	–	–	–	–	12911
M12 x 1,75	–	–	–	10,200	.4016	–	–	12870	12851	–
M12 x 1,50	–	–	–	10,500	.4134	–	–	12872	12852	–
–	1/2-13	–	–	10,716	.4219	27/64	–	12863	12843	–
M14 x 2,00	–	–	–	12,000	.4724	–	–	12873	12853	–
–	9/16-12	–	–	12,304	.4844	31/64	–	12864	12844	–
M14 x 1,50	–	–	–	12,500	.4921	–	–	12874	12854	–
–	5/8-11	–	9/16-12	13,495	.5313	17/32	–	12865	12845	–
M16 x 2,00	–	–	–	14,000	.5512	–	–	12875	12855	–
M16 x 1,50	–	–	–	14,500	.5709	–	–	12876	12856	–

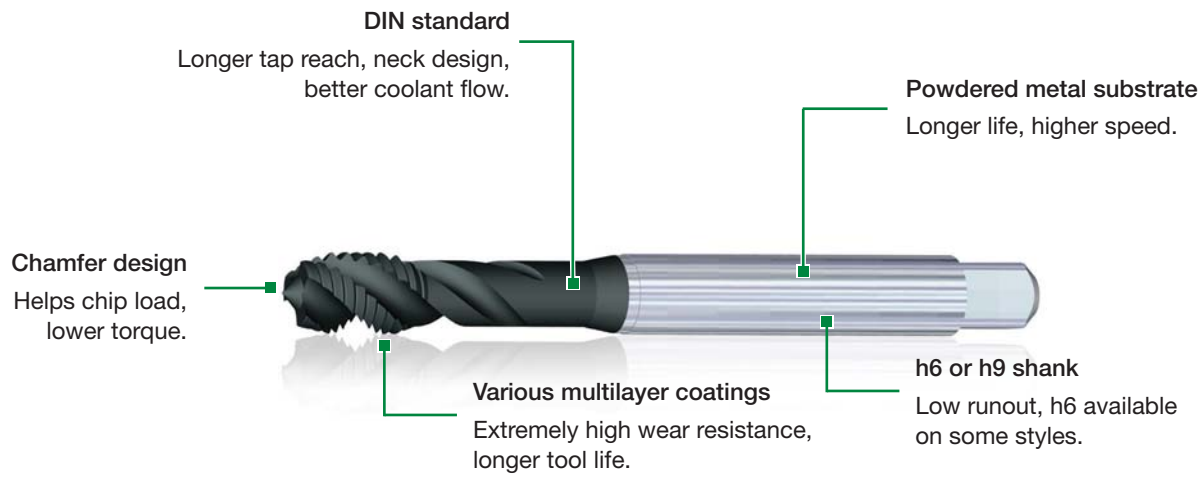
	N		All Materials	
Solid Carbide Taps	Recommended SC Drill		Alternate Tap Drill	
				
forming through hole with coolant GX48_GN1515	approximately 3 x D with coolant WD 412522	approximately 5 x D with coolant WD 412527	approximately 5 x D with coolant VDS402A WU25PD	approximately 5 x D non-coolant VDS202A WU25PD
12877	TCM65903000	012535—00318	VDS402A03175	VDS202A03175
12887	TCM25903700	–	VDS402A03700	VDS202A03700
12878	–	–	VDS402A03797	VDS202A03797
12879	–	–	VDS402A04219	VDS202A04219
12880	–	–	VDS402A04496	VDS202A04496
12888	TCM25904700	–	VDS402A04700	VDS202A04700
–	TCM25909500	012535—00500	VDS402A05000	VDS202A05000
–	–	–	VDS402A05106	VDS202A05106
–	–	–	VDS402A05410	VDS202A05410
12889	TCM25905600	–	VDS402A05600	VDS202A05600
12881	–	–	VDS402A05791	VDS202A05791
12882	–	–	VDS402A05944	VDS202A05944
–	–	–	VDS402A06528	VDS202A06528
–	TCM25906700	–	VDS412A06700	VDS212A06700
12883	–	–	VDS412A07366	VDS212A07366
12890	TCM25907400	–	VDS412A07400	VDS212A07400
–	TCM65908000	012535—00793	VDS412A07938	VDS212A07938
–	TCM25908500	012535—00850	VDS412A08500	VDS212A08500
–	TCM25909000	012535—00900	VDS412A09000	VDS212A09000
12884	–	–	VDS412A08839	VDS212A08839
–	–	–	VDS412A09093	VDS212A09093
12891	TCM25909400	–	VDS412A09400	VDS212A09400
–	TCM25910200	012535—01020	VDS412A10200	VDS212A10200
–	TCM25910500	012535—01050	VDS412A10500	VDS212A10500
–	–	012535—01072	VDS412A10716	VDS212A10716
–	TCM25912000	012535—01200	VDS412A12000	VDS212A12000
–	TCM65912100	–	VDS412A12304	VDS212A12304
–	TCM25912500	012535—01250	VDS412A12500	VDS212A12500
–	–	–	VDS412A13495	VDS212A13495
–	TCM25914000	012535—01400	VDS412A14000	VDS212A14000
–	TCM25914500	012535—01450	VDS412A14500	VDS212A14500

High-Performance HSS-E-PM Taps

Our powdered metal taps deliver highly reliable threads and superior performance in blind and through hole applications. The HP HSS-E-PM is the optimum choice for customers looking for high productivity and long tool life in material-specific applications.

WIDIA-GTD™

- Enhanced design for reliable thread on different materials.
- More resistant to edge chipping than carbide.
- Better performance at high speeds.



Powdered Metal Taps

- Manufactured from high-speed steel and powder coated for thread forming and thread cutting in various applications.
- Offer performance advantages over other regular high-speed taps.
- Unmatched by competitive products.

Tap Functions

- High wear resistance and hot hardness without sacrificing edge strength.
- PVD multilayer coatings offer outstanding thermal stability, hot hardness, oxidation resistance, and low frictional coefficient.
- Spiral point feature pushes chips ahead in through holes.
- Chips stored in flutes or flushed out with straight flutes.
- Taps can be used in collet and hydraulic holders.
- Low runout of thread and chamfer.

Benefits

- Long tap life at up to 50% higher tapping speed.
- Excellent chip control.
- Greater thread strength.
- Exceptional thread quality and long life.

Victory™ GT Series HSS-E-PM Taps • ANSI Inch and Metric

★ Good
★★ Better
★★★ Best

GT Series High-Performance HSS-E-PM Taps	series	size range (inch and metric) size min - max	hole	chamfer form	coolant	grade	tap dimension
	**GT20**	#2 - 3/4"				GP6520	ANSI 302A
	**GT20**	#2 - 3/4"				GM6515	ANSI 302A
	**GT20**	M3 - M12				GP6520	ANSI 302A
	**GT20**	M3 - M12				GM6515	ANSI 302A
	**GT30**	#2 - 1"				GP6520	ANSI 302A
	**GT30**	#2 - 1"				GM6515	ANSI 302A
	**GT30**	#4 - 3/4"				GP6505	ANSI 302A
	**GT40**	#10 - 3/4"				GP6520	ANSI 302A
	**GT40**	M3 - M16				GP6520	ANSI 302A

P				M	K		N			S				H		Page	Recommended Cutting Parameters
1, 2, 3, 4, 6, 7	5, 9, 10, 11	12, 13.1	13.2	14.1, 14.2, 14.3, 14.4	15, 16, 17, 18, 19	20	21	22, 23, 24, 25	26, 27, 28	31, 32	33, 34, 35	36	37	38.1, 38.2, 40.1, 40.2, 41.1	39.1, 41.2		
Steel <35 HRC	Steel 36–48 HRC	PH & Ferritic Stainless Steel <35 HRC	PH & Ferritic Stainless Steel >35 HRC	Stainless Steel	Cast Iron		Wrought Aluminum	Cast Aluminum	Copper, Copper Alloys	Iron Based	Cobalt Based	Nickel Based	Titanium & Alloys	Hardened Steel 49–55 HRC	Hardened Steel 56–68 HRC		
★★★		★★★								★★★						A36	A70–A71
				★★★			★	★					★			A36	A70–A71
★★★		★★★								★★★						A37	A70–A71
				★★★			★	★					★			A37	A70–A71
★★★		★★★								★★★						A44	A70–A71
				★★★			★	★					★			A44	A70–A71
★★		★		★													
					★★★	★★★										A56	A70–A71
					★★★	★★★										A57	A70–A71

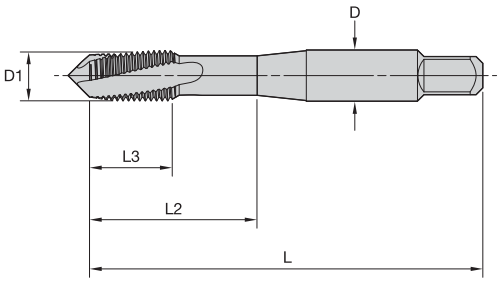
Victory™ GT Series HP HSS-E-PM Taps • DIN Metric

★ Good
★★ Better
★★★ Best

GT Series High-Performance HSS-E-PM Taps	series	size range (metric) size min - max	hole	chamfer form	coolant	grade	tap dimension
	GT00	M3 - M20	★★★	★★★	★★★	WP31MG	DIN 371,374,376
	GT02	M3 - M20	★★★	★★★	★★★	WP31MG	DIN 371,374,376
	GT04	M3 - M20	★★★	★★★	★★★	WH36MG	DIN 371,374,376
	GT06	M6 - M16	★★★	★★★	★★★	WS32MG	DIN 371,374,376
	GT10	M3 - M20	★★★	★★★	★★★	WS32MG	DIN 371,374,376
	GT12	M3 - M20	★★★	★★★	★★★	WS32MG	DIN 371,374,376
	GT14	M3 - M12	★★★	★★★	★★★	WN35MG	DIN 371,376
	GT16	M3 - M12	★★★	★★★	★★★	WN35MG	DIN 371
	GT20	M3 - M42	★★★	★★★	★★★	GP6520	DIN 371,374,376,XL
	GT20	M3 - M20	★★★	★★★	★★★	GM6515	DIN 371,374,376
	GT21	M5 - M14	★★★	★★★	★★	GP6520	DIN 371,376
	GT21	M5 - M14	★★★	★★★	★★	GM6515	DIN 371,376
	GT22	M3 - M16	★★★	★★★	★★★	WP31MG	DIN 371,374,376
	GT22	M3 - M16	★★★	★★★	★★★	WN38MG	DIN 371,374,376
	GT23	M5 - M16	★★★	★★★	★★	WP31MG	DIN 371,374,376
	GT23	M5 - M16	★★★	★★★	★★	WN38MG	DIN 371,374,376
	GT30	M3 - M42	★★★	★★★	★★★	GP6520	DIN 371,374,376,XL
	GT30	M3 - M24	★★★	★★★	★★★	GM6515	DIN 371,374,376
	GT30	M3 - M16	★★★	★★★	★★★	GP6505	DIN 371,376
	GT31	M5 - M42	★★★	★★★	★★	GP6520	DIN 371,376,XL
	GT31	M5 - M16	★★★	★★★	★★	GM6515	DIN 371,376
	GT32	M5 - M16	★★★	★★★	★★★	GP6520	DIN 371,374,376
	GT33	M5 - M16	★★★	★★★	★★★	GP6520	DIN 371,374,376
	GT40	M4 - M22	★★★	★★★	★★★	GP6520	DIN 371,376
	GT41	M4 - M20	★★★	★★★	★★★	GP6520	DIN 371,376
	GT42	M5 - M16	★★★	★★★	★★★	GP6520	DIN 371,374,376
	GT43	M5 - M16	★★★	★★★	★★★	GP6520	DIN 371,374,376
	GT50	M24 - M42	★★★	★★★	★★★	GP6520	DIN 376,XL
	GT51	M24 - M42	★★★	★★★	★★★	GP6520	DIN 376,XL
	GT70	M3 - M16	★★★	★★★	★★★	WN48EG	DIN 371,376
	GT80	M3 - M20	★★★	★★★	★★★	WN48EG	DIN 371,376

P				M	K		N			S				H		Page(s)	Recommended Cutting Parameters
1, 2, 3, 4, 6, 7	5, 9, 10, 11	12, 13.1	13.2	14.1, 14.2, 14.3, 14.4	15, 16, 17, 18, 19	20	21	22, 23, 24, 25	26, 27, 28	31, 32	33, 34, 35	36	37	38.1, 38.2, 40.1, 40.2, 41.1	39.1, 41.2		
Steel <35 HRC	Steel 36–48 HRC	PH & Ferritic Stainless Steel <35 HRC	PH & Ferritic Stainless Steel >35 HRC	Stainless Steel	Cast Iron		Wrought Aluminum	Cast Aluminum	Copper, Copper Alloys	Iron Based	Cobalt Based	Nickel Based	Titanium & Alloys	Hardened Steel 49–55 HRC	Hardened Steel 56–68 HRC		
	★★★		★★★	★	★	★					★					A40	A70–A71
	★★★		★★★		★	★					★					A50	A70–A71
	★★★		★★★		★★★	★★★				★★	★★	★★				A52	A70–A71
					★★★	★★★								★★★		A53	A70–A71
											★★★	★★★				A42	A70–A71
											★★★	★★★				A54	A70–A71
									★				★★★			A43	A70–A71
									★				★★★			A55	A70–A71
★★★		★★★								★★★						A38, A65	A70–A71
				★★★			★	★					★			A38	A70–A71
★★★		★★★								★★★						A39	A70–A71
				★★★			★	★					★			A39	A70–A71
																A62	A70–A71
★★★							★★★	★								A62	A70–A71
		★★★														A63	A70–A71
							★★★	★								A63	A70–A71
★★★		★★★								★★★						A46, A66	A70–A71
				★★★			★						★			A46	A70–A71
★★																A46	A70–A71
★★★		★★★								★★★						A47, A67	A70–A71
				★★★			★						★			A47	A70–A71
★★★		★★★								★★★						A48	A70–A71
★★★		★★★														A49	A70–A71
					★★★	★★★		★★★	★★							A58	A70–A71
					★★★	★★★		★★★	★★							A59	A70–A71
					★★★	★★★		★★★	★★							A60	A70–A71
					★★★	★★★		★★★	★★							A61	A70–A71
★★★		★★		★												A68	A70–A71
★★★		★★		★												A69	A70–A71
							★★★	★	★							A41	A70–A71
							★★★									A51	A70–A71

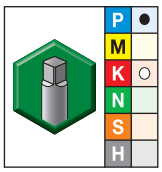
- GM6515 TiN + CrC/C for stainless steel.
- GP6520 TiCN for steel.

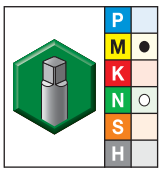


VICTORY

● first choice
○ alternate choice

■ GT20 • Machine Screw and Fractional • Form D Plug Chamfer

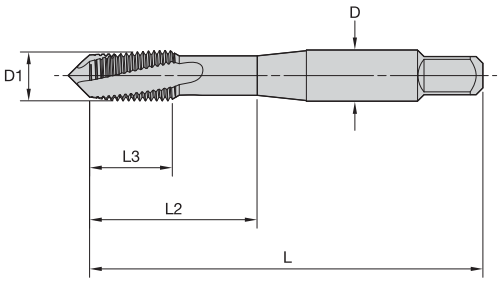




Shank Tolerance	
D Fractional	D Inch
.250–.375	+0, -.0004
.438–.625	+0, -.0004

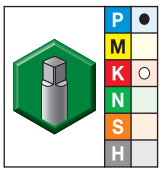
GP6520	GM6515	D1 size	L	L3	L2	D	number of flutes	class of fit
GT205031	GT205001	2 - 56	1.75	.44	.50	.141	2	2BX
GT205032	GT205002	2 - 56	1.75	.44	.50	.141	2	3BX
GT205033	GT205003	4 - 40	1.88	.56	.69	.141	2	2BX
GT205034	GT205004	4 - 40	1.88	.56	.69	.141	2	3BX
GT205035	GT205005	5 - 40	1.94	.63	.75	.141	2	3BX
GT205036	GT205006	6 - 32	2.00	.36	.71	.141	2	2BX
GT205037	GT205007	6 - 32	2.00	.36	.71	.141	2	3BX
GT205038	GT205008	8 - 32	2.13	.31	.76	.168	2	2BX
GT205039	GT205009	8 - 32	2.13	.31	.76	.168	2	3BX
GT205052	GT205022	8 - 36	2.13	.31	.76	.168	3	3BX
GT205040	GT205010	10 - 24	2.38	.47	.91	.194	3	3BX
GT205053	GT205023	10 - 32	2.38	.47	.91	.194	3	2BX
GT205054	GT205024	10 - 32	2.38	.47	.91	.194	3	3BX
GT205041	GT205011	12 - 24	2.38	.42	.96	.220	3	3BX
GT205042	GT205012	1/4 - 20	2.50	.44	1.00	.255	3	2BX
GT205043	GT205013	1/4 - 20	2.50	.44	1.00	.255	3	3BX
GT205055	GT205025	1/4 - 28	2.50	.44	1.00	.255	3	2BX
GT205056	GT205026	1/4 - 28	2.50	.44	1.00	.255	3	3BX
GT205044	GT205014	5/16 - 18	2.72	.49	1.13	.318	3	2BX
GT205045	GT205015	5/16 - 18	2.72	.49	1.13	.318	3	3BX
GT205057	GT205027	5/16 - 24	2.72	.49	1.13	.318	3	3BX
GT205046	GT205016	3/8 - 16	2.94	.60	1.27	.381	3	2BX
GT205047	GT205017	3/8 - 16	2.94	.60	1.27	.381	3	3BX
GT205058	GT205028	3/8 - 24	2.94	.60	1.27	.381	3	3BX
GT205048	GT205018	7/16 - 14	3.16	.71	1.49	.323	3	3BX
GT205059	GT205029	7/16 - 20	3.16	.71	1.49	.323	3	3BX
GT205049	GT205019	1/2 - 13	3.38	.77	1.74	.367	3	3BX
GT205060	GT205030	1/2 - 20	3.38	.77	1.74	.367	3	3BX
GT205050	GT205020	5/8 - 11	3.81	.91	1.89	.480	3	3BX
GT205051	GT205021	3/4 - 10	4.25	1.00	2.08	.590	3	3BX

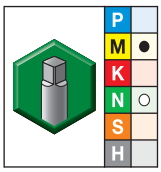
- GM6515 TiN + CrC/C for stainless steel.
- GP6520 TiCN for steel.



● first choice
○ alternate choice

GT20 • Form D Plug Chamfer • Metric ANSI

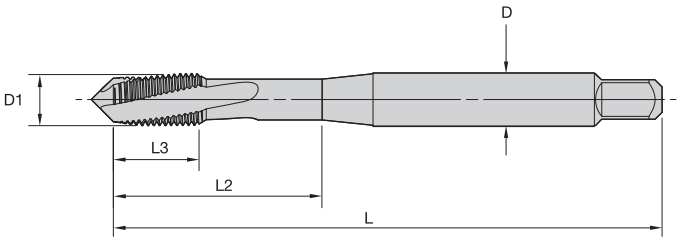




Shank Tolerance	
D Fractional	D Inch
.250–.375	+0, -.0004
.438–.625	+0, -.0004

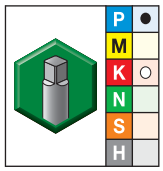
GP6520	GM6515	D1 size	L	L3	L2	D	number of flutes	class of fit
GT205069	**GT205061**	M3 X 0,5	1.94	.63	.75	.141	2	6HX
GT205070	**GT205062**	M4 X 0,7	2.13	.32	.76	.168	2	6HX
GT205071	**GT205063**	M5 X 0,8	2.38	.47	.91	.194	2	6HX
GT205072	**GT205064**	M6 X 1	2.50	.46	1.01	.255	3	6HX
GT205074	**GT205066**	M8 X 1,25	2.72	.48	1.12	.318	3	6HX
GT205075	**GT205067**	M10 X 1,5	2.94	.53	1.26	.381	3	6HX
GT205076	**GT205068**	M12 X 1,75	3.38	.77	1.74	.367	3	6HX

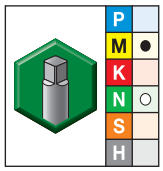
- GM6515 TiN + CrC/C for stainless steel.
- GP6520 TiCN for steel.



● first choice
○ alternate choice

GT20 • Form D Plug Chamfer • Metric DIN 371, 374, and 376

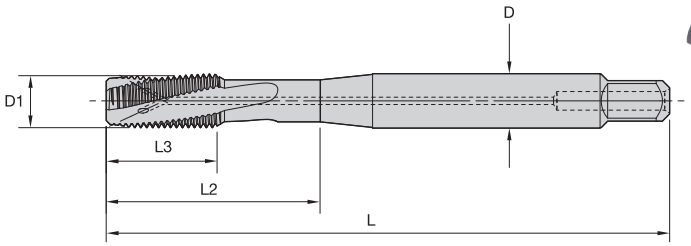




Shank Tolerance	
D	Tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

GP6520	GM6515	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
GT205094	GT205077	M3 X 0,5	56	8	18	3,5	2	DIN 371	6HX
GT205095	GT205078	M4 X 0,7	63	10	21	4,5	2	DIN 371	6HX
GT205096	GT205079	M5 X 0,8	70	10	25	6,0	2	DIN 371	6HX
GT205097	GT205080	M6 X 1	80	10	30	6,0	3	DIN 371	6HX
GT205104	GT205087	M8 X 1	90	13	35	6,0	4	DIN 374	6HX
GT205098	GT205081	M8 X 1,25	90	13	35	8,0	3	DIN 371	6HX
GT205105	GT205088	M10 X 1	90	10	35	7,0	4	DIN 374	6HX
GT205106	GT205089	M10 X 1,25	100	15	39	7,0	4	DIN 374	6HX
GT205099	GT205082	M10 X 1,5	100	15	39	10,0	3	DIN 371	6HX
GT205107	GT205090	M12 X 1,5	100	15	39	9,0	4	DIN 374	6HX
GT205100	GT205083	M12 X 1,75	110	18	44	9,0	3	DIN 376	6HX
GT205108	GT205091	M14 X 1,5	100	15	47	11,0	4	DIN 374	6HX
GT205101	GT205084	M14 X 2	110	20	52	11,0	4	DIN 376	6HX
GT205109	GT205092	M16 X 1,5	100	15	46	12,0	4	DIN 374	6HX
GT205102	GT205085	M16 X 2	110	20	51	12,0	4	DIN 376	6HX
GT205110	GT205093	M18 X 1,5	110	15	50	14,0	4	DIN 374	6HX
GT205103	GT205086	M20 X 2,5	140	25	64	16,0	4	DIN 376	6HX

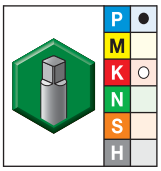
- GM6515 TiN+CrC/C for stainless steel.
- GP6520 TiCN for steel.

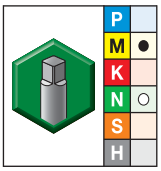


VICTORY

● first choice
○ alternate choice

GT21 • Form D Plug Chamfer • Through Coolant • Metric DIN 371 and 376



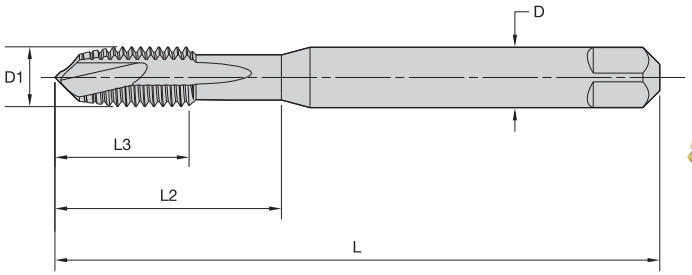


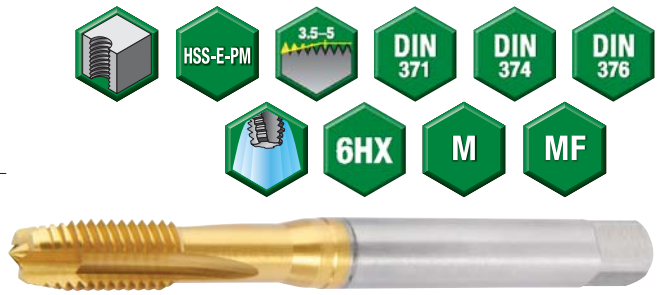
GP6520	GM6515	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
GT215007	GT215001	M5 X 0,8	70	10	25	6,0	2	DIN 371	6HX
GT215008	GT215002	M6 X 1	80	10	30	6,0	3	DIN 371	6HX
GT215009	GT215003	M8 X 1,25	90	13	35	8,0	3	DIN 371	6HX
GT215010	GT215004	M10 X 1,5	100	15	39	10,0	3	DIN 371	6HX
GT215011	GT215005	M12 X 1,75	110	18	44	9,0	3	DIN 376	6HX
GT215012	GT215006	M14 X 2	110	20	52	11,0	4	DIN 376	6HX

Shank Tolerance

D	Tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

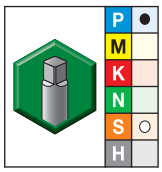
• WP31MG TiN for steel 32–44 HRC.





● first choice
○ alternate choice

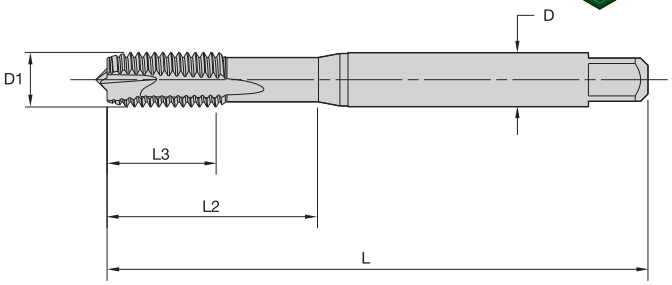
■ GT00 • Form B Plug Chamfer • Metric DIN 371, 374, and 376



Shank Tolerance	
D	Tolerance h9
1–3	+0, -0,025
3,5–6	+0, -0,030
7–10	+0, -0,036
11–18	+0, -0,043

WP31MG	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
GT005001	M3 X 0,5	56	11	18	3,5	2	DIN 371	6HX
GT005002	M4 X 0,7	63	13	21	4,5	2	DIN 371	6HX
GT005003	M5 X 0,8	70	15	25	6,0	2	DIN 371	6HX
GT005004	M6 X 1	80	17	30	6,0	3	DIN 371	6HX
GT005012	M8 X 1	90	17	–	6,0	3	DIN 374	6HX
GT005005	M8 X 1,25	90	20	35	8,0	3	DIN 371	6HX
GT005013	M10 X 1	90	18	–	7,0	3	DIN 374	6HX
GT005014	M10 X 1,25	100	22	–	7,0	3	DIN 374	6HX
GT005006	M10 X 1,5	100	22	39	10,0	3	DIN 371	6HX
GT005015	M12 X 1,25	100	22	–	9,0	3	DIN 374	6HX
GT005016	M12 X 1,5	100	22	–	9,0	3	DIN 374	6HX
GT005007	M12 X 1,75	110	24	–	9,0	3	DIN 376	6HX
GT005017	M14 X 1,5	100	22	–	11,0	3	DIN 374	6HX
GT005008	M14 X 2	110	26	–	11,0	3	DIN 376	6HX
GT005018	M16 X 1,5	100	22	–	12,0	4	DIN 374	6HX
GT005009	M16 X 2	110	27	–	12,0	4	DIN 376	6HX
GT005010	M18 X 2	125	30	–	14,0	4	DIN 376	6HX
GT005011	M20 X 2,5	140	32	–	16,0	4	DIN 376	6HX

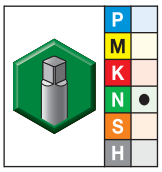
• WN48EG DLC for aluminum.



VICTORY

● first choice
○ alternate choice

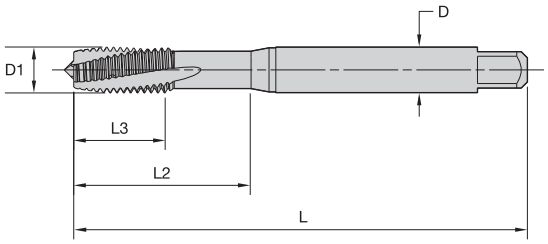
■ GT70 • Form B Plug Chamfer • Metric DIN 371 and 376



Shank Tolerance	
D	Tolerance h9
1–3	+0, -0,025
3,5–6	+0, -0,030
7–10	+0, -0,036
11–18	+0, -0,043

WN48EG	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
GT705001	M3 X 0,5	56	11	18	3,5	2	DIN 371	6H
GT705002	M4 X 0,7	63	13	21	4,5	2	DIN 371	6H
GT705003	M5 X 0,8	70	15	25	6,0	2	DIN 371	6H
GT705004	M6 X 1	80	17	30	6,0	2	DIN 371	6H
GT705005	M8 X 1,25	90	20	35	8,0	2	DIN 371	6H
GT705006	M10 X 1,5	100	22	39	10,0	2	DIN 371	6H
GT705007	M12 X 1,75	110	24	–	9,0	3	DIN 376	6H
GT705008	M16 X 2	110	27	–	12,0	3	DIN 376	6H

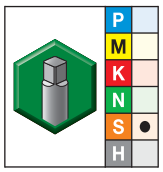
• WS32MG TiCN for nickel and nickel alloys.



VICTORY

● first choice
○ alternate choice

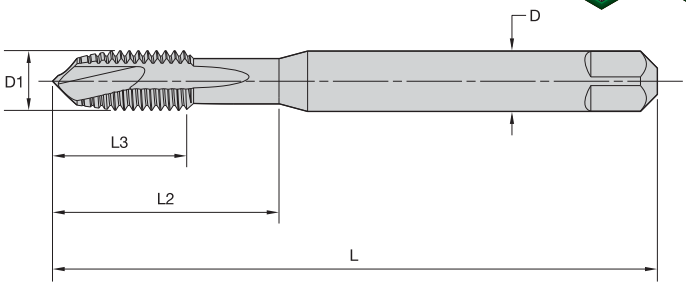
■ GT10 • Form D Plug Chamfer • Metric DIN 371 and 376



Shank Tolerance	
D	Tolerance h9
1–3	+0, -0,025
3,5–6	+0, -0,030
7–10	+0, -0,036
11–18	+0, -0,043

WS32MG	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
GT105001	M3 X 0,5	56	11	18	3,5	2	DIN 371	6HX
GT105002	M4 X 0,7	63	13	21	4,5	3	DIN 371	6HX
GT105003	M5 X 0,8	70	15	25	6,0	3	DIN 371	6HX
GT105004	M6 X 1	80	17	30	6,0	3	DIN 371	6HX
GT105005	M8 X 1,25	90	20	35	8,0	3	DIN 371	6HX
GT105006	M10 X 1,5	100	22	39	10,0	3	DIN 371	6HX
GT105007	M12 X 1,75	110	24	–	9,0	3	DIN 376	6HX
GT105008	M14 X 2	110	26	–	11,0	3	DIN 376	6HX
GT105009	M16 X 2	110	27	–	12,0	3	DIN 376	6HX
GT105010	M20 X 2,5	140	32	–	16,0	3	DIN 376	6HX

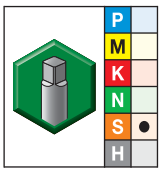
• WN35MG TiN/DLC for titanium and titanium alloys.



VICTORY

● first choice
○ alternate choice

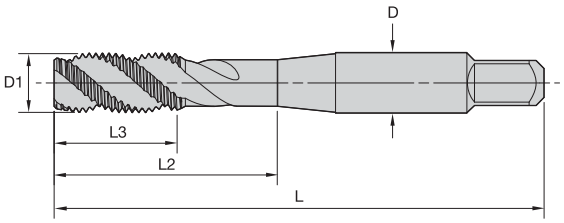
GT14 • Form B Plug Chamfer • Metric DIN 371 and 376

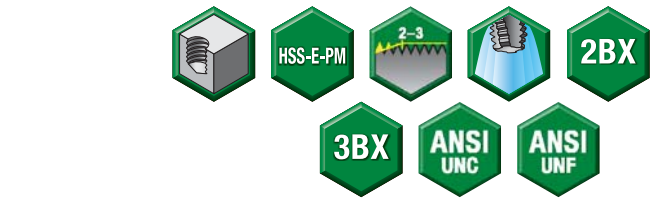


Shank Tolerance	
D	Tolerance h9
1–3	+0, -0,025
3,5–6	+0, -0,030
7–10	+0, -0,036
11–18	+0, -0,043

WN35MG	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
GT145001	M3 X 0,5	56	11	18	3,5	3	DIN 371	6HX
GT145002	M4 X 0,7	63	13	21	4,5	3	DIN 371	6HX
GT145003	M5 X 0,8	70	15	25	6,0	3	DIN 371	6HX
GT145004	M6 X 1	80	17	30	6,0	3	DIN 371	6HX
GT145005	M8 X 1,25	90	20	35	8,0	3	DIN 371	6HX
GT145006	M10 X 1,5	100	22	39	10,0	3	DIN 371	6HX
GT145007	M12 X 1,75	110	24	–	9,0	3	DIN 376	6HX

- GM6515 TiN + CrC/C for stainless steel.
- GP6520 TiCN for steel.
- GP6505 Oxide for steel.

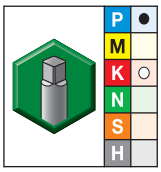


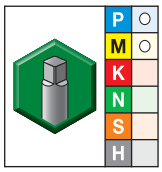


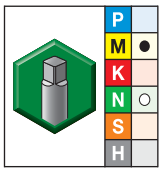
● first choice
○ alternate choice

VICTORY

GT30 • Machine Screw and Fractional • Form C Semi-Bottoming Chamfer



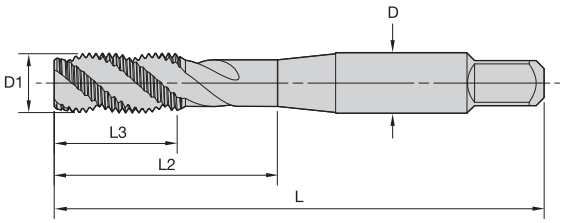




Shank Tolerance	
D Fractional	D Inch
.250–.375	+0, -.0004
.438–.625	+0, -.0004

GP6520	GP6505	GM6515	D1 size	L	L3	L2	D	number of flutes	class of fit
GT305031	–	GT305001	2 - 56	1.75	.44	.49	.141	2	3BX
GT305032	–	GT305002	4 - 40	1.88	.56	.68	.141	2	2BX
GT305033	GT305125	GT305003	4 - 40	1.88	.56	.68	.141	2	3BX
GT305034	–	GT305004	6 - 32	1.99	.36	.71	.141	3	2BX
GT305035	GT305126	GT305005	6 - 32	1.99	.36	.71	.141	3	3BX
GT305036	GT305127	GT305006	8 - 32	2.12	.31	.76	.168	3	3BX
GT305037	GT305128	GT305007	10 - 24	2.37	.47	.91	.194	3	3BX
GT305052	–	GT305022	10 - 32	2.36	.47	.91	.194	3	2BX
GT305053	GT305140	GT305023	10 - 32	2.36	.47	.91	.194	3	3BX
GT305038	GT305129	GT305008	1/4 - 20	2.50	.44	1.01	.255	3	2BX
GT305039	GT305130	GT305009	1/4 - 20	2.50	.44	1.01	.255	3	3BX
GT305054	GT305141	GT305024	1/4 - 28	2.49	.43	1.00	.255	3	2BX
GT305055	GT305142	GT305025	1/4 - 28	2.49	.43	1.00	.255	3	3BX
GT305040	GT305131	GT305010	5/16 - 18	2.72	.49	1.13	.318	3	2BX
GT305041	GT305132	GT305011	5/16 - 18	2.72	.49	1.13	.318	3	3BX
GT305056	GT305143	GT305026	5/16 - 24	2.71	.48	1.13	.318	3	2BX
GT305057	–	GT305027	5/16 - 24	2.71	.48	1.13	.318	3	3BX
GT305042	GT305133	GT305012	3/8 - 16	2.94	.60	1.27	.381	3	2BX
GT305043	GT305134	GT305013	3/8 - 16	2.94	.60	1.27	.381	3	3BX
GT305058	–	GT305028	3/8 - 24	2.92	.58	1.25	.381	3	3BX
GT305044	GT305135	GT305014	7/16 - 14	3.16	.71	1.49	.323	4	3BX
GT305059	GT305145	GT305029	7/16 - 20	3.16	.71	1.49	.323	4	3BX
GT305045	GT305136	GT305015	1/2 - 13	3.38	.77	1.74	.367	4	2BX
GT305046	GT305137	GT305016	1/2 - 13	3.38	.77	1.74	.367	4	3BX
GT305060	GT305147	GT305030	1/2 - 20	3.38	.77	1.74	.367	4	3BX
GT305047	–	GT305017	5/8 - 11	3.81	.91	1.89	.480	4	2BX
GT305048	GT305138	GT305018	5/8 - 11	3.81	.91	1.89	.480	4	3BX
GT305049	–	GT305019	3/4 - 10	4.25	1.00	2.08	.590	4	2BX
GT305050	GT305139	GT305020	3/4 - 10	4.25	1.00	2.08	.590	4	3BX
GT305051	–	GT305021	1 - 8	5.13	1.25	2.58	.800	4	3BX

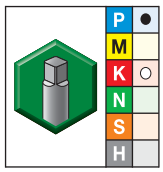
- GM6515 TiN + CrC/C for stainless steel.
- GP6520 TiCN for steel.

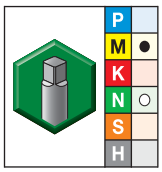


VICTORY

● first choice
○ alternate choice

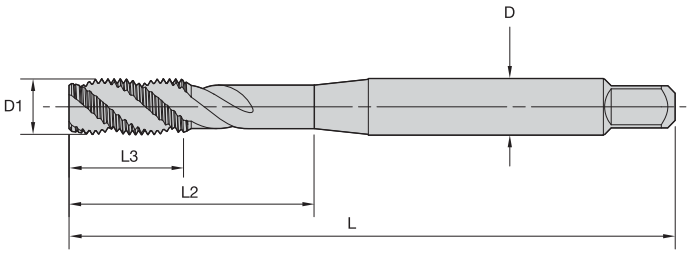
GT30 • Form C Semi-Bottoming Chamfer • Metric ANSI





GP6520	GM6515	D1 size	L	L3	L2	D	number of flutes	class of fit
							Shank Tolerance	
							D Fractional: .250–.375	D Inch: +0, -.0004
							.438–.625	+0, -.0004
GT305070	**GT305061**	M3 X 0,5	1.94	.63	.75	.141	3	6HX
GT305071	**GT305062**	M4 X 0,7	2.13	.32	.76	.168	3	6HX
GT305072	**GT305063**	M5 X 0,8	2.38	.47	.91	.194	3	6HX
GT305073	**GT305064**	M6 X 1	2.50	.46	1.01	.255	3	6HX
GT305074	**GT305065**	M8 X 1,25	2.72	.48	1.12	.318	3	6HX
GT305075	**GT305066**	M10 X 1,5	2.94	.53	1.26	.381	3	6HX
GT305076	**GT305067**	M12 X 1,75	3.38	.77	1.74	.367	4	6HX
GT305077	**GT305068**	M14 X 2	3.59	.83	1.74	.429	4	6HX
GT305078	**GT305069**	M16 X 2	3.81	.91	1.89	.480	4	6HX

- GM6515 TiN + CrC/C for stainless steel.
- GP6520 TiCN for steel.
- GP6505 oxide for steel.



● first choice
○ alternate choice

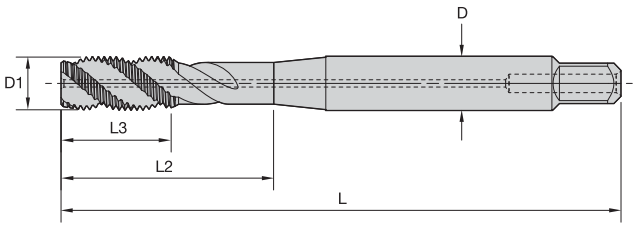
VICTORY

GT30 • Form C Semi-Bottoming Chamfer • Metric DIN 371, 374, and 376

Shank Tolerance	
D	Tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

GP6520	GP6505	GM6515	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
GT305097	GT305116	GT305148	M3 X 0,5	56	8	18	3,5	3	DIN 371	6HX
GT305098	GT305117	GT305079	M4 X 0,7	63	10	21	4,5	3	DIN 371	6HX
GT305099	GT305118	GT305080	M5 X 0,8	70	10	25	6,0	3	DIN 371	6HX
GT305100	GT305119	GT305081	M6 X 1	80	10	30	6,0	3	DIN 371	6HX
GT305109	–	GT305090	M8 X 1	90	13	35	6,0	4	DIN 374	6HX
GT305101	GT305120	GT305082	M8 X 1,25	90	13	35	8,0	3	DIN 371	6HX
GT305110	–	GT305091	M10 X 1	90	10	35	7,0	4	DIN 374	6HX
GT305111	–	GT305092	M10 X 1,25	100	15	39	7,0	4	DIN 374	6HX
GT305102	GT305121	GT305083	M10 X 1,5	100	15	39	10,0	3	DIN 371	6HX
GT305112	–	GT305093	M12 X 1,5	100	15	39	9,0	4	DIN 374	6HX
GT305103	GT305122	GT305084	M12 X 1,75	110	18	44	9,0	4	DIN 376	6HX
GT305113	–	GT305094	M14 X 1,5	100	15	47	11,0	4	DIN 374	6HX
GT305104	GT305123	GT305085	M14 X 2	110	20	52	11,0	4	DIN 376	6HX
GT305114	–	GT305095	M16 X 1,5	100	15	46	12,0	4	DIN 374	6HX
GT305105	GT305124	GT305086	M16 X 2	110	20	51	12,0	4	DIN 376	6HX
GT305115	–	GT305096	M18 X 1,5	110	15	50	14,0	4	DIN 374	6HX
GT305106	–	GT305087	M18 X 2,5	125	25	58	14,0	4	DIN 376	6HX
GT305107	–	GT305088	M22 X 2,5	140	25	70	18,0	4	DIN 376	6HX
GT305108	–	GT305089	M24 X 3	160	30	77	18,0	4	DIN 376	6HX
GT305161	–	–	M24 X 3	160	30	77	18,0	5	DIN 376	6HX
GT305163	–	–	M30 X 3,5	180	35	91	22,0	5	DIN 376	6HX
GT305164	–	–	M33 X 3,5	180	35	100	25,0	5	DIN 376	6HX
GT305166	–	–	M36 X 4	200	40	110	28,0	5	DIN 376	6HX
GT305168	–	–	M42 X 4,5	200	45	120	32,0	5	DIN 376	6HX

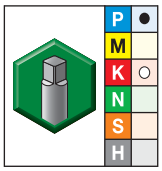
- GM6515 TiN + CrC/C for stainless steel.
- GP6520 TiCN for steel.

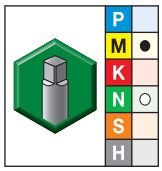


VICTORY

● first choice
○ alternate choice

GT31 • Form C Semi-Bottoming Chamfer • Through Coolant • Metric DIN 371 and 376

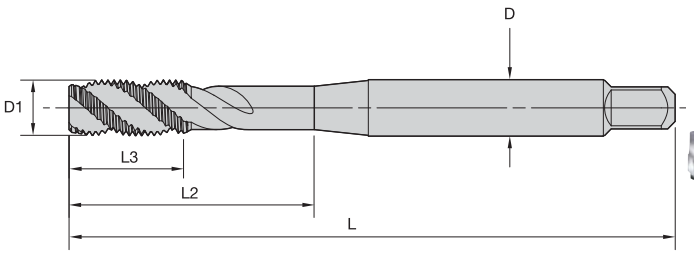




GP6520	GM6515	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
GT315007	**GT315001**	M5 X 0,8	70	10	25	6,0	3	DIN 371	6HX
GT315008	**GT315002**	M6 X 1	80	10	30	6,0	3	DIN 371	6HX
GT315009	**GT315003**	M8 X 1,25	90	13	35	8,0	3	DIN 371	6HX
GT315010	**GT315004**	M10 X 1,5	100	15	39	10,0	3	DIN 371	6HX
GT315011	**GT315005**	M12 X 1,75	110	18	44	9,0	4	DIN 376	6HX
GT315012	**GT315006**	M14 X 2	110	20	52	11,0	4	DIN 376	6HX
GT315025	–	M24 X 3	160	30	77	18,0	5	DIN 376	6HX
GT315027	–	M30 X 3,5	180	35	91	22,0	5	DIN 376	6HX
GT315028	–	M33 X 3,5	180	35	100	25,0	5	DIN 376	6HX
GT315030	–	M36 X 4	200	40	110	28,0	5	DIN 376	6HX
GT315032	–	M42 X 4,5	200	45	120	32,0	5	DIN 376	6HX

Shank Tolerance

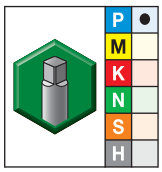
D	Tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011



● first choice
○ alternate choice

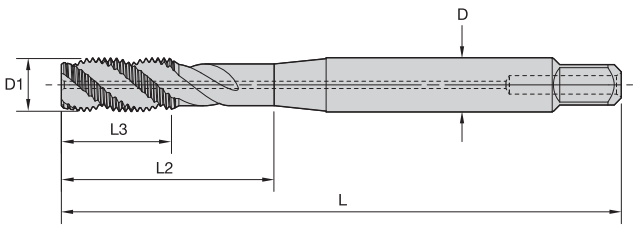
VICTORY

■ GT32 • Form E Bottoming Chamfer • Metric DIN 371, 374, and 376



Shank Tolerance	
D	Tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

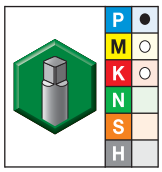
GP6520	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
GT325001	M5 X 0,8	70	10	25	6,0	3	DIN 371	6HX
GT325002	M6 X 1	80	10	30	6,0	3	DIN 371	6HX
GT325003	M8 X 1,25	90	13	35	8,0	3	DIN 371	6HX
GT325004	M10 X 1,5	100	15	39	10,0	3	DIN 371	6HX
GT325007	M12 X 1,5	100	15	39	9,0	4	DIN 374	6HX
GT325005	M12 X 1,75	110	18	44	9,0	4	DIN 376	6HX
GT325008	M14 X 1,5	100	15	47	11,0	4	DIN 374	6HX
GT325006	M14 X 2	110	20	52	11,0	4	DIN 376	6HX
GT325009	M16 X 1,5	100	15	46	12,0	4	DIN 374	6HX



● first choice
○ alternate choice

VICTORY

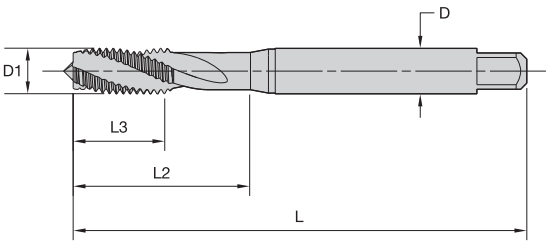
GT33 • Form E Bottoming Chamfer • Through Coolant • Metric DIN 371, 374, and 376



Shank Tolerance	
D	Tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

GP6520	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
GT335001	M5 X 0,8	70	10	25	6,0	3	DIN 371	6HX
GT335002	M6 X 1	80	10	30	6,0	3	DIN 371	6HX
GT335003	M8 X 1,25	90	13	35	8,0	3	DIN 371	6HX
GT335004	M10 X 1,5	100	15	39	10,0	3	DIN 371	6HX
GT335007	M12 X 1,5	100	15	39	9,0	4	DIN 374	6HX
GT335005	M12 X 1,75	110	18	44	9,0	4	DIN 376	6HX
GT335008	M14 X 1,5	100	15	47	11,0	4	DIN 374	6HX
GT335006	M14 X 2	110	20	52	11,0	4	DIN 376	6HX
GT335009	M16 X 1,5	100	15	46	12,0	4	DIN 374	6HX

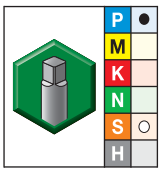
• WP31MG TiN for steel 32–44 HRC.



● first choice
○ alternate choice

VICTORY

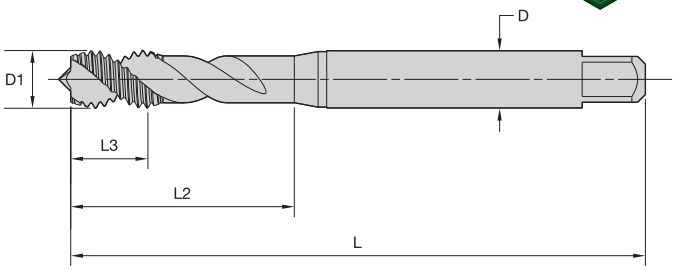
■ GT02 • Form C Semi-Bottoming Chamfer • Metric DIN 371, 374, and 376



Shank Tolerance	
D	Tolerance h9
1-3	+0, -0,025
3,5–6	+0, -0,030
7–10	+0, -0,036
11–18	+0, -0,043

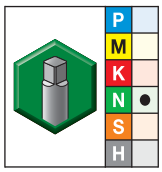
WP31MG	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
GT025001	M3 X 0,5	56	11	18	3,5	3	DIN 371	6H
GT025002	M4 X 0,7	63	13	21	4,5	3	DIN 371	6H
GT025003	M5 X 0,8	70	15	25	6,0	3	DIN 371	6H
GT025004	M6 X 1	80	17	30	6,0	3	DIN 371	6H
GT025012	M8 X 1	90	17	–	6,0	3	DIN 374	6H
GT025005	M8 X 1,25	90	20	35	8,0	3	DIN 371	6H
GT025013	M10 X 1	90	18	–	7,0	3	DIN 374	6H
GT025014	M10 X 1,25	100	22	–	7,0	3	DIN 374	6H
GT025006	M10 X 1,5	100	22	39	10,0	3	DIN 371	6H
GT025015	M12 X 1,25	100	22	–	9,0	3	DIN 374	6H
GT025016	M12 X 1,5	100	22	–	9,0	3	DIN 374	6H
GT025007	M12 X 1,75	110	24	44	12,0	3	DIN 376	6H
GT025017	M14 X 1,5	100	22	–	11,0	3	DIN 374	6H
GT025008	M14 X 2	110	26	52	11,0	3	DIN 376	6H
GT025018	M16 X 1,5	100	22	–	12,0	3	DIN 374	6H
GT025009	M16 X 2	110	27	–	12,0	3	DIN 376	6H
GT025010	M18 X 2	125	30	–	14,0	4	DIN 376	6H
GT025011	M20 X 2,5	140	32	–	16,0	4	DIN 376	6H

• WN48EG DLC for aluminum.



● first choice
○ alternate choice

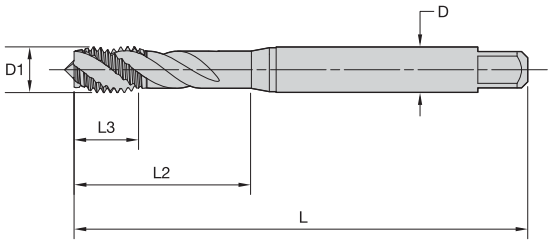
GT80 • Form C Semi-Bottoming Chamfer • Metric DIN 371 and 376



Shank Tolerance	
D	Tolerance h9
1–3	+0, -0,025
3,5–6	+0, -0,030
7–10	+0, -0,036
11–18	+0, -0,043

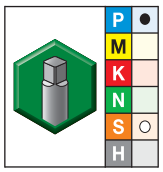
WN48EG	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
GT805001	M3 X 0,5	56	6	18	3,5	2	DIN 371	6H
GT805002	M4 X 0,7	63	7	21	4,5	2	DIN 371	6H
GT805003	M5 X 0,8	70	8	25	6,0	2	DIN 371	6H
GT805004	M6 X 1	80	10	30	6,0	2	DIN 371	6H
GT805005	M8 X 1,25	90	14	35	8,0	2	DIN 371	6H
GT805006	M10 X 1,5	100	16	39	10,0	2	DIN 371	6H
GT805007	M12 X 1,75	110	18	–	9,0	3	DIN 376	6H
GT805008	M16 X 2	110	22	–	12,0	3	DIN 376	6H
GT805009	M20 X 2,5	140	25	–	16,0	3	DIN 376	6H

• WH36MG TiAlN/MoS_2 for steel 32–44 HRC (3 x D).



● first choice
○ alternate choice

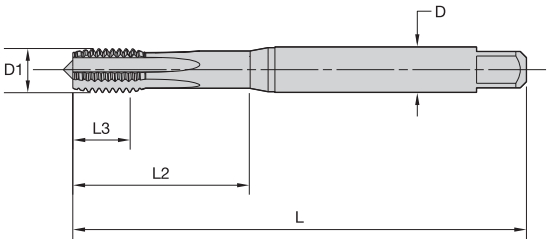
■ GT04 • Form C Semi-Bottoming Chamfer • Metric DIN 371, 374, and 376



Shank Tolerance	
D	Tolerance h9
1–3	+0, -0,025
3,5–6	+0, -0,030
7–10	+0, -0,036
11–18	+0, -0,043

WH36MG	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
GT045001	M3 X 0,5	56	6	18	3,5	3	DIN 371	6H
GT045002	M4 X 0,7	63	7	21	4,5	3	DIN 371	6H
GT045003	M5 X 0,8	70	8	25	6,0	3	DIN 371	6H
GT045004	M6 X 1	80	10	30	6,0	3	DIN 371	6H
GT045012	M8 X 1	90	10	–	6,0	3	DIN 374	6H
GT045005	M8 X 1,25	90	14	35	8,0	3	DIN 371	6H
GT045013	M10 X 1	90	10	–	7,0	3	DIN 374	6H
GT045014	M10 X 1,25	100	16	–	7,0	3	DIN 374	6H
GT045006	M10 X 1,5	100	16	39	10,0	3	DIN 371	6H
GT045015	M12 X 1,25	100	15	–	9,0	4	DIN 374	6H
GT045016	M12 X 1,5	100	15	–	9,0	4	DIN 374	6H
GT045007	M12 X 1,75	110	18	–	9,0	4	DIN 376	6H
GT045017	M14 X 1,5	100	15	–	11,0	4	DIN 374	6H
GT045008	M14 X 2	110	20	–	11,0	4	DIN 376	6H
GT045018	M16 X 1,5	100	15	–	12,0	4	DIN 374	6H
GT045009	M16 X 2	110	22	–	12,0	4	DIN 376	6H
GT045010	M18 X 2	125	25	–	14,0	4	DIN 376	6H
GT045011	M20 X 2,5	140	25	–	16,0	4	DIN 376	6H

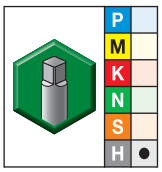
• WS32MG TiCN for steel 44–55 HRC.



● first choice
○ alternate choice

VICTORY

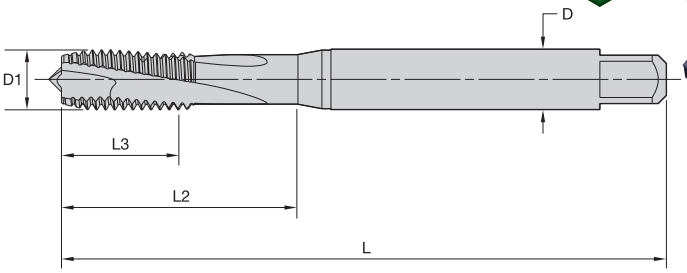
■ GT06 • Form C Semi-Bottoming Chamfer • Metric DIN 371, 374, and 376



Shank Tolerance	
D	Tolerance h9
1–3	+0, -0,025
3,5–6	+0, -0,030
7–10	+0, -0,036
11–18	+0, -0,043

WS32MG	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
GT065003	M6 X 1	80	10	30	6,0	4	DIN 371	6HX
GT065006	M8 X 1	90	10	35	8,0	5	DIN 374	6HX
GT065001	M8 X 1,25	90	14	35	8,0	5	DIN 371	6HX
GT065008	M12 X 1,5	100	15	—	9,0	5	DIN 374	6HX
GT065004	M12 X 1,75	110	18	—	9,0	5	DIN 376	6HX
GT065007	M10 X 1	90	10	35	10,0	5	DIN 374	6HX
GT065002	M10 X 1,5	100	16	39	10,0	5	DIN 371	6HX
GT065009	M14 X 1,5	100	15	—	11,0	6	DIN 374	6HX
GT065010	M16 X 1,5	100	15	—	12,0	6	DIN 374	6HX
GT065005	M16 X 2	110	22	—	12,0	6	DIN 376	6HX

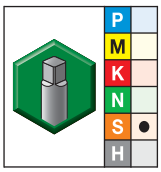
• WS32MG TiCN for nickel and nickel alloys.



VICTORY

● first choice
○ alternate choice

■ GT12 • Form C Semi-Bottoming Chamfer • Metric DIN 371 and 376

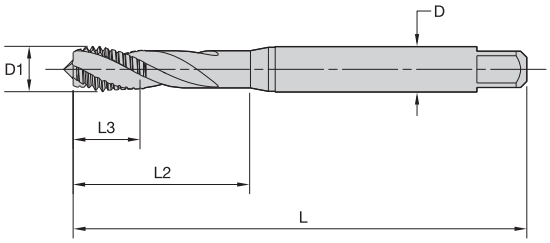


Shank Tolerance

D	Tolerance h9
1–3	+0, -0,025
3,5–6	+0, -0,030
7–10	+0, -0,036
11–18	+0, -0,043

WS32MG	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
GT125001	M3 X 0,5	56	11	18	3,5	2	DIN 371	6HX
GT125002	M4 X 0,7	63	13	21	4,5	3	DIN 371	6HX
GT125003	M5 X 0,8	70	15	25	6,0	3	DIN 371	6HX
GT125004	M6 X 1	80	17	30	6,0	3	DIN 371	6HX
GT125005	M8 X 1,25	90	20	35	8,0	3	DIN 371	6HX
GT125006	M10 X 1,5	100	22	39	10,0	3	DIN 371	6HX
GT125007	M12 X 1,75	110	24	–	9,0	3	DIN 376	6HX
GT125008	M14 X 2	110	26	–	11,0	3	DIN 376	6HX
GT125009	M16 X 2	110	27	–	12,0	3	DIN 376	6HX
GT125010	M20 X 2,5	140	32	–	16,0	3	DIN 376	6HX

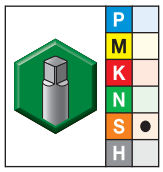
• WN35MG TiN/DLC for titanium and titanium alloys.



VICTORY

● first choice
○ alternate choice

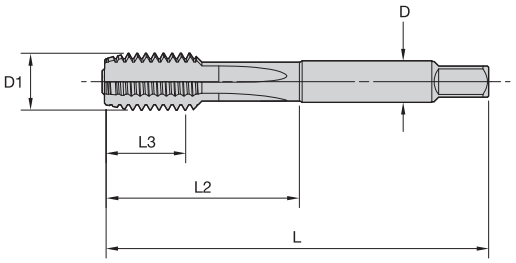
GT16 • Form C Semi-Bottoming Chamfer • Metric DIN 371

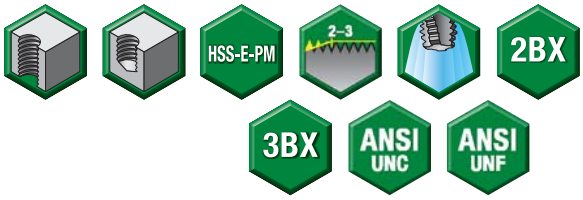


Shank Tolerance	
D	Tolerance h9
1–3	+0, -0,025
3,5–6	+0, -0,030
7–10	+0, -0,036
11–18	+0, -0,043

WN35MG	D1 size	L	L3	L2	D	number of flutes	class of fit
GT165001	M3 X 0,5	56	6	18	3,5	3	6HX
GT165002	M4 X 0,7	63	7	21	4,5	3	6HX
GT165003	M5 X 0,8	70	8	25	6,0	3	6HX
GT165004	M6 X 1	80	10	30	6,0	3	6HX
GT165005	M8 X 1,25	90	14	35	8,0	3	6HX
GT165006	M10 X 1,5	100	16	39	10,0	3	6HX
GT165007	M12 X 1,75	110	18	44	12,0	3	6HX

• GP6520 TiCN for cast iron and cast aluminum.

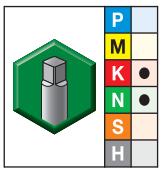




● first choice
○ alternate choice

VICTORY

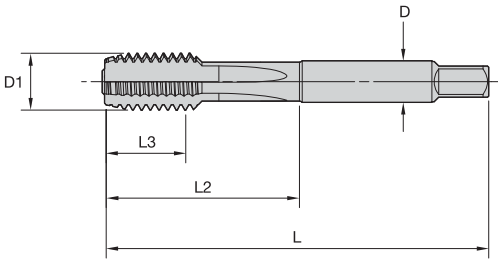
■ GT40 • Machine Screw and Fractional • Form C Semi-Bottoming Chamfer



Shank Tolerance	
D Fractional	D Inch
.250–.375	+0, -.0004
.438–.625	+0, -.0004

GP6520	D1 size	L	L3	L2	D	number of flutes	class of fit
GT405012	10 - 24	2.37	.47	.91	.194	4	3BX
GT405013	10 - 32	2.36	.47	.91	.194	4	3BX
GT405014	1/4 - 20	2.50	.44	1.01	.255	4	2BX
GT405015	1/4 - 20	2.50	.44	1.01	.255	4	3BX
GT405016	1/4 - 28	2.49	.43	1.00	.255	4	2BX
GT405017	1/4 - 28	2.49	.43	1.00	.255	4	3BX
GT405018	5/16 - 18	2.72	.49	1.13	.318	4	2BX
GT405019	5/16 - 18	2.72	.49	1.13	.318	4	3BX
GT405020	5/16 - 24	2.71	.48	1.13	.318	4	3BX
GT405021	3/8 - 16	2.94	.60	1.27	.381	4	2BX
GT405022	3/8 - 16	2.94	.60	1.27	.381	4	3BX
GT405023	3/8 - 24	2.92	.58	1.25	.381	4	3BX
GT405024	7/16 - 14	3.16	.71	1.49	.323	4	3BX
GT405025	7/16 - 20	3.16	.71	1.49	.323	4	3BX
GT405026	1/2 - 13	3.38	.77	1.74	.367	4	3BX
GT405027	1/2 - 20	3.38	.77	1.74	.367	4	3BX
GT405028	5/8 - 11	3.81	.91	1.89	.480	4	3BX
GT405029	3/4 - 10	4.25	1.00	2.08	.590	4	3BX

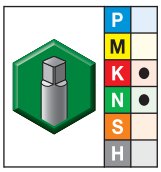
• GP6520 TiCN for cast iron and cast aluminum.



VICTORY

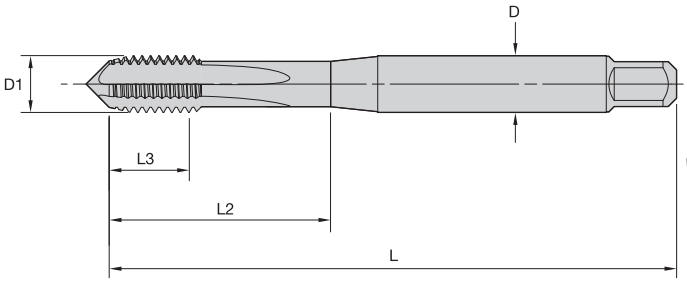
● first choice
○ alternate choice

■ GT40 • Form C Semi-Bottoming Chamfer • Metric ANSI



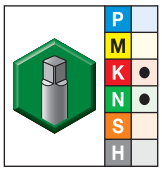
GP6520	D1 size	L	L3	L2	D	Shank Tolerance D Fractional	Shank Tolerance D Inch	number of flutes	class of fit
						.250–.375	+0, -.0004		
						.438–.625	+0, -.0004		
GT405030	M3 X 0,5	1.94	.63	.75	.140			4	6HX
GT405031	M4 X 0,7	2.12	.32	.76	.168			4	6HX
GT405032	M5 X 0,8	2.37	.47	.91	.194			4	6HX
GT405033	M6 X 1	2.50	.46	1.01	.255			4	6HX
GT405034	M8 X 1,25	2.71	.48	1.13	.318			4	6HX
GT405035	M10 X 1,5	2.92	.53	1.26	.381			4	6HX
GT405036	M12 X 1,75	3.38	.77	1.74	.367			4	6HX
GT405037	M14 X 2	3.59	.83	1.74	.429			4	6HX
GT405038	M16 X 2	3.81	.91	1.89	.480			4	6HX

• GP6520 TiCN for cast iron and cast aluminum.



● first choice
○ alternate choice

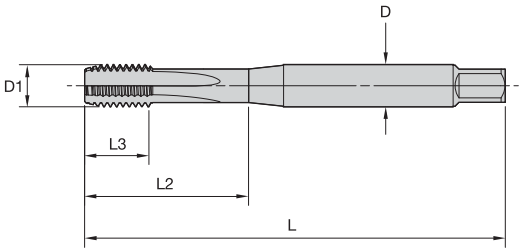
■ GT40 • Form C Semi-Bottoming Chamfer • Metric DIN 371 and 376



Shank Tolerance	
D	Tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

GP6520	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
GT405001	M4 X 0,7	63	10	21	4,5	3	DIN 371	6HX
GT405002	M5 X 0,8	70	10	25	6,0	3	DIN 371	6HX
GT405003	M6 X 1	80	10	30	6,0	4	DIN 371	6HX
GT405004	M8 X 1,25	90	13	35	8,0	4	DIN 371	6HX
GT405005	M10 X 1,5	100	15	39	10,0	4	DIN 371	6HX
GT405006	M12 X 1,75	110	18	44	9,0	4	DIN 376	6HX
GT405007	M14 X 2	110	20	52	11,0	4	DIN 376	6HX
GT405008	M16 X 2	110	20	51	12,0	4	DIN 376	6HX
GT405009	M18 X 2,5	125	25	58	14,0	4	DIN 376	6HX
GT405010	M20 X 2,5	140	25	64	16,0	4	DIN 376	6HX
GT405011	M22 X 2,5	140	25	70	18,0	4	DIN 376	6HX

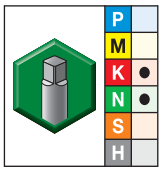
• GP6520 TiCN for cast iron and cast aluminum.



● first choice
○ alternate choice

VICTORY

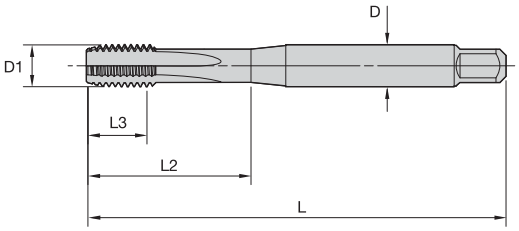
GT41 • Form C Semi-Bottoming Chamfer • Through Coolant • Metric DIN 371 and 376

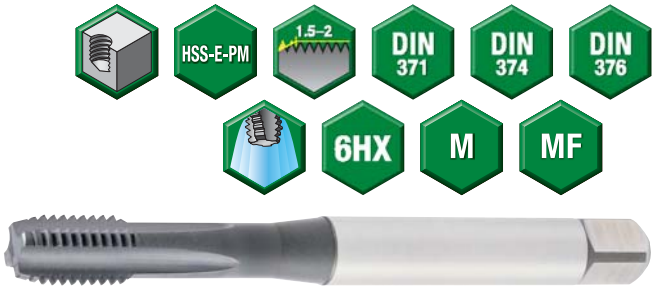


Shank Tolerance	
D	Tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

GP6520	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
GT415001	M4 X 0,7	63	10	21	4,5	3	DIN 371	6HX
GT415002	M5 X 0,8	70	10	25	6,0	3	DIN 371	6HX
GT415003	M6 X 1	80	10	30	6,0	4	DIN 371	6HX
GT415004	M8 X 1,25	90	13	35	8,0	4	DIN 371	6HX
GT415005	M10 X 1,5	100	15	39	10,0	4	DIN 371	6HX
GT415006	M12 X 1,75	110	18	44	9,0	4	DIN 376	6HX
GT415007	M14 X 2	110	20	52	11,0	4	DIN 376	6HX
GT415008	M16 X 2	110	20	51	12,0	4	DIN 376	6HX
GT415009	M18 X 2,5	125	25	58	14,0	4	DIN 376	6HX
GT415010	M20 X 2,5	140	25	64	16,0	4	DIN 376	6HX

• GP6520 TiCN for cast iron and cast aluminum.

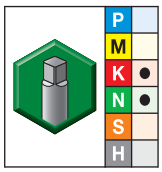




● first choice
○ alternate choice

VICTORY

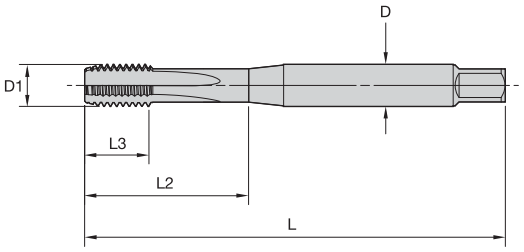
■ GT42 • Form E Bottoming Chamfer • Metric DIN 371, 374, and 376



Shank Tolerance	
D	Tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

GP6520	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
GT425001	M5 X 0,8	70	10	25	6,0	3	DIN 371	6HX
GT425002	M6 X 1	80	10	30	6,0	4	DIN 371	6HX
GT425003	M8 X 1,25	90	13	35	8,0	4	DIN 371	6HX
GT425004	M10 X 1,5	100	15	39	10,0	4	DIN 371	6HX
GT425007	M12 X 1,5	100	15	39	9,0	4	DIN 374	6HX
GT425005	M12 X 1,75	110	18	44	9,0	4	DIN 376	6HX
GT425008	M14 X 1,5	100	15	47	11,0	4	DIN 374	6HX
GT425006	M14 X 2	110	20	52	11,0	4	DIN 376	6HX
GT425009	M16 X 1,5	100	15	46	12,0	4	DIN 374	6HX

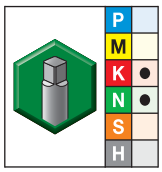
• GP6520 TiCN for cast iron and cast aluminum.



● first choice
○ alternate choice

VICTORY

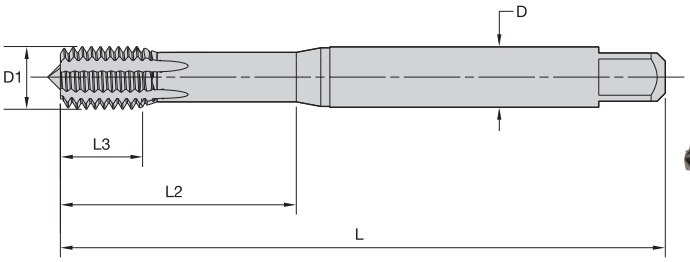
■ GT43 • Form E Bottoming Chamfer • Through Coolant • Metric DIN 371, 374, and 376



Shank Tolerance	
D	Tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

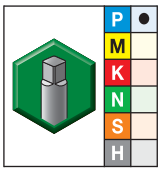
GP6520	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
GT435001	M5 X 0,8	70	10	25	6,0	3	DIN 371	6HX
GT435002	M6 X 1	80	10	30	6,0	4	DIN 371	6HX
GT435003	M8 X 1,25	90	13	35	8,0	4	DIN 371	6HX
GT435004	M10 X 1,5	100	15	39	10,0	4	DIN 371	6HX
GT435007	M12 X 1,5	100	15	39	9,0	4	DIN 374	6HX
GT435005	M12 X 1,75	110	18	44	9,0	4	DIN 376	6HX
GT435008	M14 X 1,5	100	15	47	11,0	4	DIN 374	6HX
GT435006	M14 X 2	110	20	52	11,0	4	DIN 376	6HX
GT435009	M16 X 1,5	100	15	46	12,0	4	DIN 374	6HX

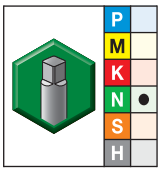
- WP31MG TiN for steel.
- WN38MG DLC for aluminum.



● first choice
○ alternate choice

■ GT22 • Form C Semi-Bottoming Entry Taper • Metric DIN 2174

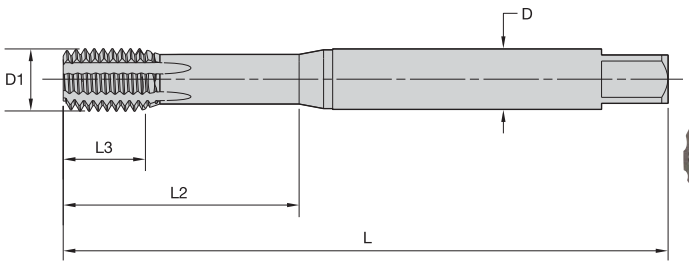




Shank Tolerance	
D	Tolerance h9
1–3	+0, -0,025
3,5–6	+0, -0,030
7–10	+0, -0,036
11–18	+0, -0,043

WP31MG	WN38MG	D1 size	L	L3	L2	D	number of lube grooves	class of fit
GT225016	GT225001	M3 X 0,5	56	6	18	3,5	4	6HX
GT225017	GT225002	M4 X 0,7	63	7	21	4,5	4	6HX
GT225018	GT225003	M5 X 0,8	70	8	25	6,0	4	6HX
GT225019	GT225004	M6 X 1	80	10	30	6,0	5	6HX
GT225024	GT225009	M8 X 1	90	10	35	8,0	5	6HX
GT225020	GT225005	M8 X 1,25	90	14	35	8,0	5	6HX
GT225025	GT225010	M10 X 1	90	10	35	10,0	5	6HX
GT225026	GT225011	M10 X 1,25	100	16	39	10,0	5	6HX
GT225021	GT225006	M10 X 1,5	100	16	39	10,0	5	6HX
GT225027	GT225012	M12 X 1,25	100	15	—	9,0	6	6HX
GT225028	GT225013	M12 X 1,5	100	15	—	9,0	6	6HX
GT225022	GT225007	M12 X 1,75	110	18	—	9,0	6	6HX
GT225029	GT225014	M14 X 1,5	100	15	—	11,0	6	6HX
GT225030	GT225015	M16 X 1,5	100	15	—	12,0	6	6HX
GT225023	GT225008	M16 X 2	110	22	—	12,0	6	6HX

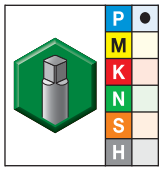
- WP31MG TiN for steel.
- WN38MG DLC for aluminum.

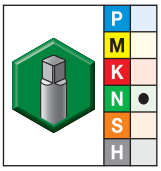


● first choice
○ alternate choice

VICTORY

GT23 • Form C Semi-Bottoming Entry Taper • Through Coolant • Metric DIN 2174





Shank Tolerance	
D	Tolerance h9
1–3	+0, -0,025
3,5–6	+0, -0,030
7–10	+0, -0,036
11–18	+0, -0,043

WP31MG	WN38MG	D1 size	L	L3	L2	D	number of lube grooves	class of fit
GT235012	GT235001	M5 X 0,8	70	8	25	6,0	4	6HX
GT235013	GT235002	M6 X 1	80	10	30	6,0	5	6HX
GT235018	GT235007	M8 X 1	90	10	35	8,0	5	6HX
GT235014	GT235003	M8 X 1,25	90	14	35	8,0	5	6HX
GT235019	GT235008	M10 X 1	90	10	35	10,0	5	6HX
GT235015	GT235004	M10 X 1,5	100	16	39	10,0	5	6HX
GT235020	GT235009	M12 X 1,5	100	15	–	9,0	6	6HX
GT235016	GT235005	M12 X 1,75	110	18	–	9,0	6	6HX
GT235021	GT235010	M14 X 1,5	100	15	–	11,0	6	6HX
GT235022	GT235011	M16 X 1,5	100	15	–	12,0	6	6HX
GT235017	GT235006	M16 X 2	110	22	–	12,0	6	6HX

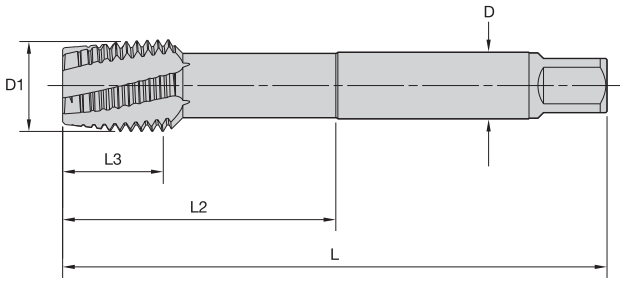
WIN WITH WIDIA™

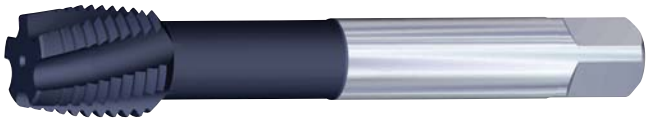
Victory™ GT HP HSS-E-PM Wind Taps

Boost productivity on large-sized components.

- Made with highly alloyed powdered metal HSS-E substrate that combines wear and heat resistance with toughness.
- GP6520™ Grade provides long tap life at high tapping speeds.
- Precision h6 shank results in exceptional thread quality and tool life due a very low runout.
- GT20 through holes.
- GT30 and GT31 for blind holes on vertical tapping.
- GT50 and GT51 for blind holes on horizontal tapping.
- All GT™ Series Wind Taps are available according to DIN 376 and extra-long lengths as standard.

• GP6520 TiCN for steel and cast iron.

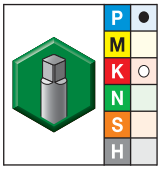




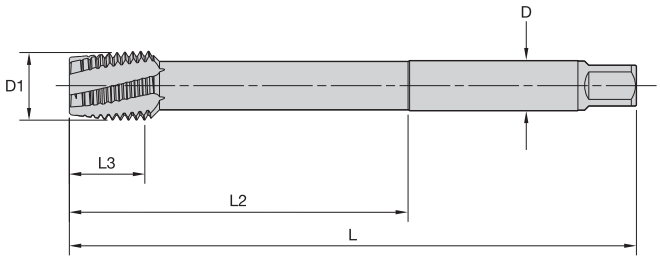
VICTORY

● first choice
○ alternate choice

GT20 • Form D Plug Chamfer • Large Sizes • Metric DIN 376



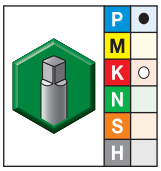
GP6520	D1 size	L	L3	L2	D	Shank Tolerance D	Shank Tolerance Tolerance h6	number of flutes	class of fit
						12–18	+0, -0,011		
						20–30	+0, -0,013		
						32–36	+0, -0,016		
GT205111	M24 X 3	160	30	77	18,0			5	6HX
GT205113	M30 X 3,5	180	35	91	22,0			5	6HX
GT205114	M33 X 3,5	180	35	100	25,0			5	6HX
GT205116	M36 X 4	200	40	110	28,0			6	6HX
GT205118	M42 X 4,5	200	45	120	32,0			6	6HX



VICTORY

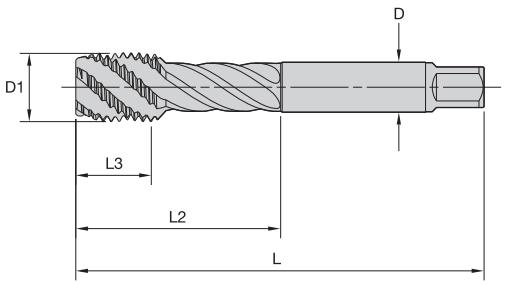
● first choice
○ alternate choice

GT20 • Form D Plug Chamfer • Larger Sizes • Metric Extra Long



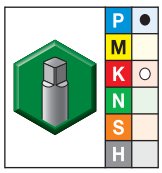
GP6520	D1 size	L	L3	L2	D	Shank Tolerance D	Shank Tolerance Tolerance h6	number of flutes	class of fit
						12–18	+0, -0,011		
						20–30	+0, -0,013		
						32–36	+0, -0,016		
GT205122	M24 X 3	200	30	120	18,0			5	6HX
GT205124	M30 X 3,5	250	35	150	22,0			5	6HX
GT205125	M33 X 3,5	250	35	150	25,0			5	6HX
GT205127	M36 X 4	250	40	150	28,0			6	6HX
GT205129	M42 X 4,5	300	45	180	32,0			6	6HX

• GP6520 TiCN for steel and cast iron.

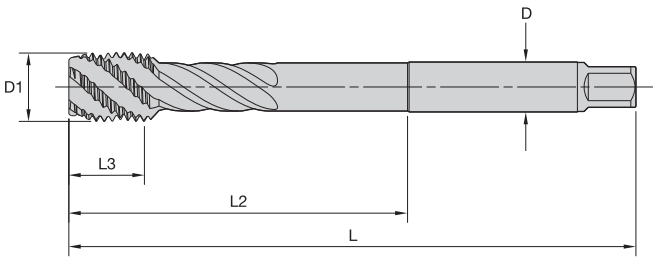


● first choice
○ alternate choice

GT30 • Form C Semi-Bottoming Chamfer • Larger Sizes • Metric DIN 376

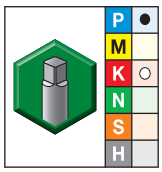


GP6520	D1 size	L	L3	L2	D	Shank Tolerance D	Shank Tolerance Tolerance h6	number of flutes	class of fit
						12–18	+0, -0,011		
						20–30	+0, -0,013		
						32–36	+0, -0,016		
GT305161	M24 X 3	160	30	77	18,0			5	6HX
GT305163	M30 X 3,5	180	35	91	22,0			5	6HX
GT305164	M33 X 3,5	180	35	100	25,0			5	6HX
GT305166	M36 X 4	200	40	110	28,0			5	6HX
GT305168	M42 X 4,5	200	45	120	32,0			5	6HX



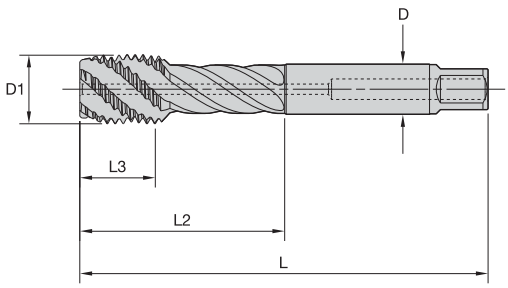
● first choice
○ alternate choice

GT30 • Form C Semi-Bottoming Chamfer • Larger Sizes • Metric Extra Long



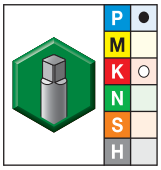
GP6520	D1 size	L	L3	L2	D	Shank Tolerance D	Shank Tolerance Tolerance h6	number of flutes	class of fit
						12–18	+0, -0,011		
						20–30	+0, -0,013		
						32–36	+0, -0,016		
GT305151	M24 X 3	200	30	120	18,0			5	6HX
GT305153	M30 X 3,5	250	35	150	22,0			5	6HX
GT305154	M33 X 3,5	250	35	150	25,0			5	6HX
GT305156	M36 X 4	250	40	150	28,0			5	6HX
GT305158	M42 X 4,5	300	45	180	32,0			5	6HX

• GP6520 TiCN for steel and cast iron.

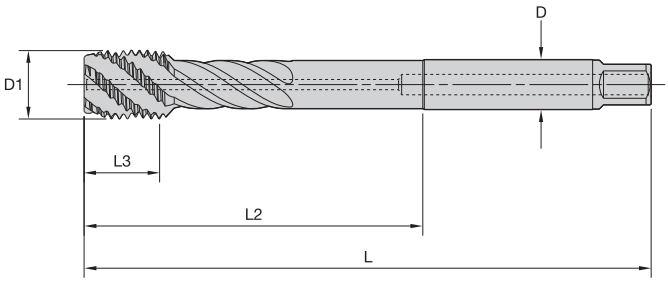


● first choice
○ alternate choice

GT31 • Form C Semi-Bottoming Chamfer • Through Coolant • Larger Sizes • Metric DIN 376

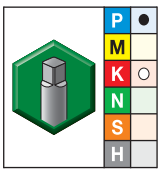


GP6520	D1 size	L	L3	L2	D	Shank Tolerance D	Shank Tolerance Tolerance h6	number of flutes	class of fit
						12–18	+0, -0,011		
						20–30	+0, -0,013		
						32–36	+0, -0,016		
GT315025	M24 X 3	160	30	77	18,0			5	6HX
GT315027	M30 X 3,5	180	35	91	22,0			5	6HX
GT315028	M33 X 3,5	180	35	100	25,0			5	6HX
GT315030	M36 X 4	200	40	110	28,0			5	6HX
GT315032	M42 X 4,5	200	45	120	32,0			5	6HX



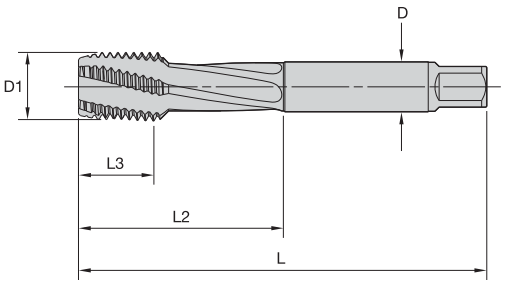
● first choice
○ alternate choice

GT31 • Form C Semi-Bottoming Chamfer • Through Coolant • Larger Sizes • Metric Extra Long



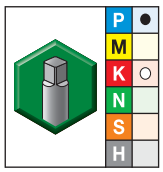
GP6520	D1 size	L	L3	L2	D	Shank Tolerance D	Shank Tolerance Tolerance h6	number of flutes	class of fit
						12–18	+0, -0,011		
						20–30	+0, -0,013		
						32–36	+0, -0,016		
GT315014	M24 X 3	200	30	120	18,0			5	6HX
GT315016	M30 X 3,5	250	35	150	22,0			5	6HX
GT315017	M33 X 3,5	250	35	150	25,0			5	6HX
GT315019	M36 X 4	250	40	150	28,0			5	6HX
GT315021	M42 X 4,5	300	45	180	32,0			5	6HX

• GP6520 TiCN for steel and cast iron.

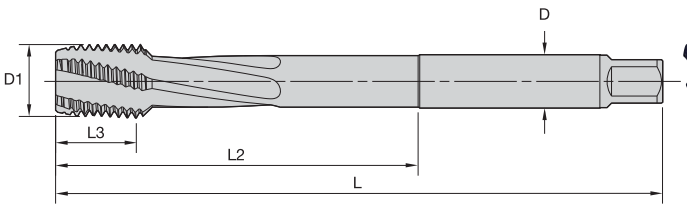


● first choice
○ alternate choice

GT50 • Form C Semi-Bottoming Chamfer • Larger Sizes • Metric DIN 376

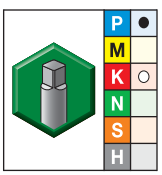


GP6520	D1 size	L	L3	L2	D	Shank Tolerance D	Shank Tolerance Tolerance h6	number of flutes	class of fit
						12–18	+0, -0,011		
						20–30	+0, -0,013		
						32–36	+0, -0,016		
GT505001	M24 X 3	160	30	77	18,0			4	6HX
GT505002	M30 X 3,5	180	35	91	22,0			5	6HX
GT505003	M33 X 3,5	180	35	100	25,0			5	6HX
GT505004	M36 X 4	200	40	110	28,0			5	6HX
GT505005	M42 X 4,5	200	45	120	32,0			6	6HX



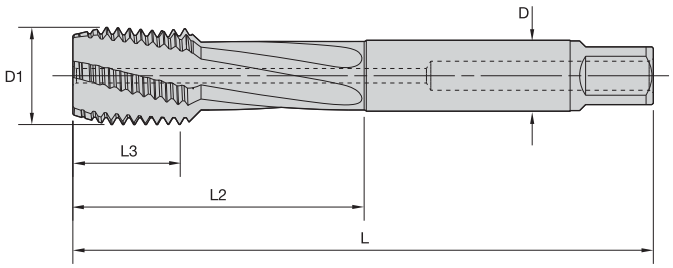
● first choice
○ alternate choice

GT50 • Form C Semi-Bottoming Chamfer • Larger Sizes • Metric Extra Long



GP6520	D1 size	L	L3	L2	D	Shank Tolerance D	Shank Tolerance Tolerance h6	number of flutes	class of fit
						12–18	+0, -0,011		
						20–30	+0, -0,013		
						32–36	+0, -0,016		
GT505006	M24 X 3	200	30	120	18,0			4	6HX
GT505007	M30 X 3,5	250	35	150	22,0			5	6HX
GT505008	M33 X 3,5	250	35	150	25,0			5	6HX
GT505009	M36 X 4	250	40	150	28,0			5	6HX
GT505010	M42 X 4,5	300	45	180	32,0			6	6HX

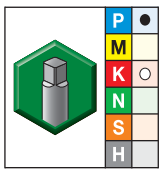
• GP6520 TiCN for steel and cast iron.



VICTORY

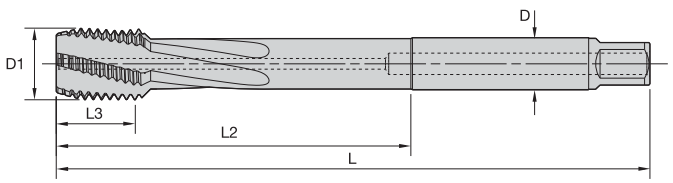
● first choice
○ alternate choice

■ GT51 • Form C Semi-Bottoming Chamfer • Through Hole • Larger Sizes • Metric DIN 376



Shank Tolerance	
D	Tolerance h6
12–18	+0, -0,011
20–30	+0, -0,013
32–36	+0, -0,016

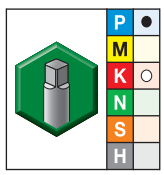
GP6520	D1 size	L	L3	L2	D	number of flutes	class of fit
GT515001	M24 X 3	160	30	77	18,0	4	6HX
GT515002	M30 X 3,5	180	35	91	22,0	5	6HX
GT515003	M33 X 3,5	180	35	100	25,0	5	6HX
GT515004	M36 X 4	200	40	110	28,0	5	6HX
GT515005	M42 X 4,5	200	45	120	32,0	6	6HX



VICTORY

● first choice
○ alternate choice

■ GT51 • Form C Semi-Bottoming Chamfer • Through Coolant • Larger Sizes • Metric Extra Long



Shank Tolerance	
D	Tolerance h6
12–18	+0, -0,011
20–30	+0, -0,013
32–36	+0, -0,016

GP6520	D1 size	L	L3	L2	D	number of flutes	class of fit
GT515006	M24 X 3	200	30	120	18,0	4	6HX
GT515007	M30 X 3,5	250	35	150	22,0	5	6HX
GT515008	M33 X 3,5	250	35	150	25,0	5	6HX
GT515009	M36 X 4	250	40	150	28,0	5	6HX
GT515010	M42 X 4,5	300	45	180	32,0	6	6HX

	Group	Through Holes					Blind Holes				
				Range — m/min					Range — m/min		
		Tap Style	Grade	min	Starting Value	max	Tap Style	Grade	min	Starting Value	max
P	1	GT20	GP6520	20	**30**	45	GT30, GT32, GT50	GP6520	14	**21**	32
		GT22	WP31MG	18	**30**	50	GT22	WP31MG	13	**21**	35
	2	GT20	GP6520	17	**25**	38	GT30, GT32, GT50	GP6520	12	**18**	26
		GT22	WP31MG	15	**25**	42	GT22	WP31MG	10	**18**	29
	2, 3, 4, 6, 7,	GT20	GP6520	12	**15**	20	GT30, GT32, GT50	GP6520	8	**11**	14
	5, 9, 10, 11	GT00	WP31MG	5	**6**	8	GT02, GT04	WP31MG	3	**4**	5
	12, 13.1	GT20	GP6520	12	**15**	20	GT30, GT32, GT50	GP6520	8	**11**	14
	13.2	GT00	WP31MG	6	**8**	10	GT02, GT04	WP31MG	4	**6**	7
M	14.1	GT20	GM6515	12	**15**	20	GT30, GT32, GT50	GM6515	8	**11**	14
	14.3	GT20	GM6515	9	**12**	16	GT30, GT32, GT50	GM6515	6	**8**	11
	14.2, 14.4	GT20	GM6515	8	**10**	13	GT30, GT32, GT50	GM6515	5	**7**	9
K	15, 16	GT40	GP6520	35	**45**	59	GT40, GT42	GP6520	24	**32**	41
	17, 18, 19	GT40	GP6520	31	**40**	52	GT40, GT42	GP6520	22	**28**	36
	20	GT40	GP6520	23	**30**	39	GT40, GT42	GP6520	16	**21**	27
N	21	GT40	GP6520	38	**50**	65	GT40, GT42	GP6520	27	**35**	46
		GT22	WN38MG	33	**50**	75	GT22	WN38MG	23	**35**	53
	22, 23, 24	GT70	WN48EG	42	**55**	72	GT80	WN48EG	30	**39**	50
		GT22	WN48EG	37	**55**	83	GT22	WN48EG	26	**39**	58
	26, 27, 28	GT40	GP6520	4	**6**	9	GT40, GT42	GP6520	3	**4**	5
S	31, 32	GT20	GP6520	8	**12**	18	GT30, GT32	GP6520	6	**8**	11
	33, 34, 35	GT10	WS32MG	3	**5**	8	GT12	WS32MG	3	**4**	5
	36	GT10	WS32MG	3	**4**	6	GT12	WS32MG	2	**3**	4
	37	GT14	WN35MG	3	**4**	6	GT16	WN35MG	2	**3**	4
H	38.1, 40.1, 40.2	GT06	WN35MG	1,3	**2,0**	3,0	GT06	WN35MG	1,1	**1,4**	1,8
	38.2, 41.1	GT06	WN35MG	1,0	**1,5**	2,3	GT06	WN35MG	0,8	**1,1**	1,4

NOTE: Increase speed by up to 25% when using coolant taps (GT21, GT23, GT31, GT33, GT41, GT43, and GT51).
Use grade GP6505™ in steels. Use 50% of the recommended speed listed for grade KP6525™.

		Through Holes					Blind Holes				
				Range — SFM					Range — SFM		
	Group	Tap Style	Grade	min	Starting Value	max	Tap Style	Grade	min	Starting Value	max
P	1	GT20	GP6520	70	**100**	150	GT30, GT32, GT50	GP6520	50	**70**	100
		GT22	WP31MG	60	**100**	160	GT22	WP31MG	40	**70**	120
	2	GT20	GP6520	50	**80**	120	GT30, GT32, GT50	GP6520	40	**60**	90
		GT22	WP31MG	50	**80**	140	GT22	WP31MG	30	**60**	100
	2, 3, 4, 6, 7,	GT20	GP6520	40	**50**	60	GT30, GT32, GT50	GP6520	30	**30**	40
	5, 9, 10, 11	GT00	WP31MG	15	**20**	26	GT02, GT04	WP31MG	11	**14**	18
	12, 13.1	GT20	GP6520	40	**50**	60	GT30, GT32, GT50	GP6520	30	**30**	40
	13.2	GT00	WP31MG	20	**30**	30	GT02, GT04	WP31MG	10	**20**	20
M	14.1	GT20	GM6515	40	**50**	60	GT30, GT32, GT50	GM6515	30	**30**	40
	14.3	GT20	GM6515	30	**40**	50	GT30, GT32, GT50	GM6515	20	**30**	40
	14.2, 14.4	GT20	GM6515	30	**30**	40	GT30, GT32, GT50	GM6515	20	**20**	30
K	15, 16	GT40	GP6520	110	**150**	190	GT40, GT42	GP6520	80	**100**	130
	17, 18, 19	GT40	GP6520	100	**130**	170	GT40, GT42	GP6520	70	**90**	120
	20	GT40	GP6520	80	**100**	130	GT40, GT42	GP6520	50	**70**	90
N	21	GT40	GP6520	130	**160**	210	GT40, GT42	GP6520	90	**110**	150
		GT22	WN38MG	110	**160**	250	GT22	WN38MG	80	**110**	170
	22, 23, 24	GT70	WN48EG	140	**180**	230	GT80	WN48EG	100	**130**	160
		GT22	WN48EG	120	**180**	270	GT22	WN48EG	80	**130**	190
	26, 27, 28	GT40	GP6520	13	**20**	30	GT40, GT42	GP6520	11	**14**	18
S	31, 32	GT20	GP6520	30	**40**	60	GT30, GT32	GP6520	21	**28**	36
	33, 34, 35	GT10	WS32MG	11	**16**	25	GT12	WS32MG	9	**11**	15
	36	GT10	WS32MG	9	**13**	20	GT12	WS32MG	7	**9**	12
	37	GT14	WN35MG	9	**13**	20	GT16	WN35MG	7	**9**	12
H	38.1, 40.1, 40.2	GT06	WN35MG	4	**7**	10	GT06	WN35MG	4	**5**	6
	38.2, 41.1	GT06	WN35MG	3	**5**	7	GT06	WN35MG	3	**3**	4

NOTE: Increase speed by up to 25% when using coolant taps (GT21, GT23, GT31, GT33, GT41, GT43, and GT51).
Use grade GP6505™ in steels. Use 50% of the recommended speed listed for grade KP6525™.

Steel <32 HRC • Selector

typical thread sizes		required tap drill diameter				P			
						HSS-E-PM Taps		HSS-E-PM Taps	
									
						ANSI		DIN 371, 374, 376	
cutting taps						blind hole	through hole	blind hole	through hole
metric	inch	mm	inch	fraction	wire	GT30_GP6520	GT20_GP6520	GT30_GP6520	GT20_GP6520
M3 x 0,50	–	2,500	.0984	–	–	GT305070	GT205069	GT305097	GT205094
–	6-32	2,705	.1065	–	36	GT305035	GT205037	–	–
M4 x 0,70	–	3,300	.1299	–	–	GT305071	GT205070	GT305098	GT205095
–	8-32	3,454	.1360	–	29	GT305036	GT205039	–	–
–	8-36	3,454	.1360	–	29	–	GT205052	–	–
–	10-24	3,734	.1470	–	26	–	GT205040	–	–
–	10-32	4,039	.1590	–	21	GT305053	GT205054	–	–
M5 x 0,80	–	4,200	.1654	–	–	GT305072	GT205071	GT305099	GT205096
M6 x 1,00	–	5,000	.1969	–	–	GT305073	GT205072	GT305100	GT205097
–	1/4-20	5,106	.2010	–	7	GT305039	GT205043	–	–
–	1/4-28	5,410	.2130	–	3	GT305055	GT205056	–	–
–	5/16-18	6,528	.2570	–	F	GT305041	GT205045	–	–
M8 x 1,25	–	6,700	.2638	–	–	GT305074	GT205074	GT305101	GT205098
–	5/16-24	6,909	.2720	–	I	GT305057	GT205057	–	–
M8 x 1,00	–	7,000	.2756	–	–	–	–	GT305109	GT205104
–	3/8-16	7,938	.3125	5/16	–	GT305043	GT205047	–	–
–	3/8-24	8,433	.3320	–	Q	GT305058	GT205058	–	–
M10 x 1,50	–	8,500	.3346	–	–	GT305075	GT205075	GT305102	GT205099
M10 x 1,25	–	8,700	.3425	–	–	–	–	GT305111	GT205106
M10 x 1,00	–	9,000	.3543	–	–	–	–	GT305110	GT205105
–	7/16-14	9,093	.3580	–	T	GT305044	GT205048	–	–
–	7/16-20	9,921	.3906	25/64	–	GT305059	GT205059	–	–
M12 x 1,75	–	10,200	.4016	–	–	GT305076	GT205076	GT305103	GT205100
M12 x 1,50	–	10,500	.4134	–	–	–	–	GT305112	GT205107
–	1/2-13	10,716	.4219	27/64	–	GT305046	GT205049	–	–
–	1/2-20	11,509	.4531	29/64	–	GT305060	GT205060	–	–
M14 x 2,00	–	12,000	.4724	–	–	GT305077	–	GT305104	GT205101
M14 x 1,50	–	12,500	.4921	–	–	–	–	GT305113	GT205108
–	5/8-11	13,495	.5313	17/32	–	GT305048	GT205050	–	–
M16 x 2,00	–	14,000	.5512	–	-	GT305078	–	GT305105	GT205102
M16 x 1,50	–	14,500	.5709	–	–	–	–	GT305114	GT205109
M18 x 2,50	–	15,500	.6102	–	–	–	–	GT305106	–
M18 x 1,50	–	16,500	.6496	–	–	–	–	GT305115	GT205110
–	3/4-10	16,670	.6563	21/32	–	GT305050	GT2050551	–	–
M20 x 2,50	–	17,500	.6890	–	–	–	–	–	GT205103
M22 x 2,50	–	19,500	.7677	–	–	–	–	GT305107	–
M24 x 3,00	–	21,000	.8268	–	–	–	–	GT305161	GT205111
–	1-8	22,225	.8750	7/8	–	GT305051	–	–	–

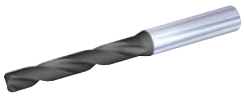
P		P		All Materials	
HSS-E-PM Taps		Recommended Drill		Alternate Tap Drill	
					
DIN 371, 374, 376					
blind hole with coolant GT31_GP6520	through hole with coolant GT21_GP6520	approximately 5 x D with coolant TDS402 WP20PD	approximately 5 x D non-coolant TDS202 WP20PD	approximately 5 x D with coolant VDS402A WU25PD	approximately 5 x D non-coolant VDS202A WU25PD
–	–	TDS402A02500	TDS202A02500	VDS402A02500	VDS202A02500
–	–	TDS402A02705	TDS202A02705	VDS402A02705	VDS202A02705
–	–	TDS402A03300	TDS202A03300	VDS402A03300	VDS202A03300
–	–	TDS402A03454	TDS202A03454	VDS402A03454	VDS202A03454
–	–	TDS402A03700	TDS202A03700	VDS402A03700	VDS202A03700
–	–	TDS402A03797	TDS202A03797	VDS402A03797	VDS202A03797
–	–	TDS402A04100	TDS202A04100	VDS402A04100	VDS202A04100
GT315007	GT215007	TDS402A04219	TDS202A04219	VDS402A04219	VDS202A04219
GT315008	GT215008	TDS402A05055	TDS202A05055	VDS402A05055	VDS202A05055
–	–	TDS402A05410	TDS202A05410	VDS402A05410	VDS202A05410
–	–	TDS402A05600	TDS202A05600	VDS402A05600	VDS202A05600
–	–	TDS402A06600	TDS202A06600	VDS412A06600	VDS212A06600
GT315009	GT215009	TDS402A06906	TDS202A06906	VDS412A06906	VDS212A06906
–	–	TDS402A07000	TDS202A07000	VDS412A07000	VDS212A07000
–	–	TDS402A07366	TDS202A07366	VDS412A07366	VDS212A07366
–	–	TDS402A08433	TDS202A08433	VDS412A08433	VDS212A08433
–	–	TDS402A08500	TDS202A08500	VDS412A08500	VDS212A08500
GT315010	GT215010	TDS402A08700	TDS202A08700	VDS412A08700	VDS212A08700
–	–	TDS402A09000	TDS202A09000	VDS412A09000	VDS212A09000
–	–	TDS402A08839	TDS202A08839	VDS412A08839	VDS212A08839
–	–	TDS402A09400	TDS202A09400	VDS412A09400	VDS212A09400
–	–	TDS402A10200	TDS202A10200	VDS412A10200	VDS212A10200
GT315011	GT215011	TDS402A10262	TDS202A10262	VDS412A10262	VDS212A10262
–	–	TDS402A10716	TDS202A10716	VDS412A10716	VDS212A10716
–	–	TDS402A10800	TDS202A10800	VDS412A10800	VDS212A10800
–	–	TDS402A11908	TDS202A11908	VDS412A11908	VDS212A11908
GT315012	GT215012	TDS402A12251	TDS202A12251	VDS412A12251	VDS212A12251
–	–	TDS402A12800	TDS202A12800	VDS412A12800	VDS212A12800
–	–	TDS402A13500	TDS202A13500	VDS412A13500	VDS212A13500
–	–	TDS402A14500	TDS202A14500	VDS412A14500	VDS212A14500
–	–	TDS402A14684	TDS202A14684	VDS412A14684	VDS212A14684
–	–	TDS402A16500	TDS202A16500	VDS412A16500	VDS212A16500
–	–	TDS402A16670	TDS202A16670	VDS412A16670	VDS212A16670
–	–	TDS402A17000	TDS202A17000	VDS412A17000	VDS212A17000
–	–	TDS402A17859	TDS202A17859	VDS412A17859	VDS212A17859
–	–	–	–	–	–
GT315025	–	TDM220R3SCF25M	TDM220R5SCF25M	–	–
–	–	TDM230R3SCF25M	TDM230R5SCF25M	–	–

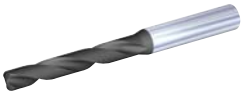
Steel 32–44 HRC • Selector

typical thread sizes	required tap drill diameter		P HSS-E-PM Taps — Tapping Steel 32–44 HRC		
					
				DIN 371, 374, 376	
cutting taps metric	mm	inch	blind hole GT02_WP31MG	blind hole (3 x D) GT04_WH36MG	through hole GT00_WP31MG
M3 x 0,50	2,500	.0984	GT025001	GT045001	GT005001
M4 x 0,70	3,300	.1299	GT025002	GT045002	GT005002
M5 x 0,80	4,200	.1654	GT025003	GT045003	GT005003
M6 x 1,00	5,000	.1969	GT025004	GT045004	GT005004
M8 x 1,25	6,700	.2638	GT025005	GT045005	GT005005
M8 x 1,00	7,000	.2756	GT025012	GT045012	GT005012
M10 x 1,50	8,500	.3346	GT025006	GT045006	GT005006
M10 x 1,25	8,700	.3425	GT025014	GT045014	GT005014
M10 x 1,00	9,000	.3543	GT025013	GT045013	GT005013
M12 x 1,75	10,200	.4016	GT025007	GT045007	GT005007
M12 x 1,50	10,500	.4134	GT025016	GT045016	GT005016
M12 x 1,25	10,800	.4252	GT025015	GT045015	GT005015
M14 x 2,00	12,000	.4724	GT025008	GT045008	GT005008
M14 x 1,50	12,500	.4921	GT025017	GT045017	GT005017
M16 x 2,00	14,000	.5512	GT025009	GT045009	GT005009
M16 x 1,50	14,500	.5709	GT025018	GT045018	GT005018
M18 x 2,50	15,500	.6102	GT025010	GT045010	GT005010
M18 x 1,50	16,500	.6496	GT025010	GT045010	GT005010
M20 x 2,50	17,500	.6890	GT025011	GT045011	GT005011

Steel • Selector

typical thread sizes	required tap drill diameter		P Steel <32 HRC — Forming Tap		
					
				DIN 2174	
cutting taps metric	mm	inch	blind and through hole GT22_WP31MG	blind and through hole with coolant GT23_WP31MG	
M3 x 0,50	2,800	.1102	GT225016	–	
M4 x 0,70	3,700	.1457	GT225017	–	
M5 x 0,80	4,700	.1850	GT225018	GT235012	
M6 x 1,00	5,600	.2205	GT225019	GT235013	
M8 x 1,25	7,400	.2913	GT225020	GT235014	
M8 x 1,00	7,600	.2992	GT225024	GT235018	
M10 x 1,50	9,400	.3701	GT225021	GT235015	
M10 x 1,25	9,500	.3740	GT225026	–	
M10 x 1,00	9,500	.3740	GT225025	GT235019	
M12 x 1,75	11,300	.4449	GT225022	GT235016	
M12 x 1,50	11,300	.4449	GT225028	GT235020	
M12 x 1,25	11,500	.4528	GT225027	–	
M14 x 1,50	13,400	.5276	GT225029	GT235021	
M16 x 2,00	15,200	.5984	GT225023	GT235017	
M16 x 1,50	15,400	.6063	GT225030	GT235022	

	P		All Materials	
	Recommended SC Drill		Alternate Tap Drill	
				
	approximately 5 x D with coolant TDS402 WP20PD	approximately 5 x D without coolant TDS202 WP20PD	approximately 5 x D with coolant VDS402A WU25PD	approximately 5 x D non-coolant VDS202A WU25PD
	TDS402A02500	TDS202A02500	VDS402A02500	VDS202A02500
	TDS402A03300	TDS202A03300	VDS402A03300	VDS202A03300
	TDS402A04219	TDS202A04219	VDS402A04219	VDS202A04219
	TDS402A05055	TDS202A05055	VDS402A05055	VDS202A05055
	TDS402A06906	TDS202A06906	VDS412A06906	VDS212A06906
	TDS402A07366	TDS202A07366	VDS412A07366	VDS212A07366
	TDS402A08700	TDS202A08700	VDS412A08700	VDS212A08700
	TDS402A09000	TDS202A09000	VDS412A09000	VDS212A09000
	TDS402A08839	TDS202A08839	VDS412A08839	VDS212A08839
	TDS402A10262	TDS202A10262	VDS412A10262	VDS212A10262
	TDS402A10716	TDS202A10716	VDS412A10716	VDS212A10716
	TDS402A11300	TDS202A11300	VDS412A11300	VDS212A11300
	TDS402A12251	TDS202A12251	VDS412A12251	VDS212A12251
	TDS402A12800	TDS202A12800	VDS412A12800	VDS212A12800
	TDS402A14500	TDS202A14500	VDS412A14500	VDS212A14500
	TDS402A14684	TDS202A14684	VDS412A14684	VDS212A14684
	TDS402A16500	TDS202A16500	VDS412A16500	VDS212A16500
	TDS402A16670	TDS202A16670	VDS412A16670	VDS212A16670
	TDS402A17859	TDS202A17859	VDS412A17859	VDS212A17859

	P		All Materials	
	Recommended SC Drill		Alternate Tap Drill	
				
	approximately 5 x D with coolant TDS402 WP20PD	approximately 5 x D without coolant TDS202 WP20PD	approximately 5 x D with coolant VDS402A WU25PD	approximately 5 x D non-coolant VDS202A WU25PD
	TDS402A02800	TDS202A02800	VDS402A02800	VDS202A02800
	TDS402A03734	TDS202A03734	VDS402A03734	VDS202A03734
	TDS402A05000	TDS202A05000	VDS402A05000	VDS202A05000
	TDS402A05791	TDS202A05791	VDS402A05791	VDS202A05791
	TDS402A07493	TDS202A07493	VDS412A07493	VDS212A07493
	TDS402A07938	TDS202A07938	VDS412A07938	VDS212A07938
	TDS402A09500	TDS202A09500	VDS412A09500	VDS212A09500
	TDS402A09500	TDS202A09500	VDS412A09500	VDS212A09500
	TDS402A09921	TDS202A09921	VDS412A09921	VDS212A09921
	TDS402A11300	TDS202A11300	VDS412A11300	VDS212A11300
	TDS402A11500	TDS202A11500	VDS412A11500	VDS212A11500
	TDS402A11509	TDS202A11509	VDS412A11509	VDS212A11509
	TDS402A13400	TDS202A13400	VDS412A13400	VDS212A13400
	TDS402A15250	TDS202A15250	VDS412A15250	VDS212A15250
	TDS402A15500	TDS202A15500	VDS412A15500	VDS212A15500

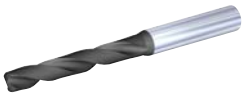
Stainless Steel • Selector

typical thread sizes		required tap drill diameter				M			
						HSS-E-PM Taps		HSS-E-PM Taps	
									
						ANSI		DIN 371, 374, 376	
cutting taps						blind hole	through hole	blind hole	through hole
metric	inch	mm	inch	fraction	wire	GT30_GM6515	GT20_GM6515	GT30_GM6515	GT20_GM6515
M3 x 0,50	–	2,500	.0984	–	–	GT305061	GT205061	GT305148	GT205077
–	6-32	2,705	.1065	–	36	GT305005	GT205007	–	–
M4 x 0,70	–	3,300	.1299	–	–	GT305062	GT205062	GT305079	GT205078
–	8-32	3,454	.1360	–	29	GT305006	GT205008	–	–
–	8-36	3,454	.1360	–	29	–	GT205022	–	–
–	10-24	3,734	.1470	–	26	GT305007	GT205010	–	–
–	10-32	4,039	.1590	–	21	GT305023	GT205024	–	–
M5 x 0,80	–	4,200	.1654	–	–	GT305063	GT205063	GT305080	GT205079
–	12-24	4,496	.1770	–	16	–	GT205011	–	–
M6 x 1,00		5,000	.1969	–	–	GT305064	GT205064	GT305081	GT205080
–	1/4-20	5,106	.2010	–	7	GT305009	GT205013	–	–
–	1/4-28	5,410	.2130	–	3	GT305025	GT205026	–	–
–	5/16-18	6,528	.2570	–	F	GT305011	GT205015	–	–
M8 x 1,25	–	6,700	.2638	–	–	GT305065	GT205066	GT305082	GT205081
–	5/16-24	6,909	.2720	–	I	GT305027	GT205027	–	–
M8 x 1,00	7.000	0,2756	–	–	–	–	GT305090	GT205087	–
–	3/8-16	7,938	.3125	5/16	–	GT305013	GT205017	–	–
–	3/8-24	8,433	.3320	–	Q	GT305028	GT205028	–	–
M10 x 1,50	–	8,500	.3346	–	–	GT305066	GT205067	GT305083	GT205082
M10 x 1,25	8.700	0,3425	–	–	–	–	GT305092	GT205089	–
M10 x 1,00	9.000	0,3543	–	–	–	–	GT305091	GT205088	–
–	7/16-14	9,093	.3580	–	T	GT305014	GT205018	–	–
–	7/16-20	9,921	.3906	25/64	–	GT305029	GT205029	–	–
M12 x 1,75	–	10,200	.4016	–	–	GT305067	GT205068	GT305084	GT205083
M12 x 1,50	–	10,500	.4134	–	–	–	–	GT305093	GT205090
–	1/2-13	10,716	.4219	27/64	–	GT305016	GT205019	–	–
–	1/2-20	11,509	.4531	29/64	–	GT305030	GT205030	–	–
M14 x 2,00	–	12,000	.4724	–	–	GT305068	–	GT305085	GT205084
M14 x 1,50	–	12,500	.4921	–	–	–	–	GT305094	GT205091
–	5/8-11	13,495	.5313	17/32	–	GT305018	GT205020	–	–
M16 x 2,00	–	14,000	.5512	–	–	GT305069	–	GT305086	GT205085
M16 x 1,50	–	14,500	.5709	–	–	–	–	GT305095	GT205092
M18 x 2,50	–	15,500	.6102	–	–	–	–	GT305087	–
M18 x 1,50	–	16,500	.6496	–	–	–	–	GT305096	GT205093
–	3/4-10	16,670	.6563	21/32	–	GT305020	GT205021	–	–
M20 x 2,50	–	17,500	.6890	–	–	–	–	–	GT205086
M22 x 2,50	–	19,500	.7677	–	–	–	–	GT305088	–
M24 x 3,00	–	21,000	.8268	–	–	–	–	GT305089	–
–	1–8	22,225	.8750	7/8	–	GT305021	–	–	–

		M		All Materials	
HSS-E-PM Taps		Recommended SC Drill		Alternate Tap Drill	
					
DIN 371, 374, 376					
blind hole with coolant GT31_GM6515	through hole with coolant GT21_GM6515	approximately 3 x D with coolant WD 412522	approximately 5 x D with coolant WD 412527	approximately 3 x D with coolant VDS401A WU25PD	approximately 5 x D with coolant VDS402A WU25PD
–	–	–	–	VDS401A02500	VDS402A02500
–	–	–	–	VDS401A02705	VDS402A02705
–	–	412522–00330	412527–00330	VDS401A03300	VDS402A03300
–	–	–	–	VDS401A03454	VDS402A03454
–	–	–	–	VDS401A03454	VDS402A03454
–	–	–	–	VDS401A03734	VDS402A03734
–	–	–	–	VDS401A04039	VDS402A04039
GT315001	GT215001	412522–00420	412527–00420	VDS401A04200	VDS402A04200
–	–	–	–	VDS401A04496	VDS402A04496
GT315002	GT215002	412522–00500	412527–00500	VDS401A05000	VDS402A05000
–	–	–	–	VDS401A05106	VDS402A05106
–	–	–	–	VDS401A05410	VDS402A05410
–	–	412522–00652	412527–00652	VDS401A06528	VDS402A06528
GT315003	GT215003	412522–00670	412527–00670	VDS411A06700	VDS412A06700
–	–	–	–	VDS411A06906	VDS412A06906
–	–	412522–00700	412527–00700	VDS411A07000	VDS412A07000
–	–	412522–00793	412527–00793	VDS411A07938	VDS412A07938
–	–	–	–	VDS411A08433	VDS412A08433
GT315004	GT215004	412522–00850	412527–00850	VDS411A08500	VDS412A08500
–	–	412522–00870	412527–00870	VDS411A08700	VDS412A08700
–	–	412522–00900	412527–00900	VDS411A09000	VDS412A09000
–	–	–	–	VDS411A09093	VDS412A09093
–	–	412522–00992	412527–00992	VDS411A09921	VDS412A09921
GT315005	GT215005	412522–01020	412527–01020	VDS411A10200	VDS412A10200
–	–	412522–01050	412527–01050	VDS411A10500	VDS412A10500
–	–	412522–01072	412527–01072	VDS411A10716	VDS412A10716
–	–	–	–	VDS411A11509	VDS412A11509
GT315006	GT215006	412522–01200	412527–01200	VDS411A12000	VDS412A12000
–	–	412522–01250	412527–01250	VDS411A12500	VDS412A12500
–	–	–	–	VDS411A13495	VDS412A13495
–	–	412522–01400	412527–01400	VDS411A14000	VDS412A14000
–	–	412522–01450	412527–01450	VDS411A14500	VDS412A14500
–	–	412522–01550	412527–01550	VDS411A15500	VDS412A15500
–	–	412522–01650	412527–01650	VDS411A16500	VDS412A16500
–	–	–	–	VDS411A16670	VDS412A16670
–	–	412522–01750	412527–01750	VDS411A17500	VDS412A17500
–	–	412522–01950	412527–01950	VDS411A19500	VDS412A19500
		Recommended Modular Drill			
		insert	tool body 3 x D		
–	–	TDM2100UPM	TDM210R3SCF25M	–	–
–	–	TDM2223UPM	TDM0886R3SS088	–	–

Cast Iron • Selector

typical thread sizes		required tap drill diameter				K			K
						HSS-E-PM Taps			Recommended SC Drill
									
						ANSI	DIN 371, 374, 376		
cutting taps						blind and through hole	blind and through hole	blind and through hole with coolant	approximately 3 x D with coolant
metric	inch	mm	inch	fraction	wire	GT40_GP6520	GT40_GP6520	GT41_GP6520	TDS411 WK15PD
M3 x 0,50	–	2,500	.0984	–	–	GT405030	–	–	TDS401A02500
M4 x 0,70	–	3,300	.1299	–	–	GT405031	GT405001	GT415001	TDS401A03300
–	10-24	3,734	.1470	–	26	GT405012	–	–	TDS401A03734
–	10-32	4,039	.1590	–	21	GT405013	–	–	TDS401A04039
M5 x 0,80	–	4,200	.1654	–	–	GT405032	GT405002	GT415002	TDS401A04200
M6 x 1,00	–	5,000	.1969	–	–	GT405033	GT405003	GT415003	TDS401A05000
–	1/4-20	5,106	.2010	–	7	GT405015	–	–	TDS401A05106
–	1/4-28	5,410	.2130	–	3	GT405017	–	–	TDS401A05410
–	5/16-18	6,528	.2570	–	F	GT405019	–	–	TDS401A06528
M8 x 1,25	–	6,700	.2638	–	–	GT405034	GT405004	GT415004	TDS411A06700
–	5/16-24	6,909	.2720	–	I	GT405020	–	–	TDS411A06906
–	3/8-16	7,938	.3125	5/16	–	GT405022	–	–	TDS411A07938
–	3/8-24	8,433	.3320	–	Q	GT405023	–	–	TDS411A08433
M10 x 1,50	–	8,500	.3346	–	–	GT405035	GT405005	GT415005	TDS411A08500
–	7/16-14	9,093	.3580	–	T	GT405024	–	–	TDS411A09093
–	7/16-20	9,921	.3906	25/64	–	GT405025	–	–	TDS411A09921
M12 x 1,75	–	10,200	.4016	–	–	GT405036	GT405006	GT415006	TDS411A10200
–	1/2-13	10,716	.4219	27/64	–	GT405026	–	–	TDS411A10716
–	1/2-20	11,509	.4531	29/64	–	GT405027	–	–	TDS411A11509
M14 x 2,00	–	12,000	.4724	–	–	GT405037	GT405007	GT415007	TDS411A12000
–	5/8-11	13,495	.5313	17/32	–	GT405028	–	–	TDS411A13495
M16 x 2,00	–	14,000	.5512	–	–	GT405038	GT405008	GT415008	TDS411A14000
M18 x 2,50	–	15,500	.6102	–	–	–	GT405009	GT415009	TDS411A15500
–	3/4-10	16,670	.6563	21/32	–	GT405029	–	–	TDS411A16670
M20 x 2,50	–	17,500	.6890	–	–	–	GT405010	GT415010	TDS411A17500
M22 x 2,50	–	19,500	.7677	–	–	–	GT405011	–	TDS411A19500

K		All Materials		
Recommended SC Drill		Alternate Tap Drill		
				
approximately 5 x D with coolant TDS412 WK15PD	approximately 5 x D non-coolant TDS212 WK15PD	approximately 3 x D with coolant VDS401A WU25PD	approximately 5 x D with coolant VDS402A WU25PD	approximately 5 x D non-coolant VDS202A WU25PD
TDS402A02500	TDS212A02500	VDS401A02500	VDS402A02500	VDS202A02500
TDS402A03300	TDS212A03300	VDS401A03300	VDS402A03300	VDS202A03300
TDS402A03734	TDS212A03734	VDS401A03734	VDS402A03734	VDS202A03734
TDS402A04039	TDS212A04039	VDS401A04039	VDS402A04039	VDS202A04039
TDS402A04200	TDS212A04200	VDS401A04200	VDS402A04200	VDS202A04200
TDS402A05000	TDS212A05000	VDS401A05000	VDS402A05000	VDS202A05000
TDS402A05106	TDS212A05106	VDS401A05106	VDS402A05106	VDS202A05106
TDS402A05410	TDS212A05410	VDS401A05410	VDS402A05410	VDS202A05410
TDS402A06528	TDS212A06528	VDS401A06528	VDS402A06528	VDS202A06528
TDS412A06700	TDS212A06700	VDS411A06700	VDS412A06700	VDS212A06700
TDS412A06906	TDS212A06906	VDS411A06906	VDS412A06906	VDS212A06906
TDS412A07938	TDS212A07938	VDS411A07938	VDS412A07938	VDS212A07938
TDS412A08433	TDS212A08433	VDS411A08433	VDS412A08433	VDS212A08433
TDS412A08500	TDS212A08500	VDS411A08500	VDS412A08500	VDS212A08500
TDS412A09093	TDS212A09093	VDS411A09093	VDS412A09093	VDS212A09093
TDS412A09921	TDS212A09921	VDS411A09921	VDS412A09921	VDS212A09921
TDS412A10200	TDS212A10200	VDS411A10200	VDS412A10200	VDS212A10200
TDS412A10716	TDS212A10716	VDS411A10716	VDS412A10716	VDS212A10716
TDS412A11509	TDS212A11509	VDS411A11509	VDS412A11509	VDS212A11509
TDS412A12000	TDS212A12000	VDS411A12000	VDS412A12000	VDS212A12000
TDS412A13495	TDS212A13495	VDS411A13495	VDS412A13495	VDS212A13495
TDS412A14000	TDS212A14000	VDS411A14000	VDS412A14000	VDS212A14000
TDS412A15500	TDS212A15500	VDS411A15500	VDS412A15500	VDS212A15500
TDS412A16670	TDS212A16670	VDS411A16670	VDS412A16670	VDS212A16670
TDS412A17500	TDS212A17500	VDS411A17500	VDS412A17500	VDS212A17500
TDS412A19500	TDS212A19500	VDS411A19500	VDS412A19500	VDS212A19500

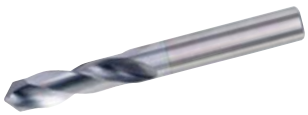
Aluminum • Selector

typical thread sizes		required tap drill diameter				N	
						HSS-E-PM Taps (Wrought, low Si)	HSS-E-PM Taps (Cast <12%)
							
						DIN 371, 374, 376	ANSI
cutting taps metric	inch	mm	inch	fraction	wire	blind hole GT80_WN48EG	through hole GT70_WN48EG	blind and through hole GT40_GP6520
M3 x 0,50	–	2,500	.0984	–	–	GT805001	GT705001	GT405030
M4 x 0,70	–	3,300	.1299	–	–	GT805002	GT705002	GT405031
–	10-24	3,734	.1470	–	26	–	–	GT405012
–	10-32	4,039	.1590	–	21	–	–	GT405013
M5 x 0,80	–	4,200	.1654	–	–	GT805003	GT705003	GT405032
M6 x 1,00	–	5,000	.1969	–	–	GT805004	GT705004	GT405033
–	1/4-20	5,106	.2010	–	7	–	–	GT405015
–	1/4-28	5,410	.2130	–	3	–	–	GT405017
–	5/16-18	6,528	.2570	–	F	–	–	GT405019
M8 x 1,25	–	6,700	.2638	–	–	GT805005	GT705005	GT405034
–	5/16-24	6,909	.2720	–	I	–	–	GT405020
–	3/8-16	7,938	.3125	5/16	–	–	–	GT405022
–	3/8-24	8,433	.3320	–	Q	–	–	GT405023
M10 x 1,50	–	8,500	.3346	–	–	GT805006	GT705006	GT405035
–	7/16-14	9,093	.3580	–	T	–	–	GT405024
–	7/16-20	9,921	.3906	25/64	–	–	–	GT405025
M12 x 1,75	–	10,200	.4016	–	–	GT805007	GT705007	GT405036
–	1/2-13	10,716	.4219	27/64	–	–	–	GT405026
–	1/2-20	11,509	.4531	29/64	–	–	–	GT405027
M14 x 2,00	–	12,000	.4724	–	–	–	–	GT405037
–	5/8-11	13,495	.5313	17/32	–	–	–	GT405028
M16 x 2,00	–	14,000	.5512	–	–	GT805008	GT705008	GT405038
M18 x 2,50	–	15,500	.6102	–	–	–	–	–
–	3/4-10	16,670	.6563	21/32	–	–	–	GT405029
M20 x 2,50	–	17,500	.6890	–	–	GT805009	–	–
M22 x 2,50	–	19,500	.7677	–	–	–	–	–

Aluminum • Forming Taps • Selector

typical thread sizes		required tap drill diameter		N	
				Forming Taps	
					
				DIN 2174	
cutting taps metric		mm	inch	blind and through hole GT22 WN38MG	blind and through hole with coolant GT23 WN38MG
M3 x 0,50		2,800	.1102	GT225001	–
M4 x 0,70		3,734	.1470	GT225002	–
M5 x 0,80		4,700	.1850	GT225003	GT235001
M6 x 1,00		5,600	.2205	GT225004	GT235002
M8 x 1,25		7,400	.2913	GT225005	GT235003
M8 x 1,00		7,600	.2992	GT225009	GT235007
M10 x 1,50		9,400	.3701	GT225006	GT235004
M10 x 1,25		9,500	.3740	GT225011	–
M10 x 1,00		9,500	.3740	GT225010	GT235008
M12 x 1,75		11,300	.4449	GT225007	GT235005
M12 x 1,50		11,300	.4449	GT225013	GT235019
M12 x 1,25		11,500	.4528	GT225012	–
M14 x 1,50		13,400	.5276	GT225014	GT235010
M16 x 2,00		15,200	.5984	GT225008	GT235006
M16 x 1,50		15,400	.6063	GT225015	GT235011

N			All Materials	
HSS-E-PM Taps (Cast <12%)		Recommended SC Drill	Alternate Tap Drill	
				
DIN 371, 374, 376				
blind and through hole GT40_GP6520	blind and through hole with coolant GT41_GP6520	approximately 3 x D with coolant 259/659	approximately 3 x D with coolant VDS401A WU25PD	approximately 5 x D with coolant VDS402A WU25PD
–	–	–	VDS401A02500	VDS402A02500
GT405001	GT415001	TCM25903300	VDS401A03300	VDS402A03300
–	–	–	VDS401A03734	VDS402A03734
–	–	–	VDS401A04039	VDS402A04039
GT405002	GT415002	TCM25904200	VDS401A04200	VDS402A04200
GT405003	GT415003	TCM25905000	VDS401A05000	VDS402A05000
–	–	TCM25905100	VDS401A05106	VDS402A05106
–	–	TCM25905400	VDS401A05410	VDS402A05410
–	–	TCM25906500	VDS401A06528	VDS402A06528
GT405004	GT415004	TCM25906700	VDS411A06700	VDS412A06700
–	–	TCM25906900	VDS411A06906	VDS412A06906
–	–	TCM65908000	VDS411A07938	VDS412A07938
–	–	–	VDS411A08433	VDS412A08433
GT405005	GT415005	TCM25908500	VDS411A08500	VDS412A08500
–	–	TCM25909100	VDS411A09093	VDS412A09093
–	–	TCM25909900	VDS411A09921	VDS412A09921
GT405006	GT415006	TCM25910200	VDS411A10200	VDS412A10200
–	–	TCM65910500	VDS411A10716	VDS412A10716
–	–	TCM65911500	VDS411A11509	VDS412A11509
GT405007	GT415007	TCM25912000	VDS411A12000	VDS412A12000
–	–	TCM25913500	VDS411A13495	VDS412A13495
GT405008	GT415008	TCM25914000	VDS411A14000	VDS412A14000
GT405009	GT415009	TCM25915500	VDS411A15500	VDS412A15500
–	–	–	VDS411A16670	VDS412A16670
GT405010	GT415010	TCM25917500	VDS411A17500	VDS412A17500
GT405011	–	TCM25919500	VDS411A19500	VDS412A19500

N	All Materials	
Recommended SC Drill	Alternate Tap Drill	
		
approximately 5 x D with coolant 259/659	approximately 3 x D with coolant VDS401A WU25PD	approximately 5 x D with coolant VDS401A WU25PD
–	VDS401A02800	VDS402A02800
–	VDS401A03734	VDS402A03734
TCM25904700	VDS401A04700	VDS402A04700
TCM25905600	VDS401A05600	VDS402A05600
TCM25907400	VDS411A07400	VDS412A07400
TCM25907600	VDS411A07600	VDS412A07600
TCM25909400	VDS411A09400	VDS412A09400
TCM25909500	VDS411A09500	VDS412A09500
TCM25909500	VDS411A09500	VDS412A09500
TCM25911300	VDS411A11300	VDS412A11300
TCM25911300	VDS411A11300	VDS412A11300
TCM25911500	VDS411A11500	VDS412A11500
–	VDS411A13400	VDS412A13400
–	VDS411A15200	VDS412A15200
–	VDS411A15400	VDS412A15400

High-Temperature Alloys

typical thread sizes			S	
			HSS-E-PM Taps — Titanium Alloys	HSS-E-PM Taps — Nickel and Cobalt Alloys
			 DIN 371, 374, 376	 DIN 371, 374, 376
metric	mm	inch	blind hole GT16_WN35MG	through hole GT14_WN35MG	blind hole GT12_WS32MG
M3 x 0,50	2,500	.0984	GT165001	GT145001	GT125001
M4 x 0,70	3,300	.1299	GT165002	GT145002	GT125002
M5 x 0,80	4,200	.1654	GT165003	GT145003	GT125003
M6 x 1,00	5,000	.1969	GT165004	GT145004	GT125004
M8 x 1,25	6,700	.2638	GT165005	GT145005	GT125005
M10 x 1,50	8,500	.3346	GT165006	GT145006	GT125006
M12 x 1,75	10,200	.4016	GT165007	GT145007	GT125007
M14 x 2,00	12,000	.4724	–	–	GT125008
M16 x 2,00	14,000	.5512	–	–	GT125009
M20 x 2,50	17,500	.6890	–	–	GT125010

Hard Material

typical thread sizes			H	
			HSS-E-PM Taps — 44–55 HRC	HSS-E-PM Taps — 55–63 HRC
			 DIN 371, 374, 376	
metric	mm	inch	blind and through hole GT06_WS32MG	blind and through hole GX10_WH16PG
M3 x 0,50	2,500	.0984	–	GX105001
M4 x 0,70	3,300	.1299	–	GX105002
M5 x 0,80	4,200	.1654	–	GX105003
M6 x 1,00	5,000	.1969	GT065003	GX105004
M8 x 1,25	6,700	.2638	GT065001	GX105005
M8 x 1,00	7,000	.2756	GT065006	GX105009
M10 x 1,50	8,500	.3346	GT065002	GX105007
M10 x 1,00	9,000	.3543	GT065007	GX105010
M12 x 1,75	10,200	.4016	GT065004	GX105007
M12 x 1,50	10,500	.4134	GT065008	GX105011
M14 x 2,00	12,000	.4724	–	GX105008
M14 x 1,50	12,500	.4921	GT065009	GX105012
M16 x 2,00	14,000	.5512	GT065005	–
M16 x 1,50	14,500	.5709	GT065010	GX105013

	S		All Materials	
HSS-E-PM Taps — Nickel and Cobalt Alloys	Recommended SC Drill		Alternate Tap Drill	
				
DIN 371, 374, 376				
through hole GT10_WS32MG	approximately 3 x D with coolant WD 412522	approximately 5 x D with coolant WD 412527	approximately 3 x D with coolant TDS+	approximately 5 x D with coolant TDS+5
GT105001	–	–	VDS401A02500	VDS402A02500
GT105002	412522-000330	412527-000330	17050103300	17050203300
GT105003	412522-000420	412527-000420	17050104200	17050204200
GT105004	412522-000500	412527-000500	17050105000	17050205000
GT105005	412522-000670	412527-000670	17050106700	17050206700
GT105006	412522-000850	412527-000850	17050108500	17050208500
GT105007	412522-001020	412527-001020	17050110200	17050210200
GT105008	412522-001200	412527-001200	17050112000	17050212000
GT105009	412522-001400	412527-001400	17050114000	17050214000
GT105010	412522-001750	412527-001750	17050117500	17050217500

	H		All Materials	
	Recommended SC Drill		Alternative Tap Drill	
				
	approximately 3 x D with coolant WIDIA-Hanita™ M155	approximately 5 x D with coolant WIDIA-Hanita™ M155	approximately 3 x D with coolant TDS+	approximately 5 x D with coolant TDS+
	WIDIA-Hanita M155 custom solution (special drill for hard materials)	WIDIA-Hanita M155 custom solution (special drill for hard materials)	–	–
			–	–
			17050104200	17050204200
			17050105000	17050205000
			17050106700	17050206700
			17050107000	17050207000
			17050108500	17050208500
			17050109000	17050209000
			17050110200	17050210200
			17050110500	17050210500
			17050112000	17050212000
			17050112500	17050212500
			17050114000	17050214000
			17050114500	17050214500

Steel • Selector

typical thread sizes	required tap drill diameter		P HSS-E-PM Taps		
					
cutting taps metric	mm	inch	blind hole GT30_GP6520	blind hole GT50_GP6520	through hole GT20_GP6520
M24 x 3,00	21,000	.8268	GT305161	GT505001	GT505111
M30 x 3,50	26,500	1.0433	GT305163	GT505002	GT505113
M33 x 3,50	29,500	1.1614	GT305164	GT505003	GT505114
M36 x 4,00	32,000	1.2598	GT305166	GT505004	GT505116
M42 x 4,50	37,500	1.4764	GT305168	GT505005	GT505118

Steel • Extra Long • Selector

typical thread sizes	required tap drill diameter		P HSS-E-PM Taps		
					
cutting taps metric	mm	inch	blind hole GT30_GP6520	blind hole GT50_GP6520	through hole GT20_GP6520
M24 x 3,00	21,000	.8268	GT305151	GT505006	GT205122
M30 x 3,50	26,500	1.0433	GT305153	GT505007	GT205124
M33 x 3,50	29,500	1.1614	GT305154	GT505008	GT205125
M36 x 4,00	32,000	1.2598	GT305156	GT505009	GT205127
M42 x 4,50	37,500	1.4764	GT305158	GT505010	GT205129

Cast Iron • Selector

typical thread sizes	required tap drill diameter		K HSS-E-PM Taps		
					
cutting taps metric	mm	inch	blind hole GT30_GP6520	blind hole GT50_GP6520	through hole GT20_GP6520
M24 x 3,00	21,000	.8268	GT305161	GT505001	GT505111
M30 x 3,50	26,500	1.0433	GT305163	GT505002	GT505113
M33 x 3,50	29,500	1.1614	GT305164	GT505003	GT505114
M36 x 4,00	32,000	1.2598	GT305166	GT505004	GT505116
M42 x 4,50	37,500	1.4764	GT305168	GT505005	GT505118

Cast Iron • Extra Long • Selector

typical thread sizes	required tap drill diameter		K HSS-E-PM Taps		
					
cutting taps metric	mm	inch	blind hole GT30_GP6520	blind hole GT50_GP6520	through hole GT20_GP6520
M24 x 3,00	21,000	.8268	GT305151	GT505006	GT205122
M30 x 3,50	26,500	1.0433	GT305153	GT505007	GT205124
M33 x 3,50	29,500	1.1614	GT305154	GT505008	GT205125
M36 x 4,00	32,000	1.2598	GT305156	GT505009	GT205127
M42 x 4,50	37,500	1.4764	GT305158	GT505010	GT205129

P		P	
HSS-E-PM Taps		Recommended Modular Drill	
			
blind hole with coolant GT31_GP6520	blind hole with coolant GT51_GP6520	TOP DRILL™ M1 insert	TOP DRILL™ M1 tool body 3 x D
GT315025	GT515001	TDM2100UPM	TDM210R3SCF25M
GT315027	GT515002	Top Cut Plus™ TN7015/XOMT-34 or WIDIA-Metcut™ Spade Blade Program	
GT315028	GT515003		
GT315030	GT515004		
GT315032	GT515005		

P		P	
HSS-E-PM Taps		Recommended Modular Drill	
			
blind hole with coolant GT31_GP6520	blind hole with coolant GT51_GP6520	TOP DRILL™ M1 insert	TOP DRILL™ M1 tool body 3 x D
GT315014	GT515006	TDM2100UPM	TDM210R3SCF25M
GT315016	GT515007	Top Cut Plus™ TN7015/XOMT-34 or WIDIA-Metcut™ Spade Blade Program	
GT315017	GT515008		
GT315019	GT515009		
GT315021	GT515010		

K		K	
HSS-E-PM Taps		Recommended Modular Drill	
			
blind hole with coolant GT31_GP6520	blind hole with coolant GT51_GP6520	TOP DRILL™ M1 insert	TOP DRILL™ M1 tool body 3 x D
GT315025	GT515001	TDM2100UPM	TDM210R3SCF25M
GT315027	GT515002	Top Cut Plus™ TN5515/XOMT-35 or WIDIA-Metcut™ Spade Blade Program	
GT315028	GT515003		
GT315030	GT515004		
GT315032	GT515005		

K		K	
HSS-E-PM Taps		Recommended Modular Drill	
			
blind hole with coolant GT31_GP6520	blind hole with coolant GT51_GP6520	TOP DRILL™ M1 insert	TOP DRILL™ M1 tool body 3 x D
GT315014	GT515006	TDM2100UPM	TDM210R3SCF25M
GT315016	GT515007	Top Cut Plus™ TN5515/XOMT-35 or WIDIA-Metcut™ Spade Blade Program	
GT315017	GT515008		
GT315019	GT515009		
GT315021	GT515010		

High-Performance HSS-E Taps

Our family of Exotic Material (EM) taps are specially designed to thread a broad assortment of materials for unrivaled high-performance tapping.

WIDIA-GTD™

- Enhanced tool geometry.
- Less tapping torque.
- Better chip removal.

Unmatched Performance

The WIDIA-GTD™ EM Series taps are designed and manufactured to successfully thread high- and low-volume applications in aluminum, stainless steel, nickel alloys, titanium alloys, mold steels, irons, brass, bronze, and plastics. The formulation of premium steel tap base material is unique for every application. The combination of a special geometry, tap surface treatment, and premium steep gives these taps the highest level of performance.

Premium Steels

EM Series taps use special HSS-E compositions containing chromium, tungsten, molybdenum, vanadium, and cobalt, depending on the application. The right combination improves tap performance resulting in improved product finish and pitch diameter size. These taps have excellent abrasion resistance and are designed for both high and low volume production. Each tap maintains the same quality from the first hole to the very last.

Broad Offering of Diameter Limits

Pitch diameters from H2–H7 and metric pitch diameters from D3–D7 are stocked as standards in many styles, at no premium in price. With rigid setups, higher pitch diameter limits can be used for longer tool life. The EM Series offers many size options to produce the class of thread desired.

EM Series HP HSS-E Taps • ANSI Inch and Metric

★ Good
★★ Better
★★★ Best

EM Series High-Performance HSS-E Taps	series	size range (inch and metric) size min - max	hole	chamfer form	coolant	coating	tap dimension
	EM-SS™ GUN™ - 8301	#2 - 2 4 1/2"	★★★	★★★	★★★	TiCN,TiN,SH50 oxide, uncoated	ANSI 302A
	EM-SS™ GUN™ - 8351	M3 - M18	★★★	★★★	★★★	TiCN,TiN,SH50 oxide, uncoated	ANSI 302A
	EM-SS™ GUN™ 6" - 8701	#2 - 1/2"	★★★	★★★	★★★	SH50 oxide	extend 6"
	EM-SS™ SPIRAL - 8304	#2 - 2 4 1/2"	★★★	★★★	★★★	TiCN,TiN,SH50 oxide, uncoated	ANSI 302A
	EM-SS™ SPIRAL - 8304	#4 - 3/4"	★★★	★★★	★★★	SH50 oxide	ANSI 302A
	EM-SS™ SPIRAL - 8354	M3 - M18	★★★	★★★	★★★	TiCN,TiN,SH50 oxide, uncoated	ANSI 302A
	EM-SS™ SPIRAL - 8354	M3 - M18	★★★	★★★	★★★	SH50 oxide	ANSI 302A
	EM-SS™ SPIRAL 6" - 8314	#2 - 1/2"	★★★	★★★	★★★	SH50 oxide	extend 6"
	EM-SS™ PIPE - 8321	1/16" – 1 11 1/2"	★★★	★★★	★★★	TiN, SH50 oxide, uncoated	
	EM-AL GUN™ - 8201	#2 - 1/2"	★★★	★★★	★★★	maxi-nitrite	ANSI-DIN length
	EM-AL GUN™ - 8251	M3 - M12	★★★	★★★	★★★	maxi-nitrite	ANSI-DIN length
	EM-ALS 25° SPIRAL - 8204	#2 - 1/2"	★★★	★★★	★★★	maxi-nitrite	ANSI-DIN length
	EM-ALS 25° SPIRAL - 8254	M3 - M12	★★★	★★★	★★★	maxi-nitrite	ANSI-DIN length
	EM-AL 45° SPIRAL - 8214	#2 - 1/2"	★★★	★★★	★★★	maxi-nitrite	ANSI-DIN length
	EM-AL 45° SPIRAL - 8264	M3 - M12	★★★	★★★	★★★	maxi-nitrite	ANSI-DIN length
	EM-NI™ GUN™ - 8601	#2 - 3/4"	★★★	★★★	★★★	TiCN, SH47 oxide nitrite, uncoated	ANSI 302A
	EM-NI™ GUN™ - 8651	M2,5 - M12	★★★	★★★	★★★	TiCN, SH47 oxide nitrite	ANSI 302A
	EM-NI™ SPIRAL - 8604	#2 - 3/4"	★★★	★★★	★★★	TiCN, SH47 oxide nitrite	ANSI 302A
	EM-NI™ SPIRAL - 8604	#4 - 3/4"	★★★	★★★	★★★	SH47 oxide nitrite	ANSI 302A
	EM-NI™ SPIRAL - 8654	M2,5 - M12	★★★	★★★	★★★	TiCN, SH47 oxide nitrite	ANSI 302A
	EM-TI™ LHSF - 8901	#2 - 1/2"	★★★	★★★	★★★	maxi-nitrite	ANSI 302A
	EM-TI™ LHSF - 8951	M2,5 - M12	★★★	★★★	★★★	maxi-nitrite	ANSI 302A

P				M	K		N			S				H		Page(s)	Recommended Cutting Parameters
1, 2, 3, 4, 6, 7	5, 9, 10, 11	12, 13.1	13.2	14.1, 14.2, 14.3, 14.4	15, 16, 17, 18, 19	20	21	22, 23, 24, 25	26, 27, 28	31, 32	33, 34, 35	36	37	38.1, 38.2, 40.1, 40.2, 41.1	39.1, 41.2		
Steel <35 HRC	Steel 36–48 HRC	PH & Ferritic Stainless Steel <35 HRC	PH & Ferritic Stainless Steel >35 HRC	Stainless Steel	Cast Iron		Wrought Aluminum	Cast Aluminum	Copper, Copper Alloys	Iron Based	Cobalt Based	Nickel Based	Titanium & Alloys	Hardened Steel 49–55 HRC	Hardened Steel 56–68 HRC		
★★★		★		★★		★★	★★									A92–A94	A264–A265
★★★		★		★★		★★	★★									A95	A264–A265
★★★		★		★★		★★										A96	A264–A265
★★★		★		★★		★★	★★									A97–A99	A264–A265
★★★		★		★★		★★										A100–A101	A264–A265
★★★		★		★★		★★	★★									A102	A264–A265
★★★		★		★★		★★										A103	A264–A265
★★★		★		★★		★★										A104	A264–A265
★★★		★		★★		★★	★★		★★							A105	A264–A265
							★★★	★★	★★							A106	A264–A265
							★★★	★★	★★							A107	A264–A265
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							★★	★★★	★★							A109	A264–A265
							★★★	★★	★★							A110	A264–A265
							★★★	★★	★★							A111	A264–A265
	★		★	★	★							★★★				A112–A113	A264–A265
	★		★	★	★							★★★				A114	A264–A265
	★		★	★	★							★★★				A115–A116	A264–A265
	★		★	★	★							★★★				A117–A118	A264–A265
	★		★	★	★							★★★				A119	A264–A265
									★				★★★			A120	A264–A265
									★				★★★			A121	A264–A265

(continued)

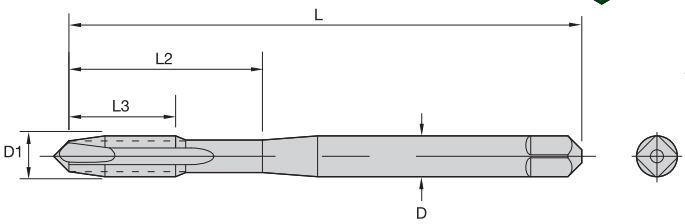
(continued)

EM Series HP HSS-E Taps • ANSI Inch and Metric

★ Good
★★ Better
★★★ Best

EM Series High-Performance HSS-E Taps	series	size range (inch and metric) size min - max	hole	chamfer form	coolant	coating	tap dimension
	**EM-TI™ SPIRAL - 8904**	#2 - 1/2"				maxi-nitrite	ANSI 302A
	**EM-TI™ SPIRAL - 8904**	#4 - 1/2"				maxi-nitrite	ANSI 302A
	**EM-TI™ SPIRAL - 8954**	M2,5 - M12				maxi-nitrite	ANSI 302A
	**EM-MS™ MOLD - 8330**	#4 - 3/4"				uncoated	ANSI 302A
	**EM-MS™ MOLD PIPE - 8320**	1/8 - 3/4				uncoated	
	**Solid Carbide - 8603**	#10 - 5/8"				uncoated	ANSI 302A
	**Solid Carbide - 8653**	M3 - M16				uncoated	ANSI 302A
	**Solid Carbide - 8603**	#10 - 5/8"				uncoated	ANSI 302A
	**Solid Carbide - 8653**	M3 - M16				uncoated	ANSI 302A
	**Solid Carbide - 8703**	#5 - 1/2"				uncoated	ANSI 302A
	**Solid Carbide - 8753**	M3 - M12				uncoated	ANSI 302A
	**Solid Carbide - 8703**	#5 - 1/2"				uncoated	ANSI 302A
	**Solid Carbide - 8753**	M3 - M12				uncoated	ANSI 302A
EM Series High-Performance HSS-E Forming Taps							
	**EM-TLD - 8580**	#2 - 1/4"				TiCN	ANSI-DIN length
	**EM-TLD - 8590**	M3 - M6				TiCN	ANSI-DIN length
	**EM-TL - 8502**	#0 - 2/4"				TiCN	ANSI-DIN length
	**EM-TL - 8512**	M3 - M12				TiCN	ANSI-DIN length
	**EM-TL - 8500**	#6 - 1/2"				TiCN	ANSI-DIN length
	**EM-TL - 8510**	M3 - M12				TiCN	ANSI-DIN length

P				M	K		N			S				H		Page	Recommended Cutting Parameters
1, 2, 3, 4, 6, 7	5, 9, 10, 11	12, 13.1	13.2	14.1, 14.2, 14.3, 14.4	15, 16, 17, 18, 19	20	21	22, 23, 24, 25	26, 27, 28	31, 32	33, 34, 35	36	37	38.1, 38.2, 40.1, 40.2, 41.1	39.1, 41.2		
Steel <35 HRC	Steel 36–48 HRC	PH & Ferritic Stainless Steel <35 HRC	PH & Ferritic Stainless Steel >35 HRC	Stainless Steel	Cast Iron		Wrought Aluminum	Cast Aluminum	Copper, Copper Alloys	Iron Based	Cobalt Based	Nickel Based	Titanium & Alloys	Hardened Steel 49–55 HRC	Hardened Steel 56–68 HRC		
									★				★★★			A122	A264–A265
									★				★★★			A123	A264–A265
									★				★★★			A124	A264–A265
	★★				★★			★								A125	A264–A265
	★★				★★			★								A126	A264–A265
					★★★											A127	A264–A265
					★★★											A129	A264–A265
					★★★											A128	A264–A265
					★★★											A130	A264–A265
								★★★								A131	A264–A265
								★★★								A133	A264–A265
								★★★								A132	A264–A265
								★★★								A134	A264–A265
								★★★									
★★★				★			★	★								A135	A264–A265
★★★				★			★	★								A136	A264–A265
★★★				★			★	★								A137	A264–A265
★★★				★			★	★								A138	A264–A265
★★★				★			★	★								A139	A264–A265
★★★				★			★	★								A140	A264–A265



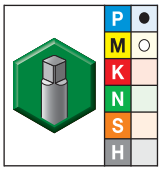
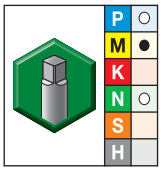
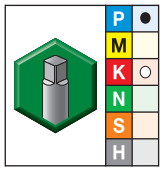
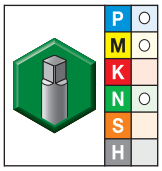
● first choice
○ alternate choice

Series 8301 • Machine Screw and Fractional • Plug Chamfer

TiCN	TiN	oxide	uncoated	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
–	–	82623	–	2 - 56	1.75	.26	.44	.141	2	H2
–	–	82624	–	2 - 56	1.75	.26	.44	.141	2	H3
–	–	82636	–	2 - 56	1.75	.26	.44	.141	2	H4
–	–	82600	–	3 - 48	1.81	.30	.50	.141	2	H2
82301	82901	82601	82601B	4 - 40	1.88	.34	.56	.141	2	H2
–	–	82602	–	4 - 40	1.88	.34	.56	.141	2	H3
–	–	82612	–	4 - 40	1.88	.34	.56	.141	2	H4
–	–	82634	82634B	4 - 40	1.88	.34	.56	.141	2	H5
–	–	82638	–	4 - 40	1.88	.34	.56	.141	2	H6
–	–	82683	–	4 - 48	1.88	.34	.56	.141	2	H2
–	–	82641	–	4 - 48	1.88	.34	.56	.141	2	H4
–	–	82603	–	5 - 40	1.94	.37	.63	.141	3	H2
–	–	82604	–	6 - 32	2.00	.41	.69	.141	3	H2
82305	82905	82605	82605B	6 - 32	2.00	.41	.69	.141	3	H3
–	–	82608	–	6 - 32	2.00	.41	.69	.141	3	H4
–	–	82635	82635B	6 - 32	2.00	.41	.69	.141	3	H5
–	–	82659		6 - 32	2.00	.41	.69	.141	3	H6
–	–	82665	82665B	6 - 32	2.00	.41	.69	.141	3	H7
–	–	82684	–	6 - 40	2.00	.41	.69	.141	3	H2
–	–	82642	–	6 - 40	2.00	.41	.69	.141	3	H3
		82606	–	8 - 32	2.13	.45	.75	.168	3	H2
82307	82907	82607	82607B	8 - 32	2.13	.45	.75	.168	3	H3
–	–	82629	–	8 - 32	2.13	.45	.75	.168	3	H4
–	–	82637	82637B	8 - 32	2.13	.45	.75	.168	3	H5
–	–	82660	–	8 - 32	2.13	.45	.75	.168	3	H6
–	–	82667	–	8 - 32	2.13	.45	.75	.168	3	H7
–		82686	–	8 - 36	2.13	.45	.75	.168	3	H2
82309	82909	82609	82609B	10 - 24	2.38	.53	.88	.194	3	H3
–	–	82657	–	10 - 24	2.38	.53	.88	.194	3	H4
–	–	82639	82639B	10 - 24	2.38	.53	.88	.194	3	H5
–	–	82690	–	10 - 24	2.38	.53	.88	.194	3	H6
–	–	82669	–	10 - 24	2.38	.53	.88	.194	3	H7
		82611	–	10 - 32	2.38	.53	.88	.194	3	H2
82310	82910	82610	82610B	10 - 32	2.38	.53	.88	.194	3	H3
–	–	82630	–	10 - 32	2.38	.53	.88	.194	3	H4
–	–	82640	82640B	10 - 32	2.38	.53	.88	.194	3	H5
–	–	82661	–	10 - 32	2.38	.53	.88	.194	3	H6
–	–	82670	–	10 - 32	2.38	.53	.88	.194	3	H7

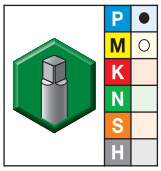
(continued)

(Series 8301 • Machine Screw and Fractional • Plug Chamfer continued)

										
TiCN	TiN	oxide	uncoated	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
–	–	82688	–	12 - 24	2.38	.57	.94	.220	3	H3
–	–	82689	–	12 - 28	2.38	.57	.94	.220	3	H3
–	–	82658	–	1/4 - 20	2.50	.59	1.00	.255	3	H2
82313	82913	82613	82613B	1/4 - 20	2.50	.59	1.00	.255	3	H3
–	–	82643	82643B	1/4 - 20	2.50	.59	1.00	.255	3	H5
–	–	82673	–	1/4 - 20	2.50	.59	1.00	.255	3	H7
–	–	82666	–	1/4 - 28	2.50	.59	1.00	.255	3	H2
82314	82914	82614	82614B	1/4 - 28	2.50	.59	1.00	.255	3	H3
–	–	82631	–	1/4 - 28	2.50	.59	1.00	.255	3	H4
–	–	82644	82644B	1/4 - 28	2.50	.59	1.00	.255	3	H5
–	–	82662	–	1/4 - 28	2.50	.59	1.00	.255	3	H6
–	–	82674	–	1/4 - 28	2.50	.59	1.00	.255	3	H7
82315	82915	82615	82615B	5/16 - 18	2.72	.67	1.13	.318	3	H3
–	–	82645	82645B	5/16 - 18	2.72	.67	1.13	.318	3	H5
–	–	82675	–	5/16 - 18	2.72	.67	1.13	.318	3	H7
82316	82916	82616	82616B	5/16 - 24	2.72	.67	1.13	.318	3	H3
–	–	82632	–	5/16 - 24	2.72	.67	1.13	.318	3	H4
–	–	82646	82646B	5/16 - 24	2.72	.67	1.13	.318	3	H5
–	–	82663	–	5/16 - 24	2.72	.67	1.13	.318	3	H6
–	–	82676	–	5/16 - 24	2.72	.67	1.13	.318	3	H7
82317	82917	82617	82617B	3/8 - 16	2.94	.75	1.25	.381	3	H3
–	–	82647	82647B	3/8 - 16	2.94	.75	1.25	.381	3	H5
–	–	82668	–	3/8 - 16	2.94	.75	1.25	.381	3	H7
82318	82918	82618	82618B	3/8 - 24	2.94	.75	1.25	.381	3	H3
–	–	82633	–	3/8 - 24	2.94	.75	1.25	.381	3	H4
–	–	82648	82648B	3/8 - 24	2.94	.75	1.25	.381	3	H5
–	–	82664	–	3/8 - 24	2.94	.75	1.25	.381	3	H6
–	–	82678	–	3/8 - 24	2.94	.75	1.25	.381	3	H7
82319	82919	82619	82619B	7/16 - 14	3.16	.89	–	.323	3	H3
–	–	82649	82649B	7/16 - 14	3.16	.89	–	.323	3	H5
–	–	82671	–	7/16 - 14	3.16	.89	–	.323	3	H7
82320	82920	82620	82620B	7/16 - 20	3.16	.89	–	.323	3	H3
–	–	82650	82650B	7/16 - 20	3.16	.89	–	.323	3	H5
–	–	82691	–	7/16 - 20	3.16	.89	–	.323	3	H6
–	–	82680	–	7/16 - 20	3.16	.89	–	.323	3	H7
82321	82921	82621	82621B	1/2 - 13	3.38	.98	–	.367	3	H3
–	–	82651	82651B	1/2 - 13	3.38	.98	–	.367	3	H5
–	–	82681	–	1/2 - 13	3.38	.98	–	.367	3	H7
82322	82922	82622	82622B	1/2 - 20	3.38	.98	–	.367	3	H3
–	–	82652	82652B	1/2 - 20	3.38	.98	–	.367	3	H5
–	–	82692	–	1/2 - 20	3.38	.98	–	.367	3	H6
–	–	82682	–	1/2 - 20	3.38	.98	–	.367	3	H7

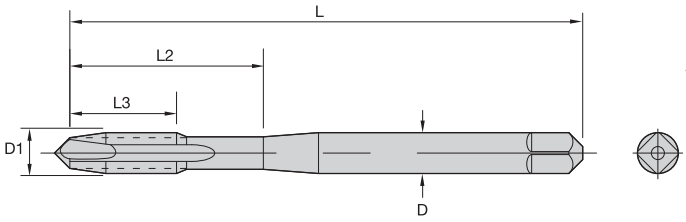
(continued)

(Series 8301 • Machine Screw and Fractional • Plug Chamfer continued)



TiCN	TiN	oxide	uncoated	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
82353	**82953**	**82653**	**82653B**	9/16 - 12	3.59	.98	—	.429	3	H3
82354	**82954**	**82654**	**82654B**	9/16 - 18	3.59	.98	—	.429	3	H3
82325	**82925**	**82625**	**82625B**	5/8 - 11	3.81	1.08	—	.480	3	H3
—	**—**	**82655**	**82655B**	5/8 - 11	3.81	1.08	—	.480	3	H5
—	**—**	**82672**	**—**	5/8 - 11	3.81	1.08	—	.480	3	H7
82326	**82926**	**82626**	**82626B**	5/8 - 18	3.81	1.08	—	.480	3	H3
—	**—**	**82656**	**82656B**	5/8 - 18	3.81	1.08	—	.480	3	H5
—	**—**	**82694**	**—**	5/8 - 18	3.81	1.08	—	.480	3	H6
—	**—**	**82677**	**—**	5/8 - 18	3.81	1.08	—	.480	3	H7
82327	**82927**	**82627**	**82627B**	3/4 - 10	4.25	1.20	—	.590	3	H3
—	**—**	**81657**	**—**	3/4 - 10	4.25	1.20	—	.590	3	H5
82328	**82928**	**82628**	**82628B**	3/4 - 16	4.25	1.20	—	.590	3	H3
82395	**82995**	**82695**	**82695B**	7/8 - 9	4.69	1.34	—	.697	3	H4
82396	**82996**	**82696**	**82696B**	7/8 - 14	4.69	1.34	—	.697	3	H4
82397	**82997**	**82697**	**82697B**	1 - 8	5.13	1.50	—	.800	3	H4
—	**—**	**82679**	**—**	1 - 12	5.13	1.50	—	.800	3	H4
—	**—**	**—**	**82700**	1 1/8 - 7	5.44	2.56	—	.896	4	H6
—	**—**	**—**	**82701**	1 1/8 - 12	5.44	2.56	—	.896	4	H5
—	**—**	**—**	**82702**	1 1/4 - 7	5.75	2.56	—	1.021	4	H6
—	**—**	**—**	**82703**	1 1/4 - 12	5.75	2.56	—	1.021	4	H5
—	**—**	**—**	**82705**	1 3/8 - 6	6.06	3.00	—	1.108	4	H6
—	**—**	**—**	**82706**	1 3/8 - 12	6.06	3.00	—	1.108	4	H5
—	**—**	**—**	**82707**	1 1/2 - 6	6.38	3.00	—	1.233	4	H6
—	**—**	**—**	**82708**	1 1/2 - 12	6.38	3.00	—	1.233	4	H5
—	**—**	**—**	**82709**	1 3/4 - 5	7.00	3.19	—	1.430	4	H7
—	**—**	**—**	**82710**	2 - 4 1/2	7.63	3.56	—	1.644	4	H7

EM taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.

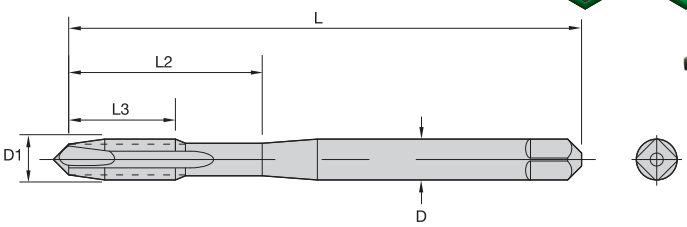


● first choice
○ alternate choice

■ Series 8351 • Plug Chamfer • Metric ANSI

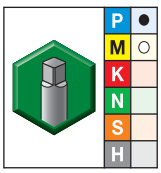
TiCN	TiN	oxide	uncoated	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
72815	72915	72615	72615B	M3 X 0,5	1.94	.31	.63	.141	3	D3
–	–	72616	72616B	M3,5 X 0,6	2.00	.38	.69	.141	3	D4
72817	72917	72617	72617B	M4 X 0,7	2.13	.38	.75	.168	3	D4
72819	72919	72619	72619B	M5 X 0,8	2.38	.50	.88	.194	3	D4
72820	72920	72620	72620B	M6 X 1	2.50	.63	1.00	.255	3	D5
–	–	72621	72621B	M7 X 1	2.72	.69	1.13	.318	3	D5
–	–	72622	72622B	M8 X 1	2.72	.69	1.13	.318	3	D5
72823	72923	72623	72623B	M8 X 1,25	2.72	.69	1.13	.318	3	D5
–	–	72624	72624B	M10 X 1,25	2.94	.75	1.25	.381	3	D5
72825	72925	72625	72625B	M10 X 1,5	2.94	.75	1.25	.381	3	D6
–	–	72626	72626B	M12 X 1,25	3.38	.94	—	.367	3	D5
72827	72927	72627	72627B	M12 X 1,75	3.38	.94	—	.367	3	D6
–	–	72628	72628B	M14 X 1,5	3.59	1.00	—	.429	3	D6
–	–	72629	72629B	M14 X 2	3.59	1.00	—	.429	3	D7
–	–	72630	72630B	M16 X 1,5	3.81	1.09	—	.480	3	D6
–	72930	–	–	M16 X 1,5	3.81	1.09	—	.480	–	D6
–	–	72631	–	M16 X 2	3.81	1.09	—	.480	3	D7
72831	72931	–	–	M16 X 2	3.81	1.09	—	.480	3	D7
–	–	–	72631B	M16 X 2	3.81	1.09	—	.480	3	D7
–	–	72632	–	M18 X 1,5	4.03	1.09	—	.542	3	D6
–	–	–	72632B	M18 X 1,5	4.03	1.08	—	.542	4	D6
–	–	1072633	–	M18 X 2,5	4.03	1.08	—	.542	3	D7
–	–	–	72633B	M18 X 2,5	4.03	1.08	—	.542	4	D7

Metric taps for 6H class of fit are suitable for MJ aerospace internal threading applications.
Metric taps are manufactured to USCTI specifications and dimensions.
Metric tap blank dimensions are equivalent to inch taps.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 6H class of fit.



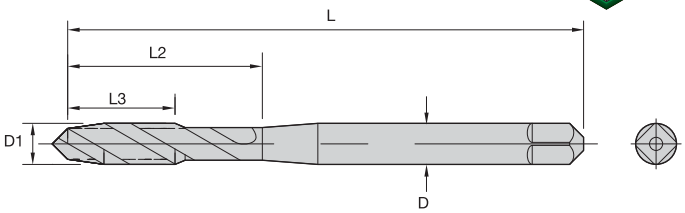
● first choice
○ alternate choice

Series 8701 • Machine Screw and Fractional • Plug Chamfer



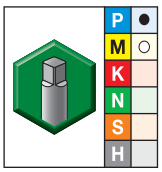
oxide	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
82523	2 - 56	6.00	.44	—	.141	2	H2
82500	3 - 48	6.00	.50	—	.141	2	H2
82501	4 - 40	6.00	.31	.56	.141	2	H2
82505	6 - 32	6.00	.38	.69	.141	3	H3
82507	8 - 32	6.00	.38	.75	.168	3	H3
82509	10 - 24	6.00	.50	.88	.194	3	H3
82510	10 - 32	6.00	.50	.88	.194	3	H3
82513	1/4 - 20	6.00	.63	1.00	.255	3	H3
82514	1/4 - 28	6.00	.63	1.00	.255	3	H3
82515	5/16 - 18	6.00	.69	1.13	.318	3	H3
82516	5/16 - 24	6.00	.69	1.13	.318	3	H3
82517	3/8 - 16	6.00	.75	1.25	.381	3	H3
82518	3/8 - 24	6.00	.75	1.25	.381	3	H3
82519	7/16 - 14	6.00	.88	—	.323	3	H3
82520	7/16 - 20	6.00	.88	—	.323	3	H3
82521	1/2 - 13	6.00	.94	—	.367	3	H3
82522	1/2 - 20	6.00	.94	—	.367	3	H3

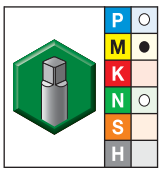
EM taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.

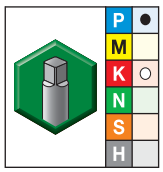


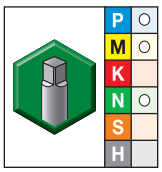
● first choice
○ alternate choice

Series 8304 • Machine Screw and Fractional • Chamfer 2-1/2–3-1/2 Pitches





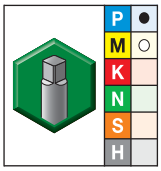


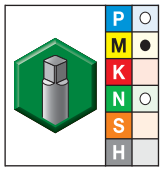


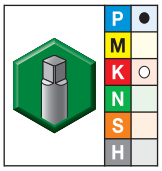
TiCN	TiN	oxide	uncoated	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
–	–	84671	84671B	2 - 56	1.75	.44	–	.141	2	H2
–	–	84672	–	3 - 48	1.81	.50	–	.141	2	H2
84301	84901	84601	84601B	4 - 40	1.88	.24	.56	.141	2	H2
–	–	84602	–	4 - 40	1.88	.24	.56	.141	2	H3
–	–	84629	–	4 - 40	1.88	.24	.56	.141	2	H4
–	–	84634	84634B	4 - 40	1.88	.24	.56	.141	2	H5
–	–	84612	–	4 - 40	1.88	.24	.56	.141	2	H6
–	–	84683	–	4 - 48	1.88	.24	.56	.141	2	H2
84303	84903	84603	84603B	5 - 40	1.94	.24	.63	.141	3	H2
–	–	84604	–	6 - 32	2.00	.28	.69	.141	3	H2
84305	84905	84605	84605B	6 - 32	2.00	.28	.69	.141	3	H3
–	–	84636	–	6 - 32	2.00	.28	.69	.141	3	H4
–	–	84635	84635B	6 - 32	2.00	.28	.69	.141	3	H5
–	–	84665	–	6 - 32	2.00	.28	.69	.141	3	H7
–	–	84684	–	6 - 40	2.00	.28	.69	.141	3	H2
–	–	84685	–	6 - 40	2.00	.28	.69	.141	3	H3
–	–	84606	–	8 - 32	2.13	.28	.75	.168	3	H2
84307	84907	84607	84607B	8 - 32	2.13	.28	.75	.168	3	H3
–	–	84638	–	8 - 32	2.13	.28	.75	.168	3	H4
–	–	84637	84637B	8 - 32	2.13	.28	.75	.168	3	H5
–	–	84660	–	8 - 32	2.13	.28	.75	.168	3	H6
–	–	84667	–	8 - 32	2.13	.28	.75	.168	3	H7
–	–	84687	–	8 - 36	2.13	.28	.75	.168	3	H3
–	–	84624	–	10 - 24	2.38	.35	.88	.194	3	H2
84309	84909	84609	84609B	10 - 24	2.38	.35	.88	.194	3	H3
–	–	84623	–	10 - 24	2.38	.35	.88	.194	3	H4
–	–	84639	84639B	10 - 24	2.38	.35	.88	.194	3	H5
–	–	84669	–	10 - 24	2.38	.35	.88	.194	3	H7
–	–	84611	–	10 - 32	2.38	.28	.88	.194	3	H2
84310	84910	84610	84610B	10 - 32	2.38	.28	.88	.194	3	H3
–	–	84630	–	10 - 32	2.38	.28	.88	.194	3	H4
–	–	84640	84640B	10 - 32	2.38	.28	.88	.194	3	H5
–	–	84662	–	10 - 32	2.38	.28	.88	.194	3	H6
–	–	84670	–	10 - 32	2.38	.28	.88	.194	3	H7

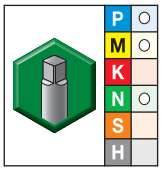
(continued)

(Series 8304 • Machine Screw and Fractional • Chamfer 2-1/2–3-1/2 Pitches continued)





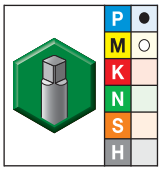
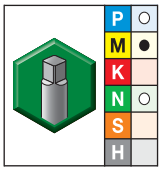
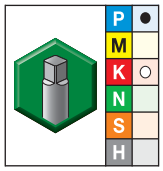
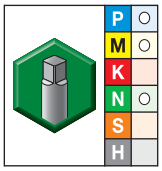




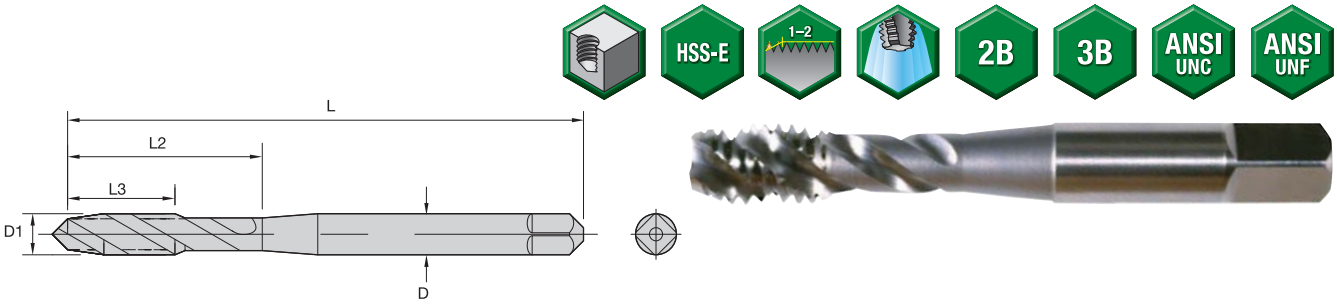
TiCN	TiN	oxide	uncoated	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
–	–	84688	–	12 - 24	2.38	.35	.94	.220	3	H3
–	–	84689	–	12 - 28	2.38	.28	.94	.220	3	H3
–	–	84641	–	1/4 - 20	2.50	.43	1.00	.255	3	H2
84313	84913	84613	84613B	1/4 - 20	2.50	.43	1.00	.255	3	H3
–	–	84643	84643B	1/4 - 20	2.50	.43	1.00	.255	3	H5
–	–	84673	–	1/4 - 20	2.50	.43	1.00	.255	3	H7
–	–	84642	–	1/4 - 28	2.50	.35	1.00	.255	3	H2
84314	84914	84614	84614B	1/4 - 28	2.50	.35	1.00	.255	3	H3
–	–	84631	–	1/4 - 28	2.50	.35	1.00	.255	3	H4
–	–	84644	84644B	1/4 - 28	2.50	.35	1.00	.255	3	H5
–	–	84664	–	1/4 - 28	2.50	.35	1.00	.255	3	H6
–	–	84674	–	1/4 - 28	2.50	.35	1.00	.255	3	H7
84315	84915	84615	84615B	5/16 - 18	2.72	.47	1.13	.318	3	H3
–	–	84645	84645B	5/16 - 18	2.72	.47	1.13	.318	3	H5
–	–	84675	–	5/16 - 18	2.72	.47	1.13	.318	3	H7
84316	84916	84616	84616B	5/16 - 24	2.72	.39	1.13	.318	3	H3
–	–	84646	84646B	5/16 - 24	2.72	.39	1.13	.318	3	H5
–	–	84657	–	5/16 - 24	2.72	.39	1.13	.318	3	H6
–	–	84676	–	5/16 - 24	2.72	.39	1.13	.318	3	H7
84317	84917	84617	84617B	3/8 - 16	2.94	.55	1.25	.381	3	H3
–	–	84647	84647B	3/8 - 16	2.94	.55	1.25	.381	3	H5
–	–	84677	–	3/8 - 16	2.94	.55	1.25	.381	3	H7
84318	84918	84618	84618B	3/8 - 24	2.94	.39	1.25	.381	3	H3
–	–	84633	–	3/8 - 24	2.94	.39	1.25	.381	3	H4
–	–	84648	84648B	3/8 - 24	2.94	.39	1.25	.381	3	H5
–	–	84658	–	3/8 - 24	2.94	.39	1.25	.381	3	H6
–	–	84678	–	3/8 - 24	2.94	.39	1.25	.381	3	H7
84319	84919	84619	84619B	7/16 - 14	3.16	.59	–	.323	3	H3
–	–	84649	84649B	7/16 - 14	3.16	.59	–	.323	3	H5
–	–	84679	–	7/16 - 14	3.16	.59	–	.323	3	H7
84320	84920	84620	84620B	7/16 - 20	3.16	.47	–	.323	3	H3
–	–	84650	84650B	7/16 - 20	3.16	.47	–	.323	3	H5
–	–	84691	–	7/16 - 20	3.16	.47	–	.323	3	H6
–	–	84680	–	7/16 - 20	3.16	.47	–	.323	3	H7
84321	84921	84621	84621B	1/2 - 13	3.38	.63	–	.367	3	H3
–	–	84651	84651B	1/2 - 13	3.38	.63	–	.367	3	H5
–	–	84681	–	1/2 - 13	3.38	.63	–	.367	3	H7
84322	84922	84622	84622B	1/2 - 20	3.38	.47	–	.367	3	H3
–	–	84652	84652B	1/2 - 20	3.38	.47	–	.367	3	H5
–	–	84692	–	1/2 - 20	3.38	.47	–	.367	3	H6
–	–	84682	–	1/2 - 20	3.38	.47	–	.367	3	H7
84353	84953	84653	84653B	9/16 - 12	3.59	.71	–	.429	3	H3

(continued)

(Series 8304 • Machine Screw and Fractional • Chamfer 2-1/2–3-1/2 Pitches continued)

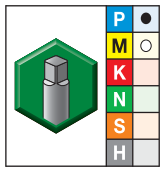
 TiCN	 TiN	 oxide	 uncoated	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
—	—	84699	84699B	9/16 - 12	3.59	.71	—	.429	3	H5
84354	84954	84654	84654B	9/16 - 18	3.59	.51	—	.429	3	H3
—	—	84698	84698B	9/16 - 18	3.59	.51	—	.429	3	H5
84325	84925	84625	84625B	5/8 - 11	3.81	.75	—	.480	3	H3
—	—	84655	84655B	5/8 - 11	3.81	.75	—	.480	3	H5
—	—	84661	—	5/8 - 11	3.81	.75	—	.480	3	H7
84326	84926	84626	84626B	5/8 - 18	3.81	.51	—	.480	3	H3
—	—	84656	84656B	5/8 - 18	3.81	.51	—	.480	3	H5
—	—	84663	—	5/8 - 18	3.81	.51	—	.480	3	H6
—	—	84666	—	5/8 - 18	3.81	.51	—	.480	3	H7
84327	84927	84627	84627B	3/4 - 10	4.25	.83	—	.590	4	H3
—	—	84693	—	3/4 - 10	4.25	.83	—	.590	4	H5
84328	84928	84628	84628B	3/4 - 16	4.25	.59	—	.590	4	H3
—	—	84694	—	3/4 - 16	4.25	.59	—	.590	4	H5
—	—	84686	—	3/4 - 16	4.25	.59	—	.590	4	H7
84395	84995	84695	84695B	7/8 - 9	4.69	.83	—	.697	4	H4
84396	84996	84696	84696B	7/8 - 14	4.69	.71	—	.697	4	H4
84397	84997	84697	—	1 - 8	5.13	.98	—	.800	4	H4
—	—	84668	—	1 - 12	5.13	.71	—	.800	4	H4
—	—	—	84701B	1 1/8 - 7	5.44	2.56	—	.896	4	H6
—	—	—	84702	1 1/8 - 12	5.44	2.56	—	.896	4	H5
—	—	—	84703B	1 1/4 - 7	5.75	2.56	—	1.021	4	H6
—	—	—	84705	1 1/4 - 12	5.75	2.56	—	1.021	4	H5
—	—	—	84706	1 3/8 - 6	6.06	3.00	—	1.108	4	H6
—	—	—	84707	1 3/8 - 12	6.06	3.00	—	1.108	4	H5
—	—	—	84709	1 1/2 - 6	6.38	3.00	—	1.233	4	H6
—	—	—	84711	1 1/2 - 12	6.38	3.00	—	1.233	4	H5
—	—	—	84714	1 3/4 - 5	7.00	3.19	—	1.430	4	H7
—	—	—	84715B	2 - 4 1/2	7.63	3.56	—	1.644	4	H3
—	—	—	84697B	1 - 8	5.13	.98	—	.800	4	H4

EM taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.



● first choice
○ alternate choice

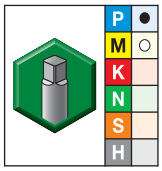
■ Series 8304 • Machine Screw and Fractionl • Full Bottoming Chamfer



oxide	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
84001	4 - 40	1.88	.24	.56	.141	2	H2
84002	4 - 40	1.88	.24	.56	.141	2	H3
84034	4 - 40	1.88	.24	.56	.141	2	H5
84083	4 - 48	1.88	.24	.56	.141	2	H2
84003	5 - 40	1.94	.24	.63	.141	3	H2
84004	6 - 32	2.00	.28	.69	.141	3	H2
84005	6 - 32	2.00	.28	.69	.141	3	H3
84035	6 - 32	2.00	.28	.69	.141	3	H5
84084	6 - 40	2.00	.28	.69	.141	3	H2
84085	6 - 40	2.00	.28	.69	.141	3	H3
84006	8 - 32	2.13	.28	.75	.168	3	H2
84007	8 - 32	2.13	.28	.75	.168	3	H3
84037	8 - 32	2.13	.28	.75	.168	3	H5
84009	10 - 24	2.38	.35	.88	.194	3	H3
84039	10 - 24	2.38	.35	.88	.194	3	H5
84010	10 - 32	2.38	.28	.88	.194	3	H3
84040	10 - 32	2.38	.28	.88	.194	3	H5
84013	1/4 - 20	2.50	.43	1.00	.255	3	H3
84043	1/4 - 20	2.50	.43	1.00	.255	3	H5
84014	1/4 - 28	2.50	.35	1.00	.255	3	H3
84044	1/4 - 28	2.50	.35	1.00	.255	3	H5
84015	5/16 - 18	2.72	.47	1.13	.318	3	H3
84045	5/16 - 18	2.72	.47	1.13	.318	3	H5
84016	5/16 - 24	2.72	.39	1.13	.318	3	H3
84046	5/16 - 24	2.72	.39	1.13	.318	3	H5
84017	3/8 - 16	2.94	.55	1.25	.381	3	H3
84047	3/8 - 16	2.94	.55	1.25	.381	3	H5
84077	3/8 - 16	2.94	.55	1.25	.381	3	H7
84018	3/8 - 24	2.94	.39	1.25	.381	3	H3
84033	3/8 - 24	2.94	.39	1.25	.381	3	H4
84048	3/8 - 24	2.94	.39	1.25	.381	3	H5
84019	7/16 - 14	3.16	.59	—	.323	3	H3
84049	7/16 - 14	3.16	.59	—	.323	3	H5
84020	7/16 - 20	3.16	.47	—	.323	3	H3

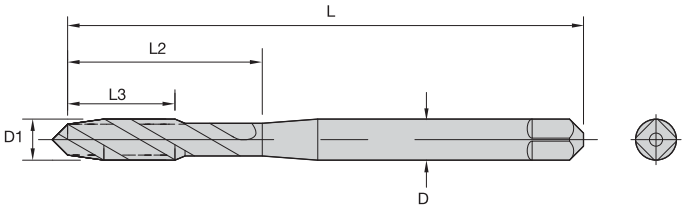
(continued)

(Series 8304 • Machine Screw and Fractionl • Full Bottoming Chamfer continued)



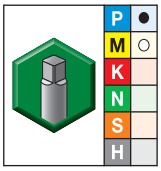
oxide	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
84050	7/16 - 20	3.16	.47	—	.323	3	H5
84021	1/2 - 13	3.38	.63	—	.367	3	H3
84051	1/2 - 13	3.38	.63	—	.367	3	H5
84022	1/2 - 20	3.38	.47	—	.367	3	H3
84052	1/2 - 20	3.38	.47	—	.367	3	H5
84053	9/16 - 12	3.59	.71	—	.429	3	H3
84054	9/16 - 18	3.59	.51	—	.429	3	H3
84025	5/8 - 11	3.81	.75	—	.480	3	H3
84055	5/8 - 11	3.81	.75	—	.480	3	H5
84026	5/8 - 18	3.81	.51	—	.480	3	H3
84056	5/8 - 18	3.81	.51	—	.480	3	H5
84027	3/4 - 10	4.25	.83	—	.590	4	H3
84028	3/4 - 16	4.25	.59	—	.590	4	H3

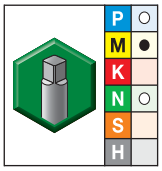
EM taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.

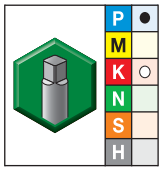


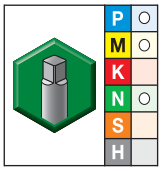
● first choice
○ alternate choice

■ Series 8354 • Chamfer 2-1/2–3-1/2 Pitches • Metric ANSI



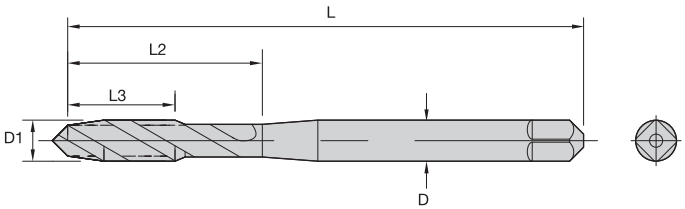






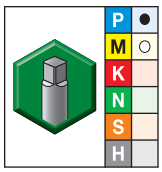
TiCN	TiN	oxide	uncoated	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
74815	74915	74615	74615B	M3 X 0,5	1.94	.31	.56	.141	3	D3
—	—	74616	74616B	M3,5 X 0,6	2.00	.38	.63	.141	3	D4
74817	74917	74617	74617B	M4 X 0,7	2.13	.38	.75	.168	3	D4
74819	74919	74619	74619B	M5 X 0,8	2.38	.50	.88	.194	3	D4
74820	74920	74620	74620B	M6 X 1	2.50	.63	1.00	.255	3	D5
—	—	74621	74621B	M7 X 1	2.72	.69	1.13	.318	3	D5
—	—	74622	74622B	M8 X 1	2.72	.69	1.13	.318	3	D5
74823	74923	74623	74623B	M8 X 1,25	2.72	.69	1.13	.318	3	D5
—	—	74624	74624B	M10 X 1,25	2.94	.75	1.25	.381	3	D5
74825	74925	74625	74625B	M10 X 1,5	2.94	.75	1.25	.381	3	D6
—	—	74626	74626B	M12 X 1,25	3.38	.94	—	.367	3	D5
74827	74927	74627	74627B	M12 X 1,75	3.38	.94	—	.367	3	D6
—	—	74628	74628B	M14 X 1,5	3.59	1.00	—	.429	3	D6
—	—	74629	74629B	M14 X 2	3.59	1.00	—	.429	3	D7
—	—	74630	74630B	M16 X 1,5	3.81	1.09	—	.480	3	D6
—	—	74631	74631B	M16 X 2	3.81	1.09	—	.480	3	D7
—	—	74632	—	M18 X 1,5	4.03	1.09	—	.542	3	D6
—	—	74633	—	M18 X 2,5	4.03	1.09	—	.542	3	D7
—	—	—	74632B	M18 X 1,5	4.03	1.09	—	.542	4	D6
—	—	—	74633B	M18 X 2,5	4.03	1.09	—	.542	4	D7

Metric taps for 6H class of fit are suitable for MJ aerospace internal threading applications.
Metric taps are manufactured to USCTI specifications and dimensions.
Metric tap blank dimensions are equivalent to inch taps.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 6H class of fit.



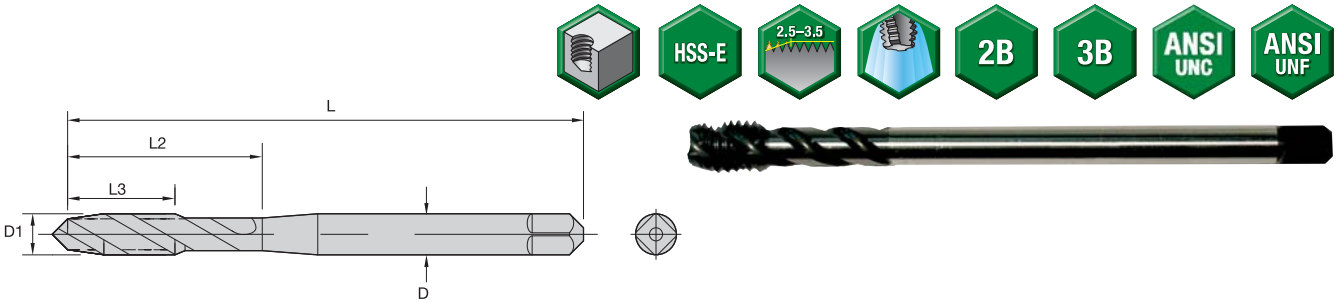
● first choice
○ alternate choice

Series 8354 • Full Bottoming Chamfer • Metric ANSI



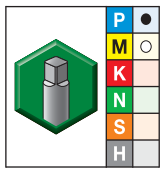
oxide	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
74015	M3 X 0,5	1.94	.31	.56	.141	3	D3
74016	M3,5 X 0,6	2.00	.38	.63	.141	3	D4
74017	M4 X 0,7	2.13	.38	.75	.168	3	D4
74019	M5 X 0,8	2.38	.50	.88	.194	3	D4
74020	M6 X 1	2.50	.63	1.00	.255	3	D5
74021	M7 X 1	2.72	.69	1.13	.318	3	D5
74022	M8 X 1	2.72	.69	1.13	.318	3	D5
74023	M8 X 1,25	2.72	.69	1.13	.318	3	D5
74024	M10 X 1,25	2.94	.75	1.25	.381	3	D5
74025	M10 X 1,5	2.94	.75	1.25	.381	3	D6
74026	M12 X 1,25	3.38	.94	—	.367	3	D5
74027	M12 X 1,75	3.38	.94	—	.367	3	D6
74028	M14 X 1,5	3.59	1.00	—	.429	3	D6
74029	M14 X 2	3.59	1.00	—	.429	3	D7
74030	M16 X 1,5	3.81	1.09	—	.480	3	D6
74031	M16 X 2	3.81	1.09	—	.480	3	D7
74032	M18 X 1,5	4.03	1.09	—	.542	3	D6

Metric taps for 6H class of fit are suitable for MJ aerospace internal threading applications.
Metric taps are manufactured to USCTI specifications and dimensions.
Metric tap blank dimensions are equivalent to inch taps.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 6H class of fit.



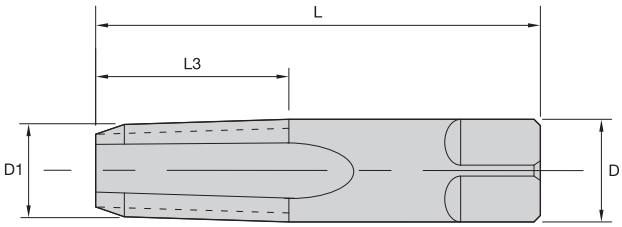
● first choice
○ alternate choice

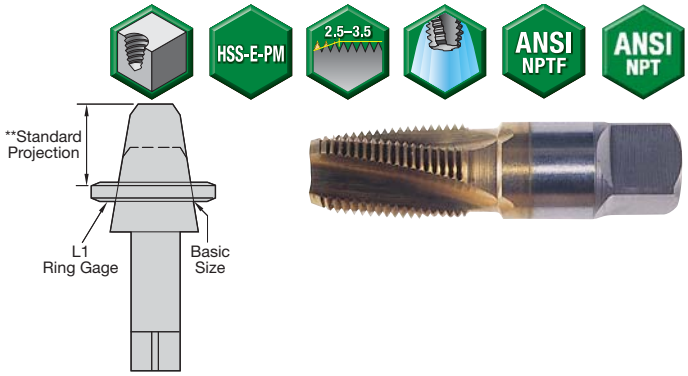
■ Series 8314 • Machine Screw and Fractional • Modified Bottoming Chamfer



Oxide	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
84523	2 - 56	6.00	.44	—	.141	2	H2
84500	3 - 48	6.00	.50	—	.141	2	H2
84501	4 - 40	6.00	.24	.56	.141	2	H2
84505	6 - 32	6.00	.28	.69	.141	3	H3
84507	8 - 32	6.00	.28	.75	.168	3	H3
84509	10 - 24	6.00	.35	.88	.194	3	H3
84510	10 - 32	6.00	.28	.88	.194	3	H3
84513	1/4 - 20	6.00	.43	1.00	.255	3	H3
84514	1/4 - 28	6.00	.35	1.00	.255	3	H3
84515	5/16 - 18	6.00	.47	1.13	.318	3	H3
84516	5/16 - 24	6.00	.39	1.13	.318	3	H3
84517	3/8 - 16	6.00	.55	1.25	.381	3	H3
84518	3/8 - 24	6.00	.39	1.25	.381	3	H3
84519	7/16 - 14	6.00	.59	—	.323	3	H3
84520	7/16 - 20	6.00	.47	—	.323	3	H3
84521	1/2 - 13	6.00	.63	—	.367	3	H3
84522	1/2 - 20	6.00	.47	—	.367	3	H3

EM taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.

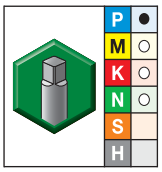


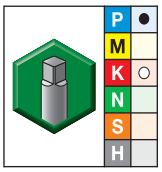


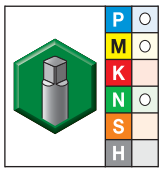
Features and Benefits:

- Ground thread pipe taps are standard in American Standard Pipe Thread (NPT) and American Standard Dryseal Pipe Thread (NPTF).
- NPT threads require the use of a sealer such as Teflon® tape or pipe compound.
- NPTF dryseal threads give a pressure-tight joint without the use of sealer.
- Standard projection.
- Unique slow spiral tap geometry for improved thread finish when tapping stainless steels.

Series 8321 • Standard Chamfer







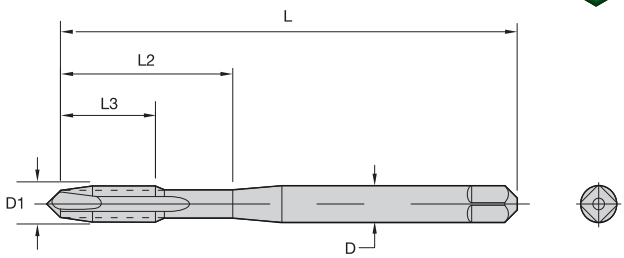
● first choice
○ alternate choice

TiN	oxide	uncoated	D1 size	L	L3	D	number of flutes	thread series
83940	83640	83640B	1/16 - 27	2.13	.69	.313	4	NPT
83960	83660	83660B	1/16 - 27	2.13	.69	.313	4	NPTF
83942	83642	83642B	1/8 - 27	2.13	.75	.313	4	NPT
83962	83662	83662B	1/8 - 27	2.13	.75	.313	4	NPTF
83941	83641	83641B	1/8 - 27	2.13	.75	.438	4	NPT
83961	83661	83661B	1/8 - 27	2.13	.75	.438	4	NPTF
83943	83643	83643B	1/4 - 18	2.44	1.06	.563	4	NPT
83963	83663	83663B	1/4 - 18	2.44	1.06	.563	4	NPTF
83944	83644	83644B	3/8 - 18	2.56	1.06	.703	4	NPT
83964	83664	83664B	3/8 - 18	2.56	1.06	.703	4	NPTF
83945	83645	83645B	1/2 - 14	3.13	1.38	.688	4	NPT
83965	83665	83665B	1/2 - 14	3.13	1.38	.688	4	NPTF
83946	83646	83646B	3/4 - 14	3.25	1.38	.906	4	NPT
83966	83666	83666B	3/4 - 14	3.25	1.38	.906	4	NPTF
83947	83647	83647B	1 - 11 1/2	3.75	1.75	1.125	4	NPT
83967	83667	83667B	1 - 11 1/2	3.75	1.75	1.125	4	NPTF

**Large shank available on D1=1/8 - 27.*

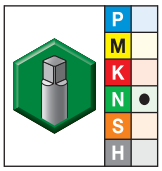
***Pipe tap projection is the distance the small end of the tap projects through an American National Standard L1 Pipe Thread Ring Gage.*

For gage measurement projection, see technical page A253.



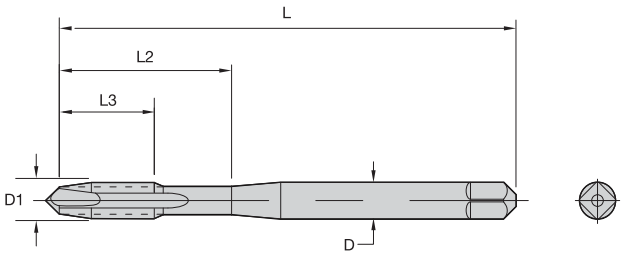
● first choice
○ alternate choice

Series 8201 • Machine Screw and Fractional • Plug Chamfer • DIN Length



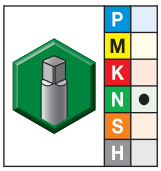
nitride	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
86200	2 - 56	1.77	.28	.47	.141	2	H2
86201	4 - 40	2.21	.43	.71	.141	2	H2
86202	5 - 40	2.21	.43	.71	.141	3	H2
86203	6 - 32	2.21	.51	.79	.141	3	H3
86204	8 - 32	2.48	.51	.83	.168	3	H3
86205	10 - 24	2.76	.63	.98	.194	3	H3
86206	10 - 32	2.76	.63	.98	.194	3	H3
86207	1/4 - 20	3.15	.75	1.18	.255	3	H3
86208	1/4 - 20	3.15	.75	1.18	.255	3	H5
86209	1/4 - 28	3.15	.75	1.18	.255	3	H3
86211	1/4 - 28	3.15	.75	1.18	.255	3	H4
86212	5/16 - 18	3.54	.87	1.38	.318	3	H3
86213	5/16 - 18	3.54	.87	1.38	.318	3	H5
86214	5/16 - 24	3.54	.87	1.38	.318	3	H3
86215	5/16 - 24	3.54	.87	1.38	.318	3	H4
86216	3/8 - 16	3.94	.95	1.54	.381	3	H3
86217	3/8 - 16	3.94	.95	1.54	.381	3	H5
86218	3/8 - 24	3.54	.79	1.54	.381	3	H3
86219	3/8 - 24	3.54	.79	1.54	.381	3	H4
86220	7/16 - 14	3.94	.95	1.65	.323	3	H3
86221	7/16 - 14	3.94	.95	1.65	.323	3	H5
86222	7/16 - 20	3.94	.95	1.65	.323	3	H3
86223	7/16 - 20	3.94	.95	1.65	.323	3	H5
86224	1/2 - 13	4.33	1.14	1.77	.367	3	H3
86225	1/2 - 13	4.33	1.14	1.77	.367	3	H5
86226	1/2 - 20	3.94	.87	1.77	.367	3	H3
86227	1/2 - 20	3.94	.87	1.77	.367	3	H5

EM taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.



● first choice
○ alternate choice

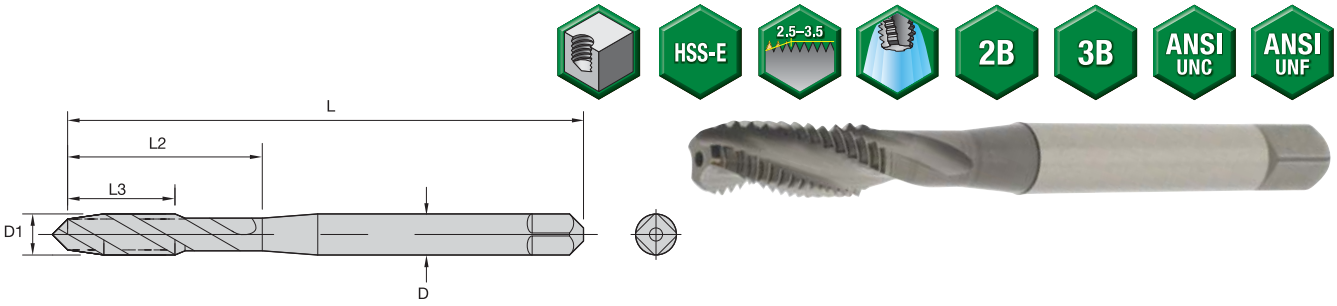
■ Series 8251 • Plug Chamfer • DIN Length • Metric ANSI



nitride	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
86228	M3 X 0,5	2.21	.43	.71	.141	3	D3
86229	M3,5 X 0,6	2.21	.51	.79	.141	3	D4
86230	M4 X 0,7	2.48	.51	.83	.168	3	D4
86231	M5 X 0,8	2.76	.63	.98	.194	3	D4
86232	M6 X 1	3.15	.75	1.18	.255	3	D5
86233	M7 X 1	3.15	.75	1.18	.318	3	D5
86234	M8 X 1	3.54	.87	1.38	.318	3	D5
86235	M8 X 1,25	3.54	.87	1.38	.318	3	D5
86236	M10 X 1,25	3.94	.95	1.54	.381	3	D5
86237	M10 X 1,5	3.94	.95	1.54	.381	3	D6
86238	M12 X 1,25	3.94	.87	1.77	.367	3	D5
86239	M12 X 1,5	3.94	.87	1.77	.367	3	D5
86240	M12 X 1,75	4.33	1.14	1.77	.367	3	D6

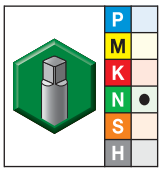
Metric taps for 6H class of fit are suitable for MJ aerospace internal threading applications.

Refer to table on pages A257–A258 for the recommended pitch diameter limit for 6H class of fit.



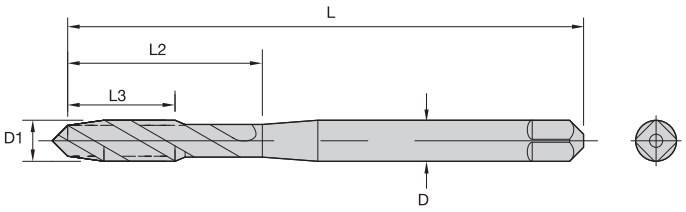
● first choice
○ alternate choice

■ Series 8204 • Machine Screw and Fractional • Semi-Bottom Chamfer • DIN Length



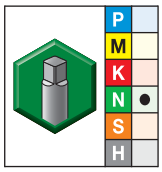
nitride	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
86400	2 - 56	1.77	.28	.47	.141	3	H2
86401	4 - 40	2.21	.43	.71	.141	3	H2
86402	5 - 40	2.21	.43	.71	.141	3	H2
86403	6 - 32	2.25	.51	.79	.141	3	H3
86404	8 - 32	2.48	.51	.83	.168	3	H3
86405	10 - 24	2.76	.63	.98	.194	3	H3
86406	10 - 32	2.76	.63	.98	.194	3	H3
86407	1/4 - 20	3.15	.75	1.18	.255	3	H3
86408	1/4 - 20	3.15	.75	1.18	.255	3	H5
86409	1/4 - 28	3.15	.75	1.18	.255	3	H3
86411	1/4 - 28	3.15	.75	1.18	.255	3	H5
86412	5/16 - 18	3.54	.87	1.38	.318	3	H3
86413	5/16 - 18	3.54	.87	1.38	.318	3	H5
86414	5/16 - 24	3.54	.87	1.38	.318	3	H3
86415	5/16 - 24	3.54	.87	1.38	.318	3	H4
86416	3/8 - 16	3.54	.95	1.54	.381	3	H3
86417	3/8 - 16	3.54	.95	1.54	.381	3	H5
86418	3/8 - 24	3.54	.79	1.54	.381	3	H3
86419	3/8 - 24	3.54	.79	1.54	.381	3	H4
86420	7/16 - 14	3.94	.95	1.65	.323	3	H3
86421	7/16 - 14	3.94	.95	1.65	.323	3	H5
86422	7/16 - 20	3.94	.95	1.65	.323	3	H3
86423	7/16 - 20	3.94	.95	1.65	.323	3	H5
86424	1/2 - 13	4.33	1.14	1.77	.367	3	H3
86425	1/2 - 13	4.33	1.14	1.77	.367	3	H5
86426	1/2 - 20	3.94	.87	1.77	.367	3	H3
86427	1/2 - 20	3.94	.87	1.77	.367	3	H5

EM taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.



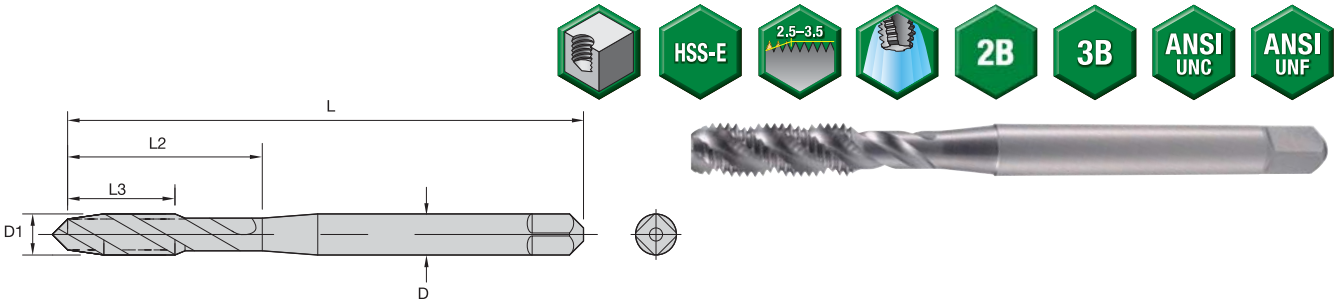
● first choice
○ alternate choice

■ Series 8254 • Semi-Bottom Chamfer • DIN Length • Metric ANSI



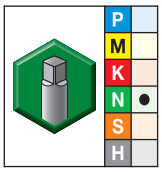
nitride	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
86428	M3 X 0,5	2.21	.43	.71	.141	3	D3
86429	M3,5 X 0,6	2.21	.51	.79	.141	3	D4
86430	M4 X 0,7	2.48	.51	.83	.168	3	D4
86431	M5 X 0,8	2.76	.63	.98	.194	3	D4
86432	M6 X 1	3.15	.75	1.18	.255	3	D5
86433	M7 X 1	3.15	.75	1.18	.318	3	D5
86434	M8 X 1	3.54	.87	1.38	.318	3	D5
86435	M8 X 1,25	3.54	.87	1.38	.318	3	D5
86436	M10 X 1,25	3.94	.95	1.54	.381	3	D5
86437	M10 X 1,5	3.94	.95	1.54	.381	3	D6
86438	M12 X 1,25	3.94	.87	1.50	.367	3	D5
86439	M12 X 1,5	3.94	.87	1.50	.367	3	D5
86440	M12 X 1,75	4.33	1.14	2.05	.367	3	D6

Metric taps for 6H class of fit are suitable for MJ aerospace internal threading applications.
Metric taps are manufactured to USCTI specifications and dimensions.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 6H class of fit.



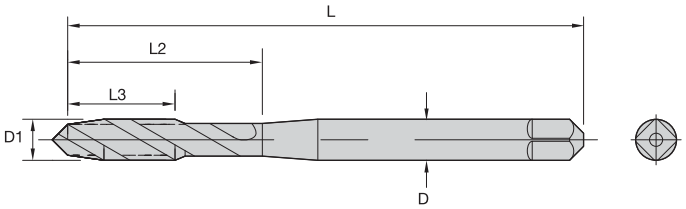
● first choice
○ alternate choice

■ Series 8214 • Machine Screw and Fractional • Semi-Bottom Chamfer • DIN Length



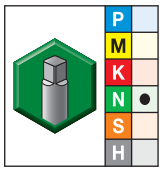
nitride	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
86500	2 - 56	1.77	.28	.47	.141	2	H2
86501	4 - 40	2.21	.43	.71	.141	2	H2
86502	5 - 40	2.21	.43	.71	.141	3	H2
86503	6 - 32	2.21	.51	.79	.141	3	H3
86504	8 - 32	2.48	.51	.83	.168	3	H3
86505	10 - 24	2.76	.63	.98	.194	3	H3
86506	10 - 32	2.76	.63	.98	.194	3	H3
86507	1/4 - 20	3.15	.75	1.18	.255	3	H3
86508	1/4 - 20	3.15	.75	1.18	.255	3	H5
86509	1/4 - 28	3.15	.75	1.18	.255	3	H3
86511	1/4 - 28	3.15	.75	1.18	.255	3	H4
86512	5/16 - 18	3.54	.87	1.38	.318	3	H3
86513	5/16 - 18	3.54	.87	1.38	.318	3	H5
86514	5/16 - 24	3.54	.87	1.38	.318	3	H3
86515	5/16 - 24	3.54	.87	1.38	.318	3	H4
86516	3/8 - 16	3.94	.95	1.54	.381	3	H3
86517	3/8 - 16	3.94	.95	1.54	.381	3	H5
86518	3/8 - 24	3.54	.79	1.54	.381	3	H3
86519	3/8 - 24	3.54	.79	1.54	.381	3	H4
86520	7/16 - 14	3.94	.95	1.65	.323	3	H3
86521	7/16 - 14	3.94	.95	1.65	.323	3	H5
86522	7/16 - 20	3.94	.95	1.65	.323	3	H3
86523	7/16 - 20	3.94	.95	1.65	.323	3	H5
86524	1/2 - 13	4.33	1.14	1.77	.367	3	H3
86525	1/2 - 13	4.33	1.14	1.77	.367	3	H5
86526	1/2 - 20	3.94	.87	1.77	.367	3	H3
86527	1/2 - 20	3.94	.87	1.77	.367	3	H5

EM taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.



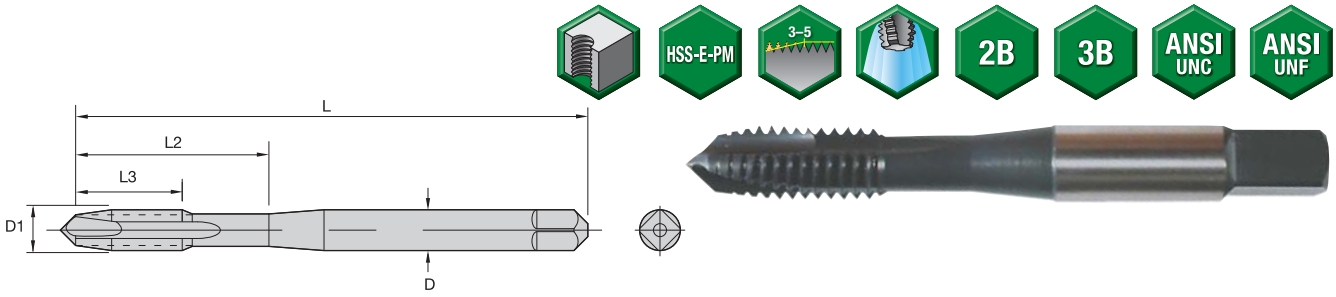
● first choice
○ alternate choice

■ Series 8264 • Semi-Bottom Chamfer • DIN Length • Metric ANSI



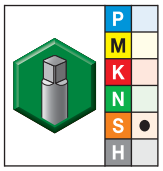
nitride	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
86528	M3 X 0,5	2.21	.43	.79	.141	3	D3
86529	M3,5 X 0,6	2.21	.51	.71	.141	3	D4
86530	M4 X 0,7	2.48	.51	.83	.168	3	D4
86531	M5 X 0,8	2.76	.63	.98	.194	3	D4
86532	M6 X 1	3.15	.75	1.18	.255	3	D5
86533	M7 X 1	3.15	.75	1.18	.318	3	D5
86534	M8 X 1	3.54	.87	1.38	.318	3	D5
86535	M8 X 1,25	3.54	.87	1.38	.318	3	D5
86536	M10 X 1,25	3.94	.95	1.54	.381	3	D5
86537	M10 X 1,5	3.94	.95	1.54	.381	3	D6
86538	M12 X 1,25	3.94	.87	1.50	.367	3	D5
86539	M12 X 1,5	3.94	.87	1.50	.367	3	D5
86540	M12 X 1,75	4.33	1.14	2.05	.367	3	D6

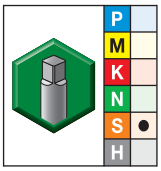
Metric taps for 6H class of fit are suitable for MJ aerospace internal threading applications.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 6H class of fit.

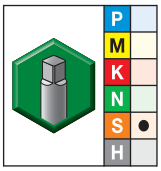


● first choice
○ alternate choice

■ Series 8601 • Machine Screw and Fractional • Plug Chamfer



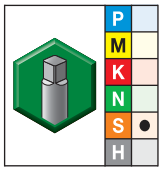




TiCN	oxide/nitride	uncoated	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
–	85523	–	2 - 56	1.75	.26	–	.141	2	H2
85401	85501	85501B	4 - 40	1.88	.34	.56	.141	2	H2
–	85502	–	4 - 40	1.88	.34	.56	.141	2	H3
–	85504	–	4 - 40	1.88	.34	.56	.141	2	H4
–	85506	–	4 - 48	1.88	.34	.56	.141	2	H2
–	85503	–	5 - 40	1.94	.37	.62	.141	3	H2
–	85508	–	6 - 32	2.00	.41	.69	.141	3	H2
85405	85505	85505B	6 - 32	2.00	.41	.69	.141	3	H3
–	85524	–	6 - 32	2.00	.41	.69	.141	3	H4
–	85535	–	6 - 32	2.00	.41	.69	.141	3	H5
–	85511	–	6 - 32	2.00	.41	.69	.141	3	H7
–	85512	85512B	6 - 40	2.00	.41	.69	.141	3	H2
	85534	–	8 - 32	2.13	.45	.75	.168	3	H2
85407	85507	85507B	8 - 32	2.13	.45	.75	.168	3	H3
–	85529	–	8 - 32	2.13	.45	.75	.168	3	H4
–	85537	–	8 - 32	2.13	.45	.75	.168	3	H5
–	85560	–	8 - 32	2.13	.45	.75	.168	3	H6
–	85567	–	8 - 32	2.13	.45	.75	.168	3	H7
85409	85509	85509B	10 - 24	2.38	.53	.88	.194	3	H3
–	85536	–	10 - 24	2.38	.53	.88	.194	3	H4
–	85539	–	10 - 24	2.38	.53	.88	.194	3	H5
–	85538	–	10 - 24	2.38	.53	.88	.194	3	H7
–	85541	–	10 - 32	2.38	.53	.88	.194	3	H2
85410	85510	85510B	10 - 32	2.38	.53	.88	.194	3	H3
–	85530	–	10 - 32	2.38	.53	.88	.194	3	H4
–	85540	–	10 - 32	2.38	.53	.88	.194	3	H5
–	85561	–	10 - 32	2.38	.53	.88	.194	3	H6
–	85570	–	10 - 32	2.38	.53	.88	.194	3	H7
85413	85513	85513B	1/4 - 20	2.50	.59	1.00	.255	3	H3
–	85543	–	1/4 - 20	2.50	.59	1.00	.255	3	H5
–	85542	–	1/4 - 20	2.50	.59	1.00	.255	3	H7
85414	85514	85514B	1/4 - 28	2.50	.59	1.00	.255	3	H3
–	85531	–	1/4 - 28	2.50	.59	1.00	.255	3	H4
–	85544	–	1/4 - 28	2.50	.59	1.00	.255	3	H5
–	85562	–	1/4 - 28	2.50	.59	1.00	.255	3	H6
–	85574	–	1/4 - 28	2.50	.59	1.00	.255	3	H7
85415	85515	85515B	5/16 - 18	2.72	.67	1.13	.318	3	H3
–	85545	–	5/16 - 18	2.72	.67	1.13	.318	3	H5

(continued)

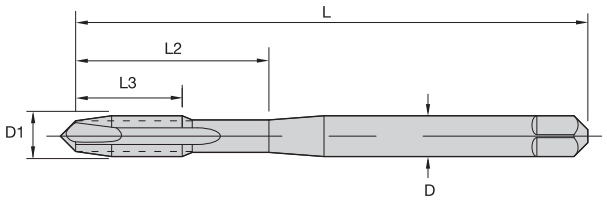
(Series 8601 • Machine Screw and Fractional • Plug Chamfer continued)



TiCN	oxide/nitride	uncoated	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
—	**85553**	—	5/16 - 18	2.72	.67	1.13	.318	3	H7
85416	**85516**	**85516B**	5/16 - 24	2.72	.67	1.13	.318	3	H3
—	**85532**	—	5/16 - 24	2.72	.67	1.13	.318	3	H4
—	**85546**	—	5/16 - 24	2.72	.67	1.13	.318	3	H5
—	**85563**	—	5/16 - 24	2.72	.67	1.13	.318	3	H6
—	**85576**	—	5/16 - 24	2.72	.67	1.13	.318	3	H7
85417	**85517**	**85517B**	3/8 - 16	2.94	.75	1.25	.381	3	H3
—	**85547**	—	3/8 - 16	2.94	.75	1.25	.381	3	H5
—	**85554**	—	3/8 - 16	2.94	.75	1.25	.381	3	H7
85418	**85518**	**85518B**	3/8 - 24	2.94	.75	1.25	.381	3	H3
—	**85533**	—	3/8 - 24	2.94	.75	1.25	.381	3	H4
—	**85548**	—	3/8 - 24	2.94	.75	1.25	.381	3	H5
—	**85564**	—	3/8 - 24	2.94	.75	1.25	.381	3	H6
—	**85578**	—	3/8 - 24	2.94	.75	1.25	.381	3	H7
85419	**85519**	**85519B**	7/16 - 14	3.16	.87	—	.323	3	H3
—	**85549**	—	7/16 - 14	3.16	.87	—	.323	3	H5
85420	**85520**	**85520B**	7/16 - 20	3.16	.87	—	.323	3	H3
	85550	—	7/16 - 20	3.16	.87	—	.323	3	H5
85421	**85521**	**85521B**	1/2 - 13	3.38	.96	—	.367	3	H3
—	**85551**	—	1/2 - 13	3.38	.96	—	.367	3	H5
—	**85555**	—	1/2 - 13	3.38	.96	—	.367	3	H7
85422	**85522**	**85522B**	1/2 - 20	3.38	.96	—	.367	3	H3
—	**85552**	—	1/2 - 20	3.38	.96	—	.367	3	H5
—	**85556**	—	1/2 - 20	3.38	.96	—	.367	3	H7
—	**85525**	—	5/8 - 11	3.81	1.08	—	.480	3	H3
—	**85565**	—	5/8 - 11	3.81	1.08	—	.480	3	H5
—	**85526**	—	5/8 - 18	3.81	1.08	—	.480	3	H3
—	**85566**	—	5/8 - 18	3.81	1.08	—	.480	3	H5
—	**85527**	—	3/4 - 10	4.25	1.20	—	.590	3	H3
—	**85557**	—	3/4 - 10	4.25	1.20	—	.590	3	H5
—	**85528**	—	3/4 - 16	4.25	1.20	—	.590	3	H3
—	**85558**	—	3/4 - 16	4.25	1.20	—	.590	3	H5

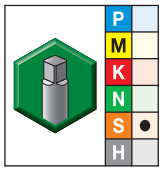
EM taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.

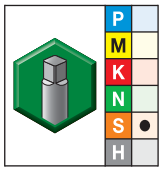
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.



● first choice
○ alternate choice

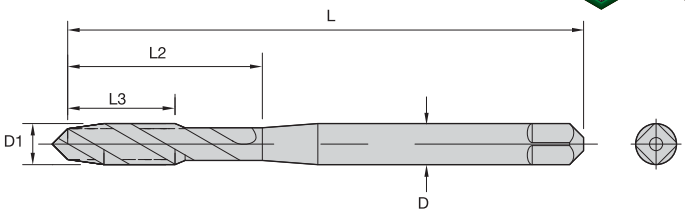
■ Series 8651 • Plug Chamfer • Metric ANSI





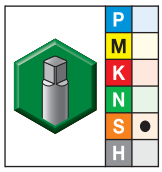
TiCN	oxide/nitride	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
—	**87320**	M2,5 X 0,45	1.81	.295	.500	.141	3	D3
87421	**87321**	M3 X 0,5	1.94	.374	.625	.141	3	D3
—	**87322**	M3,5 X 0,6	2.00	.413	.688	.141	3	D4
87423	**87323**	M4 X 0,7	2.13	.453	.750	.168	3	D4
87234	**87324**	M5 X 0,8	2.38	.531	.875	.194	3	D4
87235	**87325**	M6 X 1	2.50	.591	1.000	.255	3	D5
—	**87326**	M7 X 1	2.72	.669	1.125	.318	3	D5
—	**87327**	M8 X 1	2.72	.669	1.125	.318	3	D5
87238	**87328**	M8 X 1,25	2.72	.669	1.125	.318	3	D5
—	**87329**	M10 X 1,25	2.94	.748	1.250	.381	3	D5
87430	**87330**	M10 X 1,5	2.94	.748	1.250	.381	3	D6
—	**87331**	M12 X 1,25	3.38	.984	—	.367	3	D5
87432	**87332**	M12 X 1,75	3.38	.984	—	.367	3	D6

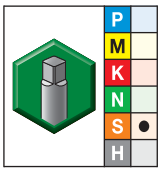
Metric taps for 6H class of fit are suitable for MJ aerospace internal threading applications.
Metric taps are manufactured to USCTI specifications and dimensions.
Metric tap blank dimensions are equivalent to inch taps.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 6H class of fit.



● first choice
○ alternate choice

■ Series 8604 • Machine Screw and Fractional • 3–4 Pitches Chamfer

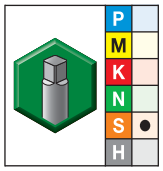


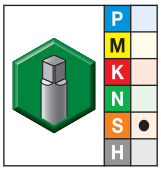


TiCN	oxide/nitride	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
—	87523	2 - 56	1.75	.44	—	.141	3	H2
—	87571	3 - 48	1.81	.50	—	.141	3	H2
87301	87501	4 - 40	1.88	.31	.56	.141	3	H2
—	87502	4 - 40	1.88	.31	.56	.141	3	H3
—	87512	4 - 40	1.88	.31	.56	.141	3	H4
—	87572	4 - 40	1.88	.31	.56	.141	3	H5
—	87503	4 - 48	1.88	.31	.56	.141	3	H2
87304	87504	5 - 40	1.94	.31	.63	.141	3	H2
—	87506	6 - 32	2.00	.38	.69	.141	3	H2
87305	87505	6 - 32	2.00	.38	.69	.141	3	H3
—	87535	6 - 32	2.00	.38	.69	.141	3	H5
—	87566	6 - 32	2.00	.38	.69	.141	3	H7
—	87511	6 - 40	2.00	.38	.69	.141	3	H2
—	87524	8 - 32	2.13	.38	.75	.168	3	H2
87307	87507	8 - 32	2.13	.38	.75	.168	3	H3
—	87529	8 - 32	2.13	.38	.75	.168	3	H4
—	87537	8 - 32	2.13	.38	.75	.168	3	H5
—	87560	8 - 32	2.13	.38	.75	.168	3	H6
—	87567	8 - 32	2.13	.38	.75	.168	3	H7
87309	87509	10 - 24	2.38	.50	.88	.194	3	H3
—	87534	10 - 24	2.38	.50	.88	.194	3	H4
—	87539	10 - 24	2.38	.50	.88	.194	3	H5
—	87536	10 - 24	2.38	.50	.88	.194	3	H7
—	87538	10 - 32	2.38	.50	.88	.194	3	H2
87310	87510	10 - 32	2.38	.50	.88	.194	3	H3
—	87530	10 - 32	2.38	.50	.88	.194	3	H4
—	87540	10 - 32	2.38	.50	.88	.194	3	H5
—	87561	10 - 32	2.38	.50	.88	.194	3	H6
—	87570	10 - 32	2.38	.50	.88	.194	3	H7
87313	87513	1/4 - 20	2.50	.63	1.00	.255	3	H3
—	87543	1/4 - 20	2.50	.63	1.00	.255	3	H5
—	87541	1/4 - 20	2.50	.63	1.00	.255	3	H7
87314	87514	1/4 - 28	2.50	.63	1.00	.255	3	H3
—	87531	1/4 - 28	2.50	.63	1.00	.255	3	H4
—	87544	1/4 - 28	2.50	.63	1.00	.255	3	H5
—	87562	1/4 - 28	2.50	.63	1.00	.255	3	H6

(continued)

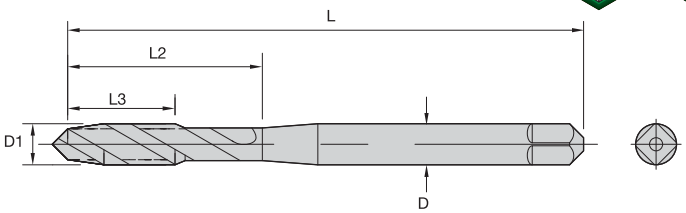
(Series 8604 • Machine Screw and Fractional • 3–4 Pitches Chamfer continued)





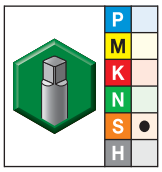
TiCN	oxide/nitride	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
—	**87574**	1/4 - 28	2.50	.63	1.00	.255	3	H7
87315	**87515**	5/16 - 18	2.72	.69	1.13	.318	3	H3
—	**87545**	5/16 - 18	2.72	.69	1.13	.318	3	H5
—	**87542**	5/16 - 18	2.72	.69	1.13	.318	3	H7
87316	**87516**	5/16 - 24	2.72	.69	1.13	.318	3	H3
—	**87532**	5/16 - 24	2.72	.69	1.13	.318	3	H4
—	**87546**	5/16 - 24	2.72	.69	1.13	.318	3	H5
—	**87563**	5/16 - 24	2.72	.69	1.13	.318	3	H6
—	**87576**	5/16 - 24	2.72	.69	1.13	.318	3	H7
87317	**87517**	3/8 - 16	2.94	.75	1.25	.381	3	H3
—	**87547**	3/8 - 16	2.94	.75	1.25	.381	3	H5
—	**87553**	3/8 - 16	2.94	.75	1.25	.381	3	H7
87318	**87518**	3/8 - 24	2.94	.75	1.25	.381	3	H3
—	**87533**	3/8 - 24	2.94	.75	1.25	.381	3	H4
—	**87548**	3/8 - 24	2.94	.75	1.25	.381	3	H5
—	**87564**	3/8 - 24	2.94	.75	1.25	.381	3	H6
—	**87578**	3/8 - 24	2.94	.75	1.25	.381	3	H7
87319	**87519**	7/16 - 14	3.16	.88	—	.323	3	H3
—	**87549**	7/16 - 14	3.16	.88	—	.323	3	H5
87220	**87520**	7/16 - 20	3.16	.88	—	.323	3	H3
—	**87550**	7/16 - 20	3.16	.88	—	.323	3	H5
87221	**87521**	1/2 - 13	3.38	.94	—	.367	3	H3
—	**87551**	1/2 - 13	3.38	.94	—	.367	3	H5
—	**87554**	1/2 - 13	3.38	.94	—	.367	3	H7
87222	**87522**	1/2 - 20	3.38	.94	—	.367	3	H3
—	**87552**	1/2 - 20	3.38	.94	—	.367	3	H5
—	**87555**	1/2 - 20	3.38	.94	—	.367	3	H7
—	**87525**	5/8 - 11	3.81	1.09	—	.480	4	H3
—	**87526**	5/8 - 18	3.81	1.09	—	.480	4	H3
—	**87559**	5/8 - 18	3.81	1.09	—	.480	4	H5
—	**87586**	5/8 - 18	3.81	1.09	—	.480	4	H7
—	**87527**	3/4 - 10	4.25	1.22	—	.590	4	H3
—	**87557**	3/4 - 10	4.25	1.22	—	.590	4	H5
—	**87528**	3/4 - 16	4.25	1.22	—	.590	4	H3
	87558	3/4 - 16	4.25	1.22	—	.590	4	H5

EM taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.



● first choice
○ alternate choice

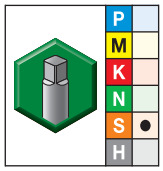
■ Series 8604 • Machine Screw and Fractional • Full Bottoming Chamfer



oxide/nitride	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
87582	4 - 40	1.88	.31	.56	.141	3	H2
87002	4 - 40	1.88	.31	.56	.141	3	H3
87072	4 - 40	1.88	.31	.56	.141	3	H5
87003	4 - 48	1.88	.31	.56	.141	3	H2
87581	5 - 40	1.94	.31	.63	.141	3	H2
87006	6 - 32	2.00	.38	.69	.141	3	H2
87005	6 - 32	2.00	.38	.69	.141	3	H3
87588	6 - 32	2.00	.38	.69	.141	3	H4
87035	6 - 32	2.00	.38	.69	.141	3	H5
87580	8 - 32	2.13	.38	.75	.168	3	H3
87037	8 - 32	2.13	.38	.75	.168	3	H5
87009	10 - 24	2.38	.50	.88	.194	3	H3
87039	10 - 24	2.38	.50	.88	.194	3	H5
87556	10 - 32	2.38	.50	.88	.194	3	H3
87040	10 - 32	2.38	.50	.88	.194	3	H5
87013	1/4 - 20	2.50	.63	1.00	.255	3	H3
87043	1/4 - 20	2.50	.63	1.00	.255	3	H5
87579	1/4 - 28	2.50	.63	1.00	.255	3	H3
87031	1/4 - 28	2.50	.63	1.00	.255	3	H4
87443	1/4 - 28	2.50	.63	1.00	.255	3	H5
87015	5/16 - 18	2.72	.69	1.13	.318	3	H3
87045	5/16 - 18	2.72	.69	1.13	.318	3	H5
87577	5/16 - 24	2.72	.69	1.13	.318	3	H3
87032	5/16 - 24	2.72	.69	1.13	.318	3	H4
87046	5/16 - 24	2.72	.69	1.13	.318	3	H5
87017	3/8 - 16	2.94	.75	1.25	.381	3	H3
87047	3/8 - 16	2.94	.75	1.25	.381	3	H5
87575	3/8 - 24	2.94	.75	1.25	.381	3	H3

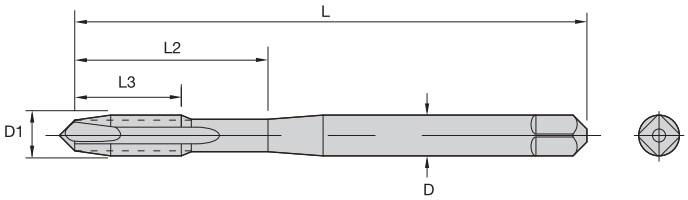
(continued)

(Series 8604 • Machine Screw and Fractional • Full Bottoming Chamfer continued)



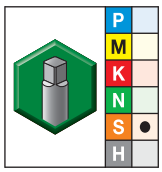
oxide/nitride	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
87033	3/8 - 24	2.94	.75	1.25	.381	3	H4
87048	3/8 - 24	2.94	.75	1.25	.381	3	H5
87019	7/16 - 14	3.16	.88	—	.323	3	H3
87049	7/16 - 14	3.16	.88	—	.323	3	H5
87573	7/16 - 20	3.16	.88	—	.323	3	H3
87050	7/16 - 20	3.16	.88	—	.323	3	H5
87500	1/2 - 13	3.38	.94	—	.367	3	H3
87051	1/2 - 13	3.38	.94	—	.367	3	H5
87022	1/2 - 20	3.38	.94	—	.367	3	H3
87052	1/2 - 20	3.38	.94	—	.367	3	H5
87025	5/8 - 11	3.81	1.09	—	.480	4	H3
87565	5/8 - 11	3.81	1.09	—	.480	4	H5
87585	5/8 - 11	3.81	1.09	—	.480	4	H7
87508	5/8 - 18	3.81	1.09	—	.480	4	H3
87027	3/4 - 10	4.25	1.22	—	.590	4	H3

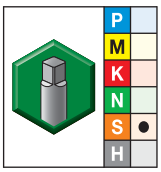
EM taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.

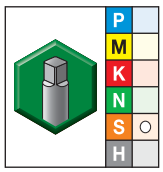


● first choice
○ alternate choice

Series 8654 • Modified Bottoming Chamfer • Metric ANSI

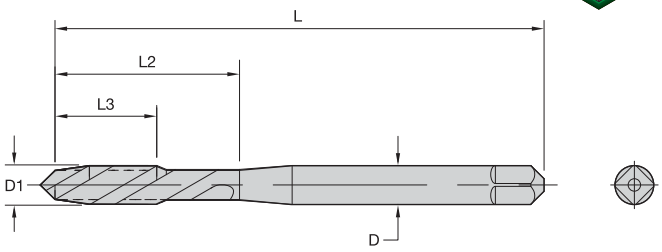






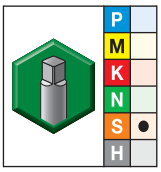
TiCN	oxide/nitride	uncoated	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
—	**88320**	—	M2,5 X 0,45	1.81	.50	—	.141	3	D3
88421	**88321**	**88321B**	M3 X 0,5	1.94	.31	.63	.141	3	D3
—	**88322**	—	M3,5 X 0,6	2.00	.38	.69	.141	3	D4
88423	**88323**	**88323B**	M4 X 0,7	2.13	.38	.75	.168	3	D4
88424	**88324**	**88324B**	M5 X 0,8	2.38	.50	.88	.194	3	D4
88425	**88325**	**88325B**	M6 X 1	2.50	.63	1.00	.255	3	D5
—	**88326**	—	M7 X 1	2.72	.69	1.13	.318	3	D5
—	**88327**	—	M8 X 1	2.72	.69	1.13	.318	3	D5
88428	**88328**	**88328B**	M8 X 1,25	2.72	.69	1.13	.318	3	D5
—	**88329**	—	M10 X 1,25	2.94	.75	1.25	.381	3	D5
88430	**88330**	**88330B**	M10 X 1,5	2.94	.75	1.25	.381	3	D6
—	**88331**	—	M12 X 1,25	3.38	.94	—	.367	3	D5
88432	**88332**	**88332B**	M12 X 1,75	3.38	.94	—	.367	3	D6

Metric taps for 6H class of fit are suitable for MJ aerospace internal threading applications.
Metric taps are manufactured to USCTI specifications and dimensions.
Metric tap blank dimensions are equivalent to inch taps.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 6H class of fit.



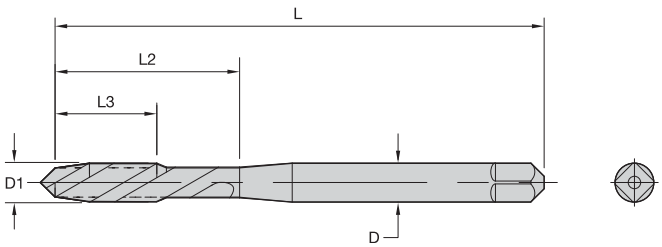
● first choice
○ alternate choice

Series 8901 • Machine Screw and Fractional • Plug Chamfer



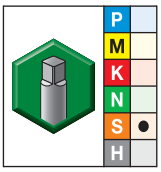
nitride	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
85623	2 - 56	1.75	.26	.44	.141	2	H2
85601	4 - 40	1.88	.34	.56	.141	3	H2
85603	5 - 40	1.94	.37	.63	.141	3	H2
85605	6 - 32	2.00	.41	.69	.141	3	H3
85635	6 - 32	2.00	.41	.69	.141	3	H5
85607	8 - 32	2.13	.45	.75	.168	3	H3
85637	8 - 32	2.13	.45	.75	.168	3	H5
85609	10 - 24	2.38	.53	.88	.194	3	H3
85639	10 - 24	2.38	.53	.88	.194	3	H5
85610	10 - 32	2.38	.53	.88	.194	3	H3
85640	10 - 32	2.38	.53	.88	.194	3	H5
85613	1/4 - 20	2.50	.59	1.00	.255	3	H3
85643	1/4 - 20	2.50	.59	1.00	.255	3	H5
85614	1/4 - 28	2.50	.59	1.00	.255	3	H3
85644	1/4 - 28	2.50	.59	1.00	.255	3	H5
85615	5/16 - 18	2.72	.67	1.13	.318	3	H3
85645	5/16 - 18	2.72	.67	1.13	.318	3	H5
85616	5/16 - 24	2.72	.67	1.13	.318	3	H3
85646	5/16 - 24	2.72	.67	1.13	.318	3	H5
85617	3/8 - 16	2.94	.75	1.25	.381	3	H3
85647	3/8 - 16	2.94	.75	1.25	.381	3	H5
85618	3/8 - 24	2.94	.75	1.25	.381	3	H3
85648	3/8 - 24	2.94	.75	1.25	.381	3	H5
85619	7/16 - 14	3.16	.87	—	.323	3	H3
85649	7/16 - 14	3.16	.87	—	.323	3	H5
85620	7/16 - 20	3.16	.87	—	.323	3	H3
85650	7/16 - 20	3.16	.87	—	.323	3	H5
85621	1/2 - 13	3.38	.98	—	.367	3	H3
85651	1/2 - 13	3.38	.98	—	.367	3	H5
85622	1/2 - 20	3.38	.98	—	.367	3	H3
85652	1/2 - 20	3.38	.98	—	.367	3	H5

EM taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.



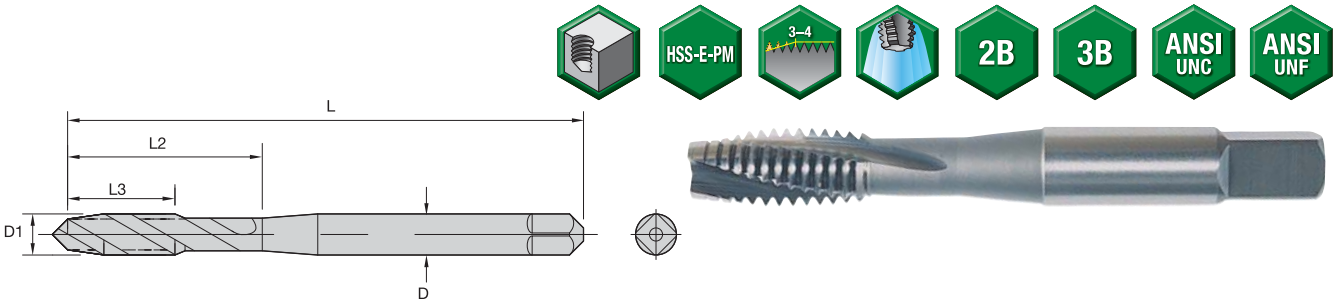
● first choice
○ alternate choice

Series 8951 • Plug Chamfer • Metric ANSI



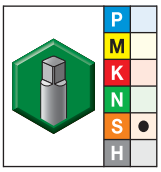
nitride	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
85700	M2,5 X 0,45	1.81	.295	.500	.141	3	D3
85701	M3 X 0,5	1.94	.374	.625	.141	3	D3
85702	M3,5 X 0,6	2.00	.413	.688	.141	3	D4
85703	M4 X 0,7	2.13	.453	.750	.168	3	D4
85704	M5 X 0,8	2.38	.531	.875	.194	3	D4
85705	M6 X 1	2.50	.591	1.000	.255	3	D5
85706	M7 X 1	2.72	.669	1.125	.318	3	D5
85707	M8 X 1	2.72	.669	1.125	.318	3	D5
85708	M8 X 1,25	2.72	.669	1.125	.318	3	D5
85709	M10 X 1,25	2.94	.748	1.250	.381	3	D5
85710	M10 X 1,5	2.94	.748	1.250	.381	3	D6
85711	M12 X 1,25	3.38	.984	—	.367	3	D5
85712	M12 X 1,75	3.38	.984	—	.367	3	D6

Metric taps for 6H class of fit are suitable for MJ aerospace internal threading applications.
Metric taps are manufactured to USCTI specifications and dimensions.
Metric tap blank dimensions are equivalent to inch taps.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 6H class of fit.



● first choice
○ alternate choice

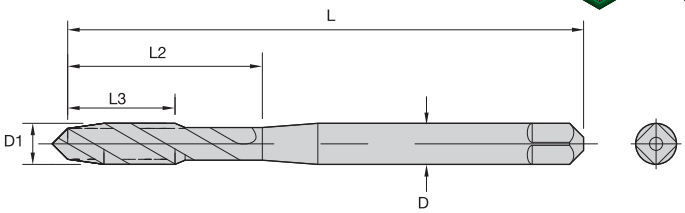
■ Series 8904 • Machine Screw and Fractional • 3–4 Pitches Chamfer



nitride	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
87638	2 - 56	1.75	.16	.44	.141	3	H2
87601	4 - 40	1.88	.24	.56	.141	3	H2
87612	4 - 40	1.88	.24	.56	.141	3	H4
87603	5 - 40	1.94	.24	.63	.141	3	H3
87605	6 - 32	2.00	.28	.69	.141	3	H3
87635	6 - 32	2.00	.28	.69	.141	3	H5
87607	8 - 32	2.13	.28	.75	.168	3	H3
87637	8 - 32	2.13	.28	.75	.168	3	H5
87609	10 - 24	2.38	.35	.88	.194	3	H3
87610	10 - 32	2.38	.28	.88	.194	3	H3
87640	10 - 32	2.38	.28	.88	.194	3	H5
87613	1/4 - 20	2.50	.43	1.00	.255	3	H3
87624	1/4 - 20	2.50	.43	1.00	.255	3	H5
87614	1/4 - 28	2.50	.35	1.00	.255	3	H3
87644	1/4 - 28	2.50	.35	1.00	.255	3	H5
87615	5/16 - 18	2.72	.47	1.13	.318	3	H3
87623	5/16 - 18	2.72	.47	1.13	.318	3	H5
87616	5/16 - 24	2.72	.39	1.13	.318	3	H3
87646	5/16 - 24	2.72	.39	1.13	.318	3	H5
87617	3/8 - 16	2.94	.55	1.25	.381	3	H3
87625	3/8 - 16	2.94	.55	1.25	.381	3	H5
87618	3/8 - 24	2.94	.39	1.25	.381	3	H3
87648	3/8 - 24	2.94	.39	1.25	.381	3	H5
87619	7/16 - 14	3.16	.59	—	.323	3	H3
87620	7/16 - 20	3.16	.47	—	.323	3	H3
87650	7/16 - 20	3.16	.47	—	.323	3	H5
87621	1/2 - 13	3.38	.63	—	.367	3	H3
87626	1/2 - 13	3.38	.63	—	.367	3	H5
87622	1/2 - 20	3.38	.47	—	.367	3	H3
87652	1/2 - 20	3.38	.47	—	.367	3	H5

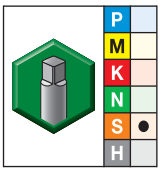
EM taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.

Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.



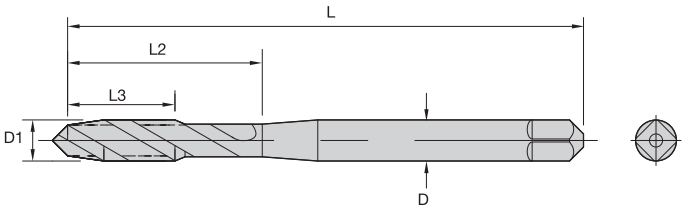
● first choice
○ alternate choice

■ Series 8904 • Machine Screw and Fractional • Full Bottoming Chamfer



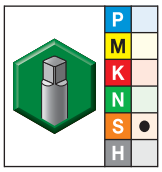
nitride	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
87000	4 - 40	1.88	.24	.56	.141	3	H2
87001	4 - 40	1.88	.24	.56	.141	3	H4
87606	6 - 32	2.00	.28	.69	.141	3	H3
87007	8 - 32	2.13	.28	.75	.168	3	H3
87608	10 - 24	2.38	.35	.88	.194	3	H3
87010	10 - 32	2.38	.28	.88	.194	3	H3
87628	1/4 - 20	2.50	.43	1.00	.255	3	H3
87627	1/4 - 20	2.50	.43	1.00	.255	3	H5
87014	1/4 - 28	2.50	.35	1.00	.255	3	H3
87695	5/16 - 18	2.72	.47	1.13	.318	3	H3
87079	5/16 - 18	2.72	.47	1.13	.318	3	H5
87016	5/16 - 24	2.72	.39	1.13	.318	3	H3
87611	3/8 - 16	2.94	.55	1.25	.381	3	H3
87685	3/8 - 16	2.94	.55	1.25	.381	3	H5
87018	3/8 - 24	2.94	.39	1.25	.381	3	H3
87629	7/16 - 14	3.16	.59	—	.323	3	H3
87020	7/16 - 20	3.16	.47	—	.323	3	H3
87021	1/2 - 13	3.38	.63	—	.367	3	H3
87023	1/2 - 20	3.38	.47	—	.367	3	H3

EM taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.



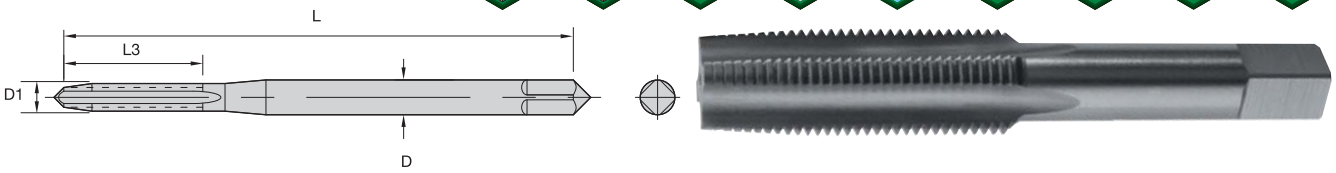
● first choice
○ alternate choice

■ Series 8954 • 3–4 Pitches Chamfer • Metric ANSI



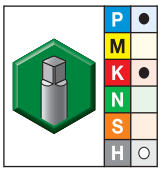
nitride	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
87700	M2,5 X 0,45	1.81	.295	.500	.141	3	D3
87701	M3 X 0,5	1.94	.197	.625	.141	3	D3
87702	M3,5 X 0,6	2.00	.276	.688	.141	3	D4
87703	M4 X 0,7	2.13	.276	.750	.168	3	D4
87704	M5 X 0,8	2.38	.354	.875	.194	3	D4
87705	M6 X 1	2.50	.433	1.000	.255	3	D5
87706	M7 X 1	2.72	.433	1.125	.318	3	D5
87708	M8 X 1,25	2.72	.472	1.125	.318	3	D5
87709	M10 X 1,25	2.94	.472	1.250	.381	3	D5
87710	M10 X 1,5	2.94	.512	1.250	.381	3	D6
87711	M12 X 1,25	3.38	.551	—	.367	3	D5
87712	M12 X 1,75	3.38	.591	—	.367	3	D6

Metric taps for 6H class of fit are suitable for MJ aerospace internal threading applications.
Metric taps are manufactured to USCTI specifications and dimensions.
Metric tap blank dimensions are equivalent to inch taps.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 6H class of fit.



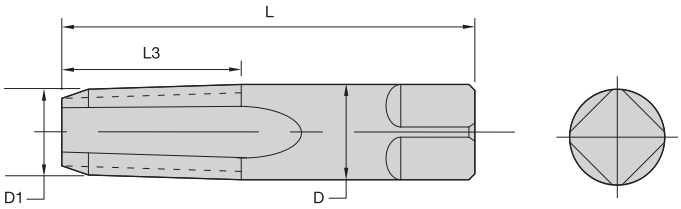
● first choice
○ alternate choice

■ Series 8330 • Machine Screw and Fractional • Plug Chamfer



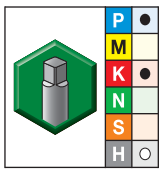
uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
89599	4 - 40	1.88	.56	.141	3	H2
89601	5 - 40	1.94	.63	.141	3	H2
89602	6 - 32	2.00	.69	.141	3	H3
89604	8 - 32	2.13	.75	.168	3	H3
89606	10 - 24	2.38	.88	.194	3	H3
89607	10 - 32	2.38	.88	.194	3	H3
89613	1/4 - 20	2.50	1.00	.255	3	H3
89614	1/4 - 28	2.50	1.00	.255	3	H3
89615	5/16 - 18	2.72	1.13	.318	4	H3
89616	5/16 - 24	2.72	1.13	.318	4	H3
89617	3/8 - 16	2.94	1.25	.381	4	H3
89618	3/8 - 24	2.94	1.25	.381	4	H3
89619	7/16 - 14	3.16	1.44	.323	4	H3
89620	7/16 - 20	3.16	1.44	.323	4	H3
89621	1/2 - 13	3.38	1.66	.367	4	H3
89622	1/2 - 20	3.38	1.66	.367	4	H3
89625	5/8 - 11	3.81	1.81	.480	4	H3
89626	5/8 - 18	3.81	1.81	.480	4	H3
89627	3/4 - 10	4.25	2.00	.590	4	H3
89628	3/4 - 16	4.25	2.00	.590	4	H3

Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.



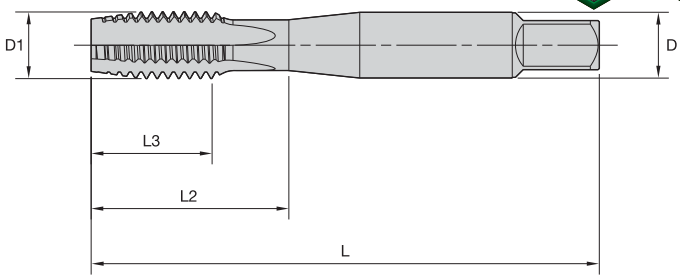
● first choice
○ alternate choice

Series 8320 • NPT Pipe • Chamfer 2-1/2–3-1/2 Pitches



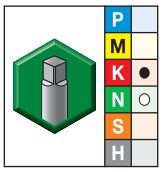
uncoated	D1 size	L	L3	D	number of flutes
89641	1/8 - 27	2.13	.750	.313	4
89643	1/4 - 18	2.44	1.063	.563	4
89644	3/8 - 18	2.56	1.063	.703	4
89645	1/2 - 14	3.13	1.375	.367	4
89646	3/4 - 14	3.25	1.375	.906	5

** Pipe tap projection is the distance the small end of the tap projects through an American National Standard L1 Pipe Thread Ring Gage.*
For gage measurement projection, see technical page A253.



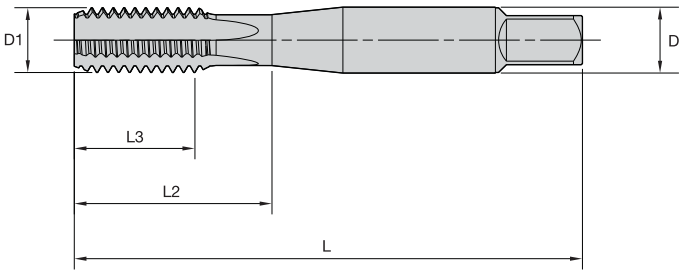
● first choice
○ alternate choice

Series 8603 • Machine Screw and Fractional • Plug Chamfer



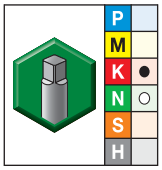
uncoated	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
83806	10 - 24	2.38	.50	.70	.194	4	H3
83808	10 - 32	2.38	.50	.70	.194	4	H3
83810	1/4 - 20	2.50	.56	.90	.255	4	H3
83812	1/4 - 28	2.50	.56	.90	.255	4	H3
83862	1/4 - 28	2.50	.56	.90	.255	4	H5
83814	5/16 - 18	2.72	.63	1.03	.318	4	H3
83816	5/16 - 24	2.72	.63	1.03	.318	4	H3
83818	3/8 - 16	2.94	.71	1.14	.381	4	H3
83868	3/8 - 16	2.94	.71	1.14	.381	4	H5
83820	3/8 - 24	2.94	.71	1.14	.381	4	H3
83870	3/8 - 24	2.94	.71	1.14	.381	4	H5
83824	7/16 - 20	3.16	.88	—	.323	4	H3
83874	7/16 - 20	3.16	.88	—	.323	4	H5
83826	1/2 - 13	3.38	.94	—	.367	4	H3
83828	1/2 - 20	3.38	.94	—	.367	4	H3
83878	1/2 - 20	3.38	.94	—	.367	4	H5
83836	5/8 - 18	3.81	1.09	—	.480	4	H3

Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.



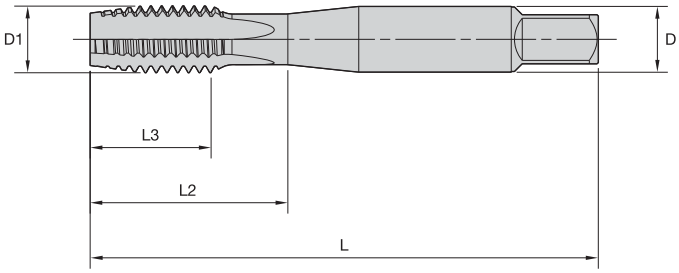
● first choice
○ alternate choice

■ Series 8603 • Machine Screw and Fractional • Full Bottoming Chamfer



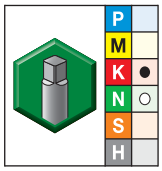
uncoated	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
83807	10 - 24	2.38	.50	.70	.194	4	H3
83809	10 - 32	2.38	.50	.70	.194	4	H3
83811	1/4 - 20	2.50	.56	.90	.255	4	H3
83861	1/4 - 20	2.50	.56	.90	.255	4	H5
83813	1/4 - 28	2.50	.56	.90	.255	4	H3
83863	1/4 - 28	2.50	.56	.90	.255	4	H5
83815	5/16 - 18	2.72	.63	1.03	.318	4	H3
83865	5/16 - 18	2.72	.63	1.03	.318	4	H5
83817	5/16 - 24	2.72	.63	1.03	.318	4	H3
83819	3/8 - 16	2.94	.71	1.14	.381	4	H3
83821	3/8 - 24	2.94	.71	1.14	.381	4	H3
83875	7/16 - 20	3.16	.88	—	.323	4	H5
83827	1/2 - 13	3.38	.94	—	.367	4	H3
83835	5/8 - 11	3.81	1.09	—	.480	4	H3

Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.



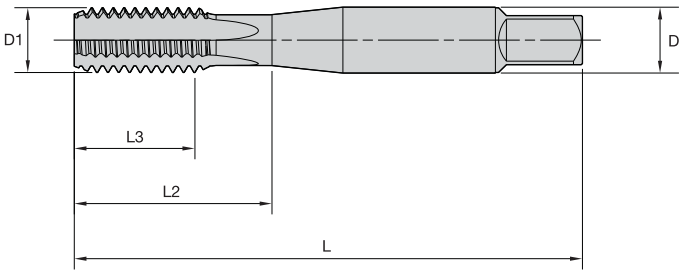
● first choice
○ alternate choice

■ Series 8653 • Plug Chamfer • Metric ANSI



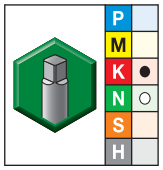
uncoated	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
70000	M3 X 0,5	1.94	.31	.52	.141	4	D3
70002	M4 X 0,7	2.13	.38	.64	.168	4	D4
70004	M5 X 0,8	2.38	.50	.70	.194	4	D4
70006	M6 X 1	2.50	.56	.90	.255	4	D5
70008	M8 X 1	2.72	.63	1.03	.318	4	D5
70010	M8 X 1,25	2.72	.63	1.03	.318	4	D5
70012	M10 X 1,25	2.94	.74	1.13	.381	4	D5
70014	M10 X 1,5	2.94	.74	1.13	.381	4	D6
70016	M12 X 1,25	3.38	.94	—	.367	4	D5
70018	M12 X 1,5	3.38	.94	—	.367	4	D6
70020	M12 X 1,75	3.38	.94	—	.367	4	D6
70024	M14 X 2	3.59	1.00	—	.429	4	D7
70026	M16 X 1,5	3.81	1.09	—	.480	4	D6

Metric taps are manufactured to USCTI specifications and dimensions.
Metric tap blank dimensions are equivalent to inch taps.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 6H class of fit.



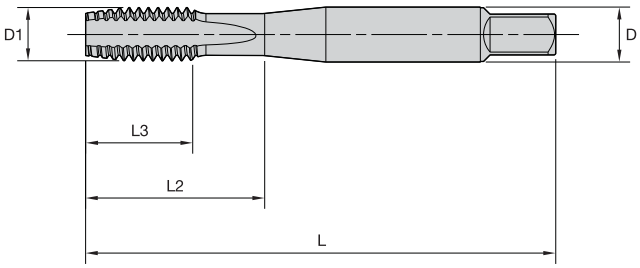
● first choice
○ alternate choice

■ Series 8653 • Full Bottoming Chamfer • Metric ANSI



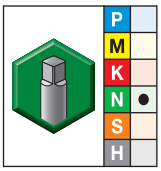
uncoated	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
70003	M4 X 0,7	2.13	.380	.64	.168	4	D4
70005	M5 X 0,8	2.38	.500	.70	.194	4	D4
70007	M6 X 1	2.50	.560	.90	.255	4	D5
70009	M8 X 1	2.72	.630	1.03	.318	4	D5
70011	M8 X 1,25	2.72	.630	1.03	.318	4	D5
70013	M10 X 1,25	2.94	.740	1.13	.381	4	D5
70015	M10 X 1,5	2.94	.740	1.13	.381	4	D6
70023	M14 X 1,5	3.59	1.000	—	.429	4	D6
70029	M16 X 2	3.81	1.090	—	.480	4	D7

Metric taps are manufactured to USCTI specifications and dimensions.
Metric tap blank dimensions are equivalent to inch taps.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 6H class of fit.



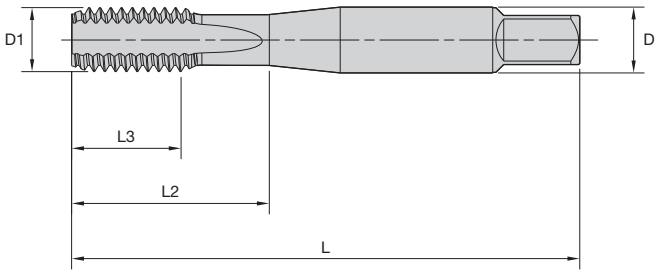
● first choice
○ alternate choice

■ Series 8703 • Machine Screw and Fractional • Plug Chamfer



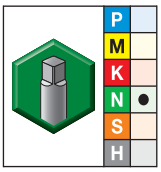
uncoated	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
84802	6 - 32	2.00	.38	.60	.141	3	H3
84804	8 - 32	2.13	.38	.64	.168	3	H3
84806	10 - 24	2.38	.50	.70	.194	3	H3
84808	10 - 32	2.38	.49	.70	.194	3	H3
84810	1/4 - 20	2.50	.56	.90	.255	3	H3
84860	1/4 - 20	2.50	.56	.90	.255	3	H5
84812	1/4 - 28	2.50	.56	.90	.255	3	H3
84862	1/4 - 28	2.50	.56	.90	.255	3	H5
84814	5/16 - 18	2.72	.63	1.03	.318	3	H3
84864	5/16 - 18	2.72	.63	1.03	.318	3	H5
84816	5/16 - 24	2.72	.63	1.03	.318	3	H3
84818	3/8 - 16	2.94	.71	1.14	.381	3	H3
84820	3/8 - 24	2.94	.71	1.14	.381	3	H3
84870	3/8 - 24	2.94	.71	1.14	.381	3	H5
84824	7/16 - 20	3.16	.88	—	.323	3	H3
84874	7/16 - 20	3.16	.88	—	.323	3	H5
84826	1/2 - 13	3.38	.94	—	.367	3	H3
84878	1/2 - 20	3.38	.94	—	.367	3	H5

Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.



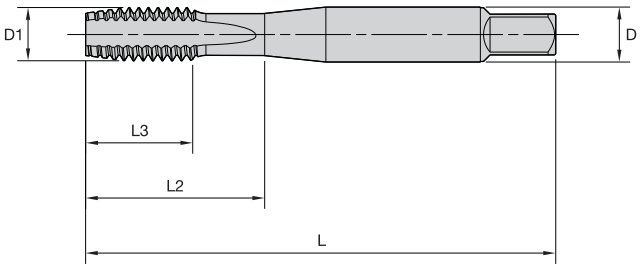
● first choice
○ alternate choice

■ Series 8703 • Machine Screw and Fractional • Full Bottoming Chamfer



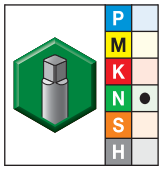
uncoated	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
84801	5 - 40	1.94	.31	.52	.141	3	H3
84803	6 - 32	2.00	.38	.60	.141	3	H3
84805	8 - 32	2.13	.38	.64	.168	3	H3
84807	10 - 24	2.38	.50	.70	.194	3	H3
84809	10 - 32	2.38	.50	.70	.194	3	H3
84811	1/4 - 20	2.50	.56	.90	.255	3	H3
84861	1/4 - 20	2.50	.56	.90	.255	3	H5
84813	1/4 - 28	2.50	.56	.90	.255	3	H3
84865	5/16 - 18	2.72	.63	1.03	.318	3	H5
84817	5/16 - 24	2.72	.63	1.02	.318	3	H3
84867	5/16 - 24	2.72	.63	1.03	.318	3	H5
84819	3/8 - 16	2.94	.71	1.25	.381	3	H3
84873	7/16 - 14	2.94	.88	1.14	.323	3	H5
84879	1/2 - 20	3.16	.94	—	.367	3	H5

Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.



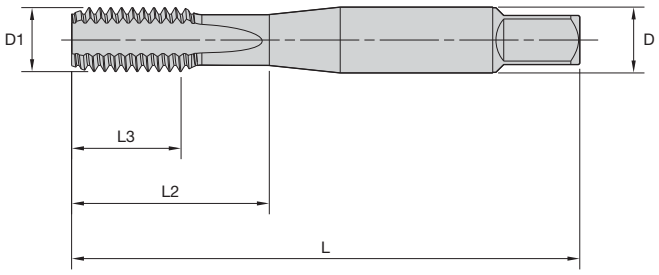
● first choice
○ alternate choice

■ Series 8753 • Plug Chamfer • Metric ANSI



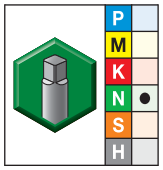
uncoated	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
71000	M3 X 0,5	1.94	.31	.52	.141	3	D3
71002	M4 X 0,7	2.13	.38	.64	.168	3	D4
71004	M5 X 0,8	2.38	.50	.70	.194	3	D4
71006	M6 X 1	2.50	.56	.90	.255	3	D5
71008	M8 X 1	2.72	.63	1.03	.318	3	D5
71010	M8 X 1,25	2.72	.63	1.03	.318	3	D5
71014	M10 X 1,5	2.94	.71	1.13	.381	3	D6

Metric taps are manufactured to USCTI specifications and dimensions.
Metric tap blank dimensions are equivalent to inch taps.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 6H class of fit.



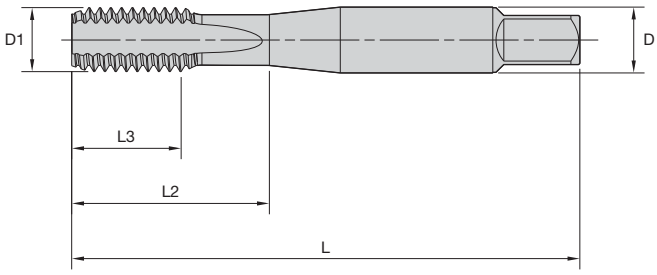
● first choice
○ alternate choice

■ Series 8753 • Full Bottoming Chamfer • Metric ANSI



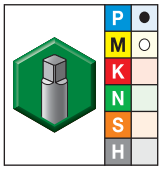
uncoated	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
71001	M3 X 0,5	1.94	.310	.520	.141	3	D3
71003	M4 X 0,7	2.13	.380	.640	.168	3	D4
71005	M5 X 0,8	2.38	.500	.700	.194	3	D4
71007	M6 X 1	2.50	.560	.900	.255	3	D5
71011	M8 X 1,25	2.72	.630	1.030	.318	3	D5
71013	M10 X 1,25	2.94	.710	1.130	.381	3	D5
71015	M10 X 1,5	2.94	.710	1.130	.381	3	D6
71017	M12 X 1,25	3.38	.940	—	.367	3	D5
71019	M12 X 1,5	3.38	.940	—	.367	3	D6

Metric taps are manufactured to USCTI specifications and dimensions.
Metric tap blank dimensions are equivalent to inch taps.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 6H class of fit.



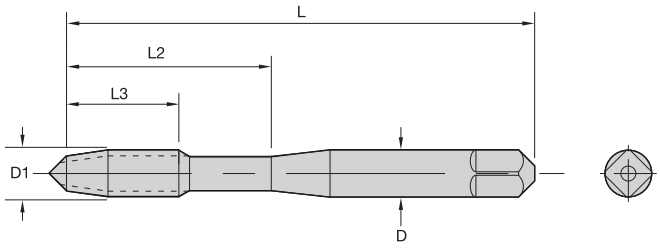
● first choice
○ alternate choice

■ Series 8580 • Machine Screw and Fractional • Entry Taper • DIN Length • Minimum Quantity Lubrication (MQL)



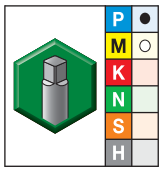
TiCN	D1 size	L	L3	L2	D	number of lube grooves	pitch diameter limit
86600	2 - 56	1.77	.354	.354	.141	—	H3
86601	4 - 40	2.21	.433	.709	.141	—	H5
86602	4 - 48	2.21	.433	.709	.141	—	H5
86603	5 - 40	2.21	.433	.709	.141	—	H5
86604	6 - 32	2.21	.512	.787	.141	—	H5
86605	8 - 32	2.48	.512	.827	.168	—	H5
86606	10 - 24	2.76	.630	.984	.194	—	H6
86607	10 - 32	2.76	.630	.984	.194	—	H6
86608	1/4 - 20	3.15	.748	1.181	.255	—	H6
86609	1/4 - 28	3.15	.748	1.181	.255	—	H6

EM-TLD form taps can be run 1.5–2 times faster than the tapping speeds recommended for thread cutting taps.
Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.



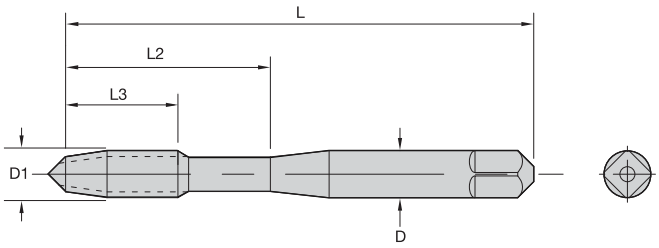
● first choice
○ alternate choice

■ Series 8590 • Entry Taper • Minimum Quantity Lubrication (MQL) • DIN Length • Metric ANSI



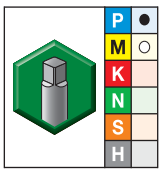
TiCN	D1 size	L	L3	L2	D	number of lube grooves	pitch diameter limit
86610	M3 X 0,5	2.21	.433	.709	.141	—	D5
86611	M3,5 X 0,6	2.21	.512	.787	.141	—	D6
86612	M4 X 0,7	2.48	.512	.827	.168	—	D7
86614	M5 X 0,8	2.76	.630	.984	.194	—	D7
86615	M6 X 1	3.15	.748	1.181	.255	—	D8

EM-TLD form taps can be run 1.5–2 times faster than the tapping speeds recommended for thread cutting taps.
Metric tap shank dimensions are equivalent to inch taps.
Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 6H class of fit.



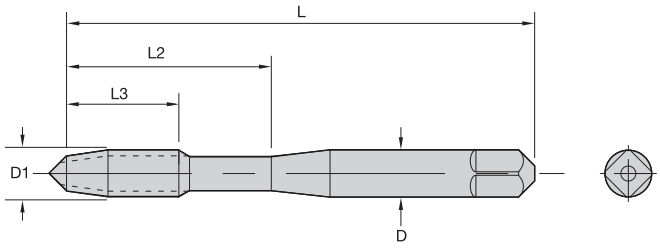
● first choice
○ alternate choice

Series 8502 • Machine Screw and Fractional • Bottom Entry Taper • DIN Length



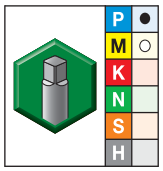
TiCN	D1 size	L	L3	L2	D	number of lube grooves	pitch diameter limit
86800	0 - 80	1.58	.32	—	.141	—	H2
86801	2 - 56	1.77	.35	—	.141	—	H3
86802	3 - 48	1.97	.28	.49	.141	—	H3
86803	3 - 56	1.97	.28	.49	.141	—	H3
86804	4 - 40	2.21	.43	.71	.141	—	H3
86805	4 - 40	2.21	.43	.71	.141	—	H5
86806	4 - 48	2.21	.43	.71	.141	—	H3
86807	4 - 48	2.21	.43	.71	.141	—	H5
86799	5 - 40	2.21	.43	.71	.141	—	H5
86808	6 - 32	2.21	.51	.79	.141	2	H3
86809	6 - 32	2.21	.51	.79	.141	2	H5
86812	8 - 32	2.48	.51	.83	.168	2	H3
86813	8 - 32	2.48	.51	.83	.168	2	H5
86816	10 - 24	2.76	.63	.98	.194	2	H4
86817	10 - 24	2.76	.63	.98	.194	2	H6
86820	10 - 32	2.76	.63	.98	.194	2	H4
86821	10 - 32	2.76	.63	.98	.194	2	H6
86824	1/4 - 20	3.15	.75	1.18	.255	2	H4
86825	1/4 - 20	3.15	.75	1.18	.255	2	H6
86828	1/4 - 28	3.15	.75	1.18	.255	2	H4
86829	1/4 - 28	3.15	.75	1.18	.255	2	H6
86832	5/16 - 18	3.54	.87	1.38	.318	3	H5
86833	5/16 - 18	3.54	.87	1.38	.318	3	H7
86836	5/16 - 24	3.54	.87	1.38	.318	3	H5
86837	5/16 - 24	3.54	.87	1.38	.318	3	H7
86840	3/8 - 16	3.94	.95	1.54	.381	3	H5
86841	3/8 - 16	3.94	.95	1.54	.381	3	H7
86844	3/8 - 24	3.94	.79	1.54	.381	3	H5
86845	3/8 - 24	3.94	.79	1.54	.381	3	H7
86848	7/16 - 14	3.94	.95	—	.323	4	H5
86849	7/16 - 14	3.94	.95	—	.323	4	H7
86852	7/16 - 20	3.94	.95	—	.323	4	H5
86853	7/16 - 20	3.94	.95	—	.323	4	H7
86856	1/2 - 13	4.33	1.14	—	.367	4	H5
86857	1/2 - 13	4.33	1.14	—	.367	4	H7
86860	1/2 - 20	4.33	.87	—	.367	4	H5
86861	1/2 - 20	4.33	.87	—	.367	4	H7

EM-TL form taps can be run 1.5–2 times faster than the tapping speeds recommended for thread cutting taps.
Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps.
Made to DIN tap lengths, ANSI shank dimensions.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.



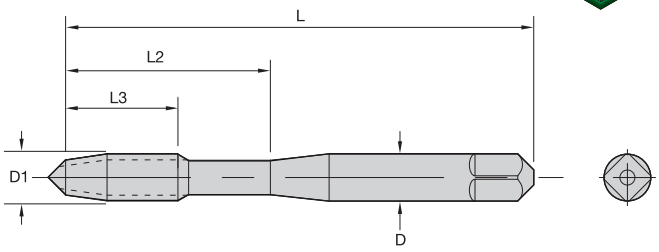
● first choice
○ alternate choice

■ Series 8512 • Bottom Entry Taper • DIN Length • Metric ANSI



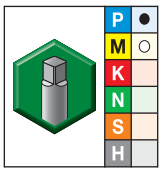
TiCN	D1 size	L	L3	L2	D	number of lube grooves	pitch diameter limit
86864	M3 X 0,5	2.21	.433	.709	.141	2	D5
86865	M3,5 X 0,6	2.21	.512	.787	.141	2	D6
86866	M4 X 0,7	2.48	.512	.827	.168	2	D6
86867	M5 X 0,8	2.76	.630	.984	.194	2	D7
86868	M6 X 1	3.15	.748	1.181	.255	2	D8
86869	M7 X 1	3.15	.748	1.181	.318	2	D9
86871	M8 X 1	3.54	.866	1.378	.318	3	D9
86873	M8 X 1,25	3.54	.866	1.378	.318	3	D9
86875	M10 X 1,25	3.94	.945	1.535	.381	4	D9
86877	M10 X 1,5	3.94	.945	1.535	.381	4	D10
86879	M12 X 1,25	3.94	.866	—	.367	4	D9
86881	M12 X 1,5	3.94	.866	—	.367	4	D9
86883	M12 X 1,75	4.33	1.142	—	.367	4	D11

EM-TL form taps can be run 1.5–2 times faster than the tapping speeds recommended for thread cutting taps.
Metric tap shank dimensions are equivalent to inch taps.
Made to DIN tap lengths, ANSI shank dimensions.
Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 6H class of fit.



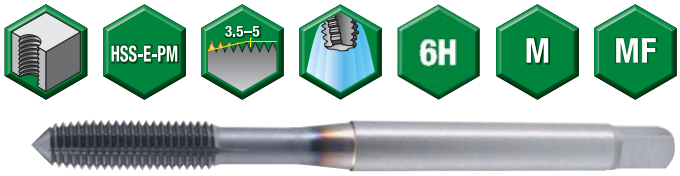
● first choice
○ alternate choice

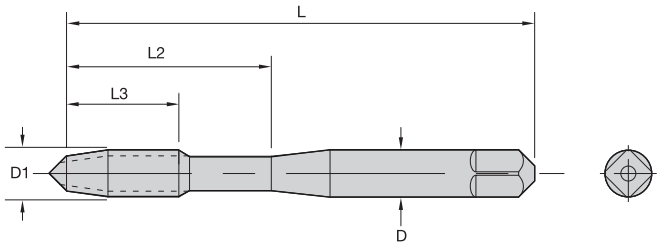
■ Series 8500 • Machine Screw and Fractional • Plug Entry Taper • DIN Length



TiCN	D1 size	L	L3	L2	D	number of lube grooves	pitch diameter limit
86800	0 - 80	1.58	.32	—	.141	—	H2
86801	2 - 56	1.77	.35	—	.141	—	H3
86802	3 - 48	1.97	.28	.49	.141	—	H3
86803	3 - 56	1.97	.28	.49	.141	—	H3
86804	4 - 40	2.21	.43	.71	.141	—	H3
86805	4 - 40	2.21	.43	.71	.141	—	H5
86806	4 - 48	2.21	.43	.71	.141	—	H3
86807	4 - 48	2.21	.43	.71	.141	—	H5
86799	5 - 40	2.21	.43	.71	.141	—	H5
86808	6 - 32	2.21	.51	.79	.141	2	H3
86809	6 - 32	2.21	.51	.79	.141	2	H5
86812	8 - 32	2.48	.51	.83	.168	2	H3
86813	8 - 32	2.48	.51	.83	.168	2	H5
86816	10 - 24	2.76	.63	.98	.194	2	H4
86817	10 - 24	2.76	.63	.98	.194	2	H6
86820	10 - 32	2.76	.63	.98	.194	2	H4
86821	10 - 32	2.76	.63	.98	.194	2	H6
86824	1/4 - 20	3.15	.75	1.18	.255	2	H4
86825	1/4 - 20	3.15	.75	1.18	.255	2	H6
86828	1/4 - 28	3.15	.75	1.18	.255	2	H4
86829	1/4 - 28	3.15	.75	1.18	.255	2	H6
86832	5/16 - 18	3.54	.87	1.38	.318	3	H5
86833	5/16 - 18	3.54	.87	1.38	.318	3	H7
86836	5/16 - 24	3.54	.87	1.38	.318	3	H5
86837	5/16 - 24	3.54	.87	1.38	.318	3	H7
86840	3/8 - 16	3.94	.95	1.54	.381	3	H5
86841	3/8 - 16	3.94	.95	1.54	.381	3	H7
86844	3/8 - 24	3.94	.79	1.54	.381	3	H5
86845	3/8 - 24	3.94	.79	1.54	.381	3	H7
86848	7/16 - 14	3.94	.95	—	.323	4	H5
86849	7/16 - 14	3.94	.95	—	.323	4	H7
86852	7/16 - 20	3.94	.95	—	.323	4	H5
86853	7/16 - 20	3.94	.95	—	.323	4	H7
86856	1/2 - 13	4.33	1.14	—	.367	4	H5
86857	1/2 - 13	4.33	1.14	—	.367	4	H7
86860	1/2 - 20	4.33	.87	—	.367	4	H5
86861	1/2 - 20	4.33	.87	—	.367	4	H7

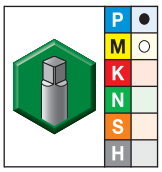
EM-TL form taps can be run 1.5–2 times faster than the tapping speeds recommended for thread cutting taps.
Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps.
Made to DIN tap lengths, ANSI shank dimensions.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.





● first choice
○ alternate choice

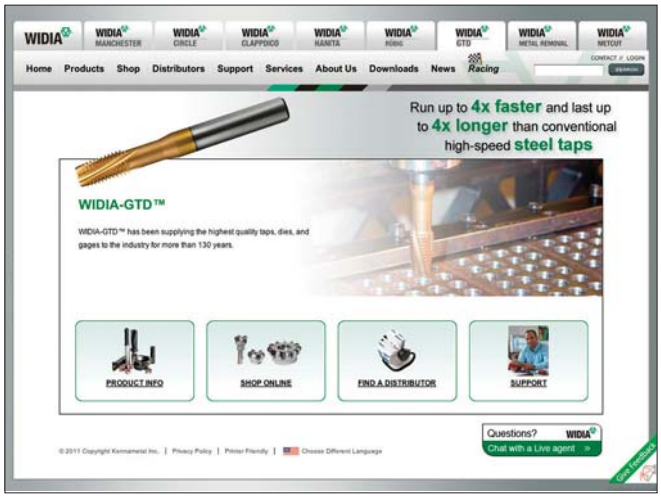
Series 8510 • Plug Entry Taper • DIN Length • Metric ANSI



TiCN	D1 size	L	L3	L2	D	number of lube grooves	pitch diameter limit
86885	M3 X 0,5	2.21	.43	.71	.141	2	D5
86886	M3,5 X 0,6	2.21	.51	.79	.141	2	D6
86887	M4 X 0,7	2.48	.51	.83	.168	2	D6
86888	M5 X 0,8	2.76	.63	.98	.194	2	D7
86889	M6 X 1	3.15	.75	1.18	.255	2	D8
86870	M7 X 1	3.15	.75	1.18	.318	2	D9
86872	M8 X 1	3.54	.87	1.38	.318	3	D9
86874	M8 X 1,25	3.54	.87	1.38	.318	3	D9
86876	M10 X 1,25	3.94	.95	1.54	.381	4	D9
86878	M10 X 1,5	3.94	.95	1.54	.381	4	D10
86880	M12 X 1,25	3.94	.87	—	.367	4	D9
86882	M12 X 1,5	3.94	.87	—	.367	4	D9
86884	M12 X 1,75	4.33	1.14	—	.367	4	D11

EM-TL form taps can be run 1.5–2 times faster than the tapping speeds recommended for thread cutting taps.
Metric tap shank dimensions are equivalent to inch taps.
Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 6H class of fit.

On the Web



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WIDIA-GTD™ offers an extensive line of thread-cutting and thread-forming taps for any industrial application, manufactured using the highest quality materials and workmanship since 1872.

New GP+ GUN™ Taps

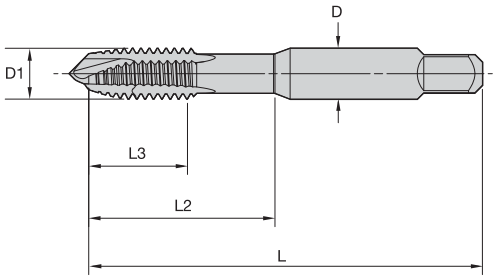
- The new WIDIA-GTD GP+ GUN taps have an optimized flute design for lower tapping torque and improved neck design for more efficent coolant flow.
- Higher quality thread and tool life.
- Enhanced performance with tool life at least 35% better than current GUN taps.
- Uncoated, TiCN, and TiN+CrC/C coatings available for tapping a broad range of materials.

Alternate Coatings

WIDIA-GTD's in-house tool coating capabilities lead the industry! Choose from a wide range of sizes, tap limits, chamfers, and styles for through and blind holes.

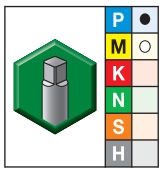
New TRU-LEDE™ Fe Taps

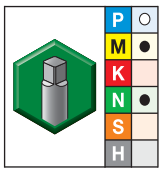
- The next generation of forming taps.
- Made from vanadium high-speed steel for extending wear life and better part finish.
- New tap lobe design improves roll threading in ductile steels and non-ferrous materials for better tool life.
- Necked design with short thread length for tapping at reduced torque levels.
- Plug and bottoming chamfers for form tapping without troublesome chips that clog and break taps.
- Performance-enhancing surface treatment available as stock standards with alternate coatings available as stocks modifications.

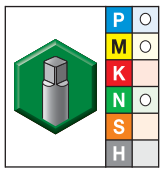


● first choice
○ alternate choice

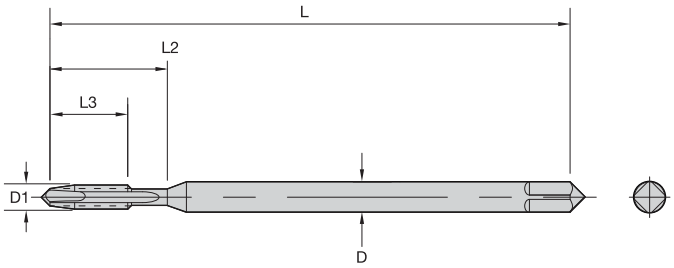
Series 2331 • Machine Screw and Fractional • Spiral-Point Plug Chamfer





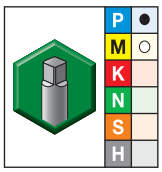


TiCN	CrC/C	uncoated	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
17508	17708	17408	4 - 40	1.88	.56	.69	.141	2	H2
17510	17710	17410	5 - 40	1.94	.63	.75	.141	2	H2
17512	17712	17412	6 - 32	2.00	.39	.88	.141	2	H2
17513	17713	17413	6 - 32	2.00	.39	.88	.141	2	H3
17517	17717	17417	8 - 32	2.13	.39	.92	.168	2	H2
17518	17718	17418	8 - 32	2.13	.39	.92	.168	2	H3
17521	17721	17421	10 - 24	2.38	.51	1.07	.194	2	H2
17522	17722	17422	10 - 24	2.38	.51	1.07	.194	2	H3
17523	17723	17423	10 - 32	2.37	.51	1.04	.194	2	H2
17524	17724	17424	10 - 32	2.37	.51	1.04	.194	2	H3
17526	17726	17426	12 - 24	2.38	.51	1.05	.220	2	H3
17529	17729	17429	1/4 - 20	2.50	.61	1.16	.255	2	H3
17530	17730	17430	1/4 - 20	2.50	.61	1.16	.255	2	H5
17531	17731	17431	1/4 - 20	2.50	.61	1.16	.255	3	H3
17532	17732	17432	1/4 - 20	2.50	.61	1.16	.255	3	H5
17533	17733	17433	1/4 - 28	2.49	.61	1.15	.255	2	H2
17534	17734	17434	1/4 - 28	2.49	.61	1.15	.255	2	H3
17536	17736	17436	5/16 - 18	2.72	.68	1.32	.318	2	H3
17537	17737	17437	5/16 - 18	2.72	.68	1.32	.318	2	H5
17538	17738	17438	5/16 - 18	2.72	.68	1.32	.318	3	H3
17539	17739	17439	5/16 - 18	2.72	.68	1.32	.318	3	H5
17540	17740	17440	5/16 - 24	2.71	.67	1.31	.318	2	H3
17542	17742	17442	3/8 - 16	2.94	.76	1.39	.381	3	H3
17543	17743	17443	3/8 - 16	2.94	.76	1.39	.381	3	H5
17544	17744	17444	3/8 - 24	2.93	.76	1.41	.381	3	H3
17545	17745	17445	7/16 - 14	3.16	.88	1.42	.323	3	H3
17546	17746	17446	7/16 - 20	3.16	.88	1.42	.323	3	H3
17547	17747	17447	1/2 - 13	3.38	.97	1.61	.367	3	H3
17548	17748	17448	1/2 - 13	3.38	.97	1.61	.367	3	H5
17549	17749	17449	1/2 - 20	3.38	.97	1.61	.367	3	H3
17550	17750	17450	5/8 - 11	3.81	1.12	1.74	.480	3	H3
17551	17751	17451	5/8 - 18	3.81	1.12	1.74	.480	3	H3
17552	17752	17452	3/4 - 10	4.25	1.25	1.92	.590	3	H3



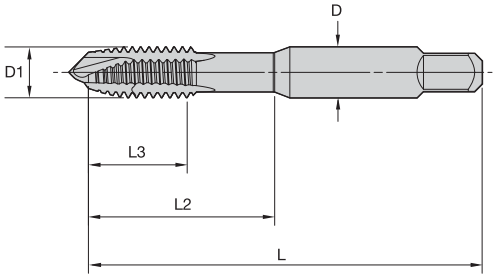
● first choice
○ alternate choice

Series 2331 • Machine Screw and Fractional • Spiral-Point Plug Chamfer • DIN Length



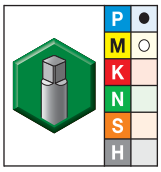
TiCN	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
25830	4 - 40	2.09	.31	.71	.141	2	H2
25833	5 - 40	2.21	.43	.71	.141	2	H2
25836	6 - 32	2.21	.38	.79	.141	2	H3
25839	8 - 32	2.48	.38	.83	.168	3	H3
25842	10 - 24	2.76	.50	.98	.194	3	H3
25843	10 - 32	2.76	.50	.98	.194	3	H3
25848	1/4 - 20	3.15	.63	1.18	.255	3	H3
25850	1/4 - 28	3.15	.63	1.18	.255	3	H3
25852	5/16 - 18	3.54	.69	1.38	.318	3	H3
25854	5/16 - 24	3.54	.69	1.38	.318	3	H3
25856	3/8 - 16	3.94	.75	1.54	.381	3	H3
25864	1/2 - 13	4.33	.94	1.14	.367	3	H3

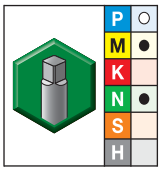
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.

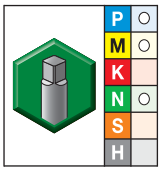


● first choice
○ alternate choice

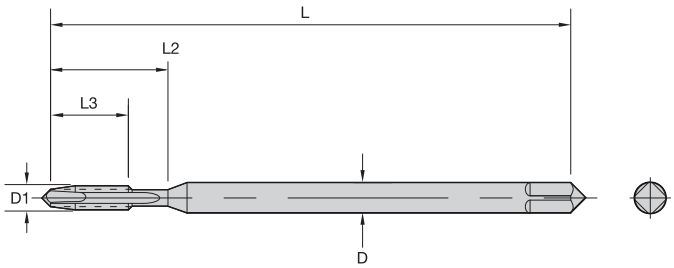
■ Series 2361 • Spiral-Point Plug Chamfer • Metric ANSI





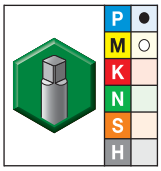


TiCN	CrC/C	uncoated	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
17563	**17763**	**17463**	M3 X 0,5	1.94	.63	.75	.141	2	D3
17564	**17764**	**17464**	M3,5 X 0,6	2.00	.38	.88	.141	2	D4
17565	**17765**	**17465**	M4 X 0,7	2.13	.39	.92	.168	2	D4
17568	**17768**	**17468**	M5 X 0,8	2.38	.51	1.07	.194	2	D4
17571	**17771**	**17471**	M6 X 1	2.49	.61	1.15	.255	2	D5
17569	**17769**	**17469**	M6 X 1	2.50	.61	1.16	.255	2	D5
17570	**17770**	**17470**	M6 X 1	2.50	.61	1.16	.255	3	D5
17573	**17773**	**17473**	M8 X 1,25	2.72	.67	1.31	.318	2	D5
17574	**17774**	**17474**	M8 X 1,25	2.72	.67	1.32	.318	3	D5
17575	**17775**	**17475**	M10 X 1,5	2.93	.76	1.41	.381	3	D6
17576	**17776**	**17476**	M12 X 1,75	3.38	.97	1.61	.367	3	D6
17577	**17777**	**17477**	M14 X 2	3.59	1.00	1.61	.429	3	D7
17578	**17778**	**17478**	M16 X 2	3.81	1.12	1.74	.480	3	D7



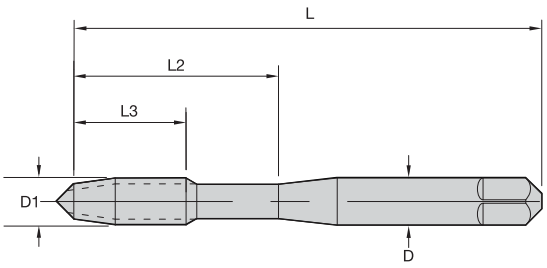
● first choice
○ alternate choice

■ Series 2361 • Spiral-Point Plug Chamfer • DIN Length • Metric ANSI



TiCN	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
25867	M3 X 0,5	2.21	.38	.71	.141	2	D3
25868	M4 X 0,7	2.48	.38	.83	.168	3	D4
25869	M5 X 0,8	2.76	.50	.98	.194	3	D4
25870	M6 X 1	3.15	.63	1.18	.255	3	D5
25871	M8 X 1,25	3.54	.69	1.38	.318	3	D5
25872	M10 X 1,5	3.94	.75	1.54	.381	3	D6
25873	M12 X 1,75	4.33	.94	1.14	.367	3	D6

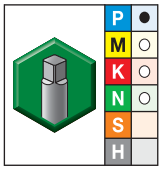
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 6H class of fit.

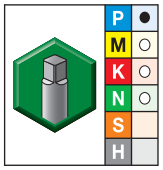


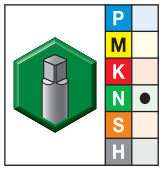
NOTE: Series 5900TC • TiCN Coated
Series 5900TiN • TiN Coated
Series 5900 • Uncoated

● first choice
○ alternate choice

Series 5900 • Machine Screw and Fractional • Plug Entry Taper

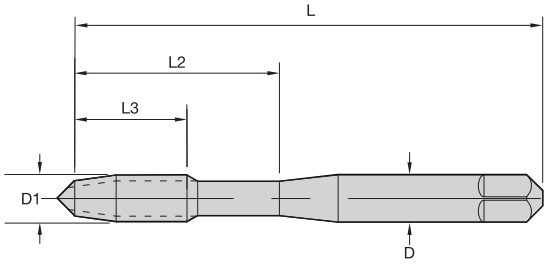






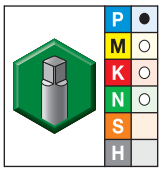
TiCN	TiN	uncoated	D1 size	L	L3	L2	D	number of lube grooves	pitch diameter limit
18703	**18303**	**18203**	6 - 32	2.00	.38	.69	.141	4	H3
18702	**18302**	**18202**	6 - 32	2.00	.38	.69	.141	4	H5
18706	**18306**	**18206**	6 - 40	2.00	.38	.69	.141	4	H3
18707	**18307**	**18207**	6 - 40	2.00	.38	.69	.141	4	H5
18711	**18311**	**18211**	8 - 32	2.13	.38	.75	.168	4	H3
18710	**18310**	**18210**	8 - 32	2.13	.38	.75	.168	4	H5
18717	**18317**	**18217**	10 - 24	2.38	.50	.88	.194	4	H4
18716	**18316**	**18216**	10 - 24	2.38	.50	.88	.194	4	H6
18721	**18321**	**18221**	10 - 32	2.38	.50	.88	.194	4	H4
18720	**18320**	**18220**	10 - 32	2.38	.50	.88	.194	4	H6
18724	**18324**	**18224**	12 - 24	2.38	.50	.94	.220	4	H4
18725	**18325**	**18225**	12 - 24	2.38	.50	.94	.220	4	H6
18729	**18329**	**18229**	1/4 - 20	2.50	.63	1.00	.255	4	H4
18728	**18328**	**18228**	1/4 - 20	2.50	.63	1.00	.255	4	H6
18733	**18333**	**18233**	1/4 - 28	2.50	.63	1.00	.255	4	H4
18732	**18332**	**18232**	1/4 - 28	2.50	.63	1.00	.255	4	H6
18737	**18337**	**18237**	5/16 - 18	2.72	.69	1.13	.318	4	H5
18736	**18336**	**18236**	5/16 - 18	2.72	.69	1.13	.318	4	H7
18741	**18341**	**18241**	5/16 - 24	2.72	.69	1.13	.318	4	H5
18740	**18340**	**18240**	5/16 - 24	2.72	.69	1.13	.318	4	H7
18745	**18345**	**18245**	3/8 - 16	2.94	.75	1.25	.381	4	H5
18744	**18344**	**18244**	3/8 - 16	2.94	.75	1.25	.381	4	H7
18748	**18348**	**18248**	3/8 - 24	2.94	.75	1.55	.381	4	H5
18752	**18352**	**18252**	1/2 - 13	3.38	.94	—	.367	4	H5
18751	**18351**	**18251**	1/2 - 13	3.38	.94	—	.367	4	H7
18754	**18354**	**18254**	1/2 - 20	3.38	.94	—	.367	4	H5

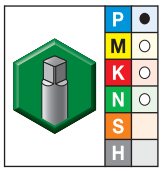
Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.

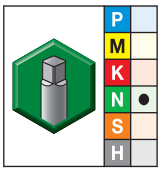


● first choice
○ alternate choice

Series 5902 • Machine Screw and Fractional • Bottom Entry Taper



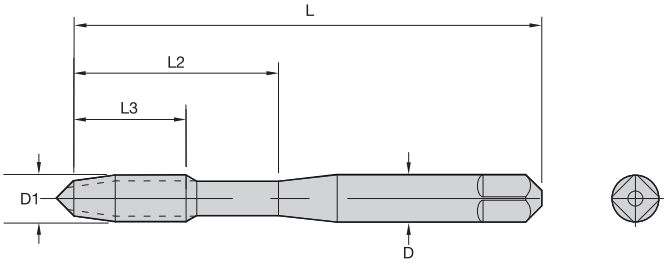




TiCN	TiN	uncoated	D1 size	L	L3	L2	D	number of lube grooves	pitch diameter limit
18700	18300	18200	6 - 32	2.00	.38	.69	.141	4	H3
18701	18301	18201	6 - 32	2.00	.38	.69	.141	4	H5
18705	18305	18205	6 - 40	2.00	.38	.69	.141	4	H3
18704	18304	18204	6 - 40	2.00	.38	.69	.141	4	H5
18709	18309	18209	8 - 32	2.13	.38	.75	.168	4	H3
18708	18308	18208	8 - 32	2.13	.38	.75	.168	4	H5
18712	18312	18212	8 - 36	2.13	.38	.75	.168	4	H3
18713	18313	18213	8 - 36	2.13	.38	.75	.168	4	H5
18715	18315	18215	10 - 24	2.38	.50	.88	.194	4	H4
18714	18314	18214	10 - 24	2.38	.50	.88	.194	4	H6
18719	18319	18219	10 - 32	2.38	.50	.88	.194	4	H4
18718	18318	18218	10 - 32	2.38	.50	.88	.194	4	H6
18723	18323	18223	12 - 24	2.38	.50	.94	.220	4	H4
18726	18326	18226	1/4 - 20	2.50	.63	1.00	.255	4	H4
18727	18327	18227	1/4 - 20	2.50	.63	1.00	.255	4	H6
18731	18331	18231	1/4 - 28	2.50	.63	1.00	.255	4	H4
18730	18330	18230	1/4 - 28	2.50	.63	1.00	.255	4	H6
18734	18334	18234	5/16 - 18	2.72	.69	1.13	.318	4	H5
18735	18335	18235	5/16 - 18	2.72	.69	1.13	.318	4	H7
18739	18339	18239	5/16 - 24	2.72	.69	1.13	.318	4	H5
18738	18338	18238	5/16 - 24	2.72	.69	1.13	.318	4	H7
18742	18342	18242	3/8 - 16	2.94	.75	1.25	.381	4	H5
18743	18343	18243	3/8 - 16	2.94	.75	1.25	.381	4	H7
18746	18346	18246	3/8 - 24	2.94	.75	1.25	.381	4	H5
18747	18347	18247	3/8 - 24	2.94	.75	1.25	.381	4	H7
18750	18350	18250	1/2 - 13	3.38	.94	—	.367	4	H5
18749	18349	18249	1/2 - 13	3.38	.94	—	.367	4	H7
18753	18353	18253	1/2 - 20	3.38	.94	—	.367	4	H5

Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps.

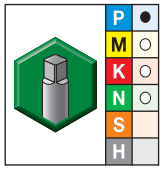
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.

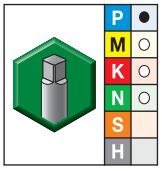


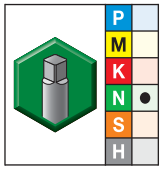
NOTE: Series 5910TC • TiCN Coated
Series 5910T • TiN Coated
Series 5910 • Uncoated

● first choice
○ alternate choice

Series 5910 • Plug Entry Taper • Metric ANSI





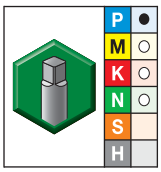


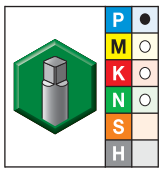
TiCN	TiN	uncoated	D1 size	L	L3	L2	D	number of lube grooves	pitch diameter limit
18756	18356	18256	M4 X 0,7	2.13	.38	.75	.168	4	D6
18758	18358	18258	M5 X 0,8	2.38	.50	.88	.194	4	D7
18760	18360	18260	M6 X 1	2.50	.63	1.00	.255	4	D8
18762	18362	18262	M8 X 1,25	2.72	.69	1.13	.318	4	D9
18764	18364	18264	M10 X 1,5	2.94	.75	1.25	.381	4	D10
18766	18366	18266	M12 X 1,75	3.38	.94	—	.367	4	D11

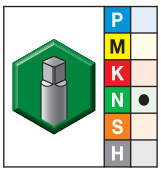
NOTE: Series 5912TC • TiCN Coated
Series 5912T • TiN Coated
Series 5912 • Uncoated

● first choice
○ alternate choice

Series 5912 • Bottom Entry Taper • Metric ANSI



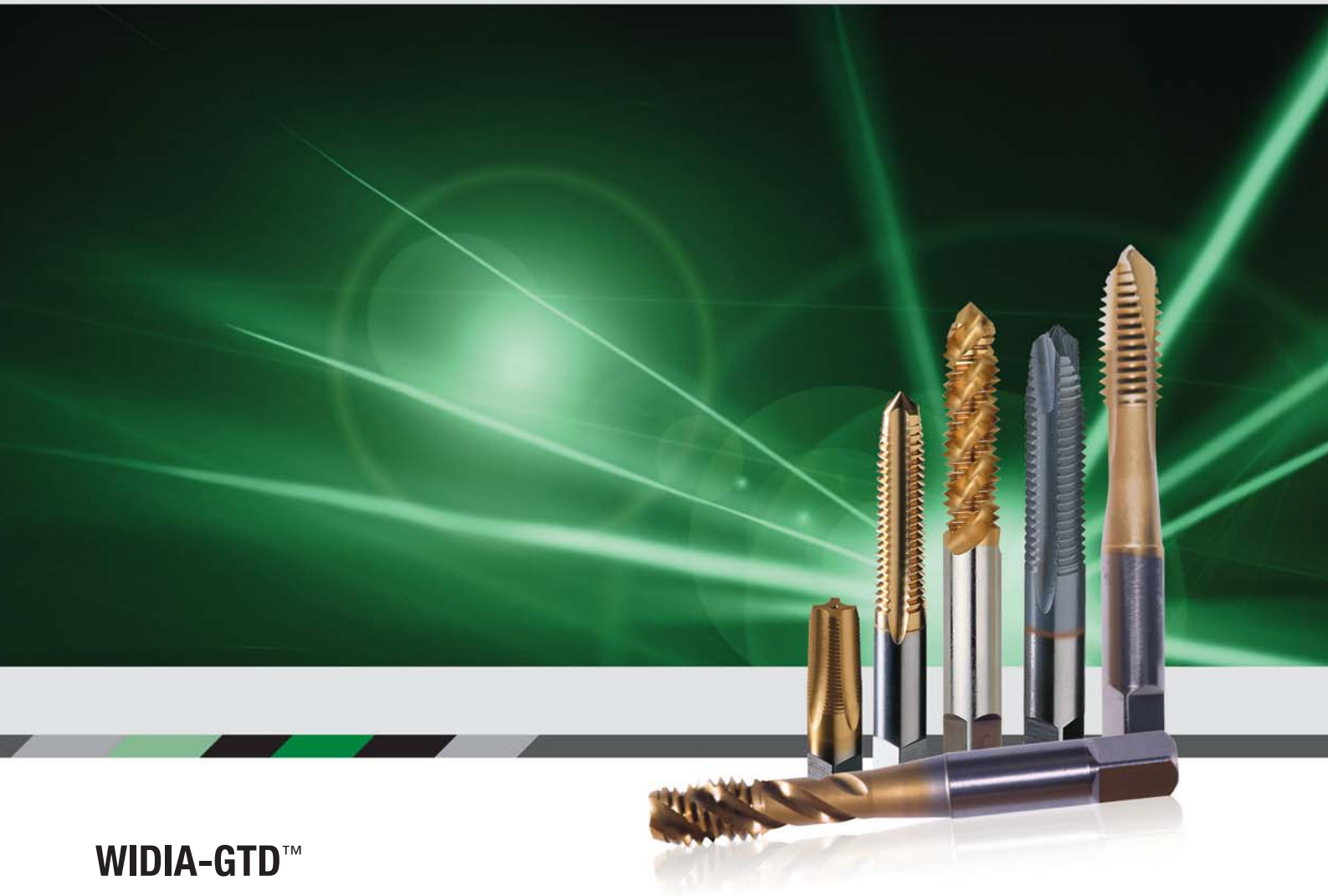




TiCN	TiN	uncoated	D1 size	L	L3	L2	D	number of lube grooves	pitch diameter limit
18755	18355	18255	M4 X 0,7	2.13	.38	.75	.168	4	D6
18757	18357	18257	M5 X 0,8	2.38	.50	.88	.194	4	D7
18759	18359	18259	M6 X 1	2.50	.63	1.00	.255	4	D8
18761	18361	18261	M8 X 1,25	2.72	.69	1.13	.318	4	D9
18763	18363	18263	M10 X 1,5	2.94	.75	1.25	.381	4	D10
18765	18365	18265	M12 X 1,75	3.38	.94	—	.367	4	D11

Metric taps are manufactured to USCTI specifications and dimensions.
Metric tap blank dimensions are equivalent to inch taps.
Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 6H class of fit.

Lightning™ Services



WIDIA-GTD™

Lightning Services

Rely on our Lightning Services program to deliver the special taps you need, when and where you need them. Within minutes, we can quote, process, and release your order to the factory.

- Non-standard tap sizes, pitches, PDs, coatings, etc.
- Special taps can be used for tapping steel, cast iron, aluminum or brass.
- Custom ordered taps can be designed to thread INCONEL®, titanium, and high-temp alloys.
- Always accurate thread pitch diameters and gage fits.

Let our Lightning Services program spark your production.
Contact your Authorized WIDIA Distributor.

Greenfield Lightning Services Available

WIDIA™

Taps Custom-Order Worksheet

Use this Custom-Order Worksheet to modify an existing product to meet your specifications. If your custom requirements do not fall into these categories, simply contact your WIDIA™ Distributor.

Trust our experienced distributors and WIDIA engineering team to design the best solution for you.

1. Start with the standard product most similar to your specifications:

catalog number _____ **grade/coating** _____

2. Type of tap needed:

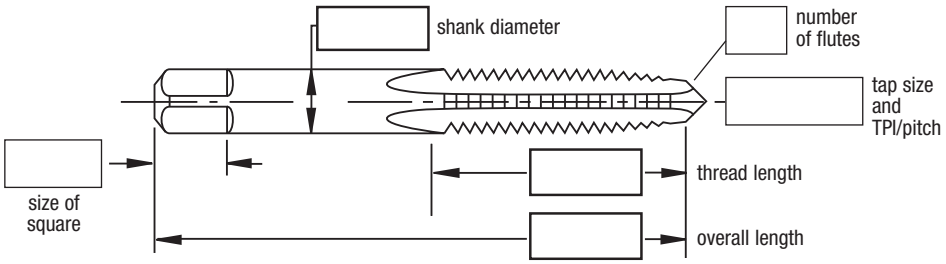
☐ solid carbide ☐ high performance HSS ☐ general purpose ☐ spiral point
☐ hand ☐ forming ☐ spiral flute
_____ pipe (and style) _____ other

3. Direction of cut (circle one)**:** left hand right hand

4. Material overview:

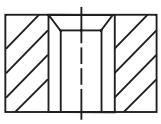
☐ ANSI ☐ DIN ☐ JIS ☐ other

5. Desired dimension:

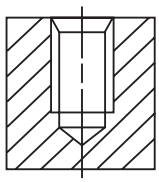


6. Choose one:

through hole:
hole diameter _____
hole depth _____



blind hole:
hole diameter _____
hole depth _____



7. Chamfer:

☐ taper: 7–10 pitch ☐ plug: 3–5 pitch ☐ semi-bottom: 2–3 pitch ☐ bottom: 1–2 pitch

8. Class of fit: **H limit** _____ **metric D limit** _____ **diameter pitch limit** _____

9. Workpiece material: _____

10. Hardness: _____

11. Number of taps required: _____

12. Price
Contact your Authorized WIDIA Distributor partners.

13. Other comments or special characteristics:

customer company name	**date**
address	**phone number**
city, state, zip	**fax number**
customer contact	**customer email address**
sales representative	

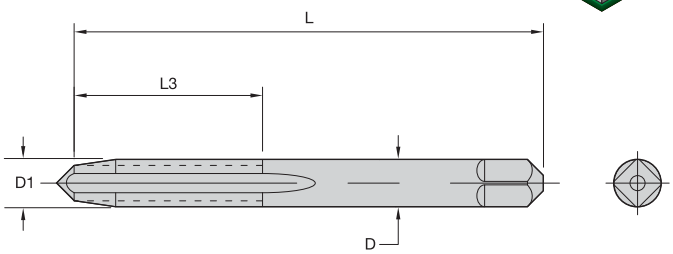
WIDIA-GTD™ Hand Taps

Features:

- Manufactured from high-speed steel.
- Straight-flute design.
- Versatile design.
- Can be used for through-hole or blind-hole tapping.
- Through-coolant holes available.

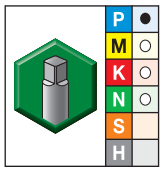
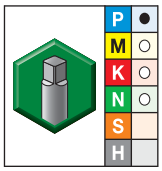
Benefits:

- Taps offer increased wear life.
- Can be used in general machinery or CNC tapping applications.
- Store chips in their flutes during threading, which protects the workpiece.



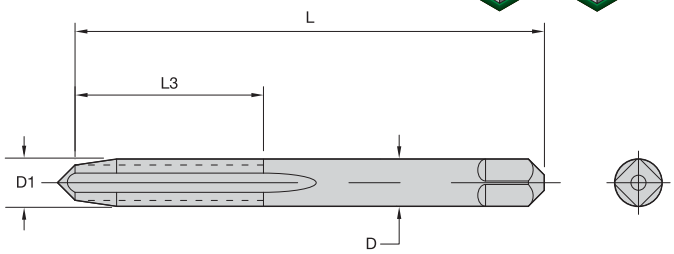
● first choice
○ alternate choice

Series 5305 • Machine Screw Sizes • Taper Chamfer

 oxide	 uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
–	15102	0 - 80	1.63	.31	.141	2	H1
–	15114	1 - 64	1.69	.38	.141	2	H1
–	15120	1 - 72	1.69	.38	.141	2	H1
–	15128	2 - 56	1.75	.44	.141	3	H1
–	15134	2 - 56	1.75	.44	.141	3	H2
–	15141	2 - 64	1.75	.44	.141	3	H1
–	15144	2 - 64	1.75	.44	.141	3	H2
–	15156	3 - 48	1.81	.50	.141	3	H2
	15166	3 - 56	1.81	.50	.141	3	H2
19563	15184	4 - 40	1.88	.56	.141	3	H2
–	15196	4 - 48	1.88	.56	.141	3	H2
–	15209	5 - 40	1.94	.63	.141	3	H2
–	15220	5 - 44	1.94	.63	.141	3	H2
–	15225	6 - 32	2.00	.69	.141	3	H1
–	15231	6 - 32	2.00	.69	.141	3	H2
19573	15237	6 - 32	2.00	.69	.141	3	H3
–	15257	6 - 40	2.00	.69	.141	3	H2
–	15275	8 - 32	2.13	.75	.168	4	H2
19583	15283	8 - 32	2.13	.75	.168	4	H3
–	15301	8 - 36	2.13	.75	.168	4	H2
–	15320	10 - 24	2.38	.88	.194	4	H2
19597	15327	10 - 24	2.38	.88	.194	4	H3
–	15344	10 - 32	2.38	.88	.194	4	H1
–	15352	10 - 32	2.38	.88	.194	4	H2
19613	15360	10 - 32	2.38	.88	.194	4	H3
–	15383	12 - 24	2.38	.94	.220	4	H3
–	15390	12 - 28	2.38	.94	.220	4	H3

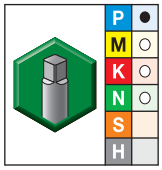
Hand taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.

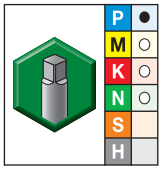
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.



● first choice
○ alternate choice

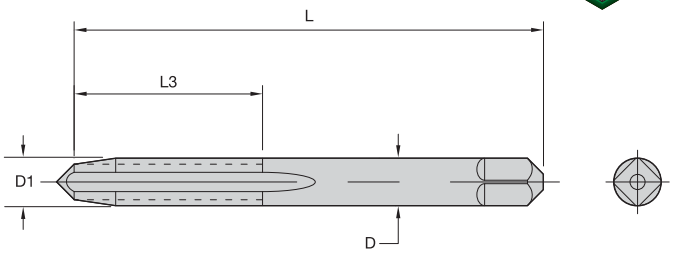
Series 5303 • Fractional Sizes • Taper Chamfer





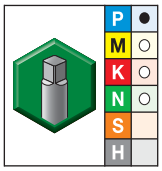
oxide	uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
–	14010	1/4 - 20	2.50	1.00	.255	4	H1
–	14015	1/4 - 20	2.50	1.00	.255	4	H2
19167	14022	1/4 - 20	2.50	1.00	.255	4	H3
19208	14055	1/4 - 28	2.50	1.00	.255	4	H3
19237	14092	5/16 - 18	2.72	1.13	.318	4	H3
19257	14122	5/16 - 24	2.72	1.13	.318	4	H3
19278	14157	3/8 - 16	2.94	1.25	.381	4	H3
19304	14190	3/8 - 24	2.94	1.25	.381	4	H3
–	14221	7/16 - 14	3.16	1.44	.323	4	H3
–	14246	7/16 - 20	3.16	1.44	.323	4	H3
19354	14281	1/2 - 13	3.38	1.66	.367	4	H3
19377	14308	1/2 - 20	3.38	1.66	.367	4	H3
–	14338	9/16 - 12	3.59	1.66	.429	4	H3
–	14356	9/16 - 18	3.59	1.66	.429	4	H3
19407	14379	5/8 - 11	3.81	1.81	.480	4	H3
–	14402	5/8 - 18	3.81	1.81	.480	4	H3
–	14423	11/16 - 11	4.03	1.06	.542	4	H3
–	14427	11/16 - 16	4.03	1.06	.542	4	H3
19443	14448	3/4 - 10	4.25	2.00	.590	4	H3
–	14471	3/4 - 16	4.25	2.00	.590	4	H3
–	14499	7/8 - 9	4.69	2.22	.697	4	H4
–	14516	7/8 - 14	4.69	2.22	.697	4	H4
–	14544	1 - 8	5.13	2.50	.800	4	H4
–	14557	1 - 12	5.13	2.50	.800	4	H4
–	14568	1 - 14	5.13	2.50	.800	4	H4
–	14594	1 1/8 - 7	5.44	2.56	.896	4	H4
–	14603	1 1/8 - 12	5.44	2.56	.896	4	H4
–	14612	1 1/4 - 7	5.75	2.56	1.021	4	H4
–	14620	1 1/4 - 12	5.75	2.56	1.021	6	H4
–	14632	1 3/8 - 6	6.06	3.00	1.108	4	H4
–	14640	1 3/8 - 12	6.06	3.00	1.108	6	H4
–	14645	1 1/2 - 6	6.38	3.00	1.233	4	H4
–	14653	1 1/2 - 12	6.38	3.00	1.233	6	H4

Hand taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.



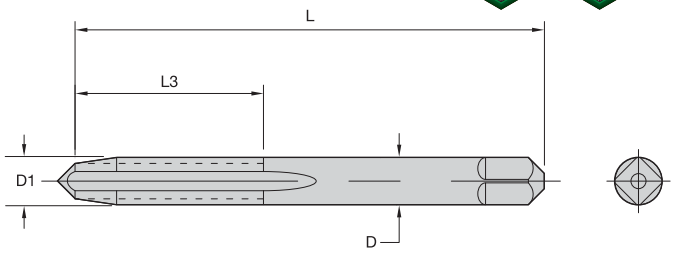
● first choice
○ alternate choice

Series 5353 • Taper Chamfer • Metric ANSI



uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
14725	M2 X 0,4	1.75	.44	.141	3	D3
14741	M3 X 0,5	1.94	.63	.141	3	D3
14757	M4 X 0,7	2.13	.75	.168	4	D4
14773	M5 X 0,8	2.38	.88	.194	4	D4
14797	M8 X 1,25	2.72	1.13	.318	4	D5
14813	M10 X 1,5	2.94	1.25	.381	4	D6
14829	M12 X 1,75	3.38	1.66	.367	4	D6
14845	M14 X 2	3.59	1.66	.429	4	D7
14861	M16 X 2	3.81	1.81	.480	4	D7
14877	M18 X 2,5	4.03	1.06	.542	4	D7
14893	M20 X 2,5	4.47	2.00	.652	4	D7
14909	M24 X 3	4.91	2.22	.760	4	D8
14925	M30 X 3,5	5.44	2.56	1.021	4	D9
14941	M36 X 4	6.06	3.00	1.233	4	D9

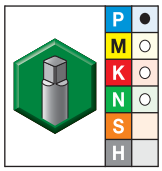
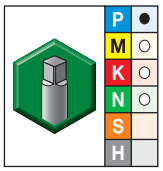
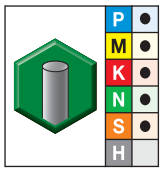
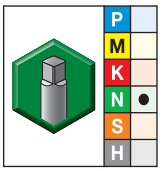
Metric taps for 6H class of fit are suitable for MJ aerospace internal threading applications.
Metric taps are manufactured to USCTI specifications and dimensions.
Metric tap blank dimensions are equivalent to inch taps.
Refer to table on page A258 for the recommended pitch diameter limit for 6H class of fit.



NOTE: Series 5305TC • TiCN Coated
Series 2305 • TiN Coated
Series 5305S • SH50 Steam Oxide
Series 5305 • Uncoated

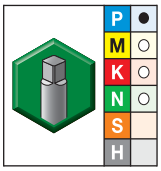
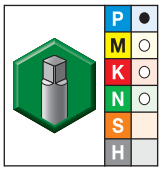
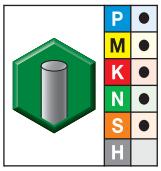
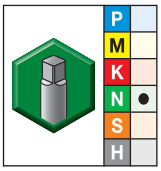
● first choice
○ alternate choice

Series 5305/2305 • Machine Screw Sizes • Plug Chamfer

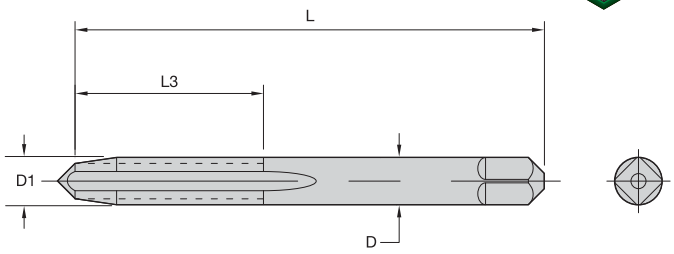
 TiCN	 TiN	 oxide	 uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
–	–	–	15103	0 - 80	1.63	.31	.141	2	H1
19121	19202	–	15107	0 - 80	1.63	.31	.141	2	H2
–	–	–	15115	1 - 64	1.69	.38	.141	2	H1
–	–	–	15118	1 - 64	1.69	.38	.141	2	H2
–	–	–	15121	1 - 72	1.69	.38	.141	2	H1
–	–	–	15125	1 - 72	1.69	.38	.141	2	H2
–	–	–	15138	2 - 56	1.75	.44	.141	2	H2
–	–	–	15129	2 - 56	1.75	.44	.141	3	H1
19122	19207	–	15135	2 - 56	1.75	.44	.141	3	H2
–	–	–	15142	2 - 64	1.75	.44	.141	3	H1
–	–	–	15145	2 - 64	1.75	.44	.141	3	H2
–	15433	–	15160	3 - 48	1.81	.50	.141	2	H2
–	–	–	15157	3 - 48	1.81	.50	.141	3	H2
–	–	–	15167	3 - 56	1.81	.50	.141	3	H2
–	–	–	15182	4 - 40	1.88	.56	.141	2	H1
–	–	–	15189	4 - 40	1.88	.56	.141	2	H2
–	–	–	15179	4 - 40	1.88	.56	.141	3	H1
19123	19211	19565	15185	4 - 40	1.88	.56	.141	3	H2
–	–	–	15192	4 - 48	1.88	.56	.141	3	H1
–	–	–	15197	4 - 48	1.88	.56	.141	3	H2
–	15437	–	15214	5 - 40	1.94	.63	.141	2	H2
–	–	–	15204	5 - 40	1.94	.63	.141	3	H1
19124	19216	–	15210	5 - 40	1.94	.63	.141	3	H2
–	–	–	15221	5 - 44	1.94	.63	.141	3	H2
–	–	–	15235	6 - 32	2.00	.69	.141	2	H2
–	–	–	15245	6 - 32	2.00	.69	.141	2	H3
–	–	–	15226	6 - 32	2.00	.69	.141	3	H1
–	19221	–	15232	6 - 32	2.00	.69	.141	3	H2
15224	–	19575	15238	6 - 32	2.00	.69	.141	3	H3
–	–	–	15262	6 - 40	2.00	.69	.141	2	H2
–	–	–	15258	6 - 40	2.00	.69	.141	3	H2
–	–	–	15279	8 - 32	2.13	.75	.168	2	H2

(continued)

(Series 5305/2305 • Machine Screw Sizes • Plug Chamfer continued)

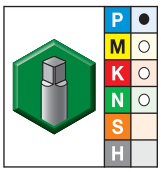
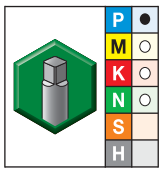
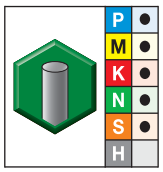
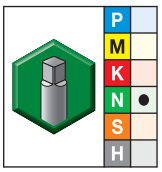
 TiCN	 TiN	 oxide	 uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
–	–	–	**15291**	8 - 32	2.13	.75	.168	2	H3
–	–	–	**15281**	8 - 32	2.13	.75	.168	3	H2
–	**15442**	–	**15293**	8 - 32	2.13	.75	.168	3	H3
–	–	–	**15268**	8 - 32	2.13	.75	.168	4	H1
–	**19226**	–	**15276**	8 - 32	2.13	.75	.168	4	H2
–	–	**19585**	**15284**	8 - 32	2.13	.75	.168	4	H3
–	–	–	**15295**	8 - 32	2.13	.75	.168	4	H7
–	–	–	**15300**	8 - 36	2.13	.75	.168	4	H1
–	–	–	**15302**	8 - 36	2.13	.75	.168	4	H2
–	–	–	**15324**	10 - 24	2.38	.88	.194	2	H2
–	–	–	**15335**	10 - 24	2.38	.88	.194	2	H3
–	**15444**	–	**15337**	10 - 24	2.38	.88	.194	3	H3
–	–	–	**15314**	10 - 24	2.38	.88	.194	4	H1
–	–	–	**15321**	10 - 24	2.38	.88	.194	4	H2
19126	**19231**	**19600**	**15328**	10 - 24	2.38	.88	.194	4	H3
–	–	–	**15356**	10 - 32	2.38	.88	.194	2	H2
–	–	–	**15368**	10 - 32	2.38	.88	.194	2	H3
–	–	–	**15358**	10 - 32	2.38	.88	.194	3	H2
–	**15450**	–	**15370**	10 - 32	2.38	.88	.194	3	H3
–	–	–	**15374**	10 - 32	2.38	.88	.194	3	H7
–	–	–	**15345**	10 - 32	2.38	.88	.194	4	H1
–	–	–	**15353**	10 - 32	2.38	.88	.194	4	H2
15348	**19236**	**19615**	**15361**	10 - 32	2.38	.88	.194	4	H3
19127	**19241**	–	**15384**	12 - 24	2.38	.94	.220	4	H3
–	–	–	**15391**	12 - 28	2.38	.94	.220	4	H3

Hand taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.



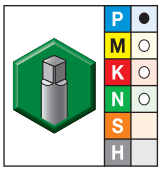
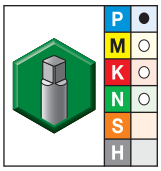
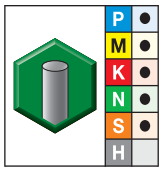
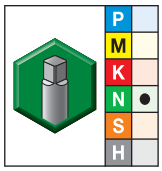
● first choice
○ alternate choice

Series 5303/2303 • Fractional Sizes • Plug Chamfer

 TiCN	 TiN	 oxide	 uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
–	15453	–	14030	1/4 - 20	2.50	1.00	.255	2	H3
–	–	–	14020	1/4 - 20	2.50	1.00	.255	3	H2
–	15454	–	14032	1/4 - 20	2.50	1.00	.255	3	H3
–	–	–	14039	1/4 - 20	2.50	1.00	.255	3	H5
–	–	–	14011	1/4 - 20	2.50	1.00	.255	4	H1
–	–	–	14016	1/4 - 20	2.50	1.00	.255	4	H2
14009	19247	19170	14023	1/4 - 20	2.50	1.00	.255	4	H3
–	–	–	14036	1/4 - 20	2.50	1.00	.255	4	H5
–	–	–	14041	1/4 - 20	2.50	1.00	.255	4	H11
–	–	–	14063	1/4 - 28	2.50	1.00	.255	2	H3
–	15456	–	14065	1/4 - 28	2.50	1.00	.255	3	H3
–	–	–	14048	1/4 - 28	2.50	1.00	.255	4	H1
–	–	–	14052	1/4 - 28	2.50	1.00	.255	4	H2
–	–	–	14053	1/4 - 28	2.50	1.00	.255	4	H2
19128	19253	19210	14056	1/4 - 28	2.50	1.00	.255	4	H3
–	–	–	14067	1/4 - 28	2.50	1.00	.255	4	H4
–	–	–	14100	5/16 - 18	2.72	1.13	.318	2	H3
–	–	–	14102	5/16 - 18	2.72	1.13	.318	3	H3
–	–	–	14082	5/16 - 18	2.72	1.13	.318	4	H1
–	–	–	14087	5/16 - 18	2.72	1.13	.318	4	H2
19129	19258	19240	14093	5/16 - 18	2.72	1.13	.318	4	H3
–	–	–	14104	5/16 - 18	2.72	1.13	.318	4	H5
–	–	–	14109	5/16 - 18	2.72	1.13	.318	4	H11
–	15462	–	14130	5/16 - 24	2.72	1.13	.318	3	H3
–	–	–	14113	5/16 - 24	2.72	1.13	.318	4	H1
–	–	–	14118	5/16 - 24	2.72	1.13	.318	4	H2
19131	19263	19260	14123	5/16 - 24	2.72	1.13	.318	4	H3
–	–	–	14133	5/16 - 24	2.72	1.13	.318	4	H4

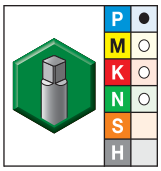
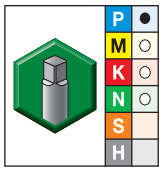
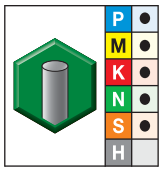
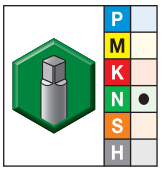
(continued)

(Series 5303/2303 • Fractional Sizes • Plug Chamfer continued)

									
TiCN	TiN	oxide	uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
–	15459	–	–	5/16 - 18	2.72	1.13	.318	2	H3
–	15460	–	–	5/16 - 18	2.72	1.13	.318	3	H3
–	15464	–	14165	3/8 - 16	2.94	1.25	.381	3	H3
–	–	–	14147	3/8 - 16	2.94	1.25	.381	4	H1
–	–	–	14152	3/8 - 16	2.94	1.25	.381	4	H2
19132	19268	19280	14158	3/8 - 16	2.94	1.25	.381	4	H3
–	–	–	14169	3/8 - 16	2.94	1.25	.381	4	H5
–	–	–	14174	3/8 - 16	2.94	1.25	.381	4	H11
–	15466	–	14198	3/8 - 24	2.94	1.25	.381	3	H3
–	–	–	14180	3/8 - 24	2.94	1.25	.381	4	H1
–	–	–	14185	3/8 - 24	2.94	1.25	.381	4	H2
19134	19273	19305	14191	3/8 - 24	2.94	1.25	.381	4	H3
–	–	–	14201	3/8 - 24	2.94	1.25	.381	4	H4
–	15467	–	14229	7/16 - 14	3.16	1.44	.323	3	H3
19135	19277	–	14222	7/16 - 14	3.16	1.44	.323	4	H3
–	–	–	14232	7/16 - 14	3.16	1.44	.323	4	H5
19136	19283	–	14247	7/16 - 20	3.16	1.44	.323	4	H3
–	–	–	14256	7/16 - 20	3.16	1.44	.323	4	H5
–	15469	–	14289	1/2 - 13	3.38	1.66	.367	3	H3
–	–	–	14274	1/2 - 13	3.38	1.66	.367	4	H1
19137	19291	19360	14282	1/2 - 13	3.38	1.66	.367	4	H3
–	–	–	14293	1/2 - 13	3.38	1.66	.367	4	H5
–	–	–	14297	1/2 - 13	3.38	1.66	.367	4	H11
–	15470	–	14316	1/2 - 20	3.38	1.66	.367	3	H3
–	–	–	14301	1/2 - 20	3.38	1.66	.367	4	H1
19138	19297	19375	14309	1/2 - 20	3.38	1.66	.367	4	H3
–	–	–	14319	1/2 - 20	3.38	1.66	.367	4	H5
–	–	–	14339	9/16 - 12	3.59	1.66	.429	4	H3
–	–	–	14346	9/16 - 12	3.59	1.66	.429	4	H5
–	–	–	14353	9/16 - 18	3.59	1.66	.429	4	H2
–	–	–	14357	9/16 - 18	3.59	1.66	.429	4	H3
–	–	–	14364	9/16 - 18	3.59	1.66	.429	4	H5

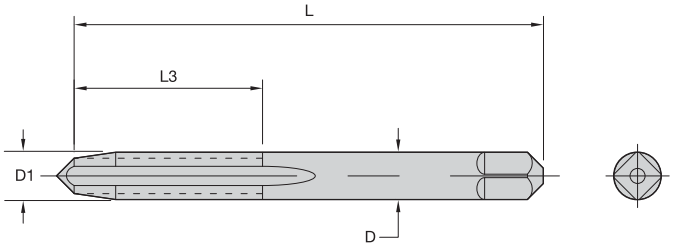
(continued)

(Series 5303/2303 • Fractional Sizes • Plug Chamfer continued)

									
TiCN	TiN	oxide	uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
–	–	–	**14378**	5/8 - 11	3.81	1.81	.480	4	H2
19139	**19307**	**19410**	**14380**	5/8 - 11	3.81	1.81	.480	4	H3
–	–	–	**14388**	5/8 - 11	3.81	1.81	.480	4	H5
–	–	–	**14391**	5/8 - 11	3.81	1.81	.480	4	H11
–	–	–	**14400**	5/8 - 18	3.81	1.81	.480	4	H2
19140	**19317**	–	**14403**	5/8 - 18	3.81	1.81	.480	4	H3
–	–	–	**14411**	5/8 - 18	3.81	1.81	.480	4	H5
–	–	–	**14424**	11/16 - 11	4.03	1.06	.542	4	H3
–	–	–	**14428**	11/16 - 16	4.03	1.06	.542	4	H3
19141	**19327**	**19445**	**14449**	3/4 - 10	4.25	2.00	.590	4	H3
–	–	–	**14457**	3/4 - 10	4.25	2.00	.590	4	H5
19142	**19337**	**19455**	**14472**	3/4 - 16	4.25	2.00	.590	4	H3
–	–	–	**14479**	3/4 - 16	4.25	2.00	.590	4	H4
–	–	–	**14482**	3/4 - 16	4.25	2.00	.590	4	H5
–	**19347**	**19465**	**14500**	7/8 - 9	4.69	2.22	.697	4	H4
–	–	–	**14508**	7/8 - 9	4.69	2.22	.697	4	H6
–	**19357**	–	**14517**	7/8 - 14	4.69	2.22	.697	4	H4
–	–	–	**14524**	7/8 - 14	4.69	2.22	.697	4	H6
–	**19367**	**19475**	**14545**	1 - 8	5.13	2.50	.800	4	H4
–	–	–	**14553**	1 - 8	5.13	2.50	.800	4	H6
–	–	–	**14558**	1 - 12	5.13	2.50	.800	4	H4
–	–	–	**14567**	1 - 14	5.13	2.50	.800	4	H2
–	–	–	**14569**	1 - 14	5.13	2.50	.800	4	H4
–	–	–	**14595**	1 1/8 - 7	5.44	2.56	.896	4	H4
–	–	–	**14604**	1 1/8 - 12	5.44	2.56	.896	4	H4
–	–	–	**14613**	1 1/4 - 7	5.75	2.56	1.021	4	H4
–	–	–	**14621**	1 1/4 - 12	5.75	2.56	1.021	6	H4
–	–	–	**14633**	1 3/8 - 6	6.06	3.00	1.108	4	H4
–	–	–	**14641**	1 3/8 - 12	6.06	3.00	1.108	6	H4
–	–	–	**14646**	1 1/2 - 6	6.38	3.00	1.233	4	H4
–	–	–	**14654**	1 1/2 - 12	6.38	3.00	1.233	6	H4

Hand taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.

Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.



NOTE: Series 5305Tc • TiCN Coated
Series 2305 • TiN Coated
Series 5305S • SH50 Steam Oxide
Series 5305 • Uncoated

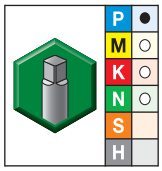
● first choice
○ alternate choice

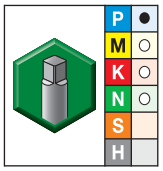
Series 5305/2305 • Machine Screw Sizes • Bottoming Chamfer

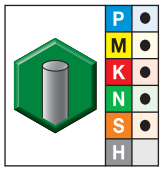
TiCN	TiN	oxide	uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
–	–	–	15104	0 - 80	1.63	.31	.141	2	H1
19174	19204	–	15108	0 - 80	1.63	.31	.141	2	H2
–	–	–	15116	1 - 64	1.69	.38	.141	2	H1
–	–	–	15122	1 - 72	1.69	.38	.141	2	H1
–	–	–	15126	1 - 72	1.69	.38	.141	2	H2
–	–	–	15139	2 - 56	1.75	.44	.141	2	H2
–	–	–	15130	2 - 56	1.75	.44	.141	3	H1
19175	19209	–	15136	2 - 56	1.75	.44	.141	3	H2
–	–	–	15143	2 - 64	1.75	.44	.141	3	H1
–	–	–	15146	2 - 64	1.75	.44	.141	3	H2
–	15432	–	15161	3 - 48	1.81	.50	.141	2	H2
–	–	–	15158	3 - 48	1.81	.50	.141	3	H2
–	–	–	15168	3 - 56	1.81	.50	.141	3	H2
–	15434	–	15190	4 - 40	1.88	.56	.141	2	H2
19176	19213	19570	15186	4 - 40	1.88	.56	.141	3	H2
–	–	–	15198	4 - 48	1.88	.56	.141	3	H2
–	15436	–	15215	5 - 40	1.94	.63	.141	2	H2
19177	19218	–	15211	5 - 40	1.94	.63	.141	3	H2
–	–	–	15222	5 - 44	1.94	.63	.141	3	H2
–	–	–	15236	6 - 32	2.00	.69	.141	2	H2
–	15438	–	15246	6 - 32	2.00	.69	.141	2	H3
–	–	–	15227	6 - 32	2.00	.69	.141	3	H1
–	19223	–	15233	6 - 32	2.00	.69	.141	3	H2
19178	–	19580	15239	6 - 32	2.00	.69	.141	3	H3
–	–	–	15259	6 - 40	2.00	.69	.141	3	H2
–	–	–	15280	8 - 32	2.13	.75	.168	2	H2
–	–	–	15292	8 - 32	2.13	.75	.168	2	H3
–	–	–	15282	8 - 32	2.13	.75	.168	3	H2
–	–	–	15294	8 - 32	2.13	.75	.168	3	H3
–	–	–	15269	8 - 32	2.13	.75	.168	4	H1
–	19228	–	15277	8 - 32	2.13	.75	.168	4	H2
19179	–	–	15285	8 - 32	2.13	.75	.168	4	H3
15270	–	19590	–	8 - 32	2.13	.75	.168	4	H3
19860	–	–	–	8 - 32	2.13	.75	.168	4	H3
–	–	–	15303	8 - 36	2.13	.75	.168	4	H2
–	–	–	15336	10 - 24	2.38	.88	.194	2	H3

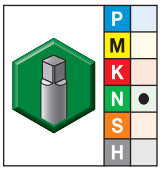
(continued)

(Series 5353 • Bottoming Chamfer • Metric ANSI continued)



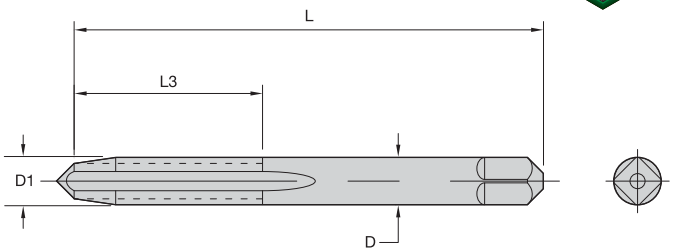






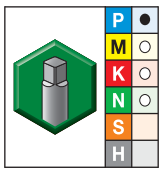
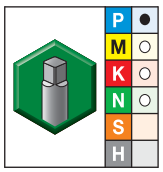
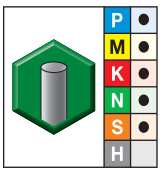
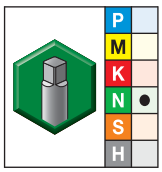
TiCN	TiN	oxide	uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
–	15443	–	15338	10 - 24	2.38	.88	.194	3	H3
–	–	–	15322	10 - 24	2.38	.88	.194	4	H2
19181	19233	19605	15329	10 - 24	2.38	.88	.194	4	H3
–	–	–	15357	10 - 32	2.38	.88	.194	2	H2
–	15445	–	15369	10 - 32	2.38	.88	.194	2	H3
–	15446	–	15359	10 - 32	2.38	.88	.194	3	H2
–	15447	–	15371	10 - 32	2.38	.88	.194	3	H3
–	–	–	15346	10 - 32	2.38	.88	.194	4	H1
–	–	–	15354	10 - 32	2.38	.88	.194	4	H2
19182	19238	19620	15362	10 - 32	2.38	.88	.194	4	H3
19183	19243	–	15385	12 - 24	2.38	.94	.220	4	H3
–	–	–	15392	12 - 28	2.38	.94	.220	4	H3

Hand taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.



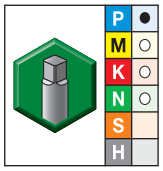
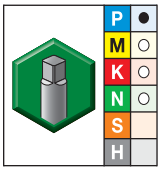
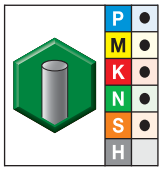
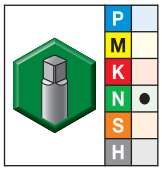
● first choice
○ alternate choice

Series 5303/2303 • Fractional Sizes • Bottoming Chamfer

 TiCN	 TiN	 oxide	 uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
–	–	–	14031	1/4 - 20	2.50	1.00	.255	2	H3
–	–	–	14033	1/4 - 20	2.50	1.00	.255	3	H3
–	–	–	14012	1/4 - 20	2.50	1.00	.255	4	H1
–	–	–	14017	1/4 - 20	2.50	1.00	.255	4	H2
19184	19251	19180	14024	1/4 - 20	2.50	1.00	.255	4	H3
–	–	–	14037	1/4 - 20	2.50	1.00	.255	4	H5
–	–	–	14064	1/4 - 28	2.50	1.00	.255	2	H3
–	15455	–	14066	1/4 - 28	2.50	1.00	.255	3	H3
19185	19256	19220	14057	1/4 - 28	2.50	1.00	.255	4	H3
–	–	–	14068	1/4 - 28	2.50	1.00	.255	4	H4
–	15457	–	14101	5/16 - 18	2.72	1.13	.318	2	H3
–	15458	–	14103	5/16 - 18	2.72	1.13	.318	3	H3
–	–	–	14083	5/16 - 18	2.72	1.13	.318	4	H1
–	–	–	14088	5/16 - 18	2.72	1.13	.318	4	H2
19186	19261	19245	14094	5/16 - 18	2.72	1.13	.318	4	H3
–	–	–	14105	5/16 - 18	2.72	1.13	.318	4	H5
–	15461	–	14131	5/16 - 24	2.72	1.13	.318	3	H3
–	–	–	14114	5/16 - 24	2.72	1.13	.318	4	H1
19187	19266	19265	14124	5/16 - 24	2.72	1.13	.318	4	H3
–	–	–	14134	5/16 - 24	2.72	1.13	.318	4	H4
–	15463	–	14166	3/8 - 16	2.94	1.25	.381	3	H3
–	–	–	14148	3/8 - 16	2.94	1.25	.381	4	H1
–	–	–	14153	3/8 - 16	2.94	1.25	.381	4	H2
19188	19271	19285	14159	3/8 - 16	2.94	1.25	.381	4	H3
–	–	–	14170	3/8 - 16	2.94	1.25	.381	4	H5
–	15465	–	14199	3/8 - 24	2.94	1.25	.381	3	H3
–	–	–	14181	3/8 - 24	2.94	1.25	.381	4	H1
19189	19275	19310	14192	3/8 - 24	2.94	1.25	.381	4	H3
–	–	–	14202	3/8 - 24	2.94	1.25	.381	4	H4
19191	19281	–	14223	7/16 - 14	3.16	1.44	.323	4	H3
–	–	–	14233	7/16 - 14	3.16	1.44	.323	4	H5
19192	19287	–	14248	7/16 - 20	3.16	1.44	.323	4	H3
–	–	–	14257	7/16 - 20	3.16	1.44	.323	4	H5
–	15468	–	14290	1/2 - 13	3.38	1.66	.367	3	H3
–	–	–	14275	1/2 - 13	3.38	1.66	.367	4	H1
19193	19293	19355	14283	1/2 - 13	3.38	1.66	.367	4	H3

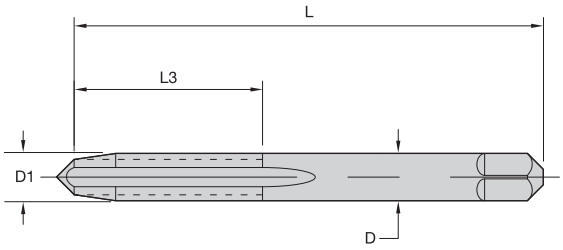
(continued)

(Series 5303/2303 • Fractional Sizes • Bottoming Chamfer continued)

									
TiCN	TiN	oxide	uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
–	–	–	**14294**	1/2 - 13	3.38	1.66	.367	4	H5
19194	**19303**	**19380**	**14310**	1/2 - 20	3.38	1.66	.367	4	H3
–	–	–	**14340**	9/16 - 12	3.59	1.66	.429	4	H3
–	–	–	**14358**	9/16 - 18	3.59	1.66	.429	4	H3
19197	**19313**	**19415**	**14381**	5/8 - 11	3.81	1.81	.480	4	H3
–	–	–	**14389**	5/8 - 11	3.81	1.81	.480	4	H5
19198	**19323**	–	**14404**	5/8 - 18	3.81	1.81	.480	4	H3
–	–	–	**14412**	5/8 - 18	3.81	1.81	.480	4	H5
–	–	–	**14425**	11/16 - 11	4.03	1.06	.542	4	H3
–	–	–	**14429**	11/16 - 16	4.03	1.06	.542	4	H3
19199	**19333**	**19450**	**14450**	3/4 - 10	4.25	2.00	.590	4	H3
–	–	–	**14458**	3/4 - 10	4.25	2.00	.590	4	H5
–	**19343**	**19460**	**14473**	3/4 - 16	4.25	2.00	.590	4	H3
–	–	–	**14483**	3/4 - 16	4.25	2.00	.590	4	H5
–	**19353**	**19470**	**14501**	7/8 - 9	4.69	2.22	.697	4	H4
–	**19363**	–	**14518**	7/8 - 14	4.69	2.22	.697	4	H4
–	**19373**	**19480**	**14546**	1 - 8	5.13	2.50	.800	4	H4
–	–	–	**14559**	1 - 12	5.13	2.50	.800	4	H4
–	–	–	**14570**	1 - 14	5.13	2.50	.800	4	H4
–	–	–	**14596**	1 1/8 - 7	5.44	2.56	.896	4	H4
–	–	–	**14605**	1 1/8 - 12	5.44	2.56	.896	4	H4
–	–	–	**14614**	1 1/4 - 7	5.75	2.56	1.021	4	H4
–	–	–	**14622**	1 1/4 - 12	5.75	2.56	1.021	6	H4
–	–	–	**14634**	1 3/8 - 6	6.06	3.00	1.108	4	H4
–	–	–	**14642**	1 3/8 - 12	6.06	3.00	1.108	6	H4
–	–	–	**14647**	1 1/2 - 6	6.38	3.00	1.233	4	H4
–	–	–	**14655**	1 1/2 - 12	6.38	3.00	1.233	6	H4

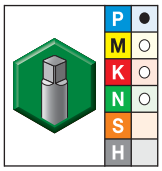
Hand taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.

Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.



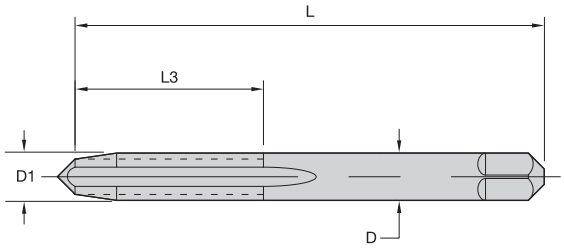
● first choice
○ alternate choice

Series 5305 • Machine Screw Sizes • Sets of One Each Taper, Plug, and Bottoming Chamfer



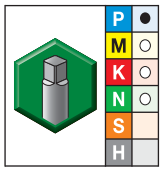
uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
15105	0 - 80	1.63	.31	.141	2	H1
15117	1 - 64	1.69	.38	.141	2	H1
15123	1 - 72	1.69	.38	.141	2	H1
15131	2 - 56	1.75	.44	.141	3	H1
15137	2 - 56	1.75	.44	.141	3	H2
15148	2 - 64	1.75	.44	.141	3	H1
15147	2 - 64	1.75	.44	.141	3	H2
15159	3 - 48	1.81	.50	.141	3	H2
15169	3 - 56	1.81	.50	.141	3	H2
15187	4 - 40	1.88	.56	.141	3	H2
15199	4 - 48	1.88	.56	.141	3	H2
15212	5 - 40	1.94	.63	.141	3	H2
15223	5 - 44	1.94	.63	.141	3	H2
15228	6 - 32	2.00	.69	.141	3	H1
15234	6 - 32	2.00	.69	.141	3	H2
15240	6 - 32	2.00	.69	.141	3	H3
15260	6 - 40	2.00	.69	.141	3	H2
15278	8 - 32	2.13	.75	.168	4	H2
15286	8 - 32	2.13	.75	.168	4	H3
15304	8 - 36	2.13	.75	.168	4	H2
15323	10 - 24	2.38	.88	.194	4	H2
15330	10 - 24	2.38	.88	.194	4	H3
15347	10 - 32	2.38	.88	.194	4	H1
15355	10 - 32	2.38	.88	.194	4	H2
15363	10 - 32	2.38	.88	.194	4	H3
15386	12 - 24	2.38	.94	.220	4	H3
15393	12 - 28	2.38	.94	.220	4	H3

Hand taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.
Tap sets — one of each taper, plug, and bottoming chamfers.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.



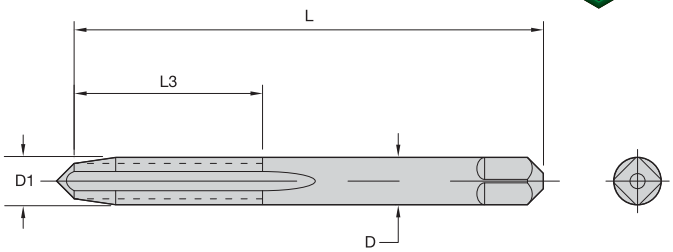
● first choice
○ alternate choice

Series 5303 • Fractional Sizes • Taper, Plug, and Bottoming Chamfer



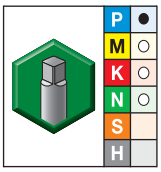
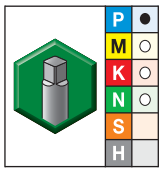
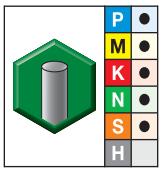
uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
14013	1/4 - 20	2.50	1.00	.255	4	H1
14018	1/4 - 20	2.50	1.00	.255	4	H2
14025	1/4 - 20	2.50	1.00	.255	4	H3
14058	1/4 - 28	2.50	1.00	.255	4	H3
14095	5/16 - 18	2.72	1.13	.318	4	H3
14125	5/16 - 24	2.72	1.13	.318	4	H3
14160	3/8 - 16	2.94	1.25	.381	4	H3
14193	3/8 - 24	2.94	1.25	.381	4	H3
14224	7/16 - 14	3.16	1.44	.323	4	H3
14249	7/16 - 20	3.16	1.44	.323	4	H3
14284	1/2 - 13	3.38	1.66	.367	4	H3
14311	1/2 - 20	3.38	1.66	.367	4	H3
14341	9/16 - 12	3.59	1.66	.429	4	H3
14359	9/16 - 18	3.59	1.66	.429	4	H3
14382	5/8 - 11	3.81	1.81	.480	4	H3
14405	5/8 - 18	3.81	1.81	.480	4	H3
14426	11/16 - 11	4.03	1.06	.542	4	H3
14430	11/16 - 16	4.03	1.06	.542	4	H3
14451	3/4 - 10	4.25	2.00	.590	4	H3
14474	3/4 - 16	4.25	2.00	.590	4	H3
14502	7/8 - 9	4.69	2.22	.697	4	H4
14519	7/8 - 14	4.69	2.22	.697	4	H4
14547	1 - 8	5.13	2.50	.800	4	H4
14560	1 - 12	5.13	2.50	.800	4	H4
14571	1 - 14	5.13	2.50	.800	4	H4
14597	1 1/8 - 7	5.44	2.56	.896	4	H4
14606	1 1/8 - 12	5.44	2.56	.896	4	H4
14615	1 1/4 - 7	5.75	2.56	1.021	4	H4
14623	1 1/4 - 12	5.75	2.56	1.021	6	H4
14635	1 3/8 - 6	6.06	3.00	1.108	4	H4
14643	1 3/8 - 12	6.06	3.00	1.108	6	H4
14648	1 1/2 - 6	6.38	3.00	1.233	4	H4
14656	1 1/2 - 12	6.38	3.00	1.233	6	H4

Hand taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.
Tap sets — one of each taper, plug, and bottoming chamfers.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.

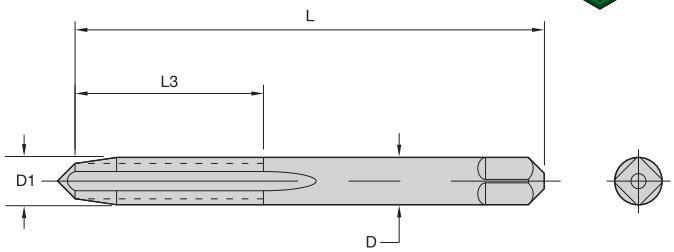


● first choice
○ alternate choice

Series 5353 • Plug Chamfer • Metric ANSI

								
TiCN	TiN	uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
–	–	**14718**	M1,6 X 0,35	1.63	.31	.141	2	D3
–	–	**14726**	M2 X 0,4	1.75	.44	.141	3	D3
–	–	**14734**	M2,5 X 0,45	1.81	.50	.141	3	D3
19217	**15471**	**14742**	M3 X 0,5	1.94	.63	.141	3	D3
–	–	**14750**	M3,5 X 0,6	2.00	.69	.141	3	D4
19219	**15473**	**14758**	M4 X 0,7	2.13	.75	.168	4	D4
–	–	**14766**	M4,5 X 0,75	2.38	.88	.194	4	D4
19222	**19906**	**14774**	M5 X 0,8	2.38	.88	.194	4	D4
19224	–	**14782**	M6 X 1	2.50	1.00	.255	4	D5
–	–	**14790**	M7 X 1	2.72	1.13	.318	4	D5
19225	**19912**	**14798**	M8 X 1,25	2.72	1.13	.318	4	D5
19227	**19915**	**14814**	M10 X 1,5	2.94	1.25	.381	4	D6
19229	**19955**	**14830**	M12 X 1,75	3.38	1.66	.367	4	D6
–	–	**14586**	M14 X 1,25	3.59	1.66	.429	4	H4
–	–	**14846**	M14 X 2	3.59	1.66	.429	4	D7
–	–	**14862**	M16 X 2	3.81	1.81	.480	4	D7
–	–	**14590**	M18 X 1,5	4.03	1.81	.542	4	H4
–	–	**14878**	M18 X 2,5	4.03	1.06	.542	4	D7
–	–	**14894**	M20 X 2,5	4.47	2.00	.652	4	D7
–	–	**14910**	M24 X 3	4.91	2.22	.760	4	D8
–	–	**14926**	M30 X 3,5	5.44	2.56	1.021	4	D9
–	–	**14942**	M36 X 4	6.06	3.00	1.233	4	D9

Metric taps for 6H class of fit are suitable for MJ aerospace internal threading applications.
Metric taps are manufactured to USCTI specifications and dimensions.
Metric tap blank dimensions are equivalent to inch taps.
Refer to table on page A258 for the recommended pitch diameter limit for 6H class of fit.



● first choice
○ alternate choice

■ Series 5353 • Bottoming Chamfer • Metric ANSI

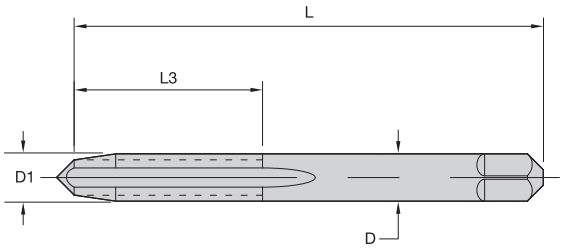
TiCN	TiN	uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
19201	**15472**	**14743**	M3 X 0,5	1.94	.63	.141	3	D3
19203	**15474**	**–**	M4 X 0,7	2.13	.75	.168	4	D4
19205	**19907**	**14775**	M5 X 0,8	2.38	.88	.194	4	D4
19206	**–**	**–**	M6 X 1	2.50	1.00	.255	4	D5
19212	**–**	**–**	M8 X 1,25	2.72	1.13	.318	4	D5
19214	**19916**	**–**	M10 X 1,5	2.94	1.25	.381	4	D6
19215	**–**	**–**	M12 X 1,75	3.38	1.66	.367	4	D6
–	**–**	**14847**	M14 X 2	3.59	1.66	.429	4	D7
–	**–**	**14863**	M16 X 2	3.81	1.81	.480	4	D7
–	**–**	**14895**	M20 X 2,5	4.47	2.00	.652	4	D7
–	**–**	**14911**	M24 X 3	4.91	2.22	.760	4	D8
–	**–**	**14927**	M30 X 3,5	5.44	2.56	1.021	4	D9
–	**–**	**14943**	M36 X 4	6.06	3.00	1.233	4	D9

■ Series 5353 • Sets of One Each, Taper, Plug, Bottoming Chamfer • Metric ANSI

● first choice
○ alternate choice

uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
14744	M3 X 0,5	1.94	.63	.141	3	D3
14760	M4 X 0,7	2.13	.75	.168	4	D4
14777	M5 X 0,8	2.38	.88	.194	4	D4
14784	M6 X 1	2.50	1.00	.255	4	D5
14800	M8 X 1,25	2.72	1.13	.318	4	D5
14816	M10 X 1,5	2.94	1.25	.381	4	D6
14832	M12 X 1,75	3.38	1.66	.367	4	D6
14848	M14 X 2	3.59	1.66	.429	4	D7
14864	M16 X 2	3.81	1.81	.480	4	D7
14896	M20 X 2,5	4.47	2.00	.652	4	D7

Metric taps for 6H class of fit are suitable for MJ aerospace internal threading applications.
Metric taps are manufactured to USCTI specifications and dimensions.
Metric tap blank dimensions are equivalent to inch taps.
Refer to table on page A258 for the recommended pitch diameter limit for 6H class of fit.



Series 5305L/5303L • Fractional Sizes • Taper, Plug, and Bottoming Chamfer and Sets

taper chamfer 7-10 pitch	plug chamfer 3-5 pitch	full bottom 1-2 pitch	taper & plug bottoming set	D1 size	L	L3	D	number of flutes	pitch diameter limit
14026	**14027**	**14028**	**14029**	1/4 - 20	2.50	1.00	.255	4	H3
—	**14060**	**—**	**—**	1/4 - 28	2.50	1.00	.255	4	H3
14096	**14097**	**14098**	**14099**	5/16 - 18	2.72	1.13	.318	4	H3
14126	**14127**	**14128**	**14129**	5/16 - 24	2.72	1.13	.318	4	H3
14161	**14162**	**14163**	**14164**	3/8 - 16	2.94	1.25	.381	4	H3
14194	**14195**	**14196**	**14197**	3/8 - 24	2.94	1.25	.381	4	H3
14225	**14226**	**14227**	**14228**	7/16 - 14	3.16	1.44	.323	4	H3
14250	**14251**	**14252**	**14253**	7/16 - 20	3.16	1.44	.323	4	H3
14285	**14286**	**14287**	**14288**	1/2 - 13	3.38	1.66	.367	4	H3
14312	**14313**	**14314**	**14315**	1/2 - 20	3.38	1.66	.367	4	H3
14342	**14343**	**14344**	**14345**	9/16 - 12	3.59	1.66	.429	4	H3
14360	**14361**	**14362**	**14363**	9/16 - 18	3.59	1.66	.429	4	H3
14383	**14384**	**14385**	**14386**	5/8 - 11	3.81	1.81	.480	4	H3
14406	**14407**	**14408**	**14409**	5/8 - 18	3.81	1.81	.480	4	H3
14452	**14453**	**14454**	**14455**	3/4 - 10	4.25	2.00	.590	4	H3
14475	**14476**	**14477**	**14478**	3/4 - 16	4.25	2.00	.590	4	H3

Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.

WIDIA™ ToolBOSS™ Secure, high-capacity solutions.

Combined with our powerful WIDIA ToolBOSS Management Software, the 28 LEVEL cabinet provides a versatile, high-capacity solution to meet the unpredictable challenges of logistics and supply chain management.

- Cut tooling inventory.
- 24/7 stock availability.
- Unique reconfiguring.
- Decrease tooling spend.
- Reduce administrative costs.
- Accountability.
- Reduced cost per location.

Drawer Options
19 different drawer sizes available.

Compatibility
Fully compatible with existing ToolBOSS units.

Diagnostics
Built-in tray diagnostic port, facilitating improved remote system support, diagnosis, and repair.

Efficiency
Multiple drawers can be selected in one transaction, minimising the time required to manage large stock volumes.

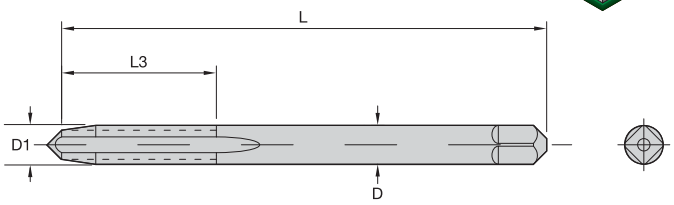
Future-Port
USB interface, as well as a DCS expansion port, for use with RFID and other ancillary equipment.

High-Speed Access
Rapid search and selection of an item is enhanced with LED identification system, guiding users to the correct drawer.

Traceability
Software provides a complete audit trail, tracking component usage details.

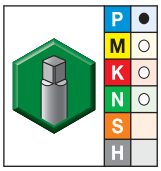
Expandability
Expandable up to 10 units per system, providing up to 1,121 secure locations.

*To learn more about ToolBOSS, contact your local Authorized Distributor or visit **www.widia.com**.*



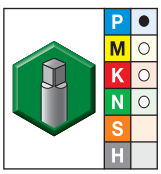
● first choice
○ alternate choice

Series 5305L/5303L • Machine Screw and Fractional • Plug Chamfer



uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
18827	6 - 32	6.00	.69	.141	3	H3
18891	8 - 32	6.00	.75	.168	4	H3
18833	10 - 24	6.00	.88	.194	4	H3
18836	10 - 32	6.00	.88	.194	4	H3
18839	1/4 - 20	6.00	1.00	.255	4	H3
18842	1/4 - 28	6.00	1.00	.255	4	H3
18845	5/16 - 18	6.00	.67	.318	4	H3
18848	5/16 - 24	6.00	.59	.318	4	H3
18851	3/8 - 16	6.00	1.25	.381	4	H3
18854	3/8 - 24	6.00	1.25	.381	4	H3

Series 5305L/3305L/5303L • Machine Screw and Fractional • Bottoming Chamfer



uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
18828	6 - 32	6.00	.69	.141	3	H3
18892	8 - 32	6.00	.75	.168	4	H3
18834	10 - 24	6.00	.88	.194	4	H3
18837	10 - 32	6.00	.88	.194	4	H3
18840	1/4 - 20	6.00	1.00	.255	4	H3
18843	1/4 - 28	6.00	1.00	.255	4	H3
18846	5/16 - 18	6.00	.67	.318	4	H3
18849	5/16 - 24	6.00	.59	.318	4	H3
18852	3/8 - 16	6.00	1.25	.381	4	H3
18855	3/8 - 24	6.00	1.25	.381	4	H3

Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.

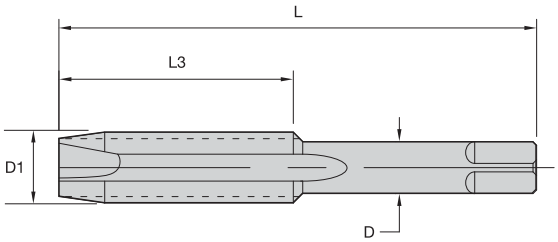
WIDIA-GTD™ GUN™ Taps for Through Holes

Features:

- GUN taps shoot chips ahead of the cutting action.
- Advanced steam oxide finish.
- High-performance TiN, TiN+CrC/C, and TiCN coatings.
- Alternate tap coatings available as stock modifications.

Benefits:

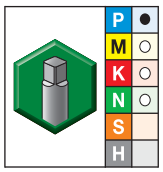
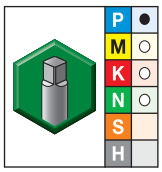
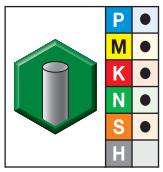
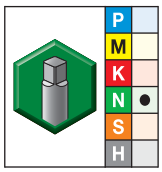
- The most efficient taps for through holes.
- Reduced overloading and clogging in flutes to protect the workpiece.
- Extended life in ferrous materials.
- Higher tapping speeds can be acheived to increase productivity.



NOTE: Series 5301TC • TiCN Coated
Series 2301 • TiN Coated
Series 5301S • SH50 Steam Oxide
Series 5301 • Uncoated

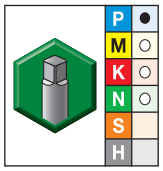
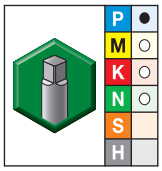
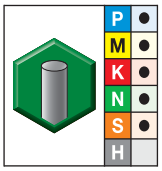
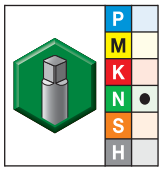
● first choice
○ alternate choice

■ Series 5301/2301 • Machine Screw and Fractional Sizes • Plug Chamfer

									
TiCN	TiN	oxide	uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
19440	19370	–	13201	0 - 80	1.63	.31	.141	2	H1
19011	19001	13111	13202	0 - 80	1.63	.31	.141	2	H2
19441	19371	–	13203	1 - 64	1.69	.38	.141	2	H1
19442	–	–	13204	1 - 64	1.69	.38	.141	2	H2
19444	19372	–	13205	1 - 72	1.69	.38	.141	2	H1
19446	–	13115	13206	1 - 72	1.69	.38	.141	2	H2
19448	19374	–	13207	2 - 56	1.75	.44	.141	2	H1
19012	19006	13117	13208	2 - 56	1.75	.44	.141	2	H2
19449	–	–	13211	2 - 64	1.75	.44	.141	2	H2
19452	19007	13119	13213	3 - 48	1.81	.50	.141	2	H2
19454	19376	–	13214	3 - 56	1.81	.50	.141	2	H1
19459	–	13121	13215	3 - 56	1.81	.50	.141	2	H2
	19379	13126	13217	4 - 36	1.88	.56	.141	2	H2
19461	19378	–	13218	4 - 40	1.88	.56	.141	2	H1
19013	19016	13123	13219	4 - 40	1.88	.56	.141	2	H2
19462	–	–	13223	4 - 48	1.88	.56	.141	2	H2
19463	19381		13224	5 - 40	1.94	.63	.141	2	H1
19014	19021	13128	13225	5 - 40	1.94	.63	.141	2	H2
19464	–	–	13229	5 - 44	1.94	.63	.141	2	H2
19466	–	–	13230	6 - 32	2.00	.69	.141	2	H1
19467	19031	13131	13231	6 - 32	2.00	.69	.141	2	H2
	19036	13132	13232	6 - 32	2.00	.69	.141	2	H3
19468	–	–	13235	6 - 32	2.00	.69	.141	2	H7
19037	19038	13134	13237	6 - 40	2.00	.69	.141	2	H2
19469	19780	–	13240	8 - 32	2.13	.75	.168	2	H1
19471	19039	13136	13241	8 - 32	2.13	.75	.168	2	H2
	19046	13137	13242	8 - 32	2.13	.75	.168	2	H3
19472	19781	–	13244	8 - 32	2.13	.75	.168	2	H7
19473	–	13139	13246	8 - 36	2.13	.75	.168	2	H2
19474	–	–	13249	10 - 24	2.38	.88	.194	2	H1
19476	–	13141	13250	10 - 24	2.38	.88	.194	2	H2
19015	19056	13142	13251	10 - 24	2.38	.88	.194	2	H3

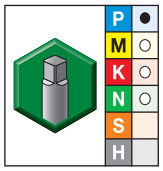
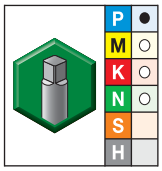
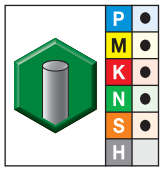
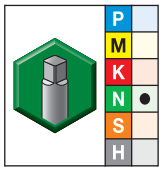
(continued)

(Series 5301/2301 • Machine Screw and Fractional Sizes • Plug Chamfer continued)

									
TiCN	TiN	oxide	uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
19477	–	–	13252	10 - 24	2.38	.88	.194	2	H7
19478	–	–	13255	10 - 32	2.38	.88	.194	2	H1
19479	19069	13145	13256	10 - 32	2.38	.88	.194	2	H2
–	19071	13146	13257	10 - 32	2.38	.88	.194	2	H3
19481	–	–	13260	10 - 32	2.38	.88	.194	2	H7
19017	19076	13148	13262	12 - 24	2.38	.94	.220	2	H3
19482	–	13149	13264	12 - 28	2.38	.94	.220	2	H3
19484	–	–	13268	1/4 - 20	2.50	1.00	.255	2	H1
19483	–	–	–	1/4 - 20	2.50	1.00	.255	2	H1
–	19079	13151	13269	1/4 - 20	2.50	1.00	.255	2	H2
19485	19086	13152	13270	1/4 - 20	2.50	1.00	.255	2	H3
19486	19096	–	13273	1/4 - 20	2.50	1.00	.255	2	H5
–	19088	13154	13272	1/4 - 20	2.50	1.00	.255	3	H3
19487	19382	–	13274	1/4 - 20	2.50	1.00	.255	3	H5
19488	19383	–	13277	1/4 - 28	2.50	1.00	.255	2	H1
19489	–	13157	13278	1/4 - 28	2.50	1.00	.255	2	H2
19492	19101	13158	13280	1/4 - 28	2.50	1.00	.255	2	H3
–	–	–	13282	1/4 - 28	2.50	1.00	.255	2	H4
19018	–	–	–	1/4 - 28	2.50	1.00	.255	3	H2
19490	–	–	13279	1/4 - 28	2.50	1.00	.255	3	H2
19494	–	–	13283	1/4 - 28	2.50	1.00	.255	3	H4
19496	–	–	13289	5/16 - 18	2.72	1.13	.318	2	H1
19497	–	–	–	5/16 - 18	2.72	1.13	.318	2	H1
–	19102	–	13290	5/16 - 18	2.72	1.13	.318	2	H2
19498	19106	13164	13291	5/16 - 18	2.72	1.13	.318	2	H3
19499	–	–	13294	5/16 - 18	2.72	1.13	.318	2	H5
–	19103	–	–	5/16 - 18	2.72	1.13	.318	3	H2
19019	19384	13166	13293	5/16 - 18	2.72	1.13	.318	3	H3
19501	–	–	13295	5/16 - 18	2.72	1.13	.318	3	H5
19502	19385	–	13297	5/16 - 24	2.72	1.13	.318	2	H1

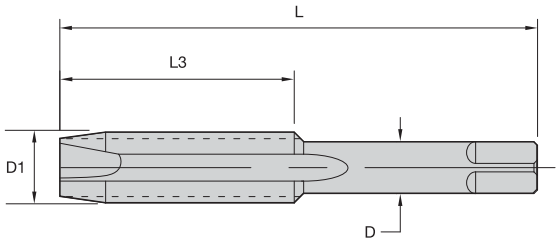
(continued)

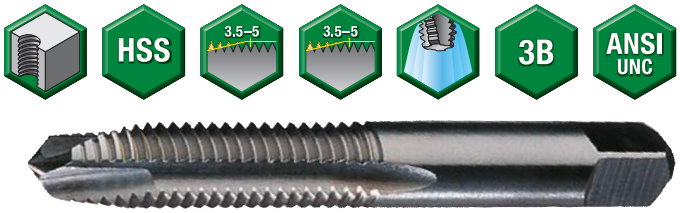
(Series 5301/2301 • Machine Screw and Fractional Sizes • Plug Chamfer continued)

 TiCN	 TiN	 oxide	 uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
–	–	13169	13298	5/16 - 24	2.72	1.13	.318	2	H2
19504	19108	13170	13300	5/16 - 24	2.72	1.13	.318	2	H3
19505	19386	–	13302	5/16 - 24	2.72	1.13	.318	2	H4
19020	19387	–	13303	5/16 - 24	2.72	1.13	.318	3	H4
19507	19388	–	13305	3/8 - 16	2.94	1.25	.381	3	H1
19508	–	–	13306	3/8 - 16	2.94	1.25	.381	3	H2
19022	19111	13176	13307	3/8 - 16	2.94	1.25	.381	3	H3
19509	–	–	13309	3/8 - 16	2.94	1.25	.381	3	H5
19510	19389	–	13311	3/8 - 24	2.94	1.25	.381	3	H1
19512	–	–	13312	3/8 - 24	2.94	1.25	.381	3	H2
19023	19112	13180	13313	3/8 - 24	2.94	1.25	.381	3	H3
19513	–	–	13315	3/8 - 24	2.94	1.25	.381	3	H4
19515	19391		13318	7/16 - 14	3.16	1.44	.323	3	H2
19024	19113	13183	13319	7/16 - 14	3.16	1.44	.323	3	H3
19516	–	–	13320	7/16 - 14	3.16	1.44	.323	3	H5
19025	19114	13185	13324	7/16 - 20	3.16	1.44	.323	3	H3
19517	–	–	13325	7/16 - 20	3.16	1.44	.323	3	H5
19519	–	–	13327	1/2 - 13	3.38	1.66	.367	3	H2
19026	19116	13189	13328	1/2 - 13	3.38	1.66	.367	3	H3
19520	–	–	13330	1/2 - 13	3.38	1.66	.367	3	H5
19521	19392	–	13332	1/2 - 20	3.38	1.66	.367	3	H1
19524	19393	–	13333	1/2 - 20	3.38	1.66	.367	3	H2
19027	19117	13193	13334	1/2 - 20	3.38	1.66	.367	3	H3
19525	–	–	13336	1/2 - 20	3.38	1.66	.367	3	H5
19028	19118	13195	13339	5/8 - 11	3.81	1.81	.480	3	H3
19526	19394	–	13340	5/8 - 11	3.81	1.81	.480	3	H5
19529		13199	13342	5/8 - 18	3.81	1.81	.480	3	H3
19029	19119	13197	13343	3/4 - 10	4.25	2.00	.590	3	H3
–	–	–	13344	3/4 - 10	4.25	2.00	.590	3	H5

GUN taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.

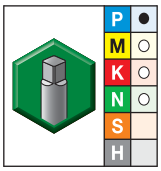
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.





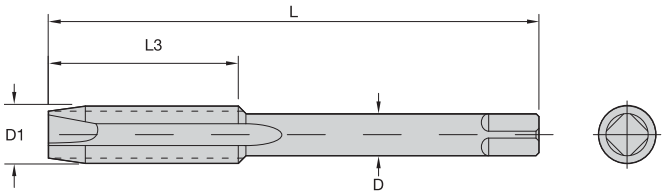
● first choice
○ alternate choice

Series 5301F • Fractional Sizes • Spiral Point, Plug Chamfer



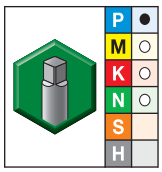
uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
13275	1/4 - 20	2.50	1.00	.255	2	H11
13296	5/16 - 18	2.72	1.13	.318	2	H11
13331	1/2 - 13	3.38	1.66	.367	3	H11
13310	3/8 - 16	2.94	1.25	.381	3	H11
13341	5/8 - 11	3.81	1.81	.480	3	H11

Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.



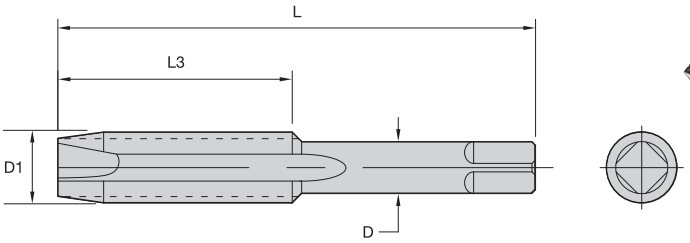
● first choice
○ alternate choice

Series 5301 • Fractional Sizes • Spiral Point, Plug Chamfer



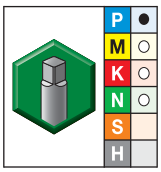
Uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
18930	6 - 32	6.00	.69	.141	2	H3
18932	8 - 32	6.00	.75	.168	2	H3
18934	10 - 24	6.00	.88	.194	2	H3
18935	10 - 32	6.00	.88	.194	2	H3
18936	1/4 - 20	6.00	1.00	.255	2	H3
18937	1/4 - 28	6.00	1.00	.255	2	H3
18938	5/16 - 18	6.00	1.13	.318	2	H3
18939	5/16 - 24	6.00	1.13	.318	2	H3
18940	3/8 - 16	6.00	1.25	.381	3	H3
18941	3/8 - 24	6.00	1.25	.381	3	H3

Also available in Hand Tap Series 5305, 5303.
GUN taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.



● first choice
○ alternate choice

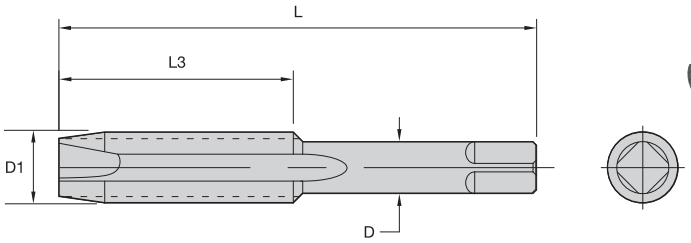
■ Series 5601 • Machine Screw and Fractional • Spiral Point, Plug Chamfer



oxide/nitride	D1 size	L	L3	D	number of flutes	pitch diameter limit
16802	6 - 32	2.00	.69	.141	3	H3
16805	8 - 32	2.13	.75	.168	3	H3
16807	10 - 24	2.38	.88	.194	3	H3
16809	10 - 32	2.38	.88	.194	3	H3
16810	1/4 - 20	2.50	1.00	.255	3	H3
16812	1/4 - 28	2.50	1.00	.255	3	H3
16814	5/16 - 18	2.72	1.13	.318	3	H3
16818	3/8 - 16	2.94	1.25	.381	3	H3
16820	3/8 - 24	2.94	1.25	.381	3	H3
16826	1/2 - 13	3.38	1.66	.367	3	H3
16830	5/8 - 11	3.81	1.81	.480	3	H3
16832	3/4 - 10	4.25	2.00	.590	3	H3

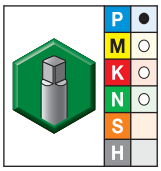
GUN taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.

Refer to table on pages A257–A258 for the recomended pitch diameter limit for 2B or 3B class of fit.



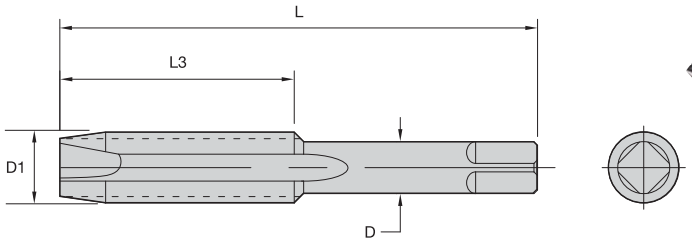
● first choice
○ alternate choice

Series 5302 • Machine Screw and Fractional • Spiral Point, Bottoming Chamfer



uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
13602	0 - 80	1.63	.31	.141	2	H2
13606	2 - 56	1.75	.44	.141	2	H2
13609	3 - 48	1.81	.50	.141	2	H2
13614	4 - 40	1.88	.56	.141	2	H2
13617	5 - 40	1.94	.63	.141	2	H2
13619	6 - 32	2.00	.69	.141	2	H2
13620	6 - 32	2.00	.69	.141	2	H3
13623	6 - 40	2.00	.69	.141	2	H2
13625	8 - 32	2.13	.75	.168	2	H2
13626	8 - 32	2.13	.75	.168	2	H3
13629	10 - 24	2.38	.88	.194	2	H2
13630	10 - 24	2.38	.88	.194	2	H3
13633	10 - 32	2.38	.88	.194	2	H2
13634	10 - 32	2.38	.88	.194	2	H3
13636	12 - 24	2.38	.94	.220	2	H3
13638	1/4 - 20	2.50	1.00	.255	2	H3
13639	1/4 - 28	2.50	1.00	.255	2	H3
13641	5/16 - 18	2.72	1.13	.318	2	H3
13642	5/16 - 24	2.72	1.13	.318	2	H3

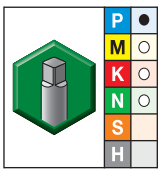
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.

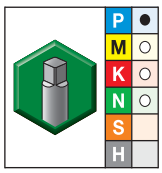


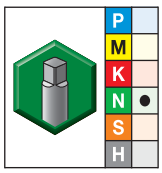
NOTE: Series 5351TC • TiCN Coated
Series 2351 • TiN Coated
Series 5351 • Uncoated

● first choice
○ alternate choice

■ Series 5351/2351 • Spiral Point, Plug Chamfer • Metric ANSI

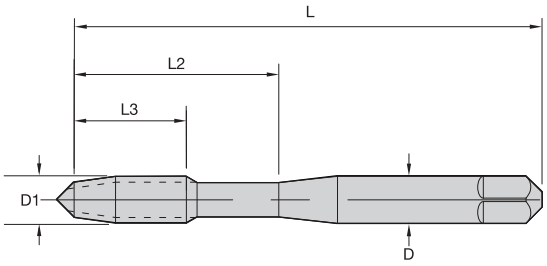






TiCN	TiN	uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
–	–	**13367**	M2 X 0,4	1.75	.44	.141	2	D3
–	–	**13369**	M2,5 X 0,45	1.81	.50	.141	2	D3
19002	**19920**	**13371**	M3 X 0,5	1.94	.63	.141	2	D3
–	–	**13373**	M3,5 X 0,6	2.00	.69	.141	2	D4
–	**19921**	**13375**	M4 X 0,7	2.13	.75	.168	2	D4
–	–	**13377**	M4,5 X 0,75	2.38	.88	.194	2	D4
19004	**19922**	**13379**	M5 X 0,8	2.38	.88	.194	2	D4
–	–	**13381**	M6 X 1	2.50	1.00	.255	2	D5
–	–	**13382**	M6,3 X 1	2.50	1.00	.255	2	D5
–	–	**13383**	M7 X 1	2.72	1.13	.318	2	D5
19008	–	**13385**	M8 X 1,25	2.72	1.13	.318	2	D5
19009	**19925**	**13389**	M10 X 1,5	2.94	1.25	.381	3	D6
19010	**19926**	–	M12 X 1,75	3.38	1.66	.367	3	D6
–	–	**13405**	M18 X 2,5	4.03	1.81	.542	3	D7

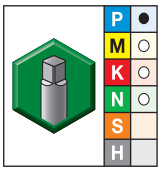
Metric taps for 6H class of fit are suitable for MJ aerospace internal threading applications.
Metric taps are manufactured to USCTI specifications and dimensions.
Metric tap blank dimensions are equivalent to inch taps.
Metric D limits suitable for ISO 6H tolerance class.
Refer to table on page A258 for the recommended pitch diameter limit for 6H class of fit.

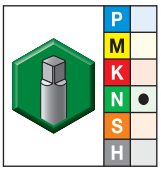


NOTE: Series 2500TiN • TiN Coated
Series 5500 • Uncoated

● first choice
○ alternate choice

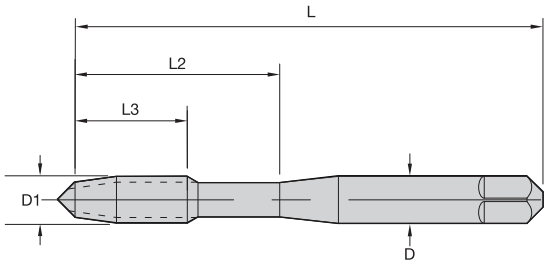
Series 2500/5500 • Machine Screw and Fractional • Plug Entry Taper





TiN	uncoated	D1 size	L	L3	L2	D	number of lube grooves	pitch diameter limit
19821	17000	4 - 40	1.88	.31	.56	.141	—	H3
—	17001	4 - 40	1.88	.31	.56	.141	—	H5
—	17002	4 - 48	1.88	.56	.56	.141	—	H3
—	17004	5 - 40	1.94	.31	.63	.141	4	H3
19822	17008	6 - 32	2.00	.38	.69	.141	4	H3
19823	17009	6 - 32	2.00	.38	.69	.141	4	H5
—	17011	6 - 40	2.00	.38	.69	.141	4	H3
—	17012	6 - 40	2.00	.38	.69	.141	4	H5
19824	17013	8 - 32	2.13	.38	.75	.168	4	H3
19826	17014	8 - 32	2.13	.38	.75	.168	4	H5
19827	17018	10 - 24	2.38	.50	.88	.194	4	H4
—	17019	10 - 24	2.38	.50	.88	.194	4	H6
19828	17020	10 - 32	2.38	.50	.88	.194	4	H4
—	17021	10 - 32	2.38	.50	.88	.194	4	H6
—	17023	12 - 24	2.38	.50	.94	.220	4	H4
—	17024	12 - 24	2.38	.50	.94	.220	4	H6
19841	17027	1/4 - 20	2.50	.63	1.00	.255	4	H4
—	17028	1/4 - 20	2.50	.63	1.00	.255	4	H6
19842	17030	1/4 - 28	2.50	.63	1.00	.255	4	H4
—	17031	1/4 - 28	2.50	.63	1.00	.255	4	H6
19846	—	5/16 - 18	2.72	.69	1.13	.318	4	H5
—	17034	5/16 - 18	2.72	.69	1.13	.318	4	H7
—	17037	5/16 - 24	2.72	.69	1.13	.318	4	H7
—	17033	5/16 - 18	2.72	.69	1.13	.318	4	H5
—	17036	5/16 - 24	2.72	.69	1.13	.318	4	H5
19847	17039	3/8 - 16	2.94	.75	1.25	.381	4	H5
—	17040	3/8 - 16	2.94	.75	1.25	.381	4	H7
—	17042	3/8 - 24	2.94	.75	—	.323	4	H8
—	17046	7/16 - 14	3.17	.88	—	.323	4	H8
—	17049	1/2 - 13	3.38	.94	—	.367	4	H5
—	17050	1/2 - 13	3.38	.94	—	.367	4	H8
—	17051	1/2 - 20	3.38	.94	—	.367	4	H5
—	17053	5/8 - 11	3.81	1.09	—	.480	4	H7
—	17055	5/8 - 18	3.81	1.09	—	.480	4	H7
—	17057	3/4 - 10	4.25	1.22	—	.590	4	H7
—	17059	3/4 - 16	4.25	1.22	—	.590	4	H7

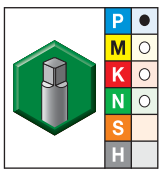
Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.

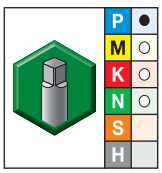


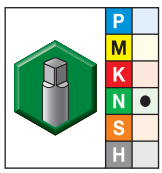
NOTE: Series 2502TiN • TiN Coated
Series 5502 • Uncoated
Series 5502TC • TiCN Coated

● first choice
○ alternate choice

Series 2502/5502 • Machine Screw and Fractional • Bottoming Chamfer



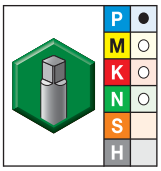
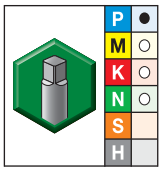
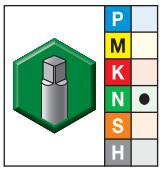




TiCN	TiN	uncoated	D1 size	L	L3	L2	D	number of lube grooves	pitch diameter limit
19500	19816	17200	0 - 80	1.63	.31	—	.141	—	H2
—	—	17201	0 - 80	1.63	.31	—	.141	—	H3
—	—	17202	1 - 64	1.69	.38	—	.141	—	H2
—	—	17204	1 - 72	1.69	.38	—	.141	—	H2
—	—	17205	1 - 72	1.69	.38	—	.141	—	H3
19506	19817	17206	2 - 56	1.75	.44	—	.141	—	H2
—	—	17207	2 - 56	1.75	.44	—	.141	—	H3
—	—	17208	2 - 64	1.75	.44	—	.141	—	H2
—	—	17209	2 - 64	1.75	.44	—	.141	—	H3
—	—	17210	3 - 48	1.81	.50	—	.141	—	H2
19511	19818	17211	3 - 48	1.81	.50	—	.141	—	H3
—	—	17213	3- 48	1.81	.50	—	.141	—	H3
19514	19849	17214	4 - 40	1.88	.31	.56	.141	—	H3
—	—	17215	4 - 40	1.88	.31	.56	.141	—	H5
—	—	17216	4 - 48	1.88	.31	.56	.141	—	H3
—	—	17217	4 - 48	1.88	.31	.56	.141	—	H5
19518	19851	17218	5 - 40	1.94	.31	.63	.141	4	H3
—	—	17219	5 - 40	1.94	.31	.63	.141	4	H5
19522	19852	17222	6 - 32	2.00	.38	.69	.141	4	H3
19523	19856	17223	6 - 32	2.00	.38	.69	.141	4	H5
—	—	17225	6 - 40	2.00	.38	.69	.141	4	H3
—	—	17226	6 - 40	2.00	.38	.69	.141	4	H5
19527	19857	17227	8 - 32	2.13	.38	.75	.168	4	H3
19528	19861	17228	8 - 32	2.13	.38	.75	.168	4	H5
—	—	17230	8 - 36	2.13	.38	.75	.168	4	H3
—	—	17231	8 - 36	2.13	.38	.75	.168	4	H5
19532	19862	17232	10 - 24	2.38	.50	.88	.194	4	H4
—	—	17233	10 - 24	2.38	.50	.88	.194	4	H6
19535	19866	17235	10 - 32	2.38	.50	.88	.194	4	H4
—	—	17236	10 - 32	2.38	.50	.88	.194	4	H6
—	—	17238	12 - 24	2.38	.50	.94	.220	4	H4
—	—	17239	12 - 24	2.38	.50	.94	.220	4	H6
19542	19869	17242	1/4 - 20	2.50	.63	1.00	.255	4	H4
—	—	17243	1/4 - 20	2.50	.63	1.00	.255	4	H6
19545	19871	17245	1/4 - 28	2.50	.63	1.00	.255	4	H4
—	—	17246	1/4 - 28	2.50	.63	1.00	.255	4	H6

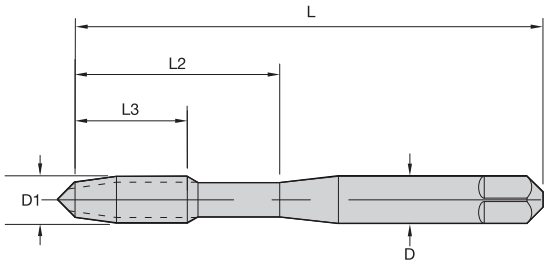
(continued)

(Series 2502/5502 • Machine Screw and Fractional • Bottoming Chamfer continued)

									
TiCN	TiN	uncoated	D1 size	L	L3	L2	D	number of lube grooves	pitch diameter limit
–	19872	–	5/16 - 18	2.72	.69	1.13	.318	4	H5
19549	19848	17251	5/16 - 24	2.72	.69	1.13	.318	4	H5
–	–	17252	5/16 - 24	2.72	.69	1.13	.318	4	H7
19548	–	17248	5/16 - 18	2.72	.69	1.13	.318	4	H5
–	–	17249	5/16 - 18	2.72	.69	1.13	.318	4	H7
19554	19873	17254	3/8 - 16	2.94	.75	1.25	.381	4	H5
–	–	17255	3/8 - 16	2.94	.75	1.25	.381	4	H7
19555	19874	17257	3/8 - 24	2.94	.75	1.25	.381	4	H5
–	–	17258	3/8 - 24	2.94	.75	1.25	.381	4	H7
19556	19875	17264	1/2 - 13	3.38	.94	—	.367	4	H5
–	–	17265	1/2 - 13	3.38	.94	—	.367	4	H8
–	–	17266	1/2 - 20	3.38	.94	—	.367	4	H5
–	–	17280	5/8 - 11	3.81	1.09	—	.480	4	H7
–	–	17282	5/8 - 18	3.81	1.09	—	.480	4	H7
–	–	17284	3/4 - 10	4.25	1.22	—	.590	4	H7
–	–	17286	3/4 - 16	4.25	1.22	—	.590	4	H7

Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps.

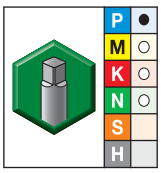
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.

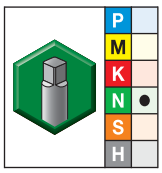


NOTE: Series 2510 • TiN Coated
Series 5510 • Uncoated

● first choice
○ alternate choice

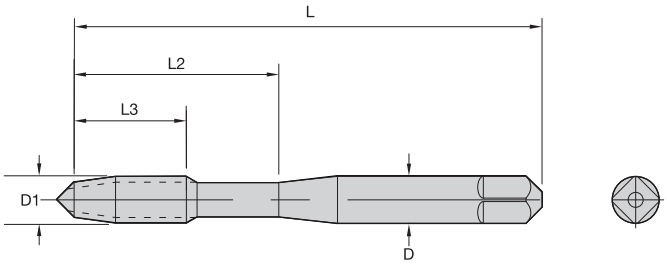
■ Series 2510/5510 • Plug Entry Taper • Metric ANSI





TiN	Uncoated	D1 size	L	L3	L2	D	number of lube grooves	pitch diameter limit
19941	**17082**	M3 X 0,5	1.94	.31	.63	.14	4	D5
–	**17084**	M4 X 0,7	2.13	.38	.75	.17	4	D6
19943	**–**	M5 X 0,8	2.38	.50	.88	.19	4	D7
–	**17087**	M6 X 1	2.50	.63	1.00	.26	4	D8
–	**17090**	M8 X 1,25	2.72	.69	1.13	.32	4	D9
–	**17091**	M10 X 1,5	2.94	.75	1.25	.38	4	D10

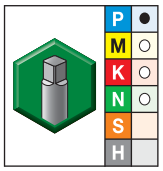
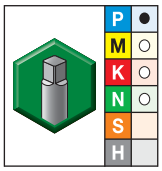
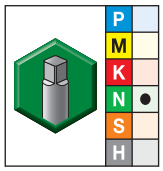
Metric taps are manufactured to USCTI specifications and dimensions.
Metric tap blank dimensions are equivalent to inch taps.
Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps.
Refer to table on page A258 for the recommended pitch diameter limit for 6H class of fit.



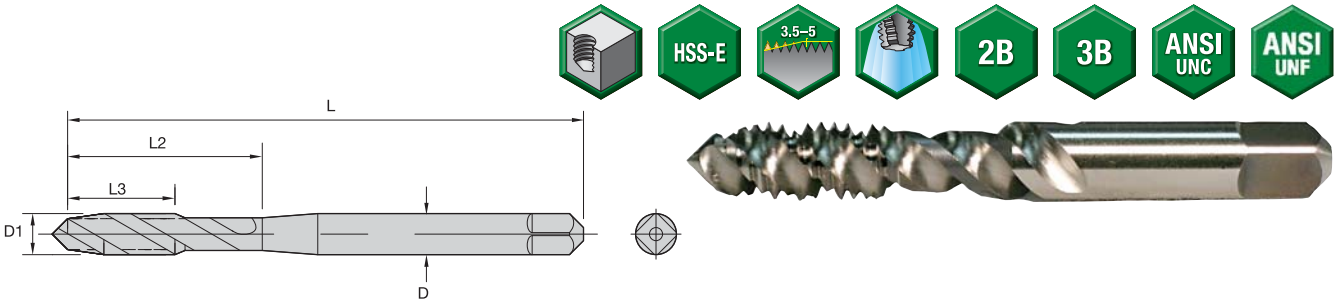
NOTE: Series 2512 • TiN Coated
Series 5512TC • TiCN Coated
Series 5512 • Uncoated

● first choice
○ alternate choice

■ Series 2512/5512 • Bottom Entry Taper • Metric ANSI

									
TiCN	**TiN**	**uncoated**	**D1 size**	**L**	**L3**	**L2**	**D**	**number of lube grooves**	**pitch diameter limit**
19567	**19948**	**17267**	M3 X 0,5	1.94	.31	.63	.141	4	D5
19569	**19949**	**17269**	M4 X 0,7	2.13	.38	.75	.168	4	D6
19571	**19950**	**17271**	M5 X 0,8	2.38	.50	.88	.194	4	D7
19572	**19951**	**17272**	M6 X 1	2.50	.63	1.00	.255	4	D8
19574	**19952**	**17275**	M8 X 1,25	2.72	.69	1.13	.318	4	D9
19576	**19953**	**17276**	M10 X 1,5	2.94	.75	1.25	.381	4	D10
—	**19954**	**17277**	M12 X 1,75	3.38	.94	—	.367	4	D11

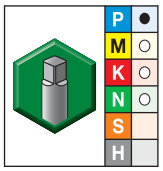
Metric taps are manufactured to USCTI specifications and dimensions.
Metric tap blank dimensions are equivalent to inch taps.
Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps.
Refer to table on page A258 for the recommended pitch diameter limit for 6H class of fit.

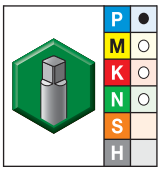


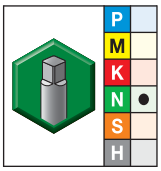
NOTE: Series 5314TC • TiCN Coated
Series 2314 • TiN Coated
Series 5314 • Uncoated

● first choice
○ alternate choice

■ Series 2314/5314 • Machine Screw and Fractional • Plug Chamfer

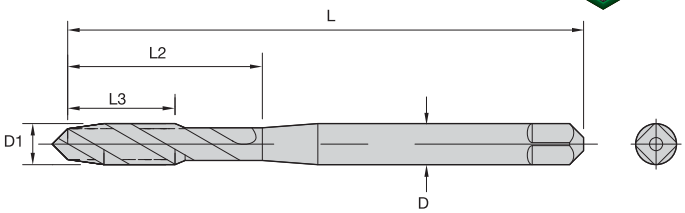






TiCN	TiN	uncoated	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
19144	19619	16003	4 - 40	1.88	.56	—	.141	2	H2
—	—	16005	5 - 40	1.94	.63	—	.141	2	H2
19146	19622	16007	6 - 32	2.00	.38	.69	.141	2	H3
19148	19626	16009	8 - 32	2.13	.38	.75	.168	3	H3
19151	19628	16011	10 - 24	2.38	.50	.88	.194	3	H3
19153	19624	16013	10 - 32	2.38	.50	.88	.194	3	H3
—	—	16015	12 - 24	2.38	.50	.94	.220	3	H3
19155	19632	16017	1/4 - 20	2.50	.63	1.00	.255	3	H3
19157	19634	16021	1/4 - 28	2.50	.63	1.00	.255	3	H3
19160	19636	16023	5/16 - 18	2.72	.69	1.12	.318	3	H3
19162	19638	16027	5/16 - 24	2.72	.69	1.12	.318	3	H3
19164	19641	16029	3/8 - 16	2.94	.75	1.25	.381	3	H3
19166	19643	16033	3/8 - 24	2.94	.75	1.25	.381	3	H3
19169	19646	16035	7/16 - 14	3.16	.88	—	.323	3	H3
—	—	16037	7/16 - 20	3.16	.88	—	.323	3	H3
19172	19648	16039	1/2 - 13	3.38	.94	—	.367	3	H3
—	—	16041	1/2 - 20	3.38	.94	—	.367	3	H3
—	—	16047	5/8 - 11	3.81	1.09	—	.480	4	H3
—	—	16051	3/4 - 10	4.25	1.22	—	.590	4	H3

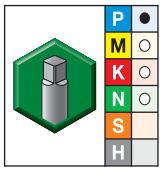
EM taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.

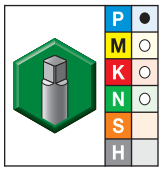


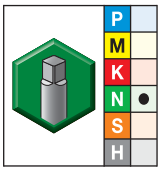
NOTE: Series 5314TC • TiCN Coated
Series 2314 • TiN Coated
Series 5314 • Uncoated

● first choice
○ alternate choice

■ Series 2314/5314 • Machine Screw and Fractional • Bottoming Chamfer

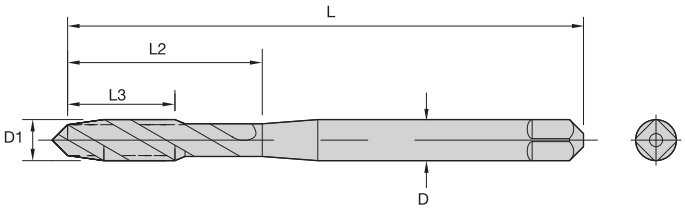






TiCN	TiN	uncoated	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
19145	19621	16004	4 - 40	1.88	.56	—	.141	2	H2
—	—	16006	5 - 40	1.94	.56	—	.141	2	H2
19147	19623	16008	6 - 32	2.00	.38	.69	.141	2	H3
19149	19627	16010	8 - 32	2.13	.38	.75	.168	3	H3
19152	19629	16012	10 - 24	2.38	.50	.88	.194	3	H3
19154	19631	16014	10 - 32	2.38	.50	.88	.194	3	H3
—	—	16016	12 - 24	2.38	.50	.94	.220	3	H3
19156	19633	16018	1/4 - 20	2.50	.63	1.00	.255	3	H3
19158	19651	16022	1/4 - 28	2.50	.63	1.00	.255	3	H3
19161	19637	16024	5/16 - 18	2.72	.69	1.12	.318	3	H3
19163	19639	16028	5/16 - 24	2.72	.69	1.12	.318	3	H3
19165	19642	16030	3/8 - 16	2.94	.75	1.25	.381	3	H3
—	19644	16034	3/8 - 24	2.94	.75	1.25	.381	3	H3
19168	—	—	3/8 - 24	2.94	.75	1.25	.381	3	H3
19171	19647	16036	7/16 - 14	3.16	.88	—	.323	3	H3
—	—	16038	7/16 - 20	3.16	.88	—	.323	3	H3
19173	19649	16040	1/2 - 13	3.38	.94	—	.367	3	H3
—	—	16042	1/2 - 20	3.38	.94	—	.367	3	H3
—	—	16048	5/8 - 11	3.81	1.09	—	.480	4	H3
—	—	16052	3/4 - 10	4.25	1.22	—	.590	4	H3

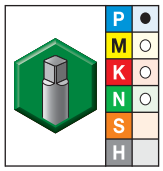
EM taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.
Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.

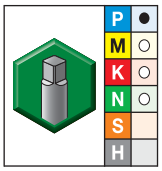


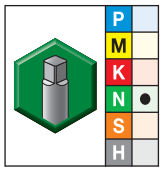
NOTE: Series 5364TC • TiCN Coated
Series 2364 • TiN Coated
Series 5364 • Uncoated

● first choice
○ alternate choice

Series 2364/5364 • Plug Chamfer • Metric ANSI

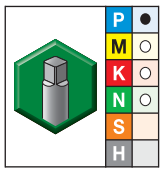


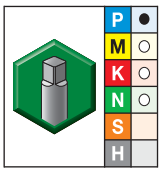


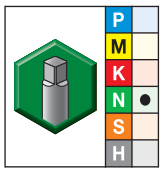


TiCN	TiN	uncoated	D1 size	L	L2	L3	D	number of flutes	pitch diameter limit
	19927	16053	M3 X 0,5	1.94	—	.31	.141	2	D3
19047	—	—	M4 X 0,7	2.13	—	.38	.168	3	D4
—	19929	16057	M4 X 0,7	2.13	.75	.38	.168	3	D4
19049	—	—	M5 X 0,8	2.38	—	.50	.194	3	D4
—	—	16061	M5 X 0,8	2.38	.88	.50	.194	3	D4
—	19933	16063	M6 X 1	2.50	1.00	.63	.255	3	D5
—	—	16069	M8 X 1,25	2.72	1.12	.69	.318	3	D5
—	19935	19054	M8 X 1,25	2.72	1.12	.69	.318	3	D5
—	19937	16071	M10 X 1,5	2.94	1.25	.75	.381	3	D6
19061	—	—	M12 X 1,75	3.38	—	.94	.367	3	D6
—	19939	16073	M12 X 1,75	3.38	—	.94	.367	3	D6

Series 2364/5364 • Bottoming Chamfer • Metric ANSI

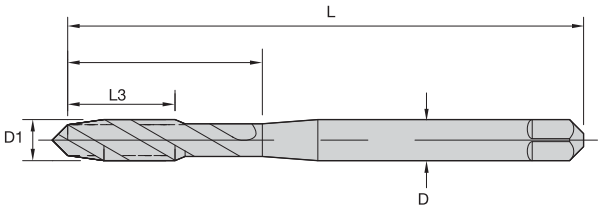


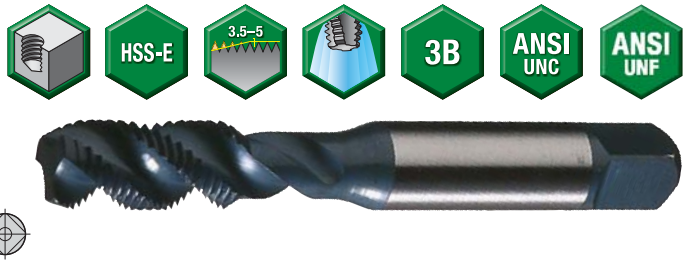




TiCN	TiN	uncoated	D1 size	L	L2	L3	D	number of flutes	pitch diameter limit
19044	—	—	M3 X 0,5	1.94	—	.31	.141	2	D3
19045	—	19928	M3 X 0,5	1.94	—	.31	.141	2	D3
—	—	16054	M3 X 0,5	1.94	—	.31	.141	2	D3
—	19930	16058	M4 X 0,7	2.13	.75	.38	.168	3	D4
—	—	19048	M4 X 0,7	2.13	.75	.38	.168	3	D4
19051	19932	16062	M5 X 0,8	2.38	.88	.50	.194	3	D4
—	—	16064	M6 X 1	2.50	.75	.38	.255	3	D5
19052	—	—	M6 X 1	2.50	—	.38	.255	3	D5
—	19934	19053	M6 X 1	2.50	.75	.38	.255	3	D5
19057	19936	16070	M8 X 1,25	2.72	1.12	.69	.318	3	D5
19058	—	—	M10 X 1,5	2.94	—	.75	.381	3	D6
19059	19938	16072	M10 X 1,5	2.94	1.25	.75	.381	3	D6
19062	—	16074	M12 X 1,75	3.38	—	.94	.367	3	D6

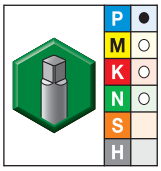
Metric D limits are suitable for ISO 6H tolerance class.
Metric taps are manufactured to USCTI specifications and dimensions.
Metric tap blank dimensions are equivalent to inch taps.
Refer to table on page A258 for the recommended pitch diameter limit for 6H class of fit.



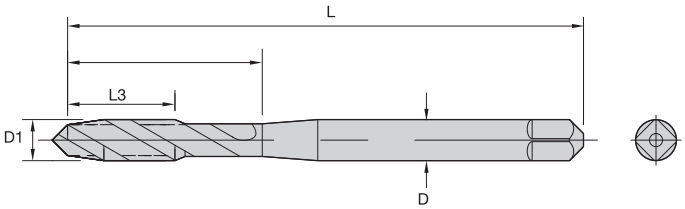


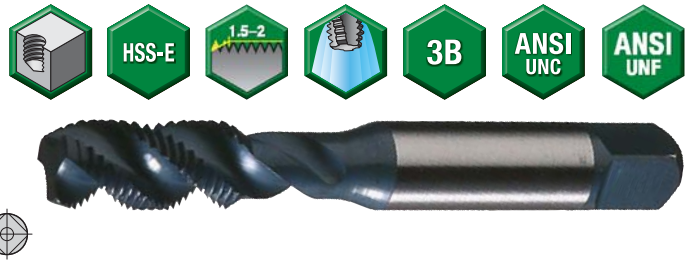
● first choice
○ alternate choice

Series 5344 • Machine Screw and Fractional • Plug Chamfer



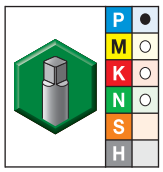
oxide	D1 size	L	L3	D	number of flutes	pitch diameter limit
16501	6 - 32	2.00	.38	.141	3	H3
16503	8 - 32	2.13	.38	.168	3	H3
16505	10 - 24	2.38	.50	.194	3	H3
16507	10 - 32	2.38	.50	.194	3	H3
16509	1/4 - 20	2.50	.63	.255	3	H3
16511	1/4 - 28	2.50	.63	.255	3	H3
16513	5/16 - 18	2.72	.69	.318	3	H3
16515	5/16 - 24	2.72	.69	.318	3	H3
16517	3/8 - 16	2.94	.75	.381	3	H3
16519	3/8 - 24	2.94	.75	.381	3	H3
16521	7/16 - 14	3.17	1.44	—	3	H3
16523	7/16 - 20	3.17	1.44	—	3	H3
16527	1/2 - 20	3.38	1.66	—	3	H3
16525	1/2 - 13	3.38	.94	.367	3	H3
16533	5/8 - 11	3.81	1.09	.480	4	H3
16537	3/4 - 10	4.25	1.22	.590	4	H3





● first choice
○ alternate choice

Series 5344 • Machine Screw and Fractional • Bottoming Chamfer



oxide	D1 size	L	L3	D	number of flutes	pitch diameter limit
16502	6 - 32	2.00	.38	.141	3	H3
16504	8 - 32	2.13	.38	.168	3	H3
16506	10 - 24	2.38	.50	.194	3	H3
16508	10 - 32	2.38	.50	.194	3	H3
16510	1/4 - 20	2.50	.63	.255	3	H3
16512	1/4 - 28	2.50	.63	.255	3	H3
16514	5/16 - 18	2.72	.69	.318	3	H3
16516	5/16 - 24	2.72	.69	.318	3	H3
16518	3/8 - 16	2.94	.75	.381	3	H3
16520	3/8 - 24	2.94	.75	.381	3	H3
16522	7/16 - 14	3.16	.88	.323	3	H3
16524	7/16 - 20	3.17	1.44	—	3	H3
16528	1/2 - 20	3.38	1.66	—	3	H3
16526	1/2 - 13	3.38	.94	.367	3	H3
16534	5/8 - 11	3.81	1.09	.480	4	H3
16538	3/4 - 10	4.25	1.22	.590	4	H3

EM taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.

Refer to table on pages A257–A258 for the recommended pitch diameter limit for 2B or 3B class of fit.

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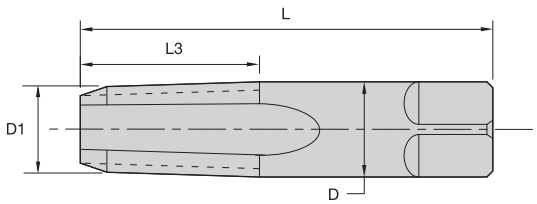
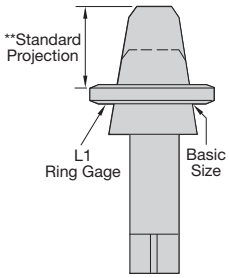




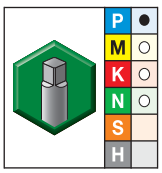
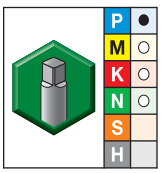
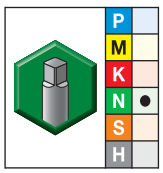
Features and Benefits:

- Manufactured from select high-speed steel.
- Ground thread pipe taps are standard in American Standard Pipe Form (NPT) and American Standard Dryseal Pipe Thread Form (NPTF).
- NPT threads require the use of a sealer, such as Teflon® tape or pipe compound.
- NPTF dryseal threads give a pressure-tight joint without the use of sealer.
- The nominal size of a pipe tap is that of the pipe fitting to be tapped, not the actual size of the tap; thread taper is 3/4" per foot.
- Alternate tap coatings are available as stock modifications.

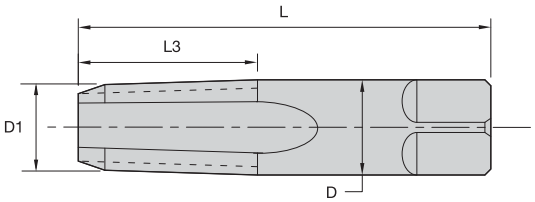
NOTE: Series 2320 • TiN Coated
Series 5320S • SH50 Steam Oxide
Series 5320 • Uncoated

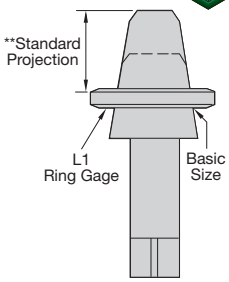
● first choice
○ alternate choice

Series 2320/5320 • 2-1/2–3-1/2 Pitches

								
oxide	TiN	uncoated	D1 size	L	L3	D	number of flutes	thread series
19690	19698	16201	1/16 - 27	2.13	.69	.313	4	NPT/ANPT
–	19691	16203	1/16 - 27	2.13	.69	.313	4	NPTF
19695	19712	16204	1/8 - 27	2.13	.75	.313	4	NPT/ANPT
–	19707	–	1/8 - 27	2.13	.75	.313	4	NPT/ANPT
–	19701	16209	1/8 - 27	2.13	.75	.313	4	NPTF
–	19702	–	1/8 - 27	2.13	.75	.313	4	NPTF
–	–	16205	1/8 - 27	2.13	.75	.438	4	NPT/ANPT
–	–	16210	1/8 - 27	2.13	.75	.438	4	NPTF
19710	19728	16212	1/4 - 18	2.44	1.06	.563	4	NPT/ANPT
–	19721	16215	1/4 - 18	2.44	1.06	.563	4	NPTF
19730	19738	16217	3/8 - 18	2.56	1.06	.700	4	NPT/ANPT
–	–	16220	3/8 - 18	2.56	1.06	.700	4	NPTF
–	19736	–	3/8 - 18	2.56	1.25	.700	4	NPTF
19740	19748	16222	1/2 - 14	3.13	1.66	.687	4	NPT/ANPT
–	19746	16225	1/2 - 14	3.13	1.66	.687	4	NPTF
19760	19768	16227	3/4 - 14	3.25	1.38	.906	5	NPT/ANPT
–	19766	16230	3/4 - 14	3.25	1.38	.906	5	NPTF
–	19778	16232	1 - 11 1/2	3.75	1.75	1.125	5	NPT/ANPT
–	19776	16235	1 - 11 1/2	3.75	1.75	1.125	5	NPTF
–	–	16237	1 1/4 - 11 1/2	4.00	1.75	1.313	5	NPT/ANPT
–	–	16239	1 1/4 - 11 1/2	4.00	1.75	1.313	5	NPTF
–	–	16243	2 - 11 1/2	4.25	1.75	1.875	7	NPT/ANPT
–	–	16245	2 - 11 1/2	4.25	1.75	1.875	7	NPTF
–	–	16240	1 1/2 - 11 1/2	4.25	3.00	1.500	7	NPT/ANPT
–	–	16242	1 1/2 - 11 1/2	4.25	3.00	1.500	7	NPTF

***Pipe tap projection is the distance the small end of the tap projects through an American National Standard Pipe Tap Thread Ring Gage.*
ANPT Taps marked NPT may be used for NPT and ANPT applications.
For gage measurement projection, see technical page A253.





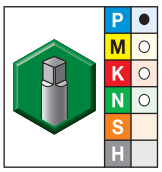
Features and Benefits:

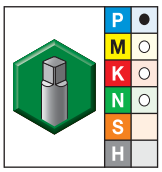
- Manufactured from select high-speed steel.
- Interrupted threads to reduce drag while taper pipe threading.
- Use where chip disposal is a concern.
- Odd number of flutes standard.
- NPT threads require the use of a sealer, such as Teflon® tape or pipe compound.
- NPTF dryseal threads give a pressure-tight joint without the use of sealer.

NOTE: Series 5319S • SH50 Steam Oxide
Series 5319 • Uncoated

■ Series 5319 • Standard Pipe Chamfer 2-1/2–3-1/2 Pitches

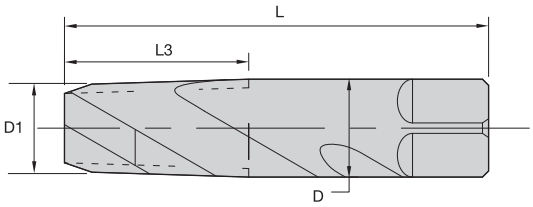
● first choice
○ alternate choice

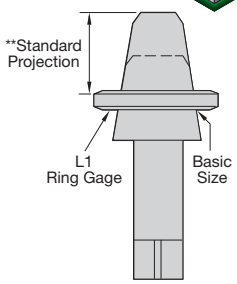




oxide	uncoated	D1 size	L	L3	D	number of flutes	thread series
–	16103	1/8 - 27	2.13	.75	.313	5	NPTF
19650	16101	1/8 - 27	2.13	.75	.313	5	NPT/ANPT
–	16102	1/8 - 27	2.13	.75	.438	5	NPT/ANPT
–	16104	1/8 - 27	2.13	.75	.438	5	NPTF
19655	–	1/4 - 18	2.44	1.06	.563	5	NPT/ANPT
–	16106	1/4 - 18	2.44	1.06	.563	5	NPTF
–	16105	1/4 - 18	2.44	1.06	.563	5	NPT/ANPT
–	16109	1/2 - 14	3.13	1.66	.688	5	NPT/ANPT
–	16110	1/2 - 14	3.13	1.66	.688	5	NPTF
19665	–	1/2 - 14	3.13	1.66	.688	5	NPT/ANPT
–	16108	3/8 - 18	2.56	1.06	.700	5	NPTF
19656	16107	3/8 - 18	2.56	1.06	.700	5	NPT/ANPT
19675	–	3/4 - 14	3.25	1.38	.906	5	NPT/ANPT
–	16112	3/4 - 14	3.25	1.38	.906	5	NPTF
–	16111	3/4 - 14	3.25	1.38	.906	5	NPT/ANPT
–	16113	1 - 11 1/2	3.75	1.75	1.125	5	NPT/ANPT
–	16114	1 - 11 1/2	3.75	1.75	1.125	5	NPTF
–	16115	1 1/4 - 11 1/2	4.00	1.75	1.313	5	NPT/ANPT
–	16117	1 1/2 - 11 1/2	4.25	3.00	1.500	7	NPT/ANPT
–	16118	2 - 11 1/2	4.25	1.75	1.875	7	NPT/ANPT

***Pipe tap projection is the distance the small end of the tap projects through an American National Standard Pipe Tap Thread Ring Gage.*
NPT taps may be used for ANPT applications.
For gage measurement projection, see technical page A253.



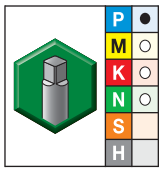


Features and Benefits:

- Manufactured from select tap high-speed steel.
- Ground threads standard in American Standard Pipe Form (NPT) and American Standard Dryseal Pipe Form (NPTF).
- NPT threads require the use of a sealer, such as Teflon® tape or pipe compound.
- NPTF dryseal threads give a pressure-tight joint without the use of sealer.
- Uncoated taps standard; coatings available as a stock modification.
- Spiral flutes lift chips out of the tapped hole reducing stop lines.
- Most effective in materials that produce long, stringy chips.

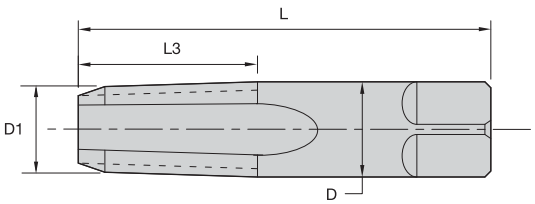
● first choice
○ alternate choice

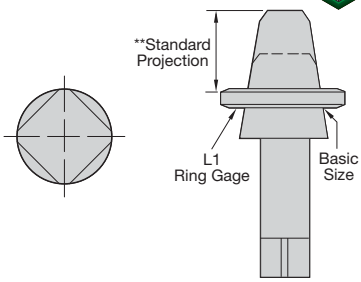
■ Series 5321 • Standard Pipe Chamfer



uncoated	D1 size	L	L3	D	number of flutes	thread series
16281	1/8 - 27	2.13	.75	.438	4	NPT/ANPT
16282	1/8 - 27	2.13	.75	.438	4	NPTF
16283	1/4 - 18	2.44	1.06	.563	4	NPT/ANPT
16284	1/4 - 18	2.44	1.06	.563	4	NPTF
16288	1/2 - 14	3.13	1.66	.688	4	NPTF
16287	1/2 - 14	3.13	1.66	.688	4	NPT/ANPT
16286	3/8 - 18	2.56	1.06	.700	4	NPTF
16285	3/8 - 18	2.56	1.06	.700	4	NPT/ANPT
16290	3/4 - 14	3.25	1.38	.906	5	NPTF
16289	3/4 - 14	3.25	1.38	.906	5	NPT/ANPT

***Pipe tap projection is the distance the small end of the tap projects through an American National Standard Pipe Tap Thread Ring Gage.*
NPT taps may be used for ANPT applications.
For gage measurement projection, see technical page A253.





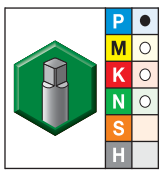
HSS ANSI NPT ANSI NPTF

Features and Benefits:

- Manufactured from select high-speed steel.
- Ground thread pipe taps are standard in American Standard Pipe Form (NPT) and American Standard Dryseal Pipe Thread Form (NPTF).
- NPT threads require the use of a sealer, such as Teflon® tape or pipe compound.
- NPTF dryseal threads give a pressure-tight joint without the use of sealer.
- Uncoated taps standard; coatings available as specials.
- Hook designed for use in ductile materials that produce long, continuous chips.

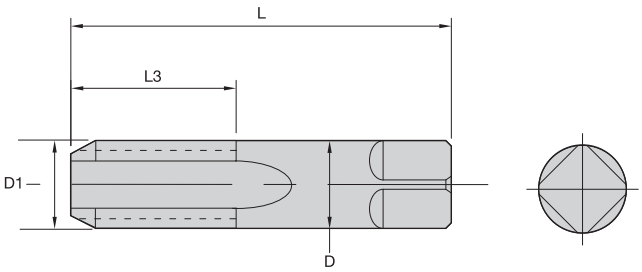
● first choice
○ alternate choice

■ Series 5820 • Standard Pipe Chamfer



uncoated	D1 size	L	L3	D	number of flutes	thread series
16213	1/4 - 18	2.44	1.06	.563	4	NPT/ANPT
16223	1/2 - 14	3.13	1.66	.688	4	NPT/ANPT
16218	3/8 - 18	2.56	1.06	.700	4	NPT/ANPT
16228	3/4 - 14	3.25	1.38	.906	5	NPT/ANPT
16233	1 - 11 1/2	3.75	1.75	1.125	5	NPT/ANPT

***Pipe tap projection is the distance the small end of the tap projects through an American National Standard Pipe Tap Thread Ring Gage.*
NPT taps may be used for ANPT applications.
For gage measurement projection, see technical page A253.

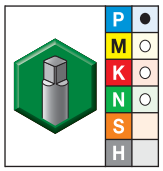


Features and Benefits:

- Manufactured from select tap high-speed steel.
- Ground thread pipe taps are standard in American National Standard Straight Pipe (NPS) thread form and American National Standard Dryseal Straight Pipe (NPSF) thread form.
- NPS threads are suitable for tapping holes or couplings for low-pressure work when used with a sealer; also suitable for NPSC and NPSM work.
- NPSF dryseal taps are intended for low-pressure work such as fuel and oil lines where a sealer is not used.
- Dryseal threads give a low-pressure, pressure-tight joint without the use of sealer.

● first choice
○ alternate choice

Series 5323 • Modified Bottoming Chamfer

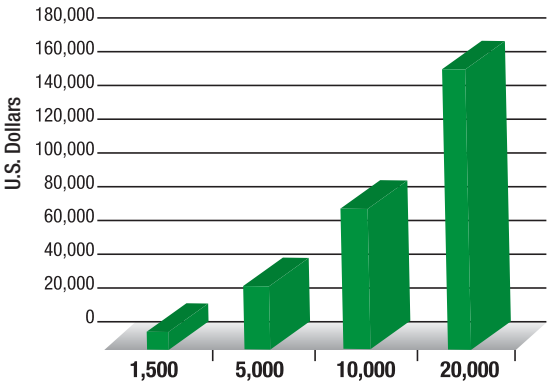


uncoated	D1 size	L	L3	D	number of flutes	thread series
16351	1/8 - 27	2.13	.75	.313	4	NPS
16353	1/8 - 27	2.13	.75	.313	4	NPSF
16354	1/8 - 27	2.13	.75	.438	4	NPSF
16352	1/8 - 27	2.13	.75	.438	4	NPS
16355	1/4 - 18	2.44	1.06	.563	4	NPS
16356	1/4 - 18	2.44	1.06	.563	4	NPSF
16360	1/2 - 14	3.13	1.66	.688	4	NPSF
16359	1/2 - 14	3.13	1.66	.688	4	NPS
16358	3/8 - 18	2.56	1.06	.700	4	NPSF
16357	3/8 - 18	2.56	1.06	.700	4	NPS
16362	3/4 - 14	3.25	1.38	.906	5	NPSF
16361	3/4 - 14	3.25	1.38	.906	5	NPS
16363	1 - 11 1/2	3.75	1.75	1.125	5	NPS

For gage measurement projection, see technical page A253.

Get Cash or Credit for Your Used Carbide

Your Potential Annual Returns*



Actual returns may vary based on current market value for recycled carbide materials.

Why recycle?

It's the right thing to do!

It's easy for your company to be environmentally conscious with our Carbide Recycling Program.

By sending us your used carbide tools, you help preserve and protect the environment and ensure that these products are recycled responsibly.

It's profitable!

Not only does WIDIA™ make it easy for your company to be environmentally conscious, we offer an added incentive — it's profitable.

Through our Carbide Recycling Program, get the full value of your investment in metalcutting tools, improve profitability, and reduce your overall tooling spend. When you send us your used carbide, we will reward you with cash or credit. *(Credit offer valid in U.S.A. only.)*

It's EASY!

Our Carbide Recycling Program is available on the web and is easy to use. You can request a quote, arrange to send us your used carbide, and check the status of your shipment.

To find out more, please contact your Authorised Distributor.

Green Boxes for green companies

The Green Box™ program is a safe and efficient way for you to package and ship your spent carbide tools to an authorised recycling location.

Qualified used carbide includes mixed coated and uncoated metalcutting tools free of chips, oil, and steel contamination. Material must be free of braze.

Maintenance Tools

A full line of taps and dies manufactured from high-speed steel with the strength and durability required for maintenance jobs.

WIDIA-GTD™

- Available in hand, GUN™, and taper pipe tap styles.
- Manufactured from select high-speed steel for blind- and through-hole tapping.
- Ground thread and straight-flute design for sharp cutting action.
- Maintenance taper pipe taps designed for very difficult maintenance applications.

Maintenance Tool Options

Hand Taps and GUN™ Taps

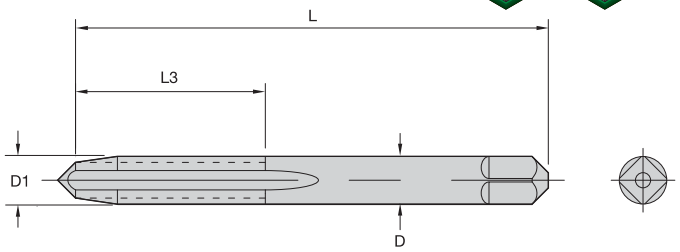
- Constructed from select high-speed steel.
- Ground thread and straight-flute design for sharp cutting action.
- Ideal for hand and power tapping for through or blind holes.
- Class 2B maintenance pitch diameter tolerances for longer life.
- Industrial quality taps at maintenance prices.

Taper Pipe Taps

- Made from select high-speed steel.
- American Standard Pipe Tap (NPT) thread form with a taper of 3/4" per foot.
- Made for the most difficult maintenance applications.
- Use for hand tapping or tapping under power.
- Furnished with 2-1/2–3-1/2 pitches chamfered.
- Standard projection.

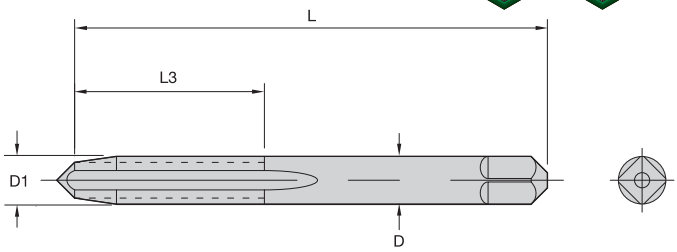
Applications

- Steel
- Stainless steel <30 Rc
- Non-ferrous materials
- Aluminum
- Cast iron



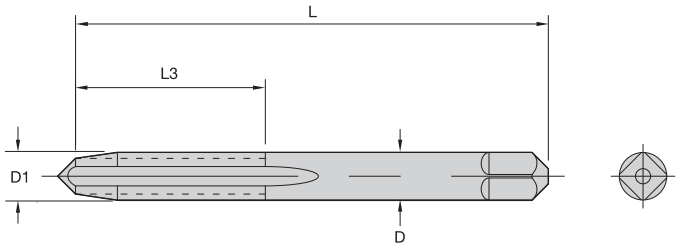
Series 7305 • Machine Screw • Taper, Plug, Bottoming Chamfer, and Sets

taper chamfer 7-10 pitch	plug chamfer 3-5 pitch	full bottom 1-2 pitch	taper and plug bottoming set	D1 size	L	L3	D	class of fit
–	11513	–	–	3 - 48	1.81	.500	.141	2B
11516	11517	11518	11519	4 - 40	1.88	.563	.141	2B
–	11521	–	–	4 - 48	1.88	.563	.141	2B
11524	11525	11526	11527	5 - 40	1.94	.625	.141	2B
11528	11529	11530	11531	6 - 32	2.00	.688	.141	2B
–	11537	–	–	6 - 40	2.00	.688	.141	2B
11540	11541	11542	11543	8 - 32	2.13	.750	.168	2B
–	11545	–	–	8 - 36	2.13	.750	.168	2B
11548	11549	11550	11551	10 - 24	2.38	.875	.194	2B
11552	11553	11554	11555	10 - 32	2.38	.875	.194	2B
11556	11557	11558	11559	12 - 24	2.38	.938	.220	2B
–	11561	–	–	12 - 28	2.38	.938	.220	2B



Series 7303 • Fractional • Taper, Plug, Bottoming Chamfer, and Sets

taper chamfer 7–10 pitch	plug chamfer 3–5 pitch	full bottom 1–2 pitch	taper and plug bottoming set	D1 size	L	L3	D	class of fit
11584	11585	11586	11587	3/16 - 24	2	.88	.194	2B
11596	11597	11598	11599	1/4 - 20	3	1.00	.255	2B
11600	11601	11602	11603	1/4 - 28	3	1.00	.255	2B
11604	11605	11606	11607	5/16 - 18	3	1.13	.318	2B
11608	11609	11610	11611	5/16 - 24	3	1.13	.318	2B
11612	11613	11614	11615	3/8 - 16	3	1.25	.381	2B
11648	11649	11650	—	5/8 - 18	3	1.25	.381	2B
11616	11617	11618	11619	3/8 - 24	3	1.25	.381	2B
11620	11621	11622	11623	7/16 - 14	3	1.44	.323	2B
11624	11625	11626	11627	7/16 - 20	3	1.44	.323	2B
11628	11629	11630	11631	1/2 - 13	3	1.66	.367	2B
11632	11633	11634	11635	1/2 - 20	3	1.66	.367	2B
11636	11637	11638	11639	9/16 - 12	4	1.66	.429	2B
11640	11641	11642	11643	9/16 - 18	4	1.66	.429	2B
11644	11645	11646	11647	5/8 - 11	4	1.81	.480	2B
—	—	—	11651	5/8 - 18	4	1.81	.480	2B
11652	11653	11654	11655	3/4 - 10	4	2.00	.590	2B
11656	11657	11658	11659	3/4 - 16	4	2.00	.590	2B
11660	11661	11662	11663	7/8 - 9	5	2.22	.697	2B
11664	11665	11666	11667	7/8 - 14	5	2.22	.697	2B
11668	11669	11670	11671	1 - 8	5	2.50	.800	2B
11672	11673	11674	11675	1 - 12	5	2.50	.800	2B
11676	11677	11678	11679	1 - 14	5	2.50	.800	2B
11680	11681	11682	11683	1 1/8 - 7	5	2.56	.896	2B
11684	11685	11686	11687	1 1/8 - 8	5	2.56	.896	2B
11688	11689	11690	11691	1 1/8 - 12	5	2.56	.896	2B
11692	11693	11694	11695	1 1/4 - 7	6	2.56	1.021	2B
11696	11697	11698	11699	1 1/4 - 8	6	2.56	1.021	2B
11700	11701	11702	11703	1 1/4 - 12	6	2.56	1.021	2B
11704	11705	11706	11707	1 3/8 - 6	6	3.00	1.108	2B
11708	11709	11710	11711	1 3/8 - 8	6	3.00	1.108	2B
11712	11713	11714	11715	1 3/8 - 12	6	3.00	1.108	2B
11716	11717	11718	11719	1 1/2 - 6	6	3.00	1.233	2B
11720	11721	11722	11723	1 1/2 - 8	6	3.00	1.233	2B
11724	11725	11726	11727	1 1/2 - 12	6	3.00	1.233	2B



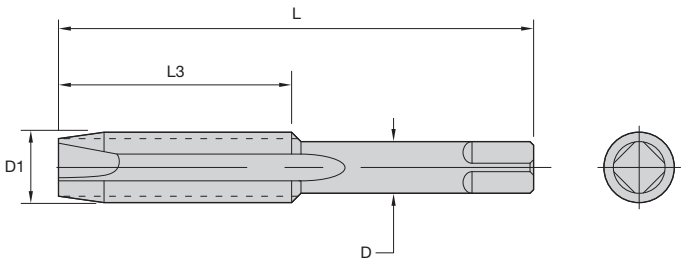
Features and Benefits:

- Constructed from select high-speed steel.
- Ground thread straight flute design for sharp cutting action.
- Ideal for hand and power tapping for through or blind holes.
- Class 2B maintenance pitch diameter tolerances for longer life.
- Industrial quality taps at maintenance prices.

Series 7353 • Plug Chamfer • Metric ANSI

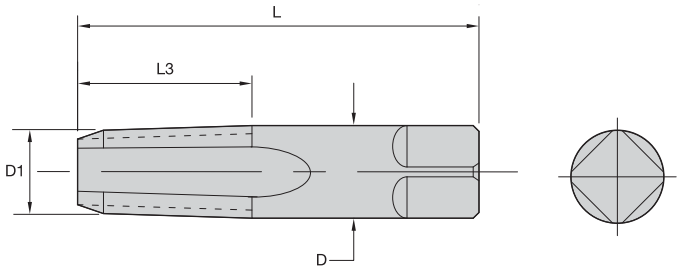
uncoated	D1 size	L	L3	D	class of fit
11900	M6 X 1	2.50	1.00	.255	6H
11901	M8 X 1,25	2.72	1.13	.318	6H
11902	M10 X 1,5	2.94	1.25	.381	6H
11903	M12 X 1,75	3.38	1.66	.367	6H
11904	M14 X 1,25	3.59	1.66	.429	6H
11905	M14 X 2	3.59	1.66	.429	6H
11906	M16 X 2	3.81	1.81	.480	6H
11907	M18 X 1,5	4.03	1.59	.542	6H
11908	M18 X 2,5	4.03	1.59	.542	6H
11909	M20 X 2,5	4.47	2.00	.652	6H
11910	M22 X 2,5	4.69	2.22	.697	6H
11911	M24 X 3	4.91	2.22	.760	6H

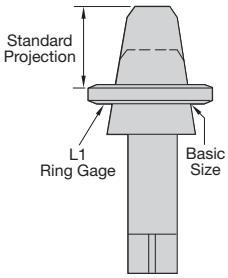
Metric taps are manufactured to USCTI specifications and dimensions.
Metric tap blank dimensions are equivalent to inch taps.



Series 7301 • Plug Chamfer

uncoated	D1 size	L	L3	D	class of fit
12027	4 - 40	1.88	.56	.141	2B
12030	5 - 40	1.94	.63	.141	2B
12031	5 - 44	1.94	.63	.141	2B
12032	6 - 32	2.00	.69	.141	2B
12033	6 - 40	2.00	.69	.141	2B
12034	8 - 32	2.15	.75	.168	2B
12035	8 - 36	2.15	.75	.168	2B
12036	10 - 24	2.38	.88	.194	2B
12037	10 - 32	2.38	.88	.194	2B
12038	12 - 24	2.38	.94	.220	2B
12039	12 - 28	2.38	.94	.220	2B
12040	1/4 - 20	2.50	1.00	.255	2B
12041	1/4 - 28	2.50	1.00	.255	2B
12042	5/16 - 18	2.72	1.13	.318	2B
12043	5/16 - 24	2.72	1.13	.318	2B
12044	3/8 - 16	2.94	1.25	.381	2B
12045	3/8 - 24	2.94	1.25	.381	2B
12046	7/16 - 14	3.16	1.44	.323	2B
12047	7/16 - 20	3.16	1.44	.323	2B
12048	1/2 - 13	3.38	1.66	.367	2B
12049	1/2 - 20	3.38	1.66	.367	2B
12050	5/8 - 11	3.81	1.81	.480	2B
12051	5/8 - 18	3.81	1.81	.480	2B
12052	3/4 - 10	4.25	1.81	.590	2B





Features and Benefits:

- Made from select high-speed steel.
- American Standard Pipe Tap (NPT) thread form with a taper of 3/4" per foot.
- Made for the most difficult maintenance applications.
- Use for hand tapping or tapping under power.
- Furnished with 2-1/2–3-1/2 pitches chamfered.
- Standard projection.

Series 7320 • Standard Chamfer 2-1/2–3-1/2 Pitches

uncoated	D1 size	L	L3	D	thread series
11800	1/8 - 27	2.13	.75	.313	NPT
11801	1/8 - 27	2.13	.75	.438	NPT
11802	1/4 - 18	2.44	1.06	.563	NPT
11803	3/8 - 18	2.56	1.06	.700	NPT
11804	1/2 - 14	3.13	1.38	.688	NPT
11805	3/4 - 14	3.25	1.38	.906	NPT
11806	1 - 11 1/2	3.75	1.75	1.125	NPT
11807	1 1/4 - 11 1/2	4.00	1.75	1.313	NPT
11808	1 1/2 - 11 1/2	4.25	1.75	1.500	NPT
11809	2 - 11 1/2	4.50	1.75	1.875	NPT

D1=cutting size

Features and Benefits:

- Carbon steel construction.
- Chamfered on both faces, 2–3 threads on one face and 1–2-1/2 threads on the other for threading close to the shoulder.
- Beveled slot to remove screw when die is used in a machine holder with its own adjusting screw.

Application Information:

- For use in hand-held die stocks or machine holders.
- For minor size adjustments, fine pitch screw adjusts edges of the die closer together or further apart; range of adjustment of round dies is slight.

Carbon Steel Round Adjustable Dies • Series 382

■ Machine Screw

D1	NC/UNF	NF/UNF	EDP number 13/16" die O.D. 1/4" thickness	EDP number 1" die O.D. 3/8" thickness
0	—	80	23019	—
1	64	—	23021	—
1	—	72	23022	—
2	56	—	23023	—
2	—	64	23025	—
3	48	—	23026	—
3	—	56	23027	—
4	40	—	23029	—
4	—	48	23031	—
5	40	—	23032	—
5	—	44	23034	—
6	32	—	23035	23105
6	—	40	23038	—
8	32	—	23039	23107
8	—	36	23041	—
10	24	—	23043	23109
10	—	32	23045	23112
12	24	—	23048	23115
12	—	28	23049	—

NOTE: Sizes and/or dimensions not listed and left-hand dies are available as specials.
Fractional sizes are listed on the next page.

Carbon Steel Round Adjustable Dies • Series 382

■ Fractional

			EDP number					
D1	NC/UNC	NF/UNF	13/16" die O.D. 1/4" thickness	1" die O.D. 3/8" thickness	1-1/2" die O.D. 1/2" thickness	2" die O.D. 5/8" thickness	2-1/2" die O.D. 3/4" thickness	3" die O.D. 1" thickness
1/4	20	—	23051	23133	23204	23284	—	—
1/4	—	28	—	23138	23209	23287	—	—
5/16	18	—	—	23143	23211	23289	—	—
5/16	—	24	—	23147	23216	23293	—	—
3/8	16	—	—	23152	23220	23295	—	—
3/8	—	24	—	23157	23225	23300	—	—
7/16	14	—	—	23162	23230	23303	—	—
7/16	—	20	—	23166	23234	23306	—	—
1/2	13	—	—	23170	23241	23310	—	—
1/2	—	20	—	23171	23245	23313	—	—
9/16	12	—	—	—	23251	23316	—	—
9/16	—	18	—	—	23255	23319	—	—
5/8	11	—	—	—	23259	23321	23361	—
5/8	—	18	—	—	23263	23324	—	—
3/4	10	—	—	—	23268	23331	23363	—
3/4	—	16	—	—	23269	23336	23365	—
7/8	9	—	—	—	—	23340	23366	—
7/8	—	14	—	—	—	23343	23367	—
1	8	—	—	—	—	23347	23368	23376
1	—	12	—	—	—	23348	23372	23377
1	—	14	—	—	—	23349	—	—
1 1/8	7	—	—	—	—	—	—	23379
1 1/8	—	12	—	—	—	—	—	23380
1 1/4	7	—	—	—	—	—	—	23381
1 1/4	—	12	—	—	—	—	—	23384
1 3/8	6	—	—	—	—	—	—	23386
1 3/8	—	12	—	—	—	—	—	23388
1 1/2	6	—	—	—	—	—	—	23389
1 1/2	—	12	—	—	—	—	—	23390

NOTE: Sizes and/or dimensions not listed and left-hand dies are available as specials.

Carbon Steel Round Adjustable Dies • Series 382

■ NPT Taper Pipe

		EDP number		
D1	TPI	1" die O.D. 3/8" thickness	1-1/2" die O.D. 1/2" thickness	2" die O.D. 5/8" thickness
1/8	27	23118	23200	—
1/4	18	—	23202	23283
3/8	18	—	23223	23298
1/2	14	—	—	23312

NOTE: Sizes and/or dimensions not listed and left-hand dies are available as specials.

D1=cutting size

Features and Benefits:

- Made from high-speed steel for improved wear life.
- Chamfered on both faces, 2–3 threads on one face and 1–2-1/2 threads on the other for threading close to the shoulder.
- Beveled screw slot to remove screw when die is used in a machine holder; range of adjustment of round dies is slight.

Application Information:

- Ideal for maintenance in the shop or in the field.
- Use in round die stocks Series 1750 or Series 1790 (see page A208).
- For minor size adjustments, fine pitch screw adjusts edges of the die closer together or further apart.

High-Speed Steel Round Adjustable Dies • Series 6382

Machine Screw

D1	NC/UNC	NF/UNF	EDP number 13/16" die O.D. 1/4" thickness	EDP number 1" die O.D. 3/8" thickness
5	40	—	23710	—
5	—	44	23712	—
6	32	—	23713	23730
6	—	40	23715	—
8	32	—	23716	23731
8	—	36	23718	—
10	24	—	23719	23732
10	—	32	23720	23733
12	24	—	23722	23735
12	—	28	23723	—

Fractional

D1	NC/UNC	NF/UNF	EDP number 13/16" die O.D. 1/4" thickness	EDP number 1" die O.D. 3/8" thickness	EDP number 1-1/2" die O.D. 1/2" thickness	EDP number 2" die O.D. 5/8" thickness
1/4	20	—	23724	23739	23761	—
1/4	—	28	23725	23742	23764	—
5/16	18	—	23727	23746	23768	—
5/16	—	24	23728	23748	23770	—
3/8	16	—	—	23751	23773	—
3/8	—	24	—	23753	23776	—
7/16	14	—	—	23757	23779	—
7/16	—	20	—	23758	23781	—
1/2	13	—	—	—	23785	—
1/2	—	20	—	—	23787	—
9/16	12	—	—	—	23792	—
9/16	—	18	—	—	23793	—
5/8	11	—	—	—	23796	23811
5/8	—	18	—	—	23798	23813
3/4	10	—	—	—	—	23816
3/4	—	16	—	—	—	23818
7/8	9	—	—	—	—	23823
7/8	—	14	—	—	—	23824

NOTE: Sizes and/or dimensions not listed and left-hand dies are available as specials.

High-Speed Steel Round Adjustable Dies • Series 6385

Metric

size	EDP number 13/16" die O.D. 1/4" thickness	EDP number 1" die O.D. 3/8" thickness	EDP number 1-1/2" die O.D. 1/2" thickness
M2,5 x 0,45	23855	—	—
M3 x 0,5	23857	—	—
M3,5 x 0,6	23859	—	—
M4 x 0,7	23861	—	—
M4,5 x 0,75	23863	—	—
M5 x 0,8	23865	—	—
M6 x 1	23867	23869	—
M7 x 1	—	23871	—
M8 x 1,25	—	23873	—
M10 x 1,5	—	23877	—
M12 x 1,75	—	23881	—
M14 x 2	—	—	23885
M16 x 2	—	—	23889
M18 x 2,5	—	—	23893
M20 x 2,5	—	—	23897

NOTE: Sizes and/or dimensions not listed and left-hand dies are available as specials.

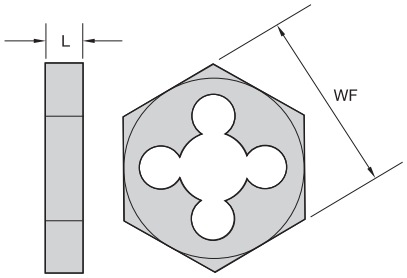
Die Stocks for Round Adjustable Dies

Series 1750 die stock

- Series 1750 die stocks hold round adjustable dies of any construction.
- These die stocks are specifically manufactured for holding dies with the open-type adjustment.
- Steel construction.

Die Stocks • Series 1750 Die Stocks with Three-Screw-Type Construction

stock number	length	die O.D.	EDP number
1751	6.25	13/16	01238
1752	9.00	1	01240
1753	14.00	1 1/2	01241
1757	23.00	2	01243
1758	29.00	2 1/2	01245
1759	40.00	3	01247



Features and Benefits:

- Made from carbon steel.
- Standard with right hand Unified and American National thread form.
- Available in metric and American National Taper Pipe (NPT) thread form.
- Cost-effective rethreading die.

Application Information:

- Use to dress over bruised or rusty threads.
- No special holder required; use standard wrench.
- Ideal for maintenance in the shop or in the field.

Hexagon Rethreading Bolt Dies • Series 377

■ Fractional

D1	NC/UNC	NF/UNF	WF width across flat	L	EDP number
1/4	20	—	19/32	1/4	24107
1/4	—	28	19/32	1/4	24110
5/16	18	—	11/16	5/16	24112
5/16	—	24	11/16	5/16	24115
3/8	16	—	25/32	3/8	24117
3/8	—	24	25/32	3/8	24121
7/16	14	—	7/8	7/16	24123
7/16	—	20	7/8	7/16	24126
1/2	13	—	1 1/16	1/2	24130
1/2	—	20	1 1/16	1/2	24133
9/16	12	—	1 1/16	1/2	24137
9/16	—	18	1 1/16	1/2	24139
5/8	11	—	1 1/4	5/8	24141
5/8	—	18	1 1/4	5/8	24144
11/16	11	—	1 7/16	3/4	24146
11/16	—	16	1 7/16	3/4	24148
3/4	10	—	1 7/16	3/4	24149
3/4	—	16	1 7/16	3/4	24153
7/8	9	—	1 5/8	7/8	24156
7/8	—	14	1 5/8	7/8	24159
1	8	—	1 13/16	1	24162
1	—	12	1 13/16	1	24166
1	—	14	1 13/16	1	24167
1 1/8	7	—	2	1	24170
1 1/8	—	12	2	1	24174
1 1/4	7	—	2 3/16	1	24176
1 1/4	—	12	2 3/16	1	24180
1 3/8	6	—	2 3/8	1	24182
1 3/8	—	12	2 3/8	1	24185
1 1/2	6	—	2 9/16	1	24187
1 1/2	—	12	2 9/16	1	24191

NOTE: D1 = thread size
WF = width across flat
L = thickness

Hexagon Rethreading Bolt Dies • Series 377

■ Metric

size	WF width across flat	L	EDP number
M5 x 0,8	19/32	1/4	24219
M6 x 1	19/32	1/4	24221
M8 x 1,25	11/16	5/16	24227
M10 x 1,5	7/8	7/16	24229
M12 x 1,75	1 1/16	1/2	24231
M14 x 2	1 1/16	1/2	24233
M16 x 2	1 1/14	5/8	24235
M20 x 2,5	1 5/8	7/8	24239

Hexagon Rethreading Bolt Dies • Series 377

■ NPT Pipe

D1	thread pitch NPT	WF width across flat	L	EDP number
1/8	27	1 1/16	3/8	24104
1/4	18	1 1/4	5/8	24106
3/8	18	1 7/16	5/8	24120
1/2	14	1 5/8	3/4	24132
3/4	14	2	13/16	24152
1	12	2 3/8	1	24165

Number 328 and 332
slip handle tap wrench

Number 338 and 339
rachet and slip handle tap wrench

Number 336 and 337
long handle tap wrench

Features and Benefits:

- Made from carefully selected steel.
- High-quality tools designed for use in hand tapping.
- Can also be used with reamers, drills, screw extractors, and any other tools that can be turned by hand.

Numbers 328 and 332 Slip Handle Tap Wrench

- T-handle on this wrench may be slipped from side to side to enable complete turn in close quarters.

Numbers 329 and 333 Plain Handle Tap Wrench

- All-purpose wrench with fixed handle.
- Ideal for out-in-the-open tapping jobs.

Numbers 336 and 337 Long Shank Tap Wrench

- Long shank enables tapping in hard-to-reach places in machine and automobile repair work.
- Plain T-handle.

Numbers 338 and 339 Ratchet Handle Tap Wrench

- Combination of ratchet and slip handle makes this all-around wrench able to handle most hand tapping jobs.

T-Handle Tap Wrenches

wrench number	wrench capacity fractional taps	wrench capacity machine screw taps	wrench capacity metric taps	overall length	EDP number
328	1/16–1/4	0 - 14	M1.5 - M6.3	2 3/4	01350
332	7/32–1/2	12 - 14	M5.5 - M12.5	3 5/8	01355
329	1/16–1/4	0 - 14	M1.5 - M6.3	2 3/4	01352
333	7/32–1/2	12 - 14	M5.5 - M12.5	3 5/8	01358
336	1/16–1/4	0 - 14	M1.5 - M6.3	8 3/4	01362
337	7/32–1/2	12 - 14	M5.5 - M12.5	10 5/8	01364
338	1/16–1/4	0 - 14	M1.5 - M6.3	3 3/4	01366
339	7/32–1/2	12 - 14	M5.5 - M12.5	5	01377

Number 22 straight tap wrench

Features and Benefits:

- Made from rugged steel.
- Jaws are made of carefully hardened and tempered tool steel.
- High-quality tools designed for use in hand tapping.
- Straight-handle design provides greater leverage.
- Especially useful with larger diameter taps or reamers.

Straight Tap Wrenches

	wrench capacity				
wrench number	fractional taps	machine screw taps	pipe tap or reamers	overall length	EDP number
0	1/16 - 1/4	0 - 14	—	7	01287
14	1/16 - 3/8	0 - 14	—	9	01292
15	5/32 - 1/2	7 - 14	1/8	11 1/8	01299
13	5/32 - 3/4	7 - 14	1/8 - 1/4	14 7/8	01304
7	1/4 - 1 1/8	1/4 - 1 1/8	1/8 - 3/4	19	01311
8	3/4 - 1 5/8	3/4 - 1 5/8	3/8 - 1 1/4	40	01325
22	1 - 2 1/2	1 - 2 1/2	3/4 - 2	54	01338

OK Jr. Tap and Die Sets • HSS Taps and Carbon Steel Round Adjustable Dies

■ OK Jr. Tap and Die Sets

set number	number of cutting sizes	7305/7303 tap and 382 die sizes NC	7305/7303 tap and 382 die sizes NF	7320 taper pipe tap NPT	7353 metric tap metric	tap wrench	die stock	set EDP number
B7	7	4-40 6-32 8-32 10-24 12-24 1/4-20	10-32	—	—	329	13	00517
B8	8	2-56 3-48 4-40 6-32 8-32 10-24	0-80 1-72	—	—	329	13	00525
B10	10	4-40 6-32 8-32 10-24 12-24	4-48 6-40 8-36 10-32 12-28	—	—	329	13	00526
C5	5	1/4-20 5/16-18 3/8-16 7/16-14 1/2-13	—	—	—	333	14	00518
407	9	1/4-20 5/16-18 3/8-16 7/16-14 1/2-13 5/8-11 3/4-10 7/8-9 1-8	—	—	—	15 7	14 15 16	00522
3100	11	1/4-20 5/16-18 3/8-16 7/16-14 1/2-13	1/4-28 5/16-24 3/8-24 7/16-20 1/2-20	1/8-27	—	333	1	00528
4132	21	1/4-20 5/16-18 3/8-16 7/16-14 1/2-13 9/16-12 5/8-11 3/4-10 7/8-9 1-8	1/4-28 5/16-24 3/8-24 7/16-20 1/2-20 9/16-18 5/8-18 3/4-16 7/8-14 1-14 NS	1/8-27	—	15 7	14 15 16	00532
4700	28 taps 15 dies	4-40 6-32 8-32 10-24 12-24 1/4-20 5/16-18 3/8-16 7/16-14 1/2-13 9/16-12	10-32 1/4-28 5/16-24 3/8-24 7/16-20 1/2-20 9/16-18 5/8-18 3/4-16 7/8-14 1-14 NS	1/8-27 1/4-18 3/8-18 1/2-14	M14 x 1,25 M18 x 1,5	329 336 15 7	14 15 16	00533

Set number C5

- Consist of:
  - Series 382 carbon steel round adjustable dies.
  - Series 7305, 7303, 7320, and 7353 HSS maintenance hand taps.
  - Series 1790 die stocks.
  - Tap wrenches.
- Dies and taps furnished with American National Form threads.
- Packaged in special case with moisture- and oil-resistant Ethafoam liner for tool protection.

Metric Tap, Die, and Drill Sets •
Industrial-Quality HSS Hand Taps with Hexagonal or Round Adjustable Dies

Tap, die, and drill set number 4800

- Consist of:
  - Series 377 carbon steel hexagon rethreading dies or series 6385 HSS round adjustable dies.
  - Series 5353 industrial-quality metric hand taps.
  - Series 150 HSS jobber drill with black oxide surface treatment (except sets 48 and 49).
  - Series 1790 or 1750 die stocks.
  - Tap wrenches.
  - Screwdriver (except set 4800).
- Packaged in special case with moisture- and oil-resistant Ethafoam liner for tool protection.

Metric Tap, Die and Drill Sets

set number	number of cutting sizes	7353 tap and 377 hexagon die sizes	150 HSS black oxide jobber drill size	tap wrench	die stock number	screwdriver number	set EDP number
4800	6	M5 x 0,8 M6 x 1 M8 x 1,25 M10 x 1,5 M12 x 1,75 M14 x 2	4,2 5,0 6,7 8,5 10,2 12,0	15	—	—	00606

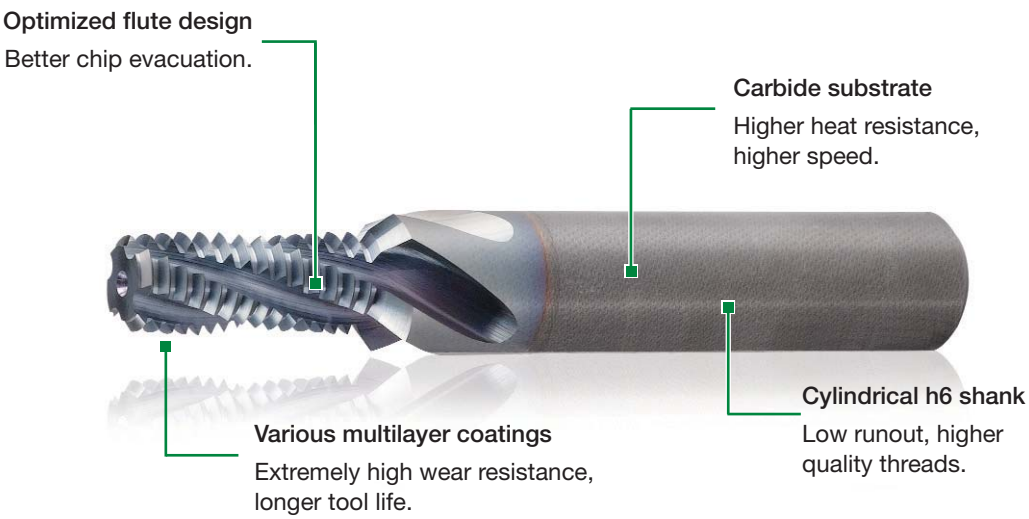
set number	number of cutting sizes	7353 tap and 6385 HSS round adjustable die sizes	150 HSS black oxide jobber drill size	tap wrench	die stock number	screwdriver number	set EDP number
2001	13	M2,5 x 0,45 M3 x 0,5 M3,5 x 0,6 M4 x 0,7 M5 x 0,8 M6 x 1 M8 x 1,25 M10 x 1,5 M12 x 1,75 M14 x 2 M16 x 2 M18 x 2,5 M20 x 2,5	2,05 2,5 2,9 3,3 4,2 5,0 6,7 8,5 10,2 12,0 14,0 15,5 17,5	14 7	1851 1852 1853	300	00527
48	7	M2,5 x 0,45 M3 x 0,5 M3,5 x 0,6 M4 x 0,7 M4,5 x 0,75 M5 x 0,8 M6 x 1	—	329	1790	300	00448
48D	7	M2,5 x 0,45 M3 x 0,5 M3,5 x 0,6 M4 x 0,7 M4,5 x 0,75 M5 x 0,8 M6 x 1	2,05 2,5 2,9 3,3 3,7 4,2 5,0	329	1790	300	00448
49	5	M6 x 1 M7 x 1 M8 x 1,25 M10 x 1,5 M12 x 1,75	—	333	1790	300	00449
49D	5	M6 x 1 M7 x 1 M8 x 1,25 M10 x 1,5 M12 x 1,75	5,0 6,0 6,7 8,5 10,2	333	1790	300	00451

Thread Mills

Available for the first time, our solid thread mills are designed to be the highest quality thread milling solution.

WIDIA-GTD™

- Cut up to 63 HRC.
- Improved overall thread quality.



Unmatched Capabilities

- Capable of easily cutting most difficult materials.
- Carbide grades make threading easier and machining times shorter.
- High-quality internal and external threading on 3-axis CNC machines.
- Thread mills make interrupted cuts and short chips.
- Design offers a range of benefits to improve overall thread quality.
- Short, easily evacuated chips generate less heat and friction, so there is a lower risk of damage to threading.

Choose WIDIA-GTD™ Thread Mills

- Greater versatility than competitive products.
- Optimum surface quality for an excellent end product.
- Designed to eliminate chipping issues.
- No need to reverse the spindle.
- Fewer machining problems means more production safety.

Victory™ GTM Series HP Solid Carbide Thread Mills • Metric

★ Good
★★ Better
★★★ Best

GTM Series Solid Thread Milling • Metric	series	size range (inch and metric) size min - max	hole	operation	coolant	grade	shank
	**GTM11**	M3 - M20	★★★	★	★★★	WU13PV	6535 HA
	**GTM21**	M5 - M16	★★★	★★	★★★	WU12PV	6535 HA
	**GTM31**	M4 - M16	★★★	★★★	★★★	WU12PV	6535 HA
	**GTM41**	M6 - M24	★★★	★★★	★★★	WU16PV	6535 HA
	**GTM41LH**	M6 - M12	★★★	★★★	★★★	WU16PV	6535 HA

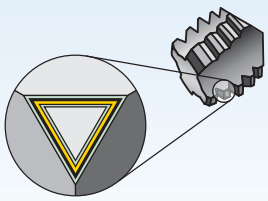
Victory GTM Series HP Solid Carbide Thread Mills • Inch

★ Good
★★ Better
★★★ Best

GTM Series Solid Thread Milling • Inch	series	size range (inch and metric) size min - max	hole	operation	coolant	grade	shank
	**GTM21**	#10 - 5/8"	★★★	★★	★★★	WU12PV	6535 HA
	**GTM31**	1/4" - 5/8"	★★★	★★★	★★★	WU12PV	6535 HA
	**GTM41**	1/4" - 3/4"	★★★	★★★	★★★	WU16PV	6535 HA

P				M	K		N			S				H		Page	Recommended Cutting Parameters
1, 2, 3, 4, 6, 7	5, 9, 10, 11	12, 13.1	13.2	14.1, 14.2, 14.3, 14.4	15, 16, 17, 18, 19	20	21	22, 23, 24, 25	26, 27, 28	31, 32	33, 34, 35	36	37	38.1, 38.2, 40.1, 40.2, 41.1	39.1, 41.2		
Steel <35 HRC	Steel 36–48 HRC	PH & Ferriitic Stainless Steel <35 HRC	PH & Ferriitic Stainless Steel >35 HRC	Stainless Steel	Cast Iron		Wrought Aluminum	Cast Aluminum	Copper, Copper Alloys	Iron Based	Cobalt Based	Nickel Based	Titanium & Alloys	Hardened Steel 49–55 HRC	Hardened Steel 56–68 HRC		
★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★	★	★	★			A220	A228–A233
★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★			A222	A228–A233
					★★★	★★★	★★★	★★★	★★★							A224	A228–A233
★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★					★★★	★★★	A226	A228–A233
										★★★	★★★	★★★	★★★	★★★	★★★	A227	A228–A233

P				M	K		N			S				H		Page	Recommended Cutting Parameters
1, 2, 3, 4, 6, 7	5, 9, 10, 11	12, 13.1	13.2	14.1, 14.2, 14.3, 14.4	15, 16, 17, 18, 19	20	21	22, 23, 24, 25	26, 27, 28	31, 32	33, 34, 35	36	37	38.1, 38.2, 40.1, 40.2, 41.1	39.1, 41.2		
Steel <35 HRC	Steel 36–48 HRC	PH & Ferriitic Stainless Steel <35 HRC	PH & Ferriitic Stainless Steel >35 HRC	Stainless Steel	Cast Iron		Wrought Aluminum	Cast Aluminum	Copper, Copper Alloys	Iron Based	Cobalt Based	Nickel Based	Titanium & Alloys	Hardened Steel 49–55 HRC	Hardened Steel 56–68 HRC		
★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★			A221	A228–A233
					★★★	★★★	★★★	★★★	★★★							A223	A228–A233
★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★					★★★	★★★	A225	A228–A233



Coatings are designed for optimized tapping performance in specific materials.

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

wear resistance ⟷ toughness

Coating	Grade Description	05	10	15	20	25	30	35	40	45
NEW! WU12PV	Coated carbide. PVD fine-grain carbide substrate with high-hardness TiCN coating. Universal grade for thread milling most materials.		P, M, K, N, S							
NEW! WU13PV	Coated carbide. PVD carbide substrate with heat-resistant TiAlN coating. Universal grade for thread milling most materials.		P, M, K, N, S							
NEW! WU16PV	Coated carbide. PVD two-layer coating with heat-resistant TiAlN base layer and low-friction MoS_2 top layer over carbide substrate. Use for thread milling most materials including high-hardness materials.		P, M, K, N, S, H							

WIN WITH WIDIA™

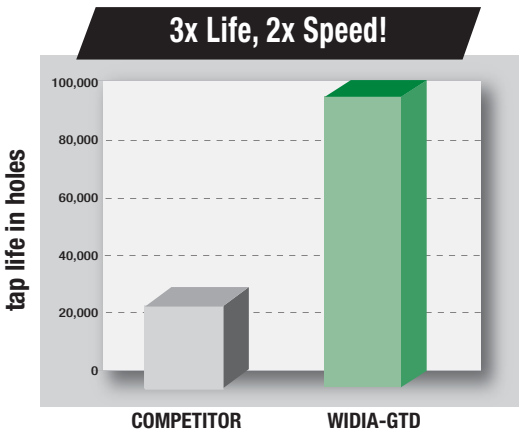
WIDIA-GTD™

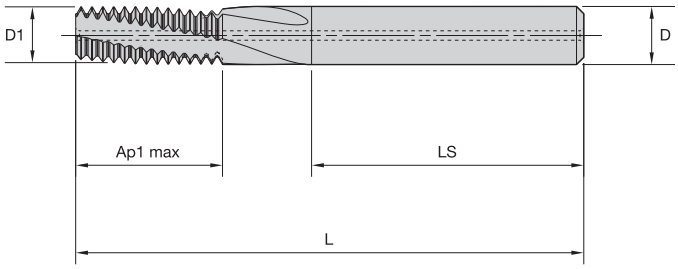
High-Performance Solid Carbide Taps for Aluminum Tapping

The first solid carbide tap specifically engineered for tapping cast silicon aluminum, wrought aluminum, and other non-ferrous materials!

- Tap at 2x the speed of conventional HSS-E taps — with 3x the tap life!
- Proprietary GN1515™ grade is highly resistant to galling and wear.
- Fully cylindrical shanks with h6 tolerance — use with hydraulic holders, shrink-fit holders, and precision collet holders.
- Taps can be reconditioned by WIDIA for additional savings.

	COMPETITOR	WIDIA-GTD
tap:	HSS-E form tap	**GX49 Bottom Forming**
tap drill size:	9,5mm	9,5mm
speed:	47 m/min	94 m/min
coolant:	radial	radial
holder:	synchronous	ERICKSON™ Slim Line
tap life:	30,000 holes	**100,000 holes**



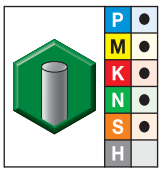


VICTORY

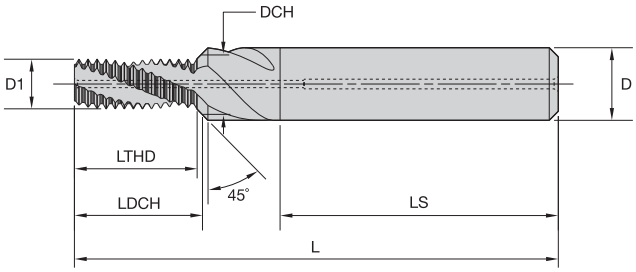
● first choice
○ alternate choice

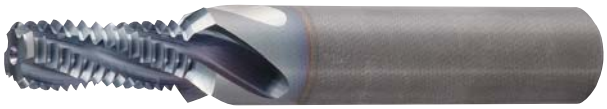
Shank Tolerance	
D	Tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–18	+0, -0,011
20–30	+0, -0,013

■ GTM11 • Through Coolant • Metric and Metric Fine



WU13PV	D1 size	D1	Ap1 max	L	LS	D	cutting edges
GTM115001	M3 X 0.5	2,4	6	42	28	4,0	3
GTM115012	M4 X 0.5	3,4	8	55	36	6,0	3
GTM115002	M4 X 0.7	3,2	9	55	36	6,0	3
GTM115013	M5 X 0.5	4,3	10	55	36	6,0	3
GTM115003	M5 X 0.8	4,0	11	55	36	6,0	3
GTM115014	M6 X 0.75	5,0	12	55	36	6,0	3
GTM115004	M6 X 1	4,8	12	55	36	6,0	3
GTM115015	M8 X 0.75	5,9	17	63	36	6,0	3
GTM115016	M8 X 1	5,9	16	63	36	6,0	3
GTM115005	M8 X 1.25	5,9	17	63	36	6,0	3
GTM115017	M10 X 1	7,9	20	70	36	8,0	3
GTM115006	M10 X 1.5	7,9	20	70	36	8,0	3
GTM115018	M12 X 1	9,9	24	80	40	10,0	4
GTM115019	M12 X 1.5	9,9	25	80	40	10,0	4
GTM115007	M12 X 1.75	9,9	25	80	40	10,0	4
GTM115020	M14 X 1.5	9,9	29	80	40	10,0	4
GTM115008	M14 X 2	11,6	29	90	45	12,0	4
GTM115021	M16 X 1.5	11,9	32	90	45	12,0	4
GTM115009	M16 X 2	11,9	33	90	45	12,0	4
GTM115022	M18 X 1.5	13,9	37	90	45	14,0	4
GTM115010	M18 X 2.5	13,9	39	90	45	14,0	4
GTM115023	M20 X 1.5	13,9	41	90	45	14,0	4
GTM115011	M20 X 2.5	13,9	41	90	45	14,0	4



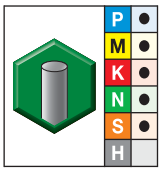


VICTORY

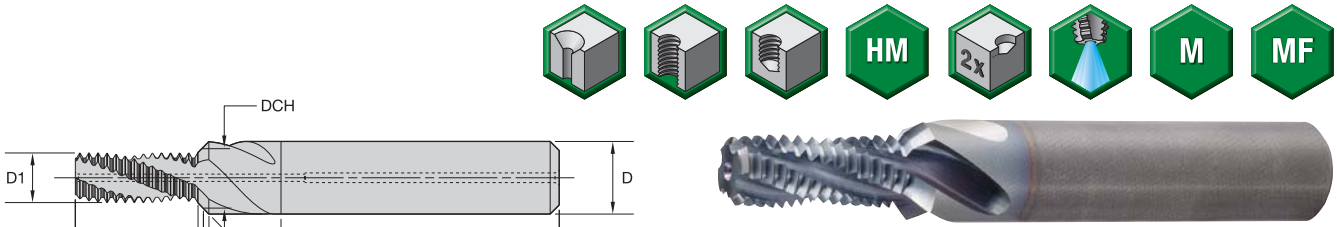
● first choice
○ alternate choice

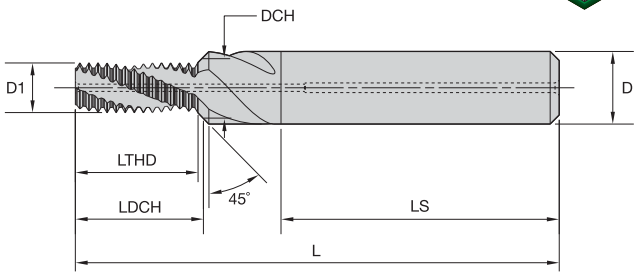
Shank Tolerance	
D	Tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–18	+0, -0,011
20–30	+0, -0,013

■ GTM21 • Through Coolant • Inch UNC



WU12PV	D1 size	D1	DCH	LTHD	LDCH	L	LS	D	cutting edges
GTM215024	#10-32	3,8	5,13	9,95	10,53	55	36	6,0	3
GTM215017	1/4-20	4,7	6,65	13,36	14,23	62	36	8,0	3
GTM215025	1/4-28	5,2	6,65	13,19	13,84	62	36	8,0	3
GTM215018	5/16-18	6,2	8,25	16,26	17,19	74	40	10,0	3
GTM215026	5/16-24	6,6	8,25	16,44	17,15	74	40	10,0	3
GTM215019	3/8-16	7,7	9,83	19,89	20,85	80	45	12,0	3
GTM215027	3/8-24	8,2	9,83	19,62	20,31	80	45	12,0	3
GTM215020	7/16-14	9,0	11,43	22,72	23,79	80	45	12,0	3
GTM215028	7/16-20	9,6	11,43	22,28	23,08	80	45	12,0	3
GTM215021	1/2-13	10,4	13,00	26,43	27,60	90	45	14,0	4
GTM215029	1/2-20	11,1	13,00	26,10	26,89	90	45	14,0	4
GTM215022	9/16-12	11,8	14,61	30,75	31,99	100	48	16,0	4
GTM215030	9/16-18	12,5	14,61	28,99	29,88	100	48	16,0	4
GTM215023	5/8-11	13,1	16,18	33,54	34,89	102	48	18,0	4
GTM215031	5/8-18	14,1	16,18	33,24	34,09	102	48	18,0	4



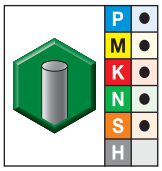


VICTORY

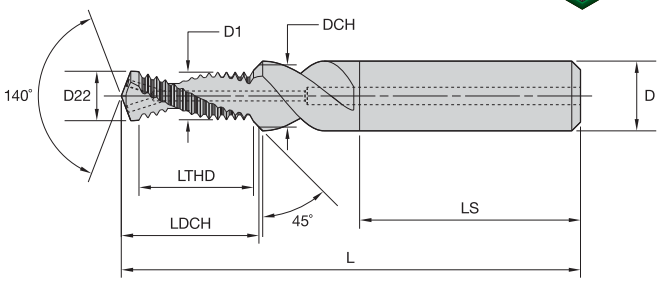
● first choice
○ alternate choice

Shank Tolerance	
D	Tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–18	+0, -0,011
20–30	+0, -0,013

GTM21 • Through Coolant • Metric and Metric Fine



WU12PV	D1 size	D1	DCH	LTHD	LDCH	L	LS	D	cutting edges
GTM215001	M5 X 0.8	4,0	5,3	10,82	11,40	55	36	6,0	3
GTM215008	M6 X 0.75	5,0	6,3	12,40	12,97	62	36	8,0	3
GTM215002	M6 X 1	4,8	6,3	12,52	13,19	62	36	8,0	3
GTM215009	M8 X 1	6,7	8,3	16,53	17,23	74	40	10,0	3
GTM215003	M8 X 1.25	6,5	8,3	16,91	17,71	74	40	10,0	3
GTM215010	M10 X 1	8,7	10,3	20,55	21,23	80	45	12,0	3
GTM215011	M10 X 1.25	8,4	10,3	20,67	21,50	80	45	12,0	3
GTM215004	M10 X 1.5	8,2	10,3	20,29	21,22	80	45	12,0	3
GTM215012	M12 X 1	10,6	12,3	24,56	25,27	90	45	14,0	4
GTM215013	M12 X 1.25	10,4	12,3	24,43	25,24	90	45	14,0	4
GTM215014	M12 X 1.5	10,1	12,3	24,80	25,76	90	45	14,0	4
GTM215005	M12 X 1.75	9,9	12,3	25,42	26,48	90	45	14,0	4
GTM215015	M14 X 1.5	12,1	14,3	29,31	30,25	100	48	16,0	4
GTM215006	M14 X 2	11,6	14,3	29,05	30,24	100	48	16,0	4
GTM215016	M16 X 1.5	14,0	16,3	32,31	33,30	102	48	18,0	4
GTM215007	M16 X 2	13,6	16,3	33,05	34,24	102	48	18,0	4

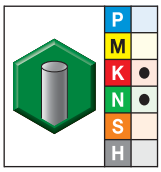


VICTORY

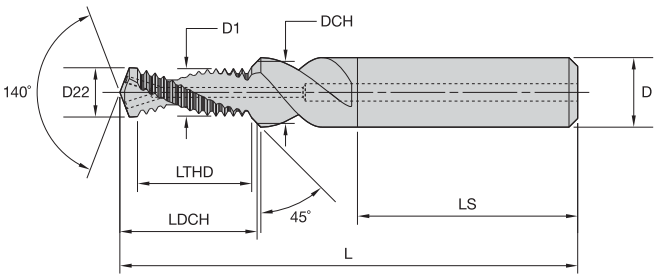
● first choice
○ alternate choice

Shank Tolerance	
D	Tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–18	+0, -0,011
20–30	+0, -0,013

■ GTM31 • Through Coolant • Inch UNC



WU12PV	D1 size	D22	D1	DCH	LTHD	LDCH	L	LS	D	cutting edges
GTM315021	1/4-20	5,2	4,9	6,7	12,80	15,87	62	36	8,0	2
GTM315028	1/4-28	5,5	5,3	6,7	12,79	15,35	62	36	8,0	2
GTM315023	5/16-18	6,6	6,3	8,3	15,63	19,19	74	40	10,0	2
GTM315030	5/16-24	6,9	6,6	8,3	15,98	19,07	74	40	10,0	2
GTM315017	3/8-16	8,0	7,7	9,8	19,16	23,25	79	45	12,0	2
GTM315024	3/8-24	8,5	8,2	9,8	19,16	22,54	79	45	12,0	2
GTM315018	7/16-14	9,4	9,0	11,4	21,89	26,58	79	45	12,0	2
GTM315025	7/16-20	9,9	9,6	11,4	21,72	25,69	79	45	12,0	2
GTM315019	1/2-13	10,8	10,4	13,0	25,52	30,71	89	45	14,0	2
GTM315026	1/2-20	11,5	11,1	13,0	25,55	29,82	89	45	14,0	2
GTM315020	9/16-12	12,3	11,8	14,6	27,66	33,37	102	48	16,0	2
GTM315027	9/16-18	12,9	12,5	14,6	28,37	33,15	102	48	16,0	2
GTM315022	5/8-11	13,5	13,1	16,2	30,14	36,40	102	48	18,0	2
GTM315029	5/8-18	14,5	14,1	16,2	31,21	36,25	102	48	18,0	2

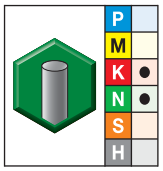


● first choice
○ alternate choice

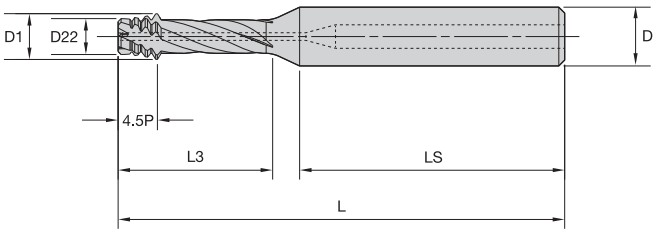
VICTORY

Shank Tolerance	
D	Tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–18	+0, -0,011
20–30	+0, -0,013

■ GTM31 • Through Coolant • Metric and Metric Fine



WU12PV	D1 size	D22	D1	DCH	LTHD	LDCH	L	LS	D	cutting edges
GTM315001	M4 X 0.7	3,3	3,2	4,3	7,74	9,6	49	36	6,0	2
GTM315002	M5 X 0.8	4,2	4,0	5,3	9,65	11,8	55	36	6,0	2
GTM315009	M6 X 0.75	5,3	5,1	6,3	12,07	14,4	62	36	8,0	2
GTM315003	M6 X 1	5,0	4,8	6,3	12,06	14,7	62	36	8,0	2
GTM315010	M8 X 1	7,0	6,8	8,3	16,09	19,1	74	40	10,0	2
GTM315004	M8 X 1.25	6,8	6,5	8,3	15,08	18,4	74	40	10,0	2
GTM315012	M10 X 1.25	8,8	8,4	10,3	20,11	23,9	79	45	12,0	2
GTM315005	M10 X 1.5	8,5	8,2	10,3	19,59	23,7	79	45	12,0	2
GTM315014	M12 X 1.5	10,5	10,2	12,3	24,12	28,6	89	45	14,0	2
GTM315006	M12 X 1.75	10,3	9,9	12,3	22,86	27,6	89	45	14,0	2
GTM315011	M10 X 1	9,0	8,7	10,3	20,11	23,5	79	45	12,0	2
GTM315013	M12 X 1.25	10,8	10,4	12,3	23,88	28,0	89	45	14,0	2
GTM315015	M14 X 1.5	12,5	12,1	14,3	27,14	32,0	102	48	16,0	2
GTM315007	M14 X 2	12,0	11,6	14,3	28,12	33,6	102	48	16,0	2
GTM315016	M16 X 1.5	14,5	14,1	16,3	31,65	36,9	102	48	18,0	2
GTM315008	M16 X 2	14,0	13,6	16,3	32,13	38,0	102	48	18,0	2

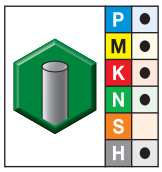


● first choice
○ alternate choice

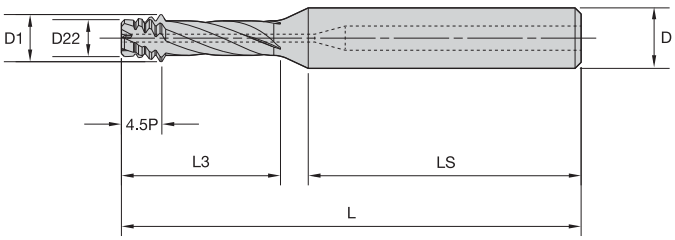
VICTORY

Shank Tolerance	
D	Tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–18	+0, -0,011
20–30	+0, -0,013

■ GTM41 • Through Coolant • Right Hand • Inch UNC and UNF



WU16PV	D1 size	D1	D22	L3	L	LS	D	cutting edges
GTM415025	1/4-20	4,64	3,34	17,0	60	36	8,0	3
GTM415033	1/4-28	4,66	3,62	17,0	60	36	8,0	3
GTM415026	5/16-18	5,64	4,12	21,9	76	40	10,0	4
GTM415034	5/16-24	5,64	4,48	21,9	76	40	10,0	4
GTM415035	3/8-24	7,14	6,00	26,3	76	40	10,0	4
GTM415027	3/8-16	7,16	5,42	26,3	76	40	10,0	4
GTM415037	1/2-20	8,45	7,06	33,0	86	45	12,0	4
GTM415036	7/16-20	8,45	7,06	33,0	86	45	12,0	4
GTM415028	7/16 - 24	8,47	6,49	31,0	86	45	12,0	4
GTM415029	1/2-13	10,08	7,95	33,4	86	45	12,0	4
GTM415038	9/16-18	11,27	9,72	41,0	98	48	16,0	4
GTM415030	9/16-12	11,28	8,98	41,0	98	48	16,0	4
GTM415039	5/8-18	12,38	10,83	42,0	98	48	16,0	4
GTM415031	5/8-11	12,89	10,40	42,0	98	48	16,0	4
GTM415040	3/4-16	15,38	13,65	51,3	111	50	20,0	5
GTM415032	3/4-10	15,50	12,77	51,3	111	50	20,0	5

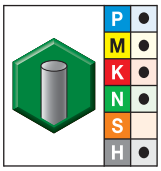


VICTORY

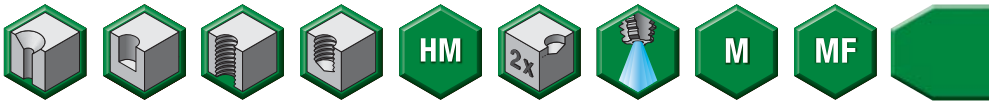
● first choice
○ alternate choice

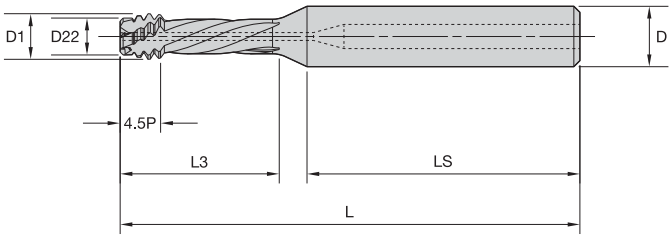
Shank Tolerance	
D	Tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–18	+0, -0,011
20–30	+0, -0,013

■ GTM41 • Through Coolant • Right Hand • Metric and Metric Fine



WU16PV	D1 size	D1	D22	L3	L	LS	D	cutting edges
GTM415001	M6 X 1	4,51	3,41	17	60	36	8,0	3
GTM415002	M7 X 1	4,51	3,41	17	60	36	8,0	3
GTM415013	M10 X 1.25	6,23	4,91	22	71	40	10,0	4
GTM415003	M8 X 1.25	6,23	4,91	22	71	40	10,0	4
GTM415004	M9 X 1.25	6,23	4,91	22	71	40	10,0	4
GTM415016	M10 X 1	6,23	5,13	22	71	40	10,0	4
GTM415014	M8 X 1	6,23	5,13	22	71	40	10,0	4
GTM415015	M9 X 1	6,23	5,13	22	71	40	10,0	4
GTM415005	M10 X 1.5	7,75	6,11	26	76	40	10,0	4
GTM415006	M11 X 1.5	7,75	6,11	26	76	40	10,0	4
GTM415007	M12 X 1.5	7,75	6,11	26	76	40	10,0	4
GTM415017	M12 X 1	9,15	8,06	30	86	45	12,0	4
GTM415018	M14 X 1	9,15	8,06	30	86	45	12,0	4
GTM415008	M12 X 1.75	9,16	7,21	32	86	45	12,0	4
GTM415019	M14 X 1.5	10,83	9,15	37	98	48	16,0	4
GTM415020	M16 X 1.5	10,83	9,15	37	98	48	16,0	4
GTM415009	M14 X 2	11,08	8,91	41	98	48	16,0	4
GTM415010	M16 X 2	11,08	8,91	41	98	48	16,0	4
GTM415011	M18 X 2.5	14,38	11,71	51	111	50	20,0	5
GTM415012	M20 X 2.5	14,38	11,71	51	111	50	20,0	5
GTM415021	M18 X 1.5	14,83	13,15	47	98	48	16,0	4
GTM415022	M20 X 1.5	14,83	13,15	47	98	48	16,0	4
GTM415023	M22 X 1.5	18,23	16,55	56	111	50	20,0	5
GTM415024	M24 X 1.5	18,23	16,55	56	111	50	20,0	5

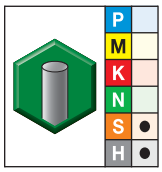




VICTORY

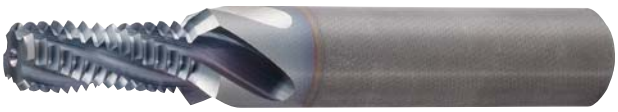
● first choice
○ alternate choice

■ GTM41 • Through Coolant • Left Hand • Metric and Metric Fine



WU16PV	D1 size	D1	D22	L3	L	LS	D	cutting edges
GTM415041	M6 X 1	4,51	3,41	17	60	36	8,0	3
GTM415042	M7 X 1	4,51	3,41	17	60	36	8,0	3
GTM415043	M8 X 1.25	6,23	4,91	22	71	40	10,0	4
GTM415044	M9 X 1.25	6,23	4,91	22	71	40	10,0	4
GTM415045	M10 X 1.5	7,75	6,11	26	76	40	10,0	4
GTM415046	M11 X 1.5	7,75	6,11	26	76	40	10,0	4
GTM415047	M12 X 1.5	9,17	7,21	32	86	45	12,0	4

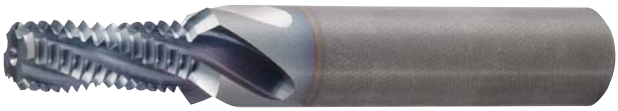
Thread Mill GTM11



Thread Mill • Chamfer GTM21

Group		Cutting Speed — vc Range — SFM			Feed/Tooth by Diameter			Cutting Speed — vc Range — SFM			Feed/Tooth by Diameter		
		min	Starting Value	max		<0.375	>0.375	min	Starting Value	max		<0.375	>0.375
P	1	300	**380**	490	inch	0.002	0.003	460	**610**	790	inch	0.002	0.004
	2	300	**380**	490	inch	0.002	0.003	460	**610**	790	inch	0.002	0.004
	3	130	**160**	230	inch	0.001	0.001	230	**300**	390	inch	0.001	0.001
	4	—	—	—	—	—	—	230	**300**	390	inch	0.001	0.001
	5	200	**260**	330	inch	0.002	0.002	230	**300**	390	inch	0.002	0.003
	6	—	—	—	—	—	—	—	—	—	—	—	—
M	1	200	**260**	330	inch	0.002	0.002	230	**300**	390	inch	0.002	0.003
	2	200	**260**	330	inch	0.002	0.002	230	**300**	390	inch	0.002	0.003
	3	—	—	—	—	—	—	—	—	—	—	—	—
K	1	390	**490**	660	inch	0.002	0.004	430	**560**	720	inch	0.002	0.004
	2	390	**490**	660	inch	0.002	0.004	430	**560**	720	inch	0.002	0.004
	3	300	**380**	490	inch	0.002	0.003	360	**460**	590	inch	0.002	0.003
N	1	660	**740**	820	inch	0.002	0.002	890	**980**	1080	inch	0.003	0.006
	2	560	**620**	690	inch	0.002	0.002	520	**570**	620	inch	0.003	0.006
	3	820	**900**	980	inch	0.003	0.004	890	**980**	1080	inch	0.003	0.006
	4	820	**900**	980	inch	0.003	0.004	890	**980**	1080	inch	0.003	0.006
	5	890	**980**	1080	inch	0.005	0.005	820	**900**	980	inch	0.004	0.008
	6	560	**620**	690	inch	0.002	0.002	300	**330**	360	inch	0.004	0.008
S	1	200	**260**	330	inch	0.002	0.002	230	**300**	390	inch	0.002	0.003
	2	160	**210**	260	inch	0.001	0.002	160	**200**	260	inch	0.001	0.002
	3	160	**210**	260	inch	0.001	0.002	160	**200**	260	inch	0.001	0.002
	4	160	**210**	260	inch	0.001	0.002	160	**200**	260	inch	0.001	0.002

Thread Mill GTM11



Thread Mill • Chamfer GTM21

Group		Cutting Speed — vc Range — m/min			Feed/Tooth by Diameter			Cutting Speed — vc Range — m/min			Feed/Tooth by Diameter		
		min	Starting Value	max		<10mm	>10mm	min	Starting Value	max		<10mm	>10mm
P	1	90	**115**	150	mm	0,05	0,08	140	**185**	240	mm	0,06	0,10
	2	90	**115**	150	mm	0,05	0,08	140	**185**	240	mm	0,06	0,10
	3	40	**50**	70	mm	0,02	0,03	70	**90**	120	mm	0,03	0,04
	4	—	—	—	—	—	—	70	**90**	120	mm	0,03	0,04
	5	60	**80**	100	mm	0,04	0,06	70	**90**	120	mm	0,05	0,08
	6	—	—	—	—	—	—	—	—	—	—	—	—
M	1	60	**80**	100	mm	0,04	0,06	70	**90**	120	mm	0,05	0,08
	2	60	**80**	100	mm	0,04	0,06	70	**90**	120	mm	0,05	0,08
	3	—	—	—	—	—	—	—	—	—	—	—	—
K	1	120	**150**	200	mm	0,06	0,10	130	**170**	220	mm	0,06	0,11
	2	120	**150**	200	mm	0,06	0,10	130	**170**	220	mm	0,06	0,11
	3	90	**115**	150	mm	0,05	0,07	110	**140**	180	mm	0,05	0,07
N	1	200	**225**	250	mm	0,05	0,06	270	**300**	330	mm	0,08	0,16
	2	170	**190**	210	mm	0,04	0,05	160	**175**	190	mm	0,08	0,16
	3	250	**275**	300	mm	0,07	0,09	270	**300**	330	mm	0,08	0,16
	4	250	**275**	300	mm	0,07	0,09	270	**300**	330	mm	0,08	0,16
	5	270	**300**	330	mm	0,12	0,13	250	**275**	300	mm	0,11	0,20
	6	170	**190**	210	mm	0,05	0,06	90	**100**	110	mm	0,11	0,20
S	1	60	**80**	100	mm	0,04	0,06	70	**90**	120	mm	0,05	0,08
	2	50	**65**	80	mm	0,03	0,04	50	**60**	80	mm	0,03	0,05
	3	50	**65**	80	mm	0,03	0,04	50	**60**	80	mm	0,03	0,05
	4	50	**65**	80	mm	0,03	0,04	50	**60**	80	mm	0,03	0,05

Drill • Chamfer • Thread Mill GTM31

Group		Cutting Speed — vc Range — SFM			Drilling				Milling			
					Recommended Feed by Diameter				Feed/Tooth by Diameter			
		min	Starting Value	max		<0.250	0.250–0.375	0.375–0.625		<0.250	0.250–0.375	0.375–0.625
K	1	430	**570**	750	IPR	0.004	0.006	0.012	inch	0.002	0.003	0.004
N	1	890	**980**	1080	IPR	0.006	0.010	0.013	inch	0.002	0.003	0.005
	2	460	**490**	560	IPR	0.006	0.010	0.013	inch	0.002	0.003	0.005
	4	890	**980**	1080	IPR	0.006	0.010	0.013	inch	0.002	0.003	0.005
	5	360	**390**	430	IPR	0.005	0.008	0.013	inch	0.002	0.003	0.005

Drill • Chamfer • Thread Mill GTM31

Group		Cutting Speed — vc Range — m/min			Drilling: Recommended Feed by Diameter				Milling: Feed/Tooth by Diameter			
		min	Starting Value	max		<6mm	6–10mm	10–16mm		<6mm	6–10mm	10–16mm
K	1	130	**175**	230	mm/r	0,10	0,16	0,30	mm	0,05	0,07	0,10
N	1	270	**300**	330	mm/r	0,15	0,25	0,34	mm	0,06	0,08	0,12
	2	140	**150**	170	mm/r	0,15	0,25	0,34	mm	0,06	0,08	0,12
	4	270	**300**	330	mm/r	0,15	0,25	0,34	mm	0,06	0,08	0,12
	5	110	**120**	130	mm/r	0,12	0,20	0,32	mm	0,06	0,08	0,12

Mill • Chamfer • Thread Mill GTM41

Group		TM Style	Grade	Cutting Speed — vc Range — SFM min	Starting Value	max	Feed/Tooth by Diameter		
								<0.375	>0.375
P	1	GTM41 R	KCU36	560	**740**	950	inch	0.002	0.003
	2	GTM41 R	KCU36	560	**740**	950	inch	0.002	0.003
	3	GTM41 R	KCU36	390	**490**	660	inch	0.001	0.002
	4	GTM41 R	KCU36	330	**410**	520	inch	0.001	0.002
	5	GTM41 R	KCU36	390	**490**	660	inch	0.001	0.002
	6	GTM41 R	KCU36	200	**260**	330	inch	0.001	0.002
M	1	GTM41 R	KCU36	390	**490**	660	inch	0.001	0.002
	2	GTM41 R	KCU36	390	**490**	660	inch	0.001	0.002
	3	GTM41 R	KCU36	390	**490**	660	inch	0.001	0.002
K	1	GTM41 R	KCU36	620	**820**	1080	inch	0.002	0.004
	2	GTM41 R	KCU36	620	**820**	1080	inch	0.002	0.004
	3	GTM41 R	KCU36	460	**610**	790	inch	0.002	0.003
N	1	—	—	—	—	—	—	—	—
	2	GTM41 R	KCU36	590	**750**	980	inch	0.002	0.003
	3	—	—	—	—	—	—	—	—
	4	GTM41 R	KCU36	690	**900**	1180	inch	0.002	0.003
	5	—	—	—	—	—	—	—	—
	6	GTM41 R	KCU36	690	**900**	1180	inch	0.002	0.003
S	1	GTM41 L	KCU36	390	**490**	660	inch	0.001	0.002
	2	GTM41 L	KCU36	160	**200**	260	inch	0.001	0.001
	3	GTM41 L	KCU36	160	**200**	260	inch	0.001	0.001
	4	GTM41 L	KCU36	230	**300**	390	inch	0.001	0.001
H	1	GTM41	KCU36	260	**330**	430	inch	0.001	0.002
	2	GTM41	KCU36	260	**330**	430	inch	0.001	0.002
	3	GTM41	KCU36	160	**210**	260	inch	0.001	0.001
	4	GTM41	KCU36	160	**210**	260	inch	0.001	0.001

NOTE: For thread depths over 2 x D up to 3 x D, reduce speed by 25% and feed by 25%.

Mill • Chamfer • Thread Mill GTM41

Group		TM Style	Grade	Cutting Speed — vc Range — m/min min	Starting Value	max		Feed/Tooth by Diameter <10mm	>10mm
P	1	GTM41 R	KCU36	170	**225**	290	mm	0,05	0,08
	2	GTM41 R	KCU36	170	**225**	290	mm	0,05	0,08
	3	GTM41 R	KCU36	120	**150**	200	mm	0,03	0,05
	4	GTM41 R	KCU36	100	**125**	160	mm	0,03	0,05
	5	GTM41 R	KCU36	120	**150**	200	mm	0,03	0,04
	6	GTM41 R	KCU36	60	**80**	100	mm	0,03	0,04
M	1	GTM41 R	KCU36	120	**150**	200	mm	0,03	0,04
	2	GTM41 R	KCU36	120	**150**	200	mm	0,03	0,04
	3	GTM41 R	KCU36	120	**150**	200	mm	0,03	0,04
K	1	GTM41 R	KCU36	190	**250**	330	mm	0,06	0,10
	2	GTM41 R	KCU36	190	**250**	330	mm	0,06	0,10
	3	GTM41 R	KCU36	140	**185**	240	mm	0,04	0,07
N	1	—	—	—	—	—	—	—	—
	2	GTM41 R	KCU36	180	**230**	300	mm	0,06	0,07
	3	—	—	—	—	—	—	—	—
	4	GTM41 R	KCU36	210	**275**	360	mm	0,06	0,07
	5	—	—	—	—	—	—	—	—
	6	GTM41 R	KCU36	210	**275**	360	mm	0,06	0,07
S	1	GTM41 L	KCU36	120	**150**	200	mm	0,025	0,045
	2	GTM41 L	KCU36	50	**60**	80	mm	0,015	0,025
	3	GTM41 L	KCU36	50	**60**	80	mm	0,015	0,025
	4	GTM41 L	KCU36	70	**90**	120	mm	0,025	0,035
H	1	GTM41	KCU36	80	**100**	130	mm	0,030	0,050
	2	GTM41	KCU36	80	**100**	130	mm	0,030	0,050
	3	GTM41	KCU36	50	**65**	80	mm	0,020	0,030
	4	GTM41	KCU36	50	**65**	80	mm	0,020	0,030

NOTE: For thread depths over 2 x D up to 3 x D, reduce speed by 25% and feed by 25%.

Thread Milling Methods

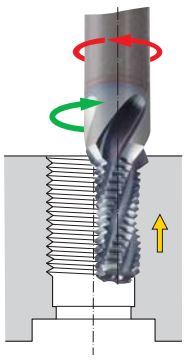
Climb Milling

Properties:

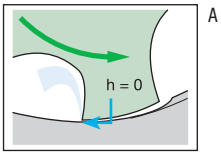
- Tool rotation direction clockwise
- Tool moves counterclockwise
- Pitch upwards

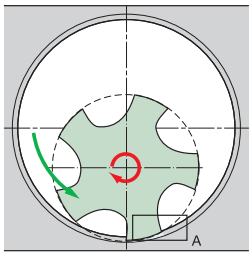
↓

- Right-hand thread



Climb milling is always when the cutting edge goes out of the material with a chip thickness h = 0





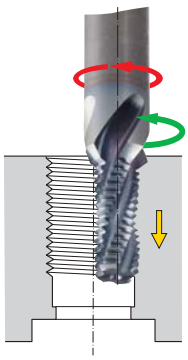
Conventional Milling

Properties:

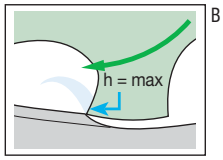
- Tool rotation direction clockwise
- Tool moves clockwise
- Pitch downwards

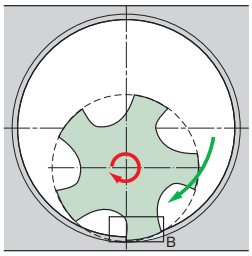
↓

- Right-hand thread



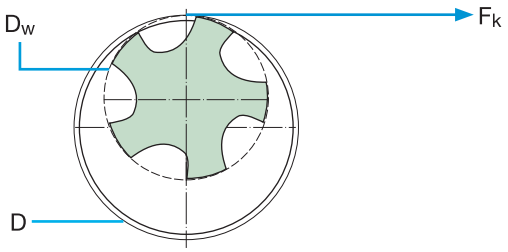
Conventional milling is always when the cutting edge goes out of the material with a chip thickness h = max





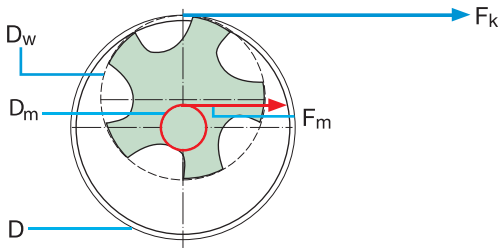
Counter Feed F_k

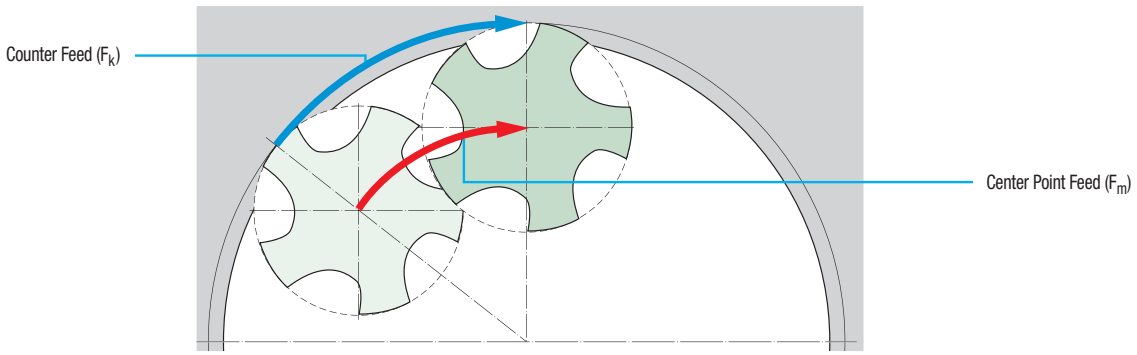
$$F_k = n \cdot f_z \cdot Z \text{ [mm/min]}$$



Center Point Feed F_m

$$F_m = \frac{F_k \cdot (D-D_w)}{D} \text{ [mm/min]}$$



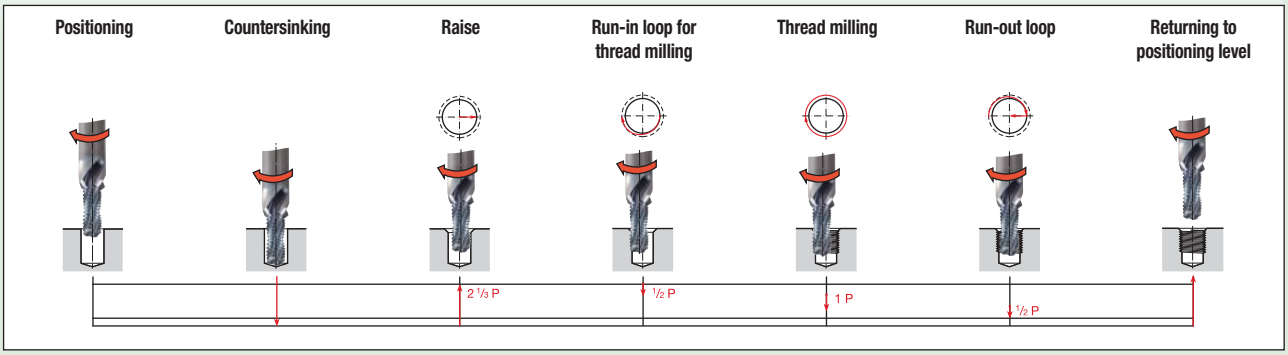


D_w = Tool diameter [mm]
n = RPM [min^{-1}]
f_z = Feed per tooth [mm]
Z = Number of teeth on tool (radial)
D = Nominal diameter of thread = Diameter of external contour [mm]
D_m = Diameter of the center point ($D-D_w$) [mm]

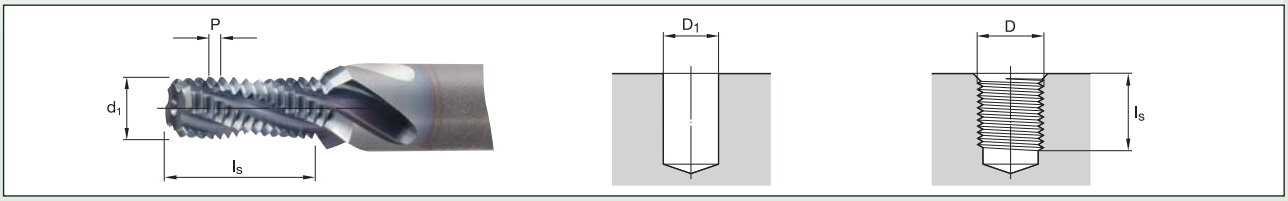
Thread Mill GTM21

Preparation	Drilling of thread hole
Process Principle	Countersinking, thread milling (conventional milling)

Cycle



Required Specification Values



Example

Size — M10-6H
Thread diameter D 10mm
Pitch.....1,5mm
Core hole diameter D_1 .....8,5mm

Material — Cast aluminum

Grade — WU12PV

Tool — GTM21
Catalog number GTM215004
Number of teeth Z 3
Tool diameter d_1 .....8,2mm*
Tool radius compensation k [1] 0,1mm**
Tool radius to be programmed [2] 4mm***
Countersink depth l_s.....21,2mm
Cutting speed v_c.....250 m/min
Feed (countersinking) f_s.....0,3 mm/U
Feed (milling) f_z .....0,09 mm/tooth

*(measured on the cutting part) **(0.01 x D) ***(1/2 d_1 - k)

$N = \frac{V_c \cdot 1000}{d_1 \cdot \pi}$	S = 9709
$v_s = f_s \cdot n$	F = 2913 (countersinking)
$v_f = f_z \cdot Z \cdot n$	F = 2622 (contour)
$v_f = \frac{v_f \text{ contour} \cdot (D-d_1)}{D}$	F = 472 (center point)

Program to DIN 66025 (conventional milling, on the contour, incremental)

Positioning the tool	N 10	G 54	G 90	G 00	X…	Y…	Z 2	S 9709	T01 [2]	M03
Advancing tool to full thread depth	N 20	G 91	Z-21.200							
Countersinking	N 30	G 01	Z-2	F 2913 (countersink)						
Raise	N 40	G 00	Z 3.450							
Moving sideways to the starting point	N 50	G 42	G01	X 4.250	F 1311 (milling, 1/2 contour)			[F 236] [3] (milling,1/2 center point)		
Run-in loop in arc	N 60	G 02	X-9.25	Y 0.000	Z-0.750	I-4.625	J 0			
Thread milling	N 70	G 02	X 0	Y 0	Z-1.500	I 5	J 0.000	F2622 [F 472] [3] (center point)		
Run-out loop in arc	N 80	G 02	X 9.25	Y 0.000	Z-0.750	I 4.625	J 0			
Exit	N 90	G 40	G 01	X-4.25						
Retracting tool to positioning level	N 100	G 90	G 00	Z 2						

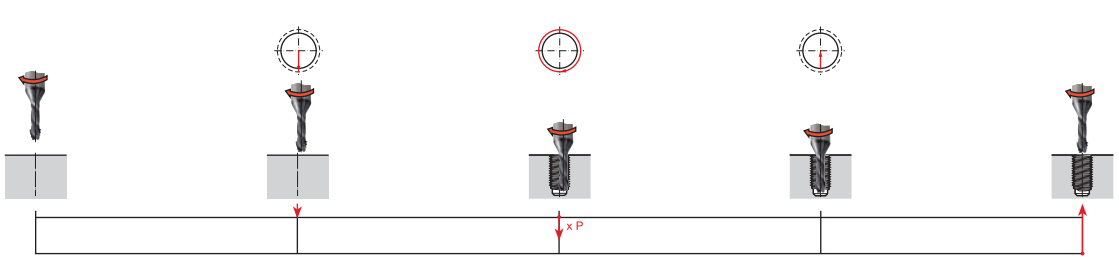
Cutting time t_h	**1.4 seconds**

NOTES:
[1] The cutter radius measured over the tooth crests of the threaded part must be reduced by the amount of the cutter radius compensation. This is necessary to achieve a depth of cut to the middle of the 6H/ISO2 nut tolerance. Please note, however, that this also depends on the radial deflection of the tool (tensile strength of the material, projecting length of the tool).
[2] The cutter radius to be programmed is normally included in the tool memory.
[3] The feed values in brackets must be used for controllers, which do not calculate the center point feed themselves.

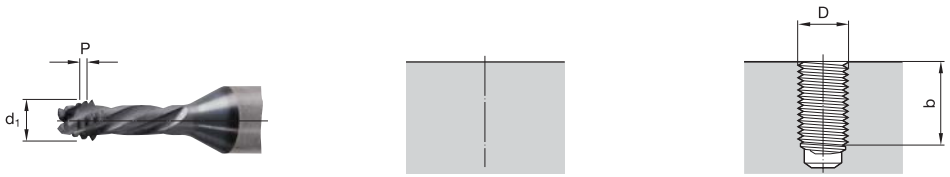
Drill Thread Mill GTM41 • Right Hand

Preparation	None
Process Principle	Milling thread and core hole, countersinking (conventional milling)

Cycle



Required Specification Values



Example

Size — M10-6H
Thread diameter D 10mm
Pitch.....1,5mm
Core hole diameter D_1 .....8,5mm

Material — Hard steel, 50 HRC

Grade — WU16PV

Tool — GTM41 Right Hand
Catalog number GTM415005
Number of teeth Z 4
Tool diameter d_1 .....7,75mm*
Tool radius compensation k [1] 0,08mm**
Tool radius to be programmed [2].....3,795mm***
Thread depth b 20mm
Cutting speed v_c.....100 m/min
Feed (milling) f_z .....0,04 mm/tooth
Number of turns [5] 17

*(measured on the cutting part) **(0.01 x D; adjust to application) ***(1/2 d_1 - k)

$$N = \frac{V_c \cdot 1000}{d_1 \cdot \pi}$$ **S = 4109**

$$v_f = f_z \cdot Z \cdot n$$ **F = 657 (contour)**

$$N = \frac{v_f \text{ contour} \cdot (D-d_1)}{D}$$ **F = 148 (center point)**

Program to DIN 66025 (conventional milling, on the contour, incremental)

Positioning the tool	N 10	G 54	G 90	G 00	X…	Y…	Z 1.500	S 4109	T01 [2]	M03 [6]
Incremental programming	N 20	G 91								
Moving sideways to the starting point	N 30	G 42	G 01	X 0	Y-5	F 657 (contour)		[F 148] [4] (center point)		
Thread milling	N 40	G 02		X 0	Y 0	Z-1.500	I 0	J 5.000		
Repeat thread milling	… [5]									
Exit	N 50	G 40	G 01	X 0	Y 5					
Retracting tool to positioning level	N 70	G 90	G 00	Z 2						

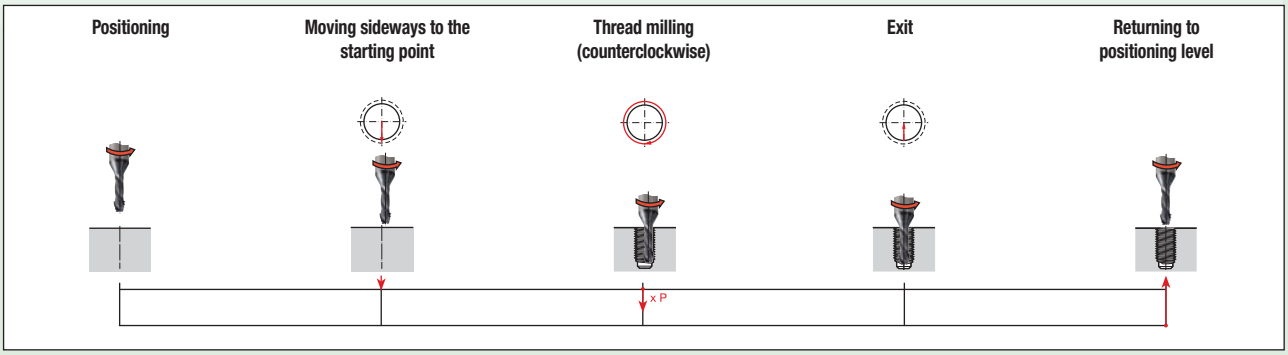
Cutting time t_h	**51.6 seconds**

NOTES:
[1] The cutter radius measured over the tooth crests of the threaded part must be reduced by the amount of the cutter radius compensation. This is necessary to achieve a depth of cut to the middle of the 6H/ISO2 nut tolerance. Please note, however, that this also depends on the radial deflection of the tool (tensile strength of the material, projecting length of the tool).
[2] The cutter radius to be programmed is normally included in the tool memory.
[3] The thread depth b must be divisible by the thread pitch P.
[4] The feed values in brackets must be used for controllers, which do not calculate the center point feed themselves.
[5] Set N40 must be repeated with the number of threads. Repetitions N = thread depth b/pitch P (rounded up to the nearest integer).

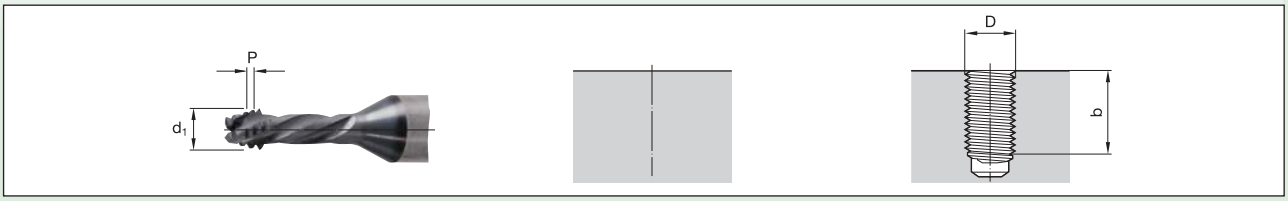
Drill Thread Mill GTM41 • Left Hand

Preparation	None
Process Principle	Milling thread and core hole, countersinking (climb milling)

Cycle



Required Specification Values



Example

Size — M10-6H
Thread diameter D 10mm
Pitch.....1,5mm
Core hole diameter D_1 .....8,5mm

Material — TiAl6V4 titanium

Grade — WU16PV

Tool — GTM41 Left Hand
Catalog number GTM415045
Number of teeth Z 4
Tool diameter d_1 .....7,75mm*
Tool radius compensation k [1] 0,08mm**
Tool radius to be programmed [2].....3,795mm***
Drilling/countersink depth l_E 20mm
Cutting speed v_c.....100 m/min
Feed (milling) f_z .....0,03 mm/tooth
Number of turns [5] 17

*(measured on the cutting part) **(0.01 x D) ***(1/2 d_1 - k)

$$N = \frac{V_c \cdot 1000}{d_1 \cdot \pi} \qquad S = 4109$$

$$v_f = f_z \cdot Z \cdot n \qquad F = 493 \text{ (contour)}$$

$$v_f = \frac{v_f \text{ contour} \cdot (D-d_1)}{D} \qquad F = 111 \text{ (center point)}$$

Program to DIN 66025 (climb milling, on the contour, incremental)

Positioning the tool	N 10	G 54	G 90	G 00	X…	Y…	Z 1.500	S 4109	T01 [2]	M04
Incremental programming	N 20	G 91								
Moving sideways to the starting point	N 30	G 42	G 01	X 0	Y-5	F 493 (contour)		[F 111] [4] (center point)		
Thread milling	N 40	G 02		X 0	Y 0	Z-1.500	I 0	J 5.000		
Repeat thread milling	… [5]									
Exit	N 50	G 40	G 01	X 0	Y 5					
Retracting tool to positioning level	N 70	G 90	G 00	Z 2						

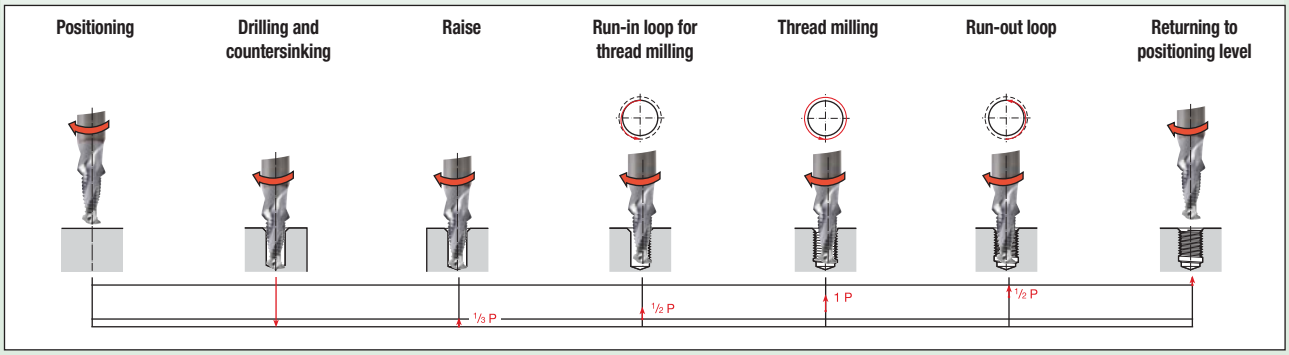
Cutting time t_h	**68.8 seconds**

NOTES:
[1] The cutter radius measured over the tooth crests of the threaded part must be reduced by the amount of the cutter radius compensation. This is necessary to achieve a depth of cut to the middle of the 6H/ISO2 nut tolerance. Please note, however, that this also depends on the radial deflection of the tool (tensile strength of the material, projecting length of the tool).
[2] The cutter radius to be programmed is normally included in the tool memory.
[3] The thread depth b must be divisible by the thread pitch P.
[4] The feed values in brackets must be used for controllers, which do not calculate the center point feed themselves.
[5] Set N40 must be repeated with the number of threads. Repetitions N = thread depth b/pitch P (rounded up to the nearest integer).

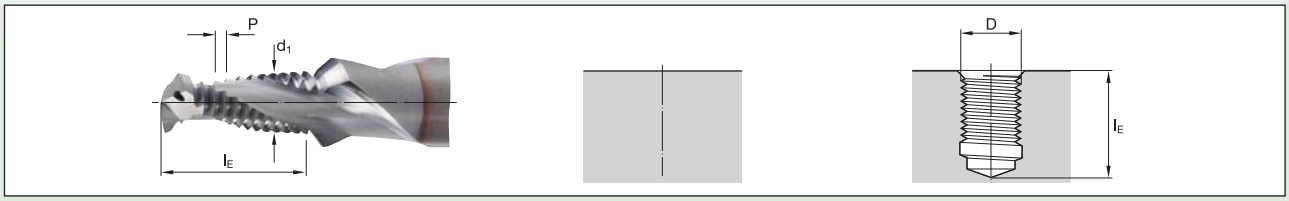
Drill Thread Mill GTM31

Preparation	None
Process Principle	Drilling, countersinking, thread milling (climb milling)

Cycle



Required Specification Values



Example

Size — M10-6H
Thread diameter D 10mm
Pitch.....1,5mm
Core hole diameter D_1 .....8,5mm

Material — Gray cast iron

Grade — WU12PV

Tool — GTM31
Catalog number GTM315005
Number of teeth Z 2
Tool diameter d_1.....8,2mm*
Tool radius compensation k [1] 0,1mm**
Tool radius to be programmed [2] 4mm***
Drilling/countersink depth l_E.....19,11mm
Cutting speed v_c.....250 m/min
Feed (drilling, countersinking) f_b .....0,25 mm/U
Feed (milling) f_z .....0,1 mm/tooth

*(measured on the cutting part) **(0.01 x D) ***(1/2 d_1 - k)

$N = \frac{V_c \cdot 1000}{d_1 \cdot \pi}$	S = 9709
$v_b = f_b \cdot n$	F = 2427 (drilling, countersinking)
$v_f = f_z \cdot Z \cdot n$	F = 1942 (contour)
$v_f = \frac{v_f \text{ contour} \cdot (D-d_1)}{D}$	F = 350 (center point)

Program to DIN 66025 (climb milling, on the contour, incremental)

Positioning the tool	N 10	G 54	G 90	G 00	X…	Y…	Z 2	S 9709	T01 [2]	M03
Drilling and countersinking	N 20	G 91	G 01	Z-21.110	F 2427 (drill, countersink)					
Raise	N 30	G 01	Z 0.500							
Moving sideways to the starting point	N 40	G 41	Y-4.250	F 971 (milling, 1/2 contour)				[F 175] [3] (1/2 center point)		
Run-in loop in arc	N 50	G 03	X 0	Y 9.250	Z 0.750	I 0	J 4.625			
Thread milling	N 60	G 03	X 0	Y 0	Z 1.500	I 0	J -5.000	F1942 [F 350] [3] (center point)		
Run-out loop in arc	N 70	G 03	X 0	Y-9.250	Z 0.750	I 0	J- 4.625			
Exit	N 80	G 00	G 40	X 0	Y 4.250					
Retracting tool to positioning level	N 90	G 90	Z 2							

Cutting time t_h	**2.3 seconds**

NOTES:
[1] The cutter radius measured over the tooth crests of the threaded part must be reduced by the amount of the cutter radius compensation. This is necessary to achieve a depth of cut to the middle of the 6H/ISO2 nut tolerance. Please note, however, that this also depends on the radial deflection of the tool (tensile strength of the material, projecting length of the tool).
[2] The cutter radius to be programmed is normally included in the tool memory.
[3] The feed values in brackets must be used for controllers, which do not calculate the center point feed themselves.

Solid Carbide and Indexable Thread Mills

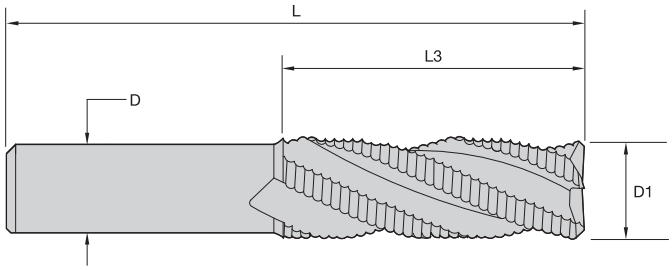
Features:

- Helical carbide thread mills with PVD TiAlN coating.
- Precision ground inserts and milled pocket with two flute holders.
- One tool for right- or left-hand threads for both internal and external threading applications.
- For fine or coarse pitch threads.

Benefits:

- Excellent resistance to wear and shock loading.
- Ensures accurate thread form alignment.
- Machines all materials.
- Produce threads in materials up to 62 Rc.

Helical Flute Solid Carbide Thread Mills



Features and Benefits:

- Manufactured from proprietary 12% cobalt micrograin carbide with excellent wear resistance and superior resistance to shock loading.
- PVD TiAlN coating standard.
- Helical flute design reduces chatter.
- Solid carbide thread mills produce full threads to within one pitch of a shoulder, 100% thread height to UN specifications.
- More cost effective than indexable thread mills.
- Same tool can produce:
  - Right- or left-hand threads.
  - Single or multiple lead threads.
  - Internal or external threads.
- Threads smaller than 1/2" (12mm) have reinforced shanks to minimize deflection.

Application Information:

- Steel
- Stainless steel
- Titanium
- High-temperature alloys
- Non-ferrous materials

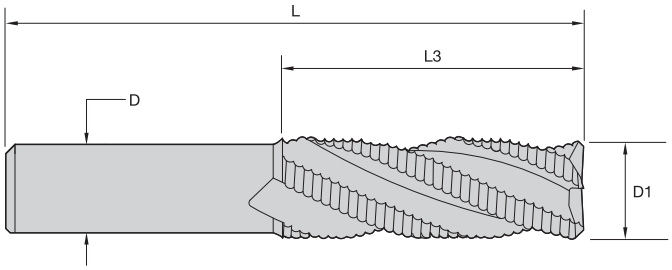
Solid Carbide Thread Mills

■ Series TMH-UN UNC/UNF Internal Threads

standard thread size	TPI	D1	L	L3	D	flutes	EDP number
8-10	32	.125	2.000	.375	.188	2	22602
10	24	.125	2.000	.375	.188	2	22604
1/4	28	.183	2.500	.562	.250	3	22603
1/4	20	.183	2.500	.562	.250	3	22606
5/16	18	.250	2.750	.750	.313	3	22608
5/16 & 3/8	24	.250	2.750	.750	.313	3	22605
3/8	16	.250	2.750	.750	.313	3	22610
7/16	14	.305	2.750	.875	.313	4	22612
7/16	14	.305	2.750	.875	.375	4	22622
7/16 & 1/2	20		2.750	.875	.313	4	22607
7/16 & 1/2	20	.305	2.750	.875	.375	4	22621
1/2	13	.305	2.750	.875	.313	4	22614
1/2	13	.305	2.750	.875	.375	4	22623
5/8	11	.370	2.750	1.125	.375	4	22617
9/16 & 5/8	18	.370	2.750	1.125	.375	4	22609
9/16	12	.370	2.750	1.125	.375	4	22615
3/4	12	.495	3.219	1.250	.500	4	22616
3/4	10	.495	3.219	1.250	.500	4	22618
13/16 +	16	.495	3.219	1.250	.500	4	22611
7/8	14	.495	3.219	1.250	.500	4	22613
1	8	.620	3.938	1.562	.625	4	22620

NOTE: D1 = Cutter diameter
D = Shank diameter
L = Overall length
L3 = Thread length

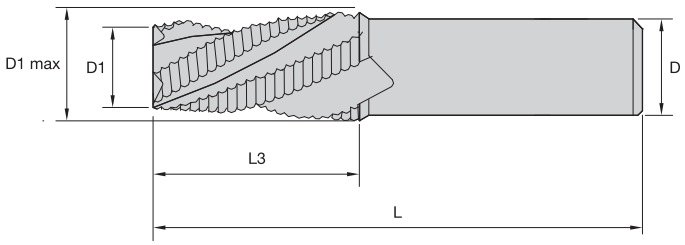
Metric Solid Carbide Thread Mills



Series TMH-ISO Internal Threads

standard thread size	D1	L	L3	D	flutes	EDP number
M4,5 x 0,75	.125	2.000	.375	.188	2	22637
M6 x 1	.183	2.500	.562	.250	3	22640
M8-M11 x 0,75	.250	2.750	.750	.313	3	22638
M8 x 1,25	.183	2.500	.562	.250	3	22642
M10 x 1,5	.250	2.750	.750	.313	3	22643
M12-M30 x 1	.305	2.750	.875	.313	4	22641
M12 x 1,75	.305	2.750	.875	.313	4	22646
M14-M80 x 1,5	.370	2.750	1.125	.375	4	22644
M16 x 2	.370	2.750	1.125	.375	4	22647
M18-M150 x 1,5	.495	3.219	1.250	.500	4	22645
M20 x 2,5	.495	3.219	1.250	.500	4	22648
M24 x 3	.620	3.938	1.562	.625	4	22649

NOTE: D1 = Cutter diameter
D = Shank diameter
L = Overall length
L3 = Thread length



Taper Pipe Size Solid Carbide Thread Mills

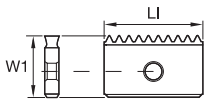
Series TMH-NPT and TMH-NPTF Internal and External Threads

								EDP number	
standard thread size	TPI	D1*	D1 max*	L	L3	D	flutes	NPT	NPTF
1/16 & 1/8	27	.2170	.248	2.500	.500	.250	3	22624	22630
1/4 & 3/8	18	.3120	.359	2.500	.750	.375	4	22625	22631
1/2 & 3/4	14	.4380	.500	2.500	1.000	.500	4	22626	22632
1/2 & 3/4	14	.4380	.500	2.750	1.000	.500	4	22636	22651
1-2	11 1/2	.5500	.620	2.750	1.125	.625	4	22627	22634
1-2	11 1/2	.5500	.620	3.500	1.125	.625	4	22650	22639

**D1 represents the small end diameter and D1 max represents the large end diameter; helical NPT/NPTF thread mills are tapered.*

NOTE: D1 = Cutter diameter at small end
D1 max = Cutter diameter at large end
D = Shank diameter
L = Overall length
L3 = Thread length

Indexable Thread Mill Inserts • UN Threads



Features and Benefits:

- One grade machines all materials.
- Precision ground inserts and milled pockets ensure accurate thread form alignment with two flute holders.
- Produce threads in materials up to 62 Rc hardness.
- Ground to CNC tolerances for exact repeatability.
- Positive cutting geometry.
- Chamfered side, secure locking in dovetail pocket.
- Single screw and fixed pocket design, no presetting.
- 100% thread form geometry.
- Produces most accurate thread form in the industry.

Application Information:

- Steel
- Stainless steel
- Cast iron
- Non-ferrous materials

External UN Inserts

14mm UN External

external TPI	LI	W1	EDP number
32	.551	.295	85151
28	.551	.295	85152
24	.551	.295	85154
20	.551	.295	85155
18	.551	.295	85156
16	.551	.295	85157

21mm UN External

external TPI	LI	W1	EDP number
20	.827	.472	85170
18	.827	.472	85171
16	.827	.472	85172
14	.827	.472	85173
12	.827	.472	85174
10	.827	.472	85175
8	.827	.472	85176

Internal UN Inserts

14mm UN Internal

internal TPI	LI	W1	EDP number
40	.551	.295	85160
28	.551	.295	85162
24	.551	.295	85164
20	.551	.295	85165
18	.551	.295	85166
16	.551	.295	85167
14	.551	.295	85168
12	.551	.295	85169

21mm UN Internal

internal TPI	LI	W1	EDP number
32	.827	.472	85146
20	.827	.472	85177
18	.827	.472	85178
16	.827	.472	85179
14	.827	.472	85180
12	.827	.472	85181
8	.827	.472	85183

30mm UN Internal

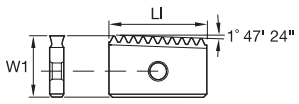
internal TPI	LI	W1	EDP number
16	1.181	.630	85194
12	1.181	.630	85196
8	1.181	.630	85198
6	1.181	.630	85200

40mm UN Internal

internal TPI	LI	W1	EDP number
16	1.575	.787	85214
4.5	1.575	.787	85221

NOTE: LI = Length of insert
W1 = Width of insert

NPT Pipe Thread Inserts and NPTF (Dryseal) Internal and External



Features and Benefits:

- One grade machines all materials.
- Precision ground inserts and milled pockets ensure accurate thread form alignment with two flute holders.
- Produce threads in materials up to 62 Rc hardness.
- Ground to CNC tolerances for exact repeatability.
- Positive cutting geometry.
- Chamfered side, secure locking in dovetail pocket.
- Single screw and fixed pocket design, no presetting.
- 100% thread form geometry.
- Produces most accurate thread form in the industry.

Application Information:

- Steel
- Stainless steel
- Cast iron
- Non-ferrous materials

Internal or External NPT Inserts

14mm NPT

TPI	LI	W1	EDP number
18	.551	.295	85257
14	.551	.295	85258

21mm NPT

TPI	LI	W1	EDP number
18	.827	.472	85259
14	.827	.472	85260
12	.827	.472	85261

30mm NPT

TPI	LI	W1	EDP number
11 1/2	1.181	.630	85262
8	1.181	.630	85263

40mm NPT

TPI	LI	W1	EDP number
11 1/2	1.575	.787	85264
8	1.575	.787	85265

Internal or External NPTF Inserts

14mm NPTF

TPI	LI	W1	EDP number
18	.551	.295	85266
14	.551	.295	85267

21mm NPTF

TPI	LI	W1	EDP number
18.0	.827	.472	85268
14.0	.827	.472	85269
11.5	.827	.472	85270

30mm NPTF

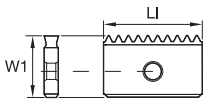
TPI	LI	W1	EDP number
11 1/2	1.181	.630	85271

40mm NPTF

TPI	LI	W1	EDP number
8	1.575	.787	85274

NOTE: LI = Length of insert
W1 = Width of insert

ISO Metric Thread Mill Inserts • Internal



Features and Benefits:

- One grade machines all materials.
- Precision ground inserts and milled pockets ensure accurate thread form alignment with two flute holders.
- Produce threads in materials up to 62 Rc hardness.
- Ground to CNC tolerances for exact repeatability.
- Positive cutting geometry.
- Chamfered side, secure locking in dovetail pocket.
- Single screw and fixed pocket design, no presetting.
- 100% thread form geometry.
- Produces most accurate thread form in the industry.

Application Information:

- Steel
- Stainless steel
- Cast iron
- Non-ferrous materials

Internal ISO Metric Inserts

14mm ISO

thread pitch mm	LI	W1	EDP number
1	.551	.295	85227
1,5	.551	.295	85228
2	.551	.295	85229

21mm ISO

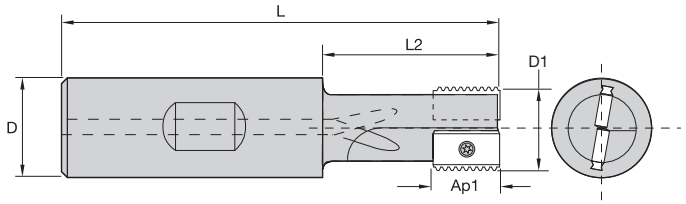
thread pitch mm	LI	W1	EDP number
1	.827	.472	85236
1,5	.827	.472	85237
2	.827	.472	85238
3	.827	.472	85240
3,5	.827	.472	85241

30mm ISO

thread pitch mm	LI	W1	EDP number
1,5	1.181	.630	85248
2	1.181	.630	85249
3	1.181	.630	85251
4	1.181	.630	85253
4,5	1.181	.630	85254
5	1.181	.630	85255

NOTE: LI = Length of insert
W1 = Width of insert

Indexable Thread Mill Holders



Features and Benefits:

- Available in one- and two-flute styles.
- Precision milled pockets align inserts for accurate thread form production.
- Holders available to produce threads from 48 UN to three threads per inch.
- Can mill threads in materials up to 62 Rc hardness.
- Produce course threads using minimal horsepower.
- Allow low cost thread production for small lot runs.
- Produce internal or external, right or left hand threads with same tool holder.
- Produce single or multiple lead threads.
- Control pitch diameter or size to within .0001".
- Produce 100% thread form height to UN specifications.

Application Information:

- Steel
- Stainless steel
- Cast iron
- Non-ferrous materials

Single-Flute Indexable Thread Mill Holders

D1	D	L	L2	flutes	Ap1	insert screw	EDP number
.450	.750	3.390	1.000	1	14mm	85113	85099*
.500	.750	3.000	.800	1	14mm	85113	85100
.500	.750	3.350	1.000	1	14mm	85113	85101
.540	.750	3.390	1.250	1	14mm	85113	85116*
.540	.750	3.000	.880	1	14mm	85113	85117
.540	.750	3.390	1.000	1	14mm	85113	85118
.670	.750	3.390	1.180	1	14mm	85113	85102
.700	.750	3.750	1.375	1	21mm	85114	85119*
.750	.750	3.750	1.575	1	21mm	85114	85103
1.140	1.000	4.370	1.968	1	30mm	85115	85104
1.730	1.500	6.000	3.070	1	40mm	85115	85105

**For taper pipe thread inserts only.*

Two-Flute Indexable Thread Mill Holders

D1	D	L	L2	flutes	Ap1	insert screw	EDP number
.790	.750	3.750	1.630	2	14mm	85113	85106
1.180	1.000	4.250	2.000	2	21mm	85114	85107
1.580	1.250	5.120	2.850	2	30mm	85114	85108
1.970	1.500	6.000	3.250	2	40mm	85114	85109

Insert Screws for Indexable Thread Mill Holders

wrench size	external thread size	description	EDP number
T7	M2.5	M2,5 x 0,45 ISO x 6,35 OAL	85113
T20	M4	M4 x 0,7 ISO x 10,15 OAL	85114
T20	M5	M5 x 0,8 ISO x 12,25	85115

NOTE: L = Overall length
L2 = Useable length
D = Shank diameter
D1 = Head diameter
Ap1 = Insert length

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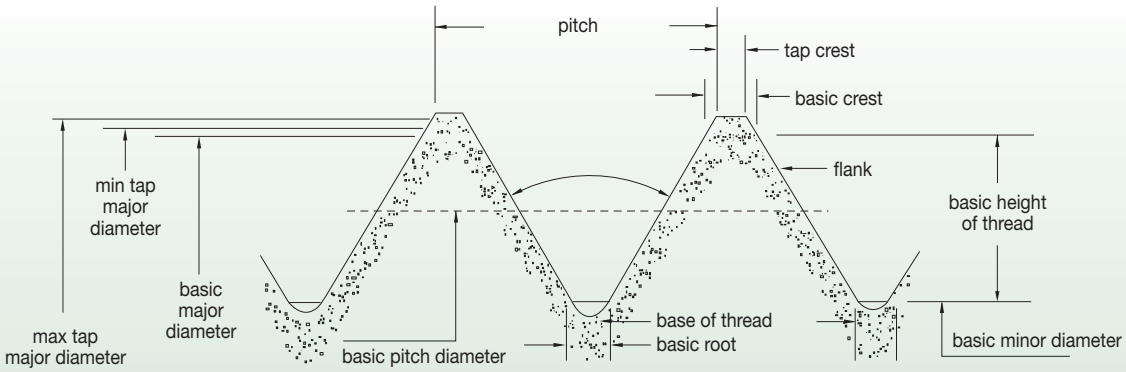
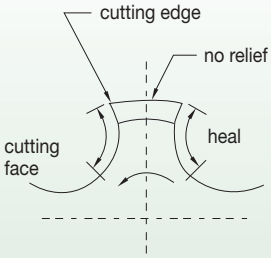
WIDIA





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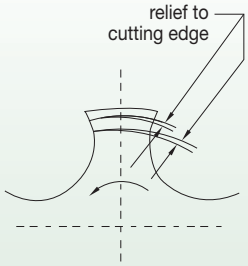
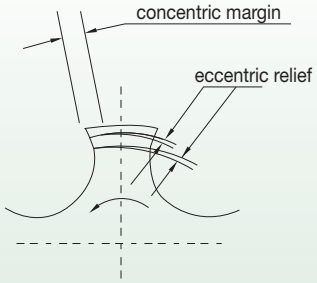
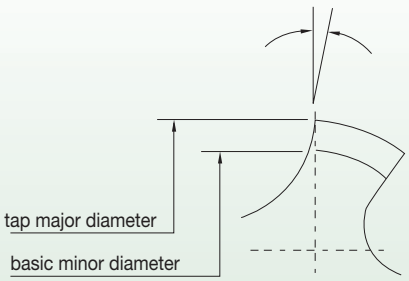


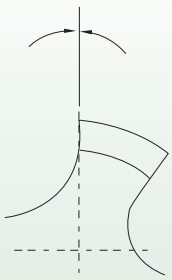
Eccentric Relief



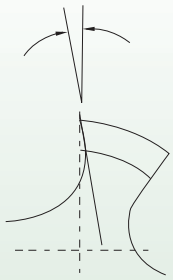
Con-Eccentric Relief



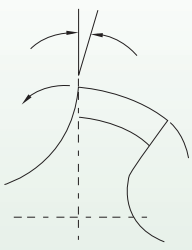
Negative Hook



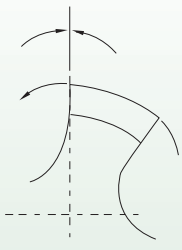
0° Hook



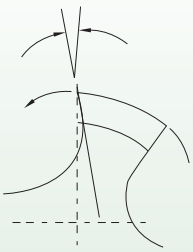
Positive Hook



Negative Rake



Radial Rake



Positive Rake

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Tap Chamfers • ANSI Taps

Hand Tap Chamfers

Taper (7–10 pitches)
The taper chamfer has the longest standard chamfer ensuring easier starting. It requires less tapping torque because of more working teeth.

Plug (3–5 pitches)
The most common chamfer for use by hand or machine in through or blind holes. This chamfer is more efficient than a bottoming or modified bottoming chamfer.

Semi-Bottom (2–2-1/2 pitches)
This short chamfer enables threading close to the bottom of blind holes. Due to the slightly longer chamfer and more working teeth, this chamfer is more efficient than a bottoming chamfer.

Bottoming (1–2 pitches)
For threading close to the bottom of blind holes, the bottoming chamfer is the least efficient chamfer available.

Tap Chamfers • DIN Taps

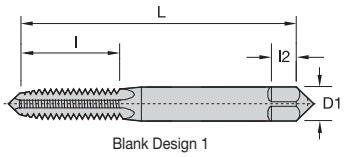
Hand Tap Chamfers

Form A (6–8 pitches)
The Form A chamfer has the longest standard chamfer ensuring easier starting. It requires less tapping torque because of more working teeth.

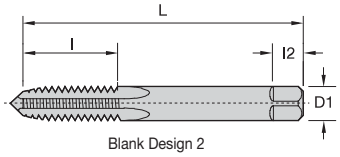
Form B/D (3.5–5 pitches)
The most common chamfers for use by hand or machine in through or blind holes. Form B applies to spiral-point taps and Form D applies to straight-flute and spiral-flute taps. This chamfer is more efficient than a Form E or Form C chamfers.

Form C (2–2-1/2 pitches)
This short chamfer enables threading close to the bottom of blind holes. Due to the slightly longer chamfer and more working teeth, this chamfer is more efficient than a Form E chamfer.

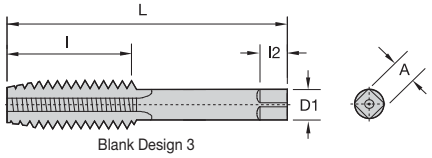
Form E (1.5–2 pitches)
For threading close to the bottom of blind holes, the Form E chamfer is the least efficient chamfer available.



Blank Design 1

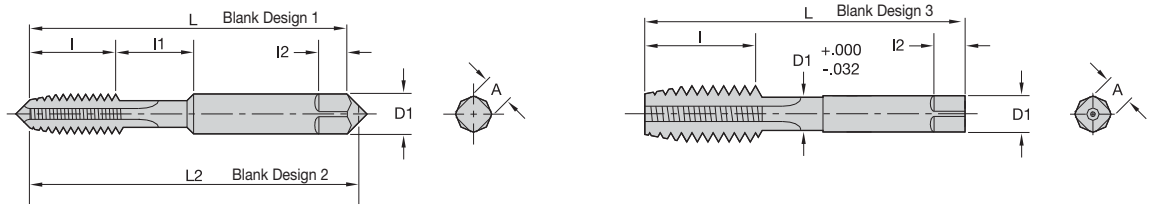


Blank Design 2



Blank Design 3

nominal diameter range (in)	machine screw size number (in)	nominal fractional diameter (in)	nominal metric diameter mm (in)	blank design number	overall length L	thread length l	square length l2	shank diameter D1	square size A
.052–.065	0 (.0600)	–	M1.6 (.0630)	1	1.63	.31	.19	.1410	.110
.065–.078	1 (.0730)		M1.8 (.0709)	1	1.69	.38	.19	.1410	.110
.078–.091	2 (.0860)	–	M2 (0787), M2.2 (.0866)	1	1.75	.44	.19	.1410	.110
.091–.104	3 (.0990)		M2.5 (.0984)	1	1.81	.50	.19	.1410	.110
.104–.117	4 (.1120)	–		1	1.88	.56	.19	.1410	.110
.117–.130	5 (.1250)		M3 (.1181)	1	1.94	.63	.19	.1410	.110
.130–.145	6 (.1380)	–	M3.5 (.1378)	1	2.00	.69	.19	.1410	.110
.145–.171	8 (.1640)		M4 (.1575)	1	2.13	.75	.25	.1680	.131
.171–.197	10 (.1900)	–	M4.5 (.1772), M5 (.1969)	1	2.38	.88	.25	.1940	.152
.197–.223	12 (.2160)			1	2.38	.94	.28	.2200	.165
.223–.260	–	1/4 (.2500)	M6 (.2362)	2	2.50	1.00	.31	.2550	.191
.260–.323		5/16 (.3125)	M7 (.2756), M8 (.3150)	2	2.72	1.13	.38	.3180	.238
.323–.395	–	3/8 (.3750)	M10 (.3937)	2	2.94	1.25	.44	.3810	.286
.395–.448		7/16 (.4375)		3	3.16	1.44	.41	.3230	.242
.448–.510	–	1/2 (.5000)	M12 (.4724)	3	3.38	1.66	.44	.3670	.275
.510–.573		9/16 (.5625)	M14 (.5512)	3	3.59	1.66	.50	.4290	.322
.573–.635	–	5/8 (.6250)	M16 (.6299)	3	3.81	1.81	.56	.4800	.360
.635–.709		11/16 (.6875)	M18 (.7087)	3	4.03	1.81	.63	.5420	.406
.709–.760	–	3/4 (.7500)		3	4.25	2.00	.69	.5900	.442
.760–.823		13/16 (.8125)	M20 (.7874)	3	4.47	2.00	.69	.6520	.489
.823–.885	–	7/8 (.8750)	M22 (.8661)	3	4.69	2.22	.75	.6970	.523
.885–.948		15/16 (.9375)	M24 (.9449)	3	4.91	2.22	.75	.7600	.570
.948–1.010	–	1 (1.0000)	M25 (.9843)	3	5.13	2.50	.81	.8000	.600
1.010–1.073		1-1/16 (1.0625)	M27 (1.0630)	3	5.13	2.50	.88	.8960	.672
1.073–1.135	–	1-1/8 (1.1250)		3	5.44	2.56	.88	.8960	.672
1.135–1.198		1-3/16 (1.1875)	M30 (1.1811)	3	5.44	2.56	1.00	1.0210	.766
1.198–1.260	–	1-1/4 (1.2500)		3	5.75	2.56	1.00	1.0210	.766
1.260–1.323		1-5/16 (1.3125)	M33 (1.2992)	3	5.75	2.56	1.06	1.1080	.831
1.323–1.385	–	1-3/8 (1.3750)		3	6.06	3.00	1.06	1.1080	.831
1.358–1.448		1-7/16 (1.4375)	M36 (1.4173)	3	6.06	3.00	1.13	1.2330	.925
1.448–1.510	–	1-1/2 (1.5000)		3	6.38	3.00	1.13	1.2330	.925
1.510–1.635		1-5/8 (1.6250)	M39 (1.5354)	3	6.69	3.19	1.13	1.3050	.979
1.635–1.760	–	1-3/4 (1.7500)	M42 (1.6535)	3	7.00	3.19	1.25	1.4300	1.072
1.760–1.885		1-7/8 (1.8750)		3	7.31	3.56	1.25	1.5190	1.139
1.885–2.010	–	2 (2.0000)	M48 (1.8898)	3	7.63	3.56	1.38	1.6440	1.233
2.010–2.135		2-1/8 (2.1250)		3	8.00	3.56	1.38	1.7690	1.327
2.135–2.260	–	2-1/4 (2.2500)	M56 (2.2047)	3	8.25	3.56	1.44	1.8940	1.420
2.260–2.385		2-3/8 (2.3750)		3	8.50	4.00	1.44	2.0190	1.514
2.385–2.510	–	2-1/2 (2.5000)		3	8.75	4.00	1.50	2.1000	1.575
2.510–2.635		2-5/8 (2.6250)	M64 (2.5197)	3	8.75	4.00	1.50	2.2250	1.669
2.635–2.760	–	2-3/4 (2.7500)		3	9.25	4.00	1.56	2.3500	1.762
2.760–2.885		2-7/8 (2.8750)	M72 (2.8346)	3	9.25	4.00	1.56	2.4750	1.856
2.885–3.010	–	3 (3.0000)		3	9.75	4.56	1.63	2.5430	1.907
3.010–3.135		3-1/8 (3.1250)		3	9.75	4.56	1.63	2.6680	2.001
3.135–3.260	–	3-1/4 (3.2500)	M80 (3.1496)	3	10.00	4.56	1.75	2.7930	2.095
3.260–3.385		3-3/8 (3.3750)		3	10.00	4.56	1.75	2.8830	2.162
3.385–3.510	–	3-1/2 (3.5000)		3	10.25	4.94	2.00	3.0080	2.256
3.510–3.635		3-5/8 (3.6250)	M90 (3.5433)	3	10.25	4.94	2.00	3.1330	2.350
3.635–3.760	–	3-3/4 (3.7500)		3	10.50	5.31	2.13	3.2170	2.413
3.760–3.885		3-7/8 (3.8750)		3	10.50	5.31	2.13	3.3420	2.506
3.885–4.010	–	4 (4.0000)	M100 (3.9370)	3	10.75	5.31	2.25	3.4670	2.600



General Dimensions

nominal diameter range (in)		machine screw size number (in)	nominal fractional diameter (in)		nominal metric diameter mm (in)		blank design number	Tap Dimensions—Inches overall length L	thread length l	neck length l1	square length l2	shank diameter D1	size of square A
.104	.117	4 (.1120)	—		—	—	1	1.88	.31	.25	.19	.1410	.110
.117	.130	5 (.1250)			M3	(.1181)	1	1.94	.31	.31	.19	.1410	.110
.130	.145	6 (.1380)	—		M3.5	(.1378)	1	2.00	.38	.31	.19	.1410	.110
.145	.171	8 (.1640)			M4	(.1575)	1	2.13	.38	.38	.25	.1680	.131
.171	.197	10 (.1900)	—		M4.5	(.1772)	1	2.38	.50	.38	.25	.1940	.152
					M5	(.1969)							
.197	.223	12 (.2160)			—	—	1	2.38	.50	.44	.28	.2200	.165
.223	.260		1/4	(.2500)	M6	(.2362)	2	2.50	.63	.38	.31	.2550	.191
.260	.323	—	5/16	(.3125)	M7(.2756),	M8(.3150)	2	2.72	.69	.44	.38	.3180	.238
.323	.395		3/8	(.3750)	M10	(.3937)	2	2.94	.75	.50	.44	.3810	.286
.395	.448	—	7/16	(.4375)	—	—	3	3.16	.88	–	.41	.3230	.242
.448	.510		1/2	(.5000)	M12	(.4724)	3	3.38	.94	–	.44	.3670	.275
.510	.573	—	9/16	(.5625)	M14	(.5541)	3	3.59	1.00	–	.50	.4290	.322
.573	.635		5/8	(.6250)	M16	(.6299)	3	3.81	1.09	–	.56	.4800	.360
.635	.709	—	11/16	(.6875)	M18	(.7087)	3	4.03	1.09	–	.63	.5420	.406
.709	.760		3/4	(.7500)	—	—	3	4.25	1.22	–	.69	.5900	.442
.760	.823	—	13/16	(.8125)	M20	(.7874)	3	4.47	1.22	–	.69	.6520	.489
.823	.885		7/8	(.8750)	M22	(.8661)	3	4.69	1.34	–	.75	.3670	.523
.885	.948	—	15/16	(.9375)	M24	(.9449)	3	4.91	1.34	–	.75	.7600	.570
.948	1.010		1	(1.0000)	M25	(.9843)	3	5.13	1.50	–	.81	.8000	.600

NOTES: Thread length l is based on a length of 12 pitches of the UNC thread series. Thread length l is a minimum value and has no tolerance. When thread length l is added to neck length l1, the total shall be no less than the minimum USCTI Table 302 thread length l. Unless otherwise specified, all tolerances are in accordance with USCTI Table 302. For eccentricity tolerances, see USCTI Table 317. Table 302 is provided for reference only. WIDIA-GTD's tap dimensions may differ.

Tolerances

element	nominal diameter range (in)	direction	tolerance (in)
length overall — L	.0520–1.0100	plus or minus	.031
	1.0100–4.0100	plus or minus	.063
length of thread — l	.0520–.2230	plus or minus	.047
	.2230–.5100	plus or minus	.063
	.5100–1.5100	plus or minus	.094
	1.5100–4.0100	plus or minus	.125
length of square — l2	.0520–1.0100	plus or minus	.031
	1.0100–4.0100	plus or minus	.063
diameter of shank — d1	.0520–.2230	minus	.0015
	.2230–.6350	minus	.0015
	.6350–1.0100	minus	.0020
	1.0100–1.5100	minus	.0020
	1.5100–2.0100	minus	.0030
	2.0100–4.0100	minus	.0030
size of square — A	.0520–.5100	minus	.004
	.5100–1.0100	minus	.006
	1.0100–2.0100	minus	.008
	2.0100–4.0100	minus	.010

Special Taps

Unless otherwise specified:

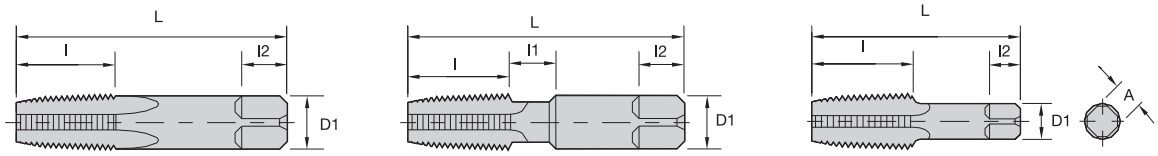
Special taps over 1.010–1.510" diameter inclusive, having 14 or more threads per inch or 1.75mm pitch and finer, and sizes over 1.510" diameter with 10 or more threads per inch or 2,5mm pitch and finer, are made to general dimensions shown in USCTI Table 303.

Special tap thread limits are determined using the formulas shown in USCTI Table 331 for Unified Inch Screw Threads and USCTI Table 341 for metric m-profile screw threads.

NOTES:
Tap sizes .395" and smaller have an external center on the thread end (may be removed on bottoming taps). Sizes .125" and smaller have an external center on the shank end. Sizes .224–.395" have truncated partial cone centers on the shank end (length of cone approximately 1/4 of diameter of shank). Sizes over .395" have internal centers on both the thread and shank ends.

For standard thread limits and tolerances for Unified Inch Screw Threads, see USCTI Table 327, and for metric threads, see USCTI Table 337.

For eccentricity tolerances of tap elements, see USCTI Table 317.



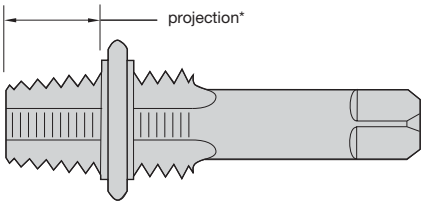
General Dimensions

	dimensions (in)					
nominal size (in)	length overall L	length of thread l	length of square l2	diameter of shank D1	size of square A	length optional neck l1
1/16	2.13	.69	.38	.3125	.234	.375
1/8	2.13	.75	.38	.3125	.234	–
1/8	2.13	.75	.38	.4375	.328	.375
1/4	2.44	1.06	.44	.5625	.421	.375
3/8	2.56	1.06	.50	.7000	.531	.375
1/2	3.13	1.38	.63	.6875	.515	–
3/4	3.25	1.38	.69	.9063	.679	–
1	3.75	1.75	.81	1.1250	.843	–
1-1/4	4.00	1.75	.94	1.3125	.984	–
1-1/2	4.25	1.75	1.00	1.5000	1.125	–
2	4.25	1.75	1.13	1.8750	1.406	–
2-1/2	5.50	2.56	1.25	2.2500	1.687	–
3	6.00	2.63	1.38	2.6250	1.968	–
3-1/2	6.50	2.69	1.50	2.8125	2.108	–
4	6.75	2.75	1.56	3.0000	2.250	–

Tolerances

element	range	direction	tolerance
length overall — L	1/16–3/4 inc.	plus/minus	.031
	1–4 inc.	plus/minus	.063
length of thread — l	1/16–3/4 inc.	plus/minus	.063
	1–1-1/4 inc.	plus/minus	.094
	1-1/2–4	plus/minus	.125
length of square — l2	1/16–3/4 inc.	plus/minus	.031
	1–4 inc.	plus/minus	.063
diameter of shank — d1	1/16–1/8	minus	.0015
	1/4–1 inc.	minus	.0020
	1-1/4–4 inc.	minus	.0030
size of square — a	1/16–1/8	minus	.004
	1/4–3/4 inc.	minus	.006
	1–4 inc.	minus	.008

American National Standard Taper Pipe Thread Form (NPT)
Aeronautical National Taper Pipe Thread Form (ANPT)
Dryseal American National Standard Taper Pipe Thread Form (NPTF)



nominal size (in)	threads per inch	projection* (in)	projection tolerance + / –	taper per foot limits min	taper per foot limits max	length L1	tap drill size** NPT, ANPT, NFTF
1/16	27	.312	.063	.719	.781	.160	C
1/8	27	.312	.063	.719	.781	.1615	Q
1/4	18	.459	.063	.719	.781	.2278	7/16
3/8	18	.454	.063	.719	.781	.240	9/16
1/2	14	.579	.063	.719	.781	.320	45/64
3/4	14	.565	.063	.719	.781	.339	29/32
1	11-1/2	.678	.094	.719	.781	.400	1-9/64
1-1/4	11-1/2	.686	.094	.719	.781	.420	1-31/64
1-1/2	11-1/2	.699	.094	.719	.781	.420	1-23/32
2	11-1/2	.667	.094	.719	.781	.436	2-3/16
2-1/2	8	.925	.094	.734	.781	.682	2-39/64
3	8	.925	.094	.734	.781	.766	3-15/64
3-1/2	8	.938	.125	.734	.781	.821	–
4	8	.950	.125	.734	.781	.844	–

**Distance small end of tap projects through L1 taper thread ring gage.*
***Recommended size given permits direct tapping without reaming the hole, but only gives a full thread for approximately the L1 length.*

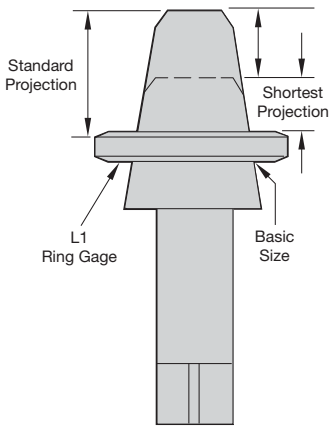
Pipe Taps

General-purpose pipe taps are appropriate for threading a wide variety of materials, both ferrous and non-ferrous.

Ground thread pipe taps are standard in American Standard Pipe Form (NPT) and American Standard Dryseal Pipe Form (NPFT). NPT threads require the use of a sealer, like Teflon® tape or pipe compound. Dryseal taps are used to tap fittings which will give a pressure-tight joint without the use of a sealer.

The nominal size of a pipe tap is that of the pipe fitting to be tapped, not the actual size of the tap. The thread tapers 3/4" per foot.

All pipe taps are furnished with 2-1/2–3-1/2 thread chamfer.

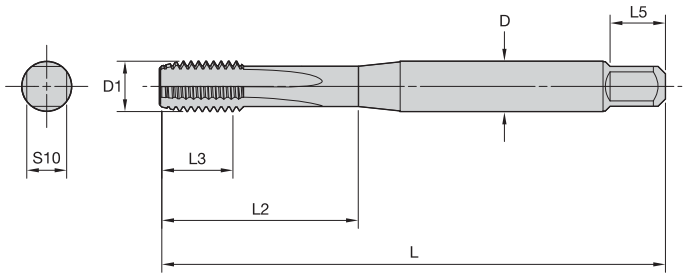


Short projection pipe taps are made with a projection shorter than standard for taper pipe tapping where the depth of tapping is limited.

Special short projection taper pipe taps can be furnished with American National Standard Taper Pipe thread (ANPT) or Dryseal American National Standard Taper Pipe thread (NPTF, PTF-SAE Short, or PTF-SPL Extra Short).

For information on short projection pipe taps and hole preparation for NPT, NPTF, and ANPT internal pipe threads, consult WIDIA-GTD Technical Bulletins.

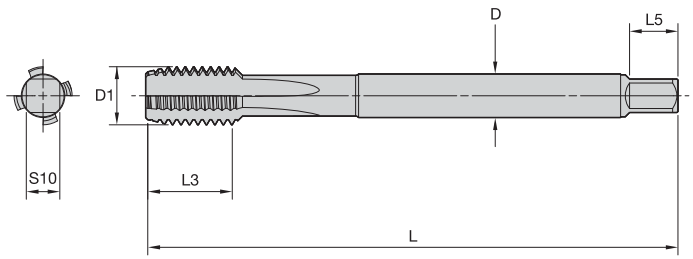
Special short projection pipe taps and left-hand pipe taps are available through Lightning Service.



DIN 371

D1	pitch	D	L	L3*	L2	L5	S10
M3	0.5	3.5	56	11	18	6	2.7
M3.5	0.6	4	56	12	20	6	3
M4	0.7	4.5	63	13	21	6	3.4
M4.5	0.75	6	70	16	25	8	4.9
M5	0.8	6	70	16	25	8	4.9
M6	1	6	80	19	30	8	4.9
M7	1	7	80	19	30	8	5.5
M8	0.75	8	80	18	30	9	6.2
M8	1.25	8	90	22	35	9	6.2
M9	0.75	9	80	18	30	10	7
M9	1.25	9	90	22	35	10	7
M10	1	10	90	20	35	11	8
M10	1.5	10	100	24	39	11	8

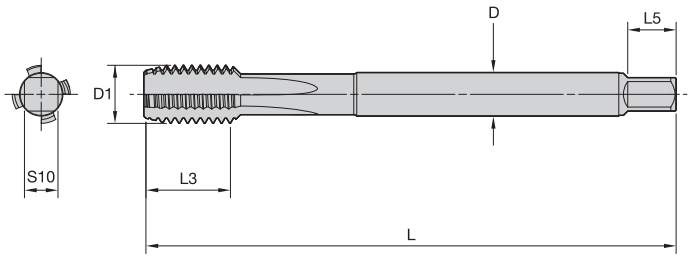
**Maximum*



DIN 376

D1	pitch	D	L	L3*	L5	S10
M8	1.25	6	90	22	8	4.9
M9	1.25	7	90	22	8	5.5
M10	1.5	7	100	24	8	5.5
M11	1.5	8	100	24	9	6.2
M12	1.75	9	110	28	10	7
M14	2	11	110	30	12	9
M16	2	12	110	32	12	9
M18	2.5	14	125	34	14	11
M20	2.5	16	140	34	15	12
M22	2.5	18	140	34	17	14.5
M24	3	18	160	38	17	14.5
M27	3	20	160	38	19	16
M30	3.5	22	180	45	21	18
M33	3.5	25	180	50	23	20
M36	4	28	200	56	25	22
M39	4	32	200	60	27	24
M42	4.5	32	200	60	27	24
M45	4.5	36	220	65	32	29

**Maximum*



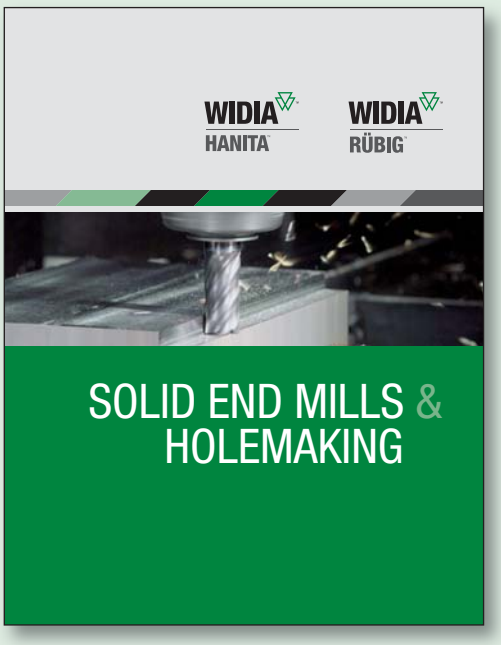
DIN 374

D1	pitch minimum	pitch maximum	D	L	L3*	L5	S10
M8	0.2	0.75	6	80	18	8	4.9
M8	–	1	6	90	22	8	4.9
M9	0.2	0.75	7	80	18	8	5.5
M9	–	1	7	90	22	8	5.5
M10	0.2	1	7	90	20	8	5.5
M10	–	1.25	7	100	24	8	5.5
M11	0.35	1	8	90	20	9	6.2
M12	0.35	1.5	9	100	22	10	7
M14	0.35	1.5	11	100	22	12	9
M16	0.35	1.5	12	100	22	12	9
M16	–	2	12	110	32	12	9
M18	0.35	1.5	14	110	25	14	11
M18	–	2	14	125	34	14	11
M20	0.35	1.5	16	125	25	15	12
M20	–	2	16	140	34	15	12
M22	0.35	1.5	18	125	25	17	14.5
M22	–	2	18	140	34	17	14.5
M24	0.35	2	18	140	28	17	14.5
M27	0.35	2	20	140	28	19	16
M30	0.35	2	22	150	28	21	18
M30	–	3	22	180	45	21	18

**Maximum*

Need More Information about Round Tool Solutions from WIDIA™?

For more information regarding WIDIA's complete line of round tool solutions, please refer to the WIDIA Solid End Mills and Holemaking catalog, contact your local Authorized WIDIA Distributor, or visit us today at www.widia.com.



Through Holes Push Chips

GUN® LHSF

- GUN™ (spiral point) or LHSF (Left-Hand Spiral Flute).
- Ideal for materials with long chips.

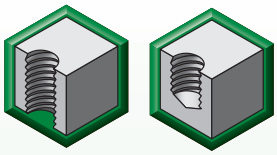
Blind Holes Pull Chips

RHSF

- RHSF (Right-Hand Spiral Flute).
- Ideal for materials with long chips.

Blind or Through Holes Store Chips

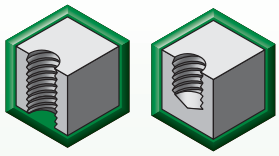
STFL



- STFL (Straight Flute).
- Ideal for materials with short chips.

Blind or Through Holes No Chips

TRU-LEDE®



- Forming.
- Ideal for ductile materials <32 HRC.

Unified Inch Screw Threads

size	threads per inch		recommended tap limits		internal thread pitch diameter limits		
	NC UNC	NC UNC	class 2B	class 3B	min all classes (BASIC)	max class 2B	max class 3B
0	—	80	H2	H1	.0519	.0542	.0536
1 1	64 —	— 72	H2 H2	H1 H1	.0629 .0640	.0655 .0665	.0648 .0659
2 2	56 —	— 64	H2 H2	H1 H1	.0744 .0759	.0772 .0786	.0765 .0779
3 3	48 —	— 56	H2 H2	H1 H1	.0855 .0874	.0885 .0902	.0877 .0895
4 4	40 —	— 48	H2 H2	H2 H1	.0958 .0985	.0991 .1016	.0982 .100
5 5	40 —	— 44	H2 H2	H2 H1	.1088 .1102	.1121 .1134	.1113 .1126
6 6	32 —	— 40	H3 H2	H2 H2	.1177 .1218	.1214 .1252	.1204 .1243
8 8	32 —	— 36	H3 H2	H2 H2	.1437 .1460	.1475 .1496	.1465 .1487
10 10	24 —	— 32	H3 H3	H3 H2	.1629 .1697	.1672 .1736	.1661 .1726
12 12	24 —	— 28	H3 H3	H3 H3	.1889 .1928	.1933 .1970	.1922 .1959
1/4 1/4	20 —	— 28	H5 H4	H3 H3	.2175 .2268	.2224 .2311	.2211 .2300
5/16 5/16	18 —	— 24	H5 H4	H3 H3	.2764 .2854	.2817 .2902	.2803 .2890
3/8 3/8	16 —	— 24	H5 H4	H3 H3	.3344 .3479	.3401 .3528	.3387 .3516
7/16 7/16	14 —	— 20	H5 H5	H3 H3	.3911 .4050	.3972 .4104	.3957 .4091
1/2 1/2	13 —	— 20	H5 H5	H3 H3	.4500 .4675	.4565 .4731	.4548 .4717
9/16 9/16	12 —	— 18	H5 H5	H3 H3	.5084 .5264	.5152 .5323	.5135 .5308
5/8 5/8	11 —	— 18	H5 H5	H3 H3	.5660 .5889	.5732 .5949	.5714 .5934
3/4 3/4	10 —	— 16	H5 H5	H5 H3	.6850 .7094	.6927 .7159	.6907 .7143
7/8 7/8	9 —	— 14	H6 H6	H4 H4	.8028 .8286	.8110 .8356	.8089 .8339

The above recommended taps normally produce the class of thread indicated in average materials when used with reasonable care. However, if the tap specified does not give a satisfactory gage fit in the work, a choice of some other limit tap will be necessary.

Unified Inch Screw Threads

size	threads per inch NC UNC	threads per inch NC UNC	recommended tap limits class 2B	recommended tap limits class 3B	internal thread pitch diameter limits min all classes (BASIC)	internal thread pitch diameter limits max class 2B	internal thread pitch diameter limits max class 3B
1 1	8 —	— 12	H8 H8	H4 H4	.9188 .9188	.9276 .9276	.9254 .9254
1	15 NS		H6	H4	.9536	.9609	.9590
2 2	7 —	— 12	H8 H6	H4 H4	1.0332 1.0709	1.0416 1.0787	1.0393 1.0768
1-1/4 1-1/4	7 —	— 12	H8 H6	H4 H4	1.1572 1.1959	1.1668 1.2039	1.1644 1.2019
1-3/8 1-3/8	6 —	— 12	H8 H6	H4 H4	1.2667 1.3209	1.2771 1.3291	1.2745 1.3270
1-1/2 1-1/2	6 —	— 12	H8 H6	H4 H4	1.3917 1.4459	1.4022 1.4542	1.3996 1.4522

Tap Recommendations for Class 6H Metric Screw Threads

thread Size nominal diameter (mm)	thread Size pitch (mm)	recommended tap limit number	internal thread — product limits — Class 6H pitch diameter (mm) min	pitch diameter (mm) max	pitch diameter (in) min	pitch diameter (in) max
1,6 2 2.5	0,35 0,4 0,45	D3 D3 D3	1,373 1,740 2,208	1,458 1,830 2,303	.05406 .06850 .08693	.05740 .07205 .09067
3 3,5 4	0,5 0,6 0,7	D3 D4 D4	2,675 3,110 3,545	2,775 3,222 3,663	.10531 .12244 .13957	.10925 .12685 .14421
4,5 5 6	0,75 0,8 1	D4 D4 D5	4,013 4,480 5,350	4,131 4,605 5,500	.15789 .17638 .21063	.16264 .18130 .21654
7 8 10	1 1,25 1,5	D5 D5 D6	6,350 7,188 9,026	6,500 7,348 9,206	.25000 .28299 .35535	.25591 .28929 .36244
12 14 16	1,75 2 2	D6 D7 D7	10,863 12,701 14,701	11,063 12,913 14,913	.42768 .50004 .57878	.43555 .50839 .58713
20 24 30	2,5 3 3,5	D7 D8 D9	18,376 22,051 27,727	18,600 22,316 28,007	.72346 .86815 1.09161	.73228 .87858 1.10264
36	4	D9	33,402	33,702	1.31504	1.32685

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WIDIA™

In addition to the nominal size and pitch of a tap, there is another important dimensional factor to be considered when selecting a ground thread tap for a given job. This factor is the pitch diameter tap limit, “H” and “L”. “H” represents (high) above basic pitch diameter; “L” (low) is below basic pitch diameter. Tap limits have been established to provide a choice in the selection of the tap size best suited to produce the class of thread desired.

Figure 1 Illustrates the numbering system and the .0005" diameter increment separation between successive limits. Because the starting point is basic pitch diameter, dividing the limit number by two establishes, in thousandths of an inch, the amount the maximum tap pitch diameter is above basic in the “H” series and the amount the minimum tap pitch diameter is under basic in the “L” series.

Figure 2 Illustrates the positioning of the tap limits in relation to the various classes of threads for a 1/4-20 size.

Figure 1

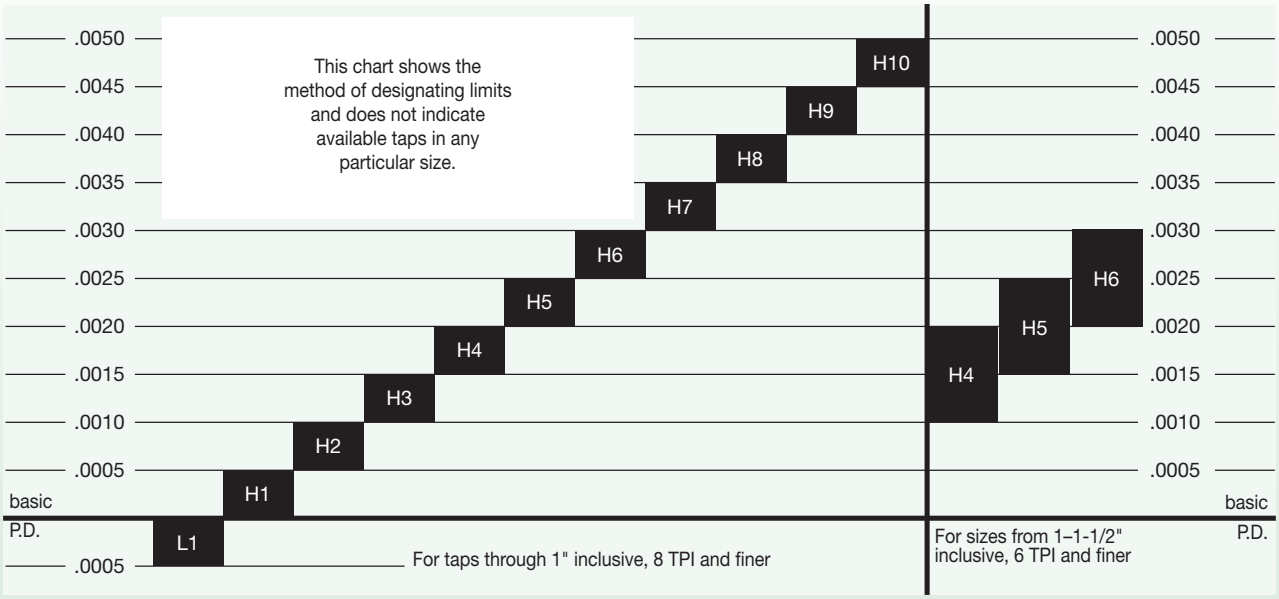
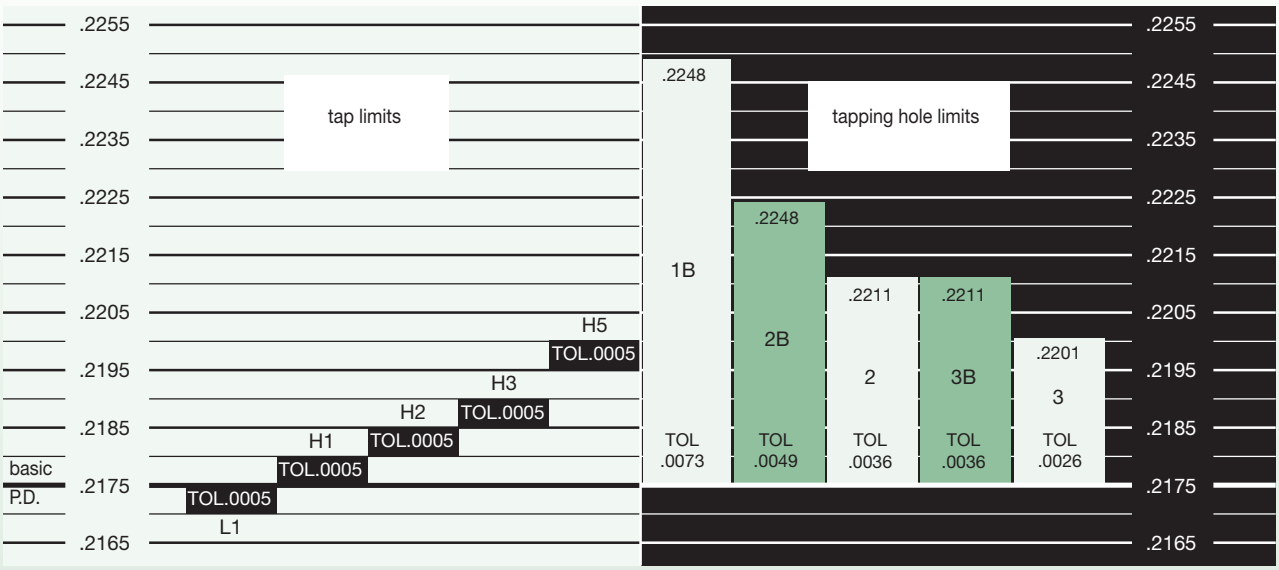
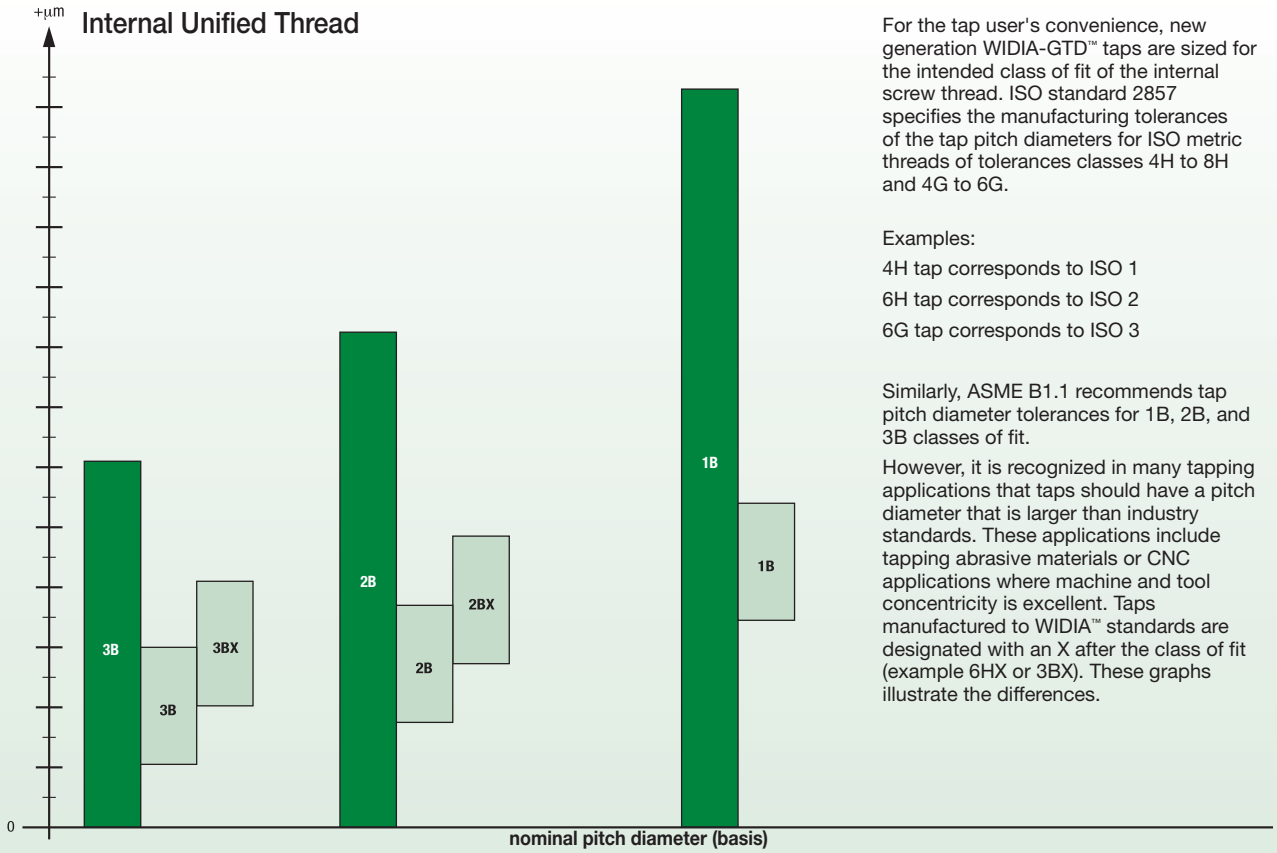


Figure 2

Class of Thread – 1/4 -20 UNC and NC



Internal Unified Thread



For the tap user's convenience, new generation WIDIA-GTD™ taps are sized for the intended class of fit of the internal screw thread. ISO standard 2857 specifies the manufacturing tolerances of the tap pitch diameters for ISO metric threads of tolerances classes 4H to 8H and 4G to 6G.

Examples:

4H tap corresponds to ISO 1

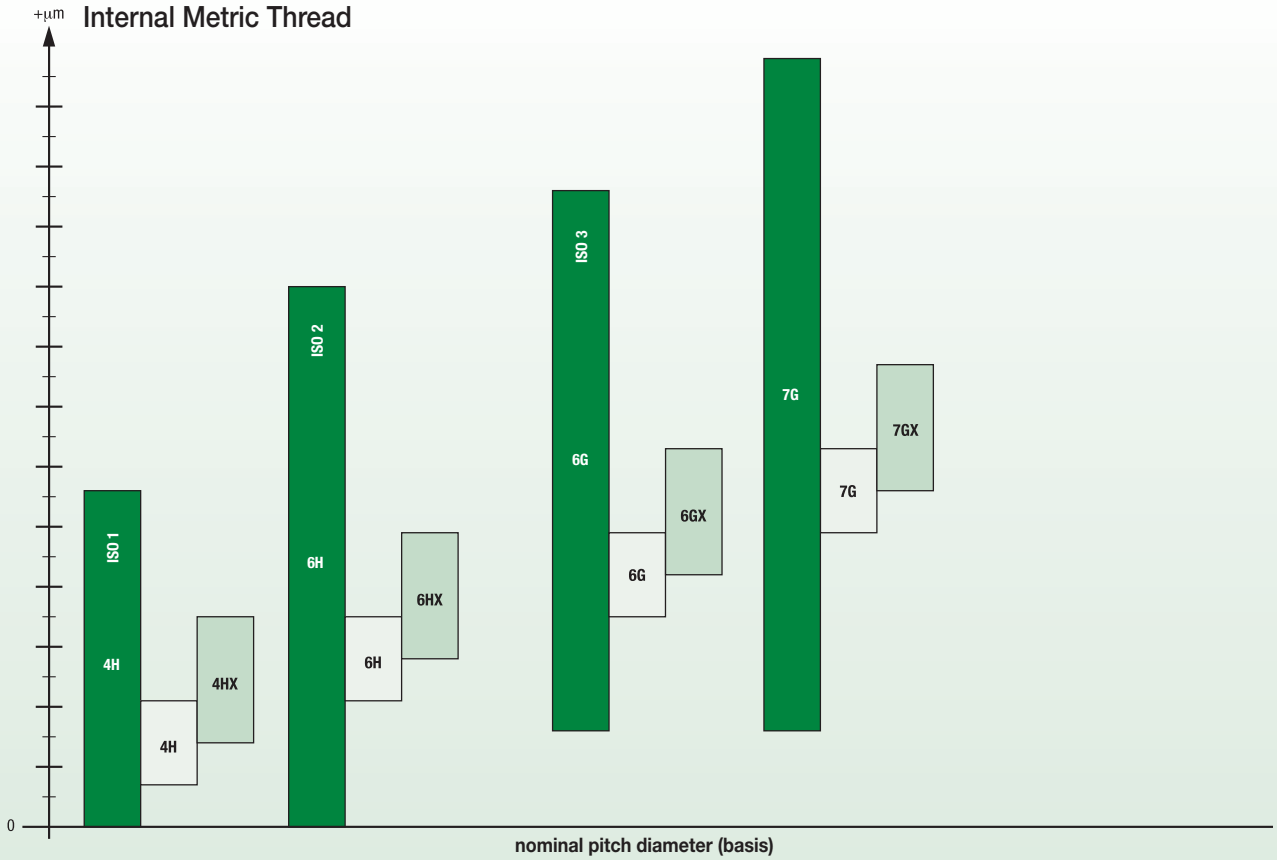
6H tap corresponds to ISO 2

6G tap corresponds to ISO 3

Similarly, ASME B1.1 recommends tap pitch diameter tolerances for 1B, 2B, and 3B classes of fit.

However, it is recognized in many tapping applications that taps should have a pitch diameter that is larger than industry standards. These applications include tapping abrasive materials or CNC applications where machine and tool concentricity is excellent. Taps manufactured to WIDIA™ standards are designated with an X after the class of fit (example 6HX or 3BX). These graphs illustrate the differences.

Internal Metric Thread



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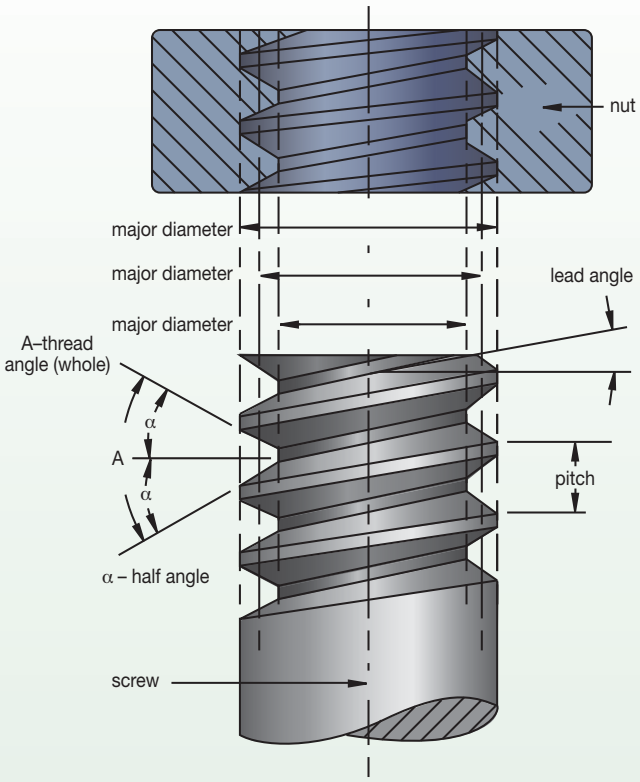
It is generally recognized that, in mass production, it is impossible to reproduce in exact detail the theoretically perfect product as laid out on the drawing board. The allowed slight variation between the theoretically perfect product drawing and each unit of the actual product is called the tolerance.



Allowance

An intentional difference in correlated dimensions of mating parts. It is the minimum clearance or maximum interference between such parts.

Angle of Thread

The angle included between the flanks of the thread measured in an axial plane

Half Angle of Thread

The angle included between a flank of the thread and the normal (90°) to the axis, measured in an axial plane.

Lead of Thread

The distance a screw thread advances axially in one turn. On a single-thread screw, the lead and pitch are identical. On a double thread, the lead is 2x pitch; on a triple thread, the lead is 3x pitch, etc.

Major Diameter

The largest diameter of a straight-screw thread.

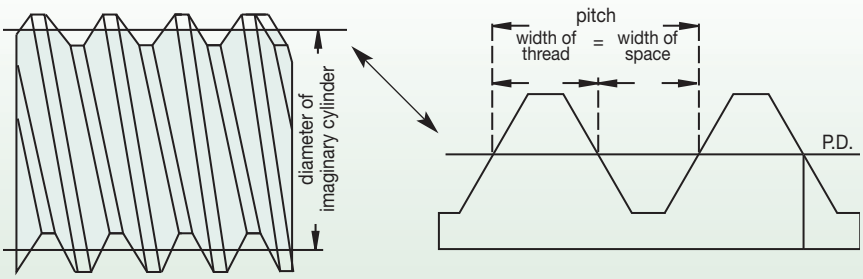
Minor Diameter

The smallest diameter of a straight-screw thread.

Pitch

The distance from a point on a screw thread to a corresponding point on the next thread measured parallel to the axis.

$$\text{The pitch in inches} = \frac{1}{\text{number of threads per inch}}$$



Pitch Diameter

On a straight-screw thread, the diameter of an imaginary cylinder that would pass through the threads at such points as to make equal the width of the threads and the width of the spaces cut by the surface of the cylinder.

Based on 65–75% threads, 1–2x diameter, through hole

material	condition	hardness BHN	hardness HRC	speed FPM	EM-style taps *EM- SS	SS TiN	SS TiCN	mold	NI	NI TiCN	TI	AL	ALS	forming taps EM-TL TiCN	TLD TiCN	#5500	GP+ GUN™
Low-Carbon Steel, Wrought																	
1005-1029, 1513-1522	Normalized or	<175	<9	50–75	•	•	•							•	•	•	•
	Cold Drawn	<276	<30	40–60	•	•	•										•
Medium-Carbon Steel, Wrought																	
1030-1055, 1525-1522	Normalized	<250	<25	30–50	•	•	•							•	•	•	•
	Hardened	<350	<38	15–25	■	■	■	•	•	•							
High-Carbon Steel, Wrought																	
1060-1069, 1070-1078	Annealed	<275	<30	30–50	•	•	•							•	•	•	•
1080-1086, 1095, 1561	Hardened	<350	<38	15–25				■	•	•							
Low-Carbon Alloy Steel, Wrought																	
4023, 4320, 5120	Normalized	<250	<25	30–45	•	•	•							•	•	•	•
8115, 8622	Hardened	<350	<38	25–35				•	•	•							
Medium-Carbon Alloy Steel, Wrought																	
4032, 4130	Normalized	<250	<25	25–35	•	•	•							•	•	•	•
5135, 8630	Hardened	<350	<38	15–20				•	•	•							
Aluminum Alloys, Wrought																	
2011-2025, 5050	Cold Drawn	<80	—	95–125	■†	•						•	•	■	■	•	
6061, 7075	Treated	<150	—	75–100	■†	•						•	•	■	■	•	
Aluminum Die Cast	As Cast	<100	—	100–150	■†	•						•	•	■	■	•	
	Treated	<125	—	70–100	■†	•						•	•	■	■	•	
High-Silicon Aluminum	Si >10%	<125	—	25–40	■†	•						•	•	■	■	•	■
Brass, Cast		—	—	50–70	■†	•			■					■	■	•	
Bronze, Cast		—	—	40–60	■†	•			■					■	■	•	
Copper		—	—	30–50	■†	•					■	•	•	■	■	•	
Copper, Beryllium		—	—	35–80	■†	•					■	•		■	■	•	
Magnesium Alloys		<100	—	100–150	■†	•					■		•	■	■	•	
Type 8 Exotic Cobalt-Based Alloys, Wrought and Cast																	
AiResist 213, V36, S-816	Treated	<230	<22	5–8	■				•	•							
Haynes 25(L-605), Stellite	Treated/Aged	<320	<34	3–5					•	•	■						
HS-31, HS-51	Cast/Aged	<290	<32	3–5					•	•	■						
Type 9 Exotic Iron-Based Alloys, Wrought																	
A-286, Discaloy, N-155	Treated	<230	<22	10–15	■	■			•								
V57, W-545, Incoloy 800, Incoloy 801	Treated/Aged	<320	<34	7–10					•		■						
Incoloy 802, 16-25-6, 19-90L		—	—						•								
Type 10 Tool Steels, Wrought																	
H10, H11, H12, H13, H14	Annealed	<250	<25	15–25	•	■	■	•									
H19, H21, H26, H42	Hardened	<375	<41	15–20				•	■	•							
D2, D3, D4, D5, D7, A7	Annealed	<150	—	30–45	•	■		•									
P2, P4, P5, P6	Annealed	<250	<25	10–15	■		■	•									
P20, P21	Annealed	<200	<16	25–35	■	■	■	•									
Type 11 Armor Plate, Wrought																	
HY80, HY100	Annealed	<250	<25	25–35	•	•		■	•	•							
MIL-S-12560, MIL-S-16216	Hardened	<300	<33	18–30	■	■		■	•	•							
	Hardened	<350	<38	15–25				■	•	•							
Type 12 High-Strength Steels, Wrought																	
300M, 4340, D6AC, 4340Si	Normalized	<350	<38	15–20	■	■	■	■	•	•							
98BV40	Normalized	<400	<43	10–15				■	•	•							
	Hardened	<460	<48	5–7					•	•							
HP9-4-20, HP25, HP30, HP45	Annealed	<375	<41	10–15				■	•	•							
	Hardened	<460	<48	7–10					•	•							
Type 13 Maraging Steels, Wrought																	
200 Grade, 250 Grade, 300 Grade	Annealed	<325	<35	15–20	■		■	■	•	•							
350 Grade, HY230																	
120 Grade, 180 Grade	Annealed	<325	<35	25–35	■		■	■	•	•							
	Maraged	<425	<45	7–10					•	•							

• First Choice ■ Alternate †Uncoated finish

**EM-TLD a TiCN-coated forming tap designed to tap dry, or mist coolant, for 1–1-1/2 diameters in tapping depth. EM forming taps and TRU-LEDE™ forming taps can be run 1.5–2x faster than the tapping speeds recommended for thread cutting taps.*

Recommendations adapted from the Machining Data Handbook, 3rd edition, by permission of the Machinability Data Center, ©1980 by Metcut Research Associates, Inc.

(continued)

(continued)

material	condition	hardness BHN	hardness HRC	speed FPM	EM-style taps SS	SS TiN	SS TiCN	mold	NI	NI TiCN	TI	forming taps EM-TL TiCN	*EM-TLD TiCN	GP+ GUN™
Type 1 Ferritic Stainless Steel, Wrought														
405, 409, 430, 434, 436, 442, 446, 502	Annealed	<185	<12	25–40	•	•	•					•	■	•
Type 2 Austenitic Stainless Steel, Wrought														
201, 202, 301, 302, 303, 304,	Annealed	<185	<12	18–25	•	•	•					•	■	•
305, 308, 309, 310, 314, 316,	Cold Drawn	<275	<30	12–20	•	•	•		•	•		•	■	•
317, 321, 330, 347, 384, 385														
Nitronic	Annealed	<250	<25	12–20	•	•	•		•	•		•	■	•
	Cold Drawn	<375	<41	7–15		■	■		•	•				
Type 3 Martensitic Stainless, Steel Wrought														
403, 410, 420, 422	Annealed	<175	<9	25–40	•	•	•		■			•	■	•
501, 502	Annealed	<225	<21	18–30	•	•	•		■			•	■	•
	Hardened	<325	<35	18–25	■	•	•		•	•				
	Hardened	<425	<45	10–18		■	■		•	•				
414, 431	Annealed	<275	<30	18–25	■	■	■		•	•				
Greek Ascoloy	Hardened	<325	<35	12–20	■	■	■		•	•				
	Hardened	<425	<45	7–15					•	•				
440A, 440B, 440C	Annealed	<275	<30	12–20	■	■	■		•	•				
	Hardened	<325	<35	10–18		■	■		•	•				
	Hardened	<425	<45	7–15					•	•				
Type 4 Precipitation Hardening, Stainless Steel Wrought														
15-5PH, 16-6PH, 17-4PH	Annealed	<200	<16	18–30		■		•	•	•				
17-7PH, AF71, AM350, AM355	Hardened	<325	<35	15–25		■		■	•	•				
PH13-8MO, PH14-8MO, PH15-7MO	Hardened	<375	<41	12–20				■	•	•				
Custom 450 HNM	Hardened	<440	<47	6–12				■	•	•				
Type 5 Titanium Alloys, Wrought														
Commercial Pure	Annealed	<170	<7	40–60	•	•					•			
Commercial Pure	Annealed	<200	<16	30–50	■	■					•			
Commercial Pure	Annealed	<275	<30	25–40		■					•			
Ti-5AL-2.5Sn	Annealed	<340	<37	15–25							•			
Ti-6AL-4V	Annealed	<350	<38	15–20							•			
Ti-6AL-6V-2Sn	Annealed	<370	<40	10–15							•			
Ti-6AL-4V	Treated	<380	<41	7–10							•			
Ti-6AL-6V-2Sn	Treated	<440	<46	5–7							•			
Type 6 Nickel Alloys, Wrought and Cast														
Nickel 200 - Nickel 270	Annealed	<170	<7	15–25					•	•	■			
Monel 400, 401, 404, Monel R405	Annealed	<240	<23	15–20					•	•	■			
Monel 502, Monel K500	Treated	<360	<39	3–5					•	•	■			
Perma Nickel 300, Duranickel 301									•	•				
Type 7 Exotic Nickel-Based Alloys, Wrought and Cast														
INCONEL® 625, 702, 706, 718, 721, 722	Annealed	<300	<33	7–10					•	•	■			
INCONEL X-759, 751, 901, Haynes 263	Treated	<400	<43	4–7					•	•	■			
M252, Nimonic 75, 80, Waspaloy									•	•				
Astroloy, INCONEL 700	Treated	<300	<33	5–8					•	•	■			
Nimonic 90, 95, Rene 41, 63	Treated	<400	<43	3–5					•	•	■			
Udimett 500, 700, 710									•	•				
AF2-1DA, Rene 77, Rene 95	Treated	<390	<43	4–7					•	•	■			
Unitemp 1753	Treated	<475	<49	3–5					•	•	■			
Hastelloy B, C, G, S, X	Annealed	<220	<20	7–10					•	•	■			
Incoloy 804, Incoloy 825	Cold Drawn	<310	<34	4–7					•	•	■			
INCONEL 600, INCONEL 601									•	•				
Udimet 630, Retractaloy 26									•	•				
M252, Rene 80, Rene 125	As Cast or	<320	<34	3–5					•	•	■			
B-1900, GMR-235, IN-100, IN-738	Cast/Aged								•	•				
MAR-M200, 246, 421, 432									•	•				
INCONEL 718, Udimet 500, 700									•	•				

*See note on page A264.

• First Choice ■ Alternate

coating	properties and application	precautions
Titanium Nitride (TiN)	Proprietary TiN coating (hardness 2300 Vickers) offers significantly improved wear life and thread finish, often at higher tapping speeds, in a broad range of materials, especially steels, irons, and plastics. Golden color.	Use with caution in non-ferrous materials such as aluminum because of tendency to gall.
Titanium Carbonitride (TiCN)	Proprietary TiCN coating (hardness 3000 Vickers) is harder, tougher, and more wear resistant than TiN under conditions of moderate cutting temperatures. Like TiN, TiCN may be used at higher cutting speeds in a broad range of materials, especially steels and irons. Blue-gray color.	Use with caution in non-ferrous materials such as aluminum because of tendency to gall. TiAlN is a better choice when used at extreme temperatures.
Titanium Nitride + Chromium Carbide Carbon (TiN + CrC/C)	Proprietary coating (hardness 2300 Vickers) that combines the wear resistance of smooth TiN coating with a lubricous top layer of chromium carbide carbon. Effective in stainless steel and non-ferrous materials including aluminum and titanium. Ideal choice for 300 series stainless steels, wrought, and die cast aluminums. Black/gray color.	Effective in both ferrous and non-ferrous materials.
Titanium Aluminum Nitride (TiAlN)	Nanolayer TiAlN coating (hardness 3300 Vickers) offers improved wear life and thread finish, especially in conditions where high temperatures can be generated. Use for PH stainless steels and nickel-based alloys like INCONEL®. Violet/gray color.	Use with caution in non-ferrous materials because of tendency to gall.
Chromium Nitride (CrN)	CrN is medium hard (hardness 1800 Vickers) and has a lower wear resistance than TiN, TiCN, and TiAlN. However, unlike these coatings, CrN does not gall when used in some non-ferrous work materials. Use for brass, bronze, zinc alloys, and magnesium alloys. Silver color.	Ineffective in ferrous materials.
Nitride (MAXI #1)	Hardened case extends wear life in abrasive materials. Use for aluminum and other non-ferrous materials.	Avoid on taper pipe, fast spiral, and small diameter (<#6) or fine pitch taps due to tendency for thread chipping.
Oxide (SH-50)	Helps prevent galling in ferrous (iron-based) materials. For free machining steel. Use for steels, stainless steels, and irons.	Has a tendency to cause galling in non-ferrous materials such as aluminum.
Nitride and Oxide (SH-47)	Combines the benefits of nitride and oxide surface treatments. For steels, stainless steels, and nickel alloys.	See precautions for nitride and oxide surface treatments.

Anyone Can Regrind Your Tools — Only We Can Truly Recondition Them

Why recondition?

Our Reconditioning Services help optimize the total value of your metalcutting tools throughout their entire life cycle by giving them "like-new" performance characteristics — with rapid turnaround time — so the tools you need are always on-hand and perform just like new.

We recondition:

- Solid carbide drills
- Reamers
- Solid carbide taps
- Solid carbide endmills
- PCD/CBN tools

Reconditioning is an affordable way to make your tooling investment last longer and to achieve continued top performance of your drills and end mills.

By sending your worn drills and end mills for reconditioning, you will get:

- Proprietary geometry
- Certified coatings
- Superior quality
- Like-new performance
- Fast turnaround time
- Application support throughout the entire tool life cycle

Tools can often be reconditioned up to five times.

To use the WIDIA™ tool Reconditioning Services, follow these simple steps:

1. Contact the Customer Service center nearest you for instructions.
2. Package the tools in a sturdy box.
3. Find the reconditioning center nearest you:
   - North America
   - South America
   - Europe
   - Asia

   Ship the tools with the instructions from Customer Service.
4. Reconditioned tools will be returned to you from the reconditioning center.

Contact your local Authorized WIDIA Distributor to get started.

Factors when trying to determine the best tapping speeds:

- Material to be tapped
- Length of chamfer on tap
- Percentage of full thread to be cut
- Length of hole (depth of thread)
- Pitch of thread
- Cutting fluids
- Machine equipment
- Horizontal or vertical tapping

The best and most efficient operating speeds for taps cannot be calculated with the same certainty, as for many other metalcutting tools.

With other tools, the feed per revolution can be set at any desired point and can be varied as conditions demand. Taps, on the other hand, must always be advanced at a rate equal to one pitch for every revolution. The style of tap may vary the conditions.

For example, with a bottoming tap, the first thread on each land cuts the full height of thread, while, with a taper or starting tap, a number of threads do their share of the cutting before the full height of thread is reached.

The depth of thread also varies, depending on the pitch. The coarser the thread, the greater the advance of the tap per revolution and the greater the amount of material removed.

The method of feeding the tap, and the type of equipment for driving, also influences the permissible speeds. If taps are mechanically fed at the proper rate of advance, they can be operated at higher speeds than if they are required to feed themselves and pull some part of the machine along with them.

Speeds may be modified to take into account any or all of these factors:

- Speeds must be lowered as length of thread increases because, in deep thread holes, the accumulated chips increase friction and interfere with lubrication.
- Bottoming taps must be run slower than plug taps.
- Tapping full height of thread calls for slower speed than if the commercial 75% height only is required.
- Coarse-thread taps in the larger diameters should be run more slowly than fine-thread taps of the same diameters.
- The quantity and quality of cutting fluid may affect the permissible speeds as much as 100%.
- Taper threaded taps, such as pipe taps, should be operated from 1/2–3/4 the speed of a straight thread tap of comparable major diameter.

RPM Formulas

SFM = Surface Feet per Minute

RPM = Revolutions per Minute

IPM = Inches per Minute

TPI = Threads per Inch

S m/m = Surface Meters per Minute

$\pi = 3.1416$

mm/min = millimeters per minute

P = Pitch (1/number of threads per inch)

Inch Sizes

SFM	=	$\frac{\text{RPM x tool diameter}}{3.82}$	or	0.26 x RPM x tool diameter
RPM	=	$\frac{3.82 \text{ x SFM}}{\text{tool diameter}}$		
IPM	=	$\frac{\text{RPM}}{\text{TPI*}}$	or	*P x RPM

Metric Sizes

S m/m	=	$\frac{\pi \text{ x tool diameter x RPM}}{1000}$
RPM	=	$\frac{\text{mm/m x 1000}}{\pi \text{ x tool diameter}}$
mm/min	=	mm P x RPM

UNC/UNF and NPT/NPTF

tap size	taper pipe taps	surface feet per minute (SFM) 5'	10'	15'	20'	25'	30'	40'	50'	60'	70'	80'	90'	100'	110'	120'	130'	140'	150'
		revolutions per minute (RPM)																	
0		318	637	955	1273	1592	1910	2546	3183	3820	4456	5093	5729	6366	7003	7639	8276	8913	9549
1		273	546	819	1046	1308	1570	2093	2617	3140	3663	4186	4710	5233	5756	6279	6805	7326	1849
2		212	424	637	888	1110	1333	1777	2221	2665	3109	3554	3999	4442	4886	5330	5774	6218	6662
3		191	382	573	772	964	1157	1543	1929	2315	2701	3086	3472	3858	4244	4629	5015	5401	5787
4		174	347	521	682	853	1023	1364	1705	2046	2387	2728	3069	3411	3751	4092	4434	4775	5115
5		147	294	441	611	764	917	1222	1528	1833	2139	2445	2750	3056	3361	3667	3973	4278	4584
6		136	273	409	553	691	829	1106	1382	1859	1935	2212	2488	2766	3042	3318	3595	3871	4148
8		119	239	358	466	583	699	932	1165	1398	1631	1864	2097	2330	2563	2796	3029	3262	3495
10		101	201	302	402	502	603	804	1005	1205	1406	1607	1808	2009	2210	2411	2612	2813	3014
12		87	174	260	354	442	531	707	884	1061	1238	1415	1592	1769	1945	2122	2300	2476	2653
1/4		76	153	229	306	382	458	611	764	917	1070	1222	1375	1528	1681	1833	1986	2139	2292
5/16		62	123	185	245	306	367	489	611	733	856	978	1100	1222	1345	1467	1589	1711	1833
3/8		50	101	151	204	255	305	407	509	611	713	815	917	1019	1120	1222	1324	1426	1528
7/16	1/8	43	87	130	175	219	262	349	437	524	611	698	786	873	960	1048	1135	1222	1310
1/2	—	38	76	115	153	191	229	305	382	458	535	611	688	764	840	917	993	1070	1146
9/16	1/4	34	68	102	137	172	206	274	342	410	478	547	616	683	752	820	888	952	1020
5/8	—	32	64	96	122	153	183	244	306	367	428	489	550	611	672	733	794	856	917
11/16	3/8	28	55	83	111	138	167	222	278	333	389	444	500	556	611	667	722	778	833
3/4	—	25	51	76	102	128	153	203	255	305	357	407	458	509	560	611	662	713	764
7/8	1/2	22	43	65	87	109	131	175	218	262	306	350	392	437	480	524	568	611	655
1	—	19	38	57	76	96	115	153	191	230	268	305	344	382	420	458	497	535	573
1-1/8	3/4	17	34	51	68	84	102	136	170	204	238	272	306	340	373	407	441	475	509
1-1/4	—	15	31	46	61	76	92	122	153	183	214	244	275	305	336	367	397	428	458
1-3/8	1	14	28	42	56	69	83	111	139	167	194	222	250	278	306	333	361	389	417
1-1/2	—	13	25	38	51	63	76	102	127	153	178	204	229	255	280	305	331	356	382
1-5/8		12	23	35	47	59	71	94	118	141	165	188	212	235	259	282	306	329	353
1-3/4		11	22	33	44	55	65	87	109	131	153	175	196	218	240	262	284	306	327
1-7/8		10	20	30	41	51	61	81	102	122	143	163	183	204	224	244	265	285	306
2		9	19	29	38	48	57	76	96	115	134	153	172	191	210	229	248	267	287

Metric

metric taps	surface feet per minute (SFM) 5'	10'	15'	20'	25'	30'	40'	50'	60'	70'	80'	90'	100'	110'	120'	130'	140'	150'
	revolutions per minute (RPM)																	
M1	490	979	1469	1959	2449	2938	3918	4897	5877	6856	7836	8815	9795	10774	11754	12733	13713	14692
M2	242	484	725	967	1209	1451	1934	2418	2901	3385	3868	4352	4835	5319	5803	6286	6770	7253
M3	162	324	486	347	809	971	1295	1619	1942	2266	2590	2914	3237	3561	3885	4208	4532	4856
M3.5	138	277	415	554	692	830	1107	1384	1661	1938	2214	1491	2768	3045	3322	3599	3875	4152
M4	122	243	365	487	608	730	973	1217	1460	1703	1946	2190	2433	2676	2920	3163	3406	3650
M5	97	194	291	388	485	582	776	970	1163	1357	1551	1745	1939	2133	2327	2521	2715	2905
M6	81	162	243	324	405	486	647	809	971	1133	1295	1457	1619	1781	1942	2104	2266	2428
M7	69	138	208	277	346	415	554	692	830	969	1107	1246	1384	1522	1661	1799	1938	2076
M8	61	121	182	243	303	364	485	606	728	849	970	1091	1213	1334	1455	1577	1698	1819
M10	48	97	145	194	242	291	388	485	582	679	776	873	970	1067	1163	1260	1357	1454
M12	40	81	121	162	202	243	324	405	486	567	647	728	809	890	971	1052	1133	1214
M14	35	69	104	139	173	208	277	347	416	485	555	624	693	763	832	901	971	1040
M16	30	61	91	121	152	182	243	303	364	424	485	546	606	667	728	788	849	910
M18	27	54	81	108	135	162	216	269	323	377	431	485	539	593	647	700	754	808
M20	24	49	73	97	121	146	194	243	291	340	388	437	485	534	582	631	680	728
M22	22	44	66	88	110	132	176	221	265	309	353	397	441	485	529	573	618	662
M24	20	40	61	81	101	121	162	202	243	283	323	364	404	445	485	526	566	606
M27	18	36	54	72	90	108	144	180	216	252	287	323	359	395	431	467	503	539
M30	16	32	49	65	81	97	129	162	194	226	259	291	323	356	388	420	453	485

Partial List of Solutions to Tapping Problems

application	symptom	common cause	remedy
general	gage out of limits	tap size and gage mismatch	select tap size for gage
	oversize thread	alignment, spindle feed	correct
	oversize at top	runout or alignment	correct
	go gage binds part way	worn tool, tap cuts off lead	replace tap, synchronous holder
	thread shaving	feed error, high axial force	program, synchronous holder
	chipping	high cutting force, worn tap	tap geometry, replace tap
	breakage	chip jamming flutes	tap geometry, tapping depth
	—	worn tool, high torque	replace tap with new tool
	short life, low speed	excessive wear	SC or HSS-E-PM HP taps
steel	birdnest blind hole	long, ductile chips	GT30 GP6505 (oxide), peck feed
	chipping	high material hardness	GT00, GT02 WP31MG (TiN)
	breakage in blind holes	hole depth >2D, chip jamming	GT04 WH36MG (TiN/MoS_2)
stainless steel	oversize thread, low life	galling	GT20, GT30 GM6515 (TiN-CrC/C)
	short life	work hardened core hole	replace drill
cast iron	excessive wear	abrasion	GT40 GP6520 (TiCN)
aluminum, cast	excessive wear	high silicon	GT40 GP6520 (TiCN)
aluminum, wrought	oversize thread	galling	GT70, GT80 WN48EG (DLC)
nickel, cobalt alloys	short life	high cutting temperature	GT10, GT12 WS32MG (TiCN)
titanium	short life	high cutting temperature	GT14, GT16 WN35MG (TiN-DLC)

Thread Mills

	vibration marks	major crest wear	edge chipping	cone shaped thread	entry marks
cutting speed	check	reduce	–	–	–
feed per tooth	check	increase	reduce	–	–
workpiece clamping	improve	improve	improve	–	improve
machine tool stability	improve	improve	improve	–	improve
cantilever arm	shorten	shorten	–	–	shorten
helix angle	increase	reduce	–	–	–
radial runout	check	check	–	–	–
coating	–	improve	improve	–	–
milling operation	–	climb mill	climb mill	climb mill	
line feed/ entry ramp	check	check	–	–	improve
coolant pressure	–	check (>20 bar, 290 psi)	check (>20 bar, 290 psi)	–	–

drill size	decimal (in)	drill size	decimal (in)	drill size	decimal (in)	drill size	decimal (in)	drill size	decimal (in)	drill size	decimal (in)
0,30mm	.0118	54	.0550	3,10mm	.1220	5,50mm	.2165	8,50mm	.3346	9/16	.5625
0,32mm	.0126	1,40mm	.0551	1/18	.1250	7/32	.2188	8,60mm	.3386	14,50mm	.5709
80	.0135	1,45mm	.0571	3,20mm	.1260	5,60mm	.2205	R	.3390	37/64	.5781
0,35mm	.0138	1,50mm	.0591	30	.1285	2	.2210	8,70mm	.3425	14,75mm	.5807
79	.0145	53	.0595	3,30mm	.1299	5,70mm	.2244	11/32	.3438	15,00mm	.5906
0,38mm	.0150	1,55mm	.0610	3,40mm	.1339	1	.2280	8,80mm	.3465	19/32	.5938
1/64	.0156	1/16	.0625	29	.1360	5,80mm	.2283	S	.3480	15,25mm	.6004
0,40mm	.0157	1,60mm	.0630	3,50mm	.1378	5,90mm	.2323	8,90mm	.3504	39/64	.6094
78	.0160	52	.0635	28	.1405	A	.2340	9,00mm	.3543	15,50mm	.6102
0,42mm	.0165	1,65mm	.0650	9/64	.1406	15/64	.2344	T	.3580	15,75mm	.6201
0,45mm	.0177	1,70mm	.0669	3,60mm	.1417	6,00mm	.2362	9,10mm	.3583	5/8	.6250
77	.0180	51	.0670	27	.1440	B	.2380	23/64	.3594	16,00mm	.6299
0,48mm	.0189	1,75mm	.0689	3,70mm	.1457	6,10mm	.2402	9,20mm	.3622	16,25mm	.6398
0,50mm	.0197	50	.0700	26	.1470	C	.2420	9,30mm	.3661	41/64	.6406
76	.0200	1,80mm	.0709	25	.1495	6,20mm	.2441	U	.3680	16,50mm	.6496
75	.0210	1,85mm	.0728	3,80mm	.1496	D	.2460	9,40mm	.3701	21/32	.6562
0,55mm	.0217	49	.0730	24	.1520	6,30mm	.2480	9,50mm	.3740	16,75mm	.6594
74	.0225	1,90mm	.0748	3,90mm	.1535	1/4, E	.2500	3/8	.3750	17,00mm	.6693
0,60mm	.0236	48	.0760	23	.1540	6,40mm	.2520	V	.3770	43/64	.6719
73	.0240	1,95mm	.0768	5/32	.1562	6,50mm	.2559	9,60mm	.3780	17,25mm	.6791
0,62mm	.0244	5/64	.0781	22	.1570	F	.2570	9,70mm	.3819	11/16	.6875
72	.0250	47	.0785	4,00mm	.1575	6,60mm	.2598	9,80mm	.3858	17,50mm	.6890
0,65mm	.0256	2,00mm	.0787	21	.1590	G	.2610	W	.3860	45/64	.7031
71	.0260	2,05mm	.0807	20	.1610	6,70mm	.2638	9,90mm	.3898	18,00mm	.7087
0,70mm	.0276	46	.0810	4,10mm	.1614	17/64	.2656	25/64	.3906	23/32	.7188
70	.0280	45	.0820	4,20mm	.1654	H	.2660	10,00mm	.3937	18,50mm	.7283
69	.0292	2,10mm	.0827	19	.1660	6,80mm	.2677	X	.3970	47/64	.7344
0,75mm	.0295	2,15mm	.0846	4,30mm	.1693	6,90mm	.2717	10,20mm	.4016	19,00mm	.7480
68	.0310	44	.0860	18	.1695	I	.2720	Y	.4040	3/4	.7500
1/32	.0312	2,20mm	.0866	11/64	.1719	7,00mm	.2756	13/32	.4062	49/64	.7656
0,80mm	.0315	2,25mm	.0886	17	.1730	J	.2770	Z	.4130	19,50mm	.7677
67	.0320	43	.0890	4,40mm	.1732	7,10mm	.2795	10,50mm	.4134	25/32	.7812
66	.0330	2,30mm	.0906	16	.1770	K	.2810	27/64	.4219	20,00mm	.7874
0,85mm	.0335	2,35mm	.0925	4,50mm	.1772	9/32	.2812	10,80mm	.4252	51/64	.7969
65	.0350	42	.0935	15	.1800	7,20mm	.2835	11,00mm	.4331	20,50mm	.8071
0,90mm	.0354	3/32	.0938	4,60mm	.1811	7,30mm	.2874	7/16	.4375	13/16	.8125
64	.0360	2,40mm	.0945	14	.1820	L	.2900	11,20mm	.4409	21,00mm	.8268
63	.0370	41	.0960	4,70mm, 13	.1850	7,40mm	.2913	11,50mm	.4528	53/64	.8281
0,95mm	.0374	2,45mm	.0965	3/16	.1875	M	.2950	29/64	.4531	27/32	.8438
62	.0380	40	.0980	4,80mm, 12	.1890	7,50mm	.2953	11,80mm	.4646	21,50mm	.8465
61	.0390	2,50mm	.0984	11	.1910	19/64	.2969	15/32	.4688	55/64	.8594
1,00mm	.0394	39	.0995	4,90mm	.1929	7,60mm	.2992	12,00mm	.4724	22,00mm	.8661
60	.0400	38	.1015	10	.1935	N	.3020	12,20mm	.4803	7/8	.8750
59	.0410	2,60mm	.1024	9	.1960	7,70mm	.3031	31/64	.4844	22,50mm	.8858
1,05mm	.0413	37	.1040	5,00mm	.1969	7,80mm	.3071	12,50mm	.4921	57/64	.8906
58	.0420	2,70mm	.1063	8	.1990	7,90mm	.3110	1/2	.5000	23,00mm	.9055
57	.0430	36	.1065	5,10mm	.2008	5/16	.3125	12,80mm	.5039	29/32	.9062
1,10mm	.0433	7/64	.1094	7	.2010	8,00mm	.3150	13,00mm	.5118	59/64	.9219
1,15mm	.0453	35	.1100	13/64	.2031	O	.3160	33/64	.5156	23,50mm	.9252
56	.0465	2,80mm	.1102	6	.2040	8,10mm	.3189	13,20mm	.5197	15/16	.9375
3/64	.0469	34	.1110	5,20mm	.2047	8,20mm	.3228	17/32	.5312	24,00mm	.9449
1,20mm	.0472	33	.1130	5	.2055	P	.3230	13,50mm	.5315	61/64	.9531
1,25mm	.0492	2,90mm	.1142	5,30mm	.2087	8,30mm	.3268	13,80mm	.5433	24,50mm	.9646
1,30mm	.0512	32	.1160	4	.2090	21/64	.3281	35/64	.5469	31/32	.9688
55	.0520	3,00mm	.1181	5,40mm	.2126	8,40mm	.3307	14,00mm	.5512	25,00mm	.9843
1,35mm	.0531	31	.1200	3	.2130	Q	.3320	14,25mm	.5610	63/64	.9844
										1"	1.0000

Metric Fractional Wire gage Letter size

Knowing the hardness of the work material to be tapped is essential in selecting the best tap for the job.

10 mm/m ball 3000 kg	120° cone 150 kg	1/16" ball 100 kg	model C	1000 lb per sq. in.	10 mm/m ball 3000 kg	120° cone 150 kg	1/16" ball 100 kg	model C	1000 lb per sq. in.
Brinell	Rockwell C	Rockwell B	Shore Scleroscope	tensile strength	Brinell	Rockwell C	Rockwell B	Shore Scleroscope	tensile strength
800	72	–	100	–	276	30	105	42	136
780	71	–	99	–	269	29	104	41	132
760	70	–	98	–	261	28	103	40	129
745	68	–	97	367	258	27	102	39	127
725	67	–	96	357	255	26	102	39	125
712	66	–	95	350	249	25	101	38	123
682	65	–	93	337	245	24	100	37	119
668	64	–	91	326	240	23	99	36	117
652	63	–	89	318	237	23	99	35	115
626	62	–	87	306	229	22	98	34	113
614	61	–	85	299	224	21	97	33	110
601	60	–	83	292	217	20	96	33	107
590	59	–	81	290	211	19	95	32	104
576	57	–	79	281	206	18	94	32	102
552	56	–	76	270	203	17	94	31	100
545	55	–	75	268	200	16	93	31	98
529	54	–	74	259	196	15	92	30	96
514	53	120	72	254	191	14	92	30	94
502	52	119	70	247	187	13	91	29	92
495	51	119	69	244	185	12	91	29	91
477	49	118	67	233	183	11	90	28	90
461	48	117	66	227	180	10	89	28	89
451	47	117	65	223	175	9	88	27	86
444	46	116	64	219	170	7	87	27	84
427	46	115	62	209	167	6	87	27	82
415	44	115	60	204	165	5	86	26	81
401	43	114	58	196	163	4	85	26	80
388	42	114	57	191	160	3	84	25	78
375	41	113	55	184	156	2	83	25	76
370	40	112	54	182	154	1	82	25	75
362	39	111	53	179	152	–	82	24	74
351	38	111	51	173	150	–	81	24	74
346	37	110	50	170	147	–	80	24	72
341	37	110	49	168	145	–	79	23	71
331	36	109	47	163	143	–	79	23	70
323	35	109	46	158	141	–	78	23	69
311	34	108	46	153	140	–	77	22	69
301	33	107	45	148	135	–	75	22	67
293	32	106	44	144	130	–	72	22	65
285	31	105	43	140	–	–	–	–	–

Taps Application Icons

Chamfer	Through Hole	Blind Hole	Tapered Hole
HSS Material	HSS-E Material	HSS-E-PM Material	Solid Carbide Material
Hole Depth	Flat-Bottom Hole	Drilled Hole	Cylindrical Shank
Cylindrical Shank with Square	6–8 Pitches	3–4 Pitches	2–3 Pitches
3.5–5 Pitches	1.5–2 Pitches	3–5 Pitches	2.5–3.5 Pitches
4–6 Pitches	1–2 Pitches	2B Class of Fit	3B Class of Fit
6H Class of Fit	6HX Class of Fit	2BX Class of Fit	3BX Class of Fit
ANSI Tap Dimensions	American National Standard Taper Pipe Tap	Dryseal American National Standard Taper Pipe Tap	Unified Inch Fine Pitch
Unified Inch Coarse Pitch	Metric Coarse Pitch	Metric Fine Pitch	DIN 371 Tap Dimensions
DIN 374 Tap Dimensions	DIN 376 Tap Dimensions	DIN 2174 Tap Dimensions	Internal Radial Coolant
Flood Coolant	Internal Axial Coolant		

DIN — German Institute for Standardization

Our complete portfolio.
Your complete satisfaction.

From turning, holemaking, and indexable milling to solid carbide end milling, solid carbide drilling, and tapping, the most powerful tools in the business now proudly wear WIDIA™ brands. When you buy WIDIA products, you're not just purchasing speed, power, and precision, you're investing in quality and complete satisfaction.

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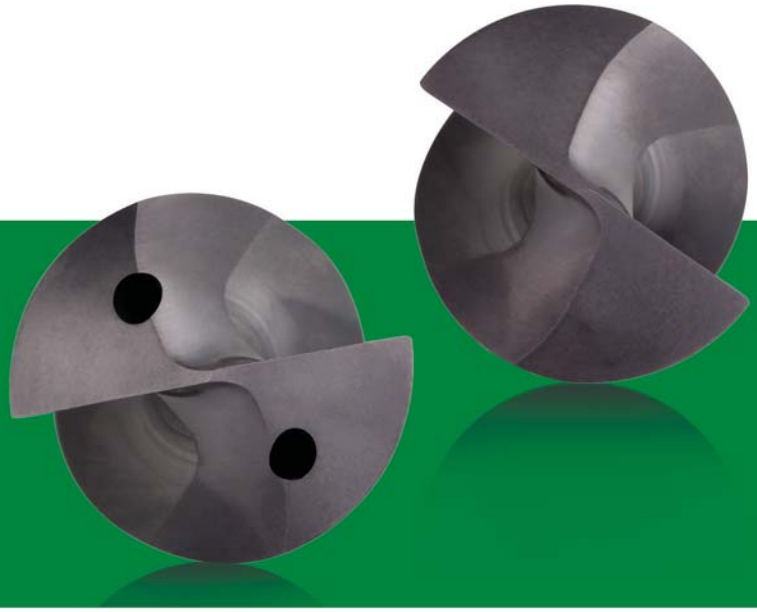
WIDIA™

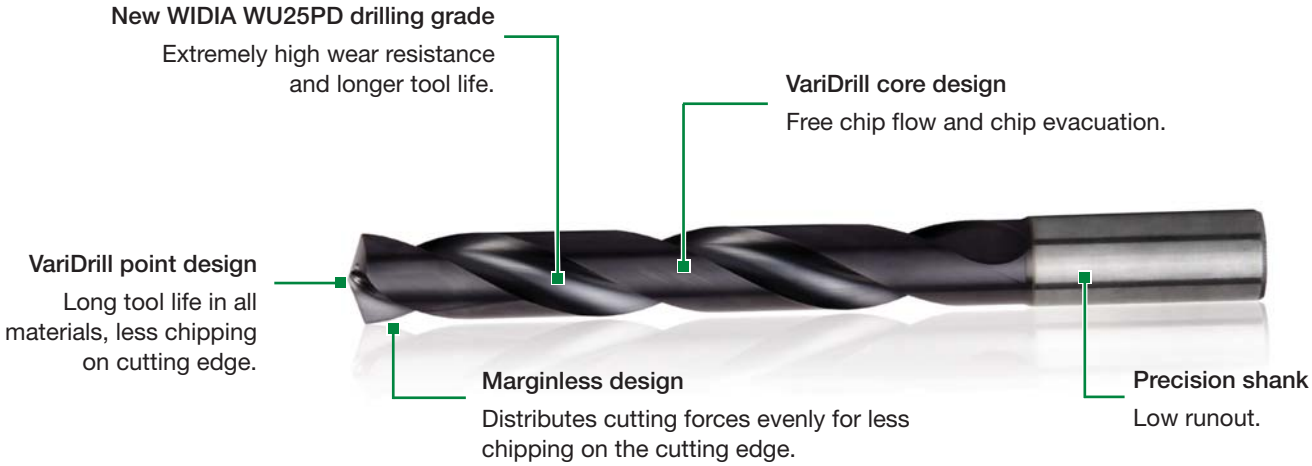
Multiple-Material Drilling • **WIDIA™ VariDrill™**

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



VariDrill™

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



Innovative Technology

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

Elegance, Strength, and Versatility

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

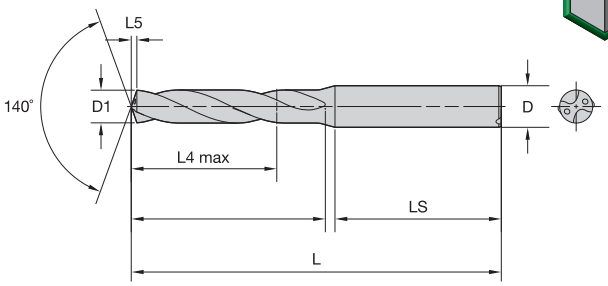
Optimum Hole Quality

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

More Options and Longer Tool Life

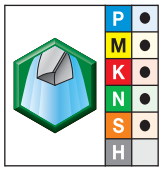
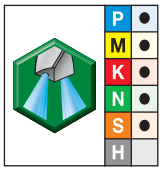
Aside from its uniquely engineered design, VariDrill also offers a broad portfolio of drilling options. With more than 2,200 items, VariDrill offers more choices than any other drill for general engineering operations. And because most drills can be reconditioned, your tools will gain extended life.

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



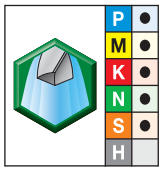
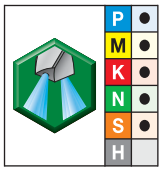
● first choice
○ alternate choice

■ VDS201A/VDS401A • 3 x D

 VDS201A • WU25PD	 VDS401A • WU25PD	D1 diameter mm	in	fraction	wire size	L4 max	L5	L	LS	D
VDS201A01000	–	1,000	.0394	–	–	5	0,1	58	28	4
VDS201A01016	–	1,016	.0400	–	–	5	0,1	58	28	4
VDS201A01041	–	1,041	.0410	–	–	5	0,2	58	28	4
VDS201A01067	–	1,067	.0420	–	–	5	0,2	58	28	4
VDS201A01092	–	1,092	.0430	–	–	5	0,2	58	28	4
VDS201A01100	–	1,100	.0433	–	–	5	0,2	58	28	4
VDS201A01181	–	1,181	.0465	–	–	5	0,2	58	28	4
VDS201A01191	–	1,191	.0469	–	–	5	0,2	58	28	4
VDS201A01200	–	1,200	.0472	–	–	5	0,2	58	28	4
VDS201A01300	–	1,300	.0512	–	–	5	0,2	58	28	4
VDS201A01321	–	1,321	.0520	–	–	5	0,2	58	28	4
VDS201A01397	–	1,397	.0550	–	–	5	0,2	58	28	4
VDS201A01400	–	1,400	.0551	–	–	5	0,2	58	28	4
VDS201A01500	VDS401A01500	1,500	.0591	–	–	6	0,2	58	28	4
VDS201A01600	VDS401A01600	1,600	.0630	–	–	6	0,2	58	28	4
VDS201A01700	VDS401A01700	1,700	.0669	–	–	6	0,3	58	28	4
VDS201A01800	VDS401A01800	1,800	.0709	–	–	6	0,3	58	28	4
VDS201A01900	VDS401A01900	1,900	.0748	–	–	6	0,3	58	28	4
VDS201A01984	VDS401A01984	1,984	.0781	–	–	10	0,3	58	28	4
VDS201A02000	VDS401A02000	2,000	.0787	–	–	10	0,3	58	28	4
VDS201A02100	VDS401A02100	2,100	.0827	–	–	10	0,3	58	28	4
VDS201A02200	VDS401A02200	2,200	.0866	–	–	10	0,3	58	28	4
VDS201A02300	VDS401A02300	2,300	.0906	–	–	10	0,4	58	28	4
VDS201A02383	VDS401A02383	2,383	.0938	3/32	–	12	0,4	58	28	4
VDS201A02400	VDS401A02400	2,400	.0945	–	–	12	0,4	58	28	4
VDS201A02439	VDS401A02439	2,439	.0960	–	41	12	0,4	58	28	4
VDS201A02489	VDS401A02489	2,489	.0980	–	40	12	0,4	58	28	4
VDS201A02500	VDS401A02500	2,500	.0984	–	–	12	0,4	58	28	4
VDS201A02578	VDS401A02578	2,578	.1015	–	38	12	0,4	58	28	4
VDS201A02600	VDS401A02600	2,600	.1024	–	–	12	0,4	58	28	4
VDS201A02642	VDS401A02642	2,642	.1040	–	37	12	0,4	58	28	4
VDS201A02700	VDS401A02700	2,700	.1063	–	–	12	0,4	58	28	4
VDS201A02705	VDS401A02705	2,705	.1065	–	36	12	0,4	58	28	4
VDS201A02779	VDS401A02779	2,779	.1094	7/64	–	12	0,4	58	28	4
VDS201A02800	VDS401A02800	2,800	.1102	–	–	12	0,5	58	28	4
VDS201A02820	VDS401A02820	2,820	.1110	–	34	12	0,5	58	28	4
VDS201A02870	VDS401A02870	2,870	.1130	–	33	12	0,5	58	28	4
VDS201A02900	VDS401A02900	2,900	.1142	–	–	12	0,5	58	28	4
VDS201A02947	VDS401A02947	2,947	.1160	–	32	12	0,5	58	28	4
VDS201A03000	VDS401A03000	3,000	.1181	–	–	14	0,5	62	36	6

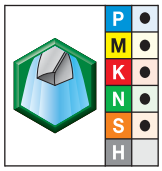
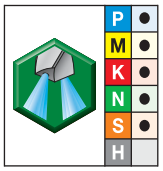
(continued)

(VDS201A/VDS401A • 3 x D continued)

		D1 diameter								
VDS201A • WU25PD	VDS401A • WU25PD	mm	in	fraction	wire size	L4 max	L5	L	LS	D
VDS201A03048	VDS401A03048	3,048	.1200	–	31	14	0,5	62	36	6
VDS201A03100	VDS401A03100	3,100	.1220	–	–	14	0,5	62	36	6
VDS201A03175	VDS401A03175	3,175	.1250	1/8	–	14	0,5	62	36	6
VDS201A03200	VDS401A03200	3,200	.1260	–	–	14	0,5	62	36	6
VDS201A03264	VDS401A03264	3,264	.1285	–	30	14	0,5	62	36	6
VDS201A03300	VDS401A03300	3,300	.1299	–	–	14	0,5	62	36	6
VDS201A03400	VDS401A03400	3,400	.1339	–	–	14	0,6	62	36	6
VDS201A03455	VDS401A03455	3,455	.1360	–	29	14	0,6	62	36	6
VDS201A03500	VDS401A03500	3,500	.1378	–	–	14	0,6	62	36	6
VDS201A03571	VDS401A03571	3,571	.1406	9/64	–	14	0,6	62	36	6
VDS201A03600	VDS401A03600	3,600	.1417	–	–	14	0,6	62	36	6
VDS201A03658	VDS401A03658	3,658	.1440	–	27	14	0,6	62	36	6
VDS201A03700	VDS401A03700	3,700	.1457	–	–	14	0,6	62	36	6
VDS201A03734	VDS401A03734	3,734	.1470	–	26	14	0,6	62	36	6
VDS201A03800	VDS401A03800	3,800	.1496	–	–	17	0,6	66	36	6
VDS201A03900	VDS401A03900	3,900	.1535	–	–	17	0,6	66	36	6
VDS201A03970	VDS401A03970	3,970	.1563	5/32	–	17	0,7	66	36	6
VDS201A04000	VDS401A04000	4,000	.1575	–	–	17	0,7	66	36	6
VDS201A04039	VDS401A04039	4,039	.1590	–	21	17	0,7	66	36	6
VDS201A04090	VDS401A04090	4,090	.1610	–	20	17	0,7	66	36	6
VDS201A04100	VDS401A04100	4,100	.1614	–	–	17	0,7	66	36	6
VDS201A04200	VDS401A04200	4,200	.1654	–	–	17	0,7	66	36	6
VDS201A04217	VDS401A04217	4,217	.1660	–	19	17	0,7	66	36	6
VDS201A04300	VDS401A04300	4,300	.1693	–	–	17	0,7	66	36	6
VDS201A04366	VDS401A04366	4,366	.1719	11/64	–	17	0,7	66	36	6
VDS201A04400	VDS401A04400	4,400	.1732	–	–	17	0,7	66	36	6
VDS201A04500	VDS401A04500	4,500	.1772	–	–	17	0,7	66	36	6
VDS201A04600	VDS401A04600	4,600	.1811	–	–	17	0,8	66	36	6
VDS201A04623	VDS401A04623	4,623	.1820	–	14	17	0,8	66	36	6
VDS201A04700	VDS401A04700	4,700	.1850	–	13	17	0,8	66	36	6
VDS201A04763	VDS401A04763	4,763	.1875	3/16	–	20	0,8	66	36	6
VDS201A04800	VDS401A04800	4,800	.1890	–	12	20	0,8	66	36	6
VDS201A04852	VDS401A04852	4,852	.1910	–	11	20	0,8	66	36	6
VDS201A04900	VDS401A04900	4,900	.1929	–	–	20	0,8	66	36	6
VDS201A05000	VDS401A05000	5,000	.1969	–	–	20	0,8	66	36	6
VDS201A05100	VDS401A05100	5,100	.2008	–	–	20	0,8	66	36	6
VDS201A05106	VDS401A05106	5,106	.2010	–	7	20	0,8	66	36	6
VDS201A05159	VDS401A05159	5,159	.2031	13/64	–	20	0,9	66	36	6
VDS201A05200	VDS401A05200	5,200	.2047	–	–	20	0,9	66	36	6
VDS201A05300	VDS401A05300	5,300	.2087	–	–	20	0,9	66	36	6
VDS201A05400	VDS401A05400	5,400	.2126	–	–	20	0,9	66	36	6
VDS201A05410	VDS401A05410	5,410	.2130	–	3	20	0,9	66	36	6
VDS201A05500	VDS401A05500	5,500	.2165	–	–	20	0,9	66	36	6
VDS201A05558	VDS401A05558	5,558	.2188	7/32	–	20	0,9	66	36	6

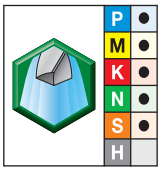
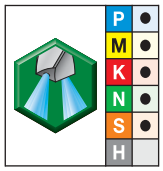
(continued)

(VDS201A/VDS401A • 3 x D continued)

		D1 diameter								
VDS201A • WU25PD	VDS401A • WU25PD	mm	in	fraction	wire size	L4 max	L5	L	LS	D
VDS201A05600	**VDS401A05600**	5,600	.2205	–	–	20	0,9	66	36	6
VDS201A05616	**VDS401A05616**	5,616	.2211	–	2	20	0,9	66	36	6
VDS201A05700	**VDS401A05700**	5,700	.2244	–	–	20	1,0	66	36	6
VDS201A05800	**VDS401A05800**	5,800	.2283	–	–	20	1,0	66	36	6
VDS201A05900	**VDS401A05900**	5,900	.2323	–	–	20	1,0	66	36	6
VDS201A05954	**VDS401A05954**	5,954	.2344	15/64	–	20	1,0	66	36	6
VDS201A06000	**VDS401A06000**	6,000	.2362	–	–	20	1,0	66	36	6
VDS201A06100	**VDS401A06100**	6,100	.2402	–	–	24	1,0	79	36	8
VDS201A06200	**VDS401A06200**	6,200	.2441	–	–	24	1,0	79	36	8
VDS201A06300	**VDS401A06300**	6,300	.2480	–	–	24	1,1	79	36	8
VDS201A06350	**VDS401A06350**	6,350	.2500	1/4	E	24	1,1	79	36	8
VDS201A06400	**VDS401A06400**	6,400	.2520	–	–	24	1,1	79	36	8
VDS201A06500	**VDS401A06500**	6,500	.2559	–	–	24	1,1	79	36	8
VDS201A06528	**VDS401A06528**	6,528	.2570	–	F	24	1,1	79	36	8
VDS201A06600	**VDS401A06600**	6,600	.2598	–	–	24	1,1	79	36	8
VDS201A06630	**VDS401A06630**	6,630	.2610	–	G	24	1,1	79	36	8
VDS201A06700	**VDS401A06700**	6,700	.2638	–	–	24	1,1	79	36	8
VDS201A06746	**VDS401A06746**	6,746	.2656	17/64	–	24	1,1	79	36	8
VDS201A06800	**VDS401A06800**	6,800	.2677	–	–	24	1,1	79	36	8
VDS201A06900	**VDS401A06900**	6,900	.2717	–	–	24	1,2	79	36	8
VDS201A07000	**VDS401A07000**	7,000	.2756	–	–	24	1,2	79	36	8
VDS201A07100	**VDS401A07100**	7,100	.2795	–	–	29	1,2	79	36	8
VDS201A07145	**VDS401A07145**	7,145	.2813	9/32	–	29	1,2	79	36	8
VDS201A07200	**VDS401A07200**	7,200	.2835	–	–	29	1,2	79	36	8
VDS201A07300	**VDS401A07300**	7,300	.2874	–	–	29	1,2	79	36	8
VDS201A07400	**VDS401A07400**	7,400	.2913	–	–	29	1,3	79	36	8
VDS201A07500	**VDS401A07500**	7,500	.2953	–	–	29	1,3	79	36	8
VDS201A07541	**VDS401A07541**	7,541	.2969	19/64	–	29	1,3	79	36	8
VDS201A07600	**VDS401A07600**	7,600	.2992	–	–	29	1,3	79	36	8
VDS201A07700	**VDS401A07700**	7,700	.3031	–	–	29	1,3	79	36	8
VDS201A07800	**VDS401A07800**	7,800	.3071	–	–	29	1,3	79	36	8
VDS201A07900	**VDS401A07900**	7,900	.3110	–	–	29	1,3	79	36	8
VDS201A07938	**VDS401A07938**	7,938	.3125	5/16	–	29	1,3	79	36	8
VDS201A08000	**VDS401A08000**	8,000	.3150	–	–	29	1,4	79	36	8
VDS201A08100	**VDS401A08100**	8,100	.3189	–	–	35	1,4	89	40	10
VDS201A08200	**VDS401A08200**	8,200	.3228	–	–	35	1,4	89	40	10
VDS201A08300	**VDS401A08300**	8,300	.3268	–	–	35	1,4	89	40	10
VDS201A08334	**VDS401A08334**	8,334	.3281	21/64	–	35	1,4	89	40	10
VDS201A08400	**VDS401A08400**	8,400	.3307	–	–	35	1,4	89	40	10
VDS201A08433	**VDS401A08433**	8,433	.3320	–	Q	35	1,4	89	40	10
VDS201A08500	**VDS401A08500**	8,500	.3346	–	–	35	1,4	89	40	10
VDS201A08600	**VDS401A08600**	8,600	.3386	–	–	35	1,5	89	40	10
VDS201A08700	**VDS401A08700**	8,700	.3425	–	–	35	1,5	89	40	10
VDS201A08733	**VDS401A08733**	8,733	.3438	11/32	–	35	1,5	89	40	10
VDS201A08800	**VDS401A08800**	8,800	.3465	–	–	35	1,5	89	40	10
VDS201A08900	**VDS401A08900**	8,900	.3504	–	–	35	1,5	89	40	10

(continued)

(VDS201A/VDS401A • 3 x D continued)

		D1 diameter								
VDS201A • WU25PD	VDS401A • WU25PD	mm	in	fraction	wire size	L4 max	L5	L	LS	D
VDS201A09000	VDS401A09000	9,000	.3543	–	–	35	1,5	89	40	10
VDS201A09100	VDS401A09100	9,100	.3583	–	–	35	1,5	89	40	10
VDS201A09129	VDS401A09129	9,129	.3594	23/64	–	35	1,6	89	40	10
VDS201A09200	VDS401A09200	9,200	.3622	–	–	35	1,6	89	40	10
VDS201A09300	VDS401A09300	9,300	.3661	–	–	35	1,6	89	40	10
VDS201A09347	VDS401A09347	9,347	.3680	–	U	35	1,6	89	40	10
VDS201A09400	VDS401A09400	9,400	.3701	–	–	35	1,6	89	40	10
VDS201A09500	VDS401A09500	9,500	.3740	–	–	35	1,6	89	40	10
VDS201A09525	VDS401A09525	9,525	.3750	3/8	–	35	1,6	89	40	10
VDS201A09600	VDS401A09600	9,600	.3780	–	–	35	1,6	89	40	10
VDS201A09700	VDS401A09700	9,700	.3819	–	–	35	1,7	89	40	10
VDS201A09800	VDS401A09800	9,800	.3858	–	–	35	1,7	89	40	10
VDS201A09900	VDS401A09900	9,900	.3898	–	–	35	1,7	89	40	10
VDS201A09921	VDS401A09921	9,921	.3906	25/64	–	35	1,7	89	40	10
VDS201A10000	VDS401A10000	10,000	.3937	–	–	35	1,7	89	40	10
VDS201A10100	VDS401A10100	10,100	.3976	–	–	40	1,7	102	45	12
VDS201A10200	VDS401A10200	10,200	.4016	–	–	40	1,7	102	45	12
VDS201A10300	VDS401A10300	10,300	.4055	–	–	40	1,8	102	45	12
VDS201A10320	VDS401A10320	10,320	.4063	13/32	–	40	1,8	102	45	12
VDS201A10400	VDS401A10400	10,400	.4094	–	–	40	1,8	102	45	12
VDS201A10500	VDS401A10500	10,500	.4134	–	–	40	1,8	102	45	12
VDS201A10600	VDS401A10600	10,600	.4173	–	–	40	1,8	102	45	12
VDS201A10700	VDS401A10700	10,700	.4213	–	–	40	1,8	102	45	12
VDS201A10716	VDS401A10716	10,716	.4219	27/64	–	40	1,8	102	45	12
VDS201A10800	VDS401A10800	10,800	.4252	–	–	40	1,8	102	45	12
VDS201A10900	VDS401A10900	10,900	.4291	–	–	40	1,9	102	45	12
VDS201A11000	VDS401A11000	11,000	.4331	–	–	40	1,9	102	45	12
VDS201A11100	VDS401A11100	11,100	.4370	–	–	40	1,9	102	45	12
VDS201A11113	VDS401A11113	11,113	.4375	7/16	–	40	1,9	102	45	12
VDS201A11200	VDS401A11200	11,200	.4409	–	–	40	1,9	102	45	12
VDS201A11300	VDS401A11300	11,300	.4449	–	–	40	1,9	102	45	12
VDS201A11400	VDS401A11400	11,400	.4488	–	–	40	2,0	102	45	12
VDS201A11500	VDS401A11500	11,500	.4528	–	–	40	2,0	102	45	12
VDS201A11509	VDS401A11509	11,509	.4531	29/64	–	40	2,0	102	45	12
VDS201A11600	VDS401A11600	11,600	.4567	–	–	40	2,0	102	45	12
VDS201A11700	VDS401A11700	11,700	.4606	–	–	40	2,0	102	45	12
VDS201A11800	VDS401A11800	11,800	.4646	–	–	40	2,0	102	45	12
VDS201A11900	VDS401A11900	11,900	.4685	–	–	40	2,0	102	45	12
VDS201A11908	VDS401A11908	11,908	.4688	15/32	–	40	2,0	102	45	12
VDS201A12000	VDS401A12000	12,000	.4724	–	–	40	2,1	102	45	12
VDS201A12100	VDS401A12100	12,100	.4764	–	–	43	2,1	107	45	14
VDS201A12200	VDS401A12200	12,200	.4803	–	–	43	2,1	107	45	14
VDS201A12300	VDS401A12300	12,300	.4843	–	–	43	2,1	107	45	14
VDS201A12304	VDS401A12304	12,304	.4844	31/64	–	43	2,1	107	45	14
VDS201A12400	VDS401A12400	12,400	.4882	–	–	43	2,1	107	45	14
VDS201A12500	VDS401A12500	12,500	.4921	–	–	43	2,1	107	45	14

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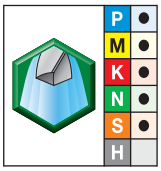
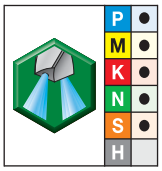
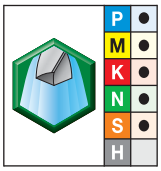
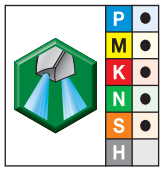
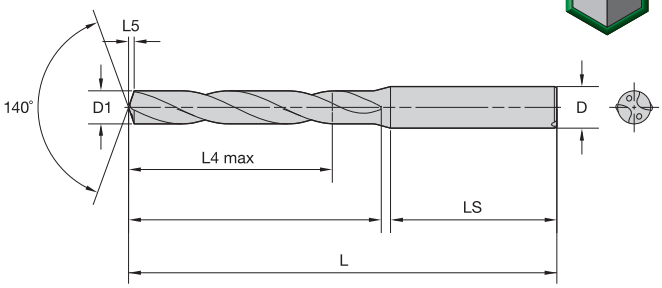
 VDS201A • WU25PD	 VDS401A • WU25PD	D1 diameter mm	in	fraction	wire size	L4 max	L5	L	LS	D
VDS201A12600	VDS401A12600	12,600	.4961	–	–	43	2,2	107	45	14
VDS201A12700	VDS401A12700	12,700	.5000	1/2	–	43	2,2	107	45	14
VDS201A12800	VDS401A12800	12,800	.5039	–	–	43	2,2	107	45	14
VDS201A12900	VDS401A12900	12,900	.5079	–	–	43	2,2	107	45	14
VDS201A13000	VDS401A13000	13,000	.5118	–	–	43	2,2	107	45	14
VDS201A13096	VDS401A13096	13,096	.5156	33/64	–	43	2,3	107	45	14
VDS201A13100	VDS401A13100	13,100	.5157	–	–	43	2,3	107	45	14
VDS201A13200	VDS401A13200	13,200	.5197	–	–	43	2,3	107	45	14
VDS201A13300	VDS401A13300	13,300	.5236	–	–	43	2,3	107	45	14
VDS201A13400	VDS401A13400	13,400	.5276	–	–	43	2,3	107	45	14
VDS201A13500	VDS401A13500	13,500	.5315	–	–	43	2,3	107	45	14
VDS201A13600	VDS401A13600	13,600	.5354	–	–	43	2,3	107	45	14
VDS201A13700	VDS401A13700	13,700	.5394	–	–	43	2,4	107	45	14
VDS201A13800	VDS401A13800	13,800	.5433	–	–	43	2,4	107	45	14
VDS201A13891	VDS401A13891	13,891	.5469	35/64	–	43	2,4	107	45	14
VDS201A13900	VDS401A13900	13,900	.5472	–	–	43	2,4	107	45	14
VDS201A14000	VDS401A14000	14,000	.5512	–	–	43	2,4	107	45	14
VDS201A14100	VDS401A14100	14,100	.5551	–	–	45	2,4	115	48	16
VDS201A14200	VDS401A14200	14,200	.5591	–	–	45	2,5	115	48	16
VDS201A14288	VDS401A14288	14,288	.5625	9/16	–	45	2,5	115	48	16
VDS201A14300	VDS401A14300	14,300	.5630	–	–	45	2,5	115	48	16
VDS201A14400	VDS401A14400	14,400	.5669	–	–	45	2,5	115	48	16
VDS201A14500	VDS401A14500	14,500	.5709	–	–	45	2,5	115	48	16
VDS201A14600	VDS401A14600	14,600	.5748	–	–	45	2,5	115	48	16
VDS201A14684	VDS401A14684	14,684	.5781	37/64	–	45	2,5	115	48	16
VDS201A14700	VDS401A14700	14,700	.5787	–	–	45	2,5	115	48	16
VDS201A14800	VDS401A14800	14,800	.5827	–	–	45	2,6	115	48	16
VDS201A14900	VDS401A14900	14,900	.5866	–	–	45	2,6	115	48	16
VDS201A15000	VDS401A15000	15,000	.5906	–	–	45	2,6	115	48	16
VDS201A15083	VDS401A15083	15,083	.5938	19/32	–	45	2,6	115	48	16
VDS201A15100	VDS401A15100	15,100	.5945	–	–	45	2,6	115	48	16
VDS201A15200	VDS401A15200	15,200	.5984	–	–	45	2,6	115	48	16
VDS201A15300	VDS401A15300	15,300	.6024	–	–	45	2,6	115	48	16
VDS201A15400	VDS401A15400	15,400	.6063	–	–	45	2,7	115	48	16
VDS201A15479	VDS401A15479	15,479	.6094	39/64	–	45	2,7	115	48	16
VDS201A15500	VDS401A15500	15,500	.6102	–	–	45	2,7	115	48	16
VDS201A15600	VDS401A15600	15,600	.6142	–	–	45	2,7	115	48	16
VDS201A15700	VDS401A15700	15,700	.6181	–	–	45	2,7	115	48	16
VDS201A15800	VDS401A15800	15,800	.6220	–	–	45	2,7	115	48	16
VDS201A15875	VDS401A15875	15,875	.6250	5/8	–	45	2,7	115	48	16
VDS201A15900	VDS401A15900	15,900	.6260	–	–	45	2,8	115	48	16
VDS201A16000	VDS401A16000	16,000	.6299	–	–	45	2,8	115	48	16
VDS201A16100	VDS401A16100	16,100	.6339	–	–	51	2,8	123	48	18
VDS201A16200	VDS401A16200	16,200	.6378	–	–	51	2,8	123	48	18
VDS201A16271	VDS401A16271	16,271	.6406	41/64	–	51	2,8	123	48	18
VDS201A16300	VDS401A16300	16,300	.6417	–	–	51	2,8	123	48	18

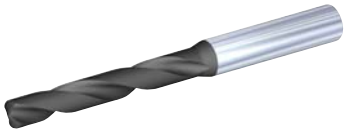
(continued)

(VDS201A/VDS401A • 3 x D continued)

		D1 diameter								
VDS201A • WU25PD	VDS401A • WU25PD	mm	in	fraction	wire size	L4 max	L5	L	LS	D
VDS201A16400	VDS401A16400	16,400	.6457	—	—	51	2,8	123	48	18
VDS201A16500	VDS401A16500	16,500	.6496	—	—	51	2,9	123	48	18
VDS201A16600	VDS401A16600	16,600	.6535	—	—	51	2,9	123	48	18
VDS201A16670	VDS401A16670	16,670	.6563	21/32	—	51	2,9	123	48	18
VDS201A16700	VDS401A16700	16,700	.6575	—	—	51	2,9	123	48	18
VDS201A16800	VDS401A16800	16,800	.6614	—	—	51	2,9	123	48	18
VDS201A16900	VDS401A16900	16,900	.6654	—	—	51	2,9	123	48	18
VDS201A17000	VDS401A17000	17,000	.6693	—	—	51	2,9	123	48	18
VDS201A17100	VDS401A17100	17,100	.6732	—	—	51	3,0	123	48	18
VDS201A17200	VDS401A17200	17,200	.6772	—	—	51	3,0	123	48	18
VDS201A17300	VDS401A17300	17,300	.6811	—	—	51	3,0	123	48	18
VDS201A17400	VDS401A17400	17,400	.6850	—	—	51	3,0	123	48	18
VDS201A17463	VDS401A17463	17,463	.6875	11/16	—	51	3,0	123	48	18
VDS201A17500	VDS401A17500	17,500	.6890	—	—	51	3,0	123	48	18
VDS201A17600	VDS401A17600	17,600	.6929	—	—	51	3,1	123	48	18
VDS201A17700	VDS401A17700	17,700	.6969	—	—	51	3,1	123	48	18
VDS201A17800	VDS401A17800	17,800	.7008	—	—	51	3,1	123	48	18
VDS201A17859	VDS401A17859	17,859	.7031	45/64	—	51	3,1	123	48	18
VDS201A17900	VDS401A17900	17,900	.7047	—	—	51	3,1	123	48	18
VDS201A18000	VDS401A18000	18,000	.7087	—	—	51	3,1	123	48	18
VDS201A18100	VDS401A18100	18,100	.7126	—	—	55	3,1	131	50	20
VDS201A18200	VDS401A18200	18,200	.7165	—	—	55	3,2	131	50	20
VDS201A18258	VDS401A18258	18,258	.7188	23/32	—	55	3,2	131	50	20
VDS201A18300	VDS401A18300	18,300	.7205	—	—	55	3,2	131	50	20
VDS201A18400	VDS401A18400	18,400	.7244	—	—	55	3,2	131	50	20
VDS201A18500	VDS401A18500	18,500	.7283	—	—	55	3,2	131	50	20
VDS201A18600	VDS401A18600	18,600	.7323	—	—	55	3,2	131	50	20
VDS201A18654	VDS401A18654	18,654	.7344	47/64	—	55	3,2	131	50	20
VDS201A18700	VDS401A18700	18,700	.7362	—	—	55	3,2	131	50	20
VDS201A18800	VDS401A18800	18,800	.7402	—	—	55	3,3	131	50	20
VDS201A18900	VDS401A18900	18,900	.7441	—	—	55	3,3	131	50	20
VDS201A19000	VDS401A19000	19,000	.7480	—	—	55	3,3	131	50	20
VDS201A19050	VDS401A19050	19,050	.7500	3/4	—	55	3,3	131	50	20
VDS201A19100	VDS401A19100	19,100	.7520	—	—	55	3,3	131	50	20
VDS201A19200	VDS401A19200	19,200	.7559	—	—	55	3,3	131	50	20
VDS201A19300	VDS401A19300	19,300	.7598	—	—	55	3,4	131	50	20
VDS201A19400	VDS401A19400	19,400	.7638	—	—	55	3,4	131	50	20
VDS201A19500	VDS401A19500	19,500	.7677	—	—	55	3,4	131	50	20
VDS201A19600	VDS401A19600	19,600	.7717	—	—	55	3,4	131	50	20
VDS201A19700	VDS401A19700	19,700	.7756	—	—	55	3,4	131	50	20
VDS201A19800	VDS401A19800	19,800	.7795	—	—	55	3,4	131	50	20
VDS201A19900	VDS401A19900	19,900	.7835	—	—	55	3,5	131	50	20
VDS201A20000	VDS401A20000	20,000	.7874	—	—	55	3,5	131	50	20

NOTE: L4 max, L5, L, LS, and D table columns reflect millimeter measurements.





● first choice
○ alternate choice

VDS202A/VDS402A • 5 x D

VDS202A • WU25PD	VDS402A • WU25PD	D1 diameter mm	in	fraction	wire size	L4 max	L5	L	LS	D
VDS202A01000	–	1,000	.0394	–	–	6	0,1	58	28	4
VDS202A01016	–	1,016	.0400	–	–	6	0,1	58	28	4
VDS202A01041	–	1,041	.0410	–	–	6	0,2	58	28	4
VDS202A01067	–	1,067	.0420	–	–	6	0,2	58	28	4
VDS202A01092	–	1,092	.0430	–	–	6	0,2	58	28	4
VDS202A01100	–	1,100	.0433	–	–	6	0,2	58	28	4
VDS202A01181	–	1,181	.0465	–	–	6	0,2	58	28	4
VDS202A01191	–	1,191	.0469	–	–	6	0,2	58	28	4
VDS202A01200	–	1,200	.0472	–	–	6	0,2	58	28	4
VDS202A01300	–	1,300	.0512	–	–	6	0,2	58	28	4
VDS202A01321	–	1,321	.0520	–	–	6	0,2	58	28	4
VDS202A01397	–	1,397	.0550	–	–	6	0,2	58	28	4
VDS202A01400	–	1,400	.0551	–	–	6	0,2	58	28	4
VDS202A01500	VDS402A01500	1,500	.0591	–	–	9	0,2	58	28	4
VDS202A01600	VDS402A01600	1,600	.0630	–	–	9	0,2	58	28	4
VDS202A01700	VDS402A01700	1,700	.0669	–	–	9	0,3	58	28	4
VDS202A01800	VDS402A01800	1,800	.0709	–	–	9	0,3	58	28	4
VDS202A01900	VDS402A01900	1,900	.0748	–	–	9	0,3	58	28	4
VDS202A01984	VDS402A01984	1,984	.0781	–	–	14	0,3	58	28	4
VDS202A02000	VDS402A02000	2,000	.0787	–	–	14	0,3	58	28	4
VDS202A02100	VDS402A02100	2,100	.0827	–	–	14	0,3	58	28	4
VDS202A02200	VDS402A02200	2,200	.0866	–	–	14	0,3	58	28	4
VDS202A02300	VDS402A02300	2,300	.0906	–	–	14	0,4	58	28	4
VDS202A02383	VDS402A02383	2,383	.0938	3/32	–	17	0,4	58	28	4
VDS202A02400	VDS402A02400	2,400	.0945	–	–	17	0,4	58	28	4
VDS202A02439	VDS402A02439	2,439	.0960	–	41	17	0,4	58	28	4
VDS202A02489	VDS402A02489	2,489	.0980	–	40	17	0,4	58	28	4
VDS202A02500	VDS402A02500	2,500	.0984	–	–	17	0,4	58	28	4
VDS202A02578	VDS402A02578	2,578	.1015	–	38	17	0,4	58	28	4
VDS202A02600	VDS402A02600	2,600	.1024	–	–	17	0,4	58	28	4
VDS202A02642	VDS402A02642	2,642	.1040	–	37	17	0,4	58	28	4
VDS202A02700	VDS402A02700	2,700	.1063	–	–	17	0,4	58	28	4
VDS202A02705	VDS402A02705	2,705	.1065	–	36	17	0,4	58	28	4
VDS202A02779	VDS402A02779	2,779	.1094	7/64	–	17	0,4	58	28	4
VDS202A02800	VDS402A02800	2,800	.1102	–	–	17	0,5	58	28	4
VDS202A02820	VDS402A02820	2,820	.1110	–	34	17	0,5	58	28	4
VDS202A02870	VDS402A02870	2,870	.1130	–	33	17	0,5	58	28	4
VDS202A02900	VDS402A02900	2,900	.1142	–	–	17	0,5	58	28	4
VDS202A02947	VDS402A02947	2,947	.1160	–	32	17	0,5	58	28	4
VDS202A03000	VDS402A03000	3,000	.1181	–	–	23	0,5	66	36	6

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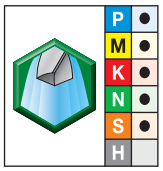
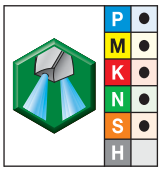
(VDS202A/VDS402A • 5 x D continued)

		D1 diameter								
VDS202A • WU25PD	VDS402A • WU25PD	mm	in	fraction	wire size	L4 max	L5	L	LS	D
VDS202A03048	VDS402A03048	3,048	.1200	–	31	23	0,5	66	36	6
VDS202A03100	VDS402A03100	3,100	.1220	–	–	23	0,5	66	36	6
VDS202A03175	VDS402A03175	3,175	.1250	1/8	–	23	0,5	66	36	6
VDS202A03200	VDS402A03200	3,200	.1260	–	–	23	0,5	66	36	6
VDS202A03264	VDS402A03264	3,264	.1285	–	30	23	0,5	66	36	6
VDS202A03300	VDS402A03300	3,300	.1299	–	–	23	0,5	66	36	6
VDS202A03400	VDS402A03400	3,400	.1339	–	–	23	0,6	66	36	6
VDS202A03455	VDS402A03455	3,455	.1360	–	29	23	0,6	66	36	6
VDS202A03500	VDS402A03500	3,500	.1378	–	–	23	0,6	66	36	6
VDS202A03571	VDS402A03571	3,571	.1406	9/64	–	23	0,6	66	36	6
VDS202A03600	VDS402A03600	3,600	.1417	–	–	23	0,6	66	36	6
VDS202A03658	VDS402A03658	3,658	.1440	–	27	23	0,6	66	36	6
VDS202A03700	VDS402A03700	3,700	.1457	–	–	23	0,6	66	36	6
VDS202A03734	VDS402A03734	3,734	.1470	–	26	23	0,6	66	36	6
VDS202A03800	VDS402A03800	3,800	.1496	–	–	29	0,6	74	36	6
VDS202A03900	VDS402A03900	3,900	.1535	–	–	29	0,6	74	36	6
VDS202A03970	VDS402A03970	3,970	.1563	5/32	–	29	0,7	74	36	6
VDS202A04000	VDS402A04000	4,000	.1575	–	–	29	0,7	74	36	6
VDS202A04039	VDS402A04039	4,039	.1590	–	21	29	0,7	74	36	6
VDS202A04090	VDS402A04090	4,090	.1610	–	20	29	0,7	74	36	6
VDS202A04100	VDS402A04100	4,100	.1614	–	–	29	0,7	74	36	6
VDS202A04200	VDS402A04200	4,200	.1654	–	–	29	0,7	74	36	6
VDS202A04217	VDS402A04217	4,217	.1660	–	19	29	0,7	74	36	6
VDS202A04300	VDS402A04300	4,300	.1693	–	–	29	0,7	74	36	6
VDS202A04366	VDS402A04366	4,366	.1719	11/64	–	29	0,7	74	36	6
VDS202A04400	VDS402A04400	4,400	.1732	–	–	29	0,7	74	36	6
VDS202A04500	VDS402A04500	4,500	.1772	–	–	29	0,7	74	36	6
VDS202A04600	VDS402A04600	4,600	.1811	–	–	29	0,8	74	36	6
VDS202A04623	VDS402A04623	4,623	.1820	–	14	29	0,8	74	36	6
VDS202A04700	VDS402A04700	4,700	.1850	–	13	29	0,8	74	36	6
VDS202A04763	VDS402A04763	4,763	.1875	3/16	–	35	0,8	82	36	6
VDS202A04800	VDS402A04800	4,800	.1890	–	12	35	0,8	82	36	6
VDS202A04852	VDS402A04852	4,852	.1910	–	11	35	0,8	82	36	6
VDS202A04900	VDS402A04900	4,900	.1929	–	–	35	0,8	82	36	6
VDS202A05000	VDS402A05000	5,000	.1969	–	–	35	0,8	82	36	6
VDS202A05100	VDS402A05100	5,100	.2008	–	–	35	0,8	82	36	6
VDS202A05106	VDS402A05106	5,106	.2010	–	7	35	0,8	82	36	6
VDS202A05159	VDS402A05159	5,159	.2031	13/64	–	35	0,9	82	36	6
VDS202A05200	VDS402A05200	5,200	.2047	–	–	35	0,9	82	36	6
VDS202A05300	VDS402A05300	5,300	.2087	–	–	35	0,9	82	36	6
VDS202A05400	VDS402A05400	5,400	.2126	–	–	35	0,9	82	36	6
VDS202A05410	VDS402A05410	5,410	.2130	–	3	35	0,9	82	36	6
VDS202A05500	VDS402A05500	5,500	.2165	–	–	35	0,9	82	36	6
VDS202A05558	VDS402A05558	5,558	.2188	7/32	–	35	0,9	82	36	6

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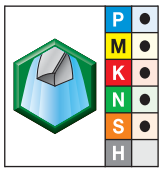
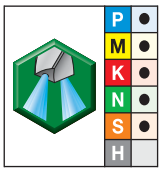
(VDS202A/VDS402A • 5 x D continued)

		D1 diameter								
VDS202A • WU25PD	VDS402A • WU25PD	mm	in	fraction	wire size	L4 max	L5	L	LS	D
VDS202A05600	VDS402A05600	5,600	.2205	–	–	35	0,9	82	36	6
VDS202A05616	VDS402A05616	5,616	.2211	–	2	35	0,9	82	36	6
VDS202A05700	VDS402A05700	5,700	.2244	–	–	35	1,0	82	36	6
VDS202A05800	VDS402A05800	5,800	.2283	–	–	35	1,0	82	36	6
VDS202A05900	VDS402A05900	5,900	.2323	–	–	35	1,0	82	36	6
VDS202A05954	VDS402A05954	5,954	.2344	15/64	–	35	1,0	82	36	6
VDS202A06000	VDS402A06000	6,000	.2362	–	–	35	1,0	82	36	6
VDS202A06100	VDS402A06100	6,100	.2402	–	–	43	1,0	91	36	8
VDS202A06200	VDS402A06200	6,200	.2441	–	–	43	1,0	91	36	8
VDS202A06300	VDS402A06300	6,300	.2480	–	–	43	1,1	91	36	8
VDS202A06350	VDS402A06350	6,350	.2500	1/4	E	43	1,1	91	36	8
VDS202A06400	VDS402A06400	6,400	.2520	–	–	43	1,1	91	36	8
VDS202A06500	VDS402A06500	6,500	.2559	–	–	43	1,1	91	36	8
VDS202A06528	VDS402A06528	6,528	.2570	–	F	43	1,1	91	36	8
VDS202A06600	VDS402A06600	6,600	.2598	–	–	43	1,1	91	36	8
VDS202A06630	VDS402A06630	6,630	.2610	–	G	43	1,1	91	36	8
VDS202A06700	VDS402A06700	6,700	.2638	–	–	43	1,1	91	36	8
VDS202A06746	VDS402A06746	6,746	.2656	17/64	–	43	1,1	91	36	8
VDS202A06800	VDS402A06800	6,800	.2677	–	–	43	1,1	91	36	8
VDS202A06900	VDS402A06900	6,900	.2717	–	–	43	1,2	91	36	8
VDS202A07000	VDS402A07000	7,000	.2756	–	–	43	1,2	91	36	8
VDS202A07100	VDS402A07100	7,100	.2795	–	–	43	1,2	91	36	8
VDS202A07145	VDS402A07145	7,145	.2813	9/32	–	43	1,2	91	36	8
VDS202A07200	VDS402A07200	7,200	.2835	–	–	43	1,2	91	36	8
VDS202A07300	VDS402A07300	7,300	.2874	–	–	43	1,2	91	36	8
VDS202A07400	VDS402A07400	7,400	.2913	–	–	43	1,3	91	36	8
VDS202A07500	VDS402A07500	7,500	.2953	–	–	43	1,3	91	36	8
VDS202A07541	VDS402A07541	7,541	.2969	19/64	–	43	1,3	91	36	8
VDS202A07600	VDS402A07600	7,600	.2992	–	–	43	1,3	91	36	8
VDS202A07700	VDS402A07700	7,700	.3031	–	–	43	1,3	91	36	8
VDS202A07800	VDS402A07800	7,800	.3071	–	–	43	1,3	91	36	8
VDS202A07900	VDS402A07900	7,900	.3110	–	–	43	1,3	91	36	8
VDS202A07938	VDS402A07938	7,938	.3125	5/16	–	43	1,3	91	36	8
VDS202A08000	VDS402A08000	8,000	.3150	–	–	43	1,4	91	36	8
VDS202A08100	VDS402A08100	8,100	.3189	–	–	49	1,4	103	40	10
VDS202A08200	VDS402A08200	8,200	.3228	–	–	49	1,4	103	40	10
VDS202A08300	VDS402A08300	8,300	.3268	–	–	49	1,4	103	40	10
VDS202A08334	VDS402A08334	8,334	.3281	21/64	–	49	1,4	103	40	10
VDS202A08400	VDS402A08400	8,400	.3307	–	–	49	1,4	103	40	10
VDS202A08433	VDS402A08433	8,433	.3320	–	Q	49	1,4	103	40	10
VDS202A08500	VDS402A08500	8,500	.3346	–	–	49	1,4	103	40	10
VDS202A08600	VDS402A08600	8,600	.3386	–	–	49	1,5	103	40	10
VDS202A08700	VDS402A08700	8,700	.3425	–	–	49	1,5	103	40	10
VDS202A08733	VDS402A08733	8,733	.3438	11/32	–	49	1,5	103	40	10
VDS202A08800	VDS402A08800	8,800	.3465	–	–	49	1,5	103	40	10
VDS202A08900	VDS402A08900	8,900	.3504	–	–	49	1,5	103	40	10

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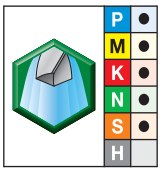
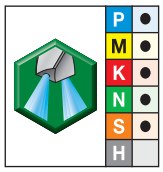
(VDS202A/VDS402A • 5 x D continued)

		D1 diameter								
VDS202A • WU25PD	VDS402A • WU25PD	mm	in	fraction	wire size	L4 max	L5	L	LS	D
VDS202A09000	VDS402A09000	9,000	.3543	–	–	49	1,5	103	40	10
VDS202A09100	VDS402A09100	9,100	.3583	–	–	49	1,5	103	40	10
VDS202A09129	VDS402A09129	9,129	.3594	23/64	–	49	1,6	103	40	10
VDS202A09200	VDS402A09200	9,200	.3622	–	–	49	1,6	103	40	10
VDS202A09300	VDS402A09300	9,300	.3661	–	–	49	1,6	103	40	10
VDS202A09347	VDS402A09347	9,347	.3680	–	U	49	1,6	103	40	10
VDS202A09400	VDS402A09400	9,400	.3701	–	–	49	1,6	103	40	10
VDS202A09500	VDS402A09500	9,500	.3740	–	–	49	1,6	103	40	10
VDS202A09525	VDS402A09525	9,525	.3750	3/8	–	49	1,6	103	40	10
VDS202A09600	VDS402A09600	9,600	.3780	–	–	49	1,6	103	40	10
VDS202A09700	VDS402A09700	9,700	.3819	–	–	49	1,7	103	40	10
VDS202A09800	VDS402A09800	9,800	.3858	–	–	49	1,7	103	40	10
VDS202A09900	VDS402A09900	9,900	.3898	–	–	49	1,7	103	40	10
VDS202A09921	VDS402A09921	9,921	.3906	25/64	–	49	1,7	103	40	10
VDS202A10000	VDS402A10000	10,000	.3937	–	–	49	1,7	103	40	10
VDS202A10100	VDS402A10100	10,100	.3976	–	–	56	1,7	118	45	12
VDS202A10200	VDS402A10200	10,200	.4016	–	–	56	1,7	118	45	12
VDS202A10300	VDS402A10300	10,300	.4055	–	–	56	1,8	118	45	12
VDS202A10320	VDS402A10320	10,320	.4063	13/32	–	56	1,8	118	45	12
VDS202A10400	VDS402A10400	10,400	.4094	–	–	56	1,8	118	45	12
VDS202A10500	VDS402A10500	10,500	.4134	–	–	56	1,8	118	45	12
VDS202A10600	VDS402A10600	10,600	.4173	–	–	56	1,8	118	45	12
VDS202A10700	VDS402A10700	10,700	.4213	–	–	56	1,8	118	45	12
VDS202A10716	VDS402A10716	10,716	.4219	27/64	–	56	1,8	118	45	12
VDS202A10800	VDS402A10800	10,800	.4252	–	–	56	1,8	118	45	12
VDS202A10900	VDS402A10900	10,900	.4291	–	–	56	1,9	118	45	12
VDS202A11000	VDS402A11000	11,000	.4331	–	–	56	1,9	118	45	12
VDS202A11100	VDS402A11100	11,100	.4370	–	–	56	1,9	118	45	12
VDS202A11113	VDS402A11113	11,113	.4375	7/16	–	56	1,9	118	45	12
VDS202A11200	VDS402A11200	11,200	.4409	–	–	56	1,9	118	45	12
VDS202A11300	VDS402A11300	11,300	.4449	–	–	56	1,9	118	45	12
VDS202A11400	VDS402A11400	11,400	.4488	–	–	56	2,0	118	45	12
VDS202A11500	VDS402A11500	11,500	.4528	–	–	56	2,0	118	45	12
VDS202A11509	VDS402A11509	11,509	.4531	29/64	–	56	2,0	118	45	12
VDS202A11600	VDS402A11600	11,600	.4567	–	–	56	2,0	118	45	12
VDS202A11700	VDS402A11700	11,700	.4606	–	–	56	2,0	118	45	12
VDS202A11800	VDS402A11800	11,800	.4646	–	–	56	2,0	118	45	12
VDS202A11900	VDS402A11900	11,900	.4685	–	–	56	2,0	118	45	12
VDS202A11908	VDS402A11908	11,908	.4688	15/32	–	56	2,0	118	45	12
VDS202A12000	VDS402A12000	12,000	.4724	–	–	56	2,1	118	45	12
VDS202A12100	VDS402A12100	12,100	.4764	–	–	60	2,1	124	45	14
VDS202A12200	VDS402A12200	12,200	.4803	–	–	60	2,1	124	45	14
VDS202A12300	VDS402A12300	12,300	.4843	–	–	60	2,1	124	45	14
VDS202A12304	VDS402A12304	12,304	.4844	31/64	–	60	2,1	124	45	14
VDS202A12400	VDS402A12400	12,400	.4882	–	–	60	2,1	124	45	14
VDS202A12500	VDS402A12500	12,500	.4921	–	–	60	2,1	124	45	14

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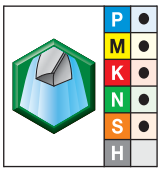
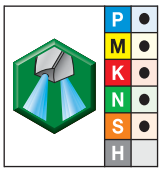
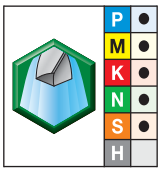
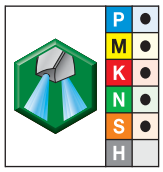
(VDS202A/VDS402A • 5 x D continued)

		D1 diameter								
VDS202A • WU25PD	VDS402A • WU25PD	mm	in	fraction	wire size	L4 max	L5	L	LS	D
VDS202A12600	VDS402A12600	12,600	.4961	—	—	60	2,2	124	45	14
VDS202A12700	VDS402A12700	12,700	.5000	1/2	—	60	2,2	124	45	14
VDS202A12800	VDS402A12800	12,800	.5039	—	—	60	2,2	124	45	14
VDS202A12900	VDS402A12900	12,900	.5079	—	—	60	2,2	124	45	14
VDS202A13000	VDS402A13000	13,000	.5118	—	—	60	2,2	124	45	14
VDS202A13096	VDS402A13096	13,096	.5156	33/64	—	60	2,3	124	45	14
VDS202A13100	VDS402A13100	13,100	.5157	—	—	60	2,3	124	45	14
VDS202A13200	VDS402A13200	13,200	.5197	—	—	60	2,3	124	45	14
VDS202A13300	VDS402A13300	13,300	.5236	—	—	60	2,3	124	45	14
VDS202A13400	VDS402A13400	13,400	.5276	—	—	60	2,3	124	45	14
VDS202A13500	VDS402A13500	13,500	.5315	—	—	60	2,3	124	45	14
VDS202A13600	VDS402A13600	13,600	.5354	—	—	60	2,3	124	45	14
VDS202A13700	VDS402A13700	13,700	.5394	—	—	60	2,4	124	45	14
VDS202A13800	VDS402A13800	13,800	.5433	—	—	60	2,4	124	45	14
VDS202A13891	VDS402A13891	13,891	.5469	35/64	—	60	2,4	124	45	14
VDS202A13900	VDS402A13900	13,900	.5472	—	—	60	2,4	124	45	14
VDS202A14000	VDS402A14000	14,000	.5512	—	—	60	2,4	124	45	14
VDS202A14100	VDS402A14100	14,100	.5551	—	—	63	2,4	133	48	16
VDS202A14200	VDS402A14200	14,200	.5591	—	—	63	2,5	133	48	16
VDS202A14288	VDS402A14288	14,288	.5625	9/16	—	63	2,5	133	48	16
VDS202A14300	VDS402A14300	14,300	.5630	—	—	63	2,5	133	48	16
VDS202A14400	VDS402A14400	14,400	.5669	—	—	63	2,5	133	48	16
VDS202A14500	VDS402A14500	14,500	.5709	—	—	63	2,5	133	48	16
VDS202A14600	VDS402A14600	14,600	.5748	—	—	63	2,5	133	48	16
VDS202A14684	VDS402A14684	14,684	.5781	37/64	—	63	2,5	133	48	16
VDS202A14700	VDS402A14700	14,700	.5787	—	—	63	2,5	133	48	16
VDS202A14800	VDS402A14800	14,800	.5827	—	—	63	2,6	133	48	16
VDS202A14900	VDS402A14900	14,900	.5866	—	—	63	2,6	133	48	16
VDS202A15000	VDS402A15000	15,000	.5906	—	—	63	2,6	133	48	16
VDS202A15083	VDS402A15083	15,083	.5938	19/32	—	63	2,6	133	48	16
VDS202A15100	VDS402A15100	15,100	.5945	—	—	63	2,6	133	48	16
VDS202A15200	VDS402A15200	15,200	.5984	—	—	63	2,6	133	48	16
VDS202A15300	VDS402A15300	15,300	.6024	—	—	63	2,6	133	48	16
VDS202A15400	VDS402A15400	15,400	.6063	—	—	63	2,7	133	48	16
VDS202A15479	VDS402A15479	15,479	.6094	39/64	—	63	2,7	133	48	16
VDS202A15500	VDS402A15500	15,500	.6102	—	—	63	2,7	133	48	16
VDS202A15600	VDS402A15600	15,600	.6142	—	—	63	2,7	133	48	16
VDS202A15700	VDS402A15700	15,700	.6181	—	—	63	2,7	133	48	16
VDS202A15800	VDS402A15800	15,800	.6220	—	—	63	2,7	133	48	16
VDS202A15875	VDS402A15875	15,875	.6250	5/8	—	63	2,7	133	48	16
VDS202A15900	VDS402A15900	15,900	.6260	—	—	63	2,8	133	48	16
VDS202A16000	VDS402A16000	16,000	.6299	—	—	63	2,8	133	48	16
VDS202A16100	VDS402A16100	16,100	.6339	—	—	71	2,8	143	48	18
VDS202A16200	VDS402A16200	16,200	.6378	—	—	71	2,8	143	48	18
VDS202A16271	VDS402A16271	16,271	.6406	41/64	—	71	2,8	143	48	18
VDS202A16300	VDS402A16300	16,300	.6417	—	—	71	2,8	143	48	18

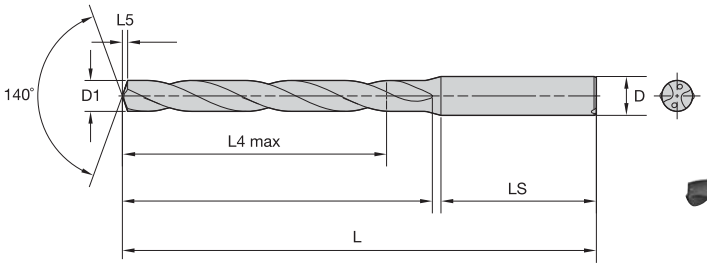
(continued)

Holemaking • Solid Carbide Drills

(VDS202A/VDS402A • 5 x D continued)

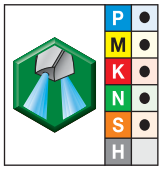
		D1 diameter								
VDS202A • WU25PD	VDS402A • WU25PD	mm	in	fraction	wire size	L4 max	L5	L	LS	D
VDS202A16400	VDS402A16400	16,400	.6457	–	–	71	2,8	143	48	18
VDS202A16500	VDS402A16500	16,500	.6496	–	–	71	2,9	143	48	18
VDS202A16600	VDS402A16600	16,600	.6535	–	–	71	2,9	143	48	18
VDS202A16670	VDS402A16670	16,670	.6563	21/32	–	71	2,9	143	48	18
VDS202A16700	VDS402A16700	16,700	.6575	–	–	71	2,9	143	48	18
VDS202A16800	VDS402A16800	16,800	.6614	–	–	71	2,9	143	48	18
VDS202A16900	VDS402A16900	16,900	.6654	–	–	71	2,9	143	48	18
VDS202A17000	VDS402A17000	17,000	.6693	–	–	71	2,9	143	48	18
VDS202A17100	VDS402A17100	17,100	.6732	–	–	71	3,0	143	48	18
VDS202A17200	VDS402A17200	17,200	.6772	–	–	71	3,0	143	48	18
VDS202A17300	VDS402A17300	17,300	.6811	–	–	71	3,0	143	48	18
VDS202A17400	VDS402A17400	17,400	.6850	–	–	71	3,0	143	48	18
VDS202A17463	VDS402A17463	17,463	.6875	11/16	–	71	3,0	143	48	18
VDS202A17500	VDS402A17500	17,500	.6890	–	–	71	3,0	143	48	18
VDS202A17600	VDS402A17600	17,600	.6929	–	–	71	3,1	143	48	18
VDS202A17700	VDS402A17700	17,700	.6969	–	–	71	3,1	143	48	18
VDS202A17800	VDS402A17800	17,800	.7008	–	–	71	3,1	143	48	18
VDS202A17859	VDS402A17859	17,859	.7031	45/64	–	71	3,1	143	48	18
VDS202A17900	VDS402A17900	17,900	.7047	–	–	71	3,1	143	48	18
VDS202A18000	VDS402A18000	18,000	.7087	–	–	71	3,1	143	48	18
VDS202A18100	VDS402A18100	18,100	.7126	–	–	77	3,1	153	50	20
VDS202A18200	VDS402A18200	18,200	.7165	–	–	77	3,2	153	50	20
VDS202A18258	VDS402A18258	18,258	.7188	23/32	–	77	3,2	153	50	20
VDS202A18300	VDS402A18300	18,300	.7205	–	–	77	3,2	153	50	20
VDS202A18400	VDS402A18400	18,400	.7244	–	–	77	3,2	153	50	20
VDS202A18500	VDS402A18500	18,500	.7283	–	–	77	3,2	153	50	20
VDS202A18600	VDS402A18600	18,600	.7323	–	–	77	3,2	153	50	20
VDS202A18654	VDS402A18654	18,654	.7344	47/64	–	77	3,2	153	50	20
VDS202A18700	VDS402A18700	18,700	.7362	–	–	77	3,2	153	50	20
VDS202A18800	VDS402A18800	18,800	.7402	–	–	77	3,3	153	50	20
VDS202A18900	VDS402A18900	18,900	.7441	–	–	77	3,3	153	50	20
VDS202A19000	VDS402A19000	19,000	.7480	–	–	77	3,3	153	50	20
VDS202A19050	VDS402A19050	19,050	.7500	3/4	–	77	3,3	153	50	20
VDS202A19100	VDS402A19100	19,100	.7520	–	–	77	3,3	153	50	20
VDS202A19200	VDS402A19200	19,200	.7559	–	–	77	3,3	153	50	20
VDS202A19300	VDS402A19300	19,300	.7598	–	–	77	3,4	153	50	20
VDS202A19400	VDS402A19400	19,400	.7638	–	–	77	3,4	153	50	20
VDS202A19500	VDS402A19500	19,500	.7677	–	–	77	3,4	153	50	20
VDS202A19600	VDS402A19600	19,600	.7717	–	–	77	3,4	153	50	20
VDS202A19700	VDS402A19700	19,700	.7756	–	–	77	3,4	153	50	20
VDS202A19800	VDS402A19800	19,800	.7795	–	–	77	3,4	153	50	20
VDS202A19900	VDS402A19900	19,900	.7835	–	–	77	3,5	153	50	20
VDS202A20000	VDS402A20000	20,000	.7874	–	–	77	3,5	153	50	20

NOTE: L4 max, L5, L, LS, and D table columns reflect millimeter measurements.



● first choice
○ alternate choice

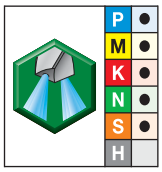
■ VDS403A • 8 x D



VDS403A • WU25PD	D1 diameter mm	D1 diameter in to	D1 diameter fraction	D1 diameter wire size	L	L4 max	L5	LS	D
VDS403A01500	1,500	.0591	–	–	58	15	0,2	28	4
VDS403A01600	1,600	.0630	–	–	58	15	0,2	28	4
VDS403A01700	1,700	.0669	–	–	58	15	0,3	28	4
VDS403A01800	1,800	.0709	–	–	58	15	0,3	28	4
VDS403A01900	1,900	.0748	–	–	58	15	0,3	28	4
VDS403A01984	1,984	.0781	–	–	66	22	0,3	28	4
VDS403A02000	2,000	.0787	–	–	66	22	0,3	28	4
VDS403A02100	2,100	.0827	–	–	66	22	0,3	28	4
VDS403A02200	2,200	.0866	–	–	66	22	0,3	28	4
VDS403A02300	2,300	.0906	–	–	66	22	0,4	28	4
VDS403A02383	2,383	.0938	3/32	–	66	25	0,4	28	4
VDS403A02400	2,400	.0945	–	–	66	25	0,4	28	4
VDS403A02439	2,439	.0960	–	41	66	25	0,4	28	4
VDS403A02489	2,489	.0980	–	40	66	25	0,4	28	4
VDS403A02500	2,500	.0984	–	–	66	25	0,4	28	4
VDS403A02578	2,578	.1015	–	38	66	25	0,4	28	4
VDS403A02600	2,600	.1024	–	–	66	25	0,4	28	4
VDS403A02642	2,642	.1040	–	37	66	25	0,4	28	4
VDS403A02700	2,700	.1063	–	–	66	25	0,4	28	4
VDS403A02705	2,705	.1065	–	36	66	25	0,4	28	4
VDS403A02779	2,779	.1094	7/64	–	66	25	0,4	28	4
VDS403A02800	2,800	.1102	–	–	66	25	0,5	28	4
VDS403A02820	2,820	.1110	–	34	66	25	0,5	28	4
VDS403A02870	2,870	.1130	–	33	66	25	0,5	28	4
VDS403A02900	2,900	.1142	–	–	66	25	0,5	28	4
VDS403A02947	2,947	.1160	–	32	66	25	0,5	28	4
VDS403A03000	3,000	.1181	–	–	78	33	0,5	36	6
VDS403A03048	3,048	.1200	–	31	78	33	0,5	36	6
VDS403A03100	3,100	.1220	–	–	78	33	0,5	36	6
VDS403A03175	3,175	.1250	1/8	–	78	33	0,5	36	6
VDS403A03200	3,200	.1260	–	–	78	33	0,5	36	6
VDS403A03264	3,264	.1285	–	30	78	33	0,5	36	6
VDS403A03300	3,300	.1299	–	30	78	33	0,5	36	6
VDS403A03400	3,400	.1339	–	–	78	33	0,6	36	6
VDS403A03455	3,455	.1360	–	29	78	33	0,6	36	6
VDS403A03500	3,500	.1378	–	21	78	33	0,6	36	6
VDS403A03571	3,571	.1406	9/64	–	78	33	0,6	36	6
VDS403A03600	3,600	.1417	–	–	78	33	0,6	36	6
VDS403A03658	3,658	.1440	–	27	78	33	0,6	36	6
VDS403A03700	3,700	.1457	–	–	78	33	0,6	36	6

(continued)

(VDS403A • 8 x D continued)



VDS403A • WU25PD	D1 diameter mm	D1 diameter in to	D1 diameter fraction	D1 diameter wire size	L	L4 max	L5	LS	D
VDS403A03734	3,734	.1470	–	26	78	33	0,6	36	6
VDS403A03800	3,800	.1496	–	–	87	41	0,6	36	6
VDS403A03900	3,900	.1535	–	–	87	41	0,6	36	6
VDS403A03970	3,970	.1563	5/32	–	87	41	0,7	36	6
VDS403A04000	4,000	.1575	–	–	87	41	0,7	36	6
VDS403A04039	4,039	.1590	–	21	87	41	0,7	36	6
VDS403A04090	4,090	.1610	–	20	87	41	0,7	36	6
VDS403A04100	4,100	.1614	–	–	87	41	0,7	36	6
VDS403A04200	4,200	.1654	–	–	87	41	0,7	36	6
VDS403A04217	4,217	.1660	–	19	87	41	0,7	36	6
VDS403A04300	4,300	.1693	–	14	87	41	0,7	36	6
VDS403A04366	4,366	.1719	11/64	–	87	41	0,7	36	6
VDS403A04400	4,400	.1732	–	–	87	41	0,7	36	6
VDS403A04500	4,500	.1772	–	–	87	41	0,7	36	6
VDS403A04600	4,600	.1811	–	19	87	41	0,8	36	6
VDS403A04623	4,623	.1820	–	14	87	41	0,8	36	6
VDS403A04700	4,700	.1850	–	13	87	41	0,8	36	6
VDS403A04763	4,763	.1875	3/16	13	94	48	0,8	36	6
VDS403A04800	4,800	.1890	–	12	94	48	0,8	36	6
VDS403A04852	4,852	.1910	–	11	94	48	0,8	36	6
VDS403A04900	4,900	.1929	–	–	94	48	0,8	36	6
VDS403A05000	5,000	.1969	–	–	94	48	0,8	36	6
VDS403A05100	5,100	.2008	–	–	94	48	0,8	36	6
VDS403A05106	5,106	.2010	–	7	94	48	0,8	36	6
VDS403A05159	5,159	.2031	13/64	–	94	48	0,9	36	6
VDS403A05200	5,200	.2047	–	–	94	48	0,9	36	6
VDS403A05300	5,300	.2087	–	12	94	48	0,9	36	6
VDS403A05400	5,400	.2126	–	7	94	48	0,9	36	6
VDS403A05410	5,410	.2130	–	3	94	48	0,9	36	6
VDS403A05500	5,500	.2165	–	3	94	48	0,9	36	6
VDS403A05558	5,558	.2188	7/32	2	94	48	0,9	36	6
VDS403A05600	5,600	.2205	–	–	94	48	0,9	36	6
VDS403A05616	5,616	.2211	–	2	94	48	0,9	36	6
VDS403A05700	5,700	.2244	–	–	94	48	1,0	36	6
VDS403A05800	5,800	.2283	–	–	94	48	1,0	36	6
VDS403A05900	5,900	.2323	–	–	94	48	1,0	36	6
VDS403A05954	5,954	.2344	15/64	–	94	48	1,0	36	6
VDS403A06000	6,000	.2362	–	–	94	48	1,0	36	6
VDS403A06100	6,100	.2402	–	–	105	57	1,0	36	8
VDS403A06200	6,200	.2441	–	F	105	57	1,0	36	8
VDS403A06300	6,300	.2480	–	–	105	57	1,1	36	8
VDS403A06350	6,350	.2500	1/4	E	105	57	1,1	36	8
VDS403A06400	6,400	.2520	–	–	105	57	1,1	36	8
VDS403A06500	6,500	.2559	–	–	105	57	1,1	36	8

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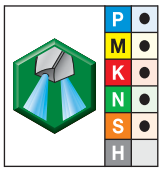
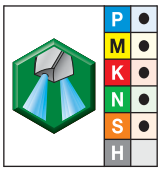


VDS403A • WU25PD	D1 diameter mm	D1 diameter in to	D1 diameter fraction	D1 diameter wire size	L	L4 max	L5	LS	D
VDS403A06528	6,528	.2570	–	F	105	57	1,1	36	8
VDS403A06600	6,600	.2598	–	E	105	57	1,1	36	8
VDS403A06630	6,630	.2610	–	G	105	57	1,1	36	8
VDS403A06700	6,700	.2638	–	–	105	57	1,1	36	8
VDS403A06746	6,746	.2656	17/64	–	105	57	1,1	36	8
VDS403A06800	6,800	.2677	–	–	105	57	1,1	36	8
VDS403A06900	6,900	.2717	–	–	105	57	1,2	36	8
VDS403A07000	7,000	.2756	–	–	105	57	1,2	36	8
VDS403A07100	7,100	.2795	–	–	110	61	1,2	36	8
VDS403A07145	7,145	.2813	9/32	–	110	61	1,2	36	8
VDS403A07200	7,200	.2835	–	–	110	61	1,2	36	8
VDS403A07300	7,300	.2874	–	–	110	61	1,2	36	8
VDS403A07400	7,400	.2913	–	–	110	61	1,3	36	8
VDS403A07500	7,500	.2953	–	–	110	61	1,3	36	8
VDS403A07541	7,541	.2969	19/64	–	110	61	1,3	36	8
VDS403A07600	7,600	.2992	–	–	110	61	1,3	36	8
VDS403A07700	7,700	.3031	–	–	110	61	1,3	36	8
VDS403A07800	7,800	.3071	–	–	110	61	1,3	36	8
VDS403A07900	7,900	.3110	–	–	110	61	1,3	36	8
VDS403A07938	7,938	.3125	5/16	Q	110	61	1,3	36	8
VDS403A08000	8,000	.3150	–	–	110	61	1,4	36	8
VDS403A08100	8,100	.3189	–	–	122	68	1,4	40	10
VDS403A08200	8,200	.3228	–	–	122	68	1,4	40	10
VDS403A08300	8,300	.3268	–	–	122	68	1,4	40	10
VDS403A08334	8,334	.3281	21/64	–	122	68	1,4	40	10
VDS403A08400	8,400	.3307	–	–	122	68	1,4	40	10
VDS403A08433	8,433	.3320	–	Q	122	68	1,4	40	10
VDS403A08500	8,500	.3346	–	–	122	68	1,4	40	10
VDS403A08600	8,600	.3386	–	–	122	68	1,5	40	10
VDS403A08700	8,700	.3425	–	–	122	68	1,5	40	10
VDS403A08733	8,733	.3438	11/32	–	122	68	1,5	40	10
VDS403A08800	8,800	.3465	–	–	122	68	1,5	40	10
VDS403A08900	8,900	.3504	–	–	122	68	1,5	40	10
VDS403A09000	9,000	.3543	–	–	122	68	1,5	40	10
VDS403A09100	9,100	.3583	–	–	122	68	1,5	40	10
VDS403A09129	9,129	.3594	23/64	–	122	68	1,6	40	10
VDS403A09200	9,200	.3622	–	–	122	68	1,6	40	10
VDS403A09300	9,300	.3661	–	–	122	68	1,6	40	10
VDS403A09347	9,347	.3680	–	U	122	68	1,6	40	10
VDS403A09400	9,400	.3701	–	–	122	68	1,6	40	10
VDS403A09500	9,500	.3740	–	–	122	68	1,6	40	10
VDS403A09525	9,525	.3750	3/8	–	122	68	1,6	40	10
VDS403A09600	9,600	.3780	–	U	122	68	1,6	40	10
VDS403A09700	9,700	.3819	–	–	122	68	1,7	40	10

(continued)

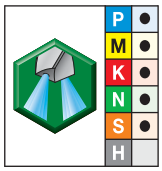
(VDS403A • 8 x D continued)



VDS403A • WU25PD	D1 diameter mm	D1 diameter in to	D1 diameter fraction	D1 diameter wire size	L	L4 max	L5	LS	D
VDS403A09800	9,800	.3858	–	–	122	68	1,7	40	10
VDS403A09900	9,900	.3898	–	–	122	68	1,7	40	10
VDS403A09921	9,921	.3906	25/64	–	122	68	1,7	40	10
VDS403A10000	10,000	.3937	–	–	122	68	1,7	40	10
VDS403A10100	10,100	.3976	–	–	141	79	1,7	45	12
VDS403A10200	10,200	.4016	–	–	141	79	1,7	45	12
VDS403A10300	10,300	.4055	–	–	141	79	1,8	45	12
VDS403A10320	10,320	.4063	13/32	–	141	79	1,8	45	12
VDS403A10400	10,400	.4094	–	–	141	79	1,8	45	12
VDS403A10500	10,500	.4134	–	–	141	79	1,8	45	12
VDS403A10600	10,600	.4173	–	–	141	79	1,8	45	12
VDS403A10700	10,700	.4213	–	–	141	79	1,8	45	12
VDS403A10716	10,716	.4219	27/64	–	141	79	1,8	45	12
VDS403A10800	10,800	.4252	–	–	141	79	1,8	45	12
VDS403A10900	10,900	.4291	–	–	141	79	1,9	45	12
VDS403A11000	11,000	.4331	–	–	141	79	1,9	45	12
VDS403A11100	11,100	.4370	–	–	141	79	1,9	45	12
VDS403A11113	11,113	.4375	7/16	–	141	79	1,9	45	12
VDS403A11200	11,200	.4409	–	–	141	79	1,9	45	12
VDS403A11300	11,300	.4449	–	–	141	79	1,9	45	12
VDS403A11400	11,400	.4488	–	–	141	79	2,0	45	12
VDS403A11500	11,500	.4528	–	–	141	79	2,0	45	12
VDS403A11509	11,509	.4531	29/64	–	141	79	2,0	45	12
VDS403A11600	11,600	.4567	–	–	141	79	2,0	45	12
VDS403A11700	11,700	.4606	–	–	141	79	2,0	45	12
VDS403A11800	11,800	.4646	–	–	141	79	2,0	45	12
VDS403A11900	11,900	.4685	–	–	141	79	2,0	45	12
VDS403A11908	11,908	.4688	15/32	–	141	79	2,0	45	12
VDS403A12000	12,000	.4724	–	–	141	79	2,1	45	12
VDS403A12100	12,100	.4764	–	–	155	91	2,1	45	14
VDS403A12200	12,200	.4803	–	–	155	91	2,1	45	14
VDS403A12300	12,300	.4843	–	–	155	91	2,1	45	14
VDS403A12304	12,304	.4844	31/64	–	155	91	2,1	45	14
VDS403A12400	12,400	.4882	–	–	155	91	2,1	45	14
VDS403A12500	12,500	.4921	–	–	155	91	2,1	45	14
VDS403A12600	12,600	.4961	–	–	155	91	2,2	45	14
VDS403A12700	12,700	.5000	1/2	–	155	91	2,2	45	14
VDS403A12800	12,800	.5039	–	–	155	91	2,2	45	14
VDS403A12900	12,900	.5079	–	–	155	91	2,2	45	14
VDS403A13000	13,000	.5118	–	–	155	91	2,2	45	14
VDS403A13096	13,096	.5156	33/64	–	155	91	2,3	45	14
VDS403A13100	13,100	.5157	–	–	155	91	2,3	45	14
VDS403A13200	13,200	.5197	–	–	155	91	2,3	45	14
VDS403A13300	13,300	.5236	–	–	155	91	2,3	45	14
VDS403A13400	13,400	.5276	–	–	155	91	2,3	45	14
VDS403A13500	13,500	.5315	–	–	155	91	2,3	45	14
VDS403A13600	13,600	.5354	–	–	155	91	2,3	45	14
VDS403A13700	13,700	.5394	–	–	155	91	2,4	45	14

(continued)

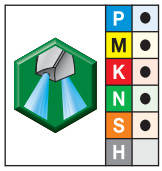
(VDS403A • 8 x D continued)



VDS403A • WU25PD	D1 diameter mm	in to	fraction	wire size	L	L4 max	L5	LS	D
VDS403A13800	13,800	.5433	–	–	155	91	2,4	45	14
VDS403A13891	13,891	.5469	35/64	–	155	91	2,4	45	14
VDS403A13900	13,900	.5472	–	–	155	91	2,4	45	14
VDS403A14000	14,000	.5512	–	–	155	91	2,4	45	14
VDS403A14100	14,100	.5551	–	–	171	101	2,4	48	16
VDS403A14200	14,200	.5591	–	–	171	101	2,5	48	16
VDS403A14288	14,288	.5625	9/16	–	171	101	2,5	48	16
VDS403A14300	14,300	.5630	–	–	171	101	2,5	48	16
VDS403A14400	14,400	.5669	–	–	171	101	2,5	48	16
VDS403A14500	14,500	.5709	–	–	171	101	2,5	48	16
VDS403A14600	14,600	.5748	–	–	171	101	2,5	48	16
VDS403A14684	14,684	.5781	37/64	–	171	101	2,5	48	16
VDS403A14700	14,700	.5787	–	–	171	101	2,5	48	16
VDS403A14800	14,800	.5827	–	–	171	101	2,6	48	16
VDS403A14900	14,900	.5866	–	–	171	101	2,6	48	16
VDS403A15000	15,000	.5906	–	–	171	101	2,6	48	16
VDS403A15083	15,083	.5938	19/32	–	171	101	2,6	48	16
VDS403A15100	15,100	.5945	–	–	171	101	2,6	48	16
VDS403A15200	15,200	.5984	–	–	171	101	2,6	48	16
VDS403A15300	15,300	.6024	–	–	171	101	2,6	48	16
VDS403A15400	15,400	.6063	–	–	171	101	2,7	48	16
VDS403A15479	15,479	.6094	39/64	–	171	101	2,7	48	16
VDS403A15500	15,500	.6102	–	–	171	101	2,7	48	16
VDS403A15600	15,600	.6142	–	–	171	101	2,7	48	16
VDS403A15700	15,700	.6181	–	–	171	101	2,7	48	16
VDS403A15800	15,800	.6220	–	–	171	101	2,7	48	16
VDS403A15875	15,875	.6250	5/8	–	171	101	2,7	48	16
VDS403A15900	15,900	.6260	–	–	171	101	2,8	48	16
VDS403A16000	16,000	.6299	–	–	171	101	2,8	48	16
VDS403A16100	16,100	.6339	–	–	185	113	2,8	48	18
VDS403A16200	16,200	.6378	–	–	185	113	2,8	48	18
VDS403A16271	16,271	.6406	41/64	–	185	113	2,8	48	18
VDS403A16300	16,300	.6417	–	–	185	113	2,8	48	18
VDS403A16400	16,400	.6457	–	–	185	113	2,8	48	18
VDS403A16500	16,500	.6496	–	–	185	113	2,9	48	18
VDS403A16600	16,600	.6535	–	–	185	113	2,9	48	18
VDS403A16670	16,670	.6563	21/32	–	185	113	2,9	48	18
VDS403A16700	16,700	.6575	–	–	185	113	2,9	48	18
VDS403A16800	16,800	.6614	–	–	185	113	2,9	48	18
VDS403A16900	16,900	.6654	–	–	185	113	2,9	48	18
VDS403A17000	17,000	.6693	–	–	185	113	2,9	48	18
VDS403A17100	17,100	.6732	–	–	185	113	3,0	48	18
VDS403A17200	17,200	.6772	–	–	185	113	3,0	48	18
VDS403A17300	17,300	.6811	–	–	185	113	3,0	48	18
VDS403A17400	17,400	.6850	–	–	185	113	3,0	48	18
VDS403A17463	17,463	.6875	11/16	–	185	113	3,0	48	18

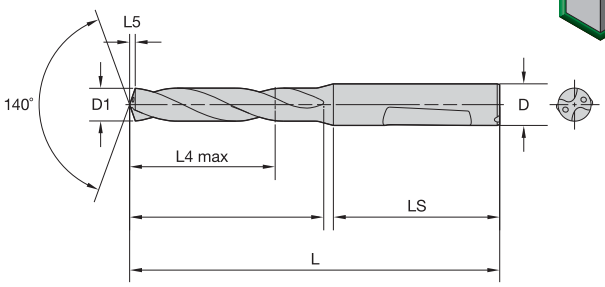
(continued)

(VDS403A • 8 x D continued)



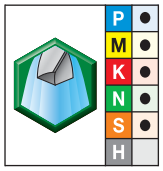
VDS403A • WU25PD	D1 diameter mm	in to	fraction	wire size	L	L4 max	L5	LS	D
VDS403A17500	17,500	.6890	–	–	185	113	3,0	48	18
VDS403A17600	17,600	.6929	–	–	185	113	3,1	48	18
VDS403A17700	17,700	.6969	–	–	185	113	3,1	48	18
VDS403A17800	17,800	.7008	–	–	185	113	3,1	48	18
VDS403A17859	17,859	.7031	45/64	–	185	113	3,1	48	18
VDS403A17900	17,900	.7047	–	–	185	113	3,1	48	18
VDS403A18000	18,000	.7087	–	–	185	113	3,1	48	18
VDS403A18100	18,100	.7126	–	–	200	124	3,1	50	20
VDS403A18200	18,200	.7165	–	–	200	124	3,2	50	20
VDS403A18258	18,258	.7188	23/32	–	200	124	3,2	50	20
VDS403A18300	18,300	.7205	–	–	200	124	3,2	50	20
VDS403A18400	18,400	.7244	–	–	200	124	3,2	50	20
VDS403A18500	18,500	.7283	–	–	200	124	3,2	50	20
VDS403A18600	18,600	.7323	–	–	200	124	3,2	50	20
VDS403A18654	18,654	.7344	47/64	–	200	124	3,2	50	20
VDS403A18700	18,700	.7362	–	–	200	124	3,2	50	20
VDS403A18800	18,800	.7402	–	–	200	124	3,3	50	20
VDS403A18900	18,900	.7441	–	–	200	124	3,3	50	20
VDS403A19000	19,000	.7480	–	–	200	124	3,3	50	20
VDS403A19050	19,050	.7500	3/4	–	200	124	3,3	50	20
VDS403A19100	19,100	.7520	–	–	200	124	3,3	50	20
VDS403A19200	19,200	.7559	–	–	200	124	3,3	50	20
VDS403A19300	19,300	.7598	–	–	200	124	3,4	50	20
VDS403A19400	19,400	.7638	–	–	200	124	3,4	50	20
VDS403A19500	19,500	.7677	–	–	200	124	3,4	50	20
VDS403A19600	19,600	.7717	–	–	200	124	3,4	50	20
VDS403A19700	19,700	.7756	–	–	200	124	3,4	50	20
VDS403A19800	19,800	.7795	–	–	200	124	3,4	50	20
VDS403A19900	19,900	.7835	–	–	200	124	3,5	50	20
VDS403A20000	20,000	.7874	–	–	200	124	3,5	50	20

NOTE: L4 max, L5, L, LS, and D table columns reflect millimeter measurements.



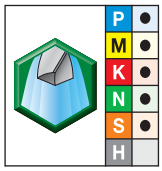
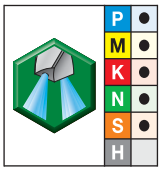
● first choice
○ alternate choice

■ VDS201F/VDS401F • 3 x D

		D1 diameter								
VDS201F • WU25PD	VDS401F • WU25PD	mm	in	fraction	wire size	L4 max	L5	L	LS	D
VDS201F03000	VDS401F03000	3,000	.1181	–	–	14	0,5	62	36	6
VDS201F03100	VDS401F03100	3,100	.1220	–	–	14	0,5	62	36	6
VDS201F03200	VDS401F03200	3,200	.1260	–	–	14	0,5	62	36	6
VDS201F03300	VDS401F03300	3,300	.1299	–	–	14	0,5	62	36	6
VDS201F03400	VDS401F03400	3,400	.1339	–	–	14	0,6	62	36	6
VDS201F03500	VDS401F03500	3,500	.1378	–	–	14	0,6	62	36	6
VDS201F03600	VDS401F03600	3,600	.1417	–	–	14	0,6	62	36	6
VDS201F03700	VDS401F03700	3,700	.1457	–	–	14	0,6	62	36	6
VDS201F03800	VDS401F03800	3,800	.1496	–	–	17	0,6	66	36	6
VDS201F03900	VDS401F03900	3,900	.1535	–	–	17	0,6	66	36	6
VDS201F04000	VDS401F04000	4,000	.1575	–	–	17	0,7	66	36	6
VDS201F04100	VDS401F04100	4,100	.1614	–	–	17	0,7	66	36	6
VDS201F04200	VDS401F04200	4,200	.1654	–	–	17	0,7	66	36	6
VDS201F04300	VDS401F04300	4,300	.1693	–	–	17	0,7	66	36	6
VDS201F04400	VDS401F04400	4,400	.1732	–	–	17	0,7	66	36	6
VDS201F04500	VDS401F04500	4,500	.1772	–	–	17	0,7	66	36	6
VDS201F04600	VDS401F04600	4,600	.1811	–	–	17	0,8	66	36	6
VDS201F04700	VDS401F04700	4,700	.1850	–	13	17	0,8	66	36	6
VDS201F04800	VDS401F04800	4,800	.1890	–	12	20	0,8	66	36	6
VDS201F04900	VDS401F04900	4,900	.1929	–	–	20	0,8	66	36	6
VDS201F05000	VDS401F05000	5,000	.1969	–	–	20	0,8	66	36	6
VDS201F05100	VDS401F05100	5,100	.2008	–	–	20	0,8	66	36	6
VDS201F05200	VDS401F05200	5,200	.2047	–	–	20	0,9	66	36	6
VDS201F05300	VDS401F05300	5,300	.2087	–	–	20	0,9	66	36	6
VDS201F05400	VDS401F05400	5,400	.2126	–	–	20	0,9	66	36	6
VDS201F05500	VDS401F05500	5,500	.2165	–	–	20	0,9	66	36	6
VDS201F05600	VDS401F05600	5,600	.2205	–	–	20	0,9	66	36	6
VDS201F05700	VDS401F05700	5,700	.2244	–	–	20	1,0	66	36	6
VDS201F05800	VDS401F05800	5,800	.2283	–	–	20	1,0	66	36	6
VDS201F05900	VDS401F05900	5,900	.2323	–	–	20	1,0	66	36	6
VDS201F06000	VDS401F06000	6,000	.2362	–	–	20	1,0	66	36	6
VDS201F06100	VDS401F06100	6,100	.2402	–	–	24	1,0	79	36	8
VDS201F06200	VDS401F06200	6,200	.2441	–	–	24	1,0	79	36	8
VDS201F06300	VDS401F06300	6,300	.2480	–	–	24	1,1	79	36	8
VDS201F06400	VDS401F06400	6,400	.2520	–	–	24	1,1	79	36	8
VDS201F06500	VDS401F06500	6,500	.2559	–	–	24	1,1	79	36	8
VDS201F06600	VDS401F06600	6,600	.2598	–	–	24	1,1	79	36	8
VDS201F06700	VDS401F06700	6,700	.2638	–	–	24	1,1	79	36	8
VDS201F06800	VDS401F06800	6,800	.2677	–	–	24	1,1	79	36	8
VDS201F06900	VDS401F06900	6,900	.2717	–	–	24	1,2	79	36	8

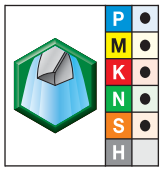
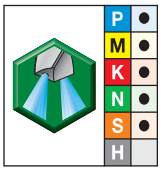
(continued)

(VDS201F/VDS401F • 3 x D continued)

		D1 diameter								
VDS201F • WU25PD	VDS401F • WU25PD	mm	in	fraction	wire size	L4 max	L5	L	LS	D
VDS201F07000	VDS401F07000	7,000	.2756	–	–	24	1,2	79	36	8
VDS201F07100	VDS401F07100	7,100	.2795	–	–	29	1,2	79	36	8
VDS201F07200	VDS401F07200	7,200	.2835	–	–	29	1,2	79	36	8
VDS201F07300	VDS401F07300	7,300	.2874	–	–	29	1,2	79	36	8
VDS201F07400	VDS401F07400	7,400	.2913	–	–	29	1,3	79	36	8
VDS201F07500	VDS401F07500	7,500	.2953	–	–	29	1,3	79	36	8
VDS201F07600	VDS401F07600	7,600	.2992	–	–	29	1,3	79	36	8
VDS201F07700	VDS401F07700	7,700	.3031	–	–	29	1,3	79	36	8
VDS201F07800	VDS401F07800	7,800	.3071	–	–	29	1,3	79	36	8
VDS201F07900	VDS401F07900	7,900	.3110	–	–	29	1,3	79	36	8
VDS201F08000	VDS401F08000	8,000	.3150	–	–	29	1,4	79	36	8
VDS201F08100	VDS401F08100	8,100	.3189	–	–	35	1,4	89	40	10
VDS201F08200	VDS401F08200	8,200	.3228	–	–	35	1,4	89	40	10
VDS201F08300	VDS401F08300	8,300	.3268	–	–	35	1,4	89	40	10
VDS201F08400	VDS401F08400	8,400	.3307	–	–	35	1,4	89	40	10
VDS201F08500	VDS401F08500	8,500	.3346	–	–	35	1,4	89	40	10
VDS201F08600	VDS401F08600	8,600	.3386	–	–	35	1,5	89	40	10
VDS201F08700	VDS401F08700	8,700	.3425	–	–	35	1,5	89	40	10
VDS201F08800	VDS401F08800	8,800	.3465	–	–	35	1,5	89	40	10
VDS201F08900	VDS401F08900	8,900	.3504	–	–	35	1,5	89	40	10
VDS201F09000	VDS401F09000	9,000	.3543	–	–	35	1,5	89	40	10
VDS201F09100	VDS401F09100	9,100	.3583	–	–	35	1,5	89	40	10
VDS201F09200	VDS401F09200	9,200	.3622	–	–	35	1,6	89	40	10
VDS201F09300	VDS401F09300	9,300	.3661	–	–	35	1,6	89	40	10
VDS201F09400	VDS401F09400	9,400	.3701	–	–	35	1,6	89	40	10
VDS201F09500	VDS401F09500	9,500	.3740	–	–	35	1,6	89	40	10
VDS201F09600	VDS401F09600	9,600	.3780	–	–	35	1,6	89	40	10
VDS201F09700	VDS401F09700	9,700	.3819	–	–	35	1,7	89	40	10
VDS201F09800	VDS401F09800	9,800	.3858	–	–	35	1,7	89	40	10
VDS201F09900	VDS401F09900	9,900	.3898	–	–	35	1,7	89	40	10
VDS201F10000	VDS401F10000	10,000	.3937	–	–	35	1,7	89	40	10
VDS201F10100	VDS401F10100	10,100	.3976	–	–	40	1,7	102	45	12
VDS201F10200	VDS401F10200	10,200	.4016	–	–	40	1,7	102	45	12
VDS201F10300	VDS401F10300	10,300	.4055	–	–	40	1,8	102	45	12
VDS201F10400	VDS401F10400	10,400	.4094	–	–	40	1,8	102	45	12
VDS201F10500	VDS401F10500	10,500	.4134	–	–	40	1,8	102	45	12
VDS201F10600	VDS401F10600	10,600	.4173	–	–	40	1,8	102	45	12
VDS201F10700	VDS401F10700	10,700	.4213	–	–	40	1,8	102	45	12
VDS201F10800	VDS401F10800	10,800	.4252	–	–	40	1,8	102	45	12
VDS201F10900	VDS401F10900	10,900	.4291	–	–	40	1,9	102	45	12
VDS201F11000	VDS401F11000	11,000	.4331	–	–	40	1,9	102	45	12
VDS201F11100	VDS401F11100	11,100	.4370	–	–	40	1,9	102	45	12
VDS201F11200	VDS401F11200	11,200	.4409	–	–	40	1,9	102	45	12
VDS201F11300	VDS401F11300	11,300	.4449	–	–	40	1,9	102	45	12
VDS201F11400	VDS401F11400	11,400	.4488	–	–	40	2,0	102	45	12
VDS201F11500	VDS401F11500	11,500	.4528	–	–	40	2,0	102	45	12
VDS201F11600	VDS401F11600	11,600	.4567	–	–	40	2,0	102	45	12
VDS201F11700	VDS401F11700	11,700	.4606	–	–	40	2,0	102	45	12

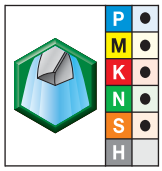
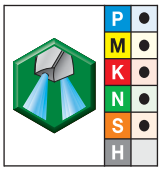
(continued)

(VDS201F/VDS401F • 3 x D continued)

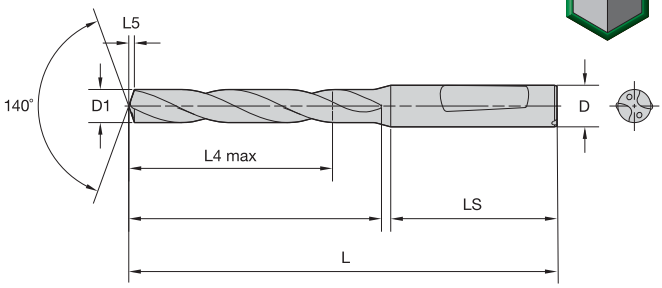
		D1 diameter								
VDS201F • WU25PD	VDS401F • WU25PD	mm	in	fraction	wire size	L4 max	L5	L	LS	D
VDS201F11800	VDS401F11800	11,800	.4646	–	–	40	2,0	102	45	12
VDS201F11900	VDS401F11900	11,900	.4685	–	–	40	2,0	102	45	12
VDS201F12000	VDS401F12000	12,000	.4724	–	–	40	2,1	102	45	12
VDS201F12100	VDS401F12100	12,100	.4764	–	–	43	2,1	107	45	14
VDS201F12200	VDS401F12200	12,200	.4803	–	–	43	2,1	107	45	14
VDS201F12300	VDS401F12300	12,300	.4843	–	–	43	2,1	107	45	14
VDS201F12400	VDS401F12400	12,400	.4882	–	–	43	2,1	107	45	14
VDS201F12500	VDS401F12500	12,500	.4921	–	–	43	2,1	107	45	14
VDS201F12600	VDS401F12600	12,600	.4961	–	–	43	2,2	107	45	14
VDS201F12700	VDS401F12700	12,700	.5000	1/2	–	43	2,2	107	45	14
VDS201F12800	VDS401F12800	12,800	.5039	–	–	43	2,2	107	45	14
VDS201F12900	VDS401F12900	12,900	.5079	–	–	43	2,2	107	45	14
VDS201F13000	VDS401F13000	13,000	.5118	–	–	43	2,2	107	45	14
VDS201F13100	VDS401F13100	13,100	.5157	–	–	43	2,3	107	45	14
VDS201F13200	VDS401F13200	13,200	.5197	–	–	43	2,3	107	45	14
VDS201F13300	VDS401F13300	13,300	.5236	–	–	43	2,3	107	45	14
VDS201F13400	VDS401F13400	13,400	.5276	–	–	43	2,3	107	45	14
VDS201F13500	VDS401F13500	13,500	.5315	–	–	43	2,3	107	45	14
VDS201F13600	VDS401F13600	13,600	.5354	–	–	43	2,3	107	45	14
VDS201F13700	VDS401F13700	13,700	.5394	–	–	43	2,4	107	45	14
VDS201F13800	VDS401F13800	13,800	.5433	–	–	43	2,4	107	45	14
VDS201F13900	VDS401F13900	13,900	.5472	–	–	43	2,4	107	45	14
VDS201F14000	VDS401F14000	14,000	.5512	–	–	43	2,4	107	45	14
VDS201F14100	VDS401F14100	14,100	.5551	–	–	45	2,4	115	48	16
VDS201F14200	VDS401F14200	14,200	.5591	–	–	45	2,5	115	48	16
VDS201F14300	VDS401F14300	14,300	.5630	–	–	45	2,5	115	48	16
VDS201F14400	VDS401F14400	14,400	.5669	–	–	45	2,5	115	48	16
VDS201F14500	VDS401F14500	14,500	.5709	–	–	45	2,5	115	48	16
VDS201F14600	VDS401F14600	14,600	.5748	–	–	45	2,5	115	48	16
VDS201F14700	VDS401F14700	14,700	.5787	–	–	45	2,5	115	48	16
VDS201F14800	VDS401F14800	14,800	.5827	–	–	45	2,6	115	48	16
VDS201F14900	VDS401F14900	14,900	.5866	–	–	45	2,6	115	48	16
VDS201F15000	VDS401F15000	15,000	.5906	–	–	45	2,6	115	48	16
VDS201F15100	VDS401F15100	15,100	.5945	–	–	45	2,6	115	48	16
VDS201F15200	VDS401F15200	15,200	.5984	–	–	45	2,6	115	48	16
VDS201F15300	VDS401F15300	15,300	.6024	–	–	45	2,6	115	48	16
VDS201F15400	VDS401F15400	15,400	.6063	–	–	45	2,7	115	48	16
VDS201F15500	VDS401F15500	15,500	.6102	–	–	45	2,7	115	48	16
VDS201F15600	VDS401F15600	15,600	.6142	–	–	45	2,7	115	48	16
VDS201F15700	VDS401F15700	15,700	.6181	–	–	45	2,7	115	48	16
VDS201F15800	VDS401F15800	15,800	.6220	–	–	45	2,7	115	48	16
VDS201F15900	VDS401F15900	15,900	.6260	–	–	45	2,8	115	48	16
VDS201F16000	VDS401F16000	16,000	.6299	–	–	45	2,8	115	48	16
VDS201F16100	VDS401F16100	16,100	.6339	–	–	51	2,8	123	48	18
VDS201F16200	VDS401F16200	16,200	.6378	–	–	51	2,8	123	48	18
VDS201F16300	VDS401F16300	16,300	.6417	–	–	51	2,8	123	48	18
VDS201F16400	VDS401F16400	16,400	.6457	–	–	51	2,8	123	48	18
VDS201F16500	VDS401F16500	16,500	.6496	–	–	51	2,9	123	48	18

(continued)

(VDS201F/VDS401F • 3 x D continued)

		D1 diameter								
VDS201F • WU25PD	VDS401F • WU25PD	mm	in	fraction	wire size	L4 max	L5	L	LS	D
VDS201F16600	VDS401F16600	16,600	.6535	—	—	51	2,9	123	48	18
VDS201F16700	VDS401F16700	16,700	.6575	—	—	51	2,9	123	48	18
VDS201F16800	VDS401F16800	16,800	.6614	—	—	51	2,9	123	48	18
VDS201F16900	VDS401F16900	16,900	.6654	—	—	51	2,9	123	48	18
VDS201F17000	VDS401F17000	17,000	.6693	—	—	51	2,9	123	48	18
VDS201F17100	VDS401F17100	17,100	.6732	—	—	51	3,0	123	48	18
VDS201F17200	VDS401F17200	17,200	.6772	—	—	51	3,0	123	48	18
VDS201F17300	VDS401F17300	17,300	.6811	—	—	51	3,0	123	48	18
VDS201F17400	VDS401F17400	17,400	.6850	—	—	51	3,0	123	48	18
VDS201F17500	VDS401F17500	17,500	.6890	—	—	51	3,0	123	48	18
VDS201F17600	VDS401F17600	17,600	.6929	—	—	51	3,1	123	48	18
VDS201F17700	VDS401F17700	17,700	.6969	—	—	51	3,1	123	48	18
VDS201F17800	VDS401F17800	17,800	.7008	—	—	51	3,1	123	48	18
VDS201F17900	VDS401F17900	17,900	.7047	—	—	51	3,1	123	48	18
VDS201F18000	VDS401F18000	18,000	.7087	—	—	51	3,1	123	48	18
VDS201F18100	VDS401F18100	18,100	.7126	—	—	55	3,1	131	50	20
VDS201F18200	VDS401F18200	18,200	.7165	—	—	55	3,2	131	50	20
VDS201F18300	VDS401F18300	18,300	.7205	—	—	55	3,2	131	50	20
VDS201F18400	VDS401F18400	18,400	.7244	—	—	55	3,2	131	50	20
VDS201F18500	VDS401F18500	18,500	.7283	—	—	55	3,2	131	50	20
VDS201F18600	VDS401F18600	18,600	.7323	—	—	55	3,2	131	50	20
VDS201F18700	VDS401F18700	18,700	.7362	—	—	55	3,2	131	50	20
VDS201F18800	VDS401F18800	18,800	.7402	—	—	55	3,3	131	50	20
VDS201F18900	VDS401F18900	18,900	.7441	—	—	55	3,3	131	50	20
VDS201F19000	VDS401F19000	19,000	.7480	—	—	55	3,3	131	50	20
VDS201F19100	VDS401F19100	19,100	.7520	—	—	55	3,3	131	50	20
VDS201F19200	VDS401F19200	19,200	.7559	—	—	55	3,3	131	50	20
VDS201F19300	VDS401F19300	19,300	.7598	—	—	55	3,4	131	50	20
VDS201F19400	VDS401F19400	19,400	.7638	—	—	55	3,4	131	50	20
VDS201F19500	VDS401F19500	19,500	.7677	—	—	55	3,4	131	50	20
VDS201F19600	VDS401F19600	19,600	.7717	—	—	55	3,4	131	50	20
VDS201F19700	VDS401F19700	19,700	.7756	—	—	55	3,4	131	50	20
VDS201F19800	VDS401F19800	19,800	.7795	—	—	55	3,4	131	50	20
VDS201F19900	VDS401F19900	19,900	.7835	—	—	55	3,5	131	50	20
VDS201F20000	VDS401F20000	20,000	.7874	—	—	55	3,5	131	50	20

NOTE: L4 max, L5, L, LS, and D table columns reflect millimeter measurements.



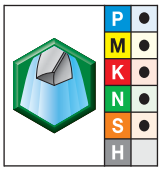
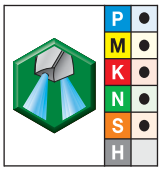
● first choice
○ alternate choice

■ VDS202F/VDS402F • 5 x D

		D1 diameter								
VDS202F • WU25PD	VDS402F • WU25PD	mm	in	fraction	wire size	L4 max	L5	L	LS	D
VDS202F03000	VDS402F03000	3,000	.1181	—	—	23	0,5	66	36	6
VDS202F03100	VDS402F03100	3,100	.1220	—	—	23	0,5	66	36	6
VDS202F03200	VDS402F03200	3,200	.1260	—	—	23	0,5	66	36	6
VDS202F03300	VDS402F03300	3,300	.1299	—	—	23	0,5	66	36	6
VDS202F03400	VDS402F03400	3,400	.1339	—	—	23	0,6	66	36	6
VDS202F03500	VDS402F03500	3,500	.1378	—	—	23	0,6	66	36	6
VDS202F03600	VDS402F03600	3,600	.1417	—	—	23	0,6	66	36	6
VDS202F03700	VDS402F03700	3,700	.1457	—	—	23	0,6	66	36	6
VDS202F03800	VDS402F03800	3,800	.1496	—	—	29	0,6	74	36	6
VDS202F03900	VDS402F03900	3,900	.1535	—	—	29	0,6	74	36	6
VDS202F04000	VDS402F04000	4,000	.1575	—	—	29	0,7	74	36	6
VDS202F04100	VDS402F04100	4,100	.1614	—	—	29	0,7	74	36	6
VDS202F04200	VDS402F04200	4,200	.1654	—	—	29	0,7	74	36	6
VDS202F04300	VDS402F04300	4,300	.1693	—	—	29	0,7	74	36	6
VDS202F04400	VDS402F04400	4,400	.1732	—	—	29	0,7	74	36	6
VDS202F04500	VDS402F04500	4,500	.1772	—	—	29	0,7	74	36	6
VDS202F04600	VDS402F04600	4,600	.1811	—	—	29	0,8	74	36	6
VDS202F04700	VDS402F04700	4,700	.1850	—	13	29	0,8	74	36	6
VDS202F04800	VDS402F04800	4,800	.1890	—	12	35	0,8	82	36	6
VDS202F04900	VDS402F04900	4,900	.1929	—	—	35	0,8	82	36	6
VDS202F05000	VDS402F05000	5,000	.1969	—	—	35	0,8	82	36	6
VDS202F05100	VDS402F05100	5,100	.2008	—	—	35	0,8	82	36	6
VDS202F05200	VDS402F05200	5,200	.2047	—	—	35	0,9	82	36	6
VDS202F05300	VDS402F05300	5,300	.2087	—	—	35	0,9	82	36	6
VDS202F05400	VDS402F05400	5,400	.2126	—	—	35	0,9	82	36	6
VDS202F05500	VDS402F05500	5,500	.2165	—	—	35	0,9	82	36	6
VDS202F05600	VDS402F05600	5,600	.2205	—	—	35	0,9	82	36	6
VDS202F05700	VDS402F05700	5,700	.2244	—	—	35	1,0	82	36	6
VDS202F05800	VDS402F05800	5,800	.2283	—	—	35	1,0	82	36	6
VDS202F05900	VDS402F05900	5,900	.2323	—	—	35	1,0	82	36	6
VDS202F06000	VDS402F06000	6,000	.2362	—	—	35	1,0	82	36	6
VDS202F06100	VDS402F06100	6,100	.2402	—	—	43	1,0	91	36	8
VDS202F06200	VDS402F06200	6,200	.2441	—	—	43	1,0	91	36	8
VDS202F06300	VDS402F06300	6,300	.2480	—	—	43	1,1	91	36	8
VDS202F06400	VDS402F06400	6,400	.2520	—	—	43	1,1	91	36	8
VDS202F06500	VDS402F06500	6,500	.2559	—	—	43	1,1	91	36	8
VDS202F06600	VDS402F06600	6,600	.2598	—	—	43	1,1	91	36	8
VDS202F06700	VDS402F06700	6,700	.2638	—	—	43	1,1	91	36	8
VDS202F06800	VDS402F06800	6,800	.2677	—	—	43	1,1	91	36	8
VDS202F06900	VDS402F06900	6,900	.2717	—	—	43	1,2	91	36	8

(continued)

(VDS202F/VDS402F • 5 x D continued)

		D1 diameter								
VDS202F • WU25PD	VDS402F • WU25PD	mm	in	fraction	wire size	L4 max	L5	L	LS	D
VDS202F07000	VDS402F07000	7,000	.2756	–	–	43	1,2	91	36	8
VDS202F07100	VDS402F07100	7,100	.2795	–	–	43	1,2	91	36	8
VDS202F07200	VDS402F07200	7,200	.2835	–	–	43	1,2	91	36	8
VDS202F07300	VDS402F07300	7,300	.2874	–	–	43	1,2	91	36	8
VDS202F07400	VDS402F07400	7,400	.2913	–	–	43	1,3	91	36	8
VDS202F07500	VDS402F07500	7,500	.2953	–	–	43	1,3	91	36	8
VDS202F07600	VDS402F07600	7,600	.2992	–	–	43	1,3	91	36	8
VDS202F07700	VDS402F07700	7,700	.3031	–	–	43	1,3	91	36	8
VDS202F07800	VDS402F07800	7,800	.3071	–	–	43	1,3	91	36	8
VDS202F07900	VDS402F07900	7,900	.3110	–	–	43	1,3	91	36	8
VDS202F08000	VDS402F08000	8,000	.3150	–	–	43	1,4	91	36	8
VDS202F08100	VDS402F08100	8,100	.3189	–	–	49	1,4	103	40	10
VDS202F08200	VDS402F08200	8,200	.3228	–	–	49	1,4	103	40	10
VDS202F08300	VDS402F08300	8,300	.3268	–	–	49	1,4	103	40	10
VDS202F08400	VDS402F08400	8,400	.3307	–	–	49	1,4	103	40	10
VDS202F08500	VDS402F08500	8,500	.3346	–	–	49	1,4	103	40	10
VDS202F08600	VDS402F08600	8,600	.3386	–	–	49	1,5	103	40	10
VDS202F08700	VDS402F08700	8,700	.3425	–	–	49	1,5	103	40	10
VDS202F08800	VDS402F08800	8,800	.3465	–	–	49	1,5	103	40	10
VDS202F08900	VDS402F08900	8,900	.3504	–	–	49	1,5	103	40	10
VDS202F09000	VDS402F09000	9,000	.3543	–	–	49	1,5	103	40	10
VDS202F09100	VDS402F09100	9,100	.3583	–	–	49	1,5	103	40	10
VDS202F09200	VDS402F09200	9,200	.3622	–	–	49	1,6	103	40	10
VDS202F09300	VDS402F09300	9,300	.3661	–	–	49	1,6	103	40	10
VDS202F09400	VDS402F09400	9,400	.3701	–	–	49	1,6	103	40	10
VDS202F09500	VDS402F09500	9,500	.3740	–	–	49	1,6	103	40	10
VDS202F09600	VDS402F09600	9,600	.3780	–	–	49	1,6	103	40	10
VDS202F09700	VDS402F09700	9,700	.3819	–	–	49	1,7	103	40	10
VDS202F09800	VDS402F09800	9,800	.3858	–	–	49	1,7	103	40	10
VDS202F09900	VDS402F09900	9,900	.3898	–	–	49	1,7	103	40	10
VDS202F10000	VDS402F10000	10,000	.3937	–	–	49	1,7	103	40	10
VDS202F10100	VDS402F10100	10,100	.3976	–	–	56	1,7	118	45	12
VDS202F10200	VDS402F10200	10,200	.4016	–	–	56	1,7	118	45	12
VDS202F10300	VDS402F10300	10,300	.4055	–	–	56	1,8	118	45	12
VDS202F10400	VDS402F10400	10,400	.4094	–	–	56	1,8	118	45	12
VDS202F10500	VDS402F10500	10,500	.4134	–	–	56	1,8	118	45	12
VDS202F10600	VDS402F10600	10,600	.4173	–	–	56	1,8	118	45	12
VDS202F10700	VDS402F10700	10,700	.4213	–	–	56	1,8	118	45	12
VDS202F10800	VDS402F10800	10,800	.4252	–	–	56	1,8	118	45	12
VDS202F10900	VDS402F10900	10,900	.4291	–	–	56	1,9	118	45	12
VDS202F11000	VDS402F11000	11,000	.4331	–	–	56	1,9	118	45	12
VDS202F11100	VDS402F11100	11,100	.4370	–	–	56	1,9	118	45	12
VDS202F11200	VDS402F11200	11,200	.4409	–	–	56	1,9	118	45	12
VDS202F11300	VDS402F11300	11,300	.4449	–	–	56	1,9	118	45	12
VDS202F11400	VDS402F11400	11,400	.4488	–	–	56	2,0	118	45	12
VDS202F11500	VDS402F11500	11,500	.4528	–	–	56	2,0	118	45	12
VDS202F11600	VDS402F11600	11,600	.4567	–	–	56	2,0	118	45	12
VDS202F11700	VDS402F11700	11,700	.4606	–	–	56	2,0	118	45	12

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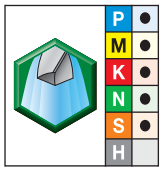
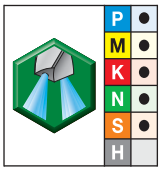
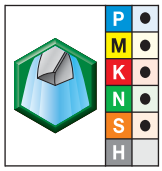
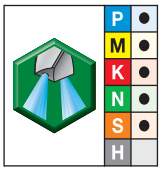
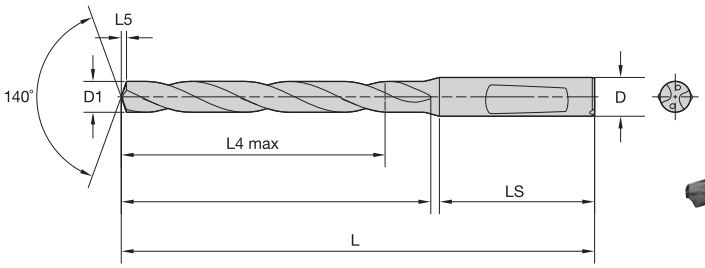
		D1 diameter								
VDS202F • WU25PD	VDS402F • WU25PD	mm	in	fraction	wire size	L4 max	L5	L	LS	D
VDS202F11800	VDS402F11800	11,800	.4646	–	–	56	2,0	118	45	12
VDS202F11900	VDS402F11900	11,900	.4685	–	–	56	2,0	118	45	12
VDS202F12000	VDS402F12000	12,000	.4724	–	–	56	2,1	118	45	12
VDS202F12100	VDS402F12100	12,100	.4764	–	–	60	2,1	124	45	14
VDS202F12200	VDS402F12200	12,200	.4803	–	–	60	2,1	124	45	14
VDS202F12300	VDS402F12300	12,300	.4843	–	–	60	2,1	124	45	14
VDS202F12400	VDS402F12400	12,400	.4882	–	–	60	2,1	124	45	14
VDS202F12500	VDS402F12500	12,500	.4921	–	–	60	2,1	124	45	14
VDS202F12600	VDS402F12600	12,600	.4961	–	–	60	2,2	124	45	14
VDS202F12700	VDS402F12700	12,700	.5000	1/2	–	60	2,2	124	45	14
VDS202F12800	VDS402F12800	12,800	.5039	–	–	60	2,2	124	45	14
VDS202F12900	VDS402F12900	12,900	.5079	–	–	60	2,2	124	45	14
VDS202F13000	VDS402F13000	13,000	.5118	–	–	60	2,2	124	45	14
VDS202F13100	VDS402F13100	13,100	.5157	–	–	60	2,3	124	45	14
VDS202F13200	VDS402F13200	13,200	.5197	–	–	60	2,3	124	45	14
VDS202F13300	VDS402F13300	13,300	.5236	–	–	60	2,3	124	45	14
VDS202F13400	VDS402F13400	13,400	.5276	–	–	60	2,3	124	45	14
VDS202F13500	VDS402F13500	13,500	.5315	–	–	60	2,3	124	45	14
VDS202F13600	VDS402F13600	13,600	.5354	–	–	60	2,3	124	45	14
VDS202F13700	VDS402F13700	13,700	.5394	–	–	60	2,4	124	45	14
VDS202F13800	VDS402F13800	13,800	.5433	–	–	60	2,4	124	45	14
VDS202F13900	VDS402F13900	13,900	.5472	–	–	60	2,4	124	45	14
VDS202F14000	VDS402F14000	14,000	.5512	–	–	60	2,4	124	45	14
VDS202F14100	VDS402F14100	14,100	.5551	–	–	63	2,4	133	48	16
VDS202F14200	VDS402F14200	14,200	.5591	–	–	63	2,5	133	48	16
VDS202F14300	VDS402F14300	14,300	.5630	–	–	63	2,5	133	48	16
VDS202F14400	VDS402F14400	14,400	.5669	–	–	63	2,5	133	48	16
VDS202F14500	VDS402F14500	14,500	.5709	–	–	63	2,5	133	48	16
VDS202F14600	VDS402F14600	14,600	.5748	–	–	63	2,5	133	48	16
VDS202F14700	VDS402F14700	14,700	.5787	–	–	63	2,5	133	48	16
VDS202F14800	VDS402F14800	14,800	.5827	–	–	63	2,6	133	48	16
VDS202F14900	VDS402F14900	14,900	.5866	–	–	63	2,6	133	48	16
VDS202F15000	VDS402F15000	15,000	.5906	–	–	63	2,6	133	48	16
VDS202F15100	VDS402F15100	15,100	.5945	–	–	63	2,6	133	48	16
VDS202F15200	VDS402F15200	15,200	.5984	–	–	63	2,6	133	48	16
VDS202F15300	VDS402F15300	15,300	.6024	–	–	63	2,6	133	48	16
VDS202F15400	VDS402F15400	15,400	.6063	–	–	63	2,7	133	48	16
VDS202F15500	VDS402F15500	15,500	.6102	–	–	63	2,7	133	48	16
VDS202F15600	VDS402F15600	15,600	.6142	–	–	63	2,7	133	48	16
VDS202F15700	VDS402F15700	15,700	.6181	–	–	63	2,7	133	48	16
VDS202F15800	VDS402F15800	15,800	.6220	–	–	63	2,7	133	48	16
VDS202F15900	VDS402F15900	15,900	.6260	–	–	63	2,8	133	48	16
VDS202F16000	VDS402F16000	16,000	.6299	–	–	63	2,8	133	48	16
VDS202F16100	VDS402F16100	16,100	.6339	–	–	71	2,8	143	48	18
VDS202F16200	VDS402F16200	16,200	.6378	–	–	71	2,8	143	48	18
VDS202F16300	VDS402F16300	16,300	.6417	–	–	71	2,8	143	48	18
VDS202F16400	VDS402F16400	16,400	.6457	–	–	71	2,8	143	48	18
VDS202F16500	VDS402F16500	16,500	.6496	–	–	71	2,9	143	48	18

(continued)

(VDS202F/VDS402F • 5 x D continued)

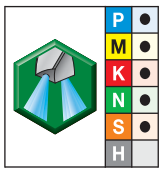
		D1 diameter								
VDS202F • WU25PD	VDS402F • WU25PD	mm	in	fraction	wire size	L4 max	L5	L	LS	D
VDS202F16600	VDS402F16600	16,600	.6535	—	—	71	2,9	143	48	18
VDS202F16700	VDS402F16700	16,700	.6575	—	—	71	2,9	143	48	18
VDS202F16800	VDS402F16800	16,800	.6614	—	—	71	2,9	143	48	18
VDS202F16900	VDS402F16900	16,900	.6654	—	—	71	2,9	143	48	18
VDS202F17000	VDS402F17000	17,000	.6693	—	—	71	2,9	143	48	18
VDS202F17100	VDS402F17100	17,100	.6732	—	—	71	3,0	143	48	18
VDS202F17200	VDS402F17200	17,200	.6772	—	—	71	3,0	143	48	18
VDS202F17300	VDS402F17300	17,300	.6811	—	—	71	3,0	143	48	18
VDS202F17400	VDS402F17400	17,400	.6850	—	—	71	3,0	143	48	18
VDS202F17500	VDS402F17500	17,500	.6890	—	—	71	3,0	143	48	18
VDS202F17600	VDS402F17600	17,600	.6929	—	—	71	3,1	143	48	18
VDS202F17700	VDS402F17700	17,700	.6969	—	—	71	3,1	143	48	18
VDS202F17800	VDS402F17800	17,800	.7008	—	—	71	3,1	143	48	18
VDS202F17900	VDS402F17900	17,900	.7047	—	—	71	3,1	143	48	18
VDS202F18000	VDS402F18000	18,000	.7087	—	—	71	3,1	143	48	18
VDS202F18100	VDS402F18100	18,100	.7126	—	—	77	3,1	153	50	20
VDS202F18200	VDS402F18200	18,200	.7165	—	—	77	3,2	153	50	20
VDS202F18300	VDS402F18300	18,300	.7205	—	—	77	3,2	153	50	20
VDS202F18400	VDS402F18400	18,400	.7244	—	—	77	3,2	153	50	20
VDS202F18500	VDS402F18500	18,500	.7283	—	—	77	3,2	153	50	20
VDS202F18600	VDS402F18600	18,600	.7323	—	—	77	3,2	153	50	20
VDS202F18700	VDS402F18700	18,700	.7362	—	—	77	3,2	153	50	20
VDS202F18800	VDS402F18800	18,800	.7402	—	—	77	3,3	153	50	20
VDS202F18900	VDS402F18900	18,900	.7441	—	—	77	3,3	153	50	20
VDS202F19000	VDS402F19000	19,000	.7480	—	—	77	3,3	153	50	20
VDS202F19100	VDS402F19100	19,100	.7520	—	—	77	3,3	153	50	20
VDS202F19200	VDS402F19200	19,200	.7559	—	—	77	3,3	153	50	20
VDS202F19300	VDS402F19300	19,300	.7598	—	—	77	3,4	153	50	20
VDS202F19400	VDS402F19400	19,400	.7638	—	—	77	3,4	153	50	20
VDS202F19500	VDS402F19500	19,500	.7677	—	—	77	3,4	153	50	20
VDS202F19600	VDS402F19600	19,600	.7717	—	—	77	3,4	153	50	20
VDS202F19700	VDS402F19700	19,700	.7756	—	—	77	3,4	153	50	20
VDS202F19800	VDS402F19800	19,800	.7795	—	—	77	3,4	153	50	20
VDS202F19900	VDS402F19900	19,900	.7835	—	—	77	3,5	153	50	20
VDS202F20000	VDS402F20000	20,000	.7874	—	—	77	3,5	153	50	20

NOTE: L4 max, L5, L, LS, and D table columns reflect millimeter measurements.



● first choice
○ alternate choice

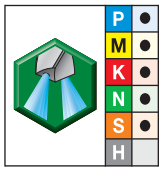
■ VDS403F • 8 x D



VDS403F • WU25PD	D1 diameter mm	in	fraction	wire size	L	L4 max	L5	LS	D
VDS403F03000	3,000	.1181	–	–	78	33	0,5	36	6
VDS403F03100	3,100	.1220	–	–	78	33	0,5	36	6
VDS403F03200	3,200	.1260	–	–	78	33	0,5	36	6
VDS403F03300	3,300	.1299	–	–	78	33	0,5	36	6
VDS403F03400	3,400	.1339	–	–	78	33	0,6	36	6
VDS403F03500	3,500	.1378	–	–	78	33	0,6	36	6
VDS403F03600	3,600	.1417	–	–	78	33	0,6	36	6
VDS403F03700	3,700	.1457	–	–	78	33	0,6	36	6
VDS403F03800	3,800	.1496	–	–	87	41	0,6	36	6
VDS403F03900	3,900	.1535	–	–	87	41	0,6	36	6
VDS403F04000	4,000	.1575	–	–	87	41	0,7	36	6
VDS403F04100	4,100	.1614	–	–	87	41	0,7	36	6
VDS403F04200	4,200	.1654	–	–	87	41	0,7	36	6
VDS403F04300	4,300	.1693	–	–	87	41	0,7	36	6
VDS403F04400	4,400	.1732	–	–	87	41	0,7	36	6
VDS403F04500	4,500	.1772	–	–	87	41	0,7	36	6
VDS403F04600	4,600	.1811	–	–	87	41	0,8	36	6
VDS403F04700	4,700	.1850	–	13	87	41	0,8	36	6
VDS403F04800	4,800	.1890	–	12	94	48	0,8	36	6
VDS403F04900	4,900	.1929	–	–	94	48	0,8	36	6
VDS403F05000	5,000	.1969	–	–	94	48	0,8	36	6
VDS403F05100	5,100	.2008	–	–	94	48	0,8	36	6
VDS403F05200	5,200	.2047	–	–	94	48	0,9	36	6
VDS403F05300	5,300	.2087	–	–	94	48	0,9	36	6
VDS403F05400	5,400	.2126	–	–	94	48	0,9	36	6
VDS403F05500	5,500	.2165	–	–	94	48	0,9	36	6
VDS403F05600	5,600	.2205	–	–	94	48	0,9	36	6
VDS403F05700	5,700	.2244	–	–	94	48	1,0	36	6
VDS403F05800	5,800	.2283	–	–	94	48	1,0	36	6
VDS403F05900	5,900	.2323	–	–	94	48	1,0	36	6
VDS403F06000	6,000	.2362	–	–	94	48	1,0	36	6
VDS403F06100	6,100	.2402	–	–	105	57	1,0	36	8
VDS403F06200	6,200	.2441	–	–	105	57	1,0	36	8
VDS403F06300	6,300	.2480	–	–	105	57	1,1	36	8
VDS403F06400	6,400	.2520	–	–	105	57	1,1	36	8
VDS403F06500	6,500	.2559	–	–	105	57	1,1	36	8
VDS403F06600	6,600	.2598	–	–	105	57	1,1	36	8
VDS403F06700	6,700	.2638	–	–	105	57	1,1	36	8
VDS403F06800	6,800	.2677	–	–	105	57	1,1	36	8
VDS403F06900	6,900	.2717	–	–	105	57	1,2	36	8

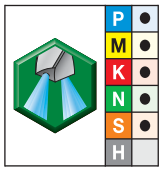
(continued)

(VDS403F • 8 x D continued)



VDS403F • WU25PD	D1 diameter mm	D1 diameter in	D1 diameter fraction	D1 diameter wire size	L	L4 max	L5	LS	D
VDS403F07000	7,000	.2756	–	–	105	57	1,2	36	8
VDS403F07100	7,100	.2795	–	–	110	61	1,2	36	8
VDS403F07200	7,200	.2835	–	–	110	61	1,2	36	8
VDS403F07300	7,300	.2874	–	–	110	61	1,2	36	8
VDS403F07400	7,400	.2913	–	–	110	61	1,3	36	8
VDS403F07500	7,500	.2953	–	–	110	61	1,3	36	8
VDS403F07600	7,600	.2992	–	–	110	61	1,3	36	8
VDS403F07700	7,700	.3031	–	–	110	61	1,3	36	8
VDS403F07800	7,800	.3071	–	–	110	61	1,3	36	8
VDS403F07900	7,900	.3110	–	–	110	61	1,3	36	8
VDS403F08000	8,000	.3150	–	–	110	61	1,4	36	8
VDS403F08100	8,100	.3189	–	–	122	68	1,4	40	10
VDS403F08200	8,200	.3228	–	–	122	68	1,4	40	10
VDS403F08300	8,300	.3268	–	–	122	68	1,4	40	10
VDS403F08400	8,400	.3307	–	–	122	68	1,4	40	10
VDS403F08500	8,500	.3346	–	–	122	68	1,4	40	10
VDS403F08600	8,600	.3386	–	–	122	68	1,5	40	10
VDS403F08700	8,700	.3425	–	–	122	68	1,5	40	10
VDS403F08800	8,800	.3465	–	–	122	68	1,5	40	10
VDS403F08900	8,900	.3504	–	–	122	68	1,5	40	10
VDS403F09000	9,000	.3543	–	–	122	68	1,5	40	10
VDS403F09100	9,100	.3583	–	–	122	68	1,5	40	10
VDS403F09200	9,200	.3622	–	–	122	68	1,6	40	10
VDS403F09300	9,300	.3661	–	–	122	68	1,6	40	10
VDS403F09400	9,400	.3701	–	–	122	68	1,6	40	10
VDS403F09500	9,500	.3740	–	–	122	68	1,6	40	10
VDS403F09600	9,600	.3780	–	–	122	68	1,6	40	10
VDS403F09700	9,700	.3819	–	–	122	68	1,7	40	10
VDS403F09800	9,800	.3858	–	–	122	68	1,7	40	10
VDS403F09900	9,900	.3898	–	–	122	68	1,7	40	10
VDS403F10000	10,000	.3937	–	–	122	68	1,7	40	10
VDS403F10100	10,100	.3976	–	–	141	79	1,7	45	12
VDS403F10200	10,200	.4016	–	–	141	79	1,7	45	12
VDS403F10300	10,300	.4055	–	–	141	79	1,8	45	12
VDS403F10400	10,400	.4094	–	–	141	79	1,8	45	12
VDS403F10500	10,500	.4134	–	–	141	79	1,8	45	12
VDS403F10600	10,600	.4173	–	–	141	79	1,8	45	12
VDS403F10700	10,700	.4213	–	–	141	79	1,8	45	12
VDS403F10800	10,800	.4252	–	–	141	79	1,8	45	12
VDS403F10900	10,900	.4291	–	–	141	79	1,9	45	12
VDS403F11000	11,000	.4331	–	–	141	79	1,9	45	12
VDS403F11100	11,100	.4370	–	–	141	79	1,9	45	12
VDS403F11200	11,200	.4409	–	–	141	79	1,9	45	12
VDS403F11300	11,300	.4449	–	–	141	79	1,9	45	12
VDS403F11400	11,400	.4488	–	–	141	79	2,0	45	12
VDS403F11500	11,500	.4528	–	–	141	79	2,0	45	12
VDS403F11600	11,600	.4567	–	–	141	79	2,0	45	12
VDS403F11700	11,700	.4606	–	–	141	79	2,0	45	12

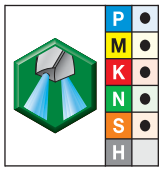
(continued)



VDS403F • WU25PD	D1 diameter mm	in	fraction	wire size	L	L4 max	L5	LS	D
VDS403F11800	11,800	.4646	–	–	141	79	2,0	45	12
VDS403F11900	11,900	.4685	–	–	141	79	2,0	45	12
VDS403F12000	12,000	.4724	–	–	141	79	2,1	45	12
VDS403F12100	12,100	.4764	–	–	155	91	2,1	45	14
VDS403F12200	12,200	.4803	–	–	155	91	2,1	45	14
VDS403F12300	12,300	.4843	–	–	155	91	2,1	45	14
VDS403F12400	12,400	.4882	–	–	155	91	2,1	45	14
VDS403F12500	12,500	.4921	–	–	155	91	2,1	45	14
VDS403F12600	12,600	.4961	–	–	155	91	2,2	45	14
VDS403F12700	12,700	.5000	1/2	–	155	91	2,2	45	14
VDS403F12800	12,800	.5039	–	–	155	91	2,2	45	14
VDS403F12900	12,900	.5079	–	–	155	91	2,2	45	14
VDS403F13000	13,000	.5118	–	–	155	91	2,2	45	14
VDS403F13100	13,100	.5157	–	–	155	91	2,3	45	14
VDS403F13200	13,200	.5197	–	–	155	91	2,3	45	14
VDS403F13300	13,300	.5236	–	–	155	91	2,3	45	14
VDS403F13400	13,400	.5276	–	–	155	91	2,3	45	14
VDS403F13500	13,500	.5315	–	–	155	91	2,3	45	14
VDS403F13600	13,600	.5354	–	–	155	91	2,3	45	14
VDS403F13700	13,700	.5394	–	–	155	91	2,4	45	14
VDS403F13800	13,800	.5433	–	–	155	91	2,4	45	14
VDS403F13900	13,900	.5472	–	–	155	91	2,4	45	14
VDS403F14000	14,000	.5512	–	–	155	91	2,4	45	14
VDS403F14100	14,100	.5551	–	–	171	101	2,4	48	16
VDS403F14200	14,200	.5591	–	–	171	101	2,5	48	16
VDS403F14300	14,300	.5630	–	–	171	101	2,5	48	16
VDS403F14400	14,400	.5669	–	–	171	101	2,5	48	16
VDS403F14500	14,500	.5709	–	–	171	101	2,5	48	16
VDS403F14600	14,600	.5748	–	–	171	101	2,5	48	16
VDS403F14700	14,700	.5787	–	–	171	101	2,5	48	16
VDS403F14800	14,800	.5827	–	–	171	101	2,6	48	16
VDS403F14900	14,900	.5866	–	–	171	101	2,6	48	16
VDS403F15000	15,000	.5906	–	–	171	101	2,6	48	16
VDS403F15100	15,100	.5945	–	–	171	101	2,6	48	16
VDS403F15200	15,200	.5984	–	–	171	101	2,6	48	16
VDS403F15300	15,300	.6024	–	–	171	101	2,6	48	16
VDS403F15400	15,400	.6063	–	–	171	101	2,7	48	16
VDS403F15500	15,500	.6102	–	–	171	101	2,7	48	16
VDS403F15600	15,600	.6142	–	–	171	101	2,7	48	16
VDS403F15700	15,700	.6181	–	–	171	101	2,7	48	16
VDS403F15800	15,800	.6220	–	–	171	101	2,7	48	16
VDS403F15900	15,900	.6260	–	–	171	101	2,8	48	16
VDS403F16000	16,000	.6299	–	–	171	101	2,8	48	16
VDS403F16100	16,100	.6339	–	–	185	113	2,8	48	18
VDS403F16200	16,200	.6378	–	–	185	113	2,8	48	18
VDS403F16300	16,300	.6417	–	–	185	113	2,8	48	18
VDS403F16400	16,400	.6457	–	–	185	113	2,8	48	18
VDS403F16500	16,500	.6496	–	–	185	113	2,9	48	18

(continued)

(VDS403F • 8 x D continued)



VDS403F • WU25PD	D1 diameter mm	D1 diameter in	D1 diameter fraction	D1 diameter wire size	L	L4 max	L5	LS	D
VDS403F16600	16,600	.6535	–	–	185	113	2,9	48	18
VDS403F16700	16,700	.6575	–	–	185	113	2,9	48	18
VDS403F16800	16,800	.6614	–	–	185	113	2,9	48	18
VDS403F16900	16,900	.6654	–	–	185	113	2,9	48	18
VDS403F17000	17,000	.6693	–	–	185	113	2,9	48	18
VDS403F17100	17,100	.6732	–	–	185	113	3,0	48	18
VDS403F17200	17,200	.6772	–	–	185	113	3,0	48	18
VDS403F17300	17,300	.6811	–	–	185	113	3,0	48	18
VDS403F17400	17,400	.6850	–	–	185	113	3,0	48	18
VDS403F17500	17,500	.6890	–	–	185	113	3,0	48	18
VDS403F17600	17,600	.6929	–	–	185	113	3,1	48	18
VDS403F17700	17,700	.6969	–	–	185	113	3,1	48	18
VDS403F17800	17,800	.7008	–	–	185	113	3,1	48	18
VDS403F17900	17,900	.7047	–	–	185	113	3,1	48	18
VDS403F18000	18,000	.7087	–	–	185	113	3,1	48	18
VDS403F18100	18,100	.7126	–	–	200	124	3,1	50	20
VDS403F18200	18,200	.7165	–	–	200	124	3,2	50	20
VDS403F18300	18,300	.7205	–	–	200	124	3,2	50	20
VDS403F18400	18,400	.7244	–	–	200	124	3,2	50	20
VDS403F18500	18,500	.7283	–	–	200	124	3,2	50	20
VDS403F18600	18,600	.7323	–	–	200	124	3,2	50	20
VDS403F18700	18,700	.7362	–	–	200	124	3,2	50	20
VDS403F18800	18,800	.7402	–	–	200	124	3,3	50	20
VDS403F18900	18,900	.7441	–	–	200	124	3,3	50	20
VDS403F19000	19,000	.7480	–	–	200	124	3,3	50	20
VDS403F19100	19,100	.7520	–	–	200	124	3,3	50	20
VDS403F19200	19,200	.7559	–	–	200	124	3,3	50	20
VDS403F19300	19,300	.7598	–	–	200	124	3,4	50	20
VDS403F19400	19,400	.7638	–	–	200	124	3,4	50	20
VDS403F19500	19,500	.7677	–	–	200	124	3,4	50	20
VDS403F19600	19,600	.7717	–	–	200	124	3,4	50	20
VDS403F19700	19,700	.7756	–	–	200	124	3,4	50	20
VDS403F19800	19,800	.7795	–	–	200	124	3,4	50	20
VDS403F19900	19,900	.7835	–	–	200	124	3,5	50	20
VDS403F20000	20,000	.7874	–	–	200	124	3,5	50	20

NOTE: L4 max, L5, L, LS, and D table columns reflect millimeter measurements.

Metric Tolerance			Inch Tolerance		
Nominal Size Range	**D1 Tolerance**	**D Tolerance h6**	**Nominal Size Range**	**D1 Tolerance**	**D Tolerance h6**
1–3	0,000/-0,014 (h8)	0,000/-0,006	.0394–.1181	.0000/-.0006 (h8)	.0000/-.0002
>3–6	0,000/-0,012 (h7)	0,000/-0,008	>.1181–.2362	.0000/-.0005 (h7)	.0000/-.0003
>6–10	0,000/-0,015 (h7)	0,000/-0,009	>.2362–.3937	.0000/-.0006 (h7)	.0000/-.0004
>10–18	0,000/-0,018 (h7)	0,000/-0,011	>.3937–.7087	.0000/-.0007 (h7)	.0000/-.0004
>18–20	0,000/-0,021 (h7)	0,000/-0,013	>.7087–.7874	.0000/-.0008 (h7)	.0000/-.0005

VariDrill • VDS2_ Series • WU25PD • Flood Coolant • Inch

		Cutting Speed — vc		Recommended Feed Rate (fz)									
	Group	Range — SFM min – max	Tool Diameter	0.0469 • 3/64	0.0781 • 5/16	0.125 • 1/8	0.188 • 3/16	0.250 • 1/4	0.313 • 5/16	0.375 • 3/8	0.500 • 1/2	0.625 • 5/8	0.750 • 3/4
P	1	200 – 330	IPR	.002 - .004	.002 - .005	.003 - .006	.003 - .006	.004 - .009	.005 - .010	.006 - .012	.007 - .014	.009 - .017	.011 - .021
P	2, 3, 4, 6, 7	160 – 300	IPR	.002 - .004	.002 - .005	.003 - .006	.004 - .007	.005 - .009	.006 - .011	.007 - .013	.009 - .015	.010 - .018	.013 - .023
P	5, 9, 10, 11	160 – 330	IPR	.002 - .004	.002 - .005	.003 - .006	.003 - .007	.005 - .009	.006 - .011	.007 - .013	.007 - .015	.009 - .018	.011 - .023
P	12, 13	100 – 200	IPR	.001 - .002	.001 - .002	.002 - .003	.002 - .004	.003 - .006	.004 - .007	.005 - .009	.005 - .010	.007 - .012	.009 - .016
M	14.1	100 – 160	IPR	.001 - .002	.001 - .002	.002 - .003	.002 - .004	.003 - .004	.004 - .005	.004 - .006	.005 - .006	.006 - .007	.006 - .008
M	14.3	130 – 200	IPR	.001 - .002	.001 - .003	.002 - .003	.002 - .004	.003 - .005	.004 - .006	.004 - .006	.005 - .007	.006 - .008	.006 - .009
M	14.2, 14.4	100 – 160	IPR	.001 - .002	.001 - .002	.002 - .003	.002 - .004	.003 - .004	.004 - .005	.004 - .006	.005 - .006	.006 - .007	.006 - .008
K	15, 16	230 – 490	IPR	.003 - .005	.003 - .005	.003 - .007	.004 - .008	.005 - .010	.006 - .012	.007 - .014	.008 - .015	.010 - .019	.012 - .023
K	17, 18, 19	300 – 390	IPR	.003 - .004	.003 - .005	.004 - .005	.004 - .006	.005 - .008	.006 - .010	.007 - .011	.008 - .013	.010 - .015	.012 - .019
K	20	260 – 390	IPR	.002 - .004	.002 - .005	.003 - .005	.003 - .006	.004 - .008	.004 - .009	.005 - .011	.006 - .013	.008 - .015	.009 - .019
N	21	300 – 890	IPR	.002 - .005	.003 - .005	.003 - .006	.004 - .006	.005 - .008	.006 - .009	.008 - .011	.009 - .013	.011 - .016	.013 - .019
N	22, 23, 24	300 – 890	IPR	.002 - .003	.003 - .005	.003 - .006	.004 - .008	.005 - .009	.006 - .011	.008 - .013	.009 - .014	.011 - .017	.013 - .020
N	25	300 – 740	IPR	.004 - .005	.004 - .005	.005 - .006	.005 - .006	.006 - .008	.006 - .009	.008 - .011	.009 - .013	.011 - .016	.013 - .017
N	26, 27, 28	300 – 890	IPR	.002 - .003	.003 - .005	.003 - .006	.004 - .008	.005 - .009	.006 - .011	.008 - .013	.009 - .014	.011 - .016	.013 - .019
S	31, 32	70 – 100	IPR	.001 - .002	.001 - .002	.001 - .002	.002 - .003	.002 - .004	.003 - .005	.004 - .005	.004 - .006	.005 - .006	.006 - .007
S	33, 34, 35	30 – 100	IPR	.001 - .001	.001 - .001	.001 - .002	.001 - .002	.002 - .003	.003 - .004	.003 - .004	.004 - .005	.004 - .006	.004 - .006
S	36	70 – 130	IPR	.001 - .001	.001 - .001	.001 - .002	.001 - .002	.002 - .003	.002 - .004	.003 - .004	.003 - .004	.004 - .005	.004 - .006
S	37	70 – 160	IPR	.001 - .001	.001 - .001	.001 - .002	.001 - .002	.002 - .003	.003 - .004	.003 - .004	.004 - .005	.004 - .006	.004 - .006

VariDrill • VDS4_ Series • WU25PD • Through Coolant • Inch

		Cutting Speed — vc		Recommended Feed Rate (fz)									
	Group	Range — SFM min – max	Tool Diameter	0.039 • 3/76	0.08 • 5/64	0.125 • 1/8	0.188 • 3/16	0.250 • 1/4	0.313 • 5/16	0.375 • 3/8	0.500 • 1/2	0.625 • 5/8	0.750 • 3/4
P	1	230 – 460	IPR	.002 - .004	.002 - .005	.003 - .006	.003 - .006	.004 - .009	.005 - .010	.006 - .012	.007 - .014	.009 - .017	.011 - .021
P	2, 3, 4, 6, 7	200 – 330	IPR	.002 - .004	.002 - .005	.003 - .006	.004 - .007	.005 - .009	.006 - .011	.007 - .013	.009 - .015	.010 - .018	.013 - .023
P	5, 9, 10, 11	160 – 330	IPR	.002 - .004	.002 - .005	.003 - .006	.003 - .007	.005 - .009	.006 - .011	.007 - .013	.007 - .015	.009 - .018	.011 - .023
P	12, 13	130 – 230	IPR	.001 - .002	.001 - .002	.002 - .003	.002 - .004	.003 - .006	.004 - .007	.005 - .009	.005 - .010	.007 - .012	.009 - .016
M	14.1	100 – 160	IPR	.001 - .002	.001 - .002	.002 - .003	.002 - .004	.003 - .004	.004 - .005	.004 - .006	.005 - .006	.006 - .007	.006 - .008
M	14.3	130 – 200	IPR	.001 - .002	.001 - .003	.002 - .003	.002 - .004	.003 - .005	.004 - .006	.004 - .006	.005 - .007	.006 - .008	.006 - .009
M	14.2, 14.4	100 – 160	IPR	.001 - .002	.001 - .002	.002 - .003	.002 - .004	.003 - .004	.004 - .005	.004 - .006	.005 - .006	.006 - .007	.006 - .008
K	15, 16	260 – 520	IPR	.003 - .006	.003 - .006	.004 - .008	.004 - .009	.006 - .011	.007 - .013	.008 - .016	.009 - .017	.011 - .021	.013 - .026
K	17, 18, 19	290 – 460	IPR	.004 - .005	.004 - .005	.004 - .006	.005 - .007	.006 - .009	.007 - .011	.008 - .013	.009 - .014	.011 - .017	.013 - .021
K	20	260 – 430	IPR	.002 - .005	.002 - .005	.003 - .006	.003 - .007	.004 - .009	.005 - .011	.006 - .012	.007 - .014	.009 - .017	.011 - .021
N	21	290 – 1030	IPR	.002 - .005	.003 - .005	.003 - .006	.004 - .006	.005 - .008	.006 - .009	.008 - .011	.009 - .013	.011 - .016	.013 - .019
N	22, 23, 24	290 – 890	IPR	.002 - .003	.003 - .005	.003 - .006	.004 - .008	.005 - .009	.006 - .011	.008 - .013	.009 - .014	.011 - .017	.013 - .020
N	25	290 – 890	IPR	.004 - .005	.004 - .005	.005 - .006	.005 - .006	.006 - .008	.006 - .009	.008 - .011	.009 - .013	.011 - .016	.013 - .017
N	26, 27, 28	290 – 890	IPR	.002 - .003	.003 - .005	.003 - .006	.004 - .008	.005 - .009	.006 - .011	.008 - .013	.009 - .014	.011 - .016	.013 - .019
S	31, 32	70 – 100	IPR	.001 - .002	.001 - .002	.001 - .002	.002 - .003	.002 - .004	.003 - .005	.004 - .005	.004 - .006	.005 - .006	.006 - .007
S	33, 34, 35	30 – 100	IPR	.001 - .001	.001 - .001	.001 - .002	.001 - .002	.002 - .003	.003 - .004	.003 - .004	.004 - .005	.004 - .006	.004 - .006
S	36	30 – 130	IPR	.001 - .001	.001 - .001	.001 - .002	.001 - .002	.002 - .003	.002 - .004	.003 - .004	.003 - .004	.004 - .005	.004 - .006
S	37	30 – 130	IPR	.001 - .001	.001 - .001	.001 - .002	.001 - .002	.002 - .003	.003 - .004	.003 - .004	.004 - .005	.004 - .006	.004 - .006

VariDrill • VDS20_ Series • WU25PD • Flood Coolant • Metric

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

VariDrill • VDS40_ Series • WU25PD • Through Coolant • Metric

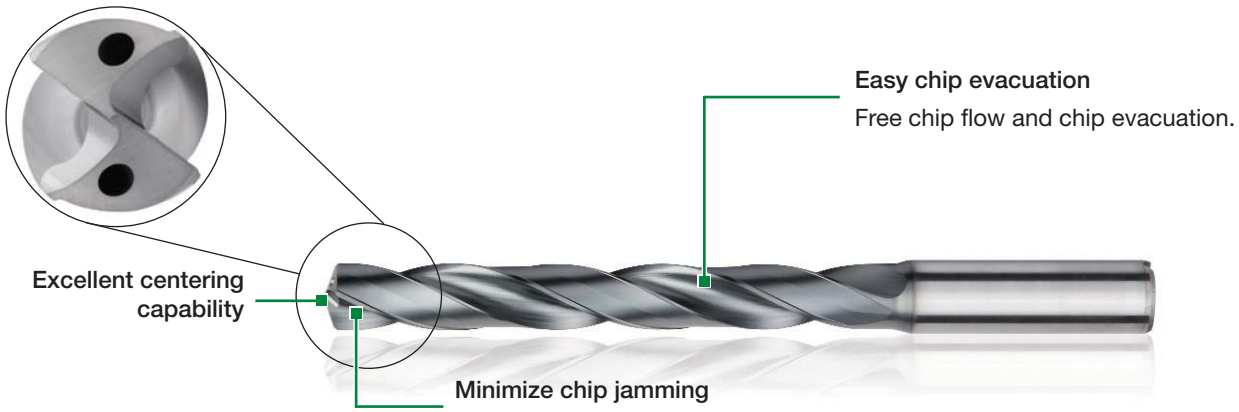
Group		Cutting Speed — vc Range — m/min min	max	Tool Diameter	Recommended Feed Rate (fz) 1,0	2,0	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	1	70	140	mm/r	0,04 - 0,09	0,05 - 0,12	0,07 - 0,14	0,08 - 0,16	0,11 - 0,22	0,13 - 0,26	0,15 - 0,31	0,18 - 0,35	0,22 - 0,42	0,28 - 0,54
	2, 3, 4, 6, 7	60	100	mm/r	0,05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

Application-Specific Drilling •
WIDIA™ TOP DRILL S™ for Steel and Cast Iron

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

TOP DRILL S™

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



TOP DRILL S™ for Steel

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

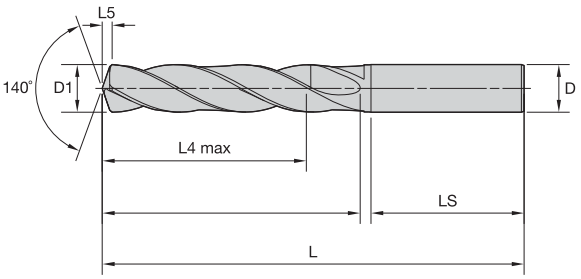
TOP DRILL S for Cast Iron

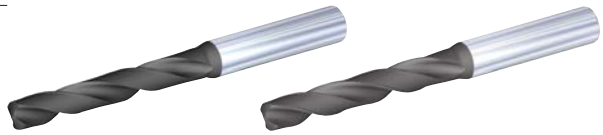
TOP DRILL S for cast iron is designed with application-specific point geometry for maximum performance in cast iron materials. The point features corner chamfers that minimize breakout on exit holes. A four-margin design improves hole straightness increasing tool life and extends cross hole and inclined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

WIDIA Advantage

- Application-specific geometry with the latest WIDIA grade technology.
- Lower cost per hole due to high MRR and long tool life.
- Consistent performance from internally controlled supply chain:

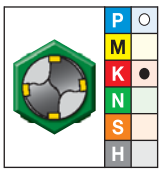
  Powder > Rod > Grinding > Coating
- Part of the complete WIDIA holemaking solution.
- Broad range of standard lengths, diameters, and coolant options in one line, including extensive intermediate metric, inch, fraction, and wire sizes.





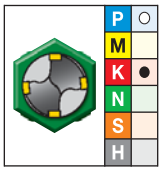
● first choice
○ alternate choice

■ TDS202A • TDS212A • 5 x D

		D1 diameter								
TDS202A • WP20PD	TDS212A • WK15PD	mm	in	fraction	wire size	L	L4 max	L5	LS	D
TDS202A03000	**TDS212A03000**	3,000	.1181	–	–	66	23	0,5	36	6
TDS202A03048	**TDS212A03048**	3,048	.1200	–	31	66	23	0,5	36	6
TDS202A03100	**TDS212A03100**	3,100	.1220	–	–	66	23	0,5	36	6
TDS202A03175	**TDS212A03175**	3,175	.1250	1/8	–	66	23	0,5	36	6
TDS202A03200	**TDS212A03200**	3,200	.1260	–	–	66	23	0,5	36	6
TDS202A03264	**TDS212A03264**	3,264	.1285	–	30	66	23	0,5	36	6
TDS202A03300	**TDS212A03300**	3,300	.1299	–	–	66	23	0,5	36	6
TDS202A03400	**TDS212A03400**	3,400	.1339	–	–	66	23	0,6	36	6
TDS202A03455	**TDS212A03455**	3,455	.1360	–	29	66	23	0,6	36	6
TDS202A03500	**TDS212A03500**	3,500	.1378	–	–	66	23	0,6	36	6
TDS202A03571	**TDS212A03571**	3,571	.1406	9/64	–	66	23	0,6	36	6
TDS202A03600	**TDS212A03600**	3,600	.1417	–	–	66	23	0,6	36	6
TDS202A03658	**TDS212A03658**	3,658	.1440	–	27	66	23	0,6	36	6
TDS202A03700	**TDS212A03700**	3,700	.1457	–	–	66	23	0,6	36	6
TDS202A03734	**TDS212A03734**	3,734	.1470	–	26	66	23	0,6	36	6
TDS202A03800	**TDS212A03800**	3,800	.1496	–	–	74	29	0,6	36	6
TDS202A03900	**TDS212A03900**	3,900	.1535	–	–	74	29	0,6	36	6
TDS202A03970	**TDS212A03970**	3,970	.1563	5/32	–	74	29	0,7	36	6
TDS202A04000	**TDS212A04000**	4,000	.1575	–	–	74	29	0,7	36	6
TDS202A04039	**TDS212A04039**	4,039	.1590	–	21	74	29	0,7	36	6
TDS202A04090	**TDS212A04090**	4,090	.1610	–	20	74	29	0,7	36	6
TDS202A04100	**TDS212A04100**	4,100	.1614	–	–	74	29	0,7	36	6
TDS202A04200	**TDS212A04200**	4,200	.1654	–	–	74	29	0,7	36	6
TDS202A04217	**TDS212A04217**	4,217	.1660	–	19	74	29	0,7	36	6
TDS202A04300	**TDS212A04300**	4,300	.1693	–	–	74	29	0,7	36	6
TDS202A04366	**TDS212A04366**	4,366	.1719	11/64	–	74	29	0,7	36	6
TDS202A04400	**TDS212A04400**	4,400	.1732	–	–	74	29	0,7	36	6
TDS202A04500	**TDS212A04500**	4,500	.1772	–	–	74	29	0,7	36	6
TDS202A04600	**TDS212A04600**	4,600	.1811	–	–	74	29	0,8	36	6
TDS202A04623	**TDS212A04623**	4,623	.1820	–	14	74	29	0,8	36	6
TDS202A04700	**TDS212A04700**	4,700	.1850	–	13	74	29	0,8	36	6
TDS202A04763	**TDS212A04763**	4,763	.1875	3/16	–	82	35	0,8	36	6
TDS202A04800	**TDS212A04800**	4,800	.1890	–	12	82	35	0,8	36	6
TDS202A04852	**TDS212A04852**	4,852	.1910	–	11	82	35	0,8	36	6
TDS202A04900	**TDS212A04900**	4,900	.1929	–	–	82	35	0,8	36	6
TDS202A05000	**TDS212A05000**	5,000	.1969	–	–	82	35	0,8	36	6
TDS202A05100	**TDS212A05100**	5,100	.2008	–	–	82	35	0,8	36	6
TDS202A05106	**TDS212A05106**	5,106	.2010	–	7	82	35	0,8	36	6
TDS202A05159	**TDS212A05159**	5,159	.2031	13/64	–	82	35	0,9	36	6
TDS202A05200	**TDS212A05200**	5,200	.2047	–	–	82	35	0,9	36	6

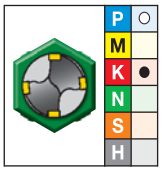
(continued)

(TDS202A • TDS212A • 5 x D continued)

				D1 diameter							
TDS202A • WP20PD	TDS212A • WK15PD	mm	in	fraction	wire size	L	L4 max	L5	LS	D
TDS202A05300	TDS212A05300	5,300	.2087	–	–	82	35	0,9	36	6
TDS202A05400	TDS212A05400	5,400	.2126	–	–	82	35	0,9	36	6
TDS202A05410	TDS212A05410	5,410	.2130	–	3	82	35	0,9	36	6
TDS202A05500	TDS212A05500	5,500	.2165	–	–	82	35	0,9	36	6
TDS202A05558	TDS212A05558	5,558	.2188	7/32	–	82	35	0,9	36	6
TDS202A05600	TDS212A05600	5,600	.2205	–	–	82	35	0,9	36	6
TDS202A05616	TDS212A05616	5,616	.2211	–	2	82	35	0,9	36	6
TDS202A05700	TDS212A05700	5,700	.2244	–	–	82	35	1,0	36	6
TDS202A05800	TDS212A05800	5,800	.2283	–	–	82	35	1,0	36	6
TDS202A05900	TDS212A05900	5,900	.2323	–	–	82	35	1,0	36	6
TDS202A05954	TDS212A05954	5,954	.2344	15/64	–	82	35	1,0	36	6
TDS202A06000	TDS212A06000	6,000	.2362	–	–	82	35	1,0	36	6
TDS202A06100	TDS212A06100	6,100	.2402	–	–	91	43	1,0	36	8
TDS202A06200	TDS212A06200	6,200	.2441	–	–	91	43	1,0	36	8
TDS202A06300	TDS212A06300	6,300	.2480	–	–	91	43	1,1	36	8
TDS202A06350	TDS212A06350	6,350	.2500	1/4	E	91	43	1,1	36	8
TDS202A06400	TDS212A06400	6,400	.2520	–	–	91	43	1,1	36	8
TDS202A06500	TDS212A06500	6,500	.2559	–	–	91	43	1,1	36	8
TDS202A06528	TDS212A06528	6,528	.2570	–	F	91	43	1,1	36	8
TDS202A06600	TDS212A06600	6,600	.2598	–	–	91	43	1,1	36	8
TDS202A06630	TDS212A06630	6,630	.2610	–	G	91	43	1,1	36	8
TDS202A06700	TDS212A06700	6,700	.2638	–	–	91	43	1,1	36	8
TDS202A06746	TDS212A06746	6,746	.2656	17/64	–	91	43	1,1	36	8
TDS202A06800	TDS212A06800	6,800	.2677	–	–	91	43	1,1	36	8
TDS202A06900	TDS212A06900	6,900	.2717	–	–	91	43	1,2	36	8
TDS202A07000	TDS212A07000	7,000	.2756	–	–	91	43	1,2	36	8
TDS202A07100	TDS212A07100	7,100	.2795	–	–	91	43	1,2	36	8
TDS202A07145	TDS212A07145	7,145	.2813	9/32	–	91	43	1,2	36	8
TDS202A07200	TDS212A07200	7,200	.2835	–	–	91	43	1,2	36	8
TDS202A07300	TDS212A07300	7,300	.2874	–	–	91	43	1,2	36	8
TDS202A07400	TDS212A07400	7,400	.2913	–	–	91	43	1,3	36	8
TDS202A07500	TDS212A07500	7,500	.2953	–	–	91	43	1,3	36	8
TDS202A07541	TDS212A07541	7,541	.2969	19/64	–	91	43	1,3	36	8
TDS202A07600	TDS212A07600	7,600	.2992	–	–	91	43	1,3	36	8
TDS202A07700	TDS212A07700	7,700	.3031	–	–	91	43	1,3	36	8
TDS202A07800	TDS212A07800	7,800	.3071	–	–	91	43	1,3	36	8
TDS202A07900	TDS212A07900	7,900	.3110	–	–	91	43	1,3	36	8
TDS202A07938	TDS212A07938	7,938	.3125	5/16	–	91	43	1,3	36	8
TDS202A08000	TDS212A08000	8,000	.3150	–	–	91	43	1,4	36	8
TDS202A08100	TDS212A08100	8,100	.3189	–	–	103	49	1,4	40	10
TDS202A08200	TDS212A08200	8,200	.3228	–	–	103	49	1,4	40	10
TDS202A08300	TDS212A08300	8,300	.3268	–	–	103	49	1,4	40	10
TDS202A08334	TDS212A08334	8,334	.3281	21/64	–	103	49	1,4	40	10
TDS202A08400	TDS212A08400	8,400	.3307	–	–	103	49	1,4	40	10
TDS202A08433	TDS212A08433	8,433	.3320	–	Q	103	49	1,4	40	10
TDS202A08500	TDS212A08500	8,500	.3346	–	–	103	49	1,4	40	10
TDS202A08600	TDS212A08600	8,600	.3386	–	–	103	49	1,5	40	10
TDS202A08700	TDS212A08700	8,700	.3425	–	–	103	49	1,5	40	10
TDS202A08733	TDS212A08733	8,733	.3438	11/32	–	103	49	1,5	40	10
TDS202A08800	TDS212A08800	8,800	.3465	–	–	103	49	1,5	40	10

(continued)

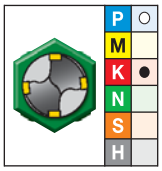
(TDS202A • TDS212A • 5 x D continued)



TDS202A • WP20PD	TDS212A • WK15PD	D1 diameter mm	in	fraction	wire size	L	L4 max	L5	LS	D
TDS202A08900	TDS212A08900	8,900	.3504	–	–	103	49	1,5	40	10
TDS202A09000	TDS212A09000	9,000	.3543	–	–	103	49	1,5	40	10
TDS202A09100	TDS212A09100	9,100	.3583	–	–	103	49	1,5	40	10
TDS202A09129	TDS212A09129	9,129	.3594	23/64	–	103	49	1,6	40	10
TDS202A09200	TDS212A09200	9,200	.3622	–	–	103	49	1,6	40	10
TDS202A09300	TDS212A09300	9,300	.3661	–	–	103	49	1,6	40	10
TDS202A09347	TDS212A09347	9,347	.3680	–	U	103	49	1,6	40	10
TDS202A09400	TDS212A09400	9,400	.3701	–	–	103	49	1,6	40	10
TDS202A09500	TDS212A09500	9,500	.3740	–	–	103	49	1,6	40	10
TDS202A09525	TDS212A09525	9,525	.3750	3/8	–	103	49	1,6	40	10
TDS202A09600	TDS212A09600	9,600	.3780	–	–	103	49	1,6	40	10
TDS202A09700	TDS212A09700	9,700	.3819	–	–	103	49	1,7	40	10
TDS202A09800	TDS212A09800	9,800	.3858	–	–	103	49	1,7	40	10
TDS202A09900	TDS212A09900	9,900	.3898	–	–	103	49	1,7	40	10
TDS202A09921	TDS212A09921	9,921	.3906	25/64	–	103	49	1,7	40	10
TDS202A10000	TDS212A10000	10,000	.3937	–	–	103	49	1,7	40	10
TDS202A10100	TDS212A10100	10,100	.3976	–	–	118	56	1,7	45	12
TDS202A10200	TDS212A10200	10,200	.4016	–	–	118	56	1,7	45	12
TDS202A10300	TDS212A10300	10,300	.4055	–	–	118	56	1,8	45	12
TDS202A10320	TDS212A10320	10,320	.4063	13/32	–	118	56	1,8	45	12
TDS202A10400	TDS212A10400	10,400	.4094	–	–	118	56	1,8	45	12
TDS202A10500	TDS212A10500	10,500	.4134	–	–	118	56	1,8	45	12
TDS202A10600	TDS212A10600	10,600	.4173	–	–	118	56	1,8	45	12
TDS202A10700	TDS212A10700	10,700	.4213	–	–	118	56	1,8	45	12
TDS202A10716	TDS212A10716	10,716	.4219	27/64	–	118	56	1,8	45	12
TDS202A10800	TDS212A10800	10,800	.4252	–	–	118	56	1,8	45	12
TDS202A10900	TDS212A10900	10,900	.4291	–	–	118	56	1,9	45	12
TDS202A11000	TDS212A11000	11,000	.4331	–	–	118	56	1,9	45	12
TDS202A11100	TDS212A11100	11,100	.4370	–	–	118	56	1,9	45	12
TDS202A11113	TDS212A11113	11,113	.4375	7/16	–	118	56	1,9	45	12
TDS202A11200	TDS212A11200	11,200	.4409	–	–	118	56	1,9	45	12
TDS202A11300	TDS212A11300	11,300	.4449	–	–	118	56	1,9	45	12
TDS202A11400	TDS212A11400	11,400	.4488	–	–	118	56	2,0	45	12
TDS202A11500	TDS212A11500	11,500	.4528	–	–	118	56	2,0	45	12
TDS202A11509	TDS212A11509	11,509	.4531	29/64	–	118	56	2,0	45	12
TDS202A11600	TDS212A11600	11,600	.4567	–	–	118	56	2,0	45	12
TDS202A11700	TDS212A11700	11,700	.4606	–	–	118	56	2,0	45	12
TDS202A11800	TDS212A11800	11,800	.4646	–	–	118	56	2,0	45	12
TDS202A11900	TDS212A11900	11,900	.4685	–	–	118	56	2,0	45	12
TDS202A11908	TDS212A11908	11,908	.4688	15/32	–	118	56	2,0	45	12
TDS202A12000	TDS212A12000	12,000	.4724	–	–	118	56	2,1	45	12
TDS202A12100	TDS212A12100	12,100	.4764	–	–	124	60	2,1	45	14
TDS202A12200	TDS212A12200	12,200	.4803	–	–	124	60	2,1	45	14
TDS202A12300	TDS212A12300	12,300	.4843	–	–	124	60	2,1	45	14
TDS202A12304	TDS212A12304	12,304	.4844	31/64	–	124	60	2,1	45	14
TDS202A12400	TDS212A12400	12,400	.4882	–	–	124	60	2,1	45	14
TDS202A12500	TDS212A12500	12,500	.4921	–	–	124	60	2,1	45	14
TDS202A12600	TDS212A12600	12,600	.4961	–	–	124	60	2,2	45	14
TDS202A12700	TDS212A12700	12,700	.5000	1/2	–	124	60	2,2	45	14
TDS202A12800	TDS212A12800	12,800	.5039	–	–	124	60	2,2	45	14
TDS202A12900	TDS212A12900	12,900	.5079	–	–	124	60	2,2	45	14

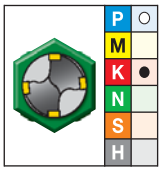
(continued)

(TDS202A • TDS212A • 5 x D continued)

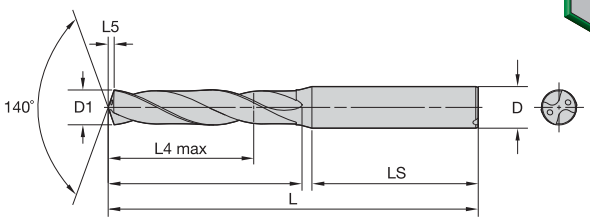
		D1 diameter								
TDS202A • WP20PD	TDS212A • WK15PD	mm	in	fraction	wire size	L	L4 max	L5	LS	D
TDS202A13000	TDS212A13000	13,000	.5118	–	–	124	60	2,2	45	14
TDS202A13096	TDS212A13096	13,096	.5156	33/64	–	124	60	2,3	45	14
TDS202A13100	TDS212A13100	13,100	.5157	–	–	124	60	2,3	45	14
TDS202A13200	TDS212A13200	13,200	.5197	–	–	124	60	2,3	45	14
TDS202A13300	TDS212A13300	13,300	.5236	–	–	124	60	2,3	45	14
TDS202A13400	TDS212A13400	13,400	.5276	–	–	124	60	2,3	45	14
TDS202A13500	TDS212A13500	13,500	.5315	–	–	124	60	2,3	45	14
TDS202A13600	TDS212A13600	13,600	.5354	–	–	124	60	2,3	45	14
TDS202A13700	TDS212A13700	13,700	.5394	–	–	124	60	2,4	45	14
TDS202A13800	TDS212A13800	13,800	.5433	–	–	124	60	2,4	45	14
TDS202A13891	TDS212A13891	13,891	.5469	35/64	–	124	60	2,4	45	14
TDS202A13900	TDS212A13900	13,900	.5472	–	–	124	60	2,4	45	14
TDS202A14000	TDS212A14000	14,000	.5512	–	–	124	60	2,4	45	14
TDS202A14100	TDS212A14100	14,100	.5551	–	–	133	63	2,4	48	16
TDS202A14200	TDS212A14200	14,200	.5591	–	–	133	63	2,5	48	16
TDS202A14288	TDS212A14288	14,288	.5625	9/16	–	133	63	2,5	48	16
TDS202A14300	TDS212A14300	14,300	.5630	–	–	133	63	2,5	48	16
TDS202A14400	TDS212A14400	14,400	.5669	–	–	133	63	2,5	48	16
TDS202A14500	TDS212A14500	14,500	.5709	–	–	133	63	2,5	48	16
TDS202A14600	TDS212A14600	14,600	.5748	–	–	133	63	2,5	48	16
TDS202A14684	TDS212A14684	14,684	.5781	37/64	–	133	63	2,5	48	16
TDS202A14700	TDS212A14700	14,700	.5787	–	–	133	63	2,5	48	16
TDS202A14800	TDS212A14800	14,800	.5827	–	–	133	63	2,6	48	16
TDS202A14900	TDS212A14900	14,900	.5866	–	–	133	63	2,6	48	16
TDS202A15000	TDS212A15000	15,000	.5906	–	–	133	63	2,6	48	16
TDS202A15083	TDS212A15083	15,083	.5938	19/32	–	133	63	2,6	48	16
TDS202A15100	TDS212A15100	15,100	.5945	–	–	133	63	2,6	48	16
TDS202A15200	TDS212A15200	15,200	.5984	–	–	133	63	2,6	48	16
TDS202A15300	TDS212A15300	15,300	.6024	–	–	133	63	2,6	48	16
TDS202A15400	TDS212A15400	15,400	.6063	–	–	133	63	2,7	48	16
TDS202A15479	TDS212A15479	15,479	.6094	39/64	–	133	63	2,7	48	16
TDS202A15500	TDS212A15500	15,500	.6102	–	–	133	63	2,7	48	16
TDS202A15600	TDS212A15600	15,600	.6142	–	–	133	63	2,7	48	16
TDS202A15700	TDS212A15700	15,700	.6181	–	–	133	63	2,7	48	16
TDS202A15800	TDS212A15800	15,800	.6220	–	–	133	63	2,7	48	16
TDS202A15875	TDS212A15875	15,875	.6250	5/8	–	133	63	2,7	48	16
TDS202A15900	TDS212A15900	15,900	.6260	–	–	133	63	2,8	48	16
TDS202A16000	TDS212A16000	16,000	.6299	–	–	133	63	2,8	48	16
TDS202A16100	TDS212A16100	16,100	.6339	–	–	143	71	2,8	48	18
TDS202A16200	TDS212A16200	16,200	.6378	–	–	143	71	2,8	48	18
TDS202A16271	TDS212A16271	16,271	.6406	41/64	–	143	71	2,8	48	18
TDS202A16300	TDS212A16300	16,300	.6417	–	–	143	71	2,8	48	18
TDS202A16400	TDS212A16400	16,400	.6457	–	–	143	71	2,8	48	18
TDS202A16500	TDS212A16500	16,500	.6496	–	–	143	71	2,9	48	18
TDS202A16600	TDS212A16600	16,600	.6535	–	–	143	71	2,9	48	18
TDS202A16670	TDS212A16670	16,670	.6563	21/32	–	143	71	2,9	48	18
TDS202A16700	TDS212A16700	16,700	.6575	–	–	143	71	2,9	48	18
TDS202A16800	TDS212A16800	16,800	.6614	–	–	143	71	2,9	48	18
TDS202A16900	TDS212A16900	16,900	.6654	–	–	143	71	2,9	48	18
TDS202A17000	TDS212A17000	17,000	.6693	–	–	143	71	2,9	48	18

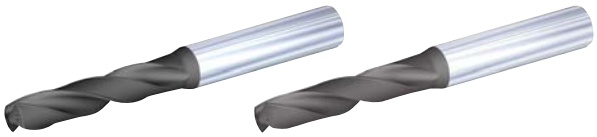
(continued)

(TDS202A • TDS212A • 5 x D continued)

		D1 diameter								
TDS202A • WP20PD	TDS212A • WK15PD	mm	in	fraction	wire size	L	L4 max	L5	LS	D
TDS202A17100	**TDS212A17100**	17,100	.6732	—	—	143	71	3,0	48	18
TDS202A17200	**TDS212A17200**	17,200	.6772	—	—	143	71	3,0	48	18
TDS202A17300	**TDS212A17300**	17,300	.6811	—	—	143	71	3,0	48	18
TDS202A17400	**TDS212A17400**	17,400	.6850	—	—	143	71	3,0	48	18
TDS202A17463	**TDS212A17463**	17,463	.6875	11/16	—	143	71	3,0	48	18
TDS202A17500	**TDS212A17500**	17,500	.6890	—	—	143	71	3,0	48	18
TDS202A17600	**TDS212A17600**	17,600	.6929	—	—	143	71	3,1	48	18
TDS202A17700	**TDS212A17700**	17,700	.6969	—	—	143	71	3,1	48	18
TDS202A17800	**TDS212A17800**	17,800	.7008	—	—	143	71	3,1	48	18
TDS202A17859	**TDS212A17859**	17,859	.7031	45/64	—	143	71	3,1	48	18
TDS202A17900	**TDS212A17900**	17,900	.7047	—	—	143	71	3,1	48	18
TDS202A18000	**TDS212A18000**	18,000	.7087	—	—	143	71	3,1	48	18
TDS202A18100	**TDS212A18100**	18,100	.7126	—	—	153	77	3,1	50	20
TDS202A18200	**TDS212A18200**	18,200	.7165	—	—	153	77	3,2	50	20
TDS202A18258	**TDS212A18258**	18,258	.7188	23/32	—	153	77	3,2	50	20
TDS202A18300	**TDS212A18300**	18,300	.7205	—	—	153	77	3,2	50	20
TDS202A18400	**TDS212A18400**	18,400	.7244	—	—	153	77	3,2	50	20
TDS202A18500	**TDS212A18500**	18,500	.7283	—	—	153	77	3,2	50	20
TDS202A18600	**TDS212A18600**	18,600	.7323	—	—	153	77	3,2	50	20
TDS202A18654	**TDS212A18654**	18,654	.7344	47/64	—	153	77	3,2	50	20
TDS202A18700	**TDS212A18700**	18,700	.7362	—	—	153	77	3,2	50	20
TDS202A18800	**TDS212A18800**	18,800	.7402	—	—	153	77	3,3	50	20
TDS202A18900	**TDS212A18900**	18,900	.7441	—	—	153	77	3,3	50	20
TDS202A19000	**TDS212A19000**	19,000	.7480	—	—	153	77	3,3	50	20
TDS202A19050	**TDS212A19050**	19,050	.7500	3/4	—	153	77	3,3	50	20
TDS202A19100	**TDS212A19100**	19,100	.7520	—	—	153	77	3,3	50	20
TDS202A19200	**TDS212A19200**	19,200	.7559	—	—	153	77	3,3	50	20
TDS202A19300	**TDS212A19300**	19,300	.7598	—	—	153	77	3,4	50	20
TDS202A19400	**TDS212A19400**	19,400	.7638	—	—	153	77	3,4	50	20
TDS202A19500	**TDS212A19500**	19,500	.7677	—	—	153	77	3,4	50	20
TDS202A19600	**TDS212A19600**	19,600	.7717	—	—	153	77	3,4	50	20
TDS202A19700	**TDS212A19700**	19,700	.7756	—	—	153	77	3,4	50	20
TDS202A19800	**TDS212A19800**	19,800	.7795	—	—	153	77	3,4	50	20
TDS202A19900	**TDS212A19900**	19,900	.7835	—	—	153	77	3,5	50	20
TDS202A20000	**TDS212A20000**	20,000	.7874	—	—	153	77	3,5	50	20

NOTE: L4 max, L5, L, LS, and D table columns reflect millimeter measurements.





● first choice
○ alternate choice

■ TDS401A • TDS411A • 3 x D

TDS401A • WP20PD	TDS411A • WK15PD	D1 diameter mm	in	fraction	wire size	L	L4 max	L5	LS	D
TDS401A03000	TDS411A03000	3,000	.1181	–	–	62	14	0,5	36	6
TDS401A03048	TDS411A03048	3,048	.1200	–	31	62	14	0,5	36	6
TDS401A03100	TDS411A03100	3,100	.1220	–	–	62	14	0,5	36	6
TDS401A03175	TDS411A03175	3,175	.1250	1/8	–	62	14	0,5	36	6
TDS401A03200	TDS411A03200	3,200	.1260	–	–	62	14	0,5	36	6
TDS401A03264	TDS411A03264	3,264	.1285	–	30	62	14	0,5	36	6
TDS401A03300	TDS411A03300	3,300	.1299	–	–	62	14	0,5	36	6
TDS401A03400	TDS411A03400	3,400	.1339	–	–	62	14	0,6	36	6
TDS401A03455	TDS411A03455	3,455	.1360	–	29	62	14	0,6	36	6
TDS401A03500	TDS411A03500	3,500	.1378	–	–	62	14	0,6	36	6
TDS401A03571	TDS411A03571	3,571	.1406	9/64	–	62	14	0,6	36	6
TDS401A03600	TDS411A03600	3,600	.1417	–	–	62	14	0,6	36	6
TDS401A03658	TDS411A03658	3,658	.1440	–	27	62	14	0,6	36	6
TDS401A03700	TDS411A03700	3,700	.1457	–	–	62	14	0,6	36	6
TDS401A03734	TDS411A03734	3,734	.1470	–	26	62	14	0,6	36	6
TDS401A03800	TDS411A03800	3,800	.1496	–	–	66	17	0,6	36	6
TDS401A03900	TDS411A03900	3,900	.1535	–	–	66	17	0,6	36	6
TDS401A03970	TDS411A03970	3,970	.1563	5/32	–	66	17	0,7	36	6
TDS401A04000	TDS411A04000	4,000	.1575	–	–	66	17	0,7	36	6
TDS401A04039	TDS411A04039	4,039	.1590	–	21	66	17	0,7	36	6
TDS401A04090	TDS411A04090	4,090	.1610	–	20	66	17	0,7	36	6
TDS401A04100	TDS411A04100	4,100	.1614	–	–	66	17	0,7	36	6
TDS401A04200	TDS411A04200	4,200	.1654	–	–	66	17	0,7	36	6
TDS401A04217	TDS411A04217	4,217	.1660	–	19	66	17	0,7	36	6
TDS401A04300	TDS411A04300	4,300	.1693	–	–	66	17	0,7	36	6
TDS401A04366	TDS411A04366	4,366	.1719	11/64	–	66	17	0,7	36	6
TDS401A04400	TDS411A04400	4,400	.1732	–	–	66	17	0,7	36	6
TDS401A04500	TDS411A04500	4,500	.1772	–	–	66	17	0,7	36	6
TDS401A04600	TDS411A04600	4,600	.1811	–	–	66	17	0,8	36	6
TDS401A04623	TDS411A04623	4,623	.1820	–	14	66	17	0,8	36	6
TDS401A04700	TDS411A04700	4,700	.1850	–	13	66	17	0,8	36	6
TDS401A04763	TDS411A04763	4,763	.1875	3/16	–	66	20	0,8	36	6
TDS401A04800	TDS411A04800	4,800	.1890	–	12	66	20	0,8	36	6
TDS401A04852	TDS411A04852	4,852	.1910	–	11	66	20	0,8	36	6
TDS401A04900	TDS411A04900	4,900	.1929	–	–	66	20	0,8	36	6
TDS401A05000	TDS411A05000	5,000	.1969	–	–	66	20	0,8	36	6
TDS401A05100	TDS411A05100	5,100	.2008	–	–	66	20	0,8	36	6
TDS401A05106	TDS411A05106	5,106	.2010	–	7	66	20	0,8	36	6
TDS401A05159	TDS411A05159	5,159	.2031	13/64	–	66	20	0,9	36	6
TDS401A05200	TDS411A05200	5,200	.2047	–	–	66	20	0,9	36	6

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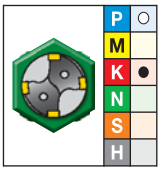
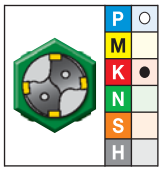
		D1 diameter								
TDS401A • WP20PD	TDS411A • WK15PD	mm	in	fraction	wire size	L	L4 max	L5	LS	D
TDS401A05300	TDS411A05300	5,300	.2087	–	–	66	20	0,9	36	6
TDS401A05400	TDS411A05400	5,400	.2126	–	–	66	20	0,9	36	6
TDS401A05410	TDS411A05410	5,410	.2130	–	3	66	20	0,9	36	6
TDS401A05500	TDS411A05500	5,500	.2165	–	–	66	20	0,9	36	6
TDS401A05558	TDS411A05558	5,558	.2188	7/32	–	66	20	0,9	36	6
TDS401A05600	TDS411A05600	5,600	.2205	–	–	66	20	0,9	36	6
TDS401A05616	TDS411A05616	5,616	.2211	–	2	66	20	0,9	36	6
TDS401A05700	TDS411A05700	5,700	.2244	–	–	66	20	1,0	36	6
TDS401A05800	TDS411A05800	5,800	.2283	–	–	66	20	1,0	36	6
TDS401A05900	TDS411A05900	5,900	.2323	–	–	66	20	1,0	36	6
TDS401A05954	TDS411A05954	5,954	.2344	15/64	–	66	20	1,0	36	6
TDS401A06000	TDS411A06000	6,000	.2362	–	–	66	20	1,0	36	6
TDS401A06100	TDS411A06100	6,100	.2402	–	–	79	24	1,0	36	8
TDS401A06200	TDS411A06200	6,200	.2441	–	–	79	24	1,0	36	8
TDS401A06300	TDS411A06300	6,300	.2480	–	–	79	24	1,1	36	8
TDS401A06350	TDS411A06350	6,350	.2500	1/4	E	79	24	1,1	36	8
TDS401A06400	TDS411A06400	6,400	.2520	–	–	79	24	1,1	36	8
TDS401A06500	TDS411A06500	6,500	.2559	–	–	79	24	1,1	36	8
TDS401A06528	TDS411A06528	6,528	.2570	–	F	79	24	1,1	36	8
TDS401A06600	TDS411A06600	6,600	.2598	–	–	79	24	1,1	36	8
TDS401A06630	TDS411A06630	6,630	.2610	–	G	79	24	1,1	36	8
TDS401A06700	TDS411A06700	6,700	.2638	–	–	79	24	1,1	36	8
TDS401A06746	TDS411A06746	6,746	.2656	17/64	–	79	24	1,1	36	8
TDS401A06800	TDS411A06800	6,800	.2677	–	–	79	24	1,1	36	8
TDS401A06900	TDS411A06900	6,900	.2717	–	–	79	24	1,2	36	8
TDS401A07000	TDS411A07000	7,000	.2756	–	–	79	24	1,2	36	8
TDS401A07100	TDS411A07100	7,100	.2795	–	–	79	29	1,2	36	8
TDS401A07145	TDS411A07145	7,145	.2813	9/32	–	79	29	1,2	36	8
TDS401A07200	TDS411A07200	7,200	.2835	–	–	79	29	1,2	36	8
TDS401A07300	TDS411A07300	7,300	.2874	–	–	79	29	1,2	36	8
TDS401A07400	TDS411A07400	7,400	.2913	–	–	79	29	1,3	36	8
TDS401A07500	TDS411A07500	7,500	.2953	–	–	79	29	1,3	36	8
TDS401A07541	TDS411A07541	7,541	.2969	19/64	–	79	29	1,3	36	8
TDS401A07600	TDS411A07600	7,600	.2992	–	–	79	29	1,3	36	8
TDS401A07700	TDS411A07700	7,700	.3031	–	–	79	29	1,3	36	8
TDS401A07800	TDS411A07800	7,800	.3071	–	–	79	29	1,3	36	8
TDS401A07900	TDS411A07900	7,900	.3110	–	–	79	29	1,3	36	8
TDS401A07938	TDS411A07938	7,938	.3125	5/16	–	79	29	1,3	36	8
TDS401A08000	TDS411A08000	8,000	.3150	–	–	79	29	1,4	36	8
TDS401A08100	TDS411A08100	8,100	.3189	–	–	89	35	1,4	40	10
TDS401A08200	TDS411A08200	8,200	.3228	–	–	89	35	1,4	40	10
TDS401A08300	TDS411A08300	8,300	.3268	–	–	89	35	1,4	40	10
TDS401A08334	TDS411A08334	8,334	.3281	21/64	–	89	35	1,4	40	10
TDS401A08400	TDS411A08400	8,400	.3307	–	–	89	35	1,4	40	10
TDS401A08433	TDS411A08433	8,433	.3320	–	Q	89	35	1,4	40	10
TDS401A08500	TDS411A08500	8,500	.3346	–	–	89	35	1,4	40	10
TDS401A08600	TDS411A08600	8,600	.3386	–	–	89	35	1,5	40	10
TDS401A08700	TDS411A08700	8,700	.3425	–	–	89	35	1,5	40	10
TDS401A08733	TDS411A08733	8,733	.3438	11/32	–	89	35	1,5	40	10
TDS401A08800	TDS411A08800	8,800	.3465	–	–	89	35	1,5	40	10
TDS401A08900	TDS411A08900	8,900	.3504	–	–	89	35	1,5	40	10
TDS401A09000	TDS411A09000	9,000	.3543	–	–	89	35	1,5	40	10

(continued)

(TDS401A • TDS411A • 3 x D continued)

		D1 diameter								
TDS401A • WP20PD	TDS411A • WK15PD	mm	in	fraction	wire size	L	L4 max	L5	LS	D
TDS401A09100	TDS411A09100	9,100	.3583	–	–	89	35	1,5	40	10
TDS401A09129	TDS411A09129	9,129	.3594	23/64	–	89	35	1,6	40	10
TDS401A09200	TDS411A09200	9,200	.3622	–	–	89	35	1,6	40	10
TDS401A09300	TDS411A09300	9,300	.3661	–	–	89	35	1,6	40	10
TDS401A09347	TDS411A09347	9,347	.3680	–	U	89	35	1,6	40	10
TDS401A09400	TDS411A09400	9,400	.3701	–	–	89	35	1,6	40	10
TDS401A09500	TDS411A09500	9,500	.3740	–	–	89	35	1,6	40	10
TDS401A09525	TDS411A09525	9,525	.3750	3/8	–	89	35	1,6	40	10
TDS401A09600	TDS411A09600	9,600	.3780	–	–	89	35	1,6	40	10
TDS401A09700	TDS411A09700	9,700	.3819	–	–	89	35	1,7	40	10
TDS401A09800	TDS411A09800	9,800	.3858	–	–	89	35	1,7	40	10
TDS401A09900	TDS411A09900	9,900	.3898	–	–	89	35	1,7	40	10
TDS401A09921	TDS411A09921	9,921	.3906	25/64	–	89	35	1,7	40	10
TDS401A10000	TDS411A10000	10,000	.3937	–	–	89	35	1,7	40	10
TDS401A10100	TDS411A10100	10,100	.3976	–	–	102	40	1,7	45	12
TDS401A10200	TDS411A10200	10,200	.4016	–	–	102	40	1,7	45	12
TDS401A10300	TDS411A10300	10,300	.4055	–	–	102	40	1,8	45	12
TDS401A10320	TDS411A10320	10,320	.4063	13/32	–	102	40	1,8	45	12
TDS401A10400	TDS411A10400	10,400	.4094	–	–	102	40	1,8	45	12
TDS401A10500	TDS411A10500	10,500	.4134	–	–	102	40	1,8	45	12
TDS401A10600	TDS411A10600	10,600	.4173	–	–	102	40	1,8	45	12
TDS401A10700	TDS411A10700	10,700	.4213	–	–	102	40	1,8	45	12
TDS401A10716	TDS411A10716	10,716	.4219	27/64	–	102	40	1,8	45	12
TDS401A10800	TDS411A10800	10,800	.4252	–	–	102	40	1,8	45	12
TDS401A10900	TDS411A10900	10,900	.4291	–	–	102	40	1,9	45	12
TDS401A11000	TDS411A11000	11,000	.4331	–	–	102	40	1,9	45	12
TDS401A11100	TDS411A11100	11,100	.4370	–	–	102	40	1,9	45	12
TDS401A11113	TDS411A11113	11,113	.4375	7/16	–	102	40	1,9	45	12
TDS401A11200	TDS411A11200	11,200	.4409	–	–	102	40	1,9	45	12
TDS401A11300	TDS411A11300	11,300	.4449	–	–	102	40	1,9	45	12
TDS401A11400	TDS411A11400	11,400	.4488	–	–	102	40	2,0	45	12
TDS401A11500	TDS411A11500	11,500	.4528	–	–	102	40	2,0	45	12
TDS401A11509	TDS411A11509	11,509	.4531	29/64	–	102	40	2,0	45	12
TDS401A11600	TDS411A11600	11,600	.4567	–	–	102	40	2,0	45	12
TDS401A11700	TDS411A11700	11,700	.4606	–	–	102	40	2,0	45	12
TDS401A11800	TDS411A11800	11,800	.4646	–	–	102	40	2,0	45	12
TDS401A11900	TDS411A11900	11,900	.4685	–	–	102	40	2,0	45	12
TDS401A11908	TDS411A11908	11,908	.4688	15/32	–	102	40	2,0	45	12
TDS401A12000	TDS411A12000	12,000	.4724	–	–	102	40	2,1	45	12
TDS401A12100	TDS411A12100	12,100	.4764	–	–	107	43	2,1	45	14
TDS401A12200	TDS411A12200	12,200	.4803	–	–	107	43	2,1	45	14
TDS401A12300	TDS411A12300	12,300	.4843	–	–	107	43	2,1	45	14
TDS401A12304	TDS411A12304	12,304	.4844	31/64	–	107	43	2,1	45	14
TDS401A12400	TDS411A12400	12,400	.4882	–	–	107	43	2,1	45	14
TDS401A12500	TDS411A12500	12,500	.4921	–	–	107	43	2,1	45	14
TDS401A12600	TDS411A12600	12,600	.4961	–	–	107	43	2,2	45	14
TDS401A12700	TDS411A12700	12,700	.5000	1/2	–	107	43	2,2	45	14
TDS401A12800	TDS411A12800	12,800	.5039	–	–	107	43	2,2	45	14
TDS401A12900	TDS411A12900	12,900	.5079	–	–	107	43	2,2	45	14

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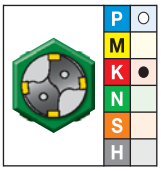
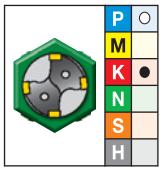
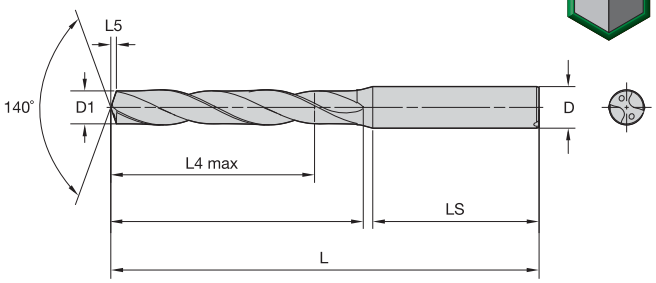
		D1 diameter								
TDS401A • WP20PD	TDS411A • WK15PD	mm	in	fraction	wire size	L	L4 max	L5	LS	D
TDS401A13000	TDS411A13000	13,000	.5118	—	—	107	43	2,2	45	14
TDS401A13096	TDS411A13096	13,096	.5156	33/64	—	107	43	2,3	45	14
TDS401A13100	TDS411A13100	13,100	.5157	—	—	107	43	2,3	45	14
TDS401A13200	TDS411A13200	13,200	.5197	—	—	107	43	2,3	45	14
TDS401A13300	TDS411A13300	13,300	.5236	—	—	107	43	2,3	45	14
TDS401A13400	TDS411A13400	13,400	.5276	—	—	107	43	2,3	45	14
TDS401A13500	TDS411A13500	13,500	.5315	—	—	107	43	2,3	45	14
TDS401A13600	TDS411A13600	13,600	.5354	—	—	107	43	2,3	45	14
TDS401A13700	TDS411A13700	13,700	.5394	—	—	107	43	2,4	45	14
TDS401A13800	TDS411A13800	13,800	.5433	—	—	107	43	2,4	45	14
TDS401A13891	TDS411A13891	13,891	.5469	35/64	—	107	43	2,4	45	14
TDS401A13900	TDS411A13900	13,900	.5472	—	—	107	43	2,4	45	14
TDS401A14000	TDS411A14000	14,000	.5512	—	—	107	43	2,4	45	14
TDS401A14100	TDS411A14100	14,100	.5551	—	—	115	45	2,4	48	16
TDS401A14200	TDS411A14200	14,200	.5591	—	—	115	45	2,5	48	16
TDS401A14288	TDS411A14288	14,288	.5625	9/16	—	115	45	2,5	48	16
TDS401A14300	TDS411A14300	14,300	.5630	—	—	115	45	2,5	48	16
TDS401A14400	TDS411A14400	14,400	.5669	—	—	115	45	2,5	48	16
TDS401A14500	TDS411A14500	14,500	.5709	—	—	115	45	2,5	48	16
TDS401A14600	TDS411A14600	14,600	.5748	—	—	115	45	2,5	48	16
TDS401A14684	TDS411A14684	14,684	.5781	37/64	—	115	45	2,5	48	16
TDS401A14700	TDS411A14700	14,700	.5787	—	—	115	45	2,5	48	16
TDS401A14800	TDS411A14800	14,800	.5827	—	—	115	45	2,6	48	16
TDS401A14900	TDS411A14900	14,900	.5866	—	—	115	45	2,6	48	16
TDS401A15000	TDS411A15000	15,000	.5906	—	—	115	45	2,6	48	16
TDS401A15083	TDS411A15083	15,083	.5938	19/32	—	115	45	2,6	48	16
TDS401A15100	TDS411A15100	15,100	.5945	—	—	115	45	2,6	48	16
TDS401A15200	TDS411A15200	15,200	.5984	—	—	115	45	2,6	48	16
TDS401A15300	TDS411A15300	15,300	.6024	—	—	115	45	2,6	48	16
TDS401A15400	TDS411A15400	15,400	.6063	—	—	115	45	2,7	48	16
TDS401A15479	TDS411A15479	15,479	.6094	39/64	—	115	45	2,7	48	16
TDS401A15500	TDS411A15500	15,500	.6102	—	—	115	45	2,7	48	16
TDS401A15600	TDS411A15600	15,600	.6142	—	—	115	45	2,7	48	16
TDS401A15700	TDS411A15700	15,700	.6181	—	—	115	45	2,7	48	16
TDS401A15800	TDS411A15800	15,800	.6220	—	—	115	45	2,7	48	16
TDS401A15875	TDS411A15875	15,875	.6250	5/8	—	115	45	2,7	48	16
TDS401A15900	TDS411A15900	15,900	.6260	—	—	115	45	2,8	48	16
TDS401A16000	TDS411A16000	16,000	.6299	—	—	115	45	2,8	48	16
TDS401A16100	TDS411A16100	16,100	.6339	—	—	123	51	2,8	48	18
TDS401A16200	TDS411A16200	16,200	.6378	—	—	123	51	2,8	48	18
TDS401A16271	TDS411A16271	16,271	.6406	41/64	—	123	51	2,8	48	18
TDS401A16300	TDS411A16300	16,300	.6417	—	—	123	51	2,8	48	18
TDS401A16400	TDS411A16400	16,400	.6457	—	—	123	51	2,8	48	18
TDS401A16500	TDS411A16500	16,500	.6496	—	—	123	51	2,9	48	18
TDS401A16600	TDS411A16600	16,600	.6535	—	—	123	51	2,9	48	18
TDS401A16670	TDS411A16670	16,670	.6563	21/32	—	123	51	2,9	48	18
TDS401A16700	TDS411A16700	16,700	.6575	—	—	123	51	2,9	48	18
TDS401A16800	TDS411A16800	16,800	.6614	—	—	123	51	2,9	48	18
TDS401A16900	TDS411A16900	16,900	.6654	—	—	123	51	2,9	48	18
TDS401A17000	TDS411A17000	17,000	.6693	—	—	123	51	2,9	48	18
TDS401A17100	TDS411A17100	17,100	.6732	—	—	123	51	3,0	48	18
TDS401A17200	TDS411A17200	17,200	.6772	—	—	123	51	3,0	48	18

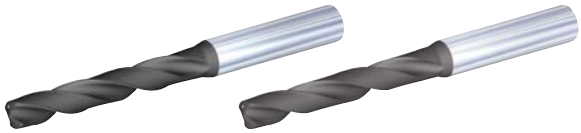
(continued)

(TDS401A • TDS411A • 3 x D continued)

				D1 diameter							
TDS401A • WP20PD	TDS411A • WK15PD	mm	in	fraction	wire size	L	L4 max	L5	LS	D
TDS401A17300	**TDS411A17300**	17,300	.6811	—	—	123	51	3,0	48	18
TDS401A17400	**TDS411A17400**	17,400	.6850	—	—	123	51	3,0	48	18
TDS401A17463	**TDS411A17463**	17,463	.6875	11/16	—	123	51	3,0	48	18
TDS401A17500	**TDS411A17500**	17,500	.6890	—	—	123	51	3,0	48	18
TDS401A17600	**TDS411A17600**	17,600	.6929	—	—	123	51	3,1	48	18
TDS401A17700	**TDS411A17700**	17,700	.6969	—	—	123	51	3,1	48	18
TDS401A17800	**TDS411A17800**	17,800	.7008	—	—	123	51	3,1	48	18
TDS401A17859	**TDS411A17859**	17,859	.7031	45/64	—	123	51	3,1	48	18
TDS401A17900	**TDS411A17900**	17,900	.7047	—	—	123	51	3,1	48	18
TDS401A18000	**TDS411A18000**	18,000	.7087	—	—	123	51	3,1	48	18
TDS401A18100	**TDS411A18100**	18,100	.7126	—	—	131	55	3,1	50	20
TDS401A18200	**TDS411A18200**	18,200	.7165	—	—	131	55	3,2	50	20
TDS401A18258	**TDS411A18258**	18,258	.7188	23/32	—	131	55	3,2	50	20
TDS401A18300	**TDS411A18300**	18,300	.7205	—	—	131	55	3,2	50	20
TDS401A18400	**TDS411A18400**	18,400	.7244	—	—	131	55	3,2	50	20
TDS401A18500	**TDS411A18500**	18,500	.7283	—	—	131	55	3,2	50	20
TDS401A18600	**TDS411A18600**	18,600	.7323	—	—	131	55	3,2	50	20
TDS401A18654	**TDS411A18654**	18,654	.7344	47/64	—	131	55	3,2	50	20
TDS401A18700	**TDS411A18700**	18,700	.7362	—	—	131	55	3,2	50	20
TDS401A18800	**TDS411A18800**	18,800	.7402	—	—	131	55	3,3	50	20
TDS401A18900	**TDS411A18900**	18,900	.7441	—	—	131	55	3,3	50	20
TDS401A19000	**TDS411A19000**	19,000	.7480	—	—	131	55	3,3	50	20
TDS401A19050	**TDS411A19050**	19,050	.7500	3/4	—	131	55	3,3	50	20
TDS401A19100	**TDS411A19100**	19,100	.7520	—	—	131	55	3,3	50	20
TDS401A19200	**TDS411A19200**	19,200	.7559	—	—	131	55	3,3	50	20
TDS401A19300	**TDS411A19300**	19,300	.7598	—	—	131	55	3,4	50	20
TDS401A19400	**TDS411A19400**	19,400	.7638	—	—	131	55	3,4	50	20
TDS401A19500	**TDS411A19500**	19,500	.7677	—	—	131	55	3,4	50	20
TDS401A19600	**TDS411A19600**	19,600	.7717	—	—	131	55	3,4	50	20
TDS401A19700	**TDS411A19700**	19,700	.7756	—	—	131	55	3,4	50	20
TDS401A19800	**TDS411A19800**	19,800	.7795	—	—	131	55	3,4	50	20
TDS401A19900	**TDS411A19900**	19,900	.7835	—	—	131	55	3,5	50	20
TDS401A20000	**TDS411A20000**	20,000	.7874	—	—	131	55	3,5	50	20

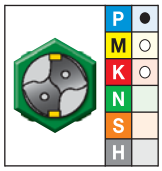
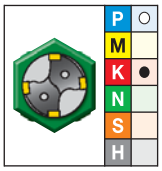
NOTE: L4 max, L5, L, LS, and D table columns reflect millimeter measurements.





● first choice
○ alternate choice

■ TDS402A • TDS412A • 5 x D

		D1 diameter								
TDS402A • WP20PD	TDS412A • WK15PD	mm	in	fraction	wire size	L	L4 max	L5	LS	D
TDS402A03000	TDS412A03000	3,000	.1181	–	–	66	23	0,5	36	6
TDS402A03048	TDS412A03048	3,048	.1200	–	31	66	23	0,5	36	6
TDS402A03100	TDS412A03100	3,100	.1220	–	–	66	23	0,5	36	6
TDS402A03175	TDS412A03175	3,175	.1250	1/8	–	66	23	0,5	36	6
TDS402A03200	TDS412A03200	3,200	.1260	–	–	66	23	0,5	36	6
TDS402A03264	TDS412A03264	3,264	.1285	–	30	66	23	0,5	36	6
TDS402A03300	TDS412A03300	3,300	.1299	–	–	66	23	0,5	36	6
TDS402A03400	TDS412A03400	3,400	.1339	–	–	66	23	0,6	36	6
TDS402A03455	TDS412A03455	3,455	.1360	–	29	66	23	0,6	36	6
TDS402A03500	TDS412A03500	3,500	.1378	–	–	66	23	0,6	36	6
TDS402A03571	TDS412A03571	3,571	.1406	9/64	–	66	23	0,6	36	6
TDS402A03600	TDS412A03600	3,600	.1417	–	–	66	23	0,6	36	6
TDS402A03658	TDS412A03658	3,658	.1440	–	27	66	23	0,6	36	6
TDS402A03700	TDS412A03700	3,700	.1457	–	–	66	23	0,6	36	6
TDS402A03734	TDS412A03734	3,734	.1470	–	26	66	23	0,6	36	6
TDS402A03800	TDS412A03800	3,800	.1496	–	–	74	29	0,6	36	6
TDS402A03900	TDS412A03900	3,900	.1535	–	–	74	29	0,6	36	6
TDS402A03970	TDS412A03970	3,970	.1563	5/32	–	74	29	0,7	36	6
TDS402A04000	TDS412A04000	4,000	.1575	–	–	74	29	0,7	36	6
TDS402A04039	TDS412A04039	4,039	.1590	–	21	74	29	0,7	36	6
TDS402A04090	TDS412A04090	4,090	.1610	–	20	74	29	0,7	36	6
TDS402A04100	TDS412A04100	4,100	.1614	–	–	74	29	0,7	36	6
TDS402A04200	TDS412A04200	4,200	.1654	–	–	74	29	0,7	36	6
TDS402A04217	TDS412A04217	4,217	.1660	–	19	74	29	0,7	36	6
TDS402A04300	TDS412A04300	4,300	.1693	–	–	74	29	0,7	36	6
TDS402A04366	TDS412A04366	4,366	.1719	11/64	–	74	29	0,7	36	6
TDS402A04400	TDS412A04400	4,400	.1732	–	–	74	29	0,7	36	6
TDS402A04500	TDS412A04500	4,500	.1772	–	–	74	29	0,7	36	6
TDS402A04600	TDS412A04600	4,600	.1811	–	–	74	29	0,8	36	6
TDS402A04623	TDS412A04623	4,623	.1820	–	14	74	29	0,8	36	6
TDS402A04700	TDS412A04700	4,700	.1850	–	13	74	29	0,8	36	6
TDS402A04763	TDS412A04763	4,763	.1875	3/16	–	82	35	0,8	36	6
TDS402A04800	TDS412A04800	4,800	.1890	–	12	82	35	0,8	36	6
TDS402A04852	TDS412A04852	4,852	.1910	–	11	82	35	0,8	36	6
TDS402A04900	TDS412A04900	4,900	.1929	–	–	82	35	0,8	36	6
TDS402A05000	TDS412A05000	5,000	.1969	–	–	82	35	0,8	36	6
TDS402A05100	TDS412A05100	5,100	.2008	–	–	82	35	0,8	36	6
TDS402A05106	TDS412A05106	5,106	.2010	–	7	82	35	0,8	36	6
TDS402A05159	TDS412A05159	5,159	.2031	13/64	–	82	35	0,9	36	6
TDS402A05200	TDS412A05200	5,200	.2047	–	–	82	35	0,9	36	6

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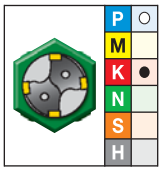
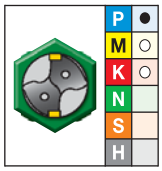
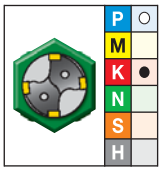
(TDS402A • TDS412A • 5 x D continued)

				D1 diameter						
TDS402A • WP20PD	TDS412A • WK15PD	mm	in	fraction	wire size	L	L4 max	L5	LS	D
TDS402A05300	TDS412A05300	5,300	.2087	–	–	82	35	0,9	36	6
TDS402A05400	TDS412A05400	5,400	.2126	–	–	82	35	0,9	36	6
TDS402A05410	TDS412A05410	5,410	.2130	–	3	82	35	0,9	36	6
TDS402A05500	TDS412A05500	5,500	.2165	–	–	82	35	0,9	36	6
TDS402A05558	TDS412A05558	5,558	.2188	7/32	–	82	35	0,9	36	6
TDS402A05600	TDS412A05600	5,600	.2205	–	–	82	35	0,9	36	6
TDS402A05616	TDS412A05616	5,616	.2211	–	2	82	35	0,9	36	6
TDS402A05700	TDS412A05700	5,700	.2244	–	–	82	35	1,0	36	6
TDS402A05800	TDS412A05800	5,800	.2283	–	–	82	35	1,0	36	6
TDS402A05900	TDS412A05900	5,900	.2323	–	–	82	35	1,0	36	6
TDS402A05954	TDS412A05954	5,954	.2344	15/64	–	82	35	1,0	36	6
TDS402A06000	TDS412A06000	6,000	.2362	–	–	82	35	1,0	36	6
TDS402A06100	TDS412A06100	6,100	.2402	–	–	91	43	1,0	36	8
TDS402A06200	TDS412A06200	6,200	.2441	–	–	91	43	1,0	36	8
TDS402A06300	TDS412A06300	6,300	.2480	–	–	91	43	1,1	36	8
TDS402A06350	TDS412A06350	6,350	.2500	1/4	E	91	43	1,1	36	8
TDS402A06400	TDS412A06400	6,400	.2520	–	–	91	43	1,1	36	8
TDS402A06500	TDS412A06500	6,500	.2559	–	–	91	43	1,1	36	8
TDS402A06528	TDS412A06528	6,528	.2570	–	F	91	43	1,1	36	8
TDS402A06600	TDS412A06600	6,600	.2598	–	–	91	43	1,1	36	8
TDS402A06630	TDS412A06630	6,630	.2610	–	G	91	43	1,1	36	8
TDS402A06700	TDS412A06700	6,700	.2638	–	–	91	43	1,1	36	8
TDS402A06746	TDS412A06746	6,746	.2656	17/64	–	91	43	1,1	36	8
TDS402A06800	TDS412A06800	6,800	.2677	–	–	91	43	1,1	36	8
TDS402A06900	TDS412A06900	6,900	.2717	–	–	91	43	1,2	36	8
TDS402A07000	TDS412A07000	7,000	.2756	–	–	91	43	1,2	36	8
TDS402A07100	TDS412A07100	7,100	.2795	–	–	91	43	1,2	36	8
TDS402A07145	TDS412A07145	7,145	.2813	9/32	–	91	43	1,2	36	8
TDS402A07200	TDS412A07200	7,200	.2835	–	–	91	43	1,2	36	8
TDS402A07300	TDS412A07300	7,300	.2874	–	–	91	43	1,2	36	8
TDS402A07400	TDS412A07400	7,400	.2913	–	–	91	43	1,3	36	8
TDS402A07500	TDS412A07500	7,500	.2953	–	–	91	43	1,3	36	8
TDS402A07541	TDS412A07541	7,541	.2969	19/64	–	91	43	1,3	36	8
TDS402A07600	TDS412A07600	7,600	.2992	–	–	91	43	1,3	36	8
TDS402A07700	TDS412A07700	7,700	.3031	–	–	91	43	1,3	36	8
TDS402A07800	TDS412A07800	7,800	.3071	–	–	91	43	1,3	36	8
TDS402A07900	TDS412A07900	7,900	.3110	–	–	91	43	1,3	36	8
TDS402A07938	TDS412A07938	7,938	.3125	5/16	–	91	43	1,3	36	8
TDS402A08000	TDS412A08000	8,000	.3150	–	–	91	43	1,4	36	8
TDS402A08100	TDS412A08100	8,100	.3189	–	–	103	49	1,4	40	10
TDS402A08200	TDS412A08200	8,200	.3228	–	–	103	49	1,4	40	10
TDS402A08300	TDS412A08300	8,300	.3268	–	–	103	49	1,4	40	10
TDS402A08334	TDS412A08334	8,334	.3281	21/64	–	103	49	1,4	40	10
TDS402A08400	TDS412A08400	8,400	.3307	–	–	103	49	1,4	40	10
TDS402A08433	TDS412A08433	8,433	.3320	–	Q	103	49	1,4	40	10
TDS402A08500	TDS412A08500	8,500	.3346	–	–	103	49	1,4	40	10
TDS402A08600	TDS412A08600	8,600	.3386	–	–	103	49	1,5	40	10
TDS402A08700	TDS412A08700	8,700	.3425	–	–	103	49	1,5	40	10
TDS402A08733	TDS412A08733	8,733	.3438	11/32	–	103	49	1,5	40	10
TDS402A08800	TDS412A08800	8,800	.3465	–	–	103	49	1,5	40	10

(continued)

(TDS402A • TDS412A • 5 x D continued)

		D1 diameter								
TDS402A • WP20PD	TDS412A • WK15PD	mm	in	fraction	wire size	L	L4 max	L5	LS	D
TDS402A08900	TDS412A08900	8,900	.3504	–	–	103	49	1,5	40	10
TDS402A09000	TDS412A09000	9,000	.3543	–	–	103	49	1,5	40	10
TDS402A09100	TDS412A09100	9,100	.3583	–	–	103	49	1,5	40	10
TDS402A09129	TDS412A09129	9,129	.3594	23/64	–	103	49	1,6	40	10
TDS402A09200	TDS412A09200	9,200	.3622	–	–	103	49	1,6	40	10
TDS402A09300	TDS412A09300	9,300	.3661	–	–	103	49	1,6	40	10
TDS402A09347	TDS412A09347	9,347	.3680	–	U	103	49	1,6	40	10
TDS402A09400	TDS412A09400	9,400	.3701	–	–	103	49	1,6	40	10
TDS402A09500	TDS412A09500	9,500	.3740	–	–	103	49	1,6	40	10
TDS402A09525	TDS412A09525	9,525	.3750	3/8	–	103	49	1,6	40	10
TDS402A09600	TDS412A09600	9,600	.3780	–	–	103	49	1,6	40	10
TDS402A09700	TDS412A09700	9,700	.3819	–	–	103	49	1,7	40	10
TDS402A09800	TDS412A09800	9,800	.3858	–	–	103	49	1,7	40	10
TDS402A09900	TDS412A09900	9,900	.3898	–	–	103	49	1,7	40	10
TDS402A09921	TDS412A09921	9,921	.3906	25/64	–	103	49	1,7	40	10
TDS402A10000	TDS412A10000	10,000	.3937	–	–	103	49	1,7	40	10
TDS402A10100	TDS412A10100	10,100	.3976	–	–	118	56	1,7	45	12
TDS402A10200	TDS412A10200	10,200	.4016	–	–	118	56	1,7	45	12
TDS402A10300	TDS412A10300	10,300	.4055	–	–	118	56	1,8	45	12
TDS402A10320	TDS412A10320	10,320	.4063	13/32	–	118	56	1,8	45	12
TDS402A10400	TDS412A10400	10,400	.4094	–	–	118	56	1,8	45	12
TDS402A10500	TDS412A10500	10,500	.4134	–	–	118	56	1,8	45	12
TDS402A10600	TDS412A10600	10,600	.4173	–	–	118	56	1,8	45	12
TDS402A10700	TDS412A10700	10,700	.4213	–	–	118	56	1,8	45	12
TDS402A10716	TDS412A10716	10,716	.4219	27/64	–	118	56	1,8	45	12
TDS402A10800	TDS412A10800	10,800	.4252	–	–	118	56	1,8	45	12
TDS402A10900	TDS412A10900	10,900	.4291	–	–	118	56	1,9	45	12
TDS402A11000	TDS412A11000	11,000	.4331	–	–	118	56	1,9	45	12
TDS402A11100	TDS412A11100	11,100	.4370	–	–	118	56	1,9	45	12
TDS402A11113	TDS412A11113	11,113	.4375	7/16	–	118	56	1,9	45	12
TDS402A11200	TDS412A11200	11,200	.4409	–	–	118	56	1,9	45	12
TDS402A11300	TDS412A11300	11,300	.4449	–	–	118	56	1,9	45	12
TDS402A11400	TDS412A11400	11,400	.4488	–	–	118	56	2,0	45	12
TDS402A11500	TDS412A11500	11,500	.4528	–	–	118	56	2,0	45	12
TDS402A11509	TDS412A11509	11,509	.4531	29/64	–	118	56	2,0	45	12
TDS402A11600	TDS412A11600	11,600	.4567	–	–	118	56	2,0	45	12
TDS402A11700	TDS412A11700	11,700	.4606	–	–	118	56	2,0	45	12
TDS402A11800	TDS412A11800	11,800	.4646	–	–	118	56	2,0	45	12
TDS402A11900	TDS412A11900	11,900	.4685	–	–	118	56	2,0	45	12
TDS402A11908	TDS412A11908	11,908	.4688	15/32	–	118	56	2,0	45	12
TDS402A12000	TDS412A12000	12,000	.4724	–	–	118	56	2,1	45	12
TDS402A12100	TDS412A12100	12,100	.4764	–	–	124	60	2,1	45	14
TDS402A12200	TDS412A12200	12,200	.4803	–	–	124	60	2,1	45	14
TDS402A12300	TDS412A12300	12,300	.4843	–	–	124	60	2,1	45	14
TDS402A12304	TDS412A12304	12,304	.4844	31/64	–	124	60	2,1	45	14
TDS402A12400	TDS412A12400	12,400	.4882	–	–	124	60	2,1	45	14
TDS402A12500	TDS412A12500	12,500	.4921	–	–	124	60	2,1	45	14
TDS402A12600	TDS412A12600	12,600	.4961	–	–	124	60	2,2	45	14
TDS402A12700	TDS412A12700	12,700	.5000	1/2	–	124	60	2,2	45	14
TDS402A12800	TDS412A12800	12,800	.5039	–	–	124	60	2,2	45	14
TDS402A12900	TDS412A12900	12,900	.5079	–	–	124	60	2,2	45	14

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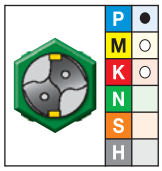
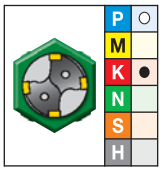
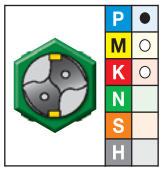
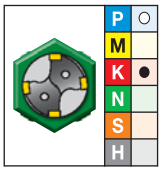
(TDS402A • TDS412A • 5 x D continued)

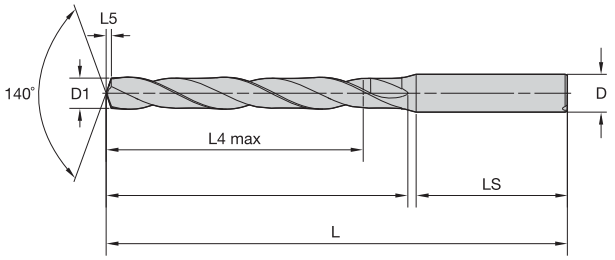
		D1 diameter								
TDS402A • WP20PD	TDS412A • WK15PD	mm	in	fraction	wire size	L	L4 max	L5	LS	D
TDS402A13000	TDS412A13000	13,000	.5118	–	–	124	60	2,2	45	14
TDS402A13096	TDS412A13096	13,096	.5156	33/64	–	124	60	2,3	45	14
TDS402A13100	TDS412A13100	13,100	.5157	–	–	124	60	2,3	45	14
TDS402A13200	TDS412A13200	13,200	.5197	–	–	124	60	2,3	45	14
TDS402A13300	TDS412A13300	13,300	.5236	–	–	124	60	2,3	45	14
TDS402A13400	TDS412A13400	13,400	.5276	–	–	124	60	2,3	45	14
TDS402A13500	TDS412A13500	13,500	.5315	–	–	124	60	2,3	45	14
TDS402A13600	TDS412A13600	13,600	.5354	–	–	124	60	2,3	45	14
TDS402A13700	TDS412A13700	13,700	.5394	–	–	124	60	2,4	45	14
TDS402A13800	TDS412A13800	13,800	.5433	–	–	124	60	2,4	45	14
TDS402A13891	TDS412A13891	13,891	.5469	35/64	–	124	60	2,4	45	14
TDS402A13900	TDS412A13900	13,900	.5472	–	–	124	60	2,4	45	14
TDS402A14000	TDS412A14000	14,000	.5512	–	–	124	60	2,4	45	14
TDS402A14100	TDS412A14100	14,100	.5551	–	–	133	63	2,4	48	16
TDS402A14200	TDS412A14200	14,200	.5591	–	–	133	63	2,5	48	16
TDS402A14288	TDS412A14288	14,288	.5625	9/16	–	133	63	2,5	48	16
TDS402A14300	TDS412A14300	14,300	.5630	–	–	133	63	2,5	48	16
TDS402A14400	TDS412A14400	14,400	.5669	–	–	133	63	2,5	48	16
TDS402A14500	TDS412A14500	14,500	.5709	–	–	133	63	2,5	48	16
TDS402A14600	TDS412A14600	14,600	.5748	–	–	133	63	2,5	48	16
TDS402A14684	TDS412A14684	14,684	.5781	37/64	–	133	63	2,5	48	16
TDS402A14700	TDS412A14700	14,700	.5787	–	–	133	63	2,5	48	16
TDS402A14800	TDS412A14800	14,800	.5827	–	–	133	63	2,6	48	16
TDS402A14900	TDS412A14900	14,900	.5866	–	–	133	63	2,6	48	16
TDS402A15000	TDS412A15000	15,000	.5906	–	–	133	63	2,6	48	16
TDS402A15083	TDS412A15083	15,083	.5938	19/32	–	133	63	2,6	48	16
TDS402A15100	TDS412A15100	15,100	.5945	–	–	133	63	2,6	48	16
TDS402A15200	TDS412A15200	15,200	.5984	–	–	133	63	2,6	48	16
TDS402A15300	TDS412A15300	15,300	.6024	–	–	133	63	2,6	48	16
TDS402A15400	TDS412A15400	15,400	.6063	–	–	133	63	2,7	48	16
TDS402A15479	TDS412A15479	15,479	.6094	39/64	–	133	63	2,7	48	16
TDS402A15500	TDS412A15500	15,500	.6102	–	–	133	63	2,7	48	16
TDS402A15600	TDS412A15600	15,600	.6142	–	–	133	63	2,7	48	16
TDS402A15700	TDS412A15700	15,700	.6181	–	–	133	63	2,7	48	16
TDS402A15800	TDS412A15800	15,800	.6220	–	–	133	63	2,7	48	16
TDS402A15875	TDS412A15875	15,875	.6250	5/8	–	133	63	2,7	48	16
TDS402A15900	TDS412A15900	15,900	.6260	–	–	133	63	2,8	48	16
TDS402A16000	TDS412A16000	16,000	.6299	–	–	133	63	2,8	48	16
TDS402A16100	TDS412A16100	16,100	.6339	–	–	143	71	2,8	48	18
TDS402A16200	TDS412A16200	16,200	.6378	–	–	143	71	2,8	48	18
TDS402A16271	TDS412A16271	16,271	.6406	41/64	–	143	71	2,8	48	18
TDS402A16300	TDS412A16300	16,300	.6417	–	–	143	71	2,8	48	18
TDS402A16400	TDS412A16400	16,400	.6457	–	–	143	71	2,8	48	18
TDS402A16500	TDS412A16500	16,500	.6496	–	–	143	71	2,9	48	18
TDS402A16600	TDS412A16600	16,600	.6535	–	–	143	71	2,9	48	18
TDS402A16670	TDS412A16670	16,670	.6563	21/32	–	143	71	2,9	48	18
TDS402A16700	TDS412A16700	16,700	.6575	–	–	143	71	2,9	48	18
TDS402A16800	TDS412A16800	16,800	.6614	–	–	143	71	2,9	48	18
TDS402A16900	TDS412A16900	16,900	.6654	–	–	143	71	2,9	48	18
TDS402A17000	TDS412A17000	17,000	.6693	–	–	143	71	2,9	48	18

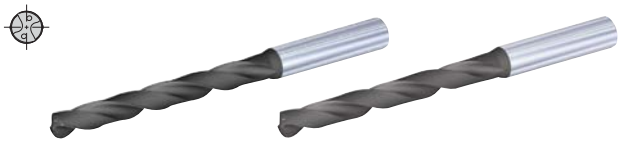
(continued)

(TDS402A • TDS412A • 5 x D continued)

		D1 diameter								
TDS402A • WP20PD	TDS412A • WK15PD	mm	in	fraction	wire size	L	L4 max	L5	LS	D
TDS402A17100	**TDS412A17100**	17,100	.6732	—	—	143	71	3,0	48	18
TDS402A17200	**TDS412A17200**	17,200	.6772	—	—	143	71	3,0	48	18
TDS402A17300	**TDS412A17300**	17,300	.6811	—	—	143	71	3,0	48	18
TDS402A17400	**TDS412A17400**	17,400	.6850	—	—	143	71	3,0	48	18
TDS402A17463	**TDS412A17463**	17,463	.6875	11/16	—	143	71	3,0	48	18
TDS402A17500	**TDS412A17500**	17,500	.6890	—	—	143	71	3,0	48	18
TDS402A17600	**TDS412A17600**	17,600	.6929	—	—	143	71	3,1	48	18
TDS402A17700	**TDS412A17700**	17,700	.6969	—	—	143	71	3,1	48	18
TDS402A17800	**TDS412A17800**	17,800	.7008	—	—	143	71	3,1	48	18
TDS402A17859	**TDS412A17859**	17,859	.7031	45/64	—	143	71	3,1	48	18
TDS402A17900	**TDS412A17900**	17,900	.7047	—	—	143	71	3,1	48	18
TDS402A18000	**TDS412A18000**	18,000	.7087	—	—	143	71	3,1	48	18
TDS402A18100	**TDS412A18100**	18,100	.7126	—	—	153	77	3,1	50	20
TDS402A18200	**TDS412A18200**	18,200	.7165	—	—	153	77	3,2	50	20
TDS402A18258	**TDS412A18258**	18,258	.7188	23/32	—	153	77	3,2	50	20
TDS402A18300	**TDS412A18300**	18,300	.7205	—	—	153	77	3,2	50	20
TDS402A18400	**TDS412A18400**	18,400	.7244	—	—	153	77	3,2	50	20
TDS402A18500	**TDS412A18500**	18,500	.7283	—	—	153	77	3,2	50	20
TDS402A18600	**TDS412A18600**	18,600	.7323	—	—	153	77	3,2	50	20
TDS402A18654	**TDS412A18654**	18,654	.7344	47/64	—	153	77	3,2	50	20
TDS402A18700	**TDS412A18700**	18,700	.7362	—	—	153	77	3,2	50	20
TDS402A18800	**TDS412A18800**	18,800	.7402	—	—	153	77	3,3	50	20
TDS402A18900	**TDS412A18900**	18,900	.7441	—	—	153	77	3,3	50	20
TDS402A19000	**TDS412A19000**	19,000	.7480	—	—	153	77	3,3	50	20
TDS402A19050	**TDS412A19050**	19,050	.7500	3/4	—	153	77	3,3	50	20
TDS402A19100	**TDS412A19100**	19,100	.7520	—	—	153	77	3,3	50	20
TDS402A19200	**TDS412A19200**	19,200	.7559	—	—	153	77	3,3	50	20
TDS402A19300	**TDS412A19300**	19,300	.7598	—	—	153	77	3,4	50	20
TDS402A19400	**TDS412A19400**	19,400	.7638	—	—	153	77	3,4	50	20
TDS402A19500	**TDS412A19500**	19,500	.7677	—	—	153	77	3,4	50	20
TDS402A19600	**TDS412A19600**	19,600	.7717	—	—	153	77	3,4	50	20
TDS402A19700	**TDS412A19700**	19,700	.7756	—	—	153	77	3,4	50	20
TDS402A19800	**TDS412A19800**	19,800	.7795	—	—	153	77	3,4	50	20
TDS402A19900	**TDS412A19900**	19,900	.7835	—	—	153	77	3,5	50	20
TDS402A20000	**TDS412A20000**	20,000	.7874	—	—	153	77	3,5	50	20

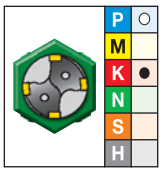
NOTE: L4 max, L5, L, LS, and D table columns reflect millimeter measurements.





● first choice
○ alternate choice

■ TDS403A • TDS413A • 8 x D

		D1 diameter								
TDS403A • WP20PD	TDS413A • WK15PD	mm	in	fraction	wire size	L	L4 max	L5	LS	D
TDS403A03000	TDS413A03000	3,000	.1181	–	–	78	33	0,5	36	6
TDS403A03048	TDS413A03048	3,048	.1200	–	31	78	33	0,5	36	6
TDS403A03100	TDS413A03100	3,100	.1220	–	–	78	33	0,5	36	6
TDS403A03175	TDS413A03175	3,175	.1250	1/8	–	78	33	0,5	36	6
TDS403A03200	TDS413A03200	3,200	.1260	–	–	78	33	0,5	36	6
TDS403A03264	TDS413A03264	3,264	.1285	–	30	78	33	0,5	36	6
TDS403A03300	TDS413A03300	3,300	.1299	–	–	78	33	0,5	36	6
TDS403A03400	TDS413A03400	3,400	.1339	–	–	78	33	0,6	36	6
TDS403A03455	TDS413A03455	3,455	.1360	–	29	78	33	0,6	36	6
TDS403A03500	TDS413A03500	3,500	.1378	–	–	78	33	0,6	36	6
TDS403A03571	TDS413A03571	3,571	.1406	9/64	–	78	33	0,6	36	6
TDS403A03600	TDS413A03600	3,600	.1417	–	–	78	33	0,6	36	6
TDS403A03658	TDS413A03658	3,658	.1440	–	27	78	33	0,6	36	6
TDS403A03700	TDS413A03700	3,700	.1457	–	–	78	33	0,6	36	6
TDS403A03734	TDS413A03734	3,734	.1470	–	26	78	33	0,6	36	6
TDS403A03800	TDS413A03800	3,800	.1496	–	–	87	41	0,6	36	6
TDS403A03900	TDS413A03900	3,900	.1535	–	–	87	41	0,6	36	6
TDS403A03970	TDS413A03970	3,970	.1563	5/32	–	87	41	0,7	36	6
TDS403A04000	TDS413A04000	4,000	.1575	–	–	87	41	0,7	36	6
TDS403A04039	TDS413A04039	4,039	.1590	–	21	87	41	0,7	36	6
TDS403A04090	TDS413A04090	4,090	.1610	–	20	87	41	0,7	36	6
TDS403A04100	TDS413A04100	4,100	.1614	–	–	87	41	0,7	36	6
TDS403A04200	TDS413A04200	4,200	.1654	–	–	87	41	0,7	36	6
TDS403A04217	TDS413A04217	4,217	.1660	–	19	87	41	0,7	36	6
TDS403A04300	TDS413A04300	4,300	.1693	–	–	87	41	0,7	36	6
TDS403A04366	TDS413A04366	4,366	.1719	11/64	–	87	41	0,7	36	6
TDS403A04400	TDS413A04400	4,400	.1732	–	–	87	41	0,7	36	6
TDS403A04500	TDS413A04500	4,500	.1772	–	–	87	41	0,7	36	6
TDS403A04600	TDS413A04600	4,600	.1811	–	–	87	41	0,8	36	6
TDS403A04623	TDS413A04623	4,623	.1820	–	14	87	41	0,8	36	6
TDS403A04700	TDS413A04700	4,700	.1850	–	13	87	41	0,8	36	6
TDS403A04763	TDS413A04763	4,763	.1875	3/16	–	94	48	0,8	36	6
TDS403A04800	TDS413A04800	4,800	.1890	–	12	94	48	0,8	36	6
TDS403A04852	TDS413A04852	4,852	.1910	–	11	94	48	0,8	36	6
TDS403A04900	TDS413A04900	4,900	.1929	–	–	94	48	0,8	36	6
TDS403A05000	TDS413A05000	5,000	.1969	–	–	94	48	0,8	36	6
TDS403A05100	TDS413A05100	5,100	.2008	–	–	94	48	0,8	36	6
TDS403A05106	TDS413A05106	5,106	.2010	–	7	94	48	0,8	36	6
TDS403A05159	TDS413A05159	5,159	.2031	13/64	–	94	48	0,9	36	6
TDS403A05200	TDS413A05200	5,200	.2047	–	–	94	48	0,9	36	6

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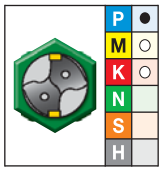
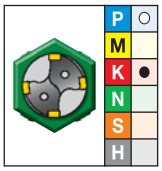
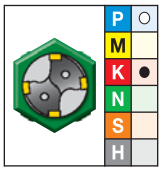
				D1 diameter						
TDS403A • WP20PD	TDS413A • WK15PD	mm	in	fraction	wire size	L	L4 max	L5	LS	D
TDS403A05300	TDS413A05300	5,300	.2087	–	–	94	48	0,9	36	6
TDS403A05400	TDS413A05400	5,400	.2126	–	–	94	48	0,9	36	6
TDS403A05410	TDS413A05410	5,410	.2130	–	3	94	48	0,9	36	6
TDS403A05500	TDS413A05500	5,500	.2165	–	–	94	48	0,9	36	6
TDS403A05558	TDS413A05558	5,558	.2188	7/32	–	94	48	0,9	36	6
TDS403A05600	TDS413A05600	5,600	.2205	–	–	94	48	0,9	36	6
TDS403A05616	TDS413A05616	5,616	.2211	–	2	94	48	0,9	36	6
TDS403A05700	TDS413A05700	5,700	.2244	–	–	94	48	1,0	36	6
TDS403A05800	TDS413A05800	5,800	.2283	–	–	94	48	1,0	36	6
TDS403A05900	TDS413A05900	5,900	.2323	–	–	94	48	1,0	36	6
TDS403A05954	TDS413A05954	5,954	.2344	15/64	–	94	48	1,0	36	6
TDS403A06000	TDS413A06000	6,000	.2362	–	–	94	48	1,0	36	6
TDS403A06100	TDS413A06100	6,100	.2402	–	–	105	57	1,0	36	8
TDS403A06200	TDS413A06200	6,200	.2441	–	–	105	57	1,0	36	8
TDS403A06300	TDS413A06300	6,300	.2480	–	–	105	57	1,1	36	8
TDS403A06350	TDS413A06350	6,350	.2500	1/4	E	105	57	1,1	36	8
TDS403A06400	TDS413A06400	6,400	.2520	–	–	105	57	1,1	36	8
TDS403A06500	TDS413A06500	6,500	.2559	–	–	105	57	1,1	36	8
TDS403A06528	TDS413A06528	6,528	.2570	–	F	105	57	1,1	36	8
TDS403A06600	TDS413A06600	6,600	.2598	–	–	105	57	1,1	36	8
TDS403A06630	TDS413A06630	6,630	.2610	–	G	105	57	1,1	36	8
TDS403A06700	TDS413A06700	6,700	.2638	–	–	105	57	1,1	36	8
TDS403A06746	TDS413A06746	6,746	.2656	17/64	–	105	57	1,1	36	8
TDS403A06800	TDS413A06800	6,800	.2677	–	–	105	57	1,1	36	8
TDS403A06900	TDS413A06900	6,900	.2717	–	–	105	57	1,2	36	8
TDS403A07000	TDS413A07000	7,000	.2756	–	–	105	57	1,2	36	8
TDS403A07100	TDS413A07100	7,100	.2795	–	–	110	61	1,2	36	8
TDS403A07145	TDS413A07145	7,145	.2813	9/32	–	110	61	1,2	36	8
TDS403A07200	TDS413A07200	7,200	.2835	–	–	110	61	1,2	36	8
TDS403A07300	TDS413A07300	7,300	.2874	–	–	110	61	1,2	36	8
TDS403A07400	TDS413A07400	7,400	.2913	–	–	110	61	1,3	36	8
TDS403A07500	TDS413A07500	7,500	.2953	–	–	110	61	1,3	36	8
TDS403A07541	TDS413A07541	7,541	.2969	19/64	–	110	61	1,3	36	8
TDS403A07600	TDS413A07600	7,600	.2992	–	–	110	61	1,3	36	8
TDS403A07700	TDS413A07700	7,700	.3031	–	–	110	61	1,3	36	8
TDS403A07800	TDS413A07800	7,800	.3071	–	–	110	61	1,3	36	8
TDS403A07900	TDS413A07900	7,900	.3110	–	–	110	61	1,3	36	8
TDS403A07938	TDS413A07938	7,938	.3125	5/16	–	110	61	1,3	36	8
TDS403A08000	TDS413A08000	8,000	.3150	–	–	110	61	1,4	36	8
TDS403A08100	TDS413A08100	8,100	.3189	–	–	122	68	1,4	40	10
TDS403A08200	TDS413A08200	8,200	.3228	–	–	122	68	1,4	40	10
TDS403A08300	TDS413A08300	8,300	.3268	–	–	122	68	1,4	40	10
TDS403A08334	TDS413A08334	8,334	.3281	21/64	–	122	68	1,4	40	10
TDS403A08400	TDS413A08400	8,400	.3307	–	–	122	68	1,4	40	10
TDS403A08433	TDS413A08433	8,433	.3320	–	Q	122	68	1,4	40	10
TDS403A08500	TDS413A08500	8,500	.3346	–	–	122	68	1,4	40	10
TDS403A08600	TDS413A08600	8,600	.3386	–	–	122	68	1,5	40	10
TDS403A08700	TDS413A08700	8,700	.3425	–	–	122	68	1,5	40	10
TDS403A08733	TDS413A08733	8,733	.3438	11/32	–	122	68	1,5	40	10
TDS403A08800	TDS413A08800	8,800	.3465	–	–	122	68	1,5	40	10
TDS403A08900	TDS413A08900	8,900	.3504	–	–	122	68	1,5	40	10
TDS403A09000	TDS413A09000	9,000	.3543	–	–	122	68	1,5	40	10

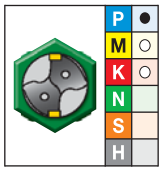
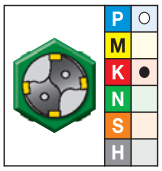
(continued)

(TDS403A • TDS413A • 8 x D continued)

										
				D1 diameter						
TDS403A • WP20PD	TDS413A • WK15PD	mm	in	fraction	wire size	L	L4 max	L5	LS	D
TDS403A09100	TDS413A09100	9,100	.3583	–	–	122	68	1,5	40	10
TDS403A09129	TDS413A09129	9,129	.3594	23/64	–	122	68	1,6	40	10
TDS403A09200	TDS413A09200	9,200	.3622	–	–	122	68	1,6	40	10
TDS403A09300	TDS413A09300	9,300	.3661	–	–	122	68	1,6	40	10
TDS403A09347	TDS413A09347	9,347	.3680	–	U	122	68	1,6	40	10
TDS403A09400	TDS413A09400	9,400	.3701	–	–	122	68	1,6	40	10
TDS403A09500	TDS413A09500	9,500	.3740	–	–	122	68	1,6	40	10
TDS403A09525	TDS413A09525	9,525	.3750	3/8	–	122	68	1,6	40	10
TDS403A09600	TDS413A09600	9,600	.3780	–	–	122	68	1,6	40	10
TDS403A09700	TDS413A09700	9,700	.3819	–	–	122	68	1,7	40	10
TDS403A09800	TDS413A09800	9,800	.3858	–	–	122	68	1,7	40	10
TDS403A09900	TDS413A09900	9,900	.3898	–	–	122	68	1,7	40	10
TDS403A09921	TDS413A09921	9,921	.3906	25/64	–	122	68	1,7	40	10
TDS403A10000	TDS413A10000	10,000	.3937	–	–	122	68	1,7	40	10
TDS403A10100	TDS413A10100	10,100	.3976	–	–	141	79	1,7	45	12
TDS403A10200	TDS413A10200	10,200	.4016	–	–	141	79	1,7	45	12
TDS403A10300	TDS413A10300	10,300	.4055	–	–	141	79	1,8	45	12
TDS403A10320	TDS413A10320	10,320	.4063	13/32	–	141	79	1,8	45	12
TDS403A10400	TDS413A10400	10,400	.4094	–	–	141	79	1,8	45	12
TDS403A10500	TDS413A10500	10,500	.4134	–	–	141	79	1,8	45	12
TDS403A10600	TDS413A10600	10,600	.4173	–	–	141	79	1,8	45	12
TDS403A10700	TDS413A10700	10,700	.4213	–	–	141	79	1,8	45	12
TDS403A10716	TDS413A10716	10,716	.4219	27/64	–	141	79	1,8	45	12
TDS403A10800	TDS413A10800	10,800	.4252	–	–	141	79	1,8	45	12
TDS403A10900	TDS413A10900	10,900	.4291	–	–	141	79	1,9	45	12
TDS403A11000	TDS413A11000	11,000	.4331	–	–	141	79	1,9	45	12
TDS403A11100	TDS413A11100	11,100	.4370	–	–	141	79	1,9	45	12
TDS403A11113	TDS413A11113	11,113	.4375	7/16	–	141	79	1,9	45	12
TDS403A11200	TDS413A11200	11,200	.4409	–	–	141	79	1,9	45	12
TDS403A11300	TDS413A11300	11,300	.4449	–	–	141	79	1,9	45	12
TDS403A11400	TDS413A11400	11,400	.4488	–	–	141	79	2,0	45	12
TDS403A11500	TDS413A11500	11,500	.4528	–	–	141	79	2,0	45	12
TDS403A11509	TDS413A11509	11,509	.4531	29/64	–	141	79	2,0	45	12
TDS403A11600	TDS413A11600	11,600	.4567	–	–	141	79	2,0	45	12
TDS403A11700	TDS413A11700	11,700	.4606	–	–	141	79	2,0	45	12
TDS403A11800	TDS413A11800	11,800	.4646	–	–	141	79	2,0	45	12
TDS403A11900	TDS413A11900	11,900	.4685	–	–	141	79	2,0	45	12
TDS403A11908	TDS413A11908	11,908	.4688	15/32	–	141	79	2,0	45	12
TDS403A12000	TDS413A12000	12,000	.4724	–	–	141	79	2,1	45	12
TDS403A12100	TDS413A12100	12,100	.4764	–	–	155	91	2,1	45	14
TDS403A12200	TDS413A12200	12,200	.4803	–	–	155	91	2,1	45	14
TDS403A12300	TDS413A12300	12,300	.4843	–	–	155	91	2,1	45	14
TDS403A12304	TDS413A12304	12,304	.4844	31/64	–	155	91	2,1	45	14
TDS403A12400	TDS413A12400	12,400	.4882	–	–	155	91	2,1	45	14
TDS403A12500	TDS413A12500	12,500	.4921	–	–	155	91	2,1	45	14
TDS403A12600	TDS413A12600	12,600	.4961	–	–	155	91	2,2	45	14
TDS403A12700	TDS413A12700	12,700	.5000	1/2	–	155	91	2,2	45	14
TDS403A12800	TDS413A12800	12,800	.5039	–	–	155	91	2,2	45	14
TDS403A12900	TDS413A12900	12,900	.5079	–	–	155	91	2,2	45	14
TDS403A13000	TDS413A13000	13,000	.5118	–	–	155	91	2,2	45	14
TDS403A13096	TDS413A13096	13,096	.5156	33/64	–	155	91	2,3	45	14

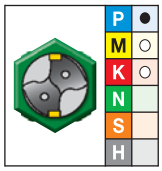
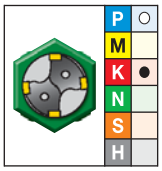
(continued)

(TDS403A • TDS413A • 8 x D continued)

		D1 diameter								
TDS403A • WP20PD	TDS413A • WK15PD	mm	in	fraction	wire size	L	L4 max	L5	LS	D
TDS403A13100	TDS413A13100	13,100	.5157	–	–	155	91	2,3	45	14
TDS403A13200	TDS413A13200	13,200	.5197	–	–	155	91	2,3	45	14
TDS403A13300	TDS413A13300	13,300	.5236	–	–	155	91	2,3	45	14
TDS403A13400	TDS413A13400	13,400	.5276	–	–	155	91	2,3	45	14
TDS403A13500	TDS413A13500	13,500	.5315	–	–	155	91	2,3	45	14
TDS403A13600	TDS413A13600	13,600	.5354	–	–	155	91	2,3	45	14
TDS403A13700	TDS413A13700	13,700	.5394	–	–	155	91	2,4	45	14
TDS403A13800	TDS413A13800	13,800	.5433	–	–	155	91	2,4	45	14
TDS403A13891	TDS413A13891	13,891	.5469	35/64	–	155	91	2,4	45	14
TDS403A13900	TDS413A13900	13,900	.5472	–	–	155	91	2,4	45	14
TDS403A14000	TDS413A14000	14,000	.5512	–	–	155	91	2,4	45	14
TDS403A14100	TDS413A14100	14,100	.5551	–	–	171	101	2,4	48	16
TDS403A14200	TDS413A14200	14,200	.5591	–	–	171	101	2,5	48	16
TDS403A14288	TDS413A14288	14,288	.5625	9/16	–	171	101	2,5	48	16
TDS403A14300	TDS413A14300	14,300	.5630	–	–	171	101	2,5	48	16
TDS403A14400	TDS413A14400	14,400	.5669	–	–	171	101	2,5	48	16
TDS403A14500	TDS413A14500	14,500	.5709	–	–	171	101	2,5	48	16
TDS403A14600	TDS413A14600	14,600	.5748	–	–	171	101	2,5	48	16
TDS403A14684	TDS413A14684	14,684	.5781	37/64	–	171	101	2,5	48	16
TDS403A14700	TDS413A14700	14,700	.5787	–	–	171	101	2,5	48	16
TDS403A14800	TDS413A14800	14,800	.5827	–	–	171	101	2,6	48	16
TDS403A14900	TDS413A14900	14,900	.5866	–	–	171	101	2,6	48	16
TDS403A15000	TDS413A15000	15,000	.5906	–	–	171	101	2,6	48	16
TDS403A15083	TDS413A15083	15,083	.5938	19/32	–	171	101	2,6	48	16
TDS403A15100	TDS413A15100	15,100	.5945	–	–	171	101	2,6	48	16
TDS403A15200	TDS413A15200	15,200	.5984	–	–	171	101	2,6	48	16
TDS403A15300	TDS413A15300	15,300	.6024	–	–	171	101	2,6	48	16
TDS403A15400	TDS413A15400	15,400	.6063	–	–	171	101	2,7	48	16
TDS403A15479	TDS413A15479	15,479	.6094	39/64	–	171	101	2,7	48	16
TDS403A15500	TDS413A15500	15,500	.6102	–	–	171	101	2,7	48	16
TDS403A15600	TDS413A15600	15,600	.6142	–	–	171	101	2,7	48	16
TDS403A15700	TDS413A15700	15,700	.6181	–	–	171	101	2,7	48	16
TDS403A15800	TDS413A15800	15,800	.6220	–	–	171	101	2,7	48	16
TDS403A15875	TDS413A15875	15,875	.6250	5/8	–	171	101	2,7	48	16
TDS403A15900	TDS413A15900	15,900	.6260	–	–	171	101	2,8	48	16
TDS403A16000	TDS413A16000	16,000	.6299	–	–	171	101	2,8	48	16
TDS403A16100	TDS413A16100	16,100	.6339	–	–	185	113	2,8	48	18
TDS403A16200	TDS413A16200	16,200	.6378	–	–	185	113	2,8	48	18
TDS403A16271	TDS413A16271	16,271	.6406	41/64	–	185	113	2,8	48	18
TDS403A16300	TDS413A16300	16,300	.6417	–	–	185	113	2,8	48	18
TDS403A16400	TDS413A16400	16,400	.6457	–	–	185	113	2,8	48	18
TDS403A16500	TDS413A16500	16,500	.6496	–	–	185	113	2,9	48	18
TDS403A16600	TDS413A16600	16,600	.6535	–	–	185	113	2,9	48	18
TDS403A16670	TDS413A16670	16,670	.6563	21/32	–	185	113	2,9	48	18
TDS403A16700	TDS413A16700	16,700	.6575	–	–	185	113	2,9	48	18
TDS403A16800	TDS413A16800	16,800	.6614	–	–	185	113	2,9	48	18
TDS403A16900	TDS413A16900	16,900	.6654	–	–	185	113	2,9	48	18
TDS403A17000	TDS413A17000	17,000	.6693	–	–	185	113	2,9	48	18
TDS403A17100	TDS413A17100	17,100	.6732	–	–	185	113	3,0	48	18
TDS403A17200	TDS413A17200	17,200	.6772	–	–	185	113	3,0	48	18
TDS403A17300	TDS413A17300	17,300	.6811	–	–	185	113	3,0	48	18
TDS403A17400	TDS413A17400	17,400	.6850	–	–	185	113	3,0	48	18

(continued)

(TDS403A • TDS413A • 8 x D continued)

		D1 diameter								
TDS403A • WP20PD	TDS413A • WK15PD	mm	in	fraction	wire size	L	L4 max	L5	LS	D
TDS403A17463	TDS413A17463	17,463	.6875	11/16	–	185	113	3,0	48	18
TDS403A17500	TDS413A17500	17,500	.6890	–	–	185	113	3,0	48	18
TDS403A17600	TDS413A17600	17,600	.6929	–	–	185	113	3,1	48	18
TDS403A17700	TDS413A17700	17,700	.6969	–	–	185	113	3,1	48	18
TDS403A17800	TDS413A17800	17,800	.7008	–	–	185	113	3,1	48	18
TDS403A17859	TDS413A17859	17,859	.7031	45/64	–	185	113	3,1	48	18
TDS403A17900	TDS413A17900	17,900	.7047	–	–	185	113	3,1	48	18
TDS403A18000	TDS413A18000	18,000	.7087	–	–	185	113	3,1	48	18
TDS403A18100	TDS413A18100	18,100	.7126	–	–	200	124	3,1	50	20
TDS403A18200	TDS413A18200	18,200	.7165	–	–	200	124	3,2	50	20
TDS403A18258	TDS413A18258	18,258	.7188	23/32	–	200	124	3,2	50	20
TDS403A18300	TDS413A18300	18,300	.7205	–	–	200	124	3,2	50	20
TDS403A18400	TDS413A18400	18,400	.7244	–	–	200	124	3,2	50	20
TDS403A18500	TDS413A18500	18,500	.7283	–	–	200	124	3,2	50	20
TDS403A18600	TDS413A18600	18,600	.7323	–	–	200	124	3,2	50	20
TDS403A18654	TDS413A18654	18,654	.7344	47/64	–	200	124	3,2	50	20
TDS403A18700	TDS413A18700	18,700	.7362	–	–	200	124	3,2	50	20
TDS403A18800	TDS413A18800	18,800	.7402	–	–	200	124	3,3	50	20
TDS403A18900	TDS413A18900	18,900	.7441	–	–	200	124	3,3	50	20
TDS403A19000	TDS413A19000	19,000	.7480	–	–	200	124	3,3	50	20
TDS403A19050	TDS413A19050	19,050	.7500	3/4	–	200	124	3,3	50	20
TDS403A19100	TDS413A19100	19,100	.7520	–	–	200	124	3,3	50	20
TDS403A19200	TDS413A19200	19,200	.7559	–	–	200	124	3,3	50	20
TDS403A19300	TDS413A19300	19,300	.7598	–	–	200	124	3,4	50	20
TDS403A19400	TDS413A19400	19,400	.7638	–	–	200	124	3,4	50	20
TDS403A19500	TDS413A19500	19,500	.7677	–	–	200	124	3,4	50	20
TDS403A19600	TDS413A19600	19,600	.7717	–	–	200	124	3,4	50	20
TDS403A19700	TDS413A19700	19,700	.7756	–	–	200	124	3,4	50	20
TDS403A19800	TDS413A19800	19,800	.7795	–	–	200	124	3,4	50	20
TDS403A19900	TDS413A19900	19,900	.7835	–	–	200	124	3,5	50	20
TDS403A20000	TDS413A20000	20,000	.7874	–	–	200	124	3,5	50	20

NOTE: L4 max, L5, L, LS, and D table columns reflect millimeter measurements.

Metric Tolerance			Inch Tolerance		
Nominal Size Range	D1 Tolerance	D Tolerance h6	Nominal size range	D1 Tolerance	D Tolerance h6
1–3	0,000/-0,014 (h8)	0,000/-0,006	.0394–.1181	.0000/-.0006 (h8)	.0000/-.0002
>3–6	0,000/-0,012 (h7)	0,000/-0,008	>.1181–.2362	.0000/-.0005 (h7)	.0000/-.0003
>6–10	0,000/-0,015 (h7)	0,000/-0,009	>.2362–.3937	.0000/-.0006 (h7)	.0000/-.0004
>10–18	0,000/-0,018 (h7)	0,000/-0,011	>.3937–.7087	.0000/-.0007 (h7)	.0000/-.0004
>18–20	0,000/-0,021 (h7)	0,000/-0,013	>.7087–.7874	.0000/-.0008 (h7)	.0000/-.0005

TOP DRILL S • TDS202 Series • WP20PD • Flood Coolant

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

TOP DRILL S • TDS202 Series • WP20PD • Flood Coolant

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

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

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

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

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

TOP DRILL S • TDS212 Series • WK15PD • Flood Coolant

	Group	Cutting Speed — vc Range — m/min min	max	Tool Diameter	Recommended Feed Rate (fz) 1,0	2,0	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
K	15, 16	70 –	170	mm/r	0,11 – 0,22	0,12 – 0,24	0,16 – 0,31	0,20 – 0,38	0,23 – 0,44	0,25 – 0,49	0,31 – 0,60	0,38 – 0,74	0,31 – 0,60	0,38 – 0,74
	17, 18, 19	80 –	140	mm/r	0,12 – 0,16	0,13 – 0,19	0,16 – 0,25	0,20 – 0,31	0,23 – 0,36	0,25 – 0,40	0,31 – 0,48	0,38 – 0,60	0,31 – 0,48	0,38 – 0,60
	20	70 –	130	mm/r	0,08 – 0,17	0,09 – 0,19	0,12 – 0,25	0,14 – 0,30	0,17 – 0,35	0,19 – 0,40	0,24 – 0,48	0,30 – 0,60	0,24 – 0,48	0,30 – 0,60

TOP DRILL S • TDS212 Series • WK15PD • Flood Coolant

	Group	Cutting Speed — vc Range — SFM min	max	Tool Diameter	Recommended Feed Rate (fz) .125 • 1/8	.188 • 3/16	.250 • 1/4	.313 • 5/16	.375 • 3/8	.500 • 1/2	.625 • 5/8	.750 • 3/4
K	15, 16	230 -	560	ipr	.004 – .009	.005 – .009	.006 – .012	.008 – .015	.009 – .017	.010 – .019	.012 – .024	.015 – .029
	17, 18, 19	260 -	460	ipr	.005 – .006	.005 – .007	.006 – .010	.008 – .012	.009 – .014	.010 – .016	.012 – .019	.015 – .024
	20	230 -	430	ipr	.003 – .007	.004 – .007	.005 – .010	.006 – .012	.007 – .014	.007 – .016	.009 – .019	.012 – .024

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

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

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

	Group	Cutting Speed — vc Range — SFM min	max	Tool Diameter	Recommended Feed Rate (fz) 0.125 • 1/8	0.188 • 3/16	0.250 • 1/4	0.313 • 5/16	0.375 • 3/8	0.500 • 1/2	0.625 • 5/8	0.750 • 3/4
K	15, 16	260 –	620	ipr	.004 – .009	.005 – .009	.006 – .012	.008 – .015	.009 – .017	.010 – .019	.012 – .024	.015 – .029
	17, 18, 19	300 –	560	ipr	.005 – .006	.005 – .007	.006 – .010	.008 – .012	.009 – .014	.010 – .016	.012 – .019	.015 – .024
	20	260 –	490	ipr	.003 – .007	.004 – .007	.005 – .010	.006 – .012	.007 – .014	.007 – .016	.009 – .019	.012 – .024

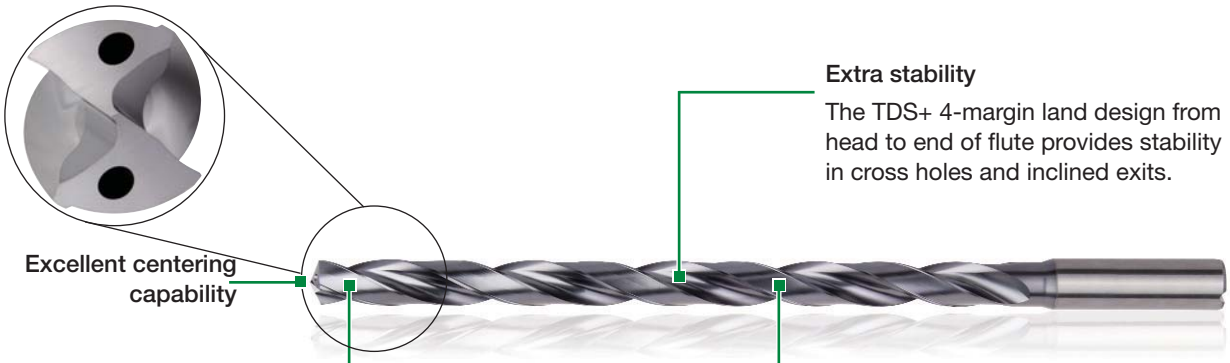
Superior Deep Hole Drilling • **WIDIA™ TOP DRILL S+™ 12 x D**

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

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

TOP DRILL S+™ 12 x D

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



Excellent centering capability

Extra stability

The TDS+ 4-margin land design from head to end of flute provides stability in cross holes and inclined exits.

Minimized chip jamming

Special gash and flute form for effective chip formation across a variety of materials.

Easy chip evacuation

The TDS+ utilizes the same technology developed for WIDIA-Rübig™ deep hole drills. The polished surface enables effective chip evacuation from deep holes.

Improved Productivity

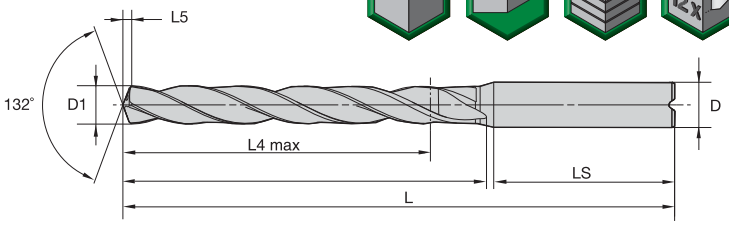
- Excellent centering capability — the new TDS+ 12 x D point is engineered to provide excellent centering capability.
- No pilot drill required — save time and money by reducing the number of steps required for your 12 x D application.

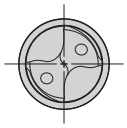
Increased Tool Life

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

WIDIA Advantage

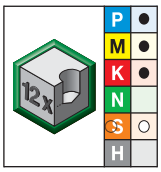
- Lower cost per hole due to high MRR and long tool life.
- Consistent performance from internally controlled supply chain: Powder > Rod > Grinding > Coating
- Part of the complete WIDIA holemaking solution.
- Get more predictable results from local regrind services using OEM standards to recondition,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





● first choice
○ alternate choice

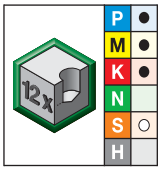
■ TDS504A • 12 x D



TDS504A • WU20PD	D1 diameter mm	in	fraction	wire size	L	L4 max	L5	LS	D
TDS504A03000	3,000	.1181	–	–	93	44	0,6	36	6
TDS504A03175	3,175	.1250	1/8	–	93	44	0,7	36	6
TDS504A03264	3,264	.1285	–	30	93	44	0,7	36	6
TDS504A03455	3,455	.1360	–	29	93	44	0,7	36	6
TDS504A03500	3,500	.1378	–	–	93	44	0,7	36	6
TDS504A03734	3,734	.1470	–	26	93	45	0,8	36	6
TDS504A03970	3,970	.1563	5/32	–	107	56	0,8	36	6
TDS504A04000	4,000	.1575	–	–	107	56	0,8	36	6
TDS504A04500	4,500	.1772	–	–	107	56	0,9	36	6
TDS504A04600	4,600	.1811	–	–	107	57	1,0	36	6
TDS504A04763	4,763	.1875	3/16	–	125	69	1,0	36	6
TDS504A04800	4,800	.1890	–	12	125	69	1,0	36	6
TDS504A05000	5,000	.1969	–	–	125	70	1,1	36	6
TDS504A05100	5,100	.2008	–	–	125	70	1,1	36	6
TDS504A05200	5,200	.2047	–	–	125	70	1,1	36	6
TDS504A05300	5,300	.2087	–	–	125	71	1,1	36	6
TDS504A05410	5,410	.2130	–	3	125	71	1,1	36	6
TDS504A05500	5,500	.2165	–	–	125	71	1,2	36	6
TDS504A05558	5,558	.2188	7/32	–	125	71	1,2	36	6
TDS504A05600	5,600	.2205	–	–	125	72	1,2	36	6
TDS504A05700	5,700	.2244	–	–	125	72	1,2	36	6
TDS504A05800	5,800	.2283	–	–	125	71	1,2	36	6
TDS504A06000	6,000	.2362	–	–	125	72	1,3	36	6
TDS504A06200	6,200	.2441	–	–	139	82	1,3	36	8
TDS504A06350	6,350	.2500	1/4	E	139	83	1,3	36	8
TDS504A06500	6,500	.2559	–	–	139	83	1,4	36	8
TDS504A06528	6,528	.2570	–	F	139	83	1,4	36	8
TDS504A06600	6,600	.2598	–	–	139	84	1,4	36	8
TDS504A06746	6,746	.2656	17/64	–	139	83	1,4	36	8
TDS504A06800	6,800	.2677	–	–	139	83	1,4	36	8
TDS504A06909	6,909	.2720	–	I	139	84	1,5	36	8
TDS504A07000	7,000	.2756	–	–	139	84	1,5	36	8
TDS504A07145	7,145	.2813	9/32	–	153	94	1,5	36	8
TDS504A07500	7,500	.2953	–	–	153	95	1,6	36	8
TDS504A07541	7,541	.2969	19/64	–	153	95	1,6	36	8
TDS504A07700	7,700	.3031	–	–	153	96	1,6	36	8
TDS504A07800	7,800	.3071	–	–	153	95	1,7	36	8
TDS504A07938	7,938	.3125	5/16	–	153	96	1,7	36	8
TDS504A08000	8,000	.3150	–	–	153	96	1,7	36	8
TDS504A08100	8,100	.3189	–	–	185	116	1,7	40	10
TDS504A08334	8,334	.3281	21/64	–	185	117	1,8	40	10
TDS504A08433	8,433	.3320	–	Q	185	117	1,8	40	10

(continued)

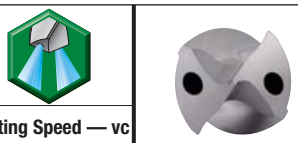
(TDS504A • 12 x D continued)



TDS504A • WU20PD	mm	in	D1 diameter fraction	wire size	L	L4 max	L5	LS	D
TDS504A08500	8,500	.3346	–	–	185	117	1,8	40	10
TDS504A08700	8,700	.3425	–	–	185	118	1,9	40	10
TDS504A08733	8,733	.3438	11/32	–	185	117	1,9	40	10
TDS504A09000	9,000	.3543	–	–	185	118	1,9	40	10
TDS504A09100	9,100	.3583	–	–	185	118	1,9	40	10
TDS504A09129	9,129	.3594	23/64	–	185	118	1,9	40	10
TDS504A09347	9,347	.3680	–	U	185	119	2,0	40	10
TDS504A09500	9,500	.3740	–	–	185	119	2,0	40	10
TDS504A09525	9,525	.3750	3/8	–	185	119	2,0	40	10
TDS504A09921	9,921	.3906	25/64	–	185	120	2,1	40	10
TDS504A10000	10,000	.3937	–	–	185	120	2,1	40	10
TDS504A10200	10,200	.4016	–	–	218	140	2,2	45	12
TDS504A10300	10,300	.4055	–	–	218	141	2,2	45	12
TDS504A10320	10,320	.4063	13/32	–	218	141	2,2	45	12
TDS504A10500	10,500	.4134	–	–	218	141	2,2	45	12
TDS504A10716	10,716	.4219	27/64	–	218	142	2,3	45	12
TDS504A10800	10,800	.4252	–	–	218	141	2,3	45	12
TDS504A11000	11,000	.4331	–	–	218	142	2,4	45	12
TDS504A11113	11,113	.4375	7/16	–	218	142	2,4	45	12
TDS504A11500	11,500	.4528	–	–	218	143	2,5	45	12
TDS504A11800	11,800	.4646	–	–	218	143	2,5	45	12
TDS504A12000	12,000	.4724	–	–	218	144	2,6	45	12
TDS504A12100	12,100	.4764	–	–	246	164	2,6	45	14
TDS504A12304	12,304	.4844	31/64	–	246	165	2,6	45	14
TDS504A12700	12,700	.5000	1/2	–	246	166	2,7	45	14
TDS504A13000	13,000	.5118	–	–	246	166	2,8	45	14
TDS504A13100	13,100	.5157	–	–	246	166	2,8	45	14
TDS504A13500	13,500	.5315	–	–	246	167	2,9	45	14
TDS504A14000	14,000	.5512	–	–	246	168	3,0	45	14
TDS504A14100	14,100	.5551	–	–	277	188	3,0	48	16
TDS504A14288	14,288	.5625	9/16	–	277	188	3,1	48	16
TDS504A14500	14,500	.5709	–	–	277	189	3,1	48	16
TDS504A14684	14,684	.5781	37/64	–	277	190	3,2	48	16
TDS504A15000	15,000	.5906	–	–	277	190	3,2	48	16
TDS504A15500	15,500	.6102	–	–	277	191	3,3	48	16
TDS504A15875	15,875	.6250	5/8	–	277	192	3,4	48	16
TDS504A16000	16,000	.6299	–	–	277	192	3,4	48	16
TDS504A16500	16,500	.6496	–	–	305	213	3,6	48	18
TDS504A17000	17,000	.6693	–	–	305	214	3,7	48	18
TDS504A17463	17,463	.6875	11/16	–	305	215	3,8	48	18
TDS504A17500	17,500	.6890	–	–	305	215	3,8	48	18
TDS504A18000	18,000	.7087	–	–	305	216	3,9	48	18
TDS504A18500	18,500	.7283	–	–	334	237	4,0	50	20
TDS504A19000	19,000	.7480	–	–	334	238	4,1	50	20
TDS504A19050	19,050	.7500	3/4	–	334	239	4,1	50	20
TDS504A19500	19,500	.7677	–	–	334	239	4,2	50	20
TDS504A20000	20,000	.7874	–	–	334	240	4,3	50	20

NOTE: L4 max, L5, L, LS, and D table columns reflect millimeter measurements.

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



Group		Cutting Speed — vc Range — SFM min		max	Tool Diameter	Recommended Feed Rate (fz) .125 • 1/8	.188 • 3/16	.250 • 1/4	.313 • 5/16	.375 • 3/8	.500 • 1/2	.625 • 5/8	.750 • 3/4
P	1	300	-	460	IPR	.004 - .006	.005 - .008	.006 - .001	.007 - .011	.009 - .012	.009 - .015	.010 - .018	.012 - .021
	2, 3, 4, 6, 7	230	-	360	IPR	.004 - .006	.004 - .007	.005 - .010	.008 - .012	.009 - .014	.010 - .018	.012 - .023	.014 - .027
	5, 9, 10, 11	230	-	360	IPR	.004 - .006	.005 - .008	.006 - .001	.007 - .011	.011 - .012	.008 - .015	.010 - .018	.012 - .021
	12, 13	200	-	300	IPR	.003 - .005	.004 - .007	.005 - .007	.006 - .008	.006 - .010	.007 - .012	.008 - .015	.010 - .016
M	14.1	200	-	160	IPR	.004 - .006	.008 - .011	.011 - .015	.014 - .015	.014 - .019	.016 - .022	.020 - .027	.022 - .030
	14.3	160	-	200	IPR	.004 - .006	.007 - .010	.011 - .014	.013 - .016	.014 - .020	.016 - .022	.019 - .025	.021 - .027
K	15, 16	260	-	460	IPR	.004 - .005	.005 - .008	.008 - .012	.011 - .014	.012 - .016	.013 - .018	.015 - .021	.016 - .023
	17, 18, 19	230	-	390	IPR	.001 - .003	.002 - .004	.003 - .004	.004 - .006	.004 - .007	.004 - .007	.005 - .010	.007 - .011
	20	230	-	430	IPR	.001 - .003	.002 - .005	.003 - .007	.004 - .008	.005 - .008	.005 - .009	.006 - .010	.007 - .011
N	21	330	-	980	IPR	.004 - .007	.005 - .008	.006 - .010	.008 - .012	.010 - .014	.012 - .016	.014 - .020	.016 - .024
	22, 23, 24	330	-	980	IPR	.004 - .008	.005 - .010	.006 - .012	.008 - .014	.010 - .016	.012 - .018	.014 - .022	.016 - .026
	25	330	-	980	IPR	.006 - .007	.006 - .008	.007 - .010	.008 - .012	.010 - .014	.012 - .016	.014 - .020	.016 - .022
	26, 27, 28	330	-	820	IPR	.004 - .008	.005 - .010	.006 - .012	.008 - .014	.010 - .016	.012 - .018	.014 - .020	.016 - .024

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

Group		Cutting Speed — vc Range — m/min min		max	Tool Diameter	Recommended Feed Rate (fz) 3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	1	90	-	140	mm/r	0,11 - 0,16	0,13 - 0,21	0,16 - 0,02	0,19 - 0,27	0,22 - 0,31	0,24 - 0,38	0,25 - 0,47	0,31 - 0,52
	2, 3, 4, 6, 7	70	-	110	mm/r	0,11 - 0,16	0,11 - 0,19	0,13 - 0,24	0,21 - 0,30	0,22 - 0,35	0,25 - 0,47	0,31 - 0,59	0,36 - 0,70
	5, 9, 10, 11	70	-	110	mm/r	0,11 - 0,16	0,13 - 0,21	0,16 - 0,02	0,19 - 0,27	0,27 - 0,31	0,21 - 0,38	0,25 - 0,47	0,31 - 0,52
	12, 13	60	-	90	mm/r	0,08 - 0,13	0,10 - 0,19	0,13 - 0,19	0,16 - 0,21	0,16 - 0,24	0,19 - 0,31	0,21 - 0,38	0,24 - 0,42
M	14.1	60	-	50	mm/r	0,11 - 0,16	0,20 - 0,28	0,28 - 0,39	0,35 - 0,39	0,35 - 0,49	0,41 - 0,56	0,50 - 0,70	0,56 - 0,77
	14.3	50	-	60	mm/r	0,11 - 0,16	0,19 - 0,24	0,27 - 0,36	0,33 - 0,42	0,35 - 0,50	0,42 - 0,56	0,47 - 0,64	0,52 - 0,70
K	15, 16	80	-	140	mm/r	0,10 - 0,14	0,14 - 0,20	0,21 - 0,30	0,27 - 0,36	0,31 - 0,42	0,33 - 0,47	0,39 - 0,53	0,42 - 0,58
	17, 18, 19	70	-	120	mm/r	0,03 - 0,07	0,06 - 0,09	0,07 - 0,11	0,09 - 0,15	0,10 - 0,17	0,11 - 0,19	0,14 - 0,24	0,18 - 0,27
	20	70	-	130	mm/r	0,03 - 0,07	0,06 - 0,13	0,07 - 0,18	0,10 - 0,20	0,12 - 0,21	0,13 - 0,22	0,15 - 0,24	0,18 - 0,27
N	21	100	-	300	mm/r	0,10 - 0,18	0,12 - 0,20	0,15 - 0,25	0,20 - 0,30	0,25 - 0,35	0,30 - 0,40	0,35 - 0,50	0,40 - 0,60
	22, 23, 24	100	-	300	mm/r	0,10 - 0,20	0,12 - 0,25	0,15 - 0,30	0,20 - 0,35	0,25 - 0,40	0,30 - 0,45	0,35 - 0,55	0,40 - 0,65
	25	100	-	300	mm/r	0,15 - 0,18	0,16 - 0,20	0,18 - 0,25	0,20 - 0,30	0,25 - 0,35	0,30 - 0,40	0,35 - 0,50	0,40 - 0,55
	26, 27, 28	100	-	250	mm/r	0,10 - 0,20	0,12 - 0,25	0,15 - 0,30	0,20 - 0,35	0,25 - 0,40	0,30 - 0,45	0,35 - 0,50	0,40 - 0,60

	vintage series	Replacement		vintage series	Replacement		Deep Hole Drilling
bold = standard non-bold = simple special	*WIDIA-Rübig™ **WIDIA-Hanita™ †WIDIA-Metal Removal™	WIDIA VariDrill™	WIDIA TOP DRILL™ S/S+/G	*WIDIA-Rübig **WIDIA-Hanita	WIDIA VariDrill™	WIDIA TOP DRILL™ S/S+/G	WIDIA WIDIA-Rübig
P — Steel		3 x D - VDS201A 3 x D - VDS201F 5 x D - VDS202A 5 x D - VDS202F	3 x D - 170500 5 x D - TDS202A		3 x D - VDS401A 3 x D - VDS401F 5 x D - VDS402A 5 x D - VDS402F 8 x D - VDS403A 8 x D - VDS403F	3 x D - TDS401A 5 x D - TDS402A 8 x D - TDS403A	12 x D - TDS504A 15 x D - H101* 20 x D - H102* 25 x D - H103* 30 x D - H104*
M — Stainless Steel		3 x D - VDS201A 3 x D - VDS201F 5 x D - VDS202A 5 x D - VDS202F	3 x D - 170500 5 x D - TDS202A	3 x D - 412522 (A)* 3 x D - 412520 (F)* 5 x D - 412527 (A)* 5 x D - 412525 (F)* 8 x D - 412834 (A)* 8 x D - 412833 (F)*	3 x D - VDS401A 3 x D - VDS401F 5 x D - VDS402A 5 x D - VDS402F 8 x D - VDS403A 8 x D - VDS403F	3 x D - TDS401A 5 x D - TDS402A 8 x D - TDS403A	12 x D - TDS504A 15 x D - H101* 20 x D - H102* 25 x D - H103* 30 x D - H104*
K — Cast Iron	Series A 3-flute*	3 x D - VDS201A 3 x D - VDS201F 5 x D - VDS202A 5 x D - VDS202F	3 x D - 170500 5 x D - TDS212A		3 x D - VDS401A 3 x D - VDS401F 5 x D - VDS402A 5 x D - VDS402F 8 x D - VDS403A 8 x D - VDS403F	3 x D - TDS411A 5 x D - TDS412A 8 x D - TDS413A	12 x D - TDS504A 15 x D - H101* 20 x D - H102* 25 x D - H103* 30 x D - H104*
N — Non-Ferrous	3 x D - M159** 5 x D - M169** 3 x D - 517113 *Type WDT** Series A 3-flute†	3 x D - VDS201A 3 x D - VDS201F 5 x D - VDS202A 5 x D - VDS202F		3 x D - M259** 5 x D - M269**	3 x D - VDS401A 3 x D - VDS401F 5 x D - VDS402A 5 x D - VDS402F 8 x D - VDS403A 8 x D - VDS403F	5 x D - TDG531A 8 x D - TDG532A 12 x D - TDG533A	H10 uncoated, sharp
S — Heat-Resistant Alloys, Titanium Alloys		3 x D - VDS201A 3 x D - VDS201F 5 x D - VDS202A 5 x D - VDS202F	3 x D - 170500	3 x D - 412522 (A)* 3 x D - 412520 (F)* 5 x D - 412527 (A)* 5 x D - 412525 (F)* 8 x D - 412834 (A)* 8 x D - 412833 (F)*	3 x D - VDS401A 3 x D - VDS401F 5 x D - VDS402A 5 x D - VDS402F 8 x D - VDS403A 8 x D - VDS403F	3 x D - 170501 5 x D - 170502 8 x D - 170503	12 x D - TDS504A 15 x D - H101* 20 x D - H102* 25 x D - H103* 30 x D - H104*
H — Hard Materials	3 x D - M155**			7 x D - 412518 (A)*			

Difficult Drilling Applications • **WIDIA™ TOP DRILL G™**

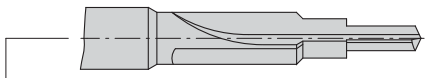
TOP DRILL G is WIDIA's solution for difficult drilling applications. Designed specifically for non-ferrous materials, TDG can be used on challenging applications with tighter hole tolerance, inclined planes, intersecting holes, and cored holes. The design of these drills also makes them appropriate for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

TOP DRILL G™

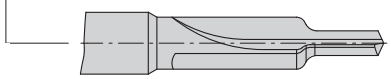
- Next generation of GGX WIDIA-Rübig™ series.
- Targeted for aluminum and non-ferrous materials.
- Can be used in challenging conditions.
- Good for multistep drills.

Eliminate operations

Special designs possible for multistage drilling and tight tolerance capabilities.



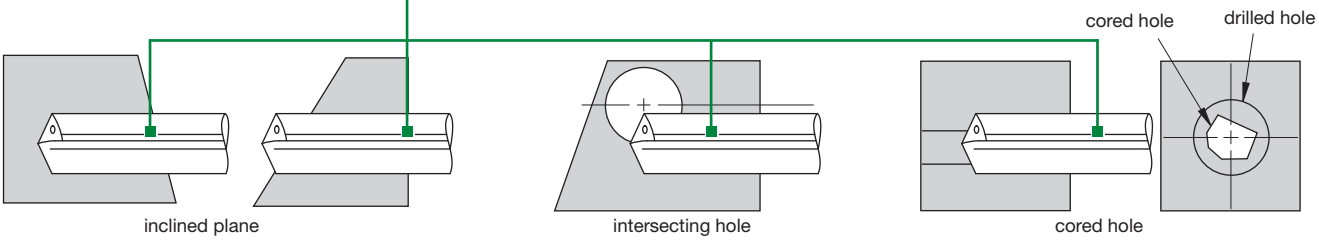
multistage drill (special)



profile drilling tools (special)

Excellent stability

The TDG design enables it to be used for even the toughest non-ferrous drilling applications.



inclined plane

intersecting hole

cored hole

TOP DRILL G Design

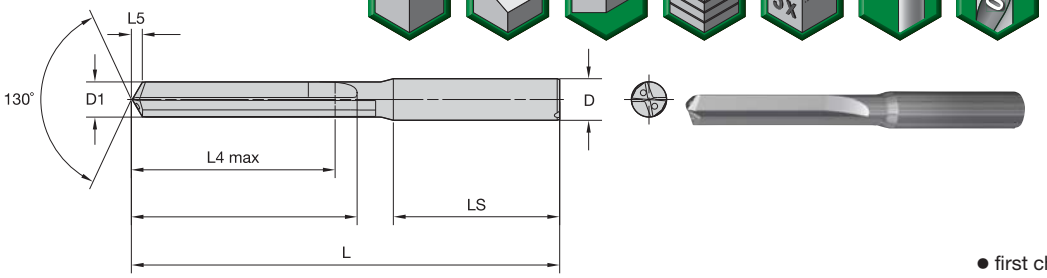
TDG is designed to handle the toughest non-ferrous drilling applications. The WK10HD™ Grade is the latest in application-specific technology. This advanced grade, combined with the TDG's optimal concentricity and safe transmission of torque, give it long tool life and extreme repeatability.

The design of TDG is optimized to evacuate "sticky" chips that result from drilling non-ferrous materials. Easily evacuating these difficult-to-remove chips results in better hole quality due to less heat and friction while drilling.

WIDIA™ Advantage

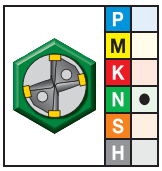
- Lower cost per hole due to high MRR and long tool life.
- Consistent performance from internally controlled supply chain:

  Powder > Rod > Grinding > Coating
- Part of the complete WIDIA holemaking solution.
- Get more predictable results from a local regrind services using OEM standards to recondition ensuring value throughout the entire life of the drill.
- Broad range of standard lengths, diameters, and coolant options in one line. Includes extensive intermediate metric, inch, fraction, and wire sizes, including tap drill sizes.



● first choice
○ alternate choice

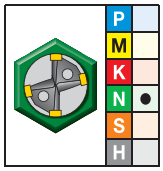
■ TDG532A • 5 x D



TDG532A • WN10HD	D1 diameter mm	in	fraction	wire size	L	L4 max	L5	LS	D
TDG532A03000	3,000	.1181	–	–	66	23	0,7	36	6
TDG532A03048	3,048	.1200	–	31	66	23	0,7	36	6
TDG532A03100	3,100	.1220	–	–	66	23	0,7	36	6
TDG532A03175	3,175	.1250	1/8	–	66	23	0,7	36	6
TDG532A03200	3,200	.1260	–	–	66	23	0,7	36	6
TDG532A03264	3,264	.1285	–	30	66	23	0,8	36	6
TDG532A03300	3,300	.1299	–	–	66	23	0,8	36	6
TDG532A03400	3,400	.1339	–	–	66	23	0,8	36	6
TDG532A03455	3,455	.1360	–	29	66	23	0,8	36	6
TDG532A03500	3,500	.1378	–	–	66	23	0,8	36	6
TDG532A03571	3,571	.1406	9/64	–	66	23	0,8	36	6
TDG532A03600	3,600	.1417	–	–	66	23	0,8	36	6
TDG532A03658	3,658	.1440	–	27	66	23	0,9	36	6
TDG532A03700	3,700	.1457	–	–	66	23	0,9	36	6
TDG532A03734	3,734	.1470	–	26	66	23	0,9	36	6
TDG532A03800	3,800	.1496	–	–	74	29	0,9	36	6
TDG532A03900	3,900	.1535	–	–	74	29	0,9	36	6
TDG532A03970	3,970	.1563	5/32	–	74	29	0,9	36	6
TDG532A04000	4,000	.1575	–	–	74	29	0,9	36	6
TDG532A04039	4,039	.1590	–	21	74	29	0,9	36	6
TDG532A04090	4,090	.1610	–	20	74	29	1,0	36	6
TDG532A04100	4,100	.1614	–	–	74	29	1,0	36	6
TDG532A04200	4,200	.1654	–	–	74	29	1,0	36	6
TDG532A04217	4,217	.1660	–	19	74	29	1,0	36	6
TDG532A04300	4,300	.1693	–	–	74	29	1,0	36	6
TDG532A04366	4,366	.1719	11/64	–	74	29	1,0	36	6
TDG532A04400	4,400	.1732	–	–	74	29	1,0	36	6
TDG532A04500	4,500	.1772	–	–	74	29	1,0	36	6
TDG532A04600	4,600	.1811	–	–	74	29	1,1	36	6
TDG532A04623	4,623	.1820	–	14	74	29	1,1	36	6
TDG532A04700	4,700	.1850	–	13	74	29	1,1	36	6
TDG532A04763	4,763	.1875	3/16	–	82	35	1,1	36	6
TDG532A04800	4,800	.1890	–	12	82	35	1,1	36	6
TDG532A04852	4,852	.1910	–	11	82	35	1,1	36	6
TDG532A04900	4,900	.1929	–	–	82	35	1,1	36	6
TDG532A05000	5,000	.1969	–	–	82	35	1,2	36	6
TDG532A05100	5,100	.2008	–	–	82	35	1,2	36	6
TDG532A05106	5,106	.2010	–	7	82	35	1,2	36	6
TDG532A05159	5,159	.2031	13/64	–	82	35	1,2	36	6
TDG532A05200	5,200	.2047	–	–	82	35	1,2	36	6

(continued)

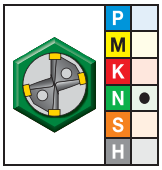
(TDG532A • 5 x D continued)



TDG532A • WN10HD	D1 diameter mm	in	fraction	wire size	L	L4 max	L5	LS	D
TDG532A05300	5,300	.2087	–	–	82	35	1,2	36	6
TDG532A05400	5,400	.2126	–	–	82	35	1,3	36	6
TDG532A05410	5,410	.2130	–	3	82	35	1,3	36	6
TDG532A05500	5,500	.2165	–	–	82	35	1,3	36	6
TDG532A05558	5,558	.2188	7/32	–	82	35	1,3	36	6
TDG532A05600	5,600	.2205	–	–	82	35	1,3	36	6
TDG532A05616	5,616	.2211	–	2	82	35	1,3	36	6
TDG532A05700	5,700	.2244	–	–	82	35	1,3	36	6
TDG532A05800	5,800	.2283	–	–	82	35	1,4	36	6
TDG532A05900	5,900	.2323	–	–	82	35	1,4	36	6
TDG532A05954	5,954	.2344	15/64	–	82	35	1,4	36	6
TDG532A06000	6,000	.2362	–	–	82	35	1,4	36	6
TDG532A06100	6,100	.2402	–	–	91	43	1,4	36	8
TDG532A06200	6,200	.2441	–	–	91	43	1,4	36	8
TDG532A06300	6,300	.2480	–	–	91	43	1,5	36	8
TDG532A06350	6,350	.2500	1/4	E	91	43	1,5	36	8
TDG532A06400	6,400	.2520	–	–	91	43	1,5	36	8
TDG532A06500	6,500	.2559	–	–	91	43	1,5	36	8
TDG532A06528	6,528	.2570	–	F	91	43	1,5	36	8
TDG532A06600	6,600	.2598	–	–	91	43	1,5	36	8
TDG532A06630	6,630	.2610	–	G	91	43	1,5	36	8
TDG532A06700	6,700	.2638	–	–	91	43	1,6	36	8
TDG532A06746	6,746	.2656	17/64	–	91	43	1,6	36	8
TDG532A06800	6,800	.2677	–	–	91	43	1,6	36	8
TDG532A06900	6,900	.2717	–	–	91	43	1,6	36	8
TDG532A07000	7,000	.2756	–	–	91	43	1,6	36	8
TDG532A07100	7,100	.2795	–	–	91	43	1,7	36	8
TDG532A07145	7,145	.2813	9/32	–	91	43	1,7	36	8
TDG532A07200	7,200	.2835	–	–	91	43	1,7	36	8
TDG532A07300	7,300	.2874	–	–	91	43	1,7	36	8
TDG532A07400	7,400	.2913	–	–	91	43	1,7	36	8
TDG532A07500	7,500	.2953	–	–	91	43	1,7	36	8
TDG532A07541	7,541	.2969	19/64	–	91	43	1,8	36	8
TDG532A07600	7,600	.2992	–	–	91	43	1,8	36	8
TDG532A07700	7,700	.3031	–	–	91	43	1,8	36	8
TDG532A07800	7,800	.3071	–	–	91	43	1,8	36	8
TDG532A07900	7,900	.3110	–	–	91	43	1,8	36	8
TDG532A07938	7,938	.3125	5/16	–	91	43	1,9	36	8
TDG532A08000	8,000	.3150	–	–	91	43	1,9	36	8
TDG532A08100	8,100	.3189	–	–	103	49	1,9	40	10
TDG532A08200	8,200	.3228	–	–	103	49	1,9	40	10
TDG532A08300	8,300	.3268	–	–	103	49	1,9	40	10
TDG532A08334	8,334	.3281	21/64	–	103	49	1,9	40	10
TDG532A08400	8,400	.3307	–	–	103	49	2,0	40	10
TDG532A08433	8,433	.3320	–	Q	103	49	2,0	40	10
TDG532A08500	8,500	.3346	–	–	103	49	2,0	40	10
TDG532A08600	8,600	.3386	–	–	103	49	2,0	40	10
TDG532A08700	8,700	.3425	–	–	103	49	2,0	40	10

(continued)

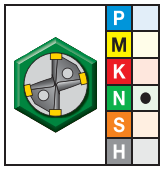
(TDG532A • 5 x D continued)



TDG532A • WN10HD	D1 diameter mm	in	fraction	wire size	L	L4 max	L5	LS	D
TDG532A08733	8,733	.3438	11/32	–	103	49	2,0	40	10
TDG532A08800	8,800	.3465	–	–	103	49	2,1	40	10
TDG532A08900	8,900	.3504	–	–	103	49	2,1	40	10
TDG532A09000	9,000	.3543	–	–	103	49	2,1	40	10
TDG532A09100	9,100	.3583	–	–	103	49	2,1	40	10
TDG532A09129	9,129	.3594	23/64	–	103	49	2,1	40	10
TDG532A09200	9,200	.3622	–	–	103	49	2,1	40	10
TDG532A09300	9,300	.3661	–	–	103	49	2,2	40	10
TDG532A09347	9,347	.3680	–	U	103	49	2,2	40	10
TDG532A09400	9,400	.3701	–	–	103	49	2,2	40	10
TDG532A09500	9,500	.3740	–	–	103	49	2,2	40	10
TDG532A09525	9,525	.3750	3/8	–	103	49	2,2	40	10
TDG532A09600	9,600	.3780	–	–	103	49	2,2	40	10
TDG532A09700	9,700	.3819	–	–	103	49	2,3	40	10
TDG532A09800	9,800	.3858	–	–	103	49	2,3	40	10
TDG532A09900	9,900	.3898	–	–	103	49	2,3	40	10
TDG532A09921	9,921	.3906	25/64	–	103	49	2,3	40	10
TDG532A10000	10,000	.3937	–	–	103	49	2,3	40	10
TDG532A10100	10,100	.3976	–	–	118	56	2,4	45	12
TDG532A10200	10,200	.4016	–	–	118	56	2,4	45	12
TDG532A10300	10,300	.4055	–	–	118	56	2,4	45	12
TDG532A10320	10,320	.4063	13/32	–	118	56	2,4	45	12
TDG532A10400	10,400	.4094	–	–	118	56	2,4	45	12
TDG532A10500	10,500	.4134	–	–	118	56	2,4	45	12
TDG532A10600	10,600	.4173	–	–	118	56	2,5	45	12
TDG532A10700	10,700	.4213	–	–	118	56	2,5	45	12
TDG532A10716	10,716	.4219	27/64	–	118	56	2,5	45	12
TDG532A10800	10,800	.4252	–	–	118	56	2,5	45	12
TDG532A10900	10,900	.4291	–	–	118	56	2,5	45	12
TDG532A11000	11,000	.4331	–	–	118	56	2,6	45	12
TDG532A11100	11,100	.4370	–	–	118	56	2,6	45	12
TDG532A11113	11,113	.4375	7/16	–	118	56	2,6	45	12
TDG532A11200	11,200	.4409	–	–	118	56	2,6	45	12
TDG532A11300	11,300	.4449	–	–	118	56	2,6	45	12
TDG532A11400	11,400	.4488	–	–	118	56	2,7	45	12
TDG532A11500	11,500	.4528	–	–	118	56	2,7	45	12
TDG532A11509	11,509	.4531	29/64	–	118	56	2,7	45	12
TDG532A11600	11,600	.4567	–	–	118	56	2,7	45	12
TDG532A11700	11,700	.4606	–	–	118	56	2,7	45	12
TDG532A11800	11,800	.4646	–	–	118	56	2,8	45	12
TDG532A11900	11,900	.4685	–	–	118	56	2,8	45	12
TDG532A11908	11,908	.4688	15/32	–	118	56	2,8	45	12
TDG532A12000	12,000	.4724	–	–	118	56	2,8	45	12
TDG532A12100	12,100	.4764	–	–	124	60	2,8	45	14
TDG532A12200	12,200	.4803	–	–	124	60	2,8	45	14
TDG532A12300	12,300	.4843	–	–	124	60	2,9	45	14
TDG532A12304	12,304	.4844	31/64	–	124	60	2,9	45	14
TDG532A12400	12,400	.4882	–	–	124	60	2,9	45	14

(continued)

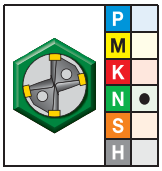
(TDG532A • 5 x D continued)



TDG532A • WN10HD	D1 diameter mm	in	fraction	wire size	L	L4 max	L5	LS	D
TDG532A12500	12,500	.4921	–	–	124	60	2,9	45	14
TDG532A12600	12,600	.4961	–	–	124	60	2,9	45	14
TDG532A12700	12,700	.5000	1/2	–	124	60	3,0	45	14
TDG532A12800	12,800	.5039	–	–	124	60	3,0	45	14
TDG532A12900	12,900	.5079	–	–	124	60	3,0	45	14
TDG532A13000	13,000	.5118	–	–	124	60	3,0	45	14
TDG532A13096	13,096	.5156	33/64	–	124	60	3,1	45	14
TDG532A13100	13,100	.5157	–	–	124	60	3,1	45	14
TDG532A13200	13,200	.5197	–	–	124	60	3,1	45	14
TDG532A13300	13,300	.5236	–	–	124	60	3,1	45	14
TDG532A13400	13,400	.5276	–	–	124	60	3,1	45	14
TDG532A13490	13,490	.5311	–	–	124	60	3,1	45	14
TDG532A13500	13,500	.5315	–	–	124	60	3,1	45	14
TDG532A13600	13,600	.5354	–	–	124	60	3,2	45	14
TDG532A13700	13,700	.5394	–	–	124	60	3,2	45	14
TDG532A13800	13,800	.5433	–	–	124	60	3,2	45	14
TDG532A13891	13,891	.5469	35/64	–	124	60	3,2	45	14
TDG532A13900	13,900	.5472	–	–	124	60	3,2	45	14
TDG532A14000	14,000	.5512	–	–	124	60	3,3	45	14
TDG532A14100	14,100	.5551	–	–	133	63	3,3	48	16
TDG532A14200	14,200	.5591	–	–	133	63	3,3	48	16
TDG532A14288	14,288	.5625	9/16	–	133	63	3,3	48	16
TDG532A14300	14,300	.5630	–	–	133	63	3,3	48	16
TDG532A14400	14,400	.5669	–	–	133	63	3,4	48	16
TDG532A14500	14,500	.5709	–	–	133	63	3,4	48	16
TDG532A14600	14,600	.5748	–	–	133	63	3,4	48	16
TDG532A14684	14,684	.5781	37/64	–	133	63	3,4	48	16
TDG532A14700	14,700	.5787	–	–	133	63	3,4	48	16
TDG532A14800	14,800	.5827	–	–	133	63	3,5	48	16
TDG532A14900	14,900	.5866	–	–	133	63	3,5	48	16
TDG532A15000	15,000	.5906	–	–	133	63	3,5	48	16
TDG532A15083	15,083	.5938	19/32	–	133	63	3,5	48	16
TDG532A15100	15,100	.5945	–	–	133	63	3,5	48	16
TDG532A15200	15,200	.5984	–	–	133	63	3,5	48	16
TDG532A15300	15,300	.6024	–	–	133	63	3,6	48	16
TDG532A15400	15,400	.6063	–	–	133	63	3,6	48	16
TDG532A15479	15,479	.6094	39/64	–	133	63	3,6	48	16
TDG532A15500	15,500	.6102	–	–	133	63	3,6	48	16
TDG532A15600	15,600	.6142	–	–	133	63	3,6	48	16
TDG532A15700	15,700	.6181	–	–	133	63	3,7	48	16
TDG532A15800	15,800	.6220	–	–	133	63	3,7	48	16
TDG532A15875	15,875	.6250	5/8	–	133	63	3,7	48	16
TDG532A15900	15,900	.6260	–	–	133	63	3,7	48	16
TDG532A16000	16,000	.6299	–	–	133	63	3,7	48	16
TDG532A16100	16,100	.6339	–	–	143	71	3,8	48	18
TDG532A16200	16,200	.6378	–	–	143	71	3,8	48	18
TDG532A16271	16,271	.6406	41/64	–	143	71	3,8	48	18
TDG532A16300	16,300	.6417	–	–	143	71	3,8	48	18

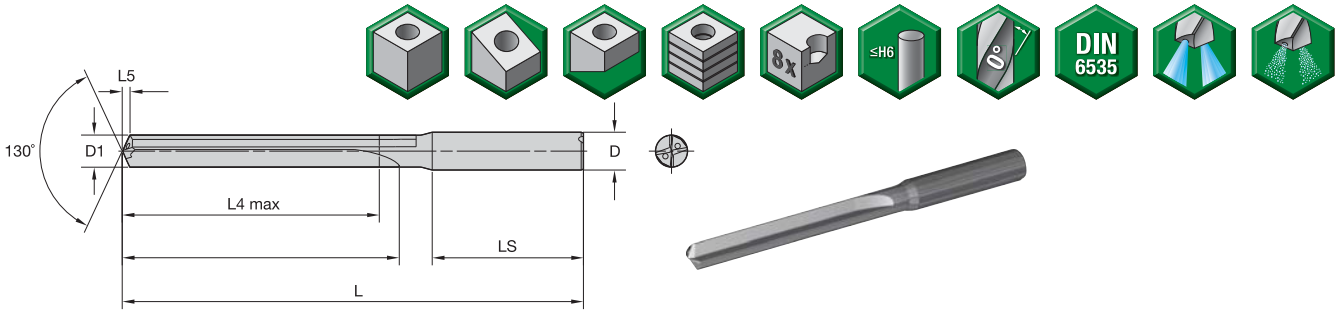
(continued)

(TDG532A • 5 x D continued)



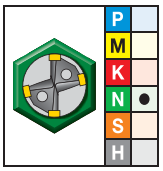
TDG532A • WN10HD	D1 diameter mm	in	fraction	wire size	L	L4 max	L5	LS	D
TDG532A16400	16,400	.6457	–	–	143	71	3,8	48	18
TDG532A16500	16,500	.6496	–	–	143	71	3,8	48	18
TDG532A16600	16,600	.6535	–	–	143	71	3,9	48	18
TDG532A16670	16,670	.6563	21/32	–	143	71	3,9	48	18
TDG532A16700	16,700	.6575	–	–	143	71	3,9	48	18
TDG532A16800	16,800	.6614	–	–	143	71	3,9	48	18
TDG532A16900	16,900	.6654	–	–	143	71	3,9	48	18
TDG532A17000	17,000	.6693	–	–	143	71	4,0	48	18
TDG532A17100	17,100	.6732	–	–	143	71	4,0	48	18
TDG532A17200	17,200	.6772	–	–	143	71	4,0	48	18
TDG532A17300	17,300	.6811	–	–	143	71	4,0	48	18
TDG532A17400	17,400	.6850	–	–	143	71	4,1	48	18
TDG532A17463	17,463	.6875	11/16	–	143	71	4,1	48	18
TDG532A17500	17,500	.6890	–	–	143	71	4,1	48	18
TDG532A17600	17,600	.6929	–	–	143	71	4,1	48	18
TDG532A17700	17,700	.6969	–	–	143	71	4,1	48	18
TDG532A17800	17,800	.7008	–	–	143	71	4,2	48	18
TDG532A17859	17,859	.7031	45/64	–	143	71	4,2	48	18
TDG532A17900	17,900	.7047	–	–	143	71	4,2	48	18
TDG532A18000	18,000	.7087	–	–	143	71	4,2	48	18
TDG532A18100	18,100	.7126	–	–	153	77	4,2	50	20
TDG532A18200	18,200	.7165	–	–	153	77	4,2	50	20
TDG532A18258	18,258	.7188	23/32	–	153	77	4,3	50	20
TDG532A18300	18,300	.7205	–	–	153	77	4,3	50	20
TDG532A18400	18,400	.7244	–	–	153	77	4,3	50	20
TDG532A18500	18,500	.7283	–	–	153	77	4,3	50	20
TDG532A18600	18,600	.7323	–	–	153	77	4,3	50	20
TDG532A18654	18,654	.7344	47/64	–	153	77	4,3	50	20
TDG532A18700	18,700	.7362	–	–	153	77	4,4	50	20
TDG532A18800	18,800	.7402	–	–	153	77	4,4	50	20
TDG532A18900	18,900	.7441	–	–	153	77	4,4	50	20
TDG532A19000	19,000	.7480	–	–	153	77	4,4	50	20
TDG532A19050	19,050	.7500	3/4	–	153	77	4,4	50	20
TDG532A19100	19,100	.7520	–	–	153	77	4,5	50	20
TDG532A19200	19,200	.7559	–	–	153	77	4,5	50	20
TDG532A19300	19,300	.7598	–	–	153	77	4,5	50	20
TDG532A19400	19,400	.7638	–	–	153	77	4,5	50	20
TDG532A19500	19,500	.7677	–	–	153	77	4,5	50	20
TDG532A19600	19,600	.7717	–	–	153	77	4,6	50	20
TDG532A19700	19,700	.7756	–	–	153	77	4,6	50	20
TDG532A19800	19,800	.7795	–	–	153	77	4,6	50	20
TDG532A19900	19,900	.7835	–	–	153	77	4,6	50	20
TDG532A20000	20,000	.7874	–	–	153	77	4,7	50	20
TDG532A21000	21,000	.8268	–	–	167	85	4,9	50	20
TDG532A22000	22,000	.8661	–	–	167	85	5,1	50	20
TDG532A23000	23,000	.9055	–	–	184	98	5,4	56	25

NOTE: L4 max, L5, L, LS, and D table columns reflect millimeter measurements.



● first choice
○ alternate choice

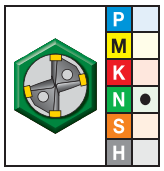
TDG533A • 8 x D



TDG533A • WN10HD	D1 diameter mm	in	fraction	wire size	L	L4 max	L5	LS	D
TDG533A03000	3,000	.1181	–	–	78	33	0,7	36	6
TDG533A03048	3,048	.1200	–	31	78	33	0,7	36	6
TDG533A03100	3,100	.1220	–	–	78	33	0,7	36	6
TDG533A03175	3,175	.1250	1/8	–	78	33	0,7	36	6
TDG533A03200	3,200	.1260	–	–	78	33	0,7	36	6
TDG533A03264	3,264	.1285	–	30	78	33	0,8	36	6
TDG533A03300	3,300	.1299	–	–	78	33	0,8	36	6
TDG533A03400	3,400	.1339	–	–	78	33	0,8	36	6
TDG533A03455	3,455	.1360	–	29	78	33	0,8	36	6
TDG533A03500	3,500	.1378	–	–	78	33	0,8	36	6
TDG533A03571	3,571	.1406	9/64	–	78	33	0,8	36	6
TDG533A03600	3,600	.1417	–	–	78	33	0,8	36	6
TDG533A03658	3,658	.1440	–	27	78	33	0,9	36	6
TDG533A03700	3,700	.1457	–	–	78	33	0,9	36	6
TDG533A03734	3,734	.1470	–	26	78	33	0,9	36	6
TDG533A03800	3,800	.1496	–	–	87	41	0,9	36	6
TDG533A03900	3,900	.1535	–	–	87	41	0,9	36	6
TDG533A03970	3,970	.1563	5/32	–	87	41	0,9	36	6
TDG533A04000	4,000	.1575	–	–	87	41	0,9	36	6
TDG533A04039	4,039	.1590	–	21	87	41	0,9	36	6
TDG533A04090	4,090	.1610	–	20	87	41	1,0	36	6
TDG533A04100	4,100	.1614	–	–	87	41	1,0	36	6
TDG533A04200	4,200	.1654	–	–	87	41	1,0	36	6
TDG533A04217	4,217	.1660	–	19	87	41	1,0	36	6
TDG533A04300	4,300	.1693	–	–	87	41	1,0	36	6
TDG533A04366	4,366	.1719	11/64	–	87	41	1,0	36	6
TDG533A04400	4,400	.1732	–	–	87	41	1,0	36	6
TDG533A04500	4,500	.1772	–	–	87	41	1,0	36	6
TDG533A04600	4,600	.1811	–	–	87	41	1,1	36	6
TDG533A04623	4,623	.1820	–	14	87	41	1,1	36	6
TDG533A04700	4,700	.1850	–	13	87	41	1,1	36	6
TDG533A04763	4,763	.1875	3/16	–	94	48	1,1	36	6
TDG533A04800	4,800	.1890	–	12	94	48	1,1	36	6
TDG533A04852	4,852	.1910	–	11	94	48	1,1	36	6
TDG533A04900	4,900	.1929	–	–	94	48	1,1	36	6
TDG533A05000	5,000	.1969	–	–	94	48	1,2	36	6
TDG533A05100	5,100	.2008	–	–	94	48	1,2	36	6
TDG533A05106	5,106	.2010	–	7	94	48	1,2	36	6
TDG533A05159	5,159	.2031	13/64	–	94	48	1,2	36	6
TDG533A05200	5,200	.2047	–	–	94	48	1,2	36	6

(continued)

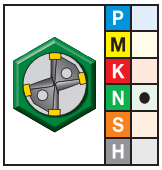
(TDG533A • 8 x D continued)



TDG533A • WN10HD	D1 diameter mm	in	fraction	wire size	L	L4 max	L5	LS	D
TDG533A05300	5,300	.2087	–	–	94	48	1,2	36	6
TDG533A05400	5,400	.2126	–	–	94	48	1,3	36	6
TDG533A05410	5,410	.2130	–	3	94	48	1,3	36	6
TDG533A05500	5,500	.2165	–	–	94	48	1,3	36	6
TDG533A05558	5,558	.2188	7/32	–	94	48	1,3	36	6
TDG533A05600	5,600	.2205	–	–	94	48	1,3	36	6
TDG533A05616	5,616	.2211	–	2	94	48	1,3	36	6
TDG533A05700	5,700	.2244	–	–	94	48	1,3	36	6
TDG533A05800	5,800	.2283	–	–	94	48	1,4	36	6
TDG533A05900	5,900	.2323	–	–	94	48	1,4	36	6
TDG533A05954	5,954	.2344	15/64	–	94	48	1,4	36	6
TDG533A06000	6,000	.2362	–	–	94	48	1,4	36	6
TDG533A06100	6,100	.2402	–	–	105	57	1,4	36	8
TDG533A06200	6,200	.2441	–	–	105	57	1,4	36	8
TDG533A06300	6,300	.2480	–	–	105	57	1,5	36	8
TDG533A06350	6,350	.2500	1/4	E	105	57	1,5	36	8
TDG533A06400	6,400	.2520	–	–	105	57	1,5	36	8
TDG533A06500	6,500	.2559	–	–	105	57	1,5	36	8
TDG533A06528	6,528	.2570	–	F	105	57	1,5	36	8
TDG533A06600	6,600	.2598	–	–	105	57	1,5	36	8
TDG533A06630	6,630	.2610	–	G	105	57	1,5	36	8
TDG533A06700	6,700	.2638	–	–	105	57	1,6	36	8
TDG533A06746	6,746	.2656	17/64	–	105	57	1,6	36	8
TDG533A06800	6,800	.2677	–	–	105	57	1,6	36	8
TDG533A06900	6,900	.2717	–	–	105	57	1,6	36	8
TDG533A07000	7,000	.2756	–	–	105	57	1,6	36	8
TDG533A07100	7,100	.2795	–	–	110	61	1,7	36	8
TDG533A07145	7,145	.2813	9/32	–	110	61	1,7	36	8
TDG533A07200	7,200	.2835	–	–	110	61	1,7	36	8
TDG533A07300	7,300	.2874	–	–	110	61	1,7	36	8
TDG533A07400	7,400	.2913	–	–	110	61	1,7	36	8
TDG533A07500	7,500	.2953	–	–	110	61	1,7	36	8
TDG533A07541	7,541	.2969	19/64	–	110	61	1,8	36	8
TDG533A07600	7,600	.2992	–	–	110	61	1,8	36	8
TDG533A07700	7,700	.3031	–	–	110	61	1,8	36	8
TDG533A07800	7,800	.3071	–	–	110	61	1,8	36	8
TDG533A07900	7,900	.3110	–	–	110	61	1,8	36	8
TDG533A07938	7,938	.3125	5/16	–	110	61	1,9	36	8
TDG533A08000	8,000	.3150	–	–	110	61	1,9	36	8
TDG533A08100	8,100	.3189	–	–	122	68	1,9	40	10
TDG533A08200	8,200	.3228	–	–	122	68	1,9	40	10
TDG533A08300	8,300	.3268	–	–	122	68	1,9	40	10
TDG533A08334	8,334	.3281	21/64	–	122	68	1,9	40	10
TDG533A08400	8,400	.3307	–	–	122	68	2,0	40	10
TDG533A08433	8,433	.3320	–	Q	122	68	2,0	40	10
TDG533A08500	8,500	.3346	–	–	122	68	2,0	40	10
TDG533A08600	8,600	.3386	–	–	122	68	2,0	40	10
TDG533A08700	8,700	.3425	–	–	122	68	2,0	40	10

(continued)

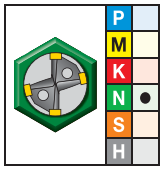
(TDG533A • 8 x D continued)



TDG533A • WN10HD	D1 diameter mm	in	fraction	wire size	L	L4 max	L5	LS	D
TDG533A08733	8,733	.3438	11/32	–	122	68	2,0	40	10
TDG533A08800	8,800	.3465	–	–	122	68	2,1	40	10
TDG533A08900	8,900	.3504	–	–	122	68	2,1	40	10
TDG533A09000	9,000	.3543	–	–	122	68	2,1	40	10
TDG533A09100	9,100	.3583	–	–	122	68	2,1	40	10
TDG533A09129	9,129	.3594	23/64	–	122	68	2,1	40	10
TDG533A09200	9,200	.3622	–	–	122	68	2,1	40	10
TDG533A09300	9,300	.3661	–	–	122	68	2,2	40	10
TDG533A09347	9,347	.3680	–	U	122	68	2,2	40	10
TDG533A09400	9,400	.3701	–	–	122	68	2,2	40	10
TDG533A09500	9,500	.3740	–	–	122	68	2,2	40	10
TDG533A09525	9,525	.3750	3/8	–	122	68	2,2	40	10
TDG533A09600	9,600	.3780	–	–	122	68	2,2	40	10
TDG533A09700	9,700	.3819	–	–	122	68	2,3	40	10
TDG533A09800	9,800	.3858	–	–	122	68	2,3	40	10
TDG533A09900	9,900	.3898	–	–	122	68	2,3	40	10
TDG533A09921	9,921	.3906	25/64	–	122	68	2,3	40	10
TDG533A10000	10,000	.3937	–	–	122	68	2,3	40	10
TDG533A10100	10,100	.3976	–	–	141	79	2,4	45	12
TDG533A10200	10,200	.4016	–	–	141	79	2,4	45	12
TDG533A10300	10,300	.4055	–	–	141	79	2,4	45	12
TDG533A10320	10,320	.4063	13/32	–	141	79	2,4	45	12
TDG533A10400	10,400	.4094	–	–	141	79	2,4	45	12
TDG533A10500	10,500	.4134	–	–	141	79	2,4	45	12
TDG533A10600	10,600	.4173	–	–	141	79	2,5	45	12
TDG533A10700	10,700	.4213	–	–	141	79	2,5	45	12
TDG533A10716	10,716	.4219	27/64	–	141	79	2,5	45	12
TDG533A10800	10,800	.4252	–	–	141	79	2,5	45	12
TDG533A10900	10,900	.4291	–	–	141	79	2,5	45	12
TDG533A11000	11,000	.4331	–	–	141	79	2,6	45	12
TDG533A11100	11,100	.4370	–	–	141	79	2,6	45	12
TDG533A11113	11,113	.4375	7/16	–	141	79	2,6	45	12
TDG533A11200	11,200	.4409	–	–	141	79	2,6	45	12
TDG533A11300	11,300	.4449	–	–	141	79	2,6	45	12
TDG533A11400	11,400	.4488	–	–	141	79	2,7	45	12
TDG533A11500	11,500	.4528	–	–	141	79	2,7	45	12
TDG533A11509	11,509	.4531	29/64	–	141	79	2,7	45	12
TDG533A11600	11,600	.4567	–	–	141	79	2,7	45	12
TDG533A11700	11,700	.4606	–	–	141	79	2,7	45	12
TDG533A11800	11,800	.4646	–	–	141	79	2,8	45	12
TDG533A11900	11,900	.4685	–	–	141	79	2,8	45	12
TDG533A11908	11,908	.4688	15/32	–	141	79	2,8	45	12
TDG533A12000	12,000	.4724	–	–	141	79	2,8	45	12
TDG533A12100	12,100	.4764	–	–	155	91	2,8	45	14
TDG533A12200	12,200	.4803	–	–	155	91	2,8	45	14
TDG533A12300	12,300	.4843	–	–	155	91	2,9	45	14
TDG533A12304	12,304	.4844	31/64	–	155	91	2,9	45	14
TDG533A12400	12,400	.4882	–	–	155	91	2,9	45	14

(continued)

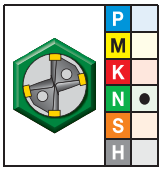
(TDG533A • 8 x D continued)



TDG533A • WN10HD	D1 diameter								
	mm	in	fraction	wire size	L	L4 max	L5	LS	D
TDG533A12500	12,500	.4921	–	–	155	91	2,9	45	14
TDG533A12600	12,600	.4961	–	–	155	91	2,9	45	14
TDG533A12700	12,700	.5000	1/2	–	155	91	3,0	45	14
TDG533A12800	12,800	.5039	–	–	155	91	3,0	45	14
TDG533A12900	12,900	.5079	–	–	155	91	3,0	45	14
TDG533A13000	13,000	.5118	–	–	155	91	3,0	45	14
TDG533A13096	13,096	.5156	33/64	–	155	91	3,1	45	14
TDG533A13100	13,100	.5157	–	–	155	91	3,1	45	14
TDG533A13200	13,200	.5197	–	–	155	91	3,1	45	14
TDG533A13300	13,300	.5236	–	–	155	91	3,1	45	14
TDG533A13400	13,400	.5276	–	–	155	91	3,1	45	14
TDG533A13490	13,490	.5311	–	–	155	91	3,1	45	14
TDG533A13500	13,500	.5315	–	–	155	91	3,1	45	14
TDG533A13600	13,600	.5354	–	–	155	91	3,2	45	14
TDG533A13700	13,700	.5394	–	–	155	91	3,2	45	14
TDG533A13800	13,800	.5433	–	–	155	91	3,2	45	14
TDG533A13891	13,891	.5469	35/64	–	155	91	3,2	45	14
TDG533A13900	13,900	.5472	–	–	155	91	3,2	45	14
TDG533A14000	14,000	.5512	–	–	155	91	3,3	45	14
TDG533A14100	14,100	.5551	–	–	171	101	3,3	48	16
TDG533A14200	14,200	.5591	–	–	171	101	3,3	48	16
TDG533A14288	14,288	.5625	9/16	–	171	101	3,3	48	16
TDG533A14300	14,300	.5630	–	–	171	101	3,3	48	16
TDG533A14400	14,400	.5669	–	–	171	101	3,4	48	16
TDG533A14500	14,500	.5709	–	–	171	101	3,4	48	16
TDG533A14600	14,600	.5748	–	–	171	101	3,4	48	16
TDG533A14684	14,684	.5781	37/64	–	171	101	3,4	48	16
TDG533A14700	14,700	.5787	–	–	171	101	3,4	48	16
TDG533A14800	14,800	.5827	–	–	171	101	3,5	48	16
TDG533A14900	14,900	.5866	–	–	171	101	3,5	48	16
TDG533A15000	15,000	.5906	–	–	171	101	3,5	48	16
TDG533A15083	15,083	.5938	19/32	–	171	101	3,5	48	16
TDG533A15100	15,100	.5945	–	–	171	101	3,5	48	16
TDG533A15200	15,200	.5984	–	–	171	101	3,5	48	16
TDG533A15300	15,300	.6024	–	–	171	101	3,6	48	16
TDG533A15400	15,400	.6063	–	–	171	101	3,6	48	16
TDG533A15479	15,479	.6094	39/64	–	171	101	3,6	48	16
TDG533A15500	15,500	.6102	–	–	171	101	3,6	48	16
TDG533A15600	15,600	.6142	–	–	171	101	3,6	48	16
TDG533A15700	15,700	.6181	–	–	171	101	3,7	48	16
TDG533A15800	15,800	.6220	–	–	171	101	3,7	48	16
TDG533A15875	15,875	.6250	5/8	–	171	101	3,7	48	16
TDG533A15900	15,900	.6260	–	–	171	101	3,7	48	16
TDG533A16000	16,000	.6299	–	–	171	101	3,7	48	16
TDG533A16100	16,100	.6339	–	–	185	113	3,8	48	18
TDG533A16200	16,200	.6378	–	–	185	113	3,8	48	18
TDG533A16271	16,271	.6406	41/64	–	185	113	3,8	48	18
TDG533A16300	16,300	.6417	–	–	185	113	3,8	48	18

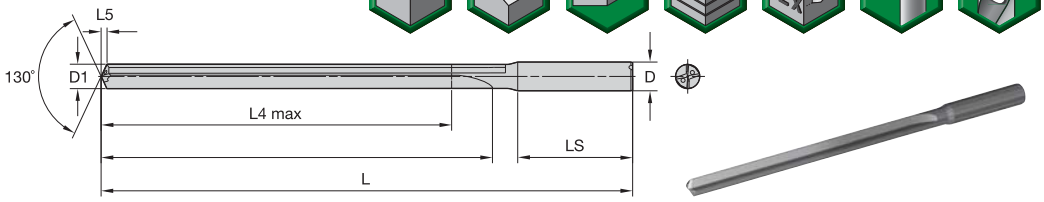
(continued)

(TDG533A • 8 x D continued)



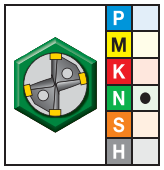
TDG533A • WN10HD	mm	in	D1 diameter fraction	wire size	L	L4 max	L5	LS	D
TDG533A16400	16,400	.6457	—	—	185	113	3,8	48	18
TDG533A16500	16,500	.6496	—	—	185	113	3,8	48	18
TDG533A16600	16,600	.6535	—	—	185	113	3,9	48	18
TDG533A16670	16,670	.6563	21/32	—	185	113	3,9	48	18
TDG533A16700	16,700	.6575	—	—	185	113	3,9	48	18
TDG533A16800	16,800	.6614	—	—	185	113	3,9	48	18
TDG533A16900	16,900	.6654	—	—	185	113	3,9	48	18
TDG533A17000	17,000	.6693	—	—	185	113	4,0	48	18
TDG533A17100	17,100	.6732	—	—	185	113	4,0	48	18
TDG533A17200	17,200	.6772	—	—	185	113	4,0	48	18
TDG533A17300	17,300	.6811	—	—	185	113	4,0	48	18
TDG533A17400	17,400	.6850	—	—	185	113	4,1	48	18
TDG533A17463	17,463	.6875	11/16	—	185	113	4,1	48	18
TDG533A17500	17,500	.6890	—	—	185	113	4,1	48	18
TDG533A17600	17,600	.6929	—	—	185	113	4,1	48	18
TDG533A17700	17,700	.6969	—	—	185	113	4,1	48	18
TDG533A17800	17,800	.7008	—	—	185	113	4,2	48	18
TDG533A17859	17,859	.7031	45/64	—	185	113	4,2	48	18
TDG533A17900	17,900	.7047	—	—	185	113	4,2	48	18
TDG533A18000	18,000	.7087	—	—	185	113	4,2	48	18
TDG533A18100	18,100	.7126	—	—	200	124	4,2	50	20
TDG533A18200	18,200	.7165	—	—	200	124	4,2	50	20
TDG533A18258	18,258	.7188	23/32	—	200	124	4,3	50	20
TDG533A18300	18,300	.7205	—	—	200	124	4,3	50	20
TDG533A18400	18,400	.7244	—	—	200	124	4,3	50	20
TDG533A18500	18,500	.7283	—	—	200	124	4,3	50	20
TDG533A18600	18,600	.7323	—	—	200	124	4,3	50	20
TDG533A18654	18,654	.7344	47/64	—	200	124	4,3	50	20
TDG533A18700	18,700	.7362	—	—	200	124	4,4	50	20
TDG533A18800	18,800	.7402	—	—	200	124	4,4	50	20
TDG533A18900	18,900	.7441	—	—	200	124	4,4	50	20
TDG533A19000	19,000	.7480	—	—	200	124	4,4	50	20
TDG533A19050	19,050	.7500	3/4	—	200	124	4,4	50	20
TDG533A19100	19,100	.7520	—	—	200	124	4,5	50	20
TDG533A19200	19,200	.7559	—	—	200	124	4,5	50	20
TDG533A19300	19,300	.7598	—	—	200	124	4,5	50	20
TDG533A19400	19,400	.7638	—	—	200	124	4,5	50	20
TDG533A19500	19,500	.7677	—	—	200	124	4,5	50	20
TDG533A19600	19,600	.7717	—	—	200	124	4,6	50	20
TDG533A19700	19,700	.7756	—	—	200	124	4,6	50	20
TDG533A19800	19,800	.7795	—	—	200	124	4,6	50	20
TDG533A19900	19,900	.7835	—	—	200	124	4,6	50	20
TDG533A20000	20,000	.7874	—	—	200	124	4,7	50	20

NOTE: L4 max, L5, L, LS, and D table columns reflect millimeter measurements.



● first choice
○ alternate choice

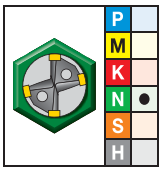
TDG534A • 12 x D



TDG534A • WN10HD	D1 diameter mm	in	fraction	wire size	L	L4 max	L5	LS	D
TDG534A03000	3,000	.1181	–	–	93	44	0,7	36	6
TDG534A03048	3,048	.1200	–	31	93	44	0,7	36	6
TDG534A03100	3,100	.1220	–	–	93	44	0,7	36	6
TDG534A03175	3,175	.1250	1/8	–	93	44	0,7	36	6
TDG534A03200	3,200	.1260	–	–	93	43	0,7	36	6
TDG534A03264	3,264	.1285	–	30	93	44	0,8	36	6
TDG534A03300	3,300	.1299	–	–	93	44	0,8	36	6
TDG534A03400	3,400	.1339	–	–	93	44	0,8	36	6
TDG534A03455	3,455	.1360	–	29	93	44	0,8	36	6
TDG534A03500	3,500	.1378	–	–	93	44	0,8	36	6
TDG534A03571	3,571	.1406	9/64	–	93	45	0,8	36	6
TDG534A03600	3,600	.1417	–	–	93	45	0,8	36	6
TDG534A03658	3,658	.1440	–	27	93	45	0,9	36	6
TDG534A03700	3,700	.1457	–	–	93	45	0,9	36	6
TDG534A03734	3,734	.1470	–	26	93	45	0,9	36	6
TDG534A03800	3,800	.1496	–	–	107	55	0,9	36	6
TDG534A03900	3,900	.1535	–	–	107	56	0,9	36	6
TDG534A03970	3,970	.1563	5/32	–	107	56	0,9	36	6
TDG534A04000	4,000	.1575	–	–	107	56	0,9	36	6
TDG534A04039	4,039	.1590	–	21	107	56	0,9	36	6
TDG534A04090	4,090	.1610	–	20	107	55	1,0	36	6
TDG534A04100	4,100	.1614	–	–	107	55	1,0	36	6
TDG534A04200	4,200	.1654	–	–	107	56	1,0	36	6
TDG534A04217	4,217	.1660	–	19	107	56	1,0	36	6
TDG534A04300	4,300	.1693	–	–	107	56	1,0	36	6
TDG534A04366	4,366	.1719	11/64	–	107	56	1,0	36	6
TDG534A04400	4,400	.1732	–	–	107	56	1,0	36	6
TDG534A04500	4,500	.1772	–	–	107	56	1,0	36	6
TDG534A04600	4,600	.1811	–	–	107	57	1,1	36	6
TDG534A04623	4,623	.1820	–	14	107	57	1,1	36	6
TDG534A04700	4,700	.1850	–	13	107	57	1,1	36	6
TDG534A04763	4,763	.1875	3/16	–	125	69	1,1	36	6
TDG534A04800	4,800	.1890	–	12	125	69	1,1	36	6
TDG534A04852	4,852	.1910	–	11	125	69	1,1	36	6
TDG534A04900	4,900	.1929	–	–	125	69	1,1	36	6
TDG534A05000	5,000	.1969	–	–	125	70	1,2	36	6
TDG534A05100	5,100	.2008	–	–	125	70	1,2	36	6
TDG534A05106	5,106	.2010	–	7	125	70	1,2	36	6
TDG534A05159	5,159	.2031	13/64	–	125	70	1,2	36	6
TDG534A05200	5,200	.2047	–	–	125	70	1,2	36	6

(continued)

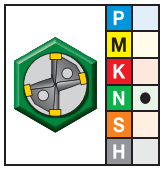
(TDG534A • 12 x D continued)



TDG534A • WN10HD	D1 diameter mm	in	fraction	wire size	L	L4 max	L5	LS	D
TDG534A05300	5,300	.2087	–	–	125	71	1,2	36	6
TDG534A05400	5,400	.2126	–	–	125	71	1,3	36	6
TDG534A05410	5,410	.2130	–	3	125	71	1,3	36	6
TDG534A05500	5,500	.2165	–	–	125	71	1,3	36	6
TDG534A05558	5,558	.2188	7/32	–	125	71	1,3	36	6
TDG534A05600	5,600	.2205	–	–	125	72	1,3	36	6
TDG534A05616	5,616	.2211	–	2	125	72	1,3	36	6
TDG534A05700	5,700	.2244	–	–	125	72	1,3	36	6
TDG534A05800	5,800	.2283	–	–	125	71	1,4	36	6
TDG534A05900	5,900	.2323	–	–	125	71	1,4	36	6
TDG534A05954	5,954	.2344	15/64	–	125	72	1,4	36	6
TDG534A06000	6,000	.2362	–	–	125	72	1,4	36	6
TDG534A06100	6,100	.2402	–	–	139	82	1,4	36	8
TDG534A06200	6,200	.2441	–	–	139	82	1,4	36	8
TDG534A06300	6,300	.2480	–	–	139	83	1,5	36	8
TDG534A06350	6,350	.2500	1/4	E	139	83	1,5	36	8
TDG534A06400	6,400	.2520	–	–	139	83	1,5	36	8
TDG534A06500	6,500	.2559	–	–	139	83	1,5	36	8
TDG534A06528	6,528	.2570	–	F	139	83	1,5	36	8
TDG534A06600	6,600	.2598	–	–	139	84	1,5	36	8
TDG534A06630	6,630	.2610	–	G	139	84	1,5	36	8
TDG534A06700	6,700	.2638	–	–	139	84	1,6	36	8
TDG534A06746	6,746	.2656	17/64	–	139	83	1,6	36	8
TDG534A06800	6,800	.2677	–	–	139	83	1,6	36	8
TDG534A06900	6,900	.2717	–	–	139	83	1,6	36	8
TDG534A07000	7,000	.2756	–	–	139	84	1,6	36	8
TDG534A07100	7,100	.2795	–	–	153	94	1,7	36	8
TDG534A07145	7,145	.2813	9/32	–	153	94	1,7	36	8
TDG534A07200	7,200	.2835	–	–	153	94	1,7	36	8
TDG534A07300	7,300	.2874	–	–	153	95	1,7	36	8
TDG534A07400	7,400	.2913	–	–	153	95	1,7	36	8
TDG534A07500	7,500	.2953	–	–	153	95	1,7	36	8
TDG534A07541	7,541	.2969	19/64	–	153	95	1,8	36	8
TDG534A07600	7,600	.2992	–	–	153	96	1,8	36	8
TDG534A07700	7,700	.3031	–	–	153	96	1,8	36	8
TDG534A07800	7,800	.3071	–	–	153	95	1,8	36	8
TDG534A07900	7,900	.3110	–	–	153	95	1,8	36	8
TDG534A07938	7,938	.3125	5/16	–	153	96	1,9	36	8
TDG534A08000	8,000	.3150	–	–	153	96	1,9	36	8
TDG534A08100	8,100	.3189	–	–	185	116	1,9	40	10
TDG534A08200	8,200	.3228	–	–	185	116	1,9	40	10
TDG534A08300	8,300	.3268	–	–	185	117	1,9	40	10
TDG534A08334	8,334	.3281	21/64	–	185	117	1,9	40	10
TDG534A08400	8,400	.3307	–	–	185	117	2,0	40	10
TDG534A08433	8,433	.3320	–	Q	185	117	2,0	40	10
TDG534A08500	8,500	.3346	–	–	185	117	2,0	40	10
TDG534A08600	8,600	.3386	–	–	185	118	2,0	40	10
TDG534A08700	8,700	.3425	–	–	185	118	2,0	40	10

(continued)

(TDG534A • 12 x D continued)



TDG534A • WN10HD	D1 diameter mm	in	fraction	wire size	L	L4 max	L5	LS	D
TDG534A08733	8,733	.3438	11/32	–	185	117	2,0	40	10
TDG534A08800	8,800	.3465	–	–	185	117	2,1	40	10
TDG534A08900	8,900	.3504	–	–	185	117	2,1	40	10
TDG534A09000	9,000	.3543	–	–	185	118	2,1	40	10
TDG534A09100	9,100	.3583	–	–	185	118	2,1	40	10
TDG534A09129	9,129	.3594	23/64	–	185	118	2,1	40	10
TDG534A09200	9,200	.3622	–	–	185	118	2,1	40	10
TDG534A09300	9,300	.3661	–	–	185	119	2,2	40	10
TDG534A09347	9,347	.3680	–	U	185	119	2,2	40	10
TDG534A09400	9,400	.3701	–	–	185	119	2,2	40	10
TDG534A09500	9,500	.3740	–	–	185	119	2,2	40	10
TDG534A09525	9,525	.3750	3/8	–	185	119	2,2	40	10
TDG534A09600	9,600	.3780	–	–	185	120	2,2	40	10
TDG534A09700	9,700	.3819	–	–	185	120	2,3	40	10
TDG534A09800	9,800	.3858	–	–	185	119	2,3	40	10
TDG534A09900	9,900	.3898	–	–	185	119	2,3	40	10
TDG534A09921	9,921	.3906	25/64	–	185	120	2,3	40	10
TDG534A10000	10,000	.3937	–	–	185	120	2,3	40	10
TDG534A10100	10,100	.3976	–	–	218	140	2,4	45	12
TDG534A10200	10,200	.4016	–	–	218	140	2,4	45	12
TDG534A10300	10,300	.4055	–	–	218	141	2,4	45	12
TDG534A10320	10,320	.4063	13/32	–	218	141	2,4	45	12
TDG534A10400	10,400	.4094	–	–	218	141	2,4	45	12
TDG534A10500	10,500	.4134	–	–	218	141	2,4	45	12
TDG534A10600	10,600	.4173	–	–	218	142	2,5	45	12
TDG534A10700	10,700	.4213	–	–	218	142	2,5	45	12
TDG534A10716	10,716	.4219	27/64	–	218	142	2,5	45	12
TDG534A10800	10,800	.4252	–	–	218	141	2,5	45	12
TDG534A10900	10,900	.4291	–	–	218	141	2,5	45	12
TDG534A11000	11,000	.4331	–	–	218	142	2,6	45	12
TDG534A11100	11,100	.4370	–	–	218	142	2,6	45	12
TDG534A11113	11,113	.4375	7/16	–	218	142	2,6	45	12
TDG534A11200	11,200	.4409	–	–	218	142	2,6	45	12
TDG534A11300	11,300	.4449	–	–	218	143	2,6	45	12
TDG534A11400	11,400	.4488	–	–	218	143	2,7	45	12
TDG534A11500	11,500	.4528	–	–	218	143	2,7	45	12
TDG534A11509	11,509	.4531	29/64	–	218	143	2,7	45	12
TDG534A11600	11,600	.4567	–	–	218	144	2,7	45	12
TDG534A11700	11,700	.4606	–	–	218	144	2,7	45	12
TDG534A11800	11,800	.4646	–	–	218	143	2,8	45	12
TDG534A11900	11,900	.4685	–	–	218	143	2,8	45	12
TDG534A11908	11,908	.4688	15/32	–	218	143	2,8	45	12
TDG534A12000	12,000	.4724	–	–	218	144	2,8	45	12
TDG534A12100	12,100	.4764	–	–	246	164	2,8	45	14
TDG534A12200	12,200	.4803	–	–	246	164	2,8	45	14
TDG534A12300	12,300	.4843	–	–	246	165	2,9	45	14
TDG534A12304	12,304	.4844	31/64	–	246	165	2,9	45	14
TDG534A12400	12,400	.4882	–	–	246	165	2,9	45	14

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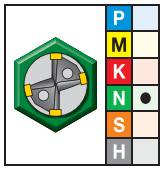
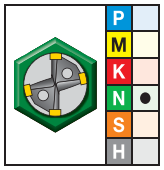
(TDG534A • 12 x D continued)



TDG534A • WN10HD	D1 diameter mm	in	fraction	wire size	L	L4 max	L5	LS	D
TDG534A12500	12,500	.4921	–	–	246	165	2,9	45	14
TDG534A12600	12,600	.4961	–	–	246	165	2,9	45	14
TDG534A12700	12,700	.5000	1/2	–	246	166	3,0	45	14
TDG534A12800	12,800	.5039	–	–	246	166	3,0	45	14
TDG534A12900	12,900	.5079	–	–	246	165	3,0	45	14
TDG534A13000	13,000	.5118	–	–	246	166	3,0	45	14
TDG534A13096	13,096	.5156	33/64	–	246	166	3,1	45	14
TDG534A13100	13,100	.5157	–	–	246	166	3,1	45	14
TDG534A13200	13,200	.5197	–	–	246	166	3,1	45	14
TDG534A13300	13,300	.5236	–	–	246	167	3,1	45	14
TDG534A13400	13,400	.5276	–	–	246	167	3,1	45	14
TDG534A13490	13,490	.5311	–	–	246	167	3,1	45	14
TDG534A13500	13,500	.5315	–	–	246	167	3,1	45	14
TDG534A13600	13,600	.5354	–	–	246	167	3,2	45	14
TDG534A13700	13,700	.5394	–	–	246	168	3,2	45	14
TDG534A13800	13,800	.5433	–	–	246	168	3,2	45	14
TDG534A13891	13,891	.5469	35/64	–	246	167	3,2	45	14
TDG534A13900	13,900	.5472	–	–	246	167	3,2	45	14
TDG534A14000	14,000	.5512	–	–	246	168	3,3	45	14
TDG534A14100	14,100	.5551	–	–	277	188	3,3	48	16
TDG534A14200	14,200	.5591	–	–	277	188	3,3	48	16
TDG534A14288	14,288	.5625	9/16	–	277	188	3,3	48	16
TDG534A14300	14,300	.5630	–	–	277	188	3,3	48	16
TDG534A14400	14,400	.5669	–	–	277	189	3,4	48	16
TDG534A14500	14,500	.5709	–	–	277	189	3,4	48	16
TDG534A14600	14,600	.5748	–	–	277	189	3,4	48	16
TDG534A14684	14,684	.5781	37/64	–	277	190	3,4	48	16
TDG534A14700	14,700	.5787	–	–	277	190	3,4	48	16
TDG534A14800	14,800	.5827	–	–	277	190	3,5	48	16
TDG534A14900	14,900	.5866	–	–	277	190	3,5	48	16
TDG534A15000	15,000	.5906	–	–	277	190	3,5	48	16
TDG534A15083	15,083	.5938	19/32	–	277	190	3,5	48	16
TDG534A15100	15,100	.5945	–	–	277	190	3,5	48	16
TDG534A15200	15,200	.5984	–	–	277	190	3,5	48	16
TDG534A15300	15,300	.6024	–	–	277	191	3,6	48	16
TDG534A15400	15,400	.6063	–	–	277	191	3,6	48	16
TDG534A15479	15,479	.6094	39/64	–	277	191	3,6	48	16
TDG534A15500	15,500	.6102	–	–	277	191	3,6	48	16
TDG534A15600	15,600	.6142	–	–	277	191	3,6	48	16
TDG534A15700	15,700	.6181	–	–	277	192	3,7	48	16
TDG534A15800	15,800	.6220	–	–	277	192	3,7	48	16
TDG534A15875	15,875	.6250	5/8	–	277	192	3,7	48	16
TDG534A15900	15,900	.6260	–	–	277	192	3,7	48	16
TDG534A16000	16,000	.6299	–	–	277	192	3,7	48	16
TDG534A16100	16,100	.6339	–	–	305	212	3,8	48	18
TDG534A16200	16,200	.6378	–	–	305	212	3,8	48	18
TDG534A16271	16,271	.6406	41/64	–	305	212	3,8	48	18
TDG534A16300	16,300	.6417	–	–	305	212	3,8	48	18

(continued)

(TDG534A • 12 x D continued)



TDG534A • WN10HD	D1 diameter mm	in	fraction	wire size	L	L4 max	L5	LS	D
TDG534A16400	16,400	.6457	–	–	305	213	3,8	48	18
TDG534A16500	16,500	.6496	–	–	305	213	3,8	48	18
TDG534A16600	16,600	.6535	–	–	305	213	3,9	48	18
TDG534A16670	16,670	.6563	21/32	–	305	214	3,9	48	18
TDG534A16700	16,700	.6575	–	–	305	214	3,9	48	18
TDG534A16800	16,800	.6614	–	–	305	214	3,9	48	18
TDG534A16900	16,900	.6654	–	–	305	214	3,9	48	18
TDG534A17000	17,000	.6693	–	–	305	214	4,0	48	18
TDG534A17100	17,100	.6732	–	–	305	214	4,0	48	18
TDG534A17200	17,200	.6772	–	–	305	214	4,0	48	18
TDG534A17300	17,300	.6811	–	–	305	214	4,0	48	18
TDG534A17400	17,400	.6850	–	–	305	215	4,1	48	18
TDG534A17463	17,463	.6875	11/16	–	305	215	4,1	48	18
TDG534A17500	17,500	.6890	–	–	305	215	4,1	48	18
TDG534A17600	17,600	.6929	–	–	305	215	4,1	48	18
TDG534A17700	17,700	.6969	–	–	305	216	4,1	48	18
TDG534A17800	17,800	.7008	–	–	305	216	4,2	48	18
TDG534A17859	17,859	.7031	45/64	–	305	216	4,2	48	18
TDG534A17900	17,900	.7047	–	–	305	216	4,2	48	18
TDG534A18000	18,000	.7087	–	–	305	216	4,2	48	18
TDG534A18100	18,100	.7126	–	–	334	237	4,2	50	20
TDG534A18200	18,200	.7165	–	–	334	236	4,2	50	20
TDG534A18258	18,258	.7188	23/32	–	334	236	4,3	50	20
TDG534A18300	18,300	.7205	–	–	334	236	4,3	50	20
TDG534A18400	18,400	.7244	–	–	334	237	4,3	50	20
TDG534A18500	18,500	.7283	–	–	334	237	4,3	50	20
TDG534A18600	18,600	.7323	–	–	334	237	4,3	50	20
TDG534A18654	18,654	.7344	47/64	–	334	237	4,3	50	20
TDG534A18700	18,700	.7362	–	–	334	237	4,4	50	20
TDG534A18800	18,800	.7402	–	–	334	238	4,4	50	20
TDG534A18900	18,900	.7441	–	–	334	238	4,4	50	20
TDG534A19000	19,000	.7480	–	–	334	238	4,4	50	20
TDG534A19050	19,050	.7500	3/4	–	334	239	4,4	50	20
TDG534A19100	19,100	.7520	–	–	334	239	4,5	50	20
TDG534A19200	19,200	.7559	–	–	334	238	4,5	50	20
TDG534A19300	19,300	.7598	–	–	334	238	4,5	50	20
TDG534A19400	19,400	.7638	–	–	334	239	4,5	50	20
TDG534A19500	19,500	.7677	–	–	334	239	4,5	50	20
TDG534A19600	19,600	.7717	–	–	334	239	4,6	50	20
TDG534A19700	19,700	.7756	–	–	334	239	4,6	50	20
TDG534A19800	19,800	.7795	–	–	334	240	4,6	50	20
TDG534A19900	19,900	.7835	–	–	334	240	4,6	50	20
TDG534A20000	20,000	.7874	–	–	334	240	4,7	50	20

NOTE: L4 max, L5, L, LS, and D table columns reflect millimeter measurements.

Metric	Tolerance		Inch	Tolerance	
Nominal Size Range	**D1 Tolerance k7**	**D Tolerance h6**	**Nominal Size Range**	**D1 Tolerance k7**	**D Tolerance h6**
>3–6	0,004/0,016	0,000/-0,008	>.1181–.2362	.0000/.0005	.0000/-.0003
>6–10	0,006/0,021	0,000/-0,009	>.2362–.3937	.0000/.0006	.0000/-.0004
>10–18	0,007/0,025	0,000/-0,011	>.3937–.7087	.0000/.0007	.0000/-.0004
>18–25,4	0,008/0,029	0,000/-0,013	>.7087–1.0000	.0000/.0009	.0000/-.0005

Top Drill G • TDG532/TDG533/TDG534 Series • WN10HD • Through Coolant

Cutting Speed — vc

Range — m/min

Recommended Feed Rate (fz)

Group		min		max	Tool Diameter	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
K	15, 16	70	-	120	mm/r	0,11 - 0,20	0,12 - 0,24	0,15 - 0,28	0,18 - 0,33	0,20 - 0,38	0,23 - 0,44	0,30 - 0,53	0,34 - 0,65
N	21	100	-	450	mm/r	0,16 - 0,25	0,19 - 0,29	0,23 - 0,35	0,27 - 0,42	0,31 - 0,50	0,36 - 0,57	0,44 - 0,69	0,52 - 0,82
	22, 23, 24	100	-	300	mm/r	0,15 - 0,23	0,17 - 0,28	0,21 - 0,34	0,25 - 0,39	0,30 - 0,46	0,34 - 0,54	0,42 - 0,67	0,52 - 0,82
	26	100	-	250	mm/r	0,16 - 0,28	0,15 - 0,32	0,19 - 0,36	0,23 - 0,40	0,25 - 0,44	0,28 - 0,48	0,32 - 0,56	0,35 - 0,63

Top Drill G • TDG532/TDG533/TDG534 Series • WN10HD • Through Coolant

Cutting Speed — vc

Range — SFM

Recommended Feed Rate (fz)

Group		min		max	Tool Diameter	.125 • 1/8	.188 • 3/16	.250 • 1/4	.313 • 5/16	.375 • 3/8	.500 • 1/2	.625 • 5/8	.750 • 3/4
K	15, 16	230	-	390	ipr	.004 - .008	.005 - .009	.006 - .011	.007 - .013	.008 - .015	.009 - .017	.012 - .021	.013 - .026
N	21	330	-	1480	ipr	.006 - .010	.007 - .011	.009 - .014	.011 - .017	.012 - .020	.014 - .022	.017 - .027	.020 - .032
	22, 23, 24	330	-	980	ipr	.006 - .009	.007 - .011	.008 - .013	.010 - .015	.012 - .018	.013 - .021	.017 - .026	.020 - .032
	26	330	-	820	ipr	.006 - .011	.006 - .013	.007 - .014	.009 - .016	.010 - .017	.011 - .019	.013 - .022	.014 - .025

Top Drill G • TDG542/TDG543/TDG544 Series • WK10PD • Through Coolant

Cutting Speed — vc

Range — m/min

Recommended Feed Rate (fz)

Group		min		max	Tool Diameter	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
K	15, 16	80	-	140	mm/r	0,11 - 0,20	0,12 - 0,24	0,15 - 0,28	0,18 - 0,33	0,20 - 0,38	0,23 - 0,44	0,30 - 0,53	0,34 - 0,65
	17;18	60	-	110	mm/r	0,10 - 0,16	0,11 - 0,20	0,13 0,23	0,17 - 0,28	0,18 - 0,32	0,23 - 0,38	0,28 - 0,47	0,32 - 0,59

Top Drill G • TDG542/TDG543/TDG544 Series • WK10PD • Through Coolant

Cutting Speed — vc

Range — SFM

Recommended Feed Rate (fz)

Group		min		max	Tool Diameter	.125 • 1/8	.188 • 3/16	.250 • 1/4	.313 • 5/16	.375 • 3/8	.500 • 1/2	.625 • 5/8	.750 • 3/4
K	15, 16	260	-	460	ipr	.004 - .008	.005 - .009	.006 - .011	.007 - .013	.008 - .015	.009 - .017	.012 - .021	.013 - .026
	17;18	200	-	360	ipr	.004 - .006	.004 - .008	.005 - .009	.007 - .011	.007 - .013	.009 - .015	.011 - .019	.013 - .023

WIN WITH WIDIA™

WIDIA

WIDIA Victory™ TOP DRILL M1™ Modular Drills

Series TDM1

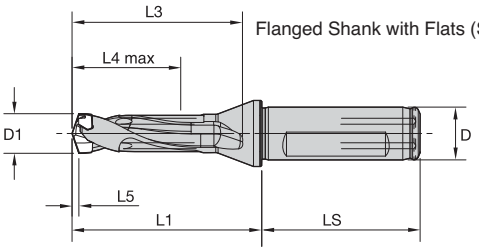
For solid carbide performance at an economical price, the TOP DRILL M1 modular drills are the ideal choice for of all your steel and cast iron general drilling applications.

- Disposable inserts mean no set-up or insert regrinding costs.
- Enhanced centering capabilities and metal removal rates.
- Speed and feed rates and performance comparable to solid carbide drills.

To learn more about our innovations, contact your local Authorized Distributor or visit **www.widia.com**.

WIDIA VICTORY
Win with Widia™

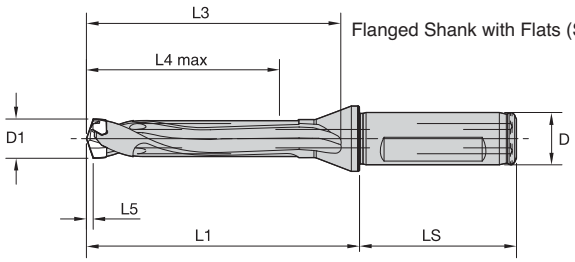
• Tool body shipped with insert wrench.



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

order number	catalog number	D1	D1 max	D	L1	L3	L4 max	L5	LS	insert blade seat size
4098937	TDM0313R3SCF050	.313	.334	.5000	1.63	1.41	1.00	.06	1.77	W10
4098938	TDM0335R3SCF050	.335	.354	.5000	1.75	1.53	1.06	.06	1.77	W11
4098939	TDM0354R3SCF050	.354	.374	.5000	1.88	1.66	1.12	.07	1.77	W12
4098940	TDM0374R3SCF050	.374	.393	.5000	1.88	1.66	1.18	.07	1.77	W13
4098941	TDM0394R3SCF063	.394	.413	.6250	2.00	1.78	1.24	.07	1.89	W14
4098942	TDM0413R3SCF063	.413	.433	.6250	2.00	1.78	1.30	.08	1.89	W15
4099013	TDM0433R3SCF063	.433	.452	.6250	2.13	1.91	1.36	.08	1.89	W16
4099014	TDM0453R3SCF063	.453	.472	.6250	2.25	2.03	1.42	.08	1.89	W17
4099015	TDM0472R3SCF063	.472	.492	.6250	2.38	2.16	1.48	.09	1.89	W18
4099016	TDM0492R3SCF063	.492	.511	.6250	2.38	2.16	1.54	.09	1.89	W19
4099017	TDM0512R3SCF063	.512	.531	.6250	2.50	2.28	1.59	.09	1.89	W20
4099018	TDM0532R3SCF063	.532	.551	.6250	2.50	2.28	1.65	.10	1.89	W21
4099019	TDM0551R3SCF063	.551	.571	.6250	2.63	2.41	1.71	.10	1.89	W22
4099020	TDM0571R3SCF063	.571	.590	.6250	2.75	2.53	1.77	.10	1.89	W23
4099021	TDM0591R3SCF075	.591	.630	.7500	2.88	2.66	1.89	.11	1.97	W24
4099022	TDM0630R3SCF075	.630	.669	.7500	3.00	2.78	2.01	.11	1.97	W25
4099023	TDM0669R3SCF075	.669	.708	.7500	3.25	3.03	2.13	.12	1.97	W26
4099024	TDM0709R3SCF075	.709	.748	.7500	3.38	3.16	2.24	.13	1.97	W27
4099025	TDM0748R3SCF075	.748	.787	.7500	3.50	3.28	2.36	.13	1.97	W28
4099026	TDM0787R3SCF100	.787	.826	1.0000	3.75	3.53	2.48	.14	2.20	W29
4099027	TDM0827R3SCF100	.827	.866	1.0000	3.88	3.66	2.60	.15	2.20	W30
4099028	TDM0866R3SCF100	.866	.905	1.0000	4.00	3.78	2.72	.16	2.20	W31
4099029	TDM0906R3SCF100	.906	.945	1.0000	4.25	4.03	2.84	.17	2.20	W32
4099030	TDM0945R3SCF100	.945	.984	1.0000	4.38	4.16	2.95	.17	2.20	W33
4099031	TDM0984R3SCF100	.984	1.023	1.0000	4.50	4.28	3.07	.18	2.20	W34

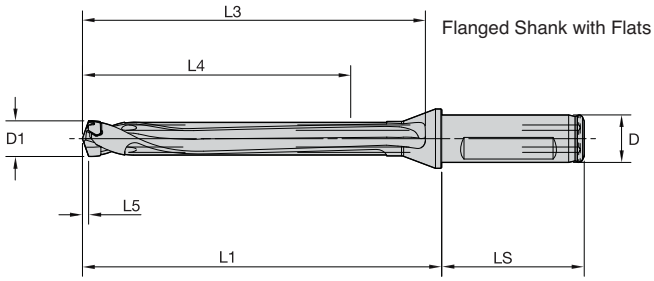
• Tool body shipped with insert wrench.



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

order number	catalog number	D1	D1 max	D	L1	L3	L4 max	L5	LS	insert blade seat size
4099032	TDM0313R5SCF050	.313	.334	.5000	2.38	2.16	1.67	.057	1.77	W10
4099033	TDM0335R5SCF050	.335	.354	.5000	2.50	2.28	1.77	.062	1.77	W11
4099034	TDM0354R5SCF050	.354	.374	.5000	2.63	2.41	1.87	.065	1.77	W12
4099035	TDM0374R5SCF050	.374	.393	.5000	2.75	2.53	1.97	.068	1.77	W13
4099036	TDM0394R5SCF063	.394	.413	.6250	2.88	2.66	2.07	.072	1.89	W14
4099037	TDM0413R5SCF063	.413	.433	.6250	3.00	2.78	2.17	.076	1.89	W15
4099038	TDM0433R5SCF063	.433	.452	.6250	3.13	2.91	2.26	.079	1.89	W16
4099039	TDM0453R5SCF063	.453	.472	.6250	3.25	3.03	2.36	.082	1.89	W17
4099040	TDM0472R5SCF063	.472	.492	.6250	3.38	3.16	2.46	.087	1.89	W18
4099041	TDM0492R5SCF063	.492	.511	.6250	3.50	3.28	2.56	.090	1.89	W19
4099042	TDM0512R5SCF063	.512	.531	.6250	3.63	3.41	2.66	.093	1.89	W20
4099043	TDM0532R5SCF063	.532	.551	.6250	3.75	3.53	2.76	.098	1.89	W21
4099044	TDM0551R5SCF063	.551	.571	.6250	3.88	3.66	2.85	.101	1.89	W22
4099045	TDM0571R5SCF063	.571	.590	.6250	4.00	3.78	2.95	.104	1.89	W23
4099046	TDM0591R5SCF075	.591	.630	.7500	4.25	4.03	3.15	.107	1.97	W24
4099047	TDM0630R5SCF075	.630	.669	.7500	4.50	4.28	3.35	.113	1.97	W25
4099048	TDM0669R5SCF075	.669	.708	.7500	4.75	4.53	3.54	.121	1.97	W26
4099049	TDM0709R5SCF075	.709	.748	.7500	5.00	4.78	3.74	.129	1.97	W27
4099050	TDM0748R5SCF075	.748	.787	.7500	5.25	5.03	3.94	.134	1.97	W28
4099051	TDM0787R5SCF100	.787	.826	1.0000	5.38	5.16	4.13	.143	2.20	W29
4099052	TDM0827R5SCF100	.827	.866	1.0000	5.75	5.53	4.33	.151	2.20	W30
4099053	TDM0866R5SCF100	.866	.905	1.0000	6.00	5.78	4.53	.156	2.20	W31
4099054	TDM0906R5SCF100	.906	.945	1.0000	6.13	5.91	4.72	.167	2.20	W32
4099055	TDM0945R5SCF100	.945	.984	1.0000	6.38	6.16	4.92	.173	2.20	W33
4099056	TDM0984R5SCF100	.984	1.023	1.0000	6.75	6.53	5.12	.178	2.20	W34

• Tool body shipped with insert wrench.



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

order number	catalog number	D1	D1 max	D	L1	L3	L4 max	L5	LS	insert blade seat size
4099057	TDM0313R8SCF050	.313	.334	.5000	3.38	3.16	2.68	.057	1.77	W10
4099058	TDM0335R8SCF050	.335	.354	.5000	3.50	3.28	2.83	.062	1.77	W11
4099059	TDM0354R8SCF050	.354	.374	.5000	3.75	3.53	2.99	.065	1.77	W12
4099060	TDM0374R8SCF050	.374	.393	.5000	4.00	3.78	3.15	.068	1.77	W13
4099061	TDM0394R8SCF063	.394	.413	.6250	4.13	3.91	3.31	.072	1.89	W14
4099062	TDM0413R8SCF063	.413	.433	.6250	4.25	4.03	3.46	.076	1.89	W15
4099063	TDM0433R8SCF063	.433	.452	.6250	4.50	4.28	3.62	.079	1.89	W16
4099064	TDM0453R8SCF063	.453	.472	.6250	4.63	4.41	3.78	.082	1.89	W17
4099065	TDM0472R8SCF063	.472	.492	.6250	4.88	4.66	3.94	.087	1.89	W18
4099066	TDM0492R8SCF063	.492	.511	.6250	5.00	4.78	4.09	.090	1.89	W19
4099067	TDM0512R8SCF063	.512	.531	.6250	5.13	4.91	4.25	.093	1.89	W20
4099068	TDM0532R8SCF063	.532	.551	.6250	5.38	5.16	4.41	.098	1.89	W21
4099069	TDM0551R8SCF063	.551	.571	.6250	5.63	5.41	4.57	.101	1.89	W22
4099070	TDM0571R8SCF063	.571	.590	.6250	5.75	5.53	4.72	.104	1.89	W23
4099071	TDM0591R8SCF075	.591	.630	.7500	6.13	5.91	5.04	.107	1.97	W24
4099072	TDM0630R8SCF075	.630	.669	.7500	6.50	6.28	5.35	.113	1.97	W25
4099073	TDM0669R8SCF075	.669	.708	.7500	6.88	6.66	5.67	.121	1.97	W26
4099074	TDM0709R8SCF075	.709	.748	.7500	7.25	7.03	5.98	.129	1.97	W27
4099075	TDM0748R8SCF075	.748	.787	.7500	7.50	7.28	6.30	.134	1.97	W28
4099076	TDM0787R8SCF100	.787	.826	1.0000	7.88	7.66	6.61	.143	2.20	W29
4099077	TDM0827R8SCF100	.827	.866	1.0000	8.25	8.03	6.93	.151	2.20	W30
4099078	TDM0866R8SCF100	.866	.905	1.0000	8.63	8.41	7.24	.156	2.20	W31
4099079	TDM0906R8SCF100	.906	.945	1.0000	9.00	8.78	7.56	.167	2.20	W32
4099080	TDM0945R8SCF100	.945	.984	1.0000	9.38	9.16	7.87	.173	2.20	W33
4099081	TDM0984R8SCF100	.984	1.023	1.0000	9.75	9.53	8.19	.178	2.20	W34

WIDIA™ Victory™ TOP DRILL M1™

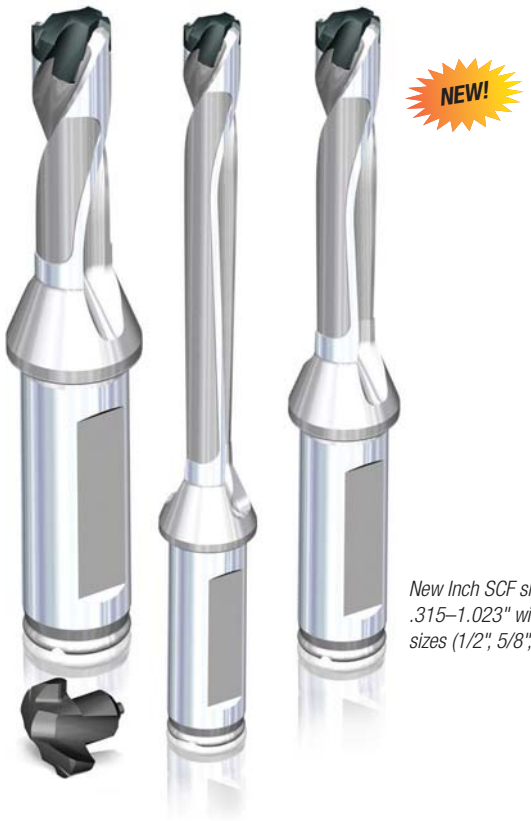
The TOP DRILL M1 modular drills offer quality and performance in one versatile, economical package.

Choose the Victory TOP DRILL M1 for:

Performance — Hole quality and metal removal rates comparable to solid carbide drills and superior to traditional indexable style drills.

Convenience — Insert is easy to change from the front without any small screws, clamps, or need to remove from the machine.

Reliability — Replaceable tip design ensures consistent performance without the issues and logistics associated with reconditioning.



New Inch SCF shank line. Covers .315–1.023" with only four shank sizes (1/2", 5/8", 3/4", and 1").

Achieve Victory with the WIDIA™ Modular Drill Family

WIDIA-Metcut™ Spade Blades

are the perfect compliment to TOP DRILL M1™ for an extensive portfolio of modular drilling.

WIDIA™ provides the complete modular holemaking solution portfolio from 8mm (.315") to 114mm (4.5") to cover a wide range of machining environments and materials.

- Fast penetration rates, less downtime, lower variability.
- Interchangeable with other conventional spade blade holders.
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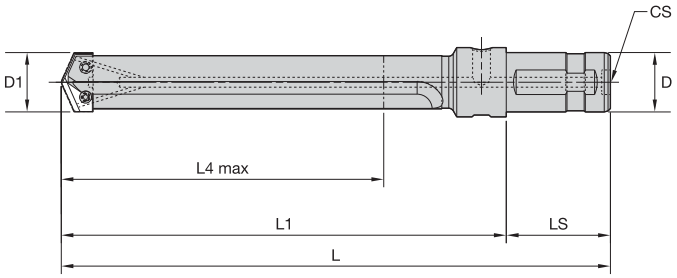
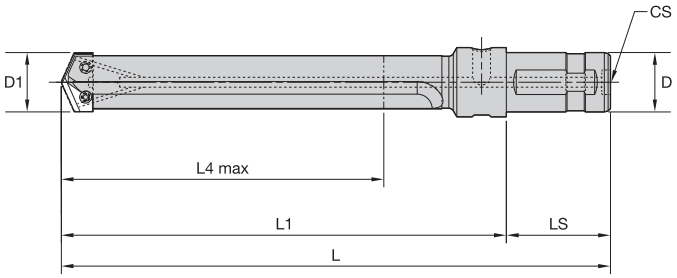


Straight Flute Holders • Short

short	D1 in	D1 mm	D1 max in	D1 max mm	L	L1	L4 max	LS	D	seat size	CS	insert screw	Torx wrench
7SZSS	.437	11,10	.508	12,90	5.75	3.37	1.50	2.38	.750	Z	1/8-27 NPT	**56-1015**	**56-2026**
7S0.5SS	.509	12,93	.695	17,65	6.35	3.97	2.10	2.38	.750	0	1/8-27 NPT	**56-1014**	**56-2017**
7S1SS	.859	21,82	.960	24,38	7.23	4.85	2.55	2.38	1.000	1.5	1/4-18 NPT	**56-1020**	**56-2028**
7S2SS	1.187	30,15	1.380	35,05	8.00	5.56	2.88	2.44	1.250	2.5	1/4-18 NPT	**56-1018**	**56-2015**
7S3SS	1.381	35,08	1.879	47,73	9.88	7.25	5.00	2.63	1.500	3	1/4-18 NPT	**56-1585**	**56-2020**
7S4SS	1.880	47,75	2.570	65,28	11.38	8.75	6.50	2.63	1.500	4	1/4-18 NPT	**56-1585**	**56-2020**
7S5SS	2.500	63,50	3.500	88,90	12.50	9.25	6.75	3.25	2.000	5	1/4-18 NPT	**56-1025**	**56-2125**

Straight Flute Holders • Medium

medium	D1 in	D1 mm	D1 max in	D1 max mm	L	L1	L4 max	LS	D	seat size	CS	insert screw	Torx wrench
7SZSM	.437	11,10	.508	12,90	6.76	4.38	2.50	2.38	.750	Z	1/8-27 NPT	**56-1015**	**56-2026**
7S0SM	.609	15,47	.695	17,65	7.71	5.33	3.34	2.38	.750	–	1/8-27 NPT	**56-1014**	**56-2017**
7S1SM	.859	21,82	.960	24,38	9.18	6.80	4.80	2.38	1.000	1.5	1/4-18 NPT	**56-1020**	**56-2028**
7S2SM	.961	24,41	1.380	35,05	10.38	7.94	5.94	2.44	1.250	2	1/4-18 NPT	**56-1018**	**56-2015**
7S2.5SM	1.187	30,15	1.380	35,05	–	5.56	5.26	2.44	1.250	2.5	1/4-18 NPT	**56-1020**	**56-2028**
7S3SM	1.381	35,08	1.879	47,73	13.88	11.25	9.00	2.63	1.500	3	1/4-18 NPT	**56-1585**	**56-2020**
7S4SM	1.880	47,75	2.570	65,28	15.38	12.75	10.50	2.63	1.500	4	1/4-18 NPT	**56-1585**	**56-2020**
7S5SM	2.500	63,50	3.500	88,90	18.25	15.00	12.50	3.25	2.000	5	1/4-18 NPT	**56-1025**	**56-2125**
7S7SM	3.501	88,93	4.500	114,30	21.25	14.62	12.25	6.63	3.000	7	1/4-18 NPT	**56-1025**	**56-2125**

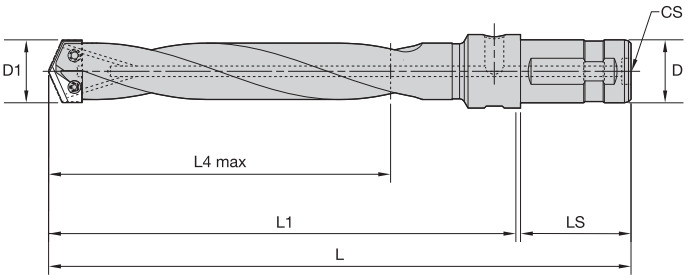


Straight Flute Holders • Long

long	D1 in	D1 mm	D1 max in	D1 max mm	L	L1	L4 max	LS	D	seat size	CS	insert screw	Torx wrench
7SZSL	.437	11,10	.508	12,90	7.76	5.38	3.50	2.38	.750	Z	1/8-27 NPT	**56-1015**	**56-2026**
7S0SL	.609	15,47	.695	17,65	9.13	6.75	4.76	2.38	.750	–	1/8-27 NPT	**56-1014**	**56-2017**
7S1SL	.690	17,53	.960	24,38	11.10	8.72	6.72	2.38	1.000	1	1/4-18 NPT	**56-1020**	**56-2028**
7S2SL	.961	24,41	1.380	35,05	12.75	10.31	8.31	2.44	1.250	2	1/4-18 NPT	**56-1018**	**56-2015**
7S3SL	1.381	35,08	1.879	47,73	18.63	16.00	13.75	2.63	1.500	3	1/4-18 NPT	**56-1585**	**56-2020**
7S4SL	1.880	47,75	2.570	65,28	21.50	18.87	16.62	2.63	1.500	4	1/4-18 NPT	**56-1585**	**56-2020**
7S7SL	3.501	88,93	4.500	114,30	28.50	22.88	19.45	6.63	3.000	7	1/4-18 NPT	**56-1025**	**56-2125**

Straight Flute Holders • Extra Long

extra long	D1 in	D1 mm	D1 max in	D1 max mm	L	L1	L4 max	LS	D	seat size	CS	insert screw	Torx wrench
7SZSE	.437	11,10	.508	12,90	8.63	6.25	4.38	2.38	.750	Z	1/8-27 NPT	**56-1015**	**56-2026**
7S0SE	.609	15,47	.695	17,65	12.17	9.80	7.80	2.38	.750	–	1/8-27 NPT	**56-1014**	**56-2017**
7S1SE	.859	21,82	.960	24,38	15.13	12.75	10.45	2.38	1.000	1.5	1/4-18 NPT	**56-1020**	**56-2028**
7S2SE	.961	24,41	1.380	35,05	15.82	13.38	11.38	2.44	1.250	2	1/4-18 NPT	**56-1018**	**56-2015**
7S3SE	1.381	35,08	1.879	47,73	25.51	22.88	–	2.63	1.500	3	1/4-18 NPT	**56-1585**	**56-2020**
7S4SE	1.880	47,75	2.570	65,28	–	–	–	–	–	–	1/4-18 NPT	**56-1585**	**56-2020**
7SXSE	3.501	88,93	.375	9,53	7.25	4.87	4.38	2.38	.750	X	–	**MS1454**	**56-2025**



Helical Flute Holders • Short

short	D1 in	D1 mm	D1 max in	D1 max mm	L	L1	L4 max	LS	D	seat size	CS	insert screw	Torx wrench
7HZSS	.437	11,10	.508	12,90	6.76	4.38	2.50	2.38	.750	Z	1/8-27 NPT	**56-1015**	**56-2026**
7H0SS	.509	12,93	.695	17,65	6.35	3.97	2.10	2.38	.750	0	1/8-27 NPT	**56-1014**	**56-2017**
7H1SS	.690	17,53	.960	24,38	7.23	4.85	2.85	2.38	1.000	1	1/4-18 NPT	**56-1020**	**56-2028**
7H2SS	.961	24,41	1.380	35,05	8.00	5.56	3.56	2.44	1.250	2	1/4-18 NPT	**56-1018**	**56-2015**
7H3SS	1.381	35,08	1.879	47,73	9.88	7.25	5.00	2.63	1.500	3	1/4-18 NPT	**56-1585**	**56-2020**
7H4SS	1.880	47,75	2.570	65,28	11.38	8.75	6.50	2.63	1.500	4	1/4-18 NPT	**56-1585**	**56-2020**

Helical Flute Holders • Medium

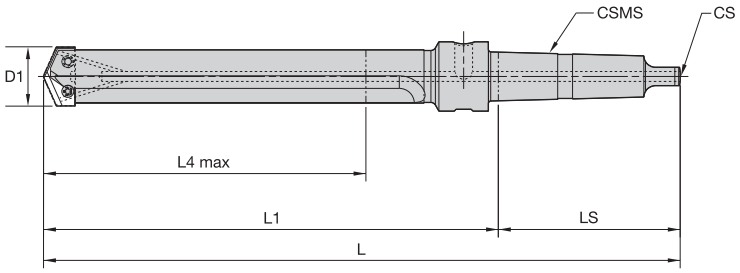
medium	D1 in	D1 mm	D1 max in	D1 max mm	L	L1	L4 max	LS	D	seat size	CS	insert screw	Torx wrench
7HZSM	.437	11,10	.508	12,90	7.76	5.38	3.50	2.38	.750	Z	1/8-27 NPT	**56-1015**	**56-2026**
7H0SM	.509	12,93	.695	17,65	7.71	5.33	3.45	2.38	.750	0	1/8-27 NPT	**56-1014**	**56-2017**
7H1SM	.859	21,82	.960	24,38	9.18	6.80	4.80	2.38	1.000	1.5	1/4-18 NPT	**56-1020**	**56-2028**
7H2SM	.961	24,41	1.380	35,05	10.38	7.94	5.94	2.44	1.250	2	1/4-18 NPT	**56-1018**	**56-2015**
7H3SM	1.381	35,08	1.879	47,73	13.88	11.25	9.00	2.63	1.500	3	1/4-18 NPT	**56-1585**	**56-2020**
7H4SM	1.880	47,75	2.570	65,28	15.38	12.75	10.50	2.63	1.500	4	1/4-18 NPT	**56-1585**	**56-2020**

Helical Flute Holders • Long

long	D1 in	D1 mm	D1 max in	D1 max mm	L	L1	L4 max	LS	D	seat size	CS	insert screw	Torx wrench
7HZSL	.437	11,10	.508	12,90	8.63	6.25	4.38	2.38	.750	Z	1/8-27 NPT	**56-1015**	**56-2026**
7H0SL	.609	15,47	.695	17,65	9.13	6.75	4.76	2.38	.750	–	1/8-27 NPT	**56-1014**	**56-2017**
7H1SL	.690	17,53	.960	24,38	11.10	8.72	6.72	2.38	1.000	1	1/4-18 NPT	**56-1020**	**56-2028**
7H2SL	.961	24,41	1.380	35,05	12.75	10.31	8.31	2.44	1.250	2	1/4-18 NPT	**56-1018**	**56-2015**
7H3SL	1.381	35,08	1.879	47,73	18.63	16.00	13.75	2.63	1.500	3	1/4-18 NPT	**56-1585**	**56-2020**

Helical Flute Holders • Extra Long

extra long	D1 in	D1 mm	D1 max in	D1 max mm	L	L1	L4 max	LS	D	seat size	CS	insert screw	Torx wrench
7H0SE	.609	15,47	.695	17,65	12.18	9.80	7.80	2.38	.750	–	1/8-27 NPT	**56-1014**	**56-2017**
7H1SE	.690	17,53	.960	24,38	15.12	12.75	10.75	2.38	1.000	1	1/4-18 NPT	**56-1020**	**56-2028**
7H2SE	.961	24,41	1.380	35,05	15.82	13.38	11.38	2.44	1.250	2	1/4-18 NPT	**56-1018**	**56-2015**



Straight Flute Holders • Short

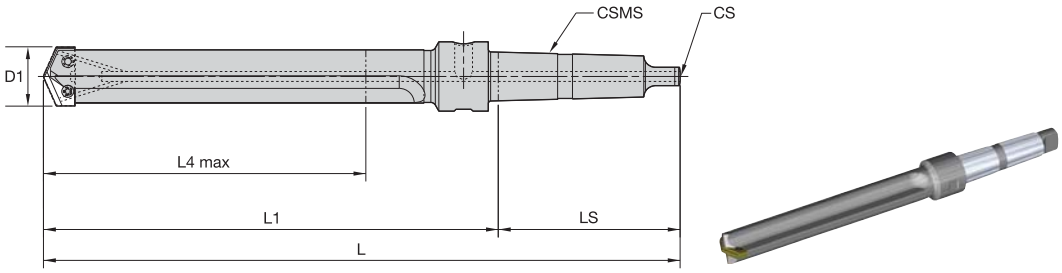
short	D1 in	D1 mm	D1 max in	D1 max mm	L	L1	L4 max	LS	CSMS system size	seat size	CS	insert screw	Torx wrench
7SZTS	.437	11,10	.508	12,90	6.50	3.56	1.50	3.13	2	Z	8-32	**56-1015**	**56-2026**
7S0TS	.509	12,93	.695	17,65	7.10	4.16	2.10	3.13	2	0	8-32	**56-1014**	**56-2017**
7S1TS	.690	17,53	.960	24,38	8.73	5.04	2.85	3.88	3	1	1/4-20	**56-1020**	**56-2028**
7S1.5TS	.859	21,82	.960	24,38	8.73	4.85	2.55	3.88	3	1.5	1/4-20	**56-1020**	**56-2028**
7S2TS	.961	24,41	1.380	35,05	9.44	5.75	3.56	3.88	3	2	1/4-20	**56-1018**	**56-2015**
7S2.5TS-4MT	1.187	30,15	1.380	35,05	9.44	5.56	2.88	3.88	3	2.5	1/4-20	**56-1018**	**56-2015**
7S3TS	1.381	35,08	1.879	47,73	12.13	7.50	5.00	4.88	4	3	5/16-18	**56-1585**	**56-2020**
7S4TS	1.880	47,75	2.570	65,28	13.62	9.00	6.50	4.88	4	4	5/16-18	**56-1585**	**56-2020**
7S5TS	2.500	63,50	3.500	88,90	15.38	9.50	6.75	6.13	5	5	1/2-13	**56-1025**	**56-2125**
7S7TS	3.501	88,93	4.500	114,30	16.28	8.62	6.88	6.13	5	7	1/2-13	**56-1025**	**56-2125**

NOTE: CSMS = Morse Taper size.

Straight Flute Holders • Medium

medium	D1 in	D1 mm	D1 max in	D1 max mm	L	L1	L4 max	LS	CSMS system size	seat size	CS	insert screw	Torx wrench
7SZTM	.437	11,10	.508	12,90	7.50	4.56	2.50	3.13	2	Z	8-32	**56-1015**	**56-2026**
7S0TM	.509	12,93	.695	17,65	8.46	5.52	3.45	3.13	2	0	8-32	**56-1014**	**56-2017**
7S1TM	.690	17,53	.960	24,38	10.68	6.99	4.80	3.88	3	1	1/4-20	**56-1020**	**56-2028**
7S1.5TM	.859	21,82	.960	24,38	10.68	6.80	4.80	3.88	3	1.5	1/4-20	**56-1020**	**56-2028**
7S2TM	.961	24,41	1.380	35,05	11.82	8.13	5.94	3.88	3	2	1/4-20	**56-1018**	**56-2015**
7S2.5TM-4MT	1.187	30,15	1.380	35,05	12.82	7.94	5.26	4.88	4	2.5	5/16-18	**56-1018**	**56-2015**
7S3TM	1.381	35,08	1.879	47,73	16.13	11.50	9.00	4.88	4	3	5/16-18	**56-1585**	**56-2020**
7S4TM	1.880	47,75	2.570	65,28	17.63	13.00	10.50	4.88	4	4	5/16-18	**56-1585**	**56-2020**
7S5TM	2.500	63,50	3.500	88,90	21.13	15.25	12.50	6.13	5	5	1/2-13	**56-1025**	**56-2125**
7S7TM	3.501	88,93	4.500	114,30	22.28	14.62	12.25	6.13	5	7	1/2-13	**56-1025**	**56-2125**

NOTE: CSMS = Morse Taper size.



Straight Flute Holders • Long

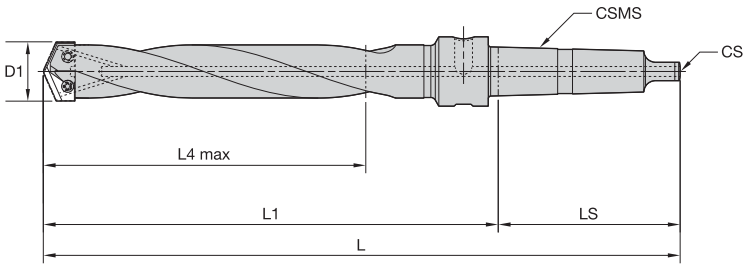
long	D1 in	D1 mm	D1 max in	D1 max mm	L	L1	L4 max	LS	CSMS system size	seat size	CS	insert screw	Torx wrench
7SZTL	.437	11,10	.508	12,90	8.51	5.57	3.50	3.13	2	Z	8-32	**56-1015**	**56-2026**
7S0TL	.509	12,93	.695	17,65	9.88	6.94	4.87	3.13	2	0	8-32	**56-1014**	**56-2017**
7S0.5TL	.609	15,47	.695	17,65	9.88	6.75	4.76	3.13	2	—	8-32	**56-1014**	**56-2017**
7S1TL	.690	17,53	.960	24,38	12.60	8.91	6.72	3.88	3	1	1/4-20	**56-1020**	**56-2028**
7S2TL	.961	24,41	1.380	35,05	14.19	10.50	8.31	3.88	3	2	1/4-20	**56-1018**	**56-2015**
7S2.5TL-4MT	1.187	30,15	1.380	35,05	15.19	10.31	7.63	4.88	4	2.5	5/16-18	**56-1018**	**56-2015**
7S3TL	1.381	35,08	1.879	47,73	20.88	16.25	13.75	4.88	4	3	5/16-18	**56-1585**	**56-2020**
7S4TL	1.880	47,75	2.570	65,28	23.75	19.12	16.62	4.88	4	4	5/16-18	**56-1585**	**56-2020**
7S5TL	2.500	63,50	3.500	88,90	26.88	21.00	18.25	6.13	5	5	1/2-13	**56-1025**	**56-2125**
7S7TL	3.501	88,93	4.500	114,30	30.53	22.88	19.45	6.13	5	7	1/2-13	**56-1025**	**56-2125**

NOTE: CSMS = Morse Taper size.

Straight Flute Holders • Extra Long

extra long	D1 in	D1 mm	D1 max in	D1 max mm	L	L1	L4 max	LS	CSMS system size	seat size	CS	insert screw	Torx wrench
7SZTE	.437	11,10	.508	12,90	9.38	6.44	4.38	3.13	2	Z	8-32	**56-1015**	**56-2026**
7S0TE	.509	12,93	.695	17,65	12.93	10.00	7.80	3.13	2	0	8-32	**56-1014**	**56-2017**
7S0.5TE	.609	15,47	.695	17,65	12.93	9.80	7.80	3.13	2	—	8-32	**56-1014**	**56-2017**
7S1TE	.690	17,53	.960	24,38	16.63	12.94	10.75	3.88	3	1	1/4-20	**56-1020**	**56-2028**
7S2TE	.961	24,41	1.380	35,05	17.26	13.57	11.38	3.88	3	2	1/4-20	**56-1018**	**56-2015**
7S2.5TE	1.187	30,15	1.380	35,05	18.26	13.38	10.70	4.88	4	2.5	5/16-18	**56-1018**	**56-2015**

NOTE: CSMS = Morse Taper size.



Helical Flute Holders • Short

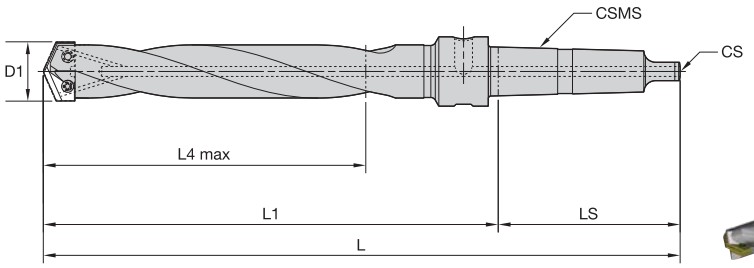
short	D1 in	D1 mm	D1 max in	D1 max mm	L	L1	L4 max	LS	CSMS system size	seat size	CS	insert screw	Torx wrench
7HZTS	.437	11,10	.508	12,90	6.50	3.56	1.50	3.13	2	Z	8-32	**56-1015**	**56-2026**
7H0TS	.509	12,93	.695	17,65	7.10	4.16	2.10	3.13	2	0	8-32	**56-1014**	**56-2017**
7H1TS	.690	17,53	.960	24,38	8.73	5.04	2.85	3.88	3	1	1/4-20	**56-1020**	**56-2028**
7H2TS	.961	24,41	1.380	35,05	9.44	5.75	3.56	3.88	3	2	1/4-20	**56-1018**	**56-2015**
7H2.5TS	1.187	30,15	1.380	35,05	9.44	5.56	2.88	3.88	3	2.5	1/4-20	**56-1020**	**56-2028**
7H3TS	1.381	35,08	1.879	47,73	12.13	7.50	5.00	4.88	4	3	5/16-18	**56-1585**	**56-2020**
7H4TS	1.880	47,75	2.570	65,28	13.63	9.00	6.50	4.88	4	4	5/16-18	**56-1585**	**56-2020**

NOTE: CSMS = Morse Taper size.

Helical Flute Holders • Medium

medium	D1 in	D1 mm	D1 max in	D1 max mm	L	L1	L4 max	LS	CSMS system size	seat size	CS	insert screw	Torx wrench
7HZTM	.437	11,10	.508	12,90	7.50	4.56	2.50	3.13	2	Z	8-32	**56-1015**	**56-2026**
7H0TM	.509	12,93	.695	17,65	8.46	5.52	3.45	3.13	2	0	8-32	**56-1014**	**56-2017**
7H0.5TM	.609	15,47	.695	17,65	8.46	5.33	3.34	3.13	2	—	8-32	**56-1013**	**56-2017**
7H1TM	.690	17,53	.960	24,38	10.68	6.99	4.80	3.88	3	1	1/4-20	**56-1020**	**56-2028**
7H2TM	.961	24,41	1.380	35,05	11.82	8.13	5.94	3.88	3	2	1/4-20	**56-1018**	**56-2015**
7H2.5TM	1.187	30,15	1.380	35,05	12.82	7.94	5.26	4.88	4	2.5	5/16-18	**56-1020**	**56-2028**
7H3TM	1.381	35,08	1.879	47,73	16.13	11.50	9.00	4.88	4	3	5/16-18	**56-1585**	**56-2020**
7H4TM	1.880	47,75	2.570	65,28	17.63	13.00	10.50	4.88	4	4	5/16-18	**56-1585**	**56-2020**
7H5TM	2.500	63,50	3.500	88,90	21.13	15.25	12.50	6.13	5	5	1/2-13	**56-1025**	**56-2125**

NOTE: CSMS = Morse Taper size.



Helical Flute Holders • Long

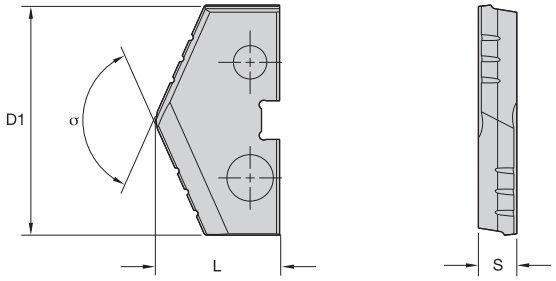
long	D1 in	D1 mm	D1 max in	D1 max mm	L	L1	L4 max	LS	CSMS system size	seat size	CS	insert screw	Torx wrench
7HZTL	.437	11,10	.508	12,90	8.51	5.57	3.50	3.13	2	Z	8-32	**56-1015**	**56-2026**
7H0TL	.509	12,93	.695	17,65	9.88	6.94	4.87	3.13	2	0	8-32	**56-1014**	**56-2017**
7H0.5TL	.609	15,47	.695	17,65	9.88	6.75	4.76	3.13	2	—	8 - 32	**56-1013**	**56-2017**
7H1TL	.690	17,53	.960	24,38	12.60	8.91	6.72	3.88	3	1	1/4 - 20	**56-1020**	**56-2028**
7H1.5TL	.859	21,82	.960	24,38	12.60	8.72	6.42	3.88	3	1.5	1/4 - 20	**56-1020**	**56-2028**
7H2TL	.961	24,41	1.380	35,05	14.19	10.50	8.31	3.88	3	2	1/4 - 20	**56-1018**	**56-2015**
7H2.5TL	1.187	30,15	1.380	35,05	14.19	10.31	7.63	3.88	3	2.5	1/4 - 20	**56-1020**	**56-2028**
7H3TL	1.381	35,08	1.879	47,73	20.88	16.25	13.75	4.88	4	3	5/16-18	**56-1585**	**56-2020**
7H4TL	1.880	47,75	2.570	65,28	23.75	19.12	16.62	4.88	4	4	5/16-18	**56-1585**	**56-2020**
7H5TL	2.500	63,50	3.500	88,90	26.88	21.00	18.25	6.13	5	5	1/2-13	**56-1025**	**56-2125**

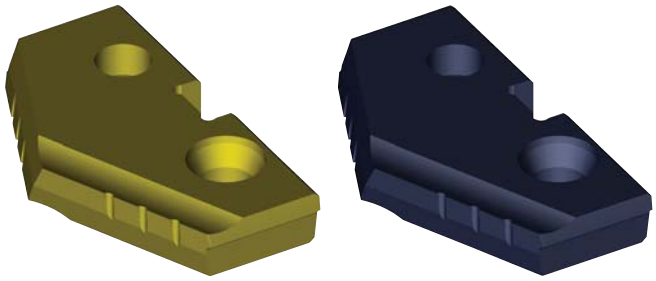
NOTE: CSMS = Morse Taper size.

Helical Flute Holders • Extra Long

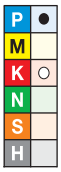
extra long	D1 in	D1 mm	D1 max in	D1 max mm	L	L1	L4 max	LS	CSMS system size	seat size	CS	insert screw	Torx wrench
7HZTE	.437	11,10	.508	12,90	9.38	6.44	4.38	3.13	2	Z	8-32	**56-1015**	**56-2026**
7H0TE	.509	12,93	.695	17,65	12.93	10.00	7.80	3.13	2	0	8-32	**56-1014**	**56-2017**
7H0.5TE	.609	15,47	.695	17,65	12.93	9.80	7.80	3.13	2	—	8 - 32	**56-1013**	**56-2017**
7H1TE	.690	17,53	.960	24,38	16.63	12.94	10.75	3.88	3	1	1/4 - 20	**56-1020**	**56-2028**
7H1.5TE	.859	21,82	.960	24,38	16.63	12.75	10.45	3.88	3	1.5	1/4 - 20	**56-1020**	**56-2028**
7H2TE	.961	24,41	1.380	35,05	17.26	13.57	11.38	3.88	3	2	1/4 - 20	**56-1018**	**56-2015**
7H2.5TE	1.187	30,15	1.380	35,05	17.26	13.36	10.70	3.88	3	2.5	1/4 - 20	**56-1020**	**56-2028**

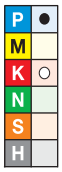
NOTE: CSMS = Morse Taper size.





Seat Size Z

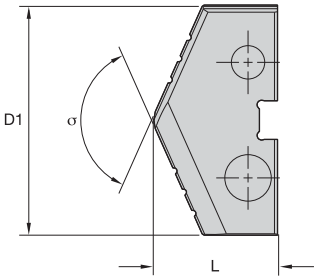


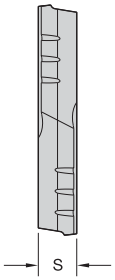


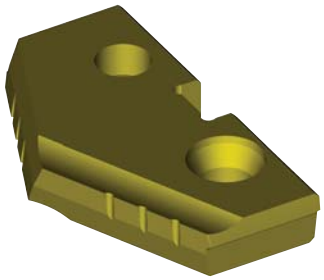
● first choice
○ alternate choice

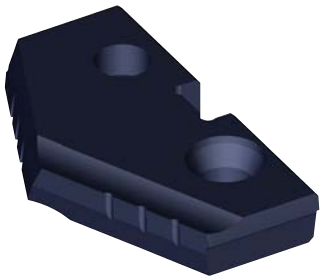
TiN	TiAlN	D1 mm	D1 in	L mm	L in	S mm	S in	σ
7FZ-0438T	**7FZ-0438A**	11,11	.438	9,19	.362	2,39	.094	132
7FZ-0453T	**7FZ-0453A**	11,51	.453	9,19	.362	2,39	.094	132
7FZ-0469T	**7FZ-0469A**	11,91	.469	9,19	.362	2,39	.094	132
—	**7FZ-0472A**	12,00	.472	9,19	.362	2,39	.094	132
7FZ-0484T	**7FZ-0484A**	12,30	.484	9,19	.362	2,39	.094	132
—	**7FZ-0492A**	12,50	.492	9,19	.362	2,39	.094	132
7FZ-0500T	**7FZ-0500A**	12,70	.500	9,19	.362	2,39	.094	132

Tool holders available upon request as an Engineered Solution.

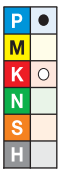


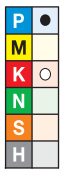






Seat Size 0

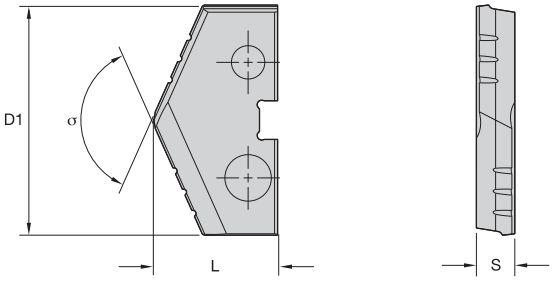


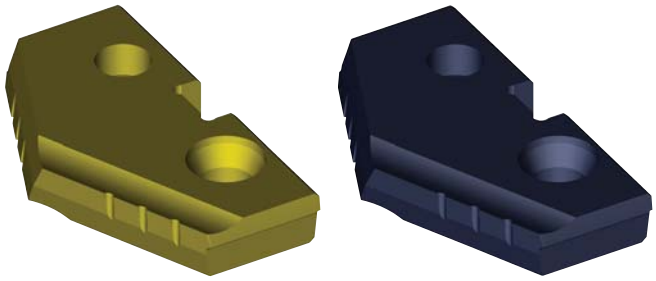


● first choice
○ alternate choice

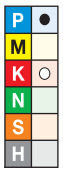
TiN	TiAlN	D1 mm	D1 in	L mm	L in	S mm	S in	σ
7F0-0512T	**–**	13,00	.512	10,80	.425	3,18	.125	132
7F0-0516T	**7F0-0516A**	13,10	.516	10,80	.425	3,18	.125	132
7F0-0531T	**7F0-0531A**	13,50	.531	10,80	.425	3,18	.125	132
7F0-0547T	**7F0-0547A**	13,89	.547	10,80	.425	3,18	.125	132
7F0-0551T	**7F0-0551A**	14,00	.551	10,80	.425	3,18	.125	132
7F0-0563T	**7F0-0563A**	14,29	.563	10,80	.425	3,18	.125	132
7F0-0571T	**7F0-0571A**	14,50	.571	10,80	.425	3,18	.125	132
7F0-0578T	**7F0-0578A**	14,68	.578	10,80	.425	3,18	.125	132
7F0-0591T	**7F0-0591A**	15,00	.591	10,80	.425	3,18	.125	132
7F0-0594T	**7F0-0594A**	15,08	.594	10,80	.425	3,18	.125	132
7F0-0609T	**7F0-0609A**	15,48	.609	10,80	.425	3,18	.125	132
–	**7F0-0610A**	15,50	.610	10,80	.425	3,18	.125	132
7F0-0625T	**7F0-0625A**	15,88	.625	10,80	.425	3,18	.125	132
7F0-0630T	**7F0-0630A**	16,00	.630	10,80	.425	3,18	.125	132
7F0-0641T	**7F0-0641A**	16,27	.641	10,80	.425	3,18	.125	132
7F0-0650T	**7F0-0650A**	16,50	.650	10,80	.425	3,18	.125	132
7F0-0656T	**7F0-0656A**	16,67	.656	10,80	.425	3,18	.125	132
7F0-0669T	**7F0-0669A**	17,00	.669	10,80	.425	3,18	.125	132
7F0-0672T	**7F0-0672A**	17,07	.672	10,80	.425	3,18	.125	132
7F0-0688T	**7F0-0688A**	17,46	.688	10,80	.425	3,18	.125	132
–	**7F0-0689A**	17,50	.689	10,80	.425	3,18	.125	132

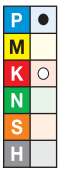
Tool holders available upon request as an Engineered Solution.





Seat Size 1

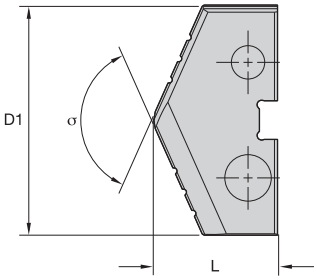


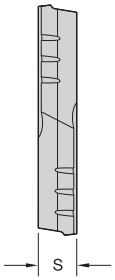


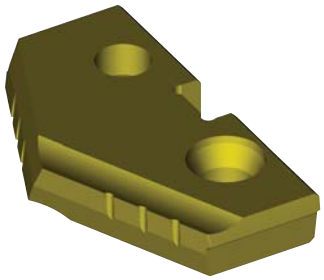
● first choice
○ alternate choice

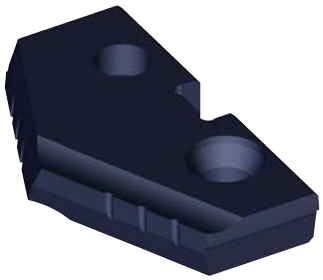
TiN	TiAlN	D1 mm	D1 in	L mm	L in	S mm	S in	σ
7F1-0703T	7F1-0703A	17,86	.703	13,84	.545	3,96	.156	132
7F1-0709T	7F1-0709A	18,00	.709	13,84	.545	3,96	.156	132
7F1-0719T	7F1-0719A	18,26	.719	13,84	.545	3,96	.156	132
7F1-0728T	7F1-0728A	18,50	.728	13,84	.545	3,96	.156	132
7F1-0734T	7F1-0734A	18,65	.734	13,84	.545	3,96	.156	132
7F1-0748T	7F1-0748A	19,00	.748	13,84	.545	3,96	.156	132
7F1-0750T	7F1-0750A	19,05	.750	13,84	.545	3,96	.156	132
7F1-0766T	7F1-0766A	19,45	.766	13,84	.545	3,96	.156	132
7F1-0768T	7F1-0768A	19,50	.768	13,84	.545	3,96	.156	132
7F1-0781T	7F1-0781A	19,85	.781	13,84	.545	3,96	.156	132
7F1-0787T	7F1-0787A	20,00	.787	13,84	.545	3,96	.156	132
7F1-0797T	7F1-0797A	20,24	.797	13,84	.545	3,96	.156	132
–	7F1-0806A	20,47	.806	13,84	.545	3,96	.156	132
7F1-0807T	7F1-0807A	20,50	.807	13,84	.545	3,96	.156	132
7F1-0813T	7F1-0813A	20,64	.813	13,84	.545	3,96	.156	132
7F1-0827T	7F1-0827A	21,00	.827	13,84	.545	3,96	.156	132
7F1-0828T	7F1-0828A	21,03	.828	13,84	.545	3,96	.156	132
7F1-0844T	7F1-0844A	21,43	.844	13,84	.545	3,96	.156	132
7F1-0859T	7F1-0859A	21,83	.859	13,84	.545	3,96	.156	132
7F1-0866T	7F1-0866A	22,00	.866	13,84	.545	3,96	.156	132
7F1-0875T	7F1-0875A	22,23	.875	13,84	.545	3,96	.156	132
7F1-0891T	7F1-0891A	22,62	.891	13,84	.545	3,96	.156	132
7F1-0906T	7F1-0906A	23,02	.906	13,84	.545	3,96	.156	132
7F1-0922T	7F1-0922A	23,42	.922	13,84	.545	3,96	.156	132
7F1-0938T	7F1-0938A	23,81	.938	13,84	.545	3,96	.156	132
7F1-0945T	7F1-0945A	24,00	.945	13,84	.545	3,96	.156	132
7F1-0953T	7F1-0953A	24,21	.953	13,84	.545	3,96	.156	132
7F1-0960T	–	24,40	.960	13,84	.545	3,96	.156	132

Tool holders available upon request as an Engineered Solution.

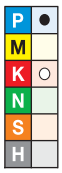


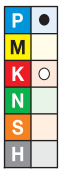






Seat Size 2

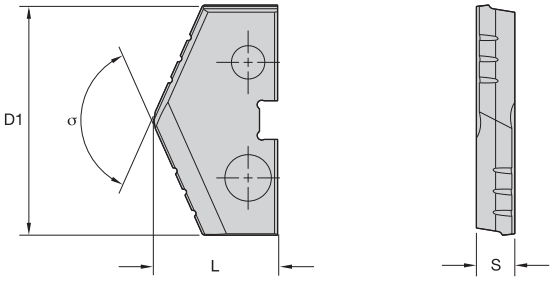


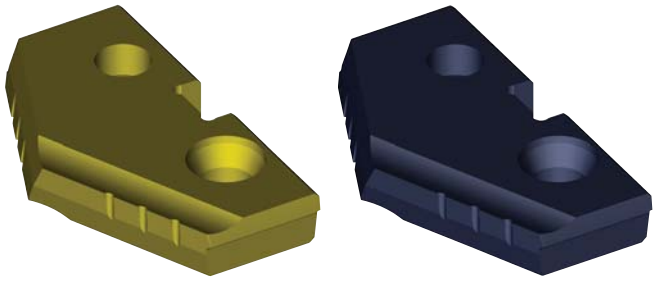


● first choice
○ alternate choice

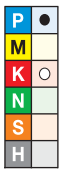
TiN	TiAlN	D1 mm	D1 in	L mm	L in	S mm	S in	σ
7F2-0969T	7F2-0969A	24,61	.969	16,13	.635	4,76	.188	132
–	7F2-0981A	24,92	.981	16,13	.635	4,76	.188	132
7F2-0984T	7F2-0984A	25,00	.984	16,13	.635	4,76	.188	132
7F2-1000T	7F2-1000A	25,40	1.000	16,13	.635	4,76	.188	132
7F2-1016T	7F2-1016A	25,80	1.016	16,13	.635	4,76	.188	132
7F2-1024T	7F2-1024A	26,00	1.024	16,13	.635	4,76	.188	132
7F2-1031T	7F2-1031A	26,20	1.031	16,13	.635	4,76	.188	132
7F2-1047T	7F2-1047A	26,59	1.047	16,13	.635	4,76	.188	132
7F2-1063T	7F2-1063A	26,99	1.063	16,13	.635	4,76	.188	132
7F2-1078T	7F2-1078A	27,61	1.078	16,13	.635	4,76	.188	132
7F2-1094T	7F2-1094A	27,78	1.094	16,13	.635	4,76	.188	132
7F2-1102T	7F2-1102A	28,00	1.102	16,13	.635	4,76	.188	132
–	7F2-1106A	28,10	1.106	16,13	.635	4,76	.188	132
7F2-1109T	7F2-1109A	28,17	1.109	16,13	.635	4,76	.188	132
7F2-1125T	7F2-1125A	28,58	1.125	16,13	.635	4,76	.188	132
7F2-1141T	7F2-1141A	28,97	1.141	16,13	.635	4,76	.188	132
7F2-1142T	7F2-1142A	29,00	1.142	16,13	.635	4,76	.188	132
7F2-1156T	7F2-1156A	29,37	1.156	16,13	.635	4,76	.188	132
7F2-1181T	7F2-1181A	30,00	1.181	16,13	.635	4,76	.188	132
7F2-1188T	7F2-1188A	30,16	1.188	16,13	.635	4,76	.188	132
7F2-1203T	–	30,56	1.203	16,13	.635	4,76	.188	132
7F2-1219T	7F2-1219A	30,96	1.219	16,13	.635	4,76	.188	132
7F2-1221T	7F2-1221A	31,00	1.221	16,13	.635	4,76	.188	132
–	7F2-1231A	31,27	1.231	16,13	.635	4,76	.188	132
7F2-1234T	–	31,35	1.234	16,13	.635	4,76	.188	132
7F2-1250T	7F2-1250A	31,75	1.250	16,13	.635	4,76	.188	132
7F2-1260T	7F2-1260A	32,00	1.260	16,13	.635	4,76	.188	132
7F2-1266T	7F2-1266A	32,15	1.266	16,13	.635	4,76	.188	132
7F2-1281T	7F2-1281A	32,55	1.281	16,13	.635	4,76	.188	132
7F2-1299T	7F2-1299A	33,00	1.299	16,13	.635	4,76	.188	132
7F2-1313T	7F2-1313A	33,34	1.313	16,13	.635	4,76	.188	132
7F2-1328T	7F2-1328A	33,73	1.328	16,13	.635	4,76	.188	132
7F2-1339T	7F2-1339A	34,00	1.339	16,13	.635	4,76	.188	132
7F2-1344T	7F2-1344A	34,13	1.344	16,13	.635	4,76	.188	132
7F2-1359T	–	34,53	1.359	16,13	.635	4,76	.188	132
7F2-1375T	7F2-1375A	34,93	1.375	16,13	.635	4,76	.188	132
7F2-1378T	7F2-1378A	35,00	1.378	16,13	.635	4,76	.188	132

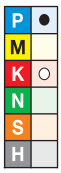
Tool holders available upon request as an Engineered Solution.





Seat Size 3

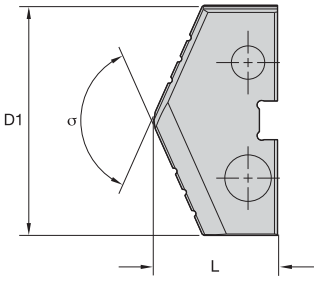


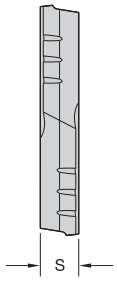


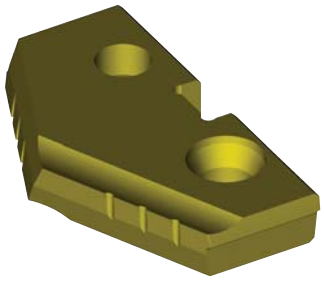
● first choice
○ alternate choice

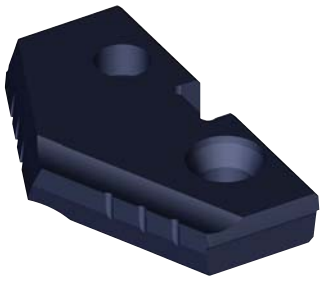
TiN	TiAlN	D1 mm	D1 in	L mm	L in	S mm	S in	σ
7F3-1391T	–	35,32	1.391	20,45	.805	6,35	.250	132
7F3-1406T	7F3-1406A	35,72	1.406	20,45	.805	6,35	.250	132
7F3-1417T	7F3-1417A	36,00	1.417	20,45	.805	6,35	.250	132
7F3-1438T	7F3-1438A	36,51	1.438	20,45	.805	6,35	.250	132
7F3-1457T	7F3-1457A	37,00	1.457	20,45	.805	6,35	.250	132
7F3-1469T	7F3-1469A	37,31	1.469	20,45	.805	6,35	.250	132
7F3-1484T	7F3-1484A	37,70	1.484	20,45	.805	6,35	.250	132
7F3-1496T	7F3-1496A	38,00	1.496	20,45	.805	6,35	.250	132
7F3-1500T	7F3-1500A	38,10	1.500	20,45	.805	6,35	.250	132
7F3-1516T	7F3-1516A	38,50	1.516	20,45	.805	6,35	.250	132
–	7F3-1525A	38,74	1.525	20,45	.805	6,35	.250	132
7F3-1531T	7F3-1531A	38,90	1.531	20,45	.805	6,35	.250	132
7F3-1535T	7F3-1535A	39,00	1.535	20,45	.805	6,35	.250	132
7F3-1563T	7F3-1563A	39,69	1.563	20,45	.805	6,35	.250	132
7F3-1575T	7F3-1575A	40,00	1.575	20,45	.805	6,35	.250	132
7F3-1578T	–	40,08	1.578	20,45	.805	6,35	.250	132
7F3-1594T	7F3-1594A	40,48	1.594	20,45	.805	6,35	.250	132
7F3-1614T	7F3-1614A	41,00	1.614	20,45	.805	6,35	.250	132
7F3-1625T	7F3-1625A	41,28	1.625	20,45	.805	6,35	.250	132
7F3-1654T	7F3-1654A	42,00	1.654	20,45	.805	6,35	.250	132
7F3-1656T	7F3-1656A	42,07	1.656	20,45	.805	6,35	.250	132
7F3-1688T	7F3-1688A	42,86	1.688	20,45	.805	6,35	.250	132
7F3-1693T	7F3-1693A	43,00	1.693	20,45	.805	6,35	.250	132
7F3-1703T	–	43,26	1.703	20,45	.805	6,35	.250	132
7F3-1719T	7F3-1719A	43,66	1.719	20,45	.805	6,35	.250	132
7F3-1732T	7F3-1732A	44,00	1.732	9,19	.362	2,39	.094	132
7F3-1750T	7F3-1750A	44,45	1.750	20,45	.805	6,35	.250	132
7F3-1766T	–	44,85	1.766	20,45	.805	6,35	.250	132
7F3-1772T	7F3-1772A	45,00	1.772	20,45	.805	6,35	.250	132
7F3-1781T	7F3-1781A	45,25	1.781	20,45	.805	6,35	.250	132
–	7F3-1793A	45,54	1.793	20,45	.805	6,35	.250	132
7F3-1811T	7F3-1811A	46,00	1.811	20,45	.805	6,35	.250	132
7F3-1813T	7F3-1813A	46,04	1.813	20,45	.805	6,35	.250	132
7F3-1828T	–	46,43	1.828	20,45	.805	6,35	.250	132
7F3-1844T	7F3-1844A	46,83	1.844	20,45	.805	6,35	.250	132
7F3-1850T	–	47,00	1.850	20,45	.805	6,35	.250	132
7F3-1875T	7F3-1875A	47,63	1.875	20,45	.805	6,35	.250	132

Tool holders available upon request as an Engineered Solution.

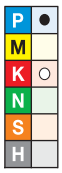


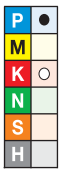






Seat Size 4

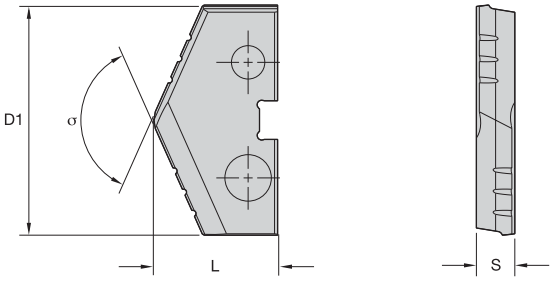


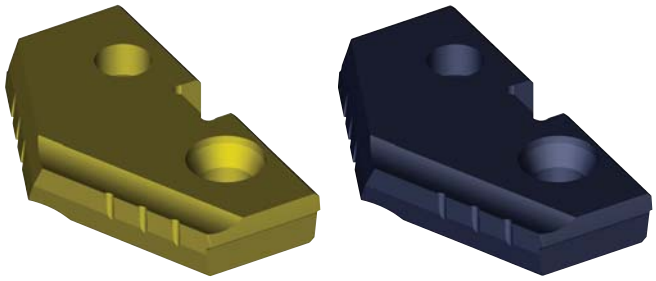


● first choice
○ alternate choice

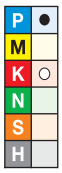
TiN	TiAlN	D1 mm	D1 in	L mm	L in	S mm	S in	σ
7F4-1880T	–	47,75	1.880	23,62	.930	7,95	.313	132
7F4-1890T	7F4-1890A	48,00	1.890	23,62	.930	7,95	.313	132
7F4-1906T	7F4-1906A	48,42	1.906	23,62	.930	7,95	.313	132
7F4-1929T	7F4-1929A	49,00	1.929	23,62	.930	7,95	.313	132
7F4-1938T	7F4-1938A	49,21	1.938	23,62	.930	7,95	.313	132
7F4-1969T	7F4-1969A	50,00	1.969	23,62	.930	7,95	.313	132
7F4-2000T	7F4-2000A	50,80	2.000	23,62	.930	7,95	.313	132
7F4-2008T	–	51,00	2.008	23,62	.930	7,95	.313	132
7F4-2016T	–	51,20	2.016	23,62	.930	7,95	.313	132
7F4-2031T	7F4-2031A	51,60	2.031	23,62	.930	7,95	.313	132
7F4-2047T	7F4-2047A	52,00	2.047	23,62	.930	7,95	.313	132
7F4-2063T	7F4-2063A	52,39	2.063	23,62	.930	7,95	.313	132
7F4-2087T	7F4-2087A	53,00	2.087	23,62	.930	7,95	.313	132
7F4-2094T	7F4-2094A	53,18	2.094	23,62	.930	7,95	.313	132
7F4-2125T	7F4-2125A	53,98	2.125	23,62	.930	7,95	.313	132
–	7F4-2126A	54,00	2.126	23,62	.930	7,95	.313	132
7F4-2156T	–	54,77	2.156	23,62	.930	7,95	.313	132
7F4-2188T	7F4-2188A	55,56	2.188	23,62	.930	7,95	.313	132
7F4-2205T	7F4-2205A	56,00	2.205	23,62	.930	7,95	.313	132
7F4-2219T	7F4-2219A	56,36	2.219	23,62	.930	7,95	.313	132
7F4-2244T	7F4-2244A	57,00	2.244	23,62	.930	7,95	.313	132
7F4-2250T	7F4-2250A	57,15	2.250	23,62	.930	7,95	.313	132
7F4-2281T	7F4-2281A	57,95	2.281	23,62	.930	7,95	.313	132
–	7F4-2284A	58,00	2.284	23,62	.930	7,95	.313	132
7F4-2313T	7F4-2313A	58,74	2.313	23,62	.930	7,95	.313	132
7F4-2323T	7F4-2323A	59,00	2.323	23,62	.930	7,95	.313	132
7F4-2344T	7F4-2344A	59,53	2.344	23,62	.930	7,95	.313	132
7F4-2362T	–	60,00	2.362	23,62	.930	7,95	.313	132
7F4-2375T	7F4-2375A	60,33	2.375	23,62	.930	7,95	.313	132
7F4-2391T	–	60,72	2.391	23,62	.930	7,95	.313	132
–	7F4-2402A	61,00	2.402	23,62	.930	7,95	.313	132
7F4-2406T	7F4-2406A	61,12	2.406	23,62	.930	7,95	.313	132
7F4-2438T	7F4-2438A	61,91	2.438	23,62	.930	7,95	.313	132
–	7F4-2441A	62,00	2.441	23,62	.930	7,95	.313	132
7F4-2469T	7F4-2469A	62,71	2.469	23,62	.930	7,95	.313	132
7F4-2480T	7F4-2480A	63,00	2.480	23,62	.930	7,95	.313	132
7F4-2500T	7F4-2500A	63,50	2.500	23,62	.930	7,95	.313	132
–	7F4-2520A	64,00	2.520	23,62	.930	7,95	.313	132
7F4-2531T	7F4-2531A	64,30	2.531	23,62	.930	7,95	.313	132
–	7F4-2559A	65,00	2.559	23,62	.930	7,95	.313	132
7F4-2563T	7F4-2563A	65,09	2.563	23,62	.930	7,95	.313	132

Tool holders available upon request as an Engineered Solution.





Seat Size 5



● first choice
○ alternate choice

TiN	TiAlN	D1 mm	D1 in	L mm	L in	S mm	S in	σ
7F5-2500T	7F5-2500A	63,50	2.500	31,50	1.240	11,13	.438	144
7F5-2520T	–	64,00	2.520	31,50	1.240	11,13	.438	144
–	7F5-2531A	64,30	2.531	31,50	1.240	11,13	.438	144
7F5-2563T	7F5-2563A	65,09	2.563	31,50	1.240	11,13	.438	144
7F5-2598T	7F5-2598A	66,00	2.598	31,50	1.240	11,13	.438	144
7F5-2625T	7F5-2625A	66,68	2.625	31,50	1.240	11,13	.438	144
7F5-2656T	–	67,47	2.656	31,50	1.240	11,13	.438	144
7F5-2677T	7F5-2677A	68,00	2.677	31,50	1.240	11,13	.438	144
7F5-2688T	7F5-2688A	68,26	2.688	31,50	1.240	11,13	.438	144
7F5-2719T	7F5-2719A	69,06	2.719	31,50	1.240	11,13	.438	144
7F5-2750T	7F5-2750A	69,85	2.750	31,50	1.240	11,13	.438	144
7F5-2756T	7F5-2756A	70,00	2.756	31,50	1.240	11,13	.438	144
7F5-2781T	7F5-2781A	70,65	2.781	31,50	1.240	11,13	.438	144
7F5-2813T	7F5-2813A	71,44	2.813	31,50	1.240	11,13	.438	144
7F5-2835T	7F5-2835A	72,00	2.835	31,50	1.240	11,13	.438	144
–	7F5-2844A	72,23	2.844	31,50	1.240	11,13	.438	144
7F5-2875T	7F5-2875A	73,03	2.875	31,50	1.240	11,13	.438	144
7F5-2906T	7F5-2906A	73,82	2.906	31,50	1.240	11,13	.438	144
7F5-2913T	7F5-2913A	74,00	2.913	31,50	1.240	11,13	.438	144
7F5-2938T	7F5-2938A	74,61	2.938	31,50	1.240	11,13	.438	144
7F5-2969T	7F5-2969A	75,41	2.969	31,50	1.240	11,13	.438	144
–	7F5-2992A	76,00	2.992	31,50	1.240	11,13	.438	144
7F5-3000T	7F5-3000A	76,20	3.000	31,50	1.240	11,13	.438	144

Tool holders available upon request as an Engineered Solution.

Seat Size 6

TiN	TiAlN	D1 mm	D1 in	L mm	L in	S mm	S in	σ
7F6-3063T	7F6-3063A	77,79	3.063	31,50	1.240	11,13	.438	144
–	7F6-3071A	78,00	3.071	31,50	1.240	11,13	.438	144
7F6-3125T	7F6-3125A	79,38	3.125	31,50	1.240	11,13	.438	144
–	7F6-3150A	80,00	3.150	31,50	1.240	11,13	.438	144
7F6-3188T	–	80,96	3.188	31,50	1.240	11,13	.438	144
7F6-3228T	7F6-3228A	82,00	3.228	31,50	1.240	11,13	.438	144
7F6-3250T	7F6-3250A	82,55	3.250	31,50	1.240	11,13	.438	144
7F6-3313T	7F6-3313A	84,14	3.313	31,50	1.240	11,13	.438	144
7F6-3375T	7F6-3375A	85,73	3.375	31,50	1.240	11,13	.438	144
7F6-3438T	7F6-3438A	87,31	3.438	31,50	1.240	11,13	.438	144
7F6-3500T	7F6-3500A	88,90	3.500	31,50	1.240	11,13	.438	144

Tool holders available upon request as an Engineered Solution.