



The VariMill II 5-flute solid carbide end mill family is a proven leader in high-performance milling, achieving supreme surface finishes in multiple materials through various milling operations, including full slotting up to a depth of cut of 1 x D.

Features and Benefits

Unequal flute spacing to cut harmonics and reduce the development of vibrations during cutting.

Center cutting for improved ramping capabilities and plunging.

38° helix angle to provide the best combination between a roughing and a finishing tool.

Unique core design to offer maximum room for chip evacuation while keeping the tool design stable.



VariMill II carbide end mills utilize a proprietary design driven by a unique relief style and unequal flute spacing.

STABLE

Unequal flute spacing design to ensure low vibrations and high cutting stability.

PRODUCTIVE

5 flutes to increase feed-rate per revolution and exceed metal removal expectations.

VERSATILE

Maximum performance in multiple operations and the best choice to remove great volumes of chips in difficult-to-machine materials.

ADVANCED PRODUCTIVITY

PRODUCT

SOLID CARBIDE END MILL

GRADE

WP15PE
WS15PE

FLUTE

5

DIAMETER RANGE

INCH

3/16–1"

METRIC

4–25mm

INDUSTRY



GENERAL
ENGINEERING



AEROSPACE



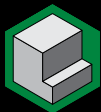
ENERGY



TRANSPORTATION

APPLICATIONS

MATERIALS



SIDE MILLING



RAMPING



HELICAL
INTERPOLATION



SLOTING

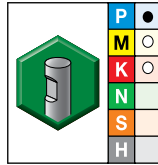
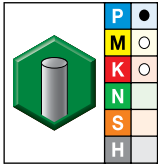
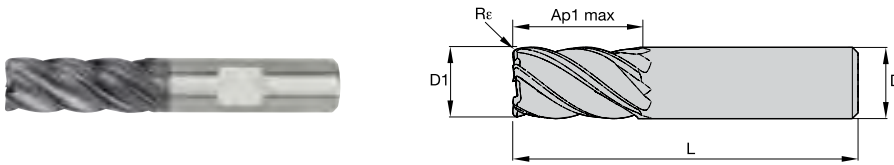


DYNAMIC
MILLING



PLUNGING

VariMill II • Series 5V0C • Square End • 5 Flute • Inch



● first choice
○ alternate choice

WP15PE		WP15PE		D1	D	length of cut Ap1 max	length L	Re	ZU
order #	catalog #	order #	catalog #						
5577051	5V0C05000AT	-	-	3/16	3/16	5/8	2 1/4	.015	5
5577052	5V0C05000BT	-	-	3/16	3/16	5/8	2 1/4	.030	5
5577053	5V0C05000ST	-	-	3/16	3/16	5/8	2 1/4	-	5
6513583	5V1C05020AT	-	-	3/16	3/16	3/4	2 1/2	.015	5
6513582	5V1C05020ST	-	-	3/16	3/16	3/4	2 1/2	-	5
6513585	5V4C07002AT	-	-	1/4	1/4	3/8	2	.015	5
6513586	5V4C07002BT	-	-	1/4	1/4	3/8	2	.030	5
6513584	5V4C07002ST	-	-	1/4	1/4	3/8	2	-	5
5577054	5V0C07002AT	-	-	1/4	1/4	3/4	2 1/2	.015	5
5577055	5V0C07002BT	-	-	1/4	1/4	3/4	2 1/2	.030	5
5577056	5V0C07002CT	-	-	1/4	1/4	3/4	2 1/2	.060	5
5577057	5V0C07002ST	-	-	1/4	1/4	3/4	2 1/2	-	5
6513588	5V1C07002AT	-	-	1/4	1/4	1 1/8	3	.015	5
6513589	5V1C07002BT	-	-	1/4	1/4	1 1/8	3	.030	5
6513587	5V1C07002ST	-	-	1/4	1/4	1 1/8	3	-	5
5577058	5V0C08003AT	-	-	5/16	5/16	3/4	2 1/2	.015	5
5577059	5V0C08003BT	-	-	5/16	5/16	3/4	2 1/2	.030	5
5577100	5V0C08003CT	-	-	5/16	5/16	3/4	2 1/2	.060	5
5577101	5V0C08003ST	-	-	5/16	5/16	3/4	2 1/2	-	5
6513591	5V4C10004AT	-	-	3/8	3/8	1/2	2	.015	5
6513592	5V4C10004BT	-	-	3/8	3/8	1/2	2	.030	5
6513590	5V4C10004ST	-	-	3/8	3/8	1/2	2	-	5
5577102	5V0C10004AT	-	-	3/8	3/8	7/8	2 1/2	.015	5
5577103	5V0C10004BT	-	-	3/8	3/8	7/8	2 1/2	.030	5
5577104	5V0C10004CT	-	-	3/8	3/8	7/8	2 1/2	.060	5
5577105	5V0C10004ST	-	-	3/8	3/8	7/8	2 1/2	-	5
6513594	5V1C10014AT	-	-	3/8	3/8	1 1/4	3	.015	5
6513595	5V1C10014BT	-	-	3/8	3/8	1 1/4	3	.030	5
6513593	5V1C10014ST	-	-	3/8	3/8	1 1/4	3	-	5
6517095	5V4C13015BT	-	-	1/2	1/2	5/8	2 1/2	.030	5
6517096	5V4C13015CT	-	-	1/2	1/2	5/8	2 1/2	.060	5
6517094	5V4C13015ST	-	-	1/2	1/2	5/8	2 1/2	-	5
6517098	5V0C13005BT	-	-	1/2	1/2	1	3	.030	5
6517097	5V0C13005ST	-	-	1/2	1/2	1	3	-	5
5577106	5V0C13015AT	5577107	5V0C13015AW	1/2	1/2	1 1/4	3	.015	5
5577108	5V0C13015BT	5577109	5V0C13015BW	1/2	1/2	1 1/4	3	.030	5
5577110	5V0C13015CT	5577111	5V0C13015CW	1/2	1/2	1 1/4	3	.060	5
5577112	5V0C13015DT	5577113	5V0C13015DW	1/2	1/2	1 1/4	3	.090	5
5577114	5V0C13015ET	5577115	5V0C13015EW	1/2	1/2	1 1/4	3	.120	5
5577116	5V0C13015ST	5577117	5V0C13015SW	1/2	1/2	1 1/4	3	-	5
6517100	5V1C13015AT	-	-	1/2	1/2	1 5/8	4	.015	5
6517111	5V1C13015BT	-	-	1/2	1/2	1 5/8	4	.030	5
6517112	5V1C13015CT	-	-	1/2	1/2	1 5/8	4	.060	5
6517099	5V1C13015ST	-	-	1/2	1/2	1 5/8	4	-	5
6517114	5V1C13025BT	-	-	1/2	1/2	2 1/8	4	.030	5
6517115	5V1C13025CT	-	-	1/2	1/2	2 1/8	4	.060	5
6517116	5V1C13025ET	-	-	1/2	1/2	2 1/8	4	.120	5
6517113	5V1C13025ST	-	-	1/2	1/2	2 1/8	4	-	5
6517118	5V4C16006BT	-	-	5/8	5/8	3/4	3	.030	5
6517117	5V4C16006ST	-	-	5/8	5/8	3/4	3	-	5
5577118	5V0C16006BT	5577119	5V0C16006BW	5/8	5/8	1 1/4	3 1/2	.030	5
5577130	5V0C16006CT	5577131	5V0C16006CW	5/8	5/8	1 1/4	3 1/2	.060	5

INDEXABLE MILLING

SOLID END MILLING

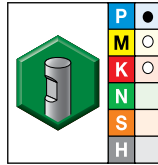
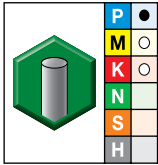
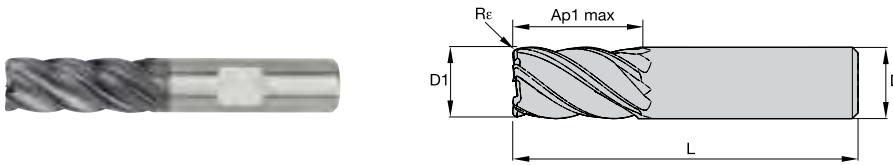
HOLEMAKING

TAPPING

TURNING

VariMill II • Series 5V0C • Square End • 5 Flute • Inch

(continued)



● first choice
○ alternate choice

WP15PE		WP15PE		D1	D	length of cut Ap1 max	length L	Re	ZU
order #	catalog #	order #	catalog #						
5577132	5V0C16006DT	5577133	5V0C16006DW	5/8	5/8	1 1/4	3 1/2	.090	5
5577134	5V0C16006ST	5577135	5V0C16006SW	5/8	5/8	1 1/4	3 1/2	—	5
6517120	5V1C16006BT	—	—	5/8	5/8	1 5/8	3 1/2	.030	5
6517121	5V1C16006CT	—	—	5/8	5/8	1 5/8	3 1/2	.060	5
6517122	5V1C16006ET	—	—	5/8	5/8	1 5/8	3 1/2	.120	5
6517119	5V1C16006ST	—	—	5/8	5/8	1 5/8	3 1/2	—	5
6517123	5V6C16006ST	—	—	5/8	5/8	2 1/8	4 1/2	—	5
6517125	5V1C16016BT	—	—	5/8	5/8	2 5/8	5	.030	5
6517124	5V1C16016ST	—	—	5/8	5/8	2 5/8	5	—	5
5577136	5V0C19007BT	5577137	5V0C19007BW	3/4	3/4	1 1/2	4	.030	5
5577138	5V0C19007CT	5577139	5V0C19007CW	3/4	3/4	1 1/2	4	.060	5
5577160	5V0C19007DT	5577161	5V0C19007DW	3/4	3/4	1 1/2	4	.090	5
5577162	5V0C19007ET	5577163	5V0C19007EW	3/4	3/4	1 1/2	4	.120	5
5577164	5V0C19007ST	5577165	5V0C19007SW	3/4	3/4	1 1/2	4	—	5
6517141	5V0C19027BT	—	—	3/4	3/4	1 3/4	4	.030	5
6517142	5V0C19027CT	—	—	3/4	3/4	1 3/4	4	.060	5
6517130	5V0C19027ST	—	—	3/4	3/4	1 3/4	4	—	5
6517146	5V1C19007BT	—	—	3/4	3/4	2 1/4	5	.030	5
6517147	5V1C19007CT	—	—	3/4	3/4	2 1/4	5	.060	5
6517148	5V1C19007ET	—	—	3/4	3/4	2 1/4	5	.120	5
6517145	5V1C19007ST	—	—	3/4	3/4	2 1/4	5	—	5
6517150	5V2C19017BT	—	—	3/4	3/4	3 1/4	6	.030	5
6517149	5V2C19017ST	—	—	3/4	3/4	3 1/4	6	—	5
5577166	5V0C25008BT	5577167	5V0C25008BW	1	1	1 3/4	4 1/2	.030	5
5577168	5V0C25008CT	5577169	5V0C25008CW	1	1	1 3/4	4 1/2	.060	5
5577182	5V0C25008ET	5577183	5V0C25008EW	1	1	1 3/4	4 1/2	.120	5
5577184	5V0C25008ST	5577185	5V0C25008SW	1	1	1 3/4	4 1/2	—	5
6517154	5V6C25008BT	—	—	1	1	2 1/4	5	.030	5
6517155	5V6C25008CT	—	—	1	1	2 1/4	5	.060	5
6517153	5V6C25008ST	—	—	1	1	2 1/4	5	—	5
6517159	5V1C25008ET	—	—	1	1	3 1/4	6	.120	5

INDEXABLE MILLING

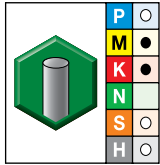
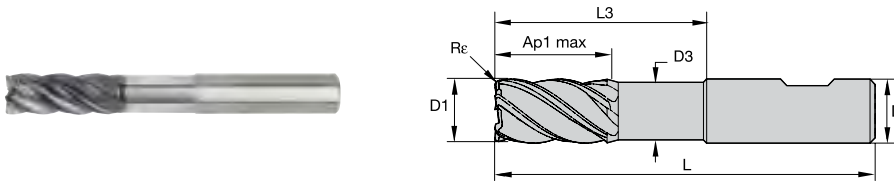
SOLID END MILLING

HOLEMAKING

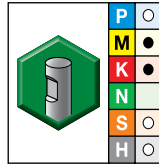
TAPPING

TURNING

VariMill II • Series 5VNC • Square End • Neck • 5 Flute • Inch



WP15PE



WP15PE

- first choice
- alternate choice

order #	catalog #	order #	catalog #	D1	D	D3	length of cut Ap1 max	L3	length L	Re	ZU
5594727	5VNC07012AT	—	—	1/4	1/4	.24	1/2	1.250	4	.015	5
5594728	5VNC10014AT	—	—	3/8	3/8	.35	7/8	1.875	4	.015	5
5594729	5VNC13005BT	5594850	5VNC13005BW	1/2	1/2	.47	1 1/4	2.250	4	.030	5
5594851	5VNC16006BT	5594852	5VNC16006BW	5/8	5/8	.59	1 1/4	2.250	4	.030	5
5594853	5VNC19017BT	5594854	5VNC19017BW	3/4	3/4	.71	1 1/2	3.250	5 1/2	.030	5
5594855	5VNC25018BT	5594856	5VNC25018BW	1	1	.94	1 3/4	3.250	5 1/2	.030	5

INDEXABLE MILLING

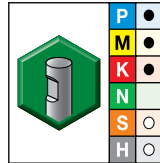
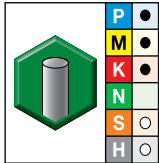
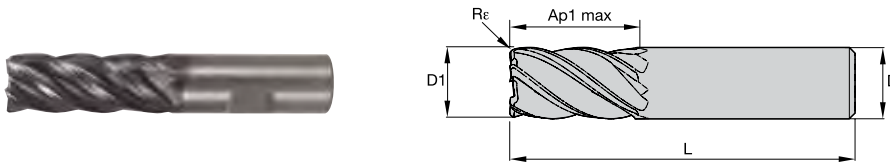
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

VariMill II • Series 5V0S • Square End • 5 Flute • Inch



● first choice
○ alternate choice

WP15PE		WP15PE		D1	D	length of cut Ap1 max	length L	Rε	ZU
order #	catalog #	order #	catalog #						
3552614	TM5V0S05000A	-	-	3/16	3/16	5/8	2 1/4	.015	5
3552615	TM5V0S05000B	-	-	3/16	3/16	5/8	2 1/4	.030	5
3552613	TM5V0S05000S	-	-	3/16	3/16	5/8	2 1/4	-	5
3552617	TM5V0S07002A	-	-	1/4	1/4	3/4	2 1/2	.015	5
3552618	TM5V0S07002B	-	-	1/4	1/4	3/4	2 1/2	.030	5
3660162	TM5V0S07002C	-	-	1/4	1/4	3/4	2 1/2	.060	5
3552616	TM5V0S07002S	-	-	1/4	1/4	3/4	2 1/2	-	5
3552585	TM5V0S08003A	-	-	5/16	5/16	3/4	2 1/2	.015	5
3552587	TM5V0S08003B	-	-	5/16	5/16	3/4	2 1/2	.030	5
3552586	TM5V0S08003S	-	-	5/16	5/16	3/4	2 1/2	-	5
3552589	TM5V0S10004A	-	-	3/8	3/8	7/8	2 1/2	.015	5
3552590	TM5V0S10004B	-	-	3/8	3/8	7/8	2 1/2	.030	5
3660385	TM5V0S10004C	-	-	3/8	3/8	7/8	2 1/2	.060	5
3552588	TM5V0S10004S	-	-	3/8	3/8	7/8	2 1/2	-	5
3552620	TM5V0S13015A	3552580	TM5V0S13015AW	1/2	1/2	1 1/4	3	.015	5
3552621	TM5V0S13015B	3552581	TM5V0S13015BW	1/2	1/2	1 1/4	3	.030	5
3660386	TM5V0S13015C	3660390	TM5V0S13015CW	1/2	1/2	1 1/4	3	.060	5
3552622	TM5V0S13015E	3552582	TM5V0S13015EW	1/2	1/2	1 1/4	3	.120	5
3552619	TM5V0S13015S	3552579	TM5V0S13015SW	1/2	1/2	1 1/4	3	-	5
3552612	TM5V0S16006B	3552578	TM5V0S16006BW	5/8	5/8	1 1/4	3 1/2	.030	5
3552611	TM5V0S16006S	3552577	TM5V0S16006SW	5/8	5/8	1 1/4	3 1/2	-	5
3552592	TM5V0S19007B	3552538	TM5V0S19007BW	3/4	3/4	1 1/2	4	.030	5
3552591	TM5V0S19007S	-	-	3/4	3/4	1 1/2	4	-	5
3552607	TM5V0S25008B	-	-	1	1	1 3/4	4 1/2	.030	5

INDEXABLE MILLING

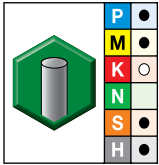
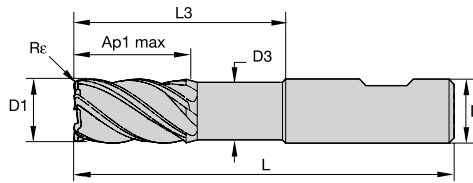
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

VariMill II • Series 5VNS • Square End • Neck • 5 Flute • Inch



AITiN-MT

● first choice
○ alternate choice

order #	catalog #	D1	D	D3	length of cut Ap1 max	L3	length L	Re	ZU
3552489	TM5VNS10014A	3/8	3/8	.35	7/8	1 7/8	4	.015	5
3738996	TM5VNS13005B	1/2	1/2	.47	1 1/4	2 1/4	4	.030	5
3738998	TM5VNS19017B	3/4	3/4	.71	1 1/2	3 1/4	5 1/2	.030	5
3738999	TM5VNS25018B	1	1	.94	1 3/4	3 1/4	5 1/2	.030	5

INDEXABLE MILLING

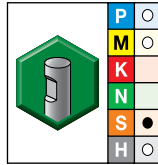
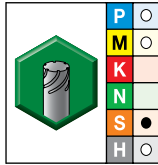
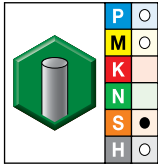
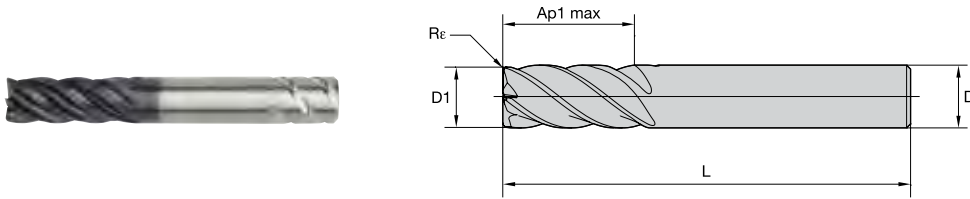
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

VariMill II ER • Series 5VOE • Square End • Eccentric Relief • 5 Flute • Inch



● first choice
○ alternate choice

WS15PE		WS15PE		WS15PE		length of cut		length	Re	ZU	
order #	catalog #	order #	catalog #	order #	catalog #	D1	D	Ap1 max	L		
6146484	5V4E05000AT	-	-	-	-	3/16	3/16	5/16	2	.015	5
6146485	5V4E05000BT	-	-	-	-	3/16	3/16	5/16	2	.030	5
6146483	5V4E05000ST	-	-	-	-	3/16	3/16	5/16	2	-	5
6146487	5V0E05000AT	-	-	-	-	3/16	3/16	9/16	2	.015	5
6146488	5V0E05000BT	-	-	-	-	3/16	3/16	9/16	2	.030	5
6146486	5V0E05000ST	-	-	-	-	3/16	3/16	9/16	2	-	5
6146490	5V1E05000AT	-	-	-	-	3/16	3/16	3/4	2 1/2	.015	5
6146521	5V1E05000BT	-	-	-	-	3/16	3/16	3/4	2 1/2	.030	5
6146489	5V1E05000ST	-	-	-	-	3/16	3/16	3/4	2 1/2	-	5
6146523	5V4E07002AT	-	-	-	-	1/4	1/4	3/8	2	.015	5
6146524	5V4E07002BT	-	-	-	-	1/4	1/4	3/8	2	.030	5
6146525	5V4E07002CT	-	-	-	-	1/4	1/4	3/8	2	.060	5
6146522	5V4E07002ST	-	-	-	-	1/4	1/4	3/8	2	-	5
6146528	5V0E07002AT	-	-	-	-	1/4	1/4	3/4	2 1/2	.015	5
6146529	5V0E07002BT	-	-	-	-	1/4	1/4	3/4	2 1/2	.030	5
6146530	5V0E07002CT	-	-	-	-	1/4	1/4	3/4	2 1/2	.060	5
6146526	5V0E07002ST	-	-	-	-	1/4	1/4	3/4	2 1/2	-	5
6146532	5V1E07002AT	-	-	-	-	1/4	1/4	1 1/8	3	.015	5
6146533	5V1E07002BT	-	-	-	-	1/4	1/4	1 1/8	3	.030	5
6146534	5V1E07002CT	-	-	-	-	1/4	1/4	1 1/8	3	.060	5
6146531	5V1E07002ST	-	-	-	-	1/4	1/4	1 1/8	3	-	5
6146536	5V0E08003AT	-	-	-	-	5/16	5/16	13/16	2 1/2	.015	5
6146537	5V0E08003BT	-	-	-	-	5/16	5/16	13/16	2 1/2	.030	5
6146538	5V0E08003CT	-	-	-	-	5/16	5/16	13/16	2 1/2	.060	5
6146535	5V0E08003ST	-	-	-	-	5/16	5/16	13/16	2 1/2	-	5
6146540	5V4E10004AT	-	-	-	-	3/8	3/8	1/2	2	.015	5
6146541	5V4E10004BT	-	-	-	-	3/8	3/8	1/2	2	.030	5
6146542	5V4E10004CT	-	-	-	-	3/8	3/8	1/2	2	.060	5
6146543	5V4E10004ET	-	-	-	-	3/8	3/8	1/2	2	.120	5
6146539	5V4E10004ST	-	-	-	-	3/8	3/8	1/2	2	-	5
5594857	5V0E10004AT	-	-	-	-	3/8	3/8	7/8	2 1/2	.015	5
5594858	5V0E10004BT	-	-	-	-	3/8	3/8	7/8	2 1/2	.030	5
5594859	5V0E10004ST	-	-	-	-	3/8	3/8	7/8	2 1/2	-	5
6146545	5V0E10014AT	-	-	-	-	3/8	3/8	1	2 1/2	.015	5
6146546	5V0E10014BT	-	-	-	-	3/8	3/8	1	2 1/2	.030	5
6146547	5V0E10014CT	-	-	-	-	3/8	3/8	1	2 1/2	.060	5
6146548	5V0E10014ET	-	-	-	-	3/8	3/8	1	2 1/2	.120	5
6146544	5V0E10014ST	-	-	-	-	3/8	3/8	1	2 1/2	-	5
6146550	5V1E10004AT	-	-	-	-	3/8	3/8	1	3	.015	5
6146551	5V1E10004BT	-	-	-	-	3/8	3/8	1	3	.030	5
6146549	5V1E10004ST	-	-	-	-	3/8	3/8	1	3	-	5
-	-	6146552	5V4E13015AV	-	-	1/2	1/2	5/8	2 1/2	.015	5
-	-	6146553	5V4E13015BV	-	-	1/2	1/2	5/8	2 1/2	.030	5
-	-	6146554	5V4E13015CV	-	-	1/2	1/2	5/8	2 1/2	.060	5
-	-	6146555	5V4E13015DV	-	-	1/2	1/2	5/8	2 1/2	.090	5
-	-	6146556	5V4E13015EV	-	-	1/2	1/2	5/8	2 1/2	.120	5
-	-	6146557	5V4E13015SV	-	-	1/2	1/2	5/8	2 1/2	-	5
6146558	5V0E13005BT	-	-	-	-	1/2	1/2	1	3	.030	5
6146559	5V0E13005CT	-	-	-	-	1/2	1/2	1	3	.060	5
6146560	5V0E13005ET	-	-	-	-	1/2	1/2	1	3	.120	5
6146561	5V0E13005ST	-	-	-	-	1/2	1/2	1	3	-	5
6146562	5V0E13015AT	5594860	5V0E13015AV	5594861	5V0E13015AW	1/2	1/2	1 1/4	3	.015	5
6146563	5V0E13015BT	5594862	5V0E13015BV	5594863	5V0E13015BW	1/2	1/2	1 1/4	3	.030	5
6146564	5V0E13015CT	5594864	5V0E13015CV	5594865	5V0E13015CW	1/2	1/2	1 1/4	3	.060	5
6146565	5V0E13015DT	5594866	5V0E13015DV	5594867	5V0E13015DW	1/2	1/2	1 1/4	3	.090	5
6146566	5V0E13015ET	5594868	5V0E13015EV	5594869	5V0E13015EW	1/2	1/2	1 1/4	3	.120	5

INDEXABLE MILLING

SOLID END MILLING

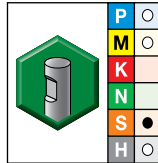
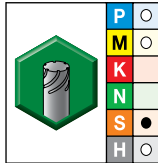
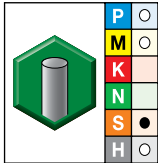
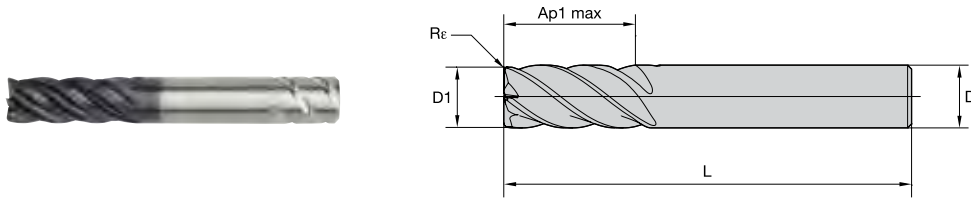
HOLEMAKING

TAPPING

TURNING

VariMill II ER • Series 5VOE • Square End • Eccentric Relief • 5 Flute • Inch

(continued)



● first choice
○ alternate choice

WS15PE		WS15PE		WS15PE		D1	D	length of cut Ap1 max	length L	Re	ZU
6146567	5V0E13015ST	5594870	5V0E13015SV	5594871	5V0E13015SW	1/2	1/2	1 1/4	3	—	5
6146568	5V1E13015BT	—	—	—	—	1/2	1/2	1 5/8	4	.030	5
6146569	5V1E13015CT	—	—	—	—	1/2	1/2	1 5/8	4	.060	5
6146570	5V1E13015ET	—	—	—	—	1/2	1/2	1 5/8	4	.120	5
6146571	5V1E13015ST	—	—	—	—	1/2	1/2	1 5/8	4	—	5
6525205	5V6E13015BT	—	—	—	—	1/2	1/2	2 1/8	4	.030	5
6525206	5V6E13015CT	—	—	—	—	1/2	1/2	2 1/8	4	.060	5
6525207	5V6E13015ET	—	—	—	—	1/2	1/2	2 1/8	4	.120	5
6525204	5V6E13015ST	—	—	—	—	1/2	1/2	2 1/8	4	—	5
—	—	6146572	5V4E16006BV	—	—	5/8	5/8	3/4	3	.030	5
—	—	6146573	5V4E16006CV	—	—	5/8	5/8	3/4	3	.060	5
—	—	6146574	5V4E16006EV	—	—	5/8	5/8	3/4	3	.120	5
—	—	6146575	5V4E16006SV	—	—	5/8	5/8	3/4	3	—	5
6146576	5V0E16006BT	5594872	5V0E16006BV	5594873	5V0E16006BW	5/8	5/8	1 1/4	3 1/2	.030	5
6146577	5V0E16006CT	5594874	5V0E16006CV	5594875	5V0E16006CW	5/8	5/8	1 1/4	3 1/2	.060	5
6146578	5V0E16006ET	—	—	—	—	5/8	5/8	1 1/4	3 1/2	.120	5
6146579	5V0E16006ST	5594876	5V0E16006SV	5594877	5V0E16006SW	5/8	5/8	1 1/4	3 1/2	—	5
—	—	6146580	5V1E16006BV	—	—	5/8	5/8	1 5/8	3 1/2	.030	5
—	—	6146581	5V1E16006CV	6146582	5V1E16006CW	5/8	5/8	1 5/8	3 1/2	.060	5
—	—	6146583	5V1E16006DV	—	—	5/8	5/8	1 5/8	3 1/2	.090	5
—	—	6146584	5V1E16006EV	—	—	5/8	5/8	1 5/8	3 1/2	.120	5
—	—	6146585	5V1E16006SV	—	—	5/8	5/8	1 5/8	3 1/2	—	5
6525209	5V6E16006BT	—	—	—	—	5/8	5/8	2 5/8	5	.030	5
6525210	5V6E16006CT	—	—	—	—	5/8	5/8	2 5/8	5	.060	5
6525231	5V6E16006ET	—	—	—	—	5/8	5/8	2 5/8	5	.120	5
6525208	5V6E16006ST	—	—	—	—	5/8	5/8	2 5/8	5	—	5
6146591	5V0E19007BT	5594878	5V0E19007BV	5594879	5V0E19007BW	3/4	3/4	1 1/2	4	.030	5
6146592	5V0E19007CT	5594880	5V0E19007CV	5594881	5V0E19007CW	3/4	3/4	1 1/2	4	.060	5
—	—	5594882	5V0E19007DV	5594883	5V0E19007DW	3/4	3/4	1 1/2	4	.090	5
6146593	5V0E19007ET	5594884	5V0E19007EV	5594885	5V0E19007EW	3/4	3/4	1 1/2	4	.120	5
—	—	—	—	6146590	5V0E19007FW	3/4	3/4	1 1/2	4	.250	5
6146594	5V0E19007ST	5594886	5V0E19007SV	5594887	5V0E19007SW	3/4	3/4	1 1/2	4	—	5
—	—	6146595	5V0E19017BV	—	—	3/4	3/4	1 5/8	4	.030	5
—	—	6146596	5V0E19017CV	—	—	3/4	3/4	1 5/8	4	.060	5
—	—	6146597	5V0E19017EV	—	—	3/4	3/4	1 5/8	4	.120	5
—	—	6146598	5V0E19017SV	—	—	3/4	3/4	1 5/8	4	—	5
6525233	5V0E19027BT	—	—	—	—	3/4	3/4	1 3/4	4	.030	5
6525234	5V0E19027CT	—	—	—	—	3/4	3/4	1 3/4	4	.060	5
6525235	5V0E19027ET	—	—	—	—	3/4	3/4	1 3/4	4	.120	5
6525232	5V0E19027ST	—	—	—	—	3/4	3/4	1 3/4	4	—	5
6525237	5V1E19007BT	—	—	—	—	3/4	3/4	2 1/4	5	.030	5
6525238	5V1E19007CT	6146599	5V1E19007CV	—	—	3/4	3/4	2 1/4	5	.060	5
6525239	5V1E19007ET	6146600	5V1E19007EV	—	—	3/4	3/4	2 1/4	5	.120	5
6525236	5V1E19007ST	6146601	5V1E19007SV	—	—	3/4	3/4	2 1/4	5	—	5
6525261	5V2E19007BT	—	—	—	—	3/4	3/4	3 1/4	6	.030	5
6525240	5V2E19007ST	—	—	—	—	3/4	3/4	3 1/4	6	—	5
—	—	6146607	5V4E25008FV	—	—	1	1	1 1/4	4	.250	5
—	—	6146608	5V4E25008SV	—	—	1	1	1 1/4	4	—	5
6525263	5V0E25008BT	5594888	5V0E25008BV	5594889	5V0E25008BW	1	1	1 3/4	4 1/2	.030	5
6525264	5V0E25008CT	5594890	5V0E25008CV	5594891	5V0E25008CW	1	1	1 3/4	4 1/2	.060	5
6525265	5V0E25008ET	5594892	5V0E25008EV	5594893	5V0E25008EW	1	1	1 3/4	4 1/2	.120	5
—	—	5594894	5V0E25008FV	5594895	5V0E25008FW	1	1	1 3/4	4 1/2	.250	5
6525262	5V0E25008ST	5594896	5V0E25008SV	5594897	5V0E25008SW	1	1	1 3/4	4 1/2	—	5
—	—	—	—	6146609	5V1E25008AW	1	1	3 1/4	6	.015	5
6525267	5V1E25008BT	—	—	6146610	5V1E25008BW	1	1	3 1/4	6	.030	5
6525268	5V1E25008CT	—	—	6146611	5V1E25008CW	1	1	3 1/4	6	.060	5

INDEXABLE MILLING

SOLID END MILLING

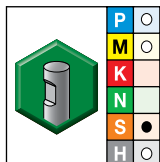
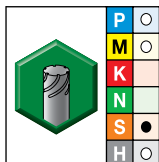
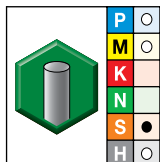
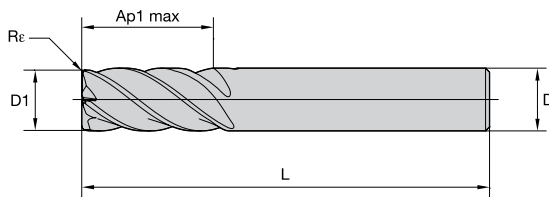
HOLEMAKING

TAPPING

TURNING

VariMill II ER • Series 5V0E • Square End • Eccentric Relief • 5 Flute • Inch

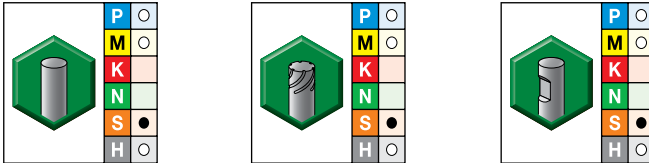
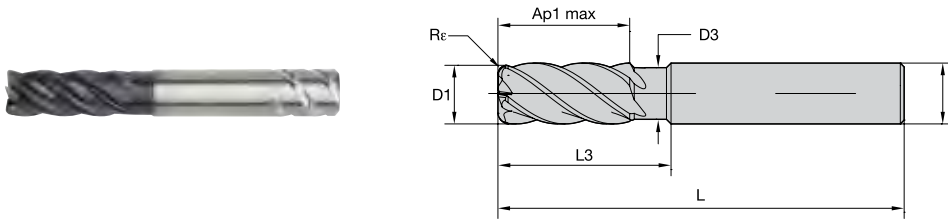
(continued)



● first choice
○ alternate choice

WS15PE		WS15PE		WS15PE		D1	D	length of cut Ap1 max	length L	Re	ZU
order #	catalog #	order #	catalog #	order #	catalog #						
-	-	-	-	6146612	5V1E25008DW	1	1	3 1/4	6	.090	5
-	-	-	-	6146613	5V1E25008EW	1	1	3 1/4	6	.120	5
-	-	-	-	6146614	5V1E25008FW	1	1	3 1/4	6	.250	5
6525266	5V1E25008ST	-	-	6146615	5V1E25008SW	1	1	3 1/4	6	-	5
-	-	-	-	6146618	5V0E32009CW	1 1/4	1 1/4	3 1/4	6	.060	5
-	-	-	-	6146619	5V0E32009SW	1 1/4	1 1/4	3 1/4	6	-	5
-	-	-	-	6146620	5V1E32009CW	1 1/4	1 1/4	5	8	.060	5
-	-	-	-	6146621	5V1E32009SW	1 1/4	1 1/4	5	8	-	5

VariMill II ER • Series 5VNE • Square End • Eccentric Relief • Neck • 5 Flute • Inch



● first choice
○ alternate choice

WS15PE		WS15PE		WS15PE		D1	D	D3	length of cut Ap1 max	L3	length L	Re	ZU
order #	catalog #	order #	catalog #	order #	catalog #								
6168921	5VNE07002AT	—	—	—	—	1/4	1/4	.24	3/8	1.125	2 1/2	.015	5
6168922	5VNE07002BT	—	—	—	—	1/4	1/4	.24	3/8	1.125	2 1/2	.030	5
6168660	5VNE07002ST	—	—	—	—	1/4	1/4	.24	3/8	1.125	2 1/2	—	5
6168925	5VNE07012AT	—	—	—	—	1/4	1/4	.24	5/8	1.750	4	.015	5
6168926	5VNE07012BT	—	—	—	—	1/4	1/4	.24	5/8	1.750	4	.030	5
6168924	5VNE07012ST	—	—	—	—	1/4	1/4	.24	5/8	1.750	4	—	5
6168929	5VNE10004AT	—	—	—	—	3/8	3/8	.35	1/2	1.375	3	.015	5
6168930	5VNE10004BT	—	—	—	—	3/8	3/8	.35	1/2	1.375	3	.030	5
6168941	5VNE10004CT	—	—	—	—	3/8	3/8	.35	1/2	1.375	3	.060	5
6168928	5VNE10004ST	—	—	—	—	3/8	3/8	.35	1/2	1.375	3	—	5
5594898	5VNE10014AT	—	—	—	—	3/8	3/8	.35	7/8	1.875	4	.015	5
6168943	5VNE10014BT	—	—	—	—	3/8	3/8	.35	7/8	1.875	4	.030	5
6168944	5VNE10014CT	—	—	—	—	3/8	3/8	.35	7/8	1.875	4	.060	5
6168942	5VNE10014ST	—	—	—	—	3/8	3/8	.35	7/8	1.875	4	—	5
6168946	5VNE10024AT	—	—	—	—	3/8	3/8	.35	7/8	2.375	4	.015	5
6168947	5VNE10024BT	—	—	—	—	3/8	3/8	.35	7/8	2.375	4	.030	5
6168948	5VNE10024CT	—	—	—	—	3/8	3/8	.35	7/8	2.375	4	.060	5
6168945	5VNE10024ST	—	—	—	—	3/8	3/8	.35	7/8	2.375	4	—	5
6168954	5VNE13005AT	—	—	—	—	1/2	1/2	.47	1 1/4	2.250	4	.015	5
—	—	5594899	5VNE13005BV	5594900	5VNE13005BW	1/2	1/2	.47	1 1/4	2.250	4	.030	5
6168955	5VNE13005CT	—	—	—	—	1/2	1/2	.47	1 1/4	2.250	4	.060	5
6168956	5VNE13005DT	—	—	—	—	1/2	1/2	.47	1 1/4	2.250	4	.090	5
6168957	5VNE13005ET	—	—	—	—	1/2	1/2	.47	1 1/4	2.250	4	.120	5
—	—	6168959	5VNE13015AV	—	—	1/2	1/2	.47	5/8	.875	5	.015	5
—	—	6168960	5VNE13015BV	—	—	1/2	1/2	.47	5/8	.875	5	.030	5
—	—	6168961	5VNE13015CV	—	—	1/2	1/2	.47	5/8	.875	5	.060	5
—	—	6168962	5VNE13015EV	—	—	1/2	1/2	.47	5/8	.875	5	.120	5
—	—	6168958	5VNE13015SV	—	—	1/2	1/2	.47	5/8	.875	5	—	5
—	—	6168963	5VNE13025SV	—	—	1/2	1/2	.47	5/8	.875	6	—	5
6168950	5VNE130Z5AT	—	—	—	—	1/2	1/2	.47	5/8	1.375	3	.015	5
6168951	5VNE130Z5BT	—	—	—	—	1/2	1/2	.47	5/8	1.375	3	.030	5
6168952	5VNE130Z5CT	—	—	—	—	1/2	1/2	.47	5/8	1.375	3	.060	5
6168953	5VNE13005ST	—	—	—	—	1/2	1/2	.47	5/8	2.250	4	—	5
—	—	6168965	5VNE16016AV	—	—	5/8	5/8	.59	1 1/4	2.250	5	.015	5
—	—	5594901	5VNE16006BV	5594902	5VNE16006BW	5/8	5/8	.59	1 1/4	2.250	4	.030	5
—	—	6168966	5VNE16016BV	—	—	5/8	5/8	.59	1 1/4	2.250	5	.030	5
—	—	6168967	5VNE16016CV	—	—	5/8	5/8	.59	1 1/4	2.250	5	.060	5
—	—	6168968	5VNE16016EV	—	—	5/8	5/8	.59	1 1/4	2.250	5	.120	5
—	—	6168964	5VNE16016SV	—	—	5/8	5/8	.59	1 1/4	2.250	5	—	5
—	—	6168971	5VNE16026BV	—	—	5/8	5/8	.59	3/4	1.000	6	.030	5
—	—	6168972	5VNE16026CV	—	—	5/8	5/8	.59	3/4	1.000	6	.060	5
—	—	6168973	5VNE16026DV	—	—	5/8	5/8	.59	3/4	1.000	6	.090	5
—	—	6168974	5VNE16026EV	—	—	5/8	5/8	.59	3/4	1.000	6	.120	5
—	—	6168969	5VNE16026SV	—	—	5/8	5/8	.59	3/4	1.000	6	—	5
6168976	5VNE19007AT	—	—	—	—	3/4	3/4	.71	1	2.250	4	.015	5
6168977	5VNE19007BT	—	—	—	—	3/4	3/4	.71	1	2.250	4	.030	5
6168978	5VNE19007CT	—	—	—	—	3/4	3/4	.71	1	2.250	4	.060	5
6168979	5VNE19007ET	—	—	—	—	3/4	3/4	.71	1	2.250	4	.120	5
6168975	5VNE19007ST	—	—	—	—	3/4	3/4	.71	1	2.250	4	—	5
—	—	6168981	5VNE19027AV	—	—	3/4	3/4	.71	1 1/2	3.250	6	.015	5
—	—	5594903	5VNE19017BV	5594904	5VNE19017BW	3/4	3/4	.71	1 1/2	3.250	5 1/2	.030	5
—	—	6168982	5VNE19027BV	—	—	3/4	3/4	.71	1 1/2	3.250	6	.030	5

INDEXABLE MILLING

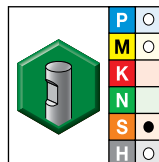
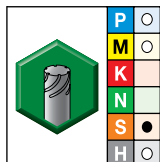
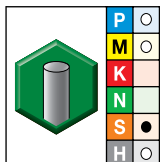
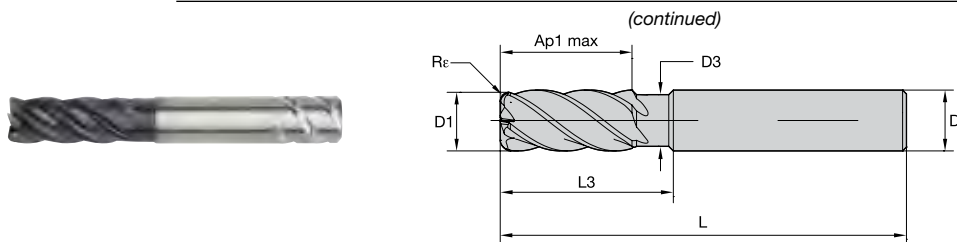
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

VariMill II ER • Series 5VNE • Square End • Eccentric Relief • Neck • 5 flute • Inch



● first choice
○ alternate choice

WS15PE		WS15PE		WS15PE				length of cut		length			
order #	catalog #	order #	catalog #	order #	catalog #	D1	D	D3	Ap1 max	L3	L	Re	ZU
—	—	6168983	5VNE19027CV	—	—	3/4	3/4	.71	1 1/2	3.250	6	.060	5
—	—	6168984	5VNE19027DV	—	—	3/4	3/4	.71	1 1/2	3.250	6	.090	5
—	—	6168985	5VNE19027EV	—	—	3/4	3/4	.71	1 1/2	3.250	6	.120	5
—	—	6168980	5VNE19027SV	—	—	3/4	3/4	.71	1 1/2	3.250	6	—	5
—	—	6168986	5VNE19037SV	—	—	3/4	3/4	.71	1 1/2	4.250	7	—	5
—	—	6169008	5VNE25048SV	—	—	1	1	.94	1 1/4	1.750	8	—	5
6168988	5VNE25008AT	—	—	—	—	1	1	.94	1 1/4	2.250	4	.015	5
6168989	5VNE25008BT	—	—	—	—	1	1	.94	1 1/4	2.250	4	.030	5
6168990	5VNE25008CT	—	—	—	—	1	1	.94	1 1/4	2.250	4	.060	5
6169001	5VNE25008DT	—	—	—	—	1	1	.94	1 1/4	2.250	4	.090	5
6169002	5VNE25008ET	—	—	—	—	1	1	.94	1 1/4	2.250	4	.120	5
6168987	5VNE25008ST	—	—	—	—	1	1	.94	1 1/4	2.250	4	—	5
—	—	6169004	5VNE25028AV	—	—	1	1	.94	1 1/4	3.250	6	.015	5
—	—	6169005	5VNE25028BV	—	—	1	1	.94	1 1/4	3.250	6	.030	5
—	—	6169006	5VNE25028CV	—	—	1	1	.94	1 1/4	3.250	6	.060	5
—	—	6169007	5VNE25028EV	—	—	1	1	.94	1 1/4	3.250	6	.120	5
—	—	6169003	5VNE25028SV	—	—	1	1	.94	1 1/4	3.250	6	—	5
—	—	5594905	5VNE25018BV	5594906	5VNE25018BW	1	1	.94	1 3/4	3.250	5 1/2	.030	5

INDEXABLE MILLING

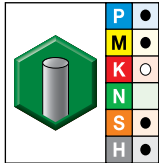
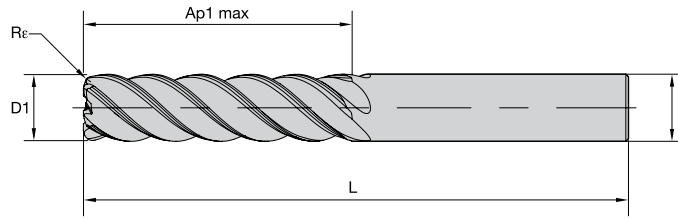
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

VariMill II Long • Series 5W1S • Square End • Long Length • 5 Flute • Inch



● first choice
○ alternate choice

AITIN-MT

order #	catalog #	D1	D	length of cut Ap1 max	length L	Re	ZU
5095168	TM5W1S07002A	1/4	1/4	1	3	.015	5
5095169	TM5W1S07002B	1/4	1/4	1	3	.030	5
5095167	TM5W1S07002S	1/4	1/4	1	3	—	5
5095341	TM5W1S08003A	5/16	5/16	1 1/4	3	.015	5
5095342	TM5W1S08003B	5/16	5/16	1 1/4	3	.030	5
5095345	TM5W1S10004A	3/8	3/8	1 1/2	4	.015	5
5095346	TM5W1S10004B	3/8	3/8	1 1/2	4	.030	5
5095347	TM5W1S10004C	3/8	3/8	1 1/2	4	.060	5
5095343	TM5W1S10004S	3/8	3/8	1 1/2	4	—	5
5095420	TM5W1S13005A	1/2	1/2	2	5	.015	5
5095421	TM5W1S13005B	1/2	1/2	2	5	.030	5
5095422	TM5W1S13005C	1/2	1/2	2	5	.060	5
5095348	TM5W1S13005S	1/2	1/2	2	5	—	5
5095425	TM5W1S16006A	5/8	5/8	2 1/2	5 1/4	.015	5
5095426	TM5W1S16006B	5/8	5/8	2 1/2	5 1/4	.030	5
5095427	TM5W1S16006C	5/8	5/8	2 1/2	5 1/4	.060	5
5095533	TM5W1S16006D	5/8	5/8	2 1/2	5 1/4	.090	5
5095428	TM5W1S16006E	5/8	5/8	2 1/2	5 1/4	.120	5
5095423	TM5W1S16006S	5/8	5/8	2 1/2	5 1/4	—	5
5095471	TM5W6S19007A	3/4	3/4	3	6	.015	5
5095472	TM5W1S19007B	3/4	3/4	3	6	.030	5
5095473	TM5W1S19007C	3/4	3/4	3	6	.060	5
5095534	TM5W1S19007D	3/4	3/4	3	6	.090	5
5095474	TM5W1S19007E	3/4	3/4	3	6	.120	5
5095429	TM5W1S19007S	3/4	3/4	3	6	—	5
5095477	TM5W1S25008A	1	1	4	7	.015	5
5095530	TM5W1S25008B	1	1	4	7	.030	5
5095531	TM5W1S25008C	1	1	4	7	.060	5
5095532	TM5W1S25008E	1	1	4	7	.120	5
5095475	TM5W1S25008S	1	1	4	7	—	5

INDEXABLE MILLING

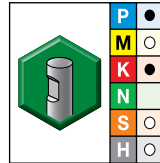
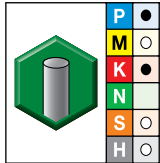
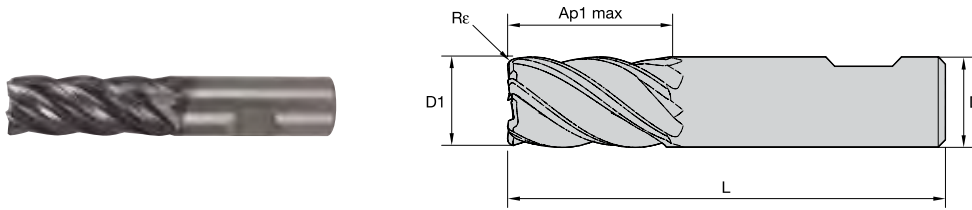
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

VariMill II • Series 5777 • Square End • Non-Center Cutting • 5 Flute • Metric



● first choice
○ alternate choice

WP15PE		WP15PE		D1	D	length of cut Ap1 max	length L	Re	ZU
order #	catalog #	order #	catalog #						
3524587	577704002MT	—	—	4,0	6	11,00	55	0,25	5
3524586	577704012MT	—	—	4,0	6	11,00	55	—	5
3524588	577705002MT	—	—	5,0	6	13,00	57	0,25	5
6525049	577706002ET	—	—	6,0	6	13,00	57	0,50	5
6525050	577706002JT	—	—	6,0	6	13,00	57	1,00	5
3524590	577706002MT	—	—	6,0	6	13,00	57	0,40	5
3524589	577706012MT	—	—	6,0	6	13,00	57	—	5
6525181	577708003JT	—	—	8,0	8	19,00	63	1,00	5
6525182	577708003KT	—	—	8,0	8	19,00	63	1,50	5
3524593	577708003MT	—	—	8,0	8	19,00	63	0,50	5
3524592	577708013MT	—	—	8,0	8	19,00	63	—	5
6525183	577710004JT	—	—	10,0	10	22,00	72	1,00	5
6525184	577710004KT	—	—	10,0	10	22,00	72	1,50	5
3524596	577710004MT	—	—	10,0	10	22,00	72	0,50	5
3524595	577710014MT	—	—	10,0	10	22,00	72	—	5
3524598	577712005MT	—	—	12,0	12	26,00	83	0,75	5
6525185	577712015ET	—	—	12,0	12	26,00	73	0,50	5
6525186	577712015JT	—	—	12,0	12	26,00	73	1,00	5
6525187	577712015KT	—	—	12,0	12	26,00	73	1,50	5
3524597	577712015MT	—	—	12,0	12	26,00	83	—	5
6525188	577712015NT	—	—	12,0	12	26,00	73	2,50	5
6525189	577716006JT	—	—	16,0	16	32,00	92	1,00	5
3524601	577716006MT	3524620	577716006MW	16,0	16	32,00	92	0,75	5
6525190	577716006PT	—	—	16,0	16	32,00	92	3,00	5
6525201	577716006QT	—	—	16,0	16	32,00	92	4,00	5
3524600	577716016MT	—	—	16,0	16	32,00	92	—	5
3524605	577720007MT	—	—	20,0	20	38,00	104	0,75	5
6525202	577720007PT	—	—	20,0	20	38,00	104	3,00	5
3524603	577720017MT	—	—	20,0	20	38,00	104	—	5
3524606	577725008MT	—	—	25,0	25	45,00	121	0,75	5
6525203	577725008RT	—	—	25,0	25	45,00	121	5,00	5

INDEXABLE MILLING

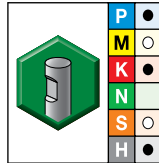
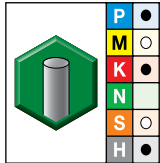
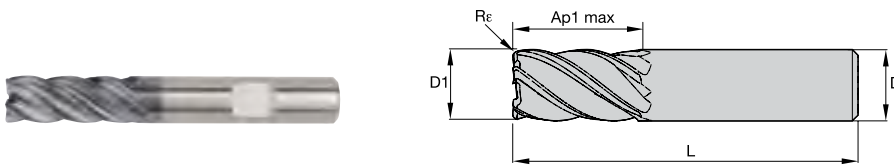
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

VariMill II • Series 577C • Square End • Center Cutting • 5 Flute • Metric



● first choice
○ alternate choice

WP15PE		WP15PE		D1	D	length of cut Ap1 max	length L	Rε	ZU
5578866	577C04002T	5578867	577C04002W	4,0	6	11,00	55	0,25	5
5578868	577C04012T	—	—	4,0	6	11,00	55	—	5
5578990	577C05002T	5578991	577C05002W	5,0	6	13,00	57	0,25	5
6519448	577C050R2TE	—	—	5,0	6	13,00	57	0,50	5
5578992	577C06002T	5578993	577C06002W	6,0	6	13,00	57	0,40	5
5578994	577C06012T	—	—	6,0	6	13,00	57	—	5
6519449	577C060R2TE	—	—	6,0	6	13,00	57	0,50	5
6519450	577C060R2TJ	—	—	6,0	6	13,00	57	1,00	5
5578995	577C07003T	—	—	7,0	8	16,00	63	0,40	5
5578997	577C08003T	5578998	577C08003W	8,0	8	19,00	63	0,50	5
5578999	577C08013T	—	—	8,0	8	19,00	63	—	5
6519481	577C080R3TJ	—	—	8,0	8	19,00	63	1,00	5
6519482	577C080R3TK	—	—	8,0	8	19,00	63	1,50	5
5579021	577C09004T	—	—	9,0	10	19,00	72	0,50	5
5579023	577C10004T	5579024	577C10004W	10,0	10	22,00	72	0,50	5
5579025	577C10014T	—	—	10,0	10	22,00	72	—	5
6519483	577C100R4TJ	—	—	10,0	10	22,00	72	1,00	5
6519484	577C100R4TK	—	—	10,0	10	22,00	72	1,50	5
6519485	577C100R4TM	—	—	10,0	10	22,00	72	2,00	5
5579026	577C12005T	5579027	577C12005W	12,0	12	26,00	83	0,75	5
5579028	577C12015T	—	—	12,0	12	26,00	83	—	5
6519486	577C120R5TE	—	—	12,0	12	26,00	83	0,50	5
6519487	577C120R5TJ	—	—	12,0	12	26,00	83	1,00	5
6519488	577C120R5TK	—	—	12,0	12	26,00	83	1,50	5
6519489	577C120R5TM	—	—	12,0	12	26,00	83	2,00	5
6519490	577C120R5TN	—	—	12,0	12	26,00	83	2,50	5
6519491	577C120R5TP	—	—	12,0	12	26,00	83	3,00	5
5579029	577C14004T	5579040	577C14004W	14,0	14	26,00	83	0,75	5
5579041	577C14014T	—	—	14,0	14	26,00	83	—	5
5579042	577C16006T	5579043	577C16006W	16,0	16	32,00	92	0,75	5
5579044	577C16016T	—	—	16,0	16	32,00	92	—	5
6519492	577C160R6TE	—	—	16,0	16	32,00	92	0,50	5
6519493	577C160R6TJ	—	—	16,0	16	32,00	92	1,00	5
6519497	577C160R6TM	—	—	16,0	16	32,00	92	2,00	5
6519499	577C160R6TP	—	—	16,0	16	32,00	92	3,00	5
6519500	577C160R6TQ	—	—	16,0	16	32,00	92	4,00	5
5579045	577C18008T	—	—	18,0	18	32,00	92	0,75	5
5579047	577C20007T	5579048	577C20007W	20,0	20	38,00	104	0,75	5
5579049	577C20017T	—	—	20,0	20	38,00	104	—	5
6519501	577C200R7TJ	—	—	20,0	20	38,00	104	1,00	5
6519502	577C200R7TM	—	—	20,0	20	38,00	104	2,00	5
6519503	577C200R7TP	—	—	20,0	20	38,00	104	3,00	5
6519504	577C200R7TQ	—	—	20,0	20	38,00	104	4,00	5
6519505	577C200R7TR	—	—	20,0	20	38,00	104	5,00	5
5579060	577C25008T	5579061	577C25008W	25,0	25	45,00	121	0,75	5
6519506	577C250R8TM	—	—	25,0	25	45,00	121	2,00	5
6519507	577C250R8TP	—	—	25,0	25	45,00	121	3,00	5
6519508	577C250R8TQ	—	—	25,0	25	45,00	121	4,00	5
6519509	577C250R8TR	—	—	25,0	25	45,00	121	5,00	5

INDEXABLE MILLING

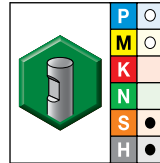
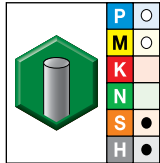
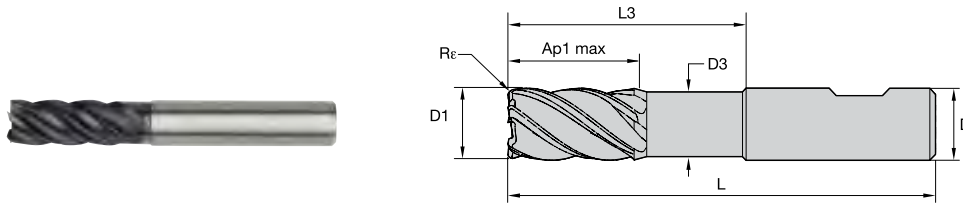
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

VariMill II • Series 57N8 • Square End • Non-Center Cutting • Neck • 5 Flute • Metric



- first choice
- alternate choice

WS15PE		WS15PE		D1	D	D3	length of cut		length		Re	ZU
order #	catalog #	order #	catalog #				Ap1 max	L3	L			
3524626	57N806002MT	—	—	6,0	6	5,60	13,00	18,00	63	—	5	
3524627	57N806022MT	—	—	6,0	6	5,60	13,00	18,00	63	0,50	5	
6492821	57N8060R2MTG	—	—	6,0	6	5,64	13,00	18,00	63	0,75	5	
3524629	57N808003MT	—	—	8,0	8	7,50	19,00	24,00	76	—	5	
3524631	57N808023MT	—	—	8,0	8	7,50	19,00	24,00	76	0,50	5	
6492822	57N8080R3MTG	—	—	8,0	8	7,52	19,00	24,00	76	0,75	5	
6492825	57N8080R3MTK	—	—	8,0	8	7,52	19,00	24,00	76	1,50	5	
3524632	57N810004MT	—	—	10,0	10	9,40	22,00	30,00	76	—	5	
3524643	57N810024MT	—	—	10,0	10	9,40	22,00	30,00	76	0,50	5	
3524644	57N810034MT	—	—	10,0	10	9,40	22,00	30,00	76	1,00	5	
3524645	57N810054MT	—	—	10,0	10	9,40	22,00	30,00	76	2,00	5	
6492823	57N8100R4MTG	—	—	10,0	10	9,40	22,00	30,00	76	0,75	5	
6492826	57N8100R4MTK	—	—	10,0	10	9,40	22,00	30,00	76	1,50	5	
3524647	57N812025MT	—	—	12,0	12	11,28	26,00	36,00	83	0,50	5	
3524648	57N812035MT	—	—	12,0	12	11,28	26,00	36,00	83	1,00	5	
3524649	57N812055MT	—	—	12,0	12	11,28	26,00	36,00	83	2,00	5	
6492827	57N8120R5MTK	—	—	12,0	12	11,28	26,00	36,00	83	1,50	5	
6492829	57N8120R5MTN	—	—	12,0	12	11,28	26,00	36,00	83	2,50	5	
6492830	57N8120R5MTP	—	—	12,0	12	11,28	26,00	36,00	83	3,00	5	
3524650	57N816006MT	—	—	16,0	16	15,05	32,00	48,00	100	—	5	
3524651	57N816026MT	3562867	57N816026MW	16,0	16	15,05	32,00	48,00	100	0,50	5	
3524652	57N816036MT	—	—	16,0	16	15,05	32,00	48,00	100	1,00	5	
3524654	57N816076MT	3524692	57N816076MW	16,0	16	15,05	32,00	48,00	100	3,00	5	
6492832	57N8160R6MTQ	—	—	16,0	16	15,04	32,00	48,00	100	4,00	5	
—	—	3524693	57N820027MW	20,0	20	18,80	38,00	60,00	115	0,50	5	
6492824	57N8200R7MTJ	—	—	20,0	20	18,80	38,00	60,00	115	1,00	5	
6492833	57N8200R7MTR	—	—	20,0	20	18,80	38,00	60,00	115	5,00	5	
6492831	57N8250R8MTP	—	—	25,0	25	23,50	45,00	75,00	135	3,00	5	
6492834	57N8250R8MTR	—	—	25,0	25	23,50	45,00	75,00	135	5,00	5	

INDEXABLE MILLING

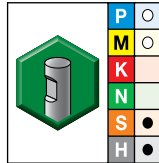
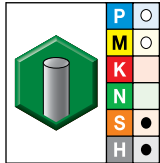
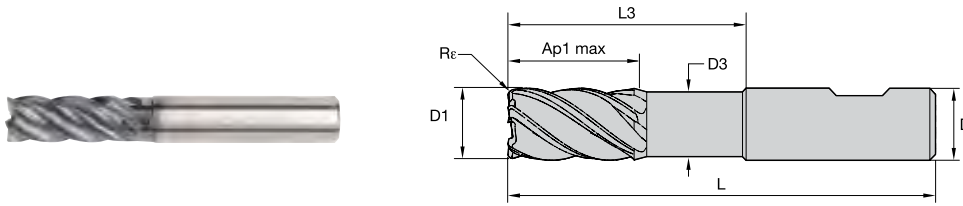
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

VariMill II • Series 57NC • Square End • Center Cutting • Neck • 5 Flute • Metric



● first choice
○ alternate choice

WS15PE		WS15PE		D1	D	D3	length of cut Ap1 max	L3	length L	Re	ZU
5598906	57NC06002T	—	—	6,0	6	5,64	13,00	18,00	63	—	5
5598907	57NC06022T	—	—	6,0	6	5,64	13,00	18,00	63	0,50	5
5598909	57NC06032T	—	—	6,0	6	5,64	13,00	18,00	63	1,00	5
—	—	5599071	57NC06042W	6,0	6	5,64	13,00	18,00	63	1,50	5
6569491	57NC060R2TK	—	—	6,0	6	5,64	13,00	17,82	63	1,50	5
5599072	57NC08003T	—	—	8,0	8	7,52	19,00	24,00	76	—	5
5599073	57NC08023T	5599074	57NC08023W	8,0	8	7,52	19,00	24,00	76	0,50	5
5599075	57NC08033T	5599076	57NC08033W	8,0	8	7,52	19,00	24,00	76	1,00	5
6569493	57NC080R3TM	5599077	57NC08053W	8,0	8	7,52	19,00	24,00	76	2,00	5
6569492	57NC080R3TK	—	—	8,0	8	7,52	19,00	24,00	76	1,50	5
5599078	57NC10004T	—	—	10,0	10	9,40	22,00	30,00	76	—	5
5599079	57NC10024T	5599080	57NC10024W	10,0	10	9,40	22,00	30,00	76	0,50	5
5599081	57NC10034T	5599082	57NC10034W	10,0	10	9,40	22,00	30,00	76	1,00	5
5599083	57NC10054T	—	—	10,0	10	9,40	22,00	30,00	76	2,00	5
6569494	57NC100R4TK	—	—	10,0	10	9,40	22,00	30,00	76	1,50	5
5599085	57NC12005T	—	—	12,0	12	11,28	26,00	36,00	83	—	5
5599086	57NC12025T	5599087	57NC12025W	12,0	12	11,28	26,00	36,00	83	0,50	5
5599088	57NC12035T	—	—	12,0	12	11,28	26,00	36,00	83	1,00	5
5599090	57NC12055T	5599091	57NC12055W	12,0	12	11,28	26,00	36,00	83	2,00	5
6569495	57NC120R5TK	—	—	12,0	12	11,28	26,00	36,00	83	1,50	5
6569496	57NC120R5TP	—	—	12,0	12	11,28	26,00	36,00	83	3,00	5
5599092	57NC16006T	—	—	16,0	16	15,04	32,00	48,00	100	—	5
5599093	57NC16026T	5598905	57NC16026W	16,0	16	15,04	32,00	48,00	100	0,50	5
5599094	57NC16036T	5599095	57NC16036W	16,0	16	15,04	32,00	48,00	100	1,00	5
5599096	57NC16056T	—	—	16,0	16	15,04	32,00	48,00	100	2,00	5
5599098	57NC16076T	5599099	57NC16076W	16,0	16	15,04	32,00	48,00	100	3,00	5
6569497	57NC160R6TQ	—	—	16,0	16	15,04	32,00	48,00	100	4,00	5
5599100	57NC20007T	—	—	20,0	20	18,80	38,00	60,00	115	—	5
5599101	57NC20027T	5599102	57NC20027W	20,0	20	18,80	38,00	60,00	115	0,50	5
5599103	57NC20037T	5599104	57NC20037W	20,0	20	18,80	38,00	60,00	115	1,00	5
5599105	57NC20057T	—	—	20,0	20	18,80	38,00	60,00	115	2,00	5
5599107	57NC20077T	5599108	57NC20077W	20,0	20	18,80	38,00	60,00	115	3,00	5
5599109	57NC20087T	—	—	20,0	20	18,80	38,00	60,00	115	4,00	5
6569498	57NC200R7TR	—	—	20,0	20	18,80	38,00	60,00	115	5,00	5
5599111	57NC25008T	—	—	25,0	25	23,50	45,00	75,00	135	—	5
5599112	57NC25028T	—	—	25,0	25	23,50	45,00	75,00	135	0,50	5
5599114	57NC25038T	5599115	57NC25038W	25,0	25	23,50	45,00	75,00	135	1,00	5
5599116	57NC25058T	—	—	25,0	25	23,50	45,00	75,00	135	2,00	5
5599118	57NC25078T	—	—	25,0	25	23,50	45,00	75,00	135	3,00	5
5599120	57NC25088T	—	—	25,0	25	23,50	45,00	75,00	135	4,00	5

INDEXABLE MILLING

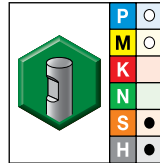
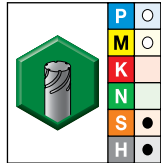
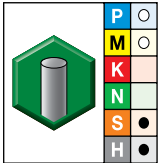
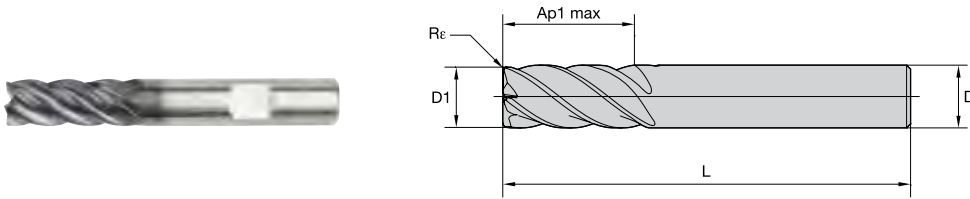
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

VariMill II ER • Series 577E • Square End • Eccentric Relief • 5 Flute • Metric



● first choice
○ alternate choice

WS15PE		WS15PE		WS15PE		D1	D	length of cut Ap1 max	length L	Re	ZU
order #	catalog #	order #	catalog #	order #	catalog #						
5599171	577E10004T	-	-	5599176	577E12015W	10,0	10	22,00	72	-	5
-	-	5599177	577E16006V	-	-	12,0	12	26,00	83	0,75	5
-	-	5599178	577E16016V	5599179	577E16016W	16,0	16	32,00	92	-	5
-	-	5599180	577E20007V	-	-	16,0	16	32,00	92	0,75	5
-	-	5599181	577E20017V	5599182	577E20017W	20,0	20	38,00	104	-	5
-	-	5599183	577E25018V	-	-	20,0	20	38,00	104	0,75	5
-	-	-	-	-	-	25,0	25	45,00	121	0,75	5

INDEXABLE MILLING

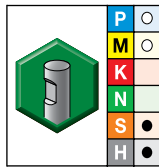
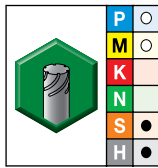
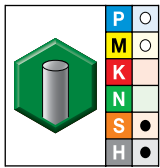
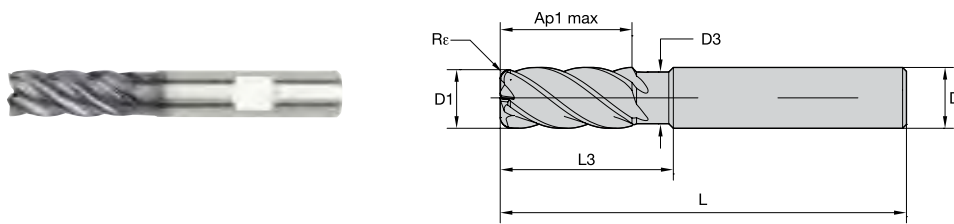
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

VariMill II ER • Series 57NE • Square End • Eccentric Relief • Neck • 5 Flute • Metric



- first choice
- alternate choice

WS15PE		WS15PE		WS15PE		D1	D	D3	length of cut Ap1 max	L3	length L	Re	ZU
order #	catalog #	order #	catalog #	order #	catalog #								
5599122	57NE10004T	—	—	—	—	10,0	10	9,40	22,00	30,00	76	—	5
5599123	57NE10024T	—	—	5599124	57NE10024W	10,0	10	9,40	22,00	30,00	76	0,50	5
5599125	57NE10034T	—	—	5599126	57NE10034W	10,0	10	9,40	22,00	30,00	76	1,00	5
5599127	57NE10054T	—	—	5599128	57NE10054W	10,0	10	9,40	22,00	30,00	76	2,00	5
—	—	5599129	57NE12005V	—	—	12,0	12	11,28	26,00	36,00	83	—	5
—	—	5599130	57NE12025V	5599131	57NE12025W	12,0	12	11,28	26,00	36,00	83	0,50	5
—	—	5599132	57NE12035V	5599133	57NE12035W	12,0	12	11,28	26,00	36,00	83	1,00	5
—	—	5599134	57NE12055V	5599135	57NE12055W	12,0	12	11,28	26,00	36,00	83	2,00	5
—	—	5599136	57NE16006V	—	—	16,0	16	15,04	32,00	48,00	100	—	5
—	—	5599137	57NE16026V	5599138	57NE16026W	16,0	16	15,04	32,00	48,00	100	0,50	5
—	—	5599139	57NE16036V	5599140	57NE16036W	16,0	16	15,04	32,00	48,00	100	1,00	5
—	—	5599141	57NE16056V	5599142	57NE16056W	16,0	16	15,04	32,00	48,00	100	2,00	5
—	—	5599143	57NE20007V	—	—	20,0	20	18,80	38,00	60,00	115	—	5
—	—	5599144	57NE20027V	5599145	57NE20027W	20,0	20	18,80	38,00	60,00	115	0,50	5
—	—	5599146	57NE20037V	5599147	57NE20037W	20,0	20	18,80	38,00	60,00	115	1,00	5
—	—	5599148	57NE20057V	5599149	57NE20057W	20,0	20	18,80	38,00	60,00	115	2,00	5
—	—	5599160	57NE20087V	5599161	57NE20087W	20,0	20	18,80	38,00	60,00	115	4,00	5
—	—	5599162	57NE25008V	—	—	25,0	25	23,50	45,00	75,00	135	—	5
—	—	5599163	57NE25028V	—	—	25,0	25	23,50	45,00	75,00	135	0,50	5
—	—	5599165	57NE25038V	—	—	25,0	25	23,50	45,00	75,00	135	1,00	5
—	—	5599167	57NE25058V	—	—	25,0	25	23,50	45,00	75,00	135	2,00	5
—	—	5599169	57NE25088V	—	—	25,0	25	23,50	45,00	75,00	135	4,00	5

INDEXABLE MILLING

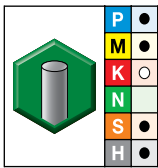
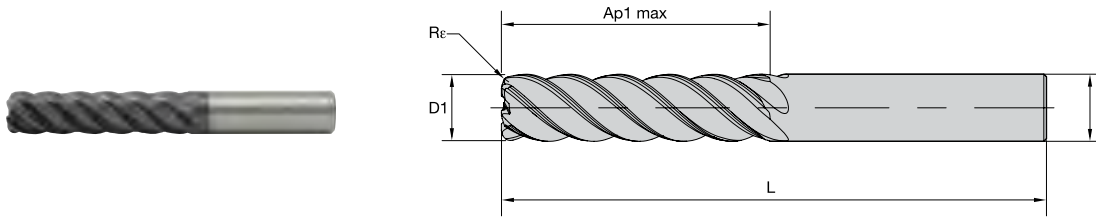
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

VariMill II Long • Series 5718 • Square End • Long Length • 5 Flute • Metric



● first choice
○ alternate choice

AITIN-MT

order #	catalog #	D1	D	length of cut Ap1 max	length L	Re	Z U
571806002MT		6,0	6	24,00	76	—	5
571806012MT		6,0	6	24,00	76	0,50	5
571806022MT		6,0	6	24,00	76	1,00	5
571808003MT		8,0	8	32,00	76	—	5
571808013MT		8,0	8	32,00	76	0,50	5
571808023MT		8,0	8	32,00	76	1,00	5
571810004MT		10,0	10	40,00	100	—	5
571810014MT		10,0	10	40,00	100	0,50	5
571810034MT		10,0	10	40,00	100	2,00	5
571810044MT		10,0	10	40,00	100	2,50	5
571812005MT		12,0	12	48,00	125	—	5
571812015MT		12,0	12	48,00	125	0,50	5
571812025MT		12,0	12	48,00	125	1,00	5
571812035MT		12,0	12	48,00	125	2,00	5
571812045MT		12,0	12	48,00	125	2,50	5
571814014MT		14,0	14	56,00	120	—	5
571814024MT		14,0	14	56,00	120	1,00	5
571814054MT		14,0	14	56,00	120	4,00	5
571816006MT		16,0	16	64,00	141	—	5
571816016MT		16,0	16	64,00	141	0,50	5
571816026MT		16,0	16	64,00	141	1,00	5
571816036MT		16,0	16	64,00	141	2,00	5
571816046MT		16,0	16	64,00	141	3,00	5
571816056MT		16,0	16	64,00	141	4,00	5
571818018MT		18,0	18	72,00	150	—	5
571820007MT		20,0	20	80,00	150	—	5
571820017MT		20,0	20	80,00	150	0,50	5
571820027MT		20,0	20	80,00	150	1,00	5
571820037MT		20,0	20	80,00	150	2,00	5
571820047MT		20,0	20	80,00	150	3,00	5
571820057MT		20,0	20	80,00	150	4,00	5
571825008MT		25,0	25	100,00	170	—	5
571825018MT		25,0	25	100,00	170	0,50	5
571825028MT		25,0	25	100,00	170	1,00	5
571825038MT		25,0	25	100,00	170	2,00	5
571825048MT		25,0	25	100,00	170	3,00	5

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

VariMill II • Series 5V0C • Application Data • WP15PE • Inch

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Material Group	Side Milling (A) and Slotting (B)			WP15PE			Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.										
	A		B	Cutting Speed – vc SFM			frac. dec.	D1 – Diameter									
	ap	ae	ap	min	max	3/16		1/4	5/16	3/8	1/2	5/8	3/4	1	1 1/4		
P	0	1.5 x D	0.5 x D	1 x D	490	–	660	IPT	0.0013	0.0018	0.0023	0.0027	0.0034	0.0039	0.0044	0.0049	0.0049
	1	1.5 x D	0.5 x D	1 x D	490	–	660	IPT	0.0013	0.0018	0.0023	0.0027	0.0034	0.0039	0.0044	0.0049	0.0049
	2	1.5 x D	0.5 x D	1 x D	460	–	620	IPT	0.0013	0.0018	0.0023	0.0027	0.0034	0.0039	0.0044	0.0049	0.0049
	3	1.5 x D	0.5 x D	1 x D	390	–	520	IPT	0.0011	0.0015	0.0020	0.0023	0.0029	0.0034	0.0039	0.0045	0.0048
	4	1.5 x D	0.5 x D	0.75 x D	300	–	490	IPT	0.0010	0.0014	0.0017	0.0020	0.0026	0.0030	0.0034	0.0039	0.0040
	5	1.5 x D	0.5 x D	1 x D	200	–	330	IPT	0.0009	0.0012	0.0016	0.0018	0.0023	0.0027	0.0031	0.0036	0.0039
6	1.5 x D	0.5 x D	0.75 x D	160	–	250	IPT	0.0008	0.0010	0.0013	0.0015	0.0019	0.0022	0.0025	0.0028	0.0029	
M	1	1.5 x D	0.5 x D	1 x D	300	–	380	IPT	0.0011	0.0015	0.0020	0.0023	0.0029	0.0034	0.0039	0.0045	0.0048
	2	1.5 x D	0.5 x D	1 x D	200	–	260	IPT	0.0009	0.0012	0.0016	0.0018	0.0023	0.0027	0.0031	0.0036	0.0039
	3	1.5 x D	0.5 x D	1 x D	200	–	230	IPT	0.0008	0.0010	0.0013	0.0015	0.0019	0.0022	0.0025	0.0028	0.0029
K	1	1.5 x D	0.5 x D	1 x D	390	–	490	IPT	0.0013	0.0018	0.0023	0.0027	0.0034	0.0039	0.0044	0.0049	0.0049
	2	1.5 x D	0.5 x D	1 x D	360	–	460	IPT	0.0011	0.0015	0.0020	0.0023	0.0029	0.0034	0.0039	0.0045	0.0048
	3	1.5 x D	0.5 x D	1 x D	360	–	430	IPT	0.0009	0.0012	0.0016	0.0018	0.0023	0.0027	0.0031	0.0036	0.0039
S	1	1.5 x D	0.3 x D	0.3 x D	160	–	300	IPT	0.0011	0.0015	0.0020	0.0023	0.0029	0.0034	0.0039	0.0045	0.0048
	2	1.5 x D	0.3 x D	0.3 x D	80	–	130	IPT	0.0006	0.0008	0.0010	0.0012	0.0015	0.0018	0.0021	0.0024	0.0026
	3	1.5 x D	0.5 x D	1 x D	80	–	130	IPT	0.0006	0.0008	0.0010	0.0012	0.0015	0.0018	0.0021	0.0024	0.0026
	4	1.5 x D	0.5 x D	1 x D	160	–	200	IPT	0.0008	0.0011	0.0014	0.0017	0.0021	0.0025	0.0028	0.0033	0.0036
H	1	1.5 x D	0.5 x D	0.75 x D	260	–	460	IPT	0.0010	0.0014	0.0017	0.0020	0.0026	0.0030	0.0034	0.0039	0.0040
	2	1.5 x D	0.2 x D	0.5 x D	230	–	390	IPT	0.0008	0.0010	0.0013	0.0015	0.0019	0.0022	0.0025	0.0028	0.0029

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

VariMill II • Series 5VNC • Application Data • WP15PE • Inch

Material Group	Side Milling (A) and Slotting (B)			WP15PE			Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.										
	A		B	Cutting Speed – vc SFM			frac. dec.	D1 – Diameter									
	ap	ae	ap	min	max	1/4		5/16	3/8	1/2	5/8	3/4	1				
P	5	1.5 x D	0.5 x D	1 x D	200	–	330	IPT	0.0012	0.0016	0.0018	0.0023	0.0027	0.0031	0.0036		
	6	1.5 x D	0.5 x D	0.75 x D	160	–	250	IPT	0.0010	0.0013	0.0015	0.0019	0.0022	0.0025	0.0028		
M	1	1.5 x D	0.5 x D	1 x D	300	–	380	IPT	0.0015	0.0020	0.0023	0.0029	0.0034	0.0039	0.0045		
	2	1.5 x D	0.5 x D	1 x D	200	–	260	IPT	0.0012	0.0016	0.0018	0.0023	0.0027	0.0031	0.0036		
	3	1.5 x D	0.5 x D	1 x D	200	–	230	IPT	0.0010	0.0013	0.0015	0.0019	0.0022	0.0025	0.0028		
K	1	1.5 x D	0.5 x D	1 x D	390	–	490	IPT	0.0018	0.0023	0.0027	0.0034	0.0039	0.0044	0.0049		
	2	1.5 x D	0.5 x D	1 x D	360	–	460	IPT	0.0015	0.0020	0.0023	0.0029	0.0034	0.0039	0.0045		
	3	1.5 x D	0.5 x D	1 x D	360	–	430	IPT	0.0012	0.0016	0.0018	0.0023	0.0027	0.0031	0.0036		
S	1	1.5 x D	0.3 x D	0.3 x D	160	–	300	IPT	0.0015	0.0020	0.0023	0.0029	0.0034	0.0039	0.0045		
	2	1.5 x D	0.3 x D	0.3 x D	80	–	130	IPT	0.0008	0.0010	0.0012	0.0015	0.0018	0.0021	0.0024		
	3	1.5 x D	0.5 x D	1 x D	80	–	130	IPT	0.0008	0.0010	0.0012	0.0015	0.0018	0.0021	0.0024		
	4	1.5 x D	0.5 x D	1 x D	160	–	200	IPT	0.0011	0.0014	0.0017	0.0021	0.0025	0.0028	0.0033		
H	1	1.5 x D	0.5 x D	0.75 x D	260	–	460	IPT	0.0014	0.0017	0.0020	0.0026	0.0030	0.0034	0.0039		
	2	1.5 x D	0.2 x D	0.5 x D	230	–	390	IPT	0.0010	0.0013	0.0015	0.0019	0.0022	0.0025	0.0028		

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

VariMill II • Series 5V0S • Application Data • WP15PE • Inch

Material Group																		
	A		B		WP15PE			Recommended feed per tooth (IPT=inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.										
					Cutting Speed – vc SFM			D1 – Diameter										
	ap	ae	ap	min	max	frac. dec.	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	1			
P	1	1.25 x D	0.5 x D	1 x D	490	–	660	IPT	.0014	.0018	.0023	.0027	.0031	.0035	.0039	.0043	.0050	
	2	1.25 x D	0.5 x D	1 x D	460	–	620	IPT	.0014	.0018	.0023	.0027	.0031	.0035	.0039	.0043	.0050	
	3	1.25 x D	0.5 x D	1 x D	390	–	520	IPT	.0011	.0015	.0020	.0023	.0026	.0029	.0034	.0038	.0046	
	4	1.25 x D	0.5 x D	0.75 x D	300	–	490	IPT	.0010	.0014	.0018	.0020	.0023	.0026	.0030	.0033	.0039	
	5	1.25 x D	0.5 x D	1 x D	200	–	330	IPT	.0009	.0012	.0016	.0018	.0021	.0023	.0027	.0030	.0036	
	6	1.25 x D	0.5 x D	0.75 x D	160	–	250	IPT	.0008	.0010	.0013	.0015	.0017	.0019	.0022	.0024	.0028	
M	1	1.25 x D	0.5 x D	1 x D	260	–	330	IPT	.0011	.0015	.0020	.0023	.0026	.0029	.0034	.0038	.0046	
	2	1.25 x D	0.5 x D	1 x D	200	–	260	IPT	.0009	.0012	.0016	.0018	.0021	.0023	.0027	.0030	.0036	
	3	1.25 x D	0.5 x D	1 x D	200	–	260	IPT	.0008	.0010	.0013	.0015	.0017	.0019	.0022	.0024	.0028	
K	1	1.25 x D	0.5 x D	1 x D	390	–	520	IPT	.0014	.0018	.0023	.0027	.0031	.0035	.0039	.0043	.0050	
	2	1.25 x D	0.5 x D	1 x D	360	–	460	IPT	.0011	.0015	.0020	.0023	.0026	.0029	.0034	.0038	.0046	
	3	1.25 x D	0.5 x D	1 x D	330	–	430	IPT	.0009	.0012	.0016	.0018	.0021	.0023	.0027	.0030	.0036	
S	1	1.0 x D	0.3 x D	0.3 x D	160	–	300	IPT	.0011	.0015	.0020	.0023	.0026	.0029	.0034	.0039	.0045	
	2	1.0 x D	0.3 x D	0.3 x D	80	–	130	IPT	.0006	.0008	.0010	.0012	.0014	.0015	.0018	.0021	.0024	
	3	1.25 x D	0.5 x D	1 x D	80	–	130	IPT	.0006	.0008	.0010	.0012	.0014	.0015	.0018	.0021	.0024	
	4	1.25 x D	0.5 x D	1 x D	160	–	200	IPT	.0008	.0011	.0014	.0017	.0019	.0021	.0025	.0028	.0033	
H	1	1.25 x D	0.5 x D	0.75 x D	260	–	460	IPT	.0010	.0014	.0018	.0020	.0023	.0026	.0030	.0033	.0039	

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

VariMill II • Series 5VNS • Application Data • ALTIN-MT • Inch

Material Group																		
	A		B		AITiN			Recommended feed per tooth (IPT=inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.										
					Cutting Speed – vc SFM			D1 – Diameter										
	ap	ae	ap	min	max	frac. dec.	1/4	3/8	1/2	5/8	3/4	1						
P	1	0.75 x D	0.5 x D	0.75 x D	490	–	660	IPT	.0018	.0027	.0035	.0039	.0043	.0050				
	2	0.75 x D	0.5 x D	0.75 x D	460	–	620	IPT	.0018	.0027	.0035	.0039	.0043	.0050				
	3	0.75 x D	0.5 x D	0.75 x D	390	–	520	IPT	0.0015	.0023	.0029	.0034	.0038	.0046				
	4	0.75 x D	0.5 x D	0.5 x D	300	–	490	IPT	0.0014	.0020	.0026	.0030	.0033	.0039				
	5	0.75 x D	0.5 x D	0.75 x D	200	–	330	IPT	.0012	.0018	.0023	.0027	.0030	.0036				
	6	0.75 x D	0.5 x D	0.5 x D	160	–	250	IPT	.0010	.0015	.0019	.0022	.0024	.0028				
M	1	0.75 x D	0.5 x D	0.75 x D	260	–	330	IPT	.0015	.0023	.0029	.0034	.0038	.0046				
	2	0.75 x D	0.5 x D	0.75 x D	200	–	260	IPT	.0012	.0018	.0023	.0027	.0030	.0036				
	3	0.75 x D	0.5 x D	0.75 x D	200	–	260	IPT	.0010	.0015	.0019	.0022	.0024	.0028				
K	1	0.75 x D	0.5 x D	0.75 x D	390	–	520	IPT	.0018	.0027	.0035	.0039	.0043	.0050				
	2	0.75 x D	0.5 x D	0.75 x D	360	–	460	IPT	.0015	.0023	.0029	.0034	.0038	.0046				
	3	0.75 x D	0.5 x D	0.75 x D	330	–	430	IPT	.0012	.0018	.0023	.0027	.0030	.0036				
S	1	0.75 x D	0.3 x D	0.3 x D	160	–	300	IPT	.0015	.0023	.0029	.0034	.0039	.0045				
	2	0.75 x D	0.3 x D	0.3 x D	80	–	130	IPT	.0008	.0012	.0015	.0018	.0021	.0024				
	3	0.75 x D	0.5 x D	0.75 x D	80	–	130	IPT	.0008	.0012	.0015	.0018	.0021	.0024				
	4	0.75 x D	0.5 x D	0.75 x D	160	–	200	IPT	.0011	.0017	.0021	.0025	.0028	.0033				
H	1	0.75 x D	0.5 x D	0.5 x D	260	–	460	IPT	.0014	.0020	.0026	.0030	.0033	.0039				

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

VariMill II ER • Series 5VOE • Application Data • WS15PE • Inch

Material Group	Side Milling (A) and Slotting (B)			WS15PE		Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.										
	A		B	Cutting Speed – vc SFM			D1 – Diameter									
	ap	ae	ap	min	max	frac. dec.	3/16	1/4	3/8	1/2	5/8	3/4	1	1 1/4		
							.1875	.2500	.3750	.5000	.6250	.7500	1.0000	1.2500		
P	4	1.5 x D	0.5 x D	0.75 x D	300	–	490	IPT	0.0010	0.0014	0.0020	0.0026	0.0030	0.0034	0.0039	0.0040
	5	1.5 x D	0.5 x D	1 x D	200	–	330	IPT	0.0009	0.0012	0.0018	0.0023	0.0027	0.0031	0.0036	0.0039
	6	1.5 x D	0.5 x D	0.75 x D	160	–	250	IPT	0.0008	0.0010	0.0015	0.0019	0.0022	0.0025	0.0028	0.0029
M	1	1.5 x D	0.5 x D	1 x D	300	–	380	IPT	0.0011	0.0015	0.0023	0.0029	0.0034	0.0039	0.0045	0.0048
	2	1.5 x D	0.5 x D	1 x D	200	–	260	IPT	0.0009	0.0012	0.0018	0.0023	0.0027	0.0031	0.0036	0.0039
	3	1.5 x D	0.5 x D	1 x D	200	–	230	IPT	0.0008	0.0010	0.0015	0.0019	0.0022	0.0025	0.0028	0.0029
S	1	1.5 x D	0.3 x D	0.3 x D	160	–	300	IPT	0.0011	0.0015	0.0023	0.0029	0.0034	0.0039	0.0045	0.0048
	2	1.5 x D	0.3 x D	0.3 x D	80	–	130	IPT	0.0006	0.0008	0.0012	0.0015	0.0018	0.0021	0.0024	0.0026
	3	1.5 x D	0.5 x D	1 x D	80	–	130	IPT	0.0006	0.0008	0.0012	0.0015	0.0018	0.0021	0.0024	0.0026
	4	1.5 x D	0.5 x D	1 x D	160	–	200	IPT	0.0008	0.0011	0.0017	0.0021	0.0025	0.0028	0.0033	0.0036
H	1	1.5 x D	0.5 x D	0.75 x D	260	–	460	IPT	0.0010	0.0014	0.0020	0.0026	0.0030	0.0034	0.0039	0.0040
	2	1.5 x D	0.2 x D	0.5 x D	230	–	390	IPT	0.0008	0.0010	0.0015	0.0019	0.0022	0.0025	0.0028	0.0029

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

VariMill II ER • Series 5VNE • Application Data • WS15PE • Inch

Material Group	Side Milling (A) and Slotting (B)			WS15PE		Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.									
	A		B	Cutting Speed – vc SFM			D1 – Diameter								
	ap	ae	ap	min	max	frac. dec.	1/4	3/8	1/2	5/8	3/4	1	1 1/4		
							.2500	.3750	.5000	.6250	.7500	1.0000	1.2500		
P	4	1.5 x D	0.5 x D	0.75 x D	300	–	490	IPT	0.0014	0.0020	0.0026	0.0030	0.0034	0.0039	0.0040
	5	1.5 x D	0.5 x D	1 x D	200	–	330	IPT	0.0012	0.0018	0.0023	0.0027	0.0031	0.0036	0.0039
	6	1.5 x D	0.5 x D	0.75 x D	160	–	250	IPT	0.0010	0.0015	0.0019	0.0022	0.0025	0.0028	0.0029
M	1	1.5 x D	0.5 x D	1 x D	300	–	380	IPT	0.0015	0.0023	0.0029	0.0034	0.0039	0.0045	0.0048
	2	1.5 x D	0.5 x D	1 x D	200	–	260	IPT	0.0012	0.0018	0.0023	0.0027	0.0031	0.0036	0.0039
	3	1.5 x D	0.5 x D	1 x D	200	–	230	IPT	0.0010	0.0015	0.0019	0.0022	0.0025	0.0028	0.0029
S	1	1.5 x D	0.3 x D	0.3 x D	160	–	300	IPT	0.0015	0.0023	0.0029	0.0034	0.0039	0.0045	0.0048
	2	1.5 x D	0.3 x D	0.3 x D	80	–	130	IPT	0.0008	0.0012	0.0015	0.0018	0.0021	0.0024	0.0026
	3	1.5 x D	0.5 x D	1 x D	80	–	130	IPT	0.0008	0.0012	0.0015	0.0018	0.0021	0.0024	0.0026
	4	1.5 x D	0.5 x D	1 x D	160	–	200	IPT	0.0011	0.0017	0.0021	0.0025	0.0028	0.0033	0.0036
H	1	1.5 x D	0.5 x D	0.75 x D	260	–	460	IPT	0.0014	0.0020	0.0026	0.0030	0.0034	0.0039	0.0040
	2	1.5 x D	0.2 x D	0.5 x D	230	–	390	IPT	0.0010	0.0015	0.0019	0.0022	0.0025	0.0028	0.0029

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

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

VariMill II • Series 5W1S • Application Data • ALTiN-MT • Inch

Material Group	Side Milling (A)		AITiN-MT Cutting Speed – vc SFM		Recommended feed per tooth (IPT = inch/th) for side milling (A). D1 – Diameter								
	A		min	max	frac. dec.	1/4 .2500	5/16 .3125	3/8 .3750	1/2 .5000	5/8 .6250	3/4 .7500	1 1.000	
	ap	ae											
	0	1	2	3	4	5	6	1	2	3	4	5	
P	0	Ap1 max	0.05 x D	980	1310	IPT	0.0022	0.0028	0.0033	0.0041	0.0047	0.0053	0.0059
	1	Ap1 max	0.05 x D	980	1310	IPT	0.0022	0.0028	0.0033	0.0041	0.0047	0.0053	0.0059
	2	Ap1 max	0.05 x D	920	1250	IPT	0.0022	0.0028	0.0033	0.0041	0.0047	0.0053	0.0059
	3	Ap1 max	0.05 x D	790	1050	IPT	0.0018	0.0023	0.0027	0.0035	0.0041	0.0046	0.0054
	4	Ap1 max	0.05 x D	590	980	IPT	0.0017	0.0021	0.0025	0.0031	0.0036	0.0040	0.0046
	5	Ap1 max	0.05 x D	390	660	IPT	0.0015	0.0019	0.0022	0.0028	0.0033	0.0037	0.0043
M	6	Ap1 max	0.05 x D	330	490	IPT	0.0012	0.0016	0.0018	0.0023	0.0027	0.0030	0.0034
	1	Ap1 max	0.05 x D	590	750	IPT	0.0018	0.0023	0.0027	0.0035	0.0041	0.0046	0.0054
	2	Ap1 max	0.05 x D	390	520	IPT	0.0015	0.0019	0.0022	0.0028	0.0033	0.0037	0.0043
K	3	Ap1 max	0.05 x D	390	460	IPT	0.0012	0.0016	0.0018	0.0023	0.0027	0.0030	0.0034
	1	Ap1 max	0.05 x D	790	980	IPT	0.0022	0.0028	0.0033	0.0041	0.0047	0.0053	0.0059
	2	Ap1 max	0.05 x D	720	920	IPT	0.0018	0.0023	0.0027	0.0035	0.0041	0.0046	0.0054
S	3	Ap1 max	0.05 x D	720	850	IPT	0.0015	0.0019	0.0022	0.0028	0.0033	0.0037	0.0043
	1	Ap1 max	0.05 x D	160	300	IPT	0.0015	0.0020	0.0023	0.0029	0.0034	0.0039	0.0045
	2	Ap1 max	0.05 x D	80	130	IPT	0.0008	0.0010	0.0012	0.0015	0.0018	0.0021	0.0024
	3	Ap1 max	0.05 x D	80	130	IPT	0.0008	0.0010	0.0012	0.0015	0.0018	0.0021	0.0024
H	4	Ap1 max	0.05 x D	160	200	IPT	0.0011	0.0014	0.0017	0.0021	0.0025	0.0028	0.0033
	1	Ap1 max	0.05 x D	520	920	IPT	0.0017	0.0021	0.0025	0.0031	0.0036	0.0040	0.0046
	2	Ap1 max	0.05 x D	460	790	IPT	0.0012	0.0016	0.0018	0.0023	0.0027	0.0030	0.0034

*For the above cutting data, do not exceed an overall ae of .032".
 NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

VariMill II • Series 5777 • Application Data • WP15PE • Metric

Material Group	Side Milling (A) and Slotting (B)		WP15PE Cutting Speed – vc m/min		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%. D1 – Diameter											
	A		ap	B	min	max	mm	4,0	6,0	8,0	10,0	12,0	16,0	20,0	25,0	
	ap	ae														
	1	2	3	4	5	6	1	2	3	4	5					
P	1	1,5 x D	0,5 x D	1 x D	150	–	200	fz	0,028	0,044	0,060	0,072	0,083	0,101	0,114	0,124
	2	1,5 x D	0,5 x D	1 x D	140	–	190	fz	0,028	0,044	0,060	0,072	0,083	0,101	0,114	0,124
	3	1,5 x D	0,5 x D	1 x D	120	–	160	fz	0,023	0,036	0,050	0,061	0,070	0,087	0,101	0,114
	4	1,5 x D	0,5 x D	0,75 x D	90	–	150	fz	0,021	0,033	0,045	0,054	0,062	0,077	0,088	0,098
	5	1,5 x D	0,5 x D	1 x D	60	–	100	fz	0,019	0,029	0,040	0,048	0,056	0,070	0,081	0,091
	6	1,5 x D	0,5 x D	0,75 x D	50	–	75	fz	0,016	0,025	0,034	0,040	0,047	0,057	0,065	0,071
M	1	1,5 x D	0,5 x D	1 x D	90	–	115	fz	0,023	0,036	0,050	0,061	0,070	0,087	0,101	0,114
	2	1,5 x D	0,5 x D	1 x D	60	–	80	fz	0,019	0,029	0,040	0,048	0,056	0,070	0,081	0,091
	3	1,5 x D	0,5 x D	1 x D	60	–	70	fz	0,016	0,025	0,034	0,040	0,047	0,057	0,065	0,071
K	1	1,5 x D	0,5 x D	1 x D	120	–	150	fz	0,028	0,044	0,060	0,072	0,083	0,101	0,114	0,124
	2	1,5 x D	0,5 x D	1 x D	110	–	130	fz	0,023	0,036	0,050	0,061	0,070	0,087	0,101	0,114
	3	1,5 x D	0,5 x D	1 x D	100	–	130	fz	0,019	0,029	0,040	0,048	0,056	0,070	0,081	0,091
S	1	1,5 x D	0,3 x D	0,3 x D	50	–	90	fz	0,023	0,036	0,050	0,061	0,070	0,087	0,101	0,114
	2	1,5 x D	0,3 x D	0,3 x D	25	–	40	fz	0,013	0,019	0,026	0,032	0,037	0,046	0,054	0,061
	3	1,5 x D	0,5 x D	1 x D	25	–	40	fz	0,013	0,019	0,026	0,032	0,037	0,046	0,054	0,061
	4	1,5 x D	0,5 x D	1 x D	50	–	60	fz	0,016	0,026	0,037	0,045	0,052	0,064	0,074	0,084
H	1	1,5 x D	0,5 x D	0,75 x D	80	–	140	fz	0,021	0,033	0,045	0,054	0,062	0,077	0,088	0,098

NOTE: Lower value of cutting speed is used for high-stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on > 12mm diameters.

VariMill II • Series 577C • Application Data • WP15PE • Metric

Material Group																				
	Side Milling (A) and Slotting (B)			WP15PE			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.													
	A		B	Cutting Speed – vc m/min			D1 – Diameter													
	ap	ae	ap	min	max	mm	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0			
P	0	1,5 x D	0,5 x D	1 x D	150	–	200	fz	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124	
	1	1,5 x D	0,5 x D	1 x D	150	–	200	fz	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124	
	2	1,5 x D	0,5 x D	1 x D	140	–	190	fz	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124	
	3	1,5 x D	0,5 x D	1 x D	120	–	160	fz	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114	
	4	1,5 x D	0,5 x D	0,75 x D	90	–	150	fz	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088	0,098	
	5	1,5 x D	0,5 x D	1 x D	60	–	100	fz	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091	
M	6	1,5 x D	0,5 x D	0,75 x D	50	–	75	fz	0,016	0,020	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065	0,071	
	1	1,5 x D	0,5 x D	1 x D	90	–	115	fz	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114	
	2	1,5 x D	0,5 x D	1 x D	60	–	80	fz	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091	
K	3	1,5 x D	0,5 x D	1 x D	60	–	70	fz	0,016	0,020	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065	0,071	
	1	1,5 x D	0,5 x D	1 x D	120	–	150	fz	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124	
S	2	1,5 x D	0,5 x D	1 x D	110	–	140	fz	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114	
	3	1,5 x D	0,5 x D	1 x D	110	–	130	fz	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091	
	1	1,5 x D	0,3 x D	0,3 x D	50	–	90	fz	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114	
	2	1,5 x D	0,3 x D	0,3 x D	25	–	40	fz	0,013	0,016	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054	0,061	
H	3	1,5 x D	0,5 x D	1 x D	25	–	40	fz	0,013	0,016	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054	0,061	
	4	1,5 x D	0,5 x D	1 x D	50	–	60	fz	0,016	0,021	0,026	0,037	0,045	0,052	0,058	0,064	0,069	0,074	0,084	
H	1	1,5 x D	0,5 x D	0,75 x D	80	–	140	fz	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088	0,098	
	2	1,5 x D	0,2 x D	0,5 x D	70	–	120	fz	0,016	0,020	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065	0,071	

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >12mm diameters.

VariMill II • Series 57N8 • Application Data • WS15PE • Metric

Material Group																				
	Side Milling (A) and Slotting (B)			WS15PE			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.													
	A		B	Cutting Speed – vc m/min			D1 – Diameter													
	ap	ae	ap	min	max	mm	6,0	8,0	10,0	12,0	16,0	20,0	25,0							
P	1	1,5 x D	0,5 x D	1 x D	150	–	200	fz	0,044	0,060	0,072	0,083	0,101	0,114	0,124					
	2	1,5 x D	0,5 x D	1 x D	140	–	190	fz	0,044	0,060	0,072	0,083	0,101	0,114	0,124					
	3	1,5 x D	0,5 x D	1 x D	120	–	160	fz	0,036	0,050	0,061	0,070	0,087	0,101	0,114					
	4	1,5 x D	0,5 x D	0,75 x D	90	–	150	fz	0,033	0,045	0,054	0,062	0,077	0,088	0,098					
	5	1,5 x D	0,5 x D	1 x D	60	–	100	fz	0,029	0,040	0,048	0,056	0,070	0,081	0,091					
	6	1,5 x D	0,5 x D	0,75 x D	50	–	75	fz	0,025	0,034	0,040	0,047	0,057	0,065	0,071					
M	1	1,5 x D	0,5 x D	1 x D	90	–	115	fz	0,036	0,050	0,061	0,070	0,087	0,101	0,114					
	2	1,5 x D	0,5 x D	1 x D	60	–	80	fz	0,029	0,040	0,048	0,056	0,070	0,081	0,091					
	3	1,5 x D	0,5 x D	1 x D	60	–	70	fz	0,025	0,034	0,040	0,047	0,057	0,065	0,071					
K	1	1,5 x D	0,5 x D	1 x D	120	–	150	fz	0,044	0,060	0,072	0,083	0,101	0,114	0,124					
	2	1,5 x D	0,5 x D	1 x D	110	–	130	fz	0,036	0,050	0,061	0,070	0,087	0,101	0,114					
S	3	1,5 x D	0,5 x D	1 x D	100	–	130	fz	0,029	0,040	0,048	0,056	0,070	0,081	0,091					
	1	1,5 x D	0,3 x D	0,3 x D	50	–	90	fz	0,036	0,050	0,061	0,070	0,087	0,101	0,114					
	2	1,5 x D	0,3 x D	0,3 x D	25	–	40	fz	0,019	0,026	0,032	0,037	0,046	0,054	0,061					
	3	1,5 x D	0,5 x D	1 x D	25	–	40	fz	0,019	0,026	0,032	0,037	0,046	0,054	0,061					
H	4	1,5 x D	0,5 x D	1 x D	50	–	60	fz	0,026	0,037	0,045	0,052	0,064	0,074	0,084					
	1	1,5 x D	0,5 x D	0,75 x D	80	–	140	fz	0,033	0,045	0,054	0,062	0,077	0,088	0,098					

NOTE: Lower value of cutting speed is used for high-stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on diameters >12mm diameters.

VariMill II • Series 57NC • Application Data • WS15PE • Metric

Material Group	Side Milling (A) and Slotting (B)			WS15PE			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.										
	A		B	Cutting Speed – vc m/min			mm	D1 – Diameter									
	ap	ae	ap	min	max	6,0		8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0		
	ap	ae	ap	min	max	fz	fz	fz	fz	fz	fz	fz	fz	fz	fz		
P	5	1,5 x D	0,5 x D	1 x D	60	–	100	fz	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091
	6	1,5 x D	0,5 x D	0,75 x D	50	–	75	fz	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065	0,071
M	1	1,5 x D	0,5 x D	1 x D	90	–	115	fz	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	2	1,5 x D	0,5 x D	1 x D	60	–	80	fz	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091
	3	1,5 x D	0,5 x D	1 x D	60	–	70	fz	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065	0,071
K	1	1,5 x D	0,5 x D	1 x D	120	–	150	fz	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124
	2	1,5 x D	0,5 x D	1 x D	110	–	140	fz	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	3	1,5 x D	0,5 x D	1 x D	110	–	130	fz	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091
S	1	1,5 x D	0,3 x D	0,3 x D	50	–	90	fz	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	2	1,5 x D	0,3 x D	0,3 x D	25	–	40	fz	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054	0,061
	3	1,5 x D	0,5 x D	1 x D	25	–	40	fz	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054	0,061
	4	1,5 x D	0,5 x D	1 x D	50	–	60	fz	0,026	0,037	0,045	0,052	0,058	0,064	0,069	0,074	0,084
H	1	1,5 x D	0,5 x D	0,75 x D	80	–	140	fz	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088	0,098
	2	1,5 x D	0,2 x D	0,5 x D	70	–	120	fz	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065	0,071

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >12mm diameters.

VariMill II ER • Series 577E • Application Data • WS15PE • Metric

Material Group	Side Milling (A) and Slotting (B)			WS15PE			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.									
	A		B	Cutting Speed – vc m/min			mm	D1 – Diameter								
	ap	ae	ap	min	max	10,0		12,0	14,0	16,0	18,0	20,0	25,0			
	ap	ae	ap	min	max	fz	fz	fz	fz	fz	fz	fz	fz			
P	4	1,5 x D	0,5 x D	0,75 x D	90	–	150	fz	0,054	0,062	0,070	0,077	0,083	0,088	0,098	
	5	1,5 x D	0,5 x D	1 x D	60	–	100	fz	0,048	0,056	0,063	0,070	0,076	0,081	0,091	
M	6	1,5 x D	0,5 x D	0,75 x D	50	–	75	fz	0,040	0,047	0,052	0,057	0,061	0,065	0,071	
	1	1,5 x D	0,5 x D	1 x D	90	–	115	fz	0,061	0,070	0,079	0,087	0,095	0,101	0,114	
	2	1,5 x D	0,5 x D	1 x D	60	–	80	fz	0,048	0,056	0,063	0,070	0,076	0,081	0,091	
S	3	1,5 x D	0,5 x D	1 x D	60	–	70	fz	0,040	0,047	0,052	0,057	0,061	0,065	0,071	
	1	1,5 x D	0,3 x D	0,3 x D	50	–	90	fz	0,061	0,070	0,079	0,087	0,095	0,101	0,114	
	2	1,5 x D	0,3 x D	0,3 x D	25	–	40	fz	0,032	0,037	0,042	0,046	0,050	0,054	0,061	
	3	1,5 x D	0,5 x D	1 x D	25	–	40	fz	0,032	0,037	0,042	0,046	0,050	0,054	0,061	
H	4	1,5 x D	0,5 x D	1 x D	50	–	60	fz	0,045	0,052	0,058	0,064	0,069	0,074	0,084	
	1	1,5 x D	0,5 x D	0,75 x D	80	–	140	fz	0,054	0,062	0,070	0,077	0,083	0,088	0,098	
2	1,5 x D	0,2 x D	0,5 x D	70	–	120	fz	0,040	0,047	0,052	0,057	0,061	0,065	0,071		

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >12mm diameters.

VariMill II ER • Series 57NE • Application Data • WS15PE • Metric

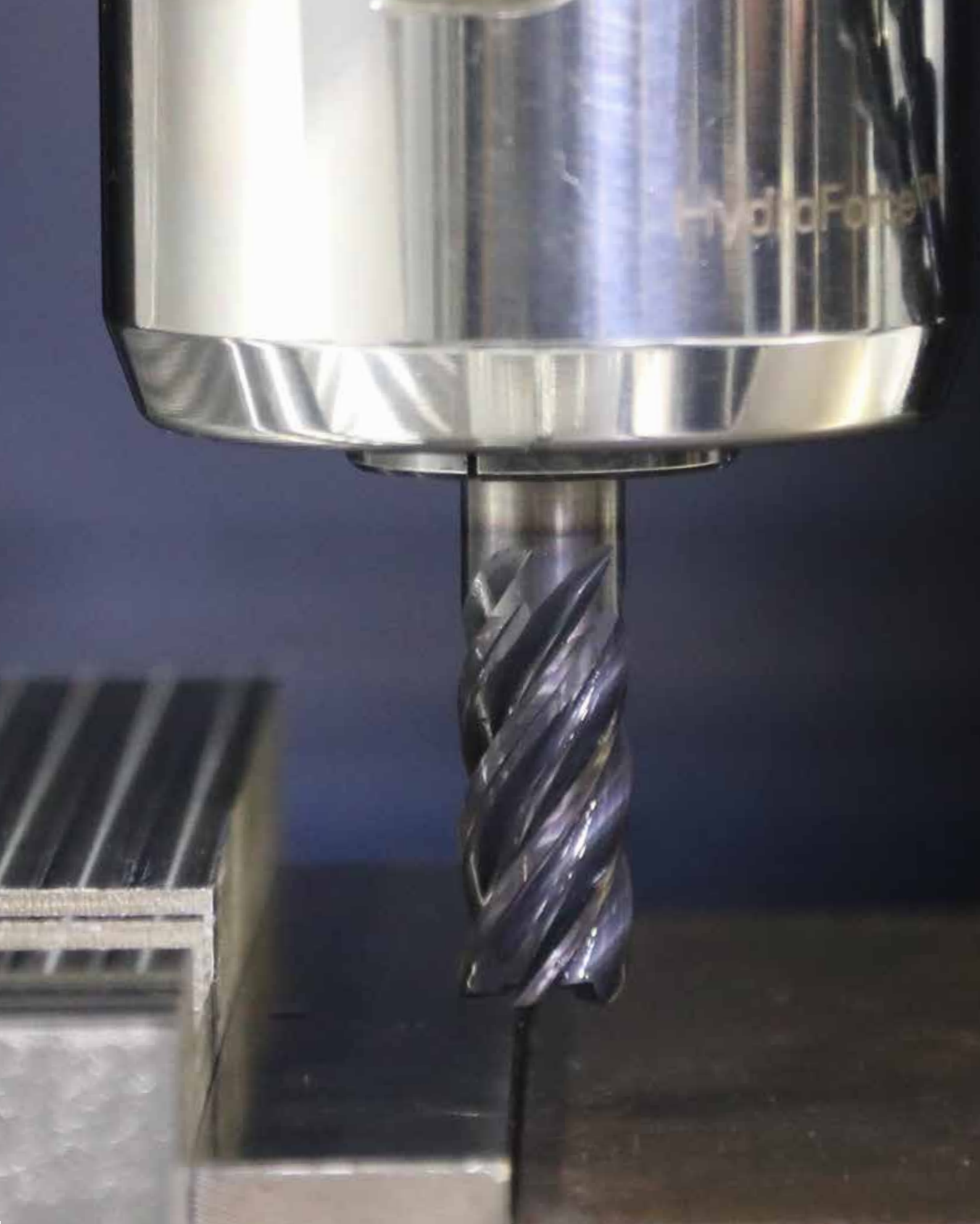
Material Group	Side Milling (A) and Slotting (B)		WS15PE				Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.								
	A		B		Cutting Speed – vc m/min		mm	D1 – Diameter							
	ap	ae	ap		min	max		10,0	12,0	14,0	16,0	18,0	20,0	25,0	
							fz								
P	4	1,5 x D	0,5 x D	0,75 x D	90	-	150	fz	0,054	0,062	0,070	0,077	0,083	0,088	0,098
	5	1,5 x D	0,5 x D	1 x D	60	-	100	fz	0,048	0,056	0,063	0,070	0,076	0,081	0,091
	6	1,5 x D	0,5 x D	0,75 x D	50	-	75	fz	0,040	0,047	0,052	0,057	0,061	0,065	0,071
M	1	1,5 x D	0,5 x D	1 x D	90	-	115	fz	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	2	1,5 x D	0,5 x D	1 x D	60	-	80	fz	0,048	0,056	0,063	0,070	0,076	0,081	0,091
	3	1,5 x D	0,5 x D	1 x D	60	-	70	fz	0,040	0,047	0,052	0,057	0,061	0,065	0,071
S	1	1,5 x D	0,3 x D	0,3 x D	50	-	90	fz	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	2	1,5 x D	0,3 x D	0,3 x D	25	-	40	fz	0,032	0,037	0,042	0,046	0,050	0,054	0,061
	3	1,5 x D	0,5 x D	1 x D	25	-	40	fz	0,032	0,037	0,042	0,046	0,050	0,054	0,061
	4	1,5 x D	0,5 x D	1 x D	50	-	60	fz	0,045	0,052	0,058	0,064	0,069	0,074	0,084
H	1	1,5 x D	0,5 x D	0,75 x D	80	-	140	fz	0,054	0,062	0,070	0,077	0,083	0,088	0,098
	2	1,5 x D	0,2 x D	0,5 x D	70	-	120	fz	0,040	0,047	0,052	0,057	0,061	0,065	0,071

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >12mm diameters.

VariMill II Long • Series 5718 • Application Data • ALTIN-MT • Metric

Material Group	Side Milling (A)		ALTIN				Recommended feed per tooth (fz = mm/th) for side milling (A).									
	A		Cutting Speed – vc m/min		mm	D1 – Diameter										
	ap	ae	min	max		6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0		
					fz											
P	0	Ap1 max	0,05 x D	300	-	400	fz	0,053	0,072	0,086	0,099	0,111	0,121	0,130	0,137	0,149
	1	Ap1 max	0,05 x D	300	-	400	fz	0,053	0,072	0,086	0,099	0,111	0,121	0,130	0,137	0,149
	2	Ap1 max	0,05 x D	280	-	380	fz	0,053	0,072	0,086	0,099	0,111	0,121	0,130	0,137	0,149
	3	Ap1 max	0,05 x D	240	-	320	fz	0,044	0,060	0,073	0,084	0,095	0,105	0,113	0,121	0,137
	4	Ap1 max	0,05 x D	180	-	300	fz	0,039	0,054	0,065	0,075	0,084	0,092	0,099	0,106	0,117
	5	Ap1 max	0,05 x D	120	-	200	fz	0,035	0,048	0,058	0,067	0,076	0,084	0,091	0,097	0,109
M	1	Ap1 max	0,05 x D	180	-	230	fz	0,044	0,060	0,073	0,084	0,095	0,105	0,113	0,121	0,137
	2	Ap1 max	0,05 x D	120	-	160	fz	0,035	0,048	0,058	0,067	0,076	0,084	0,091	0,097	0,109
	3	Ap1 max	0,05 x D	120	-	140	fz	0,030	0,040	0,048	0,056	0,062	0,068	0,073	0,078	0,085
K	1	Ap1 max	0,05 x D	240	-	300	fz	0,053	0,072	0,086	0,099	0,111	0,121	0,130	0,137	0,149
	2	Ap1 max	0,05 x D	220	-	280	fz	0,044	0,060	0,073	0,084	0,095	0,105	0,113	0,121	0,137
	3	Ap1 max	0,05 x D	220	-	260	fz	0,035	0,048	0,058	0,067	0,076	0,084	0,091	0,097	0,109
S	1	Ap1 max	0,05 x D	50	-	90	fz	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	2	Ap1 max	0,05 x D	25	-	40	fz	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054	0,061
	3	Ap1 max	0,05 x D	25	-	40	fz	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054	0,061
	4	Ap1 max	0,05 x D	50	-	60	fz	0,026	0,037	0,045	0,052	0,058	0,064	0,069	0,074	0,084
H	1	Ap1 max	0,05 x D	160	-	280	fz	0,039	0,054	0,065	0,075	0,084	0,092	0,099	0,106	0,117
	2	Ap1 max	0,05 x D	140	-	240	fz	0,030	0,040	0,048	0,056	0,062	0,068	0,073	0,078	0,085

* For the above cutting data, do not exceed an overall ae of 0,8mm.
NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >0,5mm diameters.



VariMill III™ ER

High-Performance Solid End Milling

VariMill III ER is a 7-flute solid carbide end mill engineered to provide the highest metal removal rates in difficult-to-machine workpiece materials, providing extended tool life in semi-finishing, finishing, and dynamic milling operations.

Features and Benefits



FAST

The 7-flute geometry ensures the highest feed-rates in side milling operations.

DYNAMIC

The flute and core design enable high performance and productivity in high-speed and dynamic milling applications.

SPECIFIC

VariMill III ER is particularly engineered to tackle all milling applications on difficult-to-cut materials such as heat-resistant superalloys and stainless steels.

DYNAMICALLY PRODUCTIVE

PRODUCT

SOLID CARBIDE END MILL

GRADE

WS15PE

FLUTE

7

DIAMETER RANGE

INCH

3/8–1"

METRIC

10–20mm

INDUSTRY



GENERAL
ENGINEERING



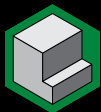
ENERGY



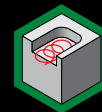
AEROSPACE

APPLICATIONS

MATERIALS



SIDE MILLING



DYNAMIC
MILLING

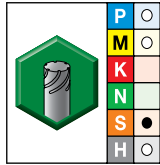
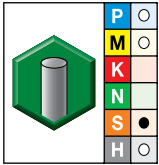
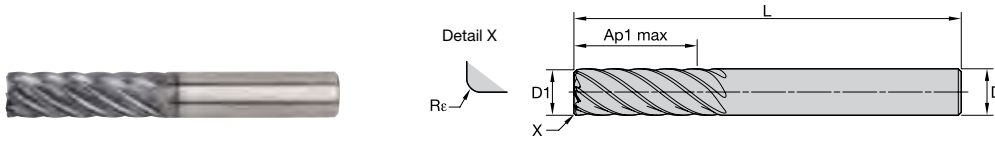


HELICAL
INTERPOLATION



RAMPING

VariMill III ER • Series 7V1E 7V2E • Square End • 7 Flute • Inch



● first choice
○ alternate choice

WS15PE		WS15PE		D1	D	length of cut Ap1 max	length L	Re	Z U
6566337	7V0E10004AT	-	-	3/8	3/8	7/8	2 1/2	.015	7
6566338	7V0E10004BT	-	-	3/8	3/8	7/8	2 1/2	.030	7
6566336	7V0E10004ST	-	-	3/8	3/8	7/8	2 1/2	-	7
5971350	7V1E10004AT	-	-	3/8	3/8	1 1/8	3	.015	7
5971421	7V1E10004BT	-	-	3/8	3/8	1 1/8	3	.030	7
6566339	7V1E10004ST	-	-	3/8	3/8	1 1/8	3	-	7
5971422	7V2E10004AT	-	-	3/8	3/8	1 7/8	4	.015	7
5971423	7V2E10004BT	-	-	3/8	3/8	1 7/8	4	.030	7
6566411	7V0E13005BT	-	-	1/2	1/2	1 1/4	3	.030	7
6566412	7V0E13005CT	-	-	1/2	1/2	1 1/4	3	.060	7
6566340	7V0E13005ST	-	-	1/2	1/2	1 1/4	3	-	7
5971427	7V1E13005BT	-	-	1/2	1/2	1 1/2	3 1/2	.030	7
5971428	7V1E13005CT	-	-	1/2	1/2	1 1/2	3 1/2	.060	7
5971429	7V1E13005ET	-	-	1/2	1/2	1 1/2	3 1/2	.120	7
-	5971430	7V2E13005BV	-	1/2	1/2	2 1/2	4 1/2	.030	7
-	5971431	7V2E13005CV	-	1/2	1/2	2 1/2	4 1/2	.060	7
-	5971432	7V2E13005EV	-	1/2	1/2	2 1/2	4 1/2	.120	7
6566414	7V0E16006BT	-	-	5/8	5/8	1 1/4	3 1/2	.030	7
6566413	7V0E16006ST	-	-	5/8	5/8	1 1/4	3 1/2	-	7
5971435	7V1E16006BT	-	-	5/8	5/8	1 7/8	4	.030	7
5971436	7V1E16006CT	-	-	5/8	5/8	1 7/8	4	.060	7
-	5971437	7V2E16006BV	-	5/8	5/8	3 1/8	5 1/2	.030	7
-	5971438	7V2E16006CV	-	5/8	5/8	3 1/8	5 1/2	.060	7
6566416	7V0E19007BT	-	-	3/4	3/4	1 3/4	4	.030	7
6566417	7V0E19007CT	-	-	3/4	3/4	1 3/4	4	.060	7
6566418	7V0E19007ET	-	-	3/4	3/4	1 3/4	4	.120	7
6566415	7V0E19007ST	-	-	3/4	3/4	1 3/4	4	-	7
5971445	7V1E19007BT	-	-	3/4	3/4	2 1/4	5	.030	7
-	5971448	7V1E19007BV	-	3/4	3/4	2 1/4	5	.030	7
-	5971449	7V1E19007CV	-	3/4	3/4	2 1/4	5	.060	7
5971446	7V1E19007CT	-	-	3/4	3/4	2 1/4	5	.060	7
-	5971450	7V1E19007EV	-	3/4	3/4	2 1/4	5	.120	7
5971447	7V1E19007ET	-	-	3/4	3/4	2 1/4	5	.120	7
6566421	7V1E19007ST	-	-	3/4	3/4	2 1/4	5	-	7
-	5971451	7V2E19007BV	-	3/4	3/4	3 3/4	6	.030	7
-	5971452	7V2E19007CV	-	3/4	3/4	3 3/4	6	.060	7
-	5971453	7V2E19007EV	-	3/4	3/4	3 3/4	6	.120	7
5971456	7V1E25008CT	-	-	1	1	3	5 1/2	.060	7
-	5971457	7V1E25008CV	-	1	1	3	5 1/2	.060	7
-	5971458	7V2E25008CV	-	1	1	5	7 1/2	.060	7

INDEXABLE MILLING

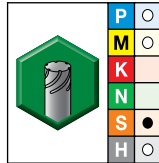
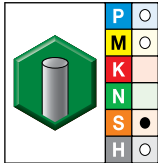
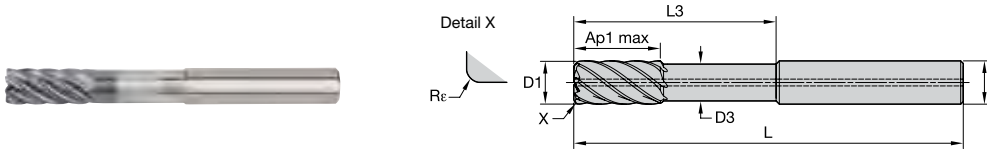
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

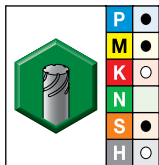
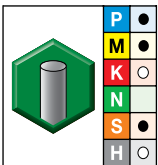
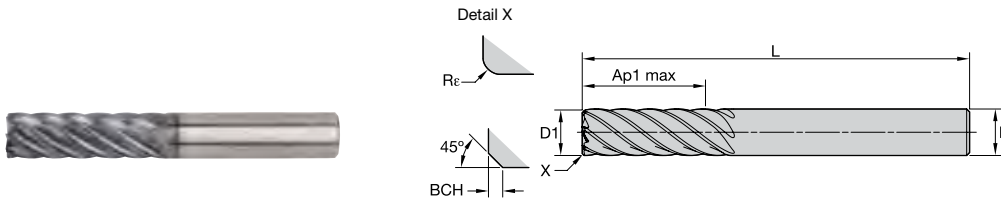
VariMill III ER • Series 7VNX • Square End • Internal Coolant • 7 Flute • Inch



● first choice
○ alternate choice

WS15PE		WS15PE		D1	D	D3	length of cut Ap1 max	L3	length L	Re	Z U
5971348	7VNX10004AT	—	—	3/8	3/8	.35	3/4	2.125	4	.015	7
5971349	7VNX10004BT	—	—	3/8	3/8	.35	3/4	2.125	4	.030	7
5971424	7VNX13005BT	—	—	1/2	1/2	.47	1	2.375	4 1/2	.030	7
5971425	7VNX13005CT	—	—	1/2	1/2	.47	1	2.375	4 1/2	.060	7
5971426	7VNX13005ET	—	—	1/2	1/2	.47	1	2.375	4 1/2	.120	7
5971433	7VNX16006BT	—	—	5/8	5/8	.59	1 1/4	2.750	5	.030	7
5971434	7VNX16006CT	—	—	5/8	5/8	.59	1 1/4	2.750	5	.060	7
5971439	7VNX19007BT	5971442	7VNX19007BV	3/4	3/4	.71	1 1/2	3.125	5 1/2	.030	7
5971440	7VNX19007CT	5971443	7VNX19007CV	3/4	3/4	.71	1 1/2	3.125	5 1/2	.060	7
5971441	7VNX19007ET	5971444	7VNX19007EV	3/4	3/4	.71	1 1/2	3.125	5 1/2	.120	7
5971454	7VNX25008CT	5971455	7VNX25008CV	1	1	.94	2	3.375	6	.060	7

VariMill III ER • Series 771E 772E • Square End • 7 Flute • Metric

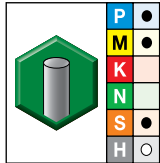
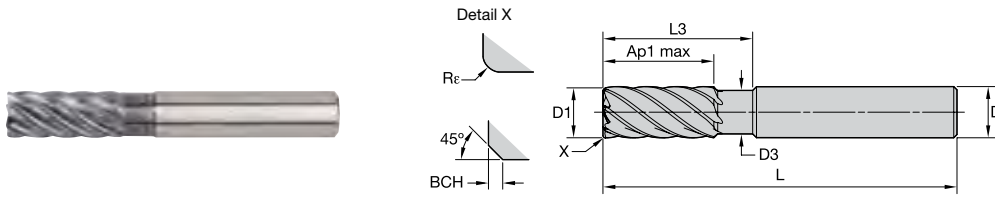


● first choice
○ alternate choice

WS15PE		WS15PE		D1	D	length of cut Ap1 max	length L	Re	BCH	Z U
5978092	771E10004T	—	—	10,0	10	30,00	76	—	0,50	7
5978093	771E10024T	—	—	10,0	10	30,00	76	0,50	—	7
5978094	772E10004T	—	—	10,0	10	50,00	100	—	0,50	7
5978095	772E10024T	—	—	10,0	10	50,00	100	0,50	—	7
5978098	771E12005T	—	—	12,0	12	36,00	100	—	0,50	7
5978099	771E12025T	—	—	12,0	12	36,00	100	0,50	—	7
5978100	772E12005T	5978102	772E12005V	12,0	12	60,00	125	—	0,50	7
5978101	772E12025T	5978103	772E12025V	12,0	12	60,00	125	0,50	—	7
5978106	771E16006T	—	—	16,0	16	48,00	110	—	0,50	7
5978107	771E16026T	—	—	16,0	16	48,00	110	0,50	—	7
5978108	772E16006T	5978110	772E16006V	16,0	16	80,00	141	—	0,50	7
5978109	772E16026T	5978111	772E16026V	16,0	16	80,00	141	0,50	—	7
5978114	771E20007T	—	—	20,0	20	60,00	125	—	0,50	7
5978115	771E20027T	—	—	20,0	20	60,00	125	0,50	—	7
5978116	772E20007T	5978118	772E20007V	20,0	20	100,00	166	—	0,50	7
5978117	772E20027T	5978119	772E20027V	20,0	20	100,00	166	0,50	—	7



VariMill III ER • Series 77NE • Square End • Neck • 7 Flute • Metric



● first choice
○ alternate choice

WS15PE

order #	catalog #	D1	D	D3	length of cut Ap1 max	L3	length L	Rε	BCH	Z U
5978039	77NE10004T	10,0	10	9,40	22,00	30,00	76	—	0,50	7
5978040	77NE10024T	10,0	10	9,40	22,00	30,00	76	0,50	—	7
5978096	77NE12005T	12,0	12	11,28	26,00	36,00	83	—	0,50	7
5978097	77NE12025T	12,0	12	11,28	26,00	36,00	83	0,50	—	7
5978104	77NE16006T	16,0	16	15,04	32,00	48,00	100	—	0,50	7
5978105	77NE16026T	16,0	16	15,04	32,00	48,00	100	0,50	—	7
5978112	77NE20007T	20,0	20	18,80	38,00	60,00	115	—	0,50	7
5978113	77NE20027T	20,0	20	18,80	38,00	60,00	115	0,50	—	7

INDEXABLE MILLING

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VariMill III ER • Series 7V1E • Application Data • WS15PE • Inch

Material Group	Side Milling (A)		WS15PE			Recommended feed per tooth (IPT = inch/th) for side milling (A).						
	A		Cutting Speed – vc SFM			D1 – Diameter						
	ap	ae	min		max	frac. dec.	3/8	1/2	5/8	3/4	1	
P	4	Ap1 max	0.1 x D	300	-	490	IPT	0.0020	0.0026	0.0030	0.0034	0.0039
	5	Ap1 max	0.1 x D	200	-	330	IPT	0.0018	0.0023	0.0027	0.0031	0.0036
M	1	Ap1 max	0.1 x D	300	-	380	IPT	0.0023	0.0029	0.0034	0.0039	0.0045
	2	Ap1 max	0.1 x D	200	-	260	IPT	0.0018	0.0023	0.0027	0.0031	0.0036
S	3	Ap1 max	0.1 x D	200	-	230	IPT	0.0015	0.0019	0.0022	0.0025	0.0028
	1	Ap1 max	0.1 x D	160	-	300	IPT	0.0023	0.0029	0.0034	0.0039	0.0045
	2	Ap1 max	0.1 x D	80	-	130	IPT	0.0012	0.0015	0.0018	0.0021	0.0024
	4	Ap1 max	0.1 x D	160	-	200	IPT	0.0017	0.0021	0.0025	0.0028	0.0033
H	1	Ap1 max	0.1 x D	260	-	460	IPT	0.0020	0.0026	0.0030	0.0034	0.0039
	2	Ap1 max	0.1 x D	230	-	390	IPT	0.0015	0.0019	0.0022	0.0025	0.0028

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

VariMill III ER • Series 7V1E • Application Data • WS15PE • Inch

Material Group	Side Milling (A)		WS15PE			Recommended feed per tooth (IPT = inch/th) for side milling (A).						
	A		Cutting Speed – vc SFM			D1 – Diameter						
	ap	ae	min		max	frac. dec.	3/8	1/2	5/8	3/4	1	
P	4	Ap1 max	0.06 x D	590	-	980	IPT	0.0025	0.0031	0.0036	0.0040	0.0046
	5	Ap1 max	0.06 x D	390	-	660	IPT	0.0022	0.0028	0.0033	0.0037	0.0043
M	1	Ap1 max	0.06 x D	590	-	750	IPT	0.0027	0.0035	0.0041	0.0046	0.0054
	2	Ap1 max	0.06 x D	390	-	520	IPT	0.0022	0.0028	0.0033	0.0037	0.0043
S	3	Ap1 max	0.06 x D	390	-	460	IPT	0.0018	0.0023	0.0027	0.0030	0.0034
	1	Ap1 max	0.06 x D	160	-	300	IPT	0.0023	0.0029	0.0034	0.0039	0.0045
	2	Ap1 max	0.06 x D	80	-	130	IPT	0.0012	0.0015	0.0018	0.0021	0.0024
	4	Ap1 max	0.06 x D	160	-	200	IPT	0.0017	0.0021	0.0025	0.0028	0.0033
H	1	Ap1 max	0.06 x D	520	-	920	IPT	0.0025	0.0031	0.0036	0.0040	0.0046
	2	Ap1 max	0.06 x D	460	-	790	IPT	0.0018	0.0023	0.0027	0.0030	0.0034

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

VariMill III ER • Series 7V2E • Application Data • WS15PE • Inch

INDEXABLE MILLING

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Material Group	Side Milling (A)		WS15PE			Recommended feed per tooth (IPT = inch/th) for side milling (A).					
	A		Cutting Speed – vc SFM			D1 – Diameter					
	ap	ae	min		max	frac. dec.	3/8	1/2	5/8	3/4	1
	ap	ae	min		max	dec.	.3750	.5000	.6250	.7500	1.0000
P	0	Ap1 max 0.05 x D	980	-	1310	IPT	0.0033	0.0041	0.0047	0.0053	0.0059
	1	Ap1 max 0.05 x D	980	-	1310	IPT	0.0033	0.0041	0.0047	0.0053	0.0059
	2	Ap1 max 0.05 x D	920	-	1250	IPT	0.0033	0.0041	0.0047	0.0053	0.0059
	3	Ap1 max 0.05 x D	790	-	1050	IPT	0.0027	0.0035	0.0041	0.0046	0.0054
	4	Ap1 max 0.05 x D	590	-	980	IPT	0.0025	0.0031	0.0036	0.0040	0.0046
	5	Ap1 max 0.05 x D	390	-	660	IPT	0.0022	0.0028	0.0033	0.0037	0.0043
M	6	Ap1 max 0.05 x D	330	-	490	IPT	0.0018	0.0023	0.0027	0.0030	0.0034
	1	Ap1 max 0.05 x D	590	-	750	IPT	0.0027	0.0035	0.0041	0.0046	0.0054
	2	Ap1 max 0.05 x D	390	-	520	IPT	0.0022	0.0028	0.0033	0.0037	0.0043
K	3	Ap1 max 0.05 x D	390	-	460	IPT	0.0018	0.0023	0.0027	0.0030	0.0034
	1	Ap1 max 0.05 x D	790	-	980	IPT	0.0033	0.0041	0.0047	0.0053	0.0059
S	2	Ap1 max 0.05 x D	720	-	920	IPT	0.0027	0.0035	0.0041	0.0046	0.0054
	3	Ap1 max 0.05 x D	720	-	850	IPT	0.0022	0.0028	0.0033	0.0037	0.0043
	1	Ap1 max 0.05 x D	160	-	300	IPT	0.0023	0.0029	0.0034	0.0039	0.0045
H	2	Ap1 max 0.05 x D	80	-	130	IPT	0.0012	0.0015	0.0018	0.0021	0.0024
	3	Ap1 max 0.05 x D	80	-	130	IPT	0.0012	0.0015	0.0018	0.0021	0.0024
	4	Ap1 max 0.05 x D	160	-	200	IPT	0.0017	0.0021	0.0025	0.0028	0.0033
H	1	Ap1 max 0.05 x D	520	-	920	IPT	0.0025	0.0031	0.0036	0.0040	0.0046
	2	Ap1 max 0.06 x D	460	-	790	IPT	0.0018	0.0023	0.0027	0.0030	0.0034

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

VariMill III ER • Series 7VNX • Application Data • WS15PE • Inch

Material Group	Side Milling (A)		WS15PE			Recommended feed per tooth (IPT = inch/th) for side milling (A).					
	A		Cutting Speed – vc SFM			D1 – Diameter					
	ap	ae	min		max	frac. dec.	3/8	1/2	5/8	3/4	1
	ap	ae	min		max	dec.	.3750	.5000	.6250	.7500	1.0000
P	4	1 x D 0.15 x D	300	-	490	IPT	0.0020	0.0026	0.0030	0.0034	0.0039
	5	1 x D 0.15 x D	200	-	330	IPT	0.0018	0.0023	0.0027	0.0031	0.0036
M	1	1 x D 0.15 x D	300	-	380	IPT	0.0023	0.0029	0.0034	0.0039	0.0045
	2	1 x D 0.15 x D	200	-	260	IPT	0.0018	0.0023	0.0027	0.0031	0.0036
	3	1 x D 0.15 x D	200	-	230	IPT	0.0015	0.0019	0.0022	0.0025	0.0028
S	1	1 x D 0.15 x D	160	-	300	IPT	0.0023	0.0029	0.0034	0.0039	0.0045
	2	1 x D 0.15 x D	80	-	130	IPT	0.0012	0.0015	0.0018	0.0021	0.0024
	3	1 x D 0.15 x D	80	-	130	IPT	0.0012	0.0015	0.0018	0.0021	0.0024
	4	1 x D 0.15 x D	160	-	200	IPT	0.0017	0.0021	0.0025	0.0028	0.0033
H	1	1 x D 0.15 x D	260	-	460	IPT	0.0020	0.0026	0.0030	0.0034	0.0039
	2	1 x D 0.15 x D	230	-	390	IPT	0.0015	0.0019	0.0022	0.0025	0.0028

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



VariMill III ER • Series 7VNX • Application Data • WS15PE • Inch

Material Group	Side Milling (A)		WS15PE		Recommended feed per tooth (IPT = inch/th) for side milling (A).							
	A		Cutting Speed – vc SFM			D1 – Diameter						
	ap	ae	min	max	frac. dec.	3/8	1/2	5/8	3/4	1		
	ap1 max	0.06 x D										
P	4	Ap1 max	0.06 x D	590	–	980	IPT	.0025	.0031	.0036	.0040	.0046
	5	Ap1 max	0.06 x D	390	–	660	IPT	.0022	.0028	.0033	.0037	.0043
M	1	Ap1 max	0.06 x D	590	–	750	IPT	.0027	.0035	.0041	.0046	.0054
	2	Ap1 max	0.06 x D	390	–	520	IPT	.0022	.0028	.0033	.0037	.0043
S	3	Ap1 max	0.06 x D	390	–	460	IPT	.0018	.0023	.0027	.0030	.0034
	1	Ap1 max	0.06 x D	160	–	300	IPT	.0023	.0029	.0034	.0039	.0045
	2	Ap1 max	0.06 x D	80	–	130	IPT	.0012	.0015	.0018	.0021	.0024
H	3	Ap1 max	0.06 x D	80	–	130	IPT	.0012	.0015	.0018	.0021	.0024
	4	Ap1 max	0.06 x D	160	–	200	IPT	.0017	.0021	.0025	.0028	.0033
	1	Ap1 max	0.06 x D	520	–	920	IPT	.0025	.0031	.0036	.0040	.0046
	2	Ap1 max	0.06 x D	460	–	790	IPT	.0018	.0023	.0027	.0030	.0034

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

VariMill III ER • Series 771E • Finishing • Application Data • WS15PE • Metric

Material Group	Side Milling (A)		WS15PE		Recommended feed per tooth (fz = mm/th) for side milling (A).									
	A		Cutting Speed – vc m/min			D1 – Diameter								
	ap	ae	min	max	mm	10,0	12,0	14,0	16,0	18,0	20,0	25,0		
	ap1 max	0,1 x D												
P	4	Ap1 max	0,1 x D	90	-	150	fz	0,054	0,062	0,070	0,077	0,083	0,088	0,098
	5	Ap1 max	0,1 x D	60	-	100	fz	0,048	0,056	0,063	0,070	0,076	0,081	0,091
M	1	Ap1 max	0,1 x D	90	-	115	fz	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	2	Ap1 max	0,1 x D	60	-	80	fz	0,048	0,056	0,063	0,070	0,076	0,081	0,091
S	3	Ap1 max	0,1 x D	60	-	70	fz	0,040	0,047	0,052	0,057	0,061	0,065	0,071
	1	Ap1 max	0,1 x D	50	-	90	fz	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	2	Ap1 max	0,1 x D	25	-	40	fz	0,032	0,037	0,042	0,046	0,050	0,054	0,061
H	3	Ap1 max	0,1 x D	25	-	40	fz	0,032	0,037	0,042	0,046	0,050	0,054	0,061
	4	Ap1 max	0,1 x D	50	-	60	fz	0,045	0,052	0,058	0,064	0,069	0,074	0,084
	1	Ap1 max	0,1 x D	80	-	140	fz	0,054	0,062	0,070	0,077	0,083	0,088	0,098
	2	Ap1 max	0,1 x D	70	-	120	fz	0,040	0,047	0,052	0,057	0,061	0,065	0,071

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >12mm diameters.

VariMill III ER • Series 771E • Semi-Finishing • Application Data • WS15PE • Metric

Material Group	Side Milling (A)		WS15PE			Recommended feed per tooth (fz = mm/th) for side milling (A).							
	A		Cutting Speed – vc m/min			mm	D1 – Diameter						
	ap	ae	min	-	max		10,0	12,0	14,0	16,0	18,0	20,0	25,0
						fz							
P	4	Ap1 max, 0,06 x D	180	-	300	fz	0,065	0,075	0,084	0,092	0,099	0,106	0,117
	5	Ap1 max, 0,06 x D	120	-	200	fz	0,058	0,067	0,076	0,084	0,091	0,097	0,109
M	1	Ap1 max, 0,06 x D	180	-	230	fz	0,073	0,084	0,095	0,105	0,113	0,121	0,137
	2	Ap1 max, 0,06 x D	120	-	160	fz	0,058	0,067	0,076	0,084	0,091	0,097	0,109
S	3	Ap1 max, 0,06 x D	120	-	140	fz	0,048	0,056	0,062	0,068	0,073	0,078	0,085
	1	Ap1 max, 0,06 x D	50	-	90	fz	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	2	Ap1 max, 0,06 x D	25	-	40	fz	0,032	0,037	0,042	0,046	0,050	0,054	0,061
	4	Ap1 max, 0,06 x D	50	-	60	fz	0,045	0,052	0,058	0,064	0,069	0,074	0,084
H	1	Ap1 max, 0,06 x D	160	-	280	fz	0,065	0,075	0,084	0,092	0,099	0,106	0,117
	2	Ap1 max, 0,06 x D	140	-	240	fz	0,048	0,056	0,062	0,068	0,073	0,078	0,085



NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >12mm diameters.

VariMill III ER • Series 772E • Application Data • WS15PE • Metric

Material Group	Side Milling (A)		WS15PE			Recommended feed per tooth (fz = mm/th) for side milling (A).						
	A		Cutting Speed – vc m/min			mm	D1 – Diameter					
	ap	ae	min	-	max		10,0	12,0	14,0	16,0	18,0	20,0
						fz						
P	0	Ap1 max, 0,05 x D	300	-	400	fz	0,086	0,099	0,111	0,121	0,130	0,137
	1	Ap1 max, 0,05 x D	300	-	400	fz	0,086	0,099	0,111	0,121	0,130	0,137
	2	Ap1 max, 0,05 x D	280	-	380	fz	0,086	0,099	0,111	0,121	0,130	0,137
	3	Ap1 max, 0,05 x D	240	-	320	fz	0,073	0,084	0,095	0,105	0,113	0,121
	4	Ap1 max, 0,05 x D	180	-	300	fz	0,065	0,075	0,084	0,092	0,099	0,106
	5	Ap1 max, 0,05 x D	120	-	200	fz	0,058	0,067	0,076	0,084	0,091	0,097
M	6	Ap1 max, 0,05 x D	100	-	150	fz	0,048	0,056	0,062	0,068	0,073	0,078
	1	Ap1 max, 0,05 x D	180	-	230	fz	0,073	0,084	0,095	0,105	0,113	0,121
	2	Ap1 max, 0,05 x D	120	-	160	fz	0,058	0,067	0,076	0,084	0,091	0,097
K	3	Ap1 max, 0,05 x D	120	-	140	fz	0,048	0,056	0,062	0,068	0,073	0,078
	1	Ap1 max, 0,05 x D	240	-	300	fz	0,086	0,099	0,111	0,121	0,130	0,137
	2	Ap1 max, 0,05 x D	220	-	280	fz	0,073	0,084	0,095	0,105	0,113	0,121
S	3	Ap1 max, 0,05 x D	220	-	260	fz	0,058	0,067	0,076	0,084	0,091	0,097
	1	Ap1 max, 0,05 x D	50	-	90	fz	0,061	0,070	0,079	0,087	0,095	0,101
	2	Ap1 max, 0,05 x D	25	-	40	fz	0,032	0,037	0,042	0,046	0,050	0,054
	3	Ap1 max, 0,05 x D	25	-	40	fz	0,032	0,037	0,042	0,046	0,050	0,054
H	4	Ap1 max, 0,05 x D	50	-	60	fz	0,045	0,052	0,058	0,064	0,069	0,074
	1	Ap1 max, 0,05 x D	160	-	280	fz	0,065	0,075	0,084	0,092	0,099	0,106
H	2	Ap1 max, 0,06 x D	140	-	240	fz	0,048	0,056	0,062	0,068	0,073	0,078

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >12mm diameters.

VariMill III ER • Series 77NE • Application Data • WS15PE • Metric

Material Group													
	Side Milling (A)		WS15PE			Recommended feed per tooth (fz = mm/th) for side milling (A).							
	A		Cutting Speed – vc m/min			mm	D1 – Diameter						
	ap	ae	min	-	max		10,0	12,0	14,0	16,0	18,0	20,0	
P	4	1 x D	0,15 x D	90	-	150	fz	0,054	0,062	0,070	0,077	0,083	0,088
	5	1 x D	0,15 x D	60	-	100	fz	0,048	0,056	0,063	0,070	0,076	0,081
M	1	1 x D	0,15 x D	90	-	115	fz	0,061	0,070	0,079	0,087	0,095	0,101
	2	1 x D	0,15 x D	60	-	80	fz	0,048	0,056	0,063	0,070	0,076	0,081
	3	1 x D	0,15 x D	60	-	70	fz	0,040	0,047	0,052	0,057	0,061	0,065
S	1	1 x D	0,15 x D	50	-	90	fz	0,061	0,070	0,079	0,087	0,095	0,101
	2	1 x D	0,15 x D	25	-	40	fz	0,032	0,037	0,042	0,046	0,050	0,054
	3	1 x D	0,15 x D	25	-	40	fz	0,032	0,037	0,042	0,046	0,050	0,054
	4	1 x D	0,15 x D	50	-	60	fz	0,045	0,052	0,058	0,064	0,069	0,074
H	1	1 x D	0,15 x D	80	-	140	fz	0,054	0,062	0,070	0,077	0,083	0,088
	2	1 x D	0,15 x D	70	-	120	fz	0,040	0,047	0,052	0,057	0,061	0,065

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >12mm diameters.

INDEXABLE MILLING

SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING

VariMill™ Chip Splitter

High-Performance Solid End Milling

VariMill Chip Splitter end mills shear chips to pieces, enabling the tool to efficiently dive into deep cavities while using dynamic milling strategies in stainless steel and superalloy applications.

Features and Benefits

Chip splitters along the flute break chips into small pieces, which are easier to evacuate.

5-flute geometry for steel applications.

7-flute geometry for stainless steel and superalloy applications.

Up to 4.5 x D Ap1 max, which helps prevent bird-nesting and possible tool breakage.



The end mill design is enhanced with small chip splitters along the tool's cutting edges to break chips into small pieces without reducing the wall finish. These smaller chips are easier to evacuate from the pocket area, especially when machining deep cavities.

DYNAMIC

The end mill evacuates chips in dynamic milling operations with complex tool paths.

EFFICIENT

Operators can utilize the full feed rate, up to the machine's capacity, with the 5- and 7-flute end mill configurations. Dynamic milling processes are typically run using a low value of radial engagement, which generates a thin chip thickness enabling higher feed rate-per-tooth values and subsequently higher MRRs and productivity.

STEADY

No more machine downtime due to tool breakage and bad chip formation and evacuation. The machine will keep running as long as the tool has material to cut in dynamic and trochoidal milling processes.

DYNAMIC CHIP FLOW

PRODUCT

SOLID CARBIDE END MILL

GRADE

WP15PE
WS15PE

FLUTE

5 & 7

DIAMETER RANGE

INCH

1/2-1"

METRIC

—

INDUSTRY



GENERAL
ENGINEERING



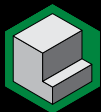
ENERGY



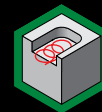
AEROSPACE

APPLICATIONS

MATERIALS



SIDE MILLING



DYNAMIC
MILLING



HELICAL
INTERPOLATION

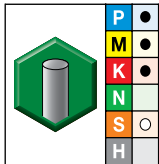


RAMPING

Solid Carbide End Mills • VariMill™ Chip Splitter

INDEXABLE MILLING

VariMill Chip Splitter • Series 570T • Radiused • 5 Flute • Cylindrical Shank • Inch



WP15PE

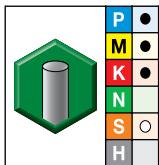
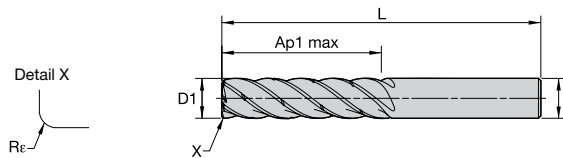
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- alternate choice

order #	catalog #	D1	D	length of cut Ap1 max	length L	Re	ZU
6853744	570TE13006RET	1/2	1/2	1 1/2	3 1/2	.030	5
6853747	570TE19009RET	3/4	3/4	2 1/4	5	.030	5
6853750	570TE2500ARET	1	1	2 1/4	5	.030	5

SOLID END MILLING

HOLEMAKING

VariMill Chip Splitter • Series 571T • Radiused • 5 Flute • Cylindrical Shank • Inch



WP15PE

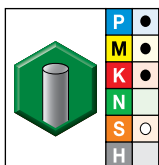
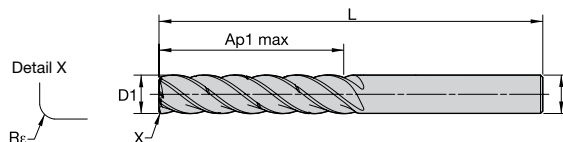
- first choice
- alternate choice

order #	catalog #	D1	D	length of cut Ap1 max	length L	Re	ZU
6853745	571TE13016RET	1/2	1/2	2	4	.030	5
6853748	571TE19019RET	3/4	3/4	3	6	.030	5
6853761	571TE2501ARET	1	1	3 1/2	6 1/2	.030	5

TAPPING

TURNING

VariMill Chip Splitter • Series 572T • Radiused • 5 Flute • Cylindrical Shank • Inch



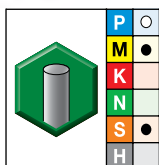
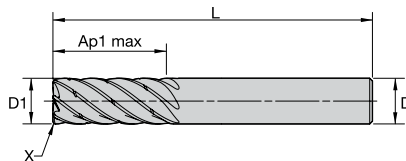
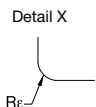
WP15PE

- first choice
- alternate choice

order #	catalog #	D1	D	length of cut Ap1 max	length L	Re	ZU
6853746	572TE13026RET	1/2	1/2	2 1/2	5	.030	5
6853749	572TE19029RET	3/4	3/4	4	7	.030	5
6853762	572TE2502ARET	1	1	4 1/2	7 1/2	.030	5



VariMill Chip Splitter • Series 770T • Radiused • 7 Flute • Cylindrical Shank • Inch

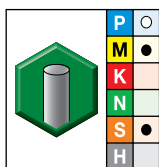
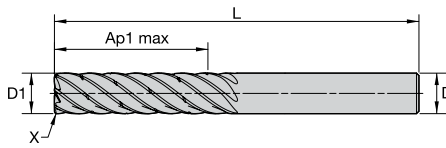
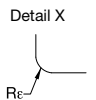


WS15PE

- first choice
- alternate choice

order #	catalog #	D1	D	length of cut Ap1 max	length L	Re	ZU
6853763	770TE13006RET	1/2	1/2	1 1/4	3 1/2	.030	7
6853764	770TE13006RGT	1/2	1/2	1 1/4	3 1/2	.060	7
6853795	770TE2500ARET	1	1	1 3/4	4 1/2	.030	7
6853796	770TE2500ARGT	1	1	1 3/4	4 1/2	.060	7
6853797	770TE2500ARKT	1	1	1 3/4	4 1/2	.120	7

VariMill Chip Splitter • Series 771T • Radiused • 7 Flute • Cylindrical Shank • Inch



WS15PE

- first choice
- alternate choice

order #	catalog #	D1	D	length of cut Ap1 max	length L	Re	ZU
6853765	771TE13016RET	1/2	1/2	2 1/8	4 1/2	.030	7
6853766	771TE13016RGT	1/2	1/2	2 1/8	4 1/2	.060	7
6853769	771TE19019RET	3/4	3/4	2 1/4	5	.030	7
6853770	771TE19019RGT	3/4	3/4	2 1/4	5	.060	7
6853791	771TE19019RKT	3/4	3/4	2 1/4	5	.120	7
6853798	771TE2501ARET	1	1	2 1/4	5	.030	7
6853799	771TE2501ARGT	1	1	2 1/4	5	.060	7
6853800	771TE2501ARKT	1	1	2 1/4	5	.120	7

Solid Carbide End Mills • VariMill™ Chip Splitter

INDEXABLE MILLING

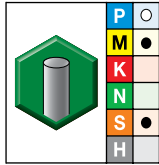
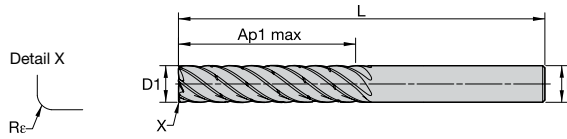
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

VariMill Chip Splitter • Series 772T • Radiused • 7 Flute • Cylindrical Shank • Inch

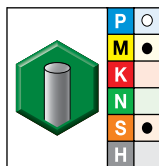
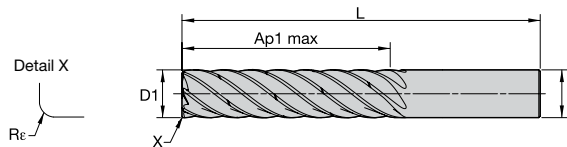


WS15PE

- first choice
- alternate choice

order #	catalog #	D1	D	length of cut Ap1 max	length L	Re	ZU
6853767	772TE13026RET	1/2	1/2	2 1/2	5	.030	7
6853768	772TE13026RGT	1/2	1/2	2 1/2	5	.060	7
6853792	772TE19029RET	3/4	3/4	3 3/4	7	.030	7
6853793	772TE19029RGT	3/4	3/4	3 3/4	7	.060	7
6853794	772TE19029RKT	3/4	3/4	3 3/4	7	.120	7
6853801	772TE2502ARET	1	1	3 1/2	6 1/2	.030	7
6853802	772TE2502ARGT	1	1	3 1/2	6 1/2	.060	7
6853803	772TE2502ARKT	1	1	3 1/2	6 1/2	.120	7

VariMill Chip Splitter • Series 773T • Radiused • 7 Flute • Cylindrical Shank • Inch



WS15PE

- first choice
- alternate choice

order #	catalog #	D1	D	length of cut Ap1 max	length L	Re	ZU
6853804	773TE2503ARET	1	1	4 1/2	7 1/2	.030	7
6853805	773TE2503ARGT	1	1	4 1/2	7 1/2	.060	7
6853806	773TE2503ARKT	1	1	4 1/2	7 1/2	.120	7

VariMill Chip Splitter • Series 570T 571T 572T • Application Data • WP15PE • Inch • ae = 10% of D1

Material Group	Side Milling		WP15PE			Recommended feed per tooth (fz=IPT) for side milling at ae = 10% of D1						
	ap	ae	Cutting Speed – Vc (SFM)			D1 – Diameter						
			min	Start	max	fraction	3/8	1/2	5/8	3/4	1	
	P	0	ap max	0.1 x D1	880	1030	1180	IPT	.0034	.0039	.0048	.0054
1		ap max	0.1 x D1	880	1030	1180	IPT	.0034	.0039	.0048	.0054	.0059
2		ap max	0.1 x D1	830	990	1125	IPT	.0034	.0039	.0048	.0054	.0059
3		ap max	0.1 x D1	710	830	954	IPT	.0024	.0033	.0041	.0048	.0054
4		ap max	0.1 x D1	530	705	880	IPT	.0026	.0030	.0036	.0042	.0046
5		ap max	0.1 x D1	350	470	590	IPT	.0023	.0026	.0033	.0038	.0043
M	6	ap max	0.1 x D1	295	370	440	IPT	.0019	.0022	.0027	.0031	.0033
	1	ap max	0.1 x D1	530	600	675	IPT	.0029	.0033	.0041	.0048	.0054
	2	ap max	0.1 x D1	350	405	465	IPT	.0023	.0026	.0033	.0038	.0043
K	3	ap max	0.1 x D1	350	380	410	IPT	.0019	.0022	.0027	.0031	.0033
	1	ap max	0.1 x D1	710	795	880	IPT	.0034	.0039	.0048	.0054	.0059
	2	ap max	0.1 x D1	650	740	820	IPT	.0029	.0033	.0041	.0048	.0054
S	3	ap max	0.1 x D1	650	705	765	IPT	.0023	.0026	.0033	.0038	.0043
	1	ap max	0.1 x D1	295	410	530	IPT	.0029	.0033	.0041	.0048	.0054
	2	ap max	0.1 x D1	145	190	235	IPT	.0015	.0018	.0022	.0026	.0029
	3	ap max	0.1 x D1	145	190	235	IPT	.0015	.0018	.0022	.0026	.0029
H	4	ap max	0.1 x D1	295	320	350	IPT	.0021	.0024	.0030	.0035	.0039
	1	ap max	0.1 x D1	470	640	820	IPT	.0026	.0030	.0036	.0042	.0046
	2	ap max	0.1 x D1	415	560	710	IPT	.0019	.0022	.0027	.0031	.0033

VariMill Chip Splitter • Series 570T 571T 572T • Application Data • WP15PE • Inch • ae = 5% of D1

Material Group	Side Milling		WP15PE			Recommended feed per tooth (fz=IPT) for side milling at ae = 5% of D1						
	ap	ae	Cutting Speed – Vc (SFM)			D1 – Diameter						
			min	Start	max	fraction	3/8	1/2	5/8	3/4	1	
	P	0	ap max	0.05 x D1	980	1145	1310	IPT	.0050	.0050	.0060	.0070
1		ap max	0.05 x D1	980	1145	1310	IPT	.0050	.0050	.0060	.0070	.0080
2		ap max	0.05 x D1	920	1100	1250	IPT	.0050	.0050	.0060	.0070	.0080
3		ap max	0.05 x D1	790	920	1050	IPT	.0040	.0040	.0060	.0060	.0070
4		ap max	0.05 x D1	590	785	980	IPT	.0030	.0040	.0050	.0060	.0060
5		ap max	0.05 x D1	390	525	660	IPT	.0030	.0040	.0040	.0050	.0060
M	6	ap max	0.05 x D1	330	410	490	IPT	.0030	.0030	.0040	.0040	.0050
	1	ap max	0.05 x D1	590	670	750	IPT	.0040	.0040	.0060	.0060	.0070
	2	ap max	0.05 x D1	390	455	520	IPT	.0030	.0040	.0040	.0050	.0060
K	3	ap max	0.05 x D1	390	425	460	IPT	.0030	.0030	.0040	.0040	.0050
	1	ap max	0.05 x D1	790	885	980	IPT	.0050	.0050	.0060	.0070	.0080
	2	ap max	0.05 x D1	720	820	920	IPT	.0040	.0040	.0060	.0060	.0070
S	3	ap max	0.05 x D1	720	785	850	IPT	.0030	.0040	.0040	.0050	.0060
	1	ap max	0.05 x D1	330	460	590	IPT	.0040	.0040	.0060	.0060	.0070
	2	ap max	0.05 x D1	160	210	260	IPT	.0020	.0020	.0030	.0030	.0040
	3	ap max	0.05 x D1	160	210	260	IPT	.0020	.0020	.0030	.0030	.0040
H	4	ap max	0.05 x D1	330	360	390	IPT	.0030	.0030	.0040	.0050	.0050
	1	ap max	0.05 x D1	520	720	920	IPT	.0030	.0040	.0050	.0040	.0060
	2	ap max	0.05 x D1	460	625	790	IPT	.0030	.0030	.0040	.0040	.0050

Solid Carbide End Mills • VariMill™ Chip Splitter

VariMill Chip Splitter • Series 570T 571T 572T • Application Data • WP15PE • Inch • ae = 2% of D1

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Material Group	Side Milling		WP15PE			Recommended feed per tooth (fz=IPT) for side milling at ae = 2% of D1						
	ap	ae	Cutting Speed – Vc (SFM)			D1 – Diameter						
			min	Start	max	fraction	3/8	1/2	5/8	3/4	1	
P	0	ap max	0.02 x D1	1000	1170	1330	IPT	.0070	.0080	.0090	.0011	.0110
	1	ap max	0.02 x D1	1000	1170	1330	IPT	.0070	.0080	.0090	.0011	.0110
	2	ap max	0.02 x D1	340	1120	1275	IPT	.0070	.0080	.0090	.0011	.0110
	3	ap max	0.02 x D1	805	940	1070	IPT	.0060	.0060	.0080	.0090	.0100
	4	ap max	0.02 x D1	600	800	1000	IPT	.0050	.0060	.0070	.0080	.0090
	5	ap max	0.02 x D1	400	535	670	IPT	.0040	.0050	.0060	.0070	.0080
M	6	ap max	0.02 x D1	335	420	500	IPT	.0040	.0040	.0050	.0060	.0070
	1	ap max	0.02 x D1	600	680	765	IPT	.0060	.0060	.0080	.0090	.0100
	2	ap max	0.02 x D1	400	460	530	IPT	.0040	.0050	.0060	.0070	.0080
K	3	ap max	0.02 x D1	400	430	470	IPT	.0040	.0040	.0050	.0060	.0070
	1	ap max	0.02 x D1	805	900	1000	IPT	.0070	.0080	.0090	.0110	.0110
	2	ap max	0.02 x D1	735	830	940	IPT	.0060	.0060	.0080	.0090	.0100
S	3	ap max	0.02 x D1	735	800	860	IPT	.0040	.0050	.0060	.0070	.0080
	1	ap max	0.02 x D1	330	470	600	IPT	.0060	.0060	.0080	.0090	.0100
	2	ap max	0.02 x D1	165	215	265	IPT	.0030	.0030	.0040	.0050	.0060
	3	ap max	0.02 x D1	165	215	265	IPT	.0030	.0030	.0040	.0050	.0060
H	4	ap max	0.02 x D1	330	360	390	IPT	.0040	.0050	.0060	.0070	.0080
	1	ap max	0.02 x D1	530	730	930	IPT	.0050	.0060	.0070	.0080	.0090
	2	ap max	0.02 x D1	470	630	800	IPT	.0040	.0040	.0050	.0060	.0070

VariMill Chip Splitter • Series 770T 771T 772T 773T • Application Data • WS15PE • Inch • ae = 10% of D1

Material Group	Side Milling		WS15PE			Recommended feed per tooth (fz=IPT) for side milling at ae = 10% of D1						
	ap	ae	Cutting Speed – Vc (SFM)			D1 – Diameter						
			min	Start	max	fraction	3/8	1/2	5/8	3/4	1	
P	4	ap max	0.1 x D1	530	705	880	IPT	.0026	.0030	.0036	.0042	.0046
	5	ap max	0.1 x D1	350	470	590	IPT	.0023	.0026	.0033	.0038	.0043
	6	ap max	0.1 x D1	295	370	440	IPT	.0019	.0022	.0027	.0031	.0033
M	1	ap max	0.1 x D1	530	600	675	IPT	.0029	.0033	.0041	.0048	.0054
	2	ap max	0.1 x D1	350	405	465	IPT	.0023	.0026	.0033	.0038	.0043
	3	ap max	0.1 x D1	350	380	410	IPT	.0019	.0022	.0027	.0031	.0033
S	1	ap max	0.1 x D1	295	410	530	IPT	.0029	.0033	.0041	.0048	.0054
	2	ap max	0.1 x D1	145	190	235	IPT	.0015	.0018	.0022	.0026	.0029
	3	ap max	0.1 x D1	145	190	235	IPT	.0015	.0018	.0022	.0026	.0029
	4	ap max	0.1 x D1	295	320	350	IPT	.0021	.0024	.0030	.0035	.0039
H	1	ap max	0.1 x D1	470	640	820	IPT	.0026	.0030	.0036	.0042	.0046
	2	ap max	0.1 x D1	415	560	710	IPT	.0019	.0022	.0027	.0031	.0033

VariMill Chip Splitter • Series 770T 771T 772T 773T •
Application Data • WS15PE • Inch • ae = 5% of D1

Material Group	Side Milling		WS15PE			Recommended feed per tooth (fz=IPT) for side milling at ae = 5% of D1						
	ap	ae	Cutting Speed – Vc (SFM)			D1 – Diameter						
			min	Start	max	fraction	3/8	1/2	5/8	3/4	1	
	P	4	ap max	0.05 x D1	590	785	980	IPT	.0030	.0040	.0050	.0060
5		ap max	0.05 x D1	390	525	660	IPT	.0030	.0040	.0040	.0050	.0060
6		ap max	0.05 x D1	330	410	490	IPT	.0030	.0030	.0040	.0040	.0050
M	1	ap max	0.05 x D1	590	670	750	IPT	.0040	.0040	.0060	.0060	.0070
	2	ap max	0.05 x D1	390	455	520	IPT	.0030	.0040	.0040	.0050	.0060
	3	ap max	0.05 x D1	390	425	460	IPT	.0030	.0030	.0040	.0040	.0050
S	1	ap max	0.05 x D1	330	460	590	IPT	.0040	.0040	.0060	.0060	.0070
	2	ap max	0.05 x D1	160	210	260	IPT	.0020	.0020	.0030	.0030	.0040
	3	ap max	0.05 x D1	160	210	260	IPT	.0020	.0020	.0030	.0030	.0040
	4	ap max	0.05 x D1	330	360	390	IPT	.0030	.0030	.0040	.0050	.0050
H	1	ap max	0.05 x D1	520	720	920	IPT	.0030	.0040	.0050	.0040	.0060
	2	ap max	0.05 x D1	460	625	790	IPT	.0030	.0030	.0040	.0040	.0050

VariMill Chip Splitter • Series 770T 771T 772T 773T •
Application Data • WS15PE • Inch • ae = 2% of D1

Material Group	Side Milling		WS15PE			Recommended feed per tooth (fz=IPT) for side milling at ae = 2% of D1						
	ap	ae	Cutting Speed – Vc (SFM)			D1 – Diameter						
			min	Start	max	fraction	3/8	1/2	5/8	3/4	1	
	P	4	ap max	0.02 x D1	600	800	1000	IPT	.0050	.0060	.0070	.0080
5		ap max	0.02 x D1	400	535	670	IPT	.0040	.0050	.0060	.0070	.0080
6		ap max	0.02 x D1	335	420	500	IPT	.0040	.0040	.0050	.0060	.0070
M	1	ap max	0.02 x D1	600	680	765	IPT	.0060	.0060	.0080	.0090	.0100
	2	ap max	0.02 x D1	400	460	530	IPT	.0040	.0050	.0060	.0070	.0080
	3	ap max	0.02 x D1	400	430	470	IPT	.0040	.0040	.0050	.0060	.0070
S	1	ap max	0.02 x D1	330	470	600	IPT	.0060	.0060	.0080	.0090	.0100
	2	ap max	0.02 x D1	165	215	265	IPT	.0030	.0030	.0040	.0050	.0060
	3	ap max	0.02 x D1	165	215	265	IPT	.0030	.0030	.0040	.0050	.0060
	4	ap max	0.02 x D1	330	360	390	IPT	.0040	.0050	.0060	.0070	.0080
H	1	ap max	0.02 x D1	530	730	930	IPT	.0050	.0060	.0070	.0080	.0090
	2	ap max	0.02 x D1	470	630	800	IPT	.0040	.0040	.0050	.0060	.0070

Roughers

High-Performance Solid End Milling

The High-Performance Roughers group of products includes numerous end mills with chip breaker profiles to operate on multiple materials and in multiple end markets, providing effective chip control to reduce the spindle power and efficiently machine components when a high quantity of material needs to be removed. This group is designed with chip breaker profiles to operate on low-power machines or when the cutting conditions are not stable.

Features and Benefits

Chipbreaker profiles to generate small and easy-to-evacuate chips.

Center cut for improved plunging and ramping applications.

Different helix angles to ensure the best performance and cutting actions on different materials categories.



The chip breaker profile on Rougher end mills helps reduce cutting forces and temperature increases, allowing the tool to perform operations longer. With different available shapes, the roughing profiles ensure the formation of small chips, which are easier to evacuate from the cutting area on different workpiece materials.

SMOOTH

The chipbreaker profile helps reduce cutting forces and the generation of high temperatures.

EASY

Small chips are easy to evacuate from the cutting area, increasing productivity and reducing machine downtime.

FIRM

The Roughers' end mills are the perfect tool when full slotting operations are the daily job.

ROUGHING BEYOND THE LIMITS

PRODUCT

SOLID CARBIDE END MILL

GRADE

WP15PE
WS15PE
TiAlN

FLUTE

3-6

DIAMETER RANGE

INCH

3/16-1"

METRIC

3-25mm

INDUSTRY



GENERAL
ENGINEERING



AEROSPACE



ENERGY



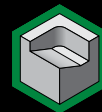
TRANSPORTATION

APPLICATIONS

MATERIALS



SIDE MILLING



RAMPING



HELICAL
INTERPOLATION



SLOTTING

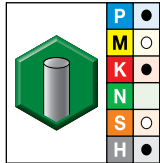
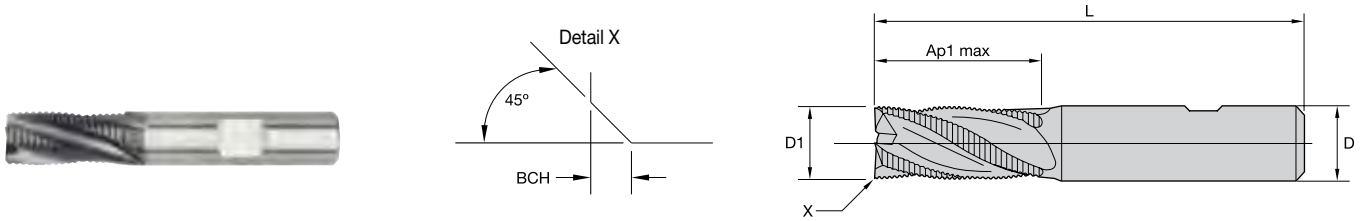


DYNAMIC
MILLING

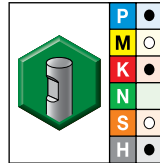


PLUNGING

Roughers • Series 4SOR • Chamfer • Inch



WP15PE

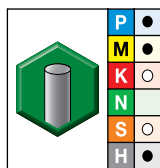
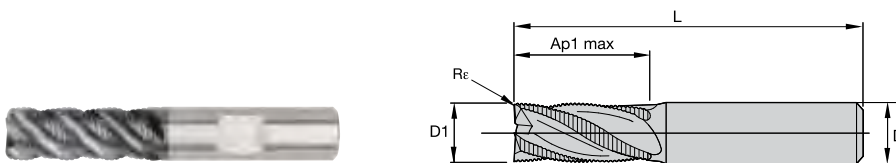


WP15PE

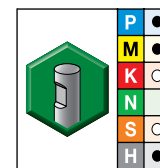
● first choice
○ alternate choice

order #	catalog #	order #	catalog #	D1	D	length of cut Ap1 max	length L	BCH	ZU
5577389	4SOR07002NT	2831385	TR4S4R07002	1/4	1/4	3/8	2	.012	3
-	-	1952552	TR4S4R10004	3/8	3/8	1/2	2	.020	4
-	-	5577390	4SOR10004NW	3/8	3/8	7/8	2 1/2	.020	4
-	-	1952593	TR4S4R13005	1/2	1/2	5/8	2 1/2	.020	4
-	-	5577391	4SOR13005NW	1/2	1/2	1	3	.020	4
-	-	2831360	TR4S4R16006	5/8	5/8	3/4	3	.020	4
-	-	5577392	4SOR16006NW	5/8	5/8	1 1/4	3 1/2	.020	4
-	-	2831355	TR4S4R19007	3/4	3/4	7/8	3 1/2	.020	4
-	-	5577393	4SOR19007NW	3/4	3/4	1 1/2	4	.020	4
-	-	5577395	4SOR25018NW	1	1	1 1/2	4	.020	4
-	-	5577394	4SOR25008NW	1	1	1 1/2	4	.020	5

Roughers • Series 4MOR 4M4R • Radius • Inch



WP15PE

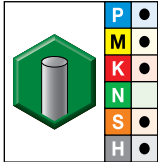
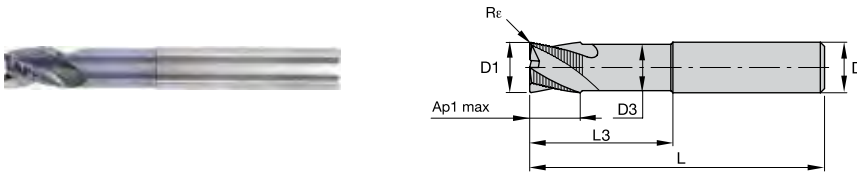


WP15PE

● first choice
○ alternate choice

order #	catalog #	order #	catalog #	D1	D	length of cut Ap1 max	length L	Re	ZU
5577384	4M4R07002BT	-	-	1/4	1/4	3/8	2	.030	3
5577315	4M0R07002BT	-	-	1/4	1/4	3/4	2 1/2	.030	4
5577385	4M4R10004BT	-	-	3/8	3/8	1/2	2	.030	4
5577316	4M0R10004BT	-	-	3/8	3/8	7/8	2 1/2	.030	4
-	-	5577386	4M4R13005XW	1/2	1/2	5/8	2 1/2	.040	4
-	-	5577317	4M0R13005XW	1/2	1/2	1 1/4	3	.040	4
-	-	5577319	4M0R16016XW	5/8	5/8	1 1/4	3 1/2	.040	6
-	-	5577388	4M4R19009XW	3/4	3/4	7/8	3 1/2	.050	4
-	-	5577381	4M0R19017XW	3/4	3/4	1 1/2	4	.050	6
-	-	5577380	4M0R19007XW	3/4	3/4	1 1/2	4	.050	4
-	-	3321507	TM4M1R19017A	3/4	3/4	2 1/4	5	.050	6
-	-	5577383	4M0R25018XW	1	1	1 1/2	4	.050	6
-	-	5577382	4M0R25008XW	1	1	1 1/2	4	.050	4
-	-	3099533	TM4M1R25018A	1	1	2 1/4	5	.050	6

Roughers • Series 4QN3 • Radius • Neck • Inch

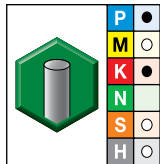
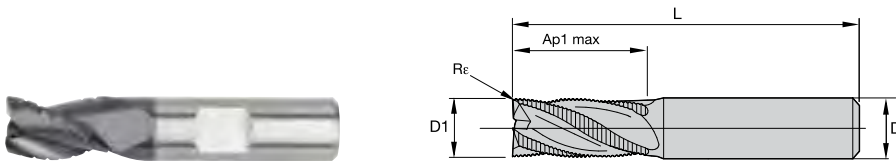


TiAlN-LT

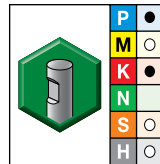
- first choice
- alternate choice

order #	catalog #	D1	D	D3	length of cut Ap1 max	L3	length L	Re	ZU
2837886	TF4QN310014A	3/8	3/8	.35	1/2	2 1/4	4	.020	3
2837870	TF4QN313005A	1/2	1/2	.47	5/8	2 1/4	5	.030	3
2837826	TF4QN319007A	3/4	3/4	.71	1	2 1/4	5	.030	3

Roughers • Series 4Q03 4Q05 4Q43 • Radius • Inch



WP15PE

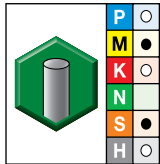
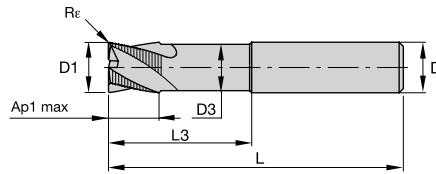


WP15PE

- first choice
- alternate choice

order #	catalog #	order #	catalog #	D1	D	length of cut Ap1 max	length L	Re	ZU
5576674	4Q0305000XT	5576744	4Q4305000XW	3/16	3/16	5/16	2	.010	3
-	-	-	-	3/16	3/16	5/8	2	.010	3
-	-	5576675	4Q0307002XW	1/4	1/4	3/4	2 1/2	.020	3
-	-	5576747	4Q4310014XW	3/8	3/8	1/2	2	.020	3
-	-	5576677	4Q0310014XW	3/8	3/8	1	2 1/2	.020	3
-	-	5576678	4Q0313015BW	1/2	1/2	1 1/4	3	.030	3
-	-	5576679	4Q0316006BW	5/8	5/8	1 5/8	3 1/2	.030	3
-	-	5576750	4Q4319017BW	3/4	3/4	1	3 1/2	.030	3
-	-	5576743	4Q0525008BW	1	1	2	4	.030	4

Roughers • Series 4U50 • Radius • Inch

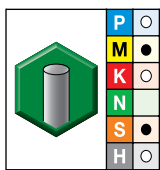
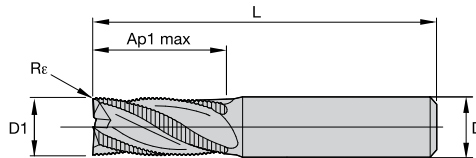


WS15PE

- first choice
- alternate choice

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

Roughers • Series 4U80 • Radius • Inch

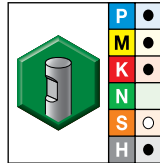
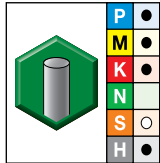
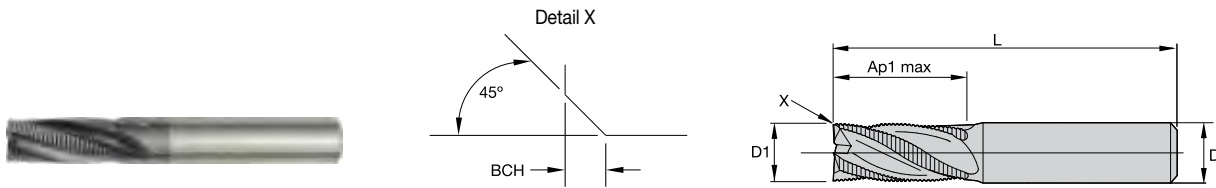


WS15PE

- first choice
- alternate choice

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

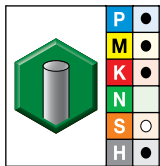
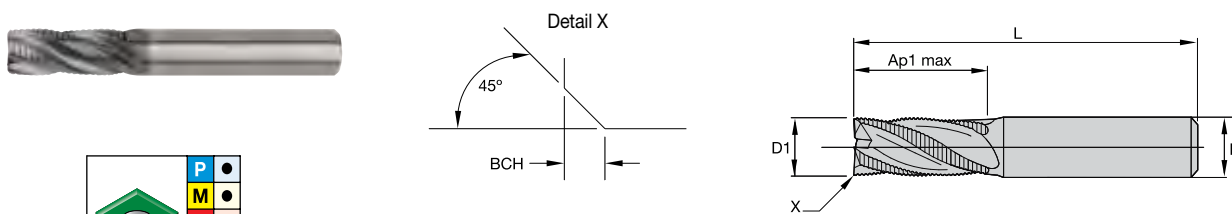
Roughers • Series 4906 • Chamfer • Metric



● first choice
○ alternate choice

WP15PE		WP15PE		D1	D	length of cut Ap1 max	length L	BCH	ZU
order #	catalog #	order #	catalog #						
1657001	490604002RT	1657002	490604002RW	4,0	6	11,00	55	0,30	3
1657009	490605002RT	1657010	490605002RW	5,0	6	13,00	57	0,30	3
1657018	490606002RT	1657019	490606002RW	6,0	6	13,00	57	0,30	3
3133084	490607003RT	1657025	490607003RW	7,0	8	16,00	63	0,30	3
1657033	490608003RT	1657034	490608003RW	8,0	8	16,00	63	0,30	3
1657050	490610004RT	1657051	490610004RW	10,0	10	22,00	72	0,50	4
3133086	490611005RT	—	—	11,0	12	26,00	83	0,50	4
1657063	490612005RT	1657064	490612005RW	12,0	12	26,00	83	0,50	4
—	—	1657085	490614014RW	14,0	14	26,00	83	0,50	4
1657096	490616006RT	1657097	490616006RW	16,0	16	32,00	92	0,50	4
1657112	490620007RT	1657113	490620007RW	20,0	20	38,00	104	0,50	4
—	—	1657121	490625008RW	25,0	25	45,00	121	0,50	5

Roughers • Series 4976 • Chamfer • Metric



● first choice
○ alternate choice

WP15PE		D1	D	length of cut Ap1 max	length L	BCH	ZU
order #	catalog #						
5560708	497604002T	4,0	6	8,00	57	0,30	3
5560709	497605002T	5,0	6	13,00	57	0,30	3
5560710	497606002T	6,0	6	13,00	57	0,30	3
5560711	497608003T	8,0	8	16,00	63	0,30	3
5560712	497610004T	10,0	10	22,00	72	0,50	4
5560713	497612005T	12,0	12	26,00	83	0,50	4
5560714	497614014T	14,0	14	26,00	83	0,50	4
5560715	497616006T	16,0	16	32,00	92	0,50	4
5560717	497620007T	20,0	20	38,00	104	0,50	4

Roughers • Series 49N6 • Chamfer • Neck • Metric

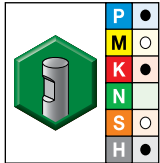
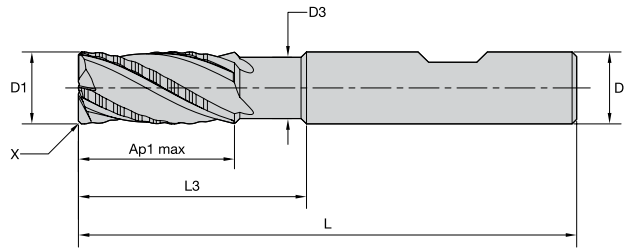
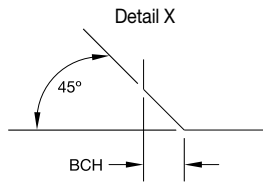
INDEXABLE MILLING

SOLID END MILLING

HOLE MAKING

TAPPING

TURNING

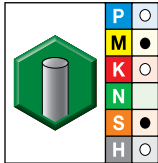
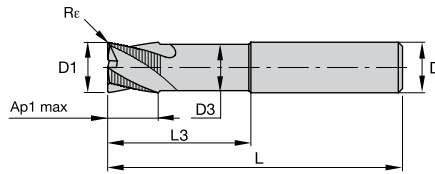


WP15PE

- first choice
- alternate choice

order #	catalog #	D1	D	D3	length of cut		length		BCH	ZU
					Ap1 max	L3	L			
3474585	49N606002MW	6,0	6	5,50	13,00	21,00	57	0,30	3	
3474587	49N608003MW	8,0	8	7,50	16,00	27,00	63	0,30	3	
3474589	49N610004MW	10,0	10	9,50	22,00	32,00	72	0,50	4	
3474591	49N612005MW	12,0	12	11,00	26,00	38,00	83	0,50	4	
3474594	49N616006MW	16,0	16	15,00	32,00	44,00	92	0,50	4	
3474597	49N625008MW	25,0	25	24,00	45,00	65,00	121	0,50	5	

Roughers • Series 4U50 • Radius • Metric

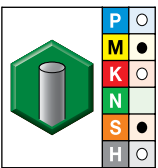
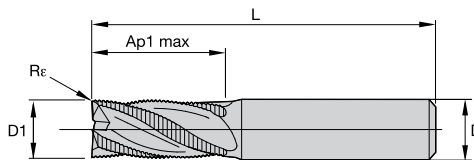


● first choice
○ alternate choice

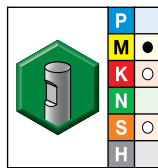
WS15PE

order #	catalog #	D1	D	D3	length of cut Ap1 max	L3	length L	Re	ZU
6431403	4U50M060R2TC	6,0	6	5,64	6,00	18,00	57	0,30	4
6431404	4U50M080R3TC	8,0	8	7,52	8,00	24,00	63	0,30	4
6431405	4U50M100R4TE	10,0	10	9,40	10,00	30,00	72	0,50	4
6431406	4U50M120R5TE	12,0	12	11,28	12,00	36,00	83	0,50	4
6431407	4U50M160R6TE	16,0	16	15,04	16,00	48,00	92	0,50	6
6431408	4U50M200R7TG	20,0	20	18,80	20,00	60,00	104	1,00	6
6431409	4U50M250R8TG	25,0	25	23,50	25,00	75,00	121	1,00	6

Roughers • Series 4U80 • Radius • Metric



WS15PE

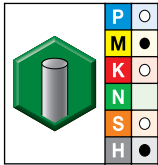
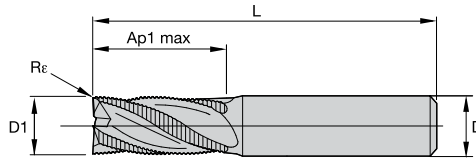


AITIN-MW

● first choice
○ alternate choice

order #	catalog #	order #	catalog #	D1	D	length of cut Ap1 max	length L	Re	ZU
6431246	4U80M060R2TC	6652714	4U80M060R2WC	6,0	6	13,00	57	0,30	4
6431247	4U80M080R3TC	6652715	4U80M080R3WC	8,0	8	16,00	63	0,30	4
6431248	4U80M100R4TE	6652716	4U80M100R4WE	10,0	10	22,00	72	0,50	4
6431249	4U80M120R5TE	6652717	4U80M120R5WE	12,0	12	26,00	83	0,50	4
6431250	4U80M160R6TE	6652718	4U80M160R6WE	16,0	16	32,00	92	0,50	6
6431401	4U80M200R7TG	—	—	20,0	20	38,00	104	1,00	6
6431402	4U80M250R8TG	—	—	25,0	25	45,00	121	1,00	6

Roughers • Series 4U40 • Radius • Metric

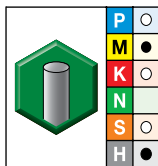
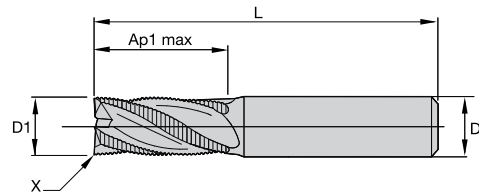
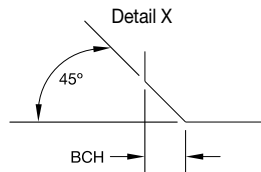


WP15PE

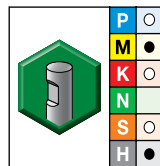
- first choice
- alternate choice

order #	catalog #	D1	D	length of cut Ap1 max	length L	R ϵ	ZU
5583420	4U4008003T	8,0	8	8,00	63	0,75	4

Roughers • Series 4U70 • Radius • Metric



WP15PE

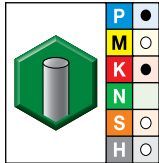
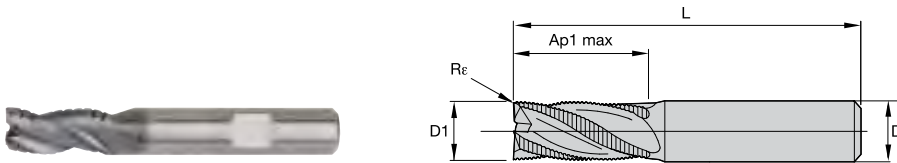


WP15PE

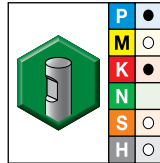
- first choice
- alternate choice

order #	catalog #	order #	catalog #	D1	D	length of cut Ap1 max	length L	BCH	ZU
—	—	5583436	4U7006002W	6,0	6	13,00	57	0,30	4
—	—	5583437	4U7008003W	8,0	8	16,00	63	0,40	4
—	—	5583439	4U7012005W	12,0	12	26,00	83	0,60	4
—	—	5583440	4U7016006W	16,0	16	32,00	92	0,60	6
5583431	4U7016046T	—	—	16,0	16	32,00	92	0,60	4
5583433	4U7020047T	—	—	20,0	20	38,00	104	1,00	4

Roughers • Series DQ13 • Radius • Metric



WP15PE

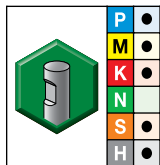
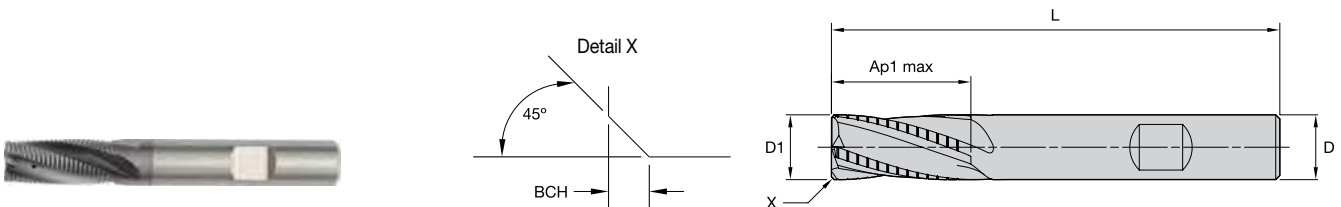


WP15PE

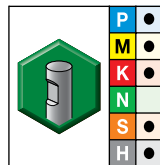
● first choice
○ alternate choice

order #	catalog #	order #	catalog #	D1	D	length of cut Ap1 max	length L	R _ε	ZU
5560534	DQ1303002T	5560536	DQ1303002W	3,0	6	7,00	54	0,25	3
5560535	DQ1304002T	-	-	4,0	6	8,00	57	0,25	3
-	-	5560538	DQ1305002W	5,0	6	10,00	57	0,25	3
-	-	5560539	DQ1306002W	6,0	6	10,00	57	0,45	3
-	-	5560701	DQ1308003W	8,0	8	16,00	63	0,45	3
-	-	5560702	DQ1310004W	10,0	10	19,00	72	0,45	3
-	-	5560703	DQ1312005W	12,0	12	22,00	83	0,45	3
-	-	5560704	DQ1314014W	14,0	14	22,00	83	0,45	3
-	-	5560705	DQ1316006W	16,0	16	32,00	92	0,45	3
-	-	5560706	DQ1318018W	18,0	18	32,00	92	0,45	3

Roughers • Series 49H6 • Chamfer • Internal Coolant • Metric



TiAlN-LW

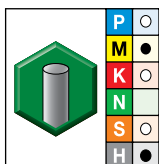
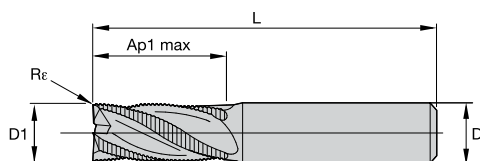


WP15PE

● first choice
○ alternate choice

order #	catalog #	order #	catalog #	D1	D	length of cut Ap1 max	length L	BCH	ZU
-	-	1657264	49H610004RW	10,0	10	22,00	72	0,50	4
-	-	1657268	49H612005RW	12,0	12	26,00	83	0,50	4
1968206	49H614014LW	-	-	14,0	14	26,00	83	0,50	4
-	-	1657274	49H616006RW	16,0	16	32,00	92	0,50	4

Roughers • Series 4940 • Radius • Metric



TIAIN-LT

● first choice
○ alternate choice

order #	catalog #	D1	D	length of cut Ap1 max	length L	Re	ZU
1846543	494006002LT	6,0	6	6,00	57	0,75	4
1846544	494008003LT	8,0	8	8,00	63	0,75	4
1846545	494010004LT	10,0	10	10,00	72	0,75	4
1846546	494012005LT	12,0	12	12,00	83	1,00	4
1846547	494016006LT	16,0	16	16,00	92	1,00	6

Roughers • Series 4S0R • Application Data • WP15PE • Inch

Material Group	Side Milling (A) and Slotting (B)		WP15PE				Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.							
	A		B		Cutting Speed – vc SFM		D1 – Diameter							
	ap	ae	ap	min	max	frac. dec.	1/4	3/8	1/2	5/8	3/4	1		
	1 x D	0.5 x D	0.5 x D											
P	0	1 x D	0.5 x D	0.5 x D	490	-	660	IPT	.0015	.0022	.0027	.0032	.0035	.0039
	1	1 x D	0.5 x D	0.5 x D	490	-	660	IPT	.0015	.0022	.0027	.0032	.0035	.0039
	2	1 x D	0.5 x D	0.5 x D	460	-	620	IPT	.0015	.0022	.0027	.0032	.0035	.0039
	3	1 x D	0.4 x D	0.5 x D	390	-	520	IPT	.0012	.0018	.0023	.0027	.0031	.0036
	4	1 x D	0.3 x D	0.4 x D	300	-	490	IPT	.0011	.0016	.0021	.0024	.0027	.0031
M	1	1 x D	0.4 x D	0.5 x D	200	-	330	IPT	.0010	.0015	.0019	.0022	.0025	.0029
	2	1 x D	0.4 x D	0.5 x D	200	-	230	IPT	.0008	.0012	.0015	.0018	.0020	.0023
	3	1 x D	0.5 x D	0.3 x D	390	-	490	IPT	.0015	.0022	.0027	.0032	.0035	.0039
K	1	1 x D	0.5 x D	0.3 x D	390	-	490	IPT	.0015	.0022	.0027	.0032	.0035	.0039
	2	1 x D	0.4 x D	0.5 x D	360	-	460	IPT	.0012	.0018	.0023	.0027	.0031	.0036
S	1	1 x D	0.5 x D	0.3 x D	360	-	430	IPT	.0010	.0015	.0019	.0022	.0025	.0029
	3	1 x D	0.5 x D	0.4 x D	160	-	300	IPT	.0015	.0023	.0029	.0034	.0039	.0045
H	1	1 x D	0.5 x D	0.4 x D	80	-	130	IPT	.0008	.0012	.0015	.0018	.0021	.0024
	1	1 x D	0.3 x D	0.3 x D	260	-	460	IPT	.0011	.0016	.0021	.0024	.0027	.0031

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

Roughers • Series 4M0R 4M4R • Application Data • WP15PE • Inch

Material Group	Side Milling (A) and Slotting (B)		WP15PE				Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.							
	A		B		Cutting Speed – vc SFM		D1 – Diameter							
	ap	ae	ap	min	max	frac. dec.	1/4	3/8	1/2	5/8	3/4	1		
	1 x D	0.5 x D	0.75 x D											
P	3	1 x D	0.5 x D	0.75 x D	390	-	520	IPT	.0015	.0023	.0029	.0034	.0039	.0045
	4	1 x D	0.3 x D	0.75 x D	300	-	490	IPT	.0014	.0020	.0026	.0030	.0034	.0039
	5	1 x D	0.5 x D	0.75 x D	200	-	330	IPT	.0012	.0018	.0023	.0027	.0031	.0036
	6	1 x D	0.3 x D	0.3 x D	160	-	250	IPT	.0010	.0015	.0019	.0022	.0025	.0028
M	1	1 x D	0.5 x D	0.75 x D	300	-	380	IPT	.0015	.0023	.0029	.0034	.0039	.0045
	2	1 x D	0.5 x D	0.75 x D	200	-	260	IPT	.0012	.0018	.0023	.0027	.0031	.0036
	3	1 x D	0.5 x D	0.75 x D	200	-	230	IPT	.0010	.0015	.0019	.0022	.0025	.0028
K	1	1 x D	0.5 x D	1 x D	390	-	490	IPT	.0018	.0027	.0034	.0040	.0044	.0049
	2	1 x D	0.5 x D	1 x D	360	-	460	IPT	.0015	.0023	.0029	.0034	.0039	.0045
	3	1 x D	0.5 x D	1 x D	360	-	430	IPT	.0012	.0018	.0023	.0027	.0031	.0036
S	1	1 x D	0.3 x D	0.75 x D	160	-	300	IPT	.0015	.0023	.0029	.0034	.0039	.0045
	2	1 x D	0.3 x D	0.3 x D	80	-	130	IPT	.0008	.0012	.0015	.0018	.0021	.0024
	3	1 x D	0.4 x D	0.75 x D	80	-	130	IPT	.0008	.0012	.0015	.0018	.0021	.0024
	4	1 x D	0.4 x D	0.75 x D	160	-	200	IPT	.0011	.0017	.0021	.0025	.0028	.0033
H	1	1 x D	0.3 x D	0.3 x D	260	-	460	IPT	.0014	.0020	.0026	.0030	.0034	.0039
	2	1 x D	0.2 x D	0.2 x D	230	-	390	IPT	.0010	.0015	.0019	.0022	.0025	.0028
	3	1 x D	0.2 x D	0.2 x D	200	-	300	IPT	.0008	.0012	.0015	.0018	.0021	.0024

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

Roughers • Series 4QN3 • Application Data • TiAlN-LT • Inch

Material Group	Side Milling (A) and Slotting (B)		TiAlN				Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.						
	A		B		Cutting Speed – vc SFM			D1 – Diameter					
	ap	ae	ap	min	max	frac. dec.	1/4	3/8	1/2	5/8	3/4		
	1 x D	0.3 x D	0.5 x D										
P	1	1 x D	0.3 x D	0.5 x D	500	–	650	IPT	.0018	.0027	.0035	.0039	.0043
	2	1 x D	0.3 x D	0.5 x D	450	–	625	IPT	.0018	.0027	.0035	.0039	.0043
	3	1 x D	0.3 x D	0.5 x D	400	–	525	IPT	.0015	.0023	.0029	.0034	.0038
	4	1 x D	0.25 x D	0.25 x D	350	–	475	IPT	.0014	.0020	.0026	.0030	.0033
	5	1 x D	0.3 x D	0.5 x D	200	–	325	IPT	.0012	.0018	.0023	.0027	.0030
	6	1 x D	0.25 x D	0.25 x D	150	–	225	IPT	.0010	.0015	.0019	.0022	.0024
M	1	1 x D	0.3 x D	0.5 x D	250	–	325	IPT	.0015	.0023	.0029	.0034	.0038
	2	1 x D	0.3 x D	0.5 x D	190	–	260	IPT	.0012	.0018	.0023	.0027	.0030
	3	1 x D	0.3 x D	0.5 x D	200	–	260	IPT	.0010	.0015	.0019	.0022	.0024
K	1	1 x D	0.3 x D	0.5 x D	400	–	525	IPT	.0018	.0027	.0035	.0039	.0043
	2	1 x D	0.3 x D	0.5 x D	360	–	460	IPT	.0015	.0023	.0029	.0034	.0038
	3	1 x D	0.3 x D	0.5 x D	330	–	430	IPT	.0012	.0018	.0023	.0027	.0030
S	1	1 x D	0.25 x D	0.25 x D	160	–	300	IPT	.0015	.0023	.0029	.0034	.0039
	2	1 x D	0.25 x D	0.25 x D	80	–	130	IPT	.0008	.0012	.0015	.0018	.0021
	3	1 x D	0.3 x D	0.5 x D	80	–	130	IPT	.0008	.0012	.0015	.0018	.0021
	4	1 x D	0.3 x D	0.5 x D	160	–	200	IPT	.0011	.0017	.0021	.0025	.0028
H	1	1 x D	0.25 x D	0.25 x D	300	–	450	IPT	.0014	.0020	.0026	.0030	.0033

NOTE: Side milling applications – For longest reach (L3) tools, reduce ae by 30%.
 Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.

Roughers • Series 4Q03 4Q05 4Q43 • Application Data • WP15PE • Inch

Material Group	Side Milling (A) and Slotting (B)		WP15PE				Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.									
	A		B		Cutting Speed – vc SFM			D1 – Diameter								
	ap	ae	ap	min	max	frac. dec.	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1		
	1 x D	0.5 x D	0.75 x D													
P	0	1 x D	0.5 x D	0.75 x D	490	–	660	IPT	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049
	1	1 x D	0.5 x D	0.75 x D	490	–	660	IPT	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049
	2	1 x D	0.5 x D	0.75 x D	460	–	620	IPT	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049
	3	1 x D	0.5 x D	0.75 x D	390	–	520	IPT	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	4	1 x D	0.4 x D	0.5 x D	300	–	490	IPT	.0010	.0014	.0018	.0020	.0026	.0030	.0034	.0039
	5	1 x D	0.5 x D	0.75 x D	200	–	330	IPT	.0009	.0012	.0016	.0018	.0023	.0027	.0031	.0036
M	1	1 x D	0.4 x D	0.5 x D	160	–	250	IPT	.0008	.0010	.0013	.0015	.0019	.0022	.0025	.0028
	1	1 x D	0.5 x D	0.75 x D	300	–	380	IPT	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	2	1 x D	0.4 x D	0.75 x D	200	–	260	IPT	.0009	.0012	.0016	.0018	.0023	.0027	.0031	.0036
K	1	1 x D	0.4 x D	0.75 x D	200	–	230	IPT	.0008	.0010	.0013	.0015	.0019	.0022	.0025	.0028
	1	1 x D	0.5 x D	0.75 x D	390	–	490	IPT	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049
	2	1 x D	0.5 x D	0.75 x D	360	–	460	IPT	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
S	1	1 x D	0.4 x D	0.75 x D	360	–	430	IPT	.0009	.0012	.0016	.0018	.0023	.0027	.0031	.0036
	1	1 x D	0.3 x D	0.4 x D	160	–	300	IPT	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	2	1 x D	0.3 x D	0.3 x D	80	–	130	IPT	.0006	.0008	.0010	.0012	.0015	.0018	.0021	.0024
	3	1 x D	0.4 x D	0.75 x D	80	–	130	IPT	.0006	.0008	.0010	.0012	.0015	.0018	.0021	.0024
H	1	1 x D	0.4 x D	0.75 x D	160	–	200	IPT	.0008	.0011	.0014	.0017	.0021	.0025	.0028	.0033
	1	1 x D	0.2 x D	0.3 x D	260	–	460	IPT	.0010	.0014	.0018	.0020	.0026	.0030	.0034	.0039

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

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Roughers • Series 4U50 • Application Data • WS15PE • Inch

Material Group	Side Milling (A) and Slotting (B)		WS15PE				Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.								
	A		B		Cutting Speed – Vc SFM			D1 – Diameter							
	ap	ae	ap	min	max	frac. dec.	1/4	5/16	3/8	1/2	5/8	3/4	1		
	M	1	1 x D	0.5 x D	0.75 x D	297	–	379.5	IPT	.0015	.0020	.0023	.0029	.0034	.0038
	2	1 x D	0.5 x D	0.75 x D	198	–	264	IPT	.0012	.0016	.0018	.0023	.0027	.0030	.0036
	3	1 x D	0.5 x D	0.75 x D	198	–	231	IPT	.0010	.0013	.0015	.0019	.0022	.0024	.0028
S	1	1 x D	0.3 x D	0.75 x D	160	–	300	IPT	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	2	1 x D	0.3 x D	0.3 x D	80	–	130	IPT	.0008	.0010	.0012	.0015	.0018	.0021	.0026
	3	1 x D	0.4 x D	0.75 x D	80	–	130	IPT	.0008	.0010	.0012	.0015	.0018	.0021	.0026
	4	1 x D	0.4 x D	0.75 x D	160	–	200	IPT	.0011	.0014	.0017	.0021	.0025	.0028	.0033

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

Roughers • Series 4U80 • Application Data • WS15PE • Inch

Material Group	Side Milling (A) and Slotting (B)		WS15PE				Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.								
	A		B		Cutting Speed – Vc SFM			D1 – Diameter							
	ap	ae	ap	min	max	frac. dec.	1/4	5/16	3/8	1/2	5/8	3/4	1		
	M	1	1 x D	0.5 x D	0.75 x D	290	–	380	IPT	.0015	.0020	.0023	.0029	.0034	.0038
	2	1 x D	0.5 x D	0.75 x D	200	–	265	IPT	.0012	.0016	.0018	.0023	.0027	.0030	.0036
	3	1 x D	0.5 x D	0.75 x D	200	–	230	IPT	.0010	.0013	.0015	.0019	.0022	.0024	.0028
S	1	1 x D	0.3 x D	0.75 x D	160	–	300	IPT	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	2	1 x D	0.3 x D	0.3 x D	80	–	130	IPT	.0008	.0010	.0012	.0015	.0018	.0021	.0024
	3	1 x D	0.4 x D	0.75 x D	80	–	130	IPT	.0008	.0010	.0012	.0015	.0018	.0021	.0024
	4	1 x D	0.4 x D	0.75 x D	160	–	200	IPT	.0011	.0014	.0017	.0021	.0025	.0028	.0033

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

Solid Carbide End Mills • Roughers

Roughers • Series 4906 • Application Data • WP15PE • Metric

Material Group	Side Milling (A) and Slotting (B)			WP15PE			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.													
	A		B	Cutting Speed – vc m/min			mm	D1 – Diameter												
	ap	ae	ap	min	–	max		4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0		
P	0	1,5 x D	0,5 x D	1 x D	150	–	200	fz	0,024	0,031	0,037	0,051	0,061	0,070	0,079	0,086	0,092	0,097	0,105	
	1	1,5 x D	0,5 x D	1 x D	150	–	200	fz	0,024	0,031	0,037	0,051	0,061	0,070	0,079	0,086	0,092	0,097	0,105	
	2	1,5 x D	0,5 x D	1 x D	140	–	190	fz	0,024	0,031	0,037	0,051	0,061	0,070	0,079	0,086	0,092	0,097	0,105	
	3	1,5 x D	0,4 x D	0,75 x D	120	–	160	fz	0,020	0,025	0,031	0,043	0,051	0,060	0,067	0,074	0,080	0,086	0,097	
	4	1,5 x D	0,3 x D	0,3 x D	90	–	150	fz	0,018	0,023	0,028	0,038	0,046	0,053	0,060	0,065	0,070	0,075	0,083	
M	5	1,5 x D	0,4 x D	0,75 x D	60	–	100	fz	0,016	0,021	0,025	0,034	0,041	0,048	0,054	0,059	0,064	0,069	0,077	
	1	1,5 x D	0,4 x D	0,75 x D	90	–	115	fz	0,020	0,025	0,031	0,043	0,051	0,060	0,067	0,074	0,080	0,086	0,097	
	2	1,5 x D	0,4 x D	0,75 x D	60	–	80	fz	0,016	0,021	0,025	0,034	0,041	0,048	0,054	0,059	0,064	0,069	0,077	
K	3	1,5 x D	0,4 x D	0,75 x D	60	–	70	fz	0,014	0,017	0,021	0,029	0,034	0,040	0,044	0,048	0,052	0,055	0,060	
	1	1,5 x D	0,5 x D	1 x D	120	–	150	fz	0,024	0,031	0,037	0,051	0,061	0,070	0,079	0,086	0,092	0,097	0,105	
	2	1,5 x D	0,4 x D	1 x D	110	–	140	fz	0,020	0,025	0,031	0,043	0,051	0,060	0,067	0,074	0,080	0,086	0,097	
S	3	1,5 x D	0,4 x D	1 x D	110	–	130	fz	0,016	0,021	0,025	0,034	0,041	0,048	0,054	0,059	0,064	0,069	0,077	
	1	1,5 x D	0,4 x D	0,75 x D	50	–	90	fz	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114	
	3	1,5 x D	0,3 x D	0,3 x D	25	–	40	fz	0,013	0,016	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054	0,061	
H	1	1,5 x D	0,3 x D	0,3 x D	80	–	140	fz	0,018	0,023	0,028	0,038	0,046	0,053	0,060	0,065	0,070	0,075	0,083	

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >12mm diameters.

Roughers • Series 4976 • Application Data • WP15PE • Metric

Material Group	Side Milling (A) and Slotting (B)			WP15PE			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.													
	A		B	Cutting Speed – vc m/min			mm	D1 – Diameter												
	ap	ae	ap	min	–	max		4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0		
P	0	1,5 x D	0,5 x D	1 x D	150	–	200	fz	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124	
	1	1,5 x D	0,5 x D	1 x D	150	–	200	fz	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124	
	2	1,5 x D	0,5 x D	1 x D	140	–	190	fz	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124	
	3	1,5 x D	0,4 x D	0,75 x D	120	–	160	fz	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114	
	4	1,5 x D	0,4 x D	0,75 x D	90	–	150	fz	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088	0,098	
M	5	1,5 x D	0,4 x D	0,75 x D	60	–	100	fz	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091	
	1	1,5 x D	0,4 x D	0,75 x D	90	–	115	fz	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114	
	2	1,5 x D	0,4 x D	0,75 x D	60	–	80	fz	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091	
K	3	1,5 x D	0,4 x D	0,75 x D	60	–	70	fz	0,016	0,020	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065	0,071	
	1	1,5 x D	0,5 x D	1 x D	120	–	150	fz	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124	
	2	1,5 x D	0,4 x D	1 x D	110	–	140	fz	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114	
S	3	1,5 x D	0,4 x D	1 x D	110	–	130	fz	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091	
	1	1,5 x D	0,3 x D	0,75 x D	50	–	90	fz	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114	
	2	1,5 x D	0,3 x D	0,3 x D	25	–	40	fz	0,013	0,016	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054	0,061	
H	3	1,5 x D	0,4 x D	0,75 x D	25	–	40	fz	0,013	0,016	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054	0,061	
	4	1,5 x D	0,3 x D	0,75 x D	50	–	60	fz	0,016	0,021	0,026	0,037	0,045	0,052	0,058	0,064	0,069	0,074	0,084	
H	1	1,5 x D	0,3 x D	0,3 x D	80	–	140	fz	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088	0,098	

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >12mm diameters.

Roughers • Series 49N6 • Application Data • WP15PE • Metric

Material Group	Side Milling (A) and Slotting (B)			WP15PE		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.															
	A		B	Cutting Speed – vc m/min		mm	D1 – Diameter														
	ap	ae	ap	min	max		4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0				
	1,5 x D	0,5 x D	1 x D			fz															
P	0	1,5 x D	0,5 x D	1 x D	150	–	200	fz	0,024	0,031	0,037	0,051	0,061	0,070	0,079	0,086	0,092	0,097	0,105		
	1	1,5 x D	0,5 x D	1 x D	150	–	200	fz	0,024	0,031	0,037	0,051	0,061	0,070	0,079	0,086	0,092	0,097	0,105		
	2	1,5 x D	0,5 x D	1 x D	140	–	190	fz	0,024	0,031	0,037	0,051	0,061	0,070	0,079	0,086	0,092	0,097	0,105		
	3	1,5 x D	0,4 x D	0,75 x D	120	–	160	fz	0,020	0,025	0,031	0,043	0,051	0,060	0,067	0,074	0,080	0,086	0,097		
	4	1,5 x D	0,3 x D	0,5 x D	90	–	150	fz	0,018	0,023	0,028	0,038	0,046	0,053	0,060	0,065	0,070	0,075	0,083		
M	5	1,5 x D	0,4 x D	0,75 x D	60	–	100	fz	0,016	0,021	0,025	0,034	0,041	0,048	0,054	0,059	0,064	0,069	0,077		
	1	1,5 x D	0,4 x D	0,75 x D	80	–	100	fz	0,020	0,025	0,031	0,043	0,051	0,060	0,067	0,074	0,080	0,086	0,097		
K	2	1,5 x D	0,4 x D	0,75 x D	60	–	80	fz	0,016	0,021	0,025	0,034	0,041	0,048	0,054	0,059	0,064	0,069	0,077		
	3	1,5 x D	0,4 x D	0,75 x D	60	–	80	fz	0,014	0,017	0,021	0,029	0,034	0,040	0,044	0,048	0,052	0,055	0,060		
S	1	1,5 x D	0,5 x D	1 x D	120	–	160	fz	0,024	0,031	0,037	0,051	0,061	0,070	0,079	0,086	0,092	0,097	0,105		
	2	1,5 x D	0,4 x D	1 x D	110	–	140	fz	0,020	0,025	0,031	0,043	0,051	0,060	0,067	0,074	0,080	0,086	0,097		
H	3	1,5 x D	0,4 x D	1 x D	100	–	130	fz	0,016	0,021	0,025	0,034	0,041	0,048	0,054	0,059	0,064	0,069	0,077		
	1	1,5 x D	0,4 x D	0,75 x D	50	–	90	fz	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114		
	3	1,5 x D	0,4 x D	0,75 x D	25	–	40	fz	0,013	0,016	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054	0,061		
	1	1,5 x D	0,3 x D	0,3 x D	80	–	140	fz	0,018	0,023	0,028	0,038	0,046	0,053	0,060	0,065	0,070	0,075	0,083		

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >12mm diameters.

Roughers • Series 4U50 • Application Data • WS15PE • Metric

Material Group	Side Milling (A) and Slotting (B)			WS15PE		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.															
	A		B	Cutting Speed – Vc m/min		mm	D1 – Diameter														
	ap	ae	ap	min	max		6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0						
	0,8 x D	0,5 x D	0,75 x D			fz															
M	1	0,8 x D	0,5 x D	0,75 x D	90	–	115	fz	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114				
	2	0,8 x D	0,4 x D	0,75 x D	60	–	80	fz	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091				
	3	0,8 x D	0,4 x D	0,75 x D	60	–	70	fz	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065	0,071				
S	1	0,8 x D	0,4 x D	0,75 x D	50	–	90	fz	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114				
	2	0,8 x D	0,25 x D	0,3 x D	25	–	40	fz	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054	0,061				
	3	0,8 x D	0,4 x D	0,75 x D	25	–	40	fz	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054	0,061				
	4	0,8 x D	0,3 x D	0,3 x D	50	–	60	fz	0,026	0,037	0,045	0,052	0,058	0,064	0,069	0,074	0,084				

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on diameters greater than 12mm.

Roughers • Series 4U80 • Application Data • WS15PE • Metric

Material Group	Side Milling (A) and Slotting (B)		WS15PE/AlTiN-MW		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.														
	A		B		Cutting Speed – Vc m/min			D1 – Diameter											
	ap	ae	ap		min		max	mm	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0		
	1 x D	0,5 x D	0,75 x D					fz											
M	1	1 x D	0,5 x D	0,75 x D	90	–	115	fz	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114		
	2	1 x D	0,5 x D	0,75 x D	60	–	80	fz	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091		
	3	1 x D	0,5 x D	0,75 x D	60	–	70	fz	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065	0,071		
S	1	1 x D	0,3 x D	0,75 x D	50	–	90	fz	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114		
	2	1 x D	0,3 x D	0,3 x D	25	–	40	fz	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054	0,061		
	3	1 x D	0,4 x D	0,75 x D	25	–	40	fz	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054	0,061		
	4	1 x D	0,4 x D	0,75 x D	50	–	60	fz	0,026	0,037	0,045	0,052	0,058	0,064	0,069	0,074	0,084		

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on diameters greater than 12mm.

Roughers • Series 4U40 • Application Data • WP15PE • Metric

Material Group	Side Milling (A) and Slotting (B)		WP15PE		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.														
	A		B		Cutting Speed – vc m/min			D1 – Diameter											
	ap	ae	ap		min		max	mm	6,0	8,0	10,0	12,0	16,0	20,0	25,0				
	0,8 x D	0,5 x D	0,75 x D					fz											
P	3	0,8 x D	0,5 x D	0,75 x D	120	–	160	fz	0,036	0,050	0,061	0,070	0,087	0,101	0,114				
	4	0,8 x D	0,4 x D	0,5 x D	90	–	150	fz	0,033	0,045	0,054	0,062	0,077	0,088	0,098				
	5	0,8 x D	0,5 x D	0,75 x D	60	–	100	fz	0,029	0,040	0,048	0,056	0,070	0,081	0,091				
M	6	0,8 x D	0,4 x D	0,5 x D	50	–	75	fz	0,025	0,034	0,040	0,047	0,057	0,065	0,071				
	1	0,8 x D	0,5 x D	0,75 x D	90	–	115	fz	0,036	0,050	0,061	0,070	0,087	0,101	0,114				
	2	0,8 x D	0,4 x D	0,75 x D	60	–	80	fz	0,029	0,040	0,048	0,056	0,070	0,081	0,091				
K	3	0,8 x D	0,4 x D	0,75 x D	60	–	70	fz	0,025	0,034	0,040	0,047	0,057	0,065	0,071				
	1	0,8 x D	0,5 x D	0,75 x D	120	–	150	fz	0,044	0,060	0,072	0,083	0,101	0,114	0,124				
	2	0,8 x D	0,5 x D	0,75 x D	110	–	140	fz	0,036	0,050	0,061	0,070	0,087	0,101	0,114				
S	3	0,8 x D	0,4 x D	0,75 x D	110	–	130	fz	0,029	0,040	0,048	0,056	0,070	0,081	0,091				
	1	0,8 x D	0,4 x D	0,75 x D	50	–	90	fz	0,036	0,050	0,061	0,070	0,087	0,101	0,114				
	2	0,8 x D	0,25 x D	0,3 x D	25	–	40	fz	0,019	0,026	0,032	0,037	0,046	0,054	0,061				
	3	0,8 x D	0,4 x D	0,75 x D	25	–	40	fz	0,019	0,026	0,032	0,037	0,046	0,054	0,061				
H	4	0,8 x D	0,3 x D	0,5 x D	50	–	60	fz	0,026	0,037	0,045	0,052	0,064	0,074	0,084				
	1	0,8 x D	0,5 x D	0,5 x D	80	–	140	fz	0,033	0,045	0,054	0,062	0,077	0,088	0,098				
	2	0,8 x D	0,2 x D	0,3 x D	70	–	120	fz	0,025	0,034	0,040	0,047	0,057	0,065	0,071				
3	0,8 x D	0,15 x D	0,2 x D	60	–	90	fz	0,019	0,026	0,032	0,037	0,046	0,054	0,061					

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
For rougher tool with 6 flutes, use ap in slotting 60% of table value.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >12mm diameters.

Roughers • Series 4U70 • Application Data • WP15PE • Metric

Material Group	Side Milling (A) and Slotting (B)		WP15PE				Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.								
	A		B	Cutting Speed – vc m/min			mm	D1 – Diameter							
	ap	ae	ap	min	–	max		6,0	8,0	10,0	12,0	16,0	20,0	25,0	
	1 x D	0,5 x D	0,75 x D				fz								
P	3	1 x D	0,5 x D	0,75 x D	120	–	160	fz	0,036	0,050	0,061	0,070	0,087	0,101	0,114
	4	1 x D	0,3 x D	0,75 x D	90	–	150	fz	0,033	0,045	0,054	0,062	0,077	0,088	0,098
	5	1 x D	0,5 x D	0,75 x D	60	–	100	fz	0,029	0,040	0,048	0,056	0,070	0,081	0,091
M	6	1 x D	0,3 x D	0,3 x D	50	–	75	fz	0,025	0,034	0,040	0,047	0,057	0,065	0,071
	1	1 x D	0,5 x D	0,75 x D	90	–	115	fz	0,036	0,050	0,061	0,070	0,087	0,101	0,114
	2	1 x D	0,5 x D	0,75 x D	60	–	80	fz	0,029	0,040	0,048	0,056	0,070	0,081	0,091
K	3	1 x D	0,5 x D	0,75 x D	60	–	70	fz	0,025	0,034	0,040	0,047	0,057	0,065	0,071
	1	1 x D	0,5 x D	1 x D	120	–	150	fz	0,044	0,060	0,072	0,083	0,101	0,114	0,124
	2	1 x D	0,5 x D	1 x D	110	–	140	fz	0,036	0,050	0,061	0,070	0,087	0,101	0,114
S	3	1 x D	0,5 x D	1 x D	110	–	130	fz	0,029	0,040	0,048	0,056	0,070	0,081	0,091
	1	1 x D	0,3 x D	0,75 x D	50	–	90	fz	0,036	0,050	0,061	0,070	0,087	0,101	0,114
	2	1 x D	0,3 x D	0,3 x D	25	–	40	fz	0,019	0,026	0,032	0,037	0,046	0,054	0,061
	3	1 x D	0,4 x D	0,75 x D	25	–	40	fz	0,019	0,026	0,032	0,037	0,046	0,054	0,061
H	4	1 x D	0,4 x D	0,75 x D	50	–	60	fz	0,026	0,037	0,045	0,052	0,064	0,074	0,084
	1	1 x D	0,3 x D	0,3 x D	80	–	140	fz	0,033	0,045	0,054	0,062	0,077	0,088	0,098
	2	1 x D	0,2 x D	0,2 x D	70	–	120	fz	0,025	0,034	0,040	0,047	0,057	0,065	0,071
	3	1 x D	0,2 x D	0,2 x D	60	–	90	fz	0,019	0,026	0,032	0,037	0,046	0,054	0,061

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 For rougher tool with 6 flutes, use ap in slotting 60% of table value.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >12mm diameters.

Roughers • Series DQ13 • Application Data • WP15PE • Metric

Material Group	Side Milling (A) and Slotting (B)		WP15PE				Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.												
	A		B	Cutting Speed – vc m/min			mm	D1 – Diameter											
	ap	ae	ap	min	–	max		3,0	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	
	1 x D	0,5 x D	0,75 x D				fz												
P	0	1 x D	0,5 x D	0,75 x D	150	–	200	fz	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	1	1 x D	0,5 x D	0,75 x D	150	–	200	fz	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	2	1 x D	0,5 x D	0,75 x D	140	–	190	fz	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	3	1 x D	0,5 x D	0,75 x D	120	–	160	fz	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	4	1 x D	0,5 x D	0,5 x D	90	–	150	fz	0,016	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088
	5	1 x D	0,5 x D	0,75 x D	60	–	100	fz	0,014	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081
M	6	1 x D	0,4 x D	0,5 x D	50	–	75	fz	0,012	0,016	0,020	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065
	1	1 x D	0,5 x D	0,75 x D	90	–	115	fz	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	2	1 x D	0,4 x D	0,75 x D	60	–	80	fz	0,014	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081
K	3	1 x D	0,4 x D	0,75 x D	60	–	70	fz	0,012	0,016	0,020	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065
	1	1 x D	0,5 x D	0,75 x D	120	–	150	fz	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	2	1 x D	0,5 x D	0,75 x D	110	–	140	fz	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
S	3	1 x D	0,4 x D	0,75 x D	110	–	130	fz	0,014	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081
	1	1 x D	0,3 x D	0,4 x D	50	–	90	fz	0,009	0,013	0,016	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054
	2	1 x D	0,3 x D	0,3 x D	25	–	40	fz	0,009	0,013	0,016	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054
	3	1 x D	0,4 x D	0,75 x D	25	–	40	fz	0,009	0,013	0,016	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054
H	4	1 x D	0,4 x D	0,75 x D	50	–	60	fz	0,011	0,016	0,021	0,026	0,037	0,045	0,052	0,058	0,064	0,069	0,074
	1	1 x D	0,2 x D	0,3 x D	80	–	140	fz	0,016	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >12mm diameters.

Roughers • Series 49H6 • Application Data • WP15PE/TiAlN-LW • Metric

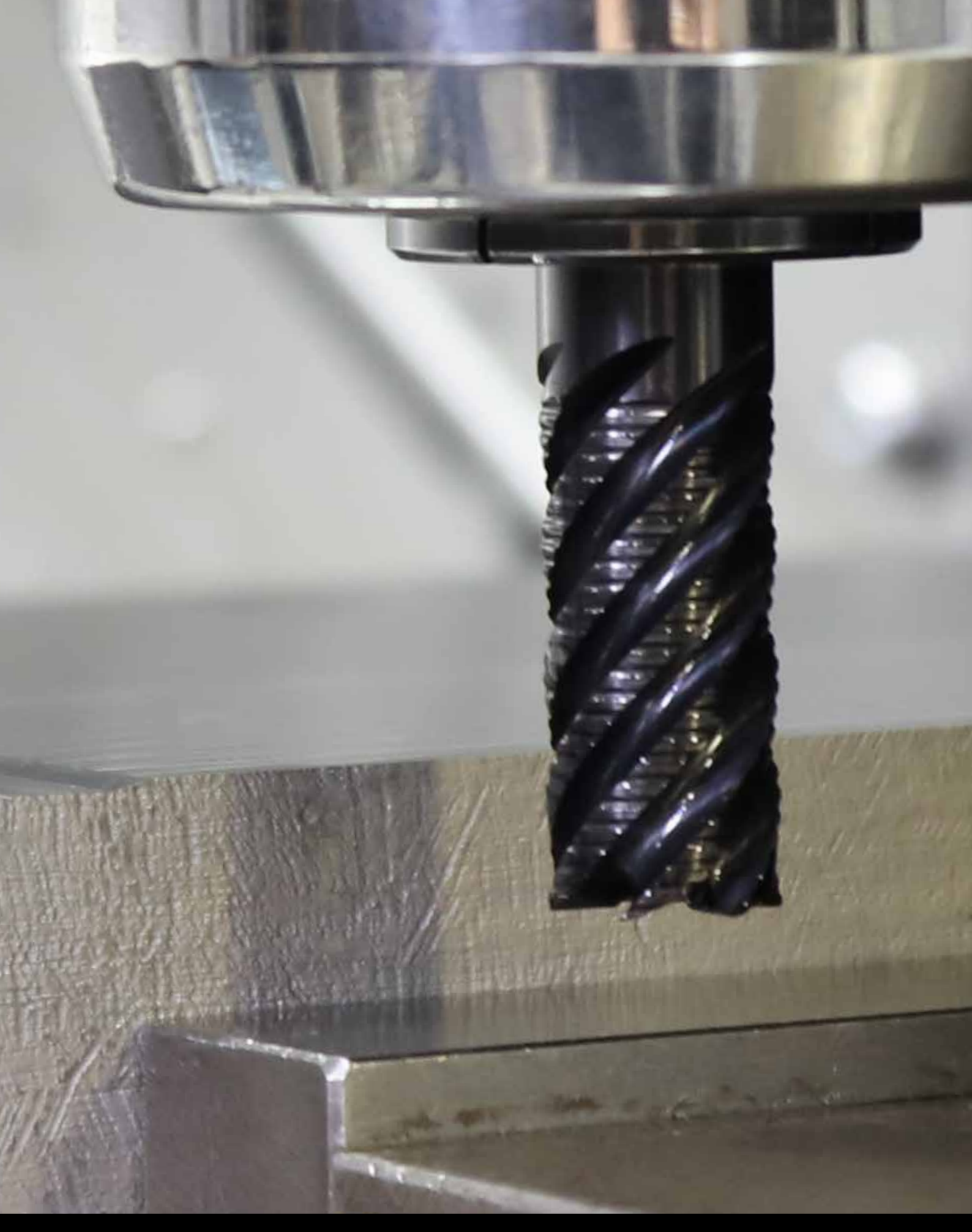
Material Group	Side Milling (A) and Slotting (B)		WP15PE/TiAlN		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.										
	A		B	Cutting Speed – vc m/min			D1 – Diameter								
	ap	ae	ap	min		max	mm	8,0	10,0	12,0	14,0	16,0	18,0	20,0	
P	0	1,5 x D	0,5 x D	1 x D	150	–	200	fz	0,048	0,058	0,066	0,074	0,081	0,086	0,091
	1	1,5 x D	0,5 x D	1 x D	150	–	200	fz	0,048	0,058	0,066	0,074	0,081	0,086	0,091
	2	1,5 x D	0,5 x D	1 x D	140	–	190	fz	0,048	0,058	0,066	0,074	0,081	0,086	0,091
	3	1,0 x D	0,4 x D	0,75 x D	120	–	160	fz	0,040	0,048	0,056	0,063	0,070	0,076	0,081
	4	1,0 x D	0,3 x D	0,5 x D	90	–	150	fz	0,036	0,043	0,050	0,056	0,061	0,066	0,070
M	1	1,0 x D	0,4 x D	0,75 x D	60	–	100	fz	0,032	0,039	0,045	0,051	0,056	0,060	0,065
	2	1,0 x D	0,4 x D	0,75 x D	90	–	115	fz	0,040	0,048	0,056	0,063	0,070	0,076	0,081
	3	1,0 x D	0,4 x D	0,75 x D	60	–	80	fz	0,032	0,039	0,045	0,051	0,056	0,060	0,065
K	1	1,5 x D	0,5 x D	1 x D	60	–	70	fz	0,027	0,032	0,037	0,042	0,046	0,049	0,052
	2	1,5 x D	0,5 x D	1 x D	120	–	150	fz	0,048	0,058	0,066	0,074	0,081	0,086	0,091
	3	1,5 x D	0,4 x D	1 x D	110	–	140	fz	0,040	0,048	0,056	0,063	0,070	0,076	0,081
S	1	1,5 x D	0,4 x D	1 x D	110	–	130	fz	0,032	0,039	0,045	0,051	0,056	0,060	0,065
	2	1,5 x D	0,5 x D	0,75 x D	50	–	90	fz	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	3	1,5 x D	0,5 x D	0,75 x D	25	–	40	fz	0,026	0,032	0,037	0,042	0,046	0,050	0,054
H	1	1,0 x D	0,3 x D	0,5 x D	80	–	140	fz	0,036	0,043	0,050	0,056	0,061	0,066	0,070

NOTE: Lower value of cutting speed is used for high-stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >12mm diameters.

Roughers • Series 4940 • Application Data • TiAlN-LT • Metric

Material Group	Side Milling (A) and Slotting (B)		TiAlN		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.										
	A		B	Cutting Speed – vc m/min			D1 – Diameter								
	ap	ae	ap	min		max	mm	6,0	8,0	10,0	12,0	16,0	20,0	25,0	
P	3	0,8 x D	0,5 x D	0,75 x D	120	–	160	Fz	0,031	0,043	0,051	0,063	0,078	0,101	0,114
	4	0,8 x D	0,4 x D	0,5 x D	90	–	150	Fz	0,028	0,038	0,046	0,056	0,069	0,088	0,098
	5	0,8 x D	0,5 x D	0,75 x D	60	–	100	Fz	0,025	0,034	0,041	0,051	0,063	0,081	0,091
	6	0,8 x D	0,4 x D	0,5 x D	50	–	75	Fz	0,021	0,029	0,034	0,042	0,051	0,065	0,071
M	1	0,8 x D	0,5 x D	0,75 x D	80	–	100	Fz	0,031	0,043	0,051	0,063	0,078	0,101	0,114
	2	0,8 x D	0,4 x D	0,75 x D	60	–	80	Fz	0,025	0,034	0,041	0,051	0,063	0,081	0,091
	3	0,8 x D	0,4 x D	0,75 x D	60	–	80	Fz	0,021	0,029	0,034	0,042	0,051	0,065	0,071
K	1	0,8 x D	0,5 x D	0,75 x D	120	–	160	Fz	0,037	0,051	0,061	0,075	0,091	0,114	0,124
	2	0,8 x D	0,5 x D	0,75 x D	110	–	140	Fz	0,031	0,043	0,051	0,063	0,078	0,101	0,114
	3	0,8 x D	0,4 x D	0,75 x D	100	–	130	Fz	0,025	0,034	0,041	0,051	0,063	0,081	0,091
S	1	0,8 x D	0,4 x D	0,75 x D	50	–	90	Fz	0,036	0,050	0,061	0,070	0,087	0,101	0,114
	2	0,8 x D	0,25 x D	0,3 x D	25	–	40	Fz	0,019	0,026	0,032	0,037	0,046	0,054	0,061
	3	0,8 x D	0,4 x D	0,75 x D	25	–	40	Fz	0,019	0,026	0,032	0,037	0,046	0,054	0,061
	4	0,8 x D	0,3 x D	0,5 x D	50	–	60	Fz	0,026	0,037	0,045	0,052	0,064	0,074	0,084
H	1	0,8 x D	0,5 x D	0,5 x D	80	–	140	Fz	0,028	0,038	0,046	0,056	0,069	0,088	0,098
	2	0,8 x D	0,2 x D	0,3 x D	70	–	120	Fz	0,021	0,029	0,034	0,042	0,051	0,065	0,071
	3	0,8 x D	0,2 x D	0,2 x D	60	–	90	Fz	0,017	0,023	0,027	0,034	0,041	0,052	0,057

NOTE: Lower value of cutting speed is used for high-stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
For rougher tool with 6 flutes, use ap in slotting 60% of table value.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on diameters greater than 12mm.



Finishers

High-Performance Solid End Milling

Use the Finishers end mill range to perform precise finishes (in both surface quality and dimension) to the final stages of component machining.

Features and Benefits

Center cutting for improved floor finishing.

Designed profiles with multiple flutes and higher helix for super finishing applications.

Unique geometries designed to be material specific.



The Finishers end mill range was designed using carbide substrates with market-leading geometries and advanced surface technologies, delivering precise movements and smooth floor finishes to a range of components.

PRECISE

The Finishers end mill line will help CNC companies achieve optimal finishes in both surface quality and dimensions.

COMPLETE

From steel to cast iron and stainless steels, the Finishers offer material-specific end mills to complete component jobs.

READY

The Finishers end mill range is ready to make the final pass on critical finishing operations using specialized designs with a higher number of flutes and increased helix angles for super finishing applications.

MIRROR FINISH

PRODUCT

SOLID CARBIDE END MILL

GRADE

WP15PE
TiAlN

FLUTE

2-8

DIAMETER RANGE

INCH

1/8-1"

METRIC

1-25mm

INDUSTRY



GENERAL
ENGINEERING



AEROSPACE



ENERGY



TRANSPORTATION

APPLICATIONS

MATERIALS

P M K S H



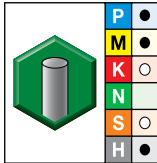
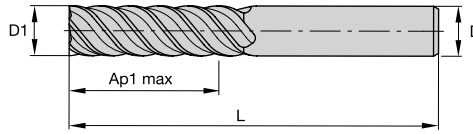
SIDE MILLING



3D PROFILING

INDEXABLE MILLING

Finishers • Series 4S07 • Sharp Edge • Inch



WP15PE

- first choice
- alternate choice

order #	catalog #	D1	D	length of cut Ap1 max	length L	ZU
5577255	4S0707002ST	1/4	1/4	3/4	2 1/2	6
5577256	4S0708003ST	5/16	5/16	13/16	2 1/2	6
5577254	4S0710004ST	3/8	3/8	7/8	2 1/2	6
5577258	4S0713005ST	1/2	1/2	1	3	6
5577259	4S0716006ST	5/8	5/8	1 1/4	3 1/2	6
5577260	4S0719007ST	3/4	3/4	1 1/2	4	6
5577261	4S0725008ST	1	1	1 1/2	4	6

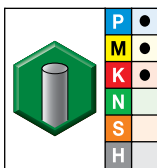
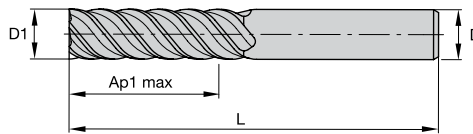
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Finishers • Series 4S05 4S07 • Sharp Edge • Inch

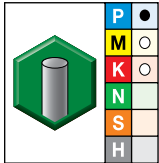
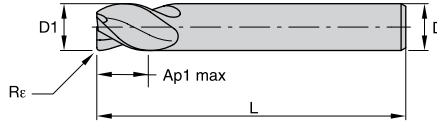


TICN-CT

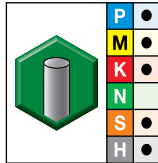
- first choice
- alternate choice

order #	catalog #	D1	D	length of cut Ap1 max	length L	ZU
2841622	TC4S0707002	1/4	1/4	3/4	2 1/2	6
2841587	TC4S0719007	3/4	3/4	1 1/2	4	6

Finishers • Series 4C03 4C43 • Radius • Inch



TiCN-CT

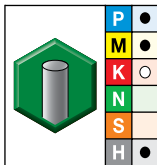
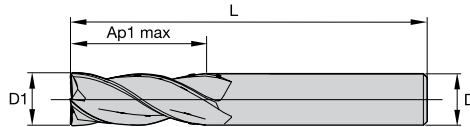


TiAlN

● first choice
○ alternate choice

order #	catalog #	order #	catalog #	D1	D	length of cut Ap1 max	length L	Re	ZU
2842506	TC4C0303001A	-	-	1/8	1/8	1/2	1 1/2	.010	3
2842502	TC4C0305000A	-	-	3/16	3/16	5/8	2	.010	3
-	-	2831637	TR4C4307002A	1/4	1/4	1/2	2	.018	3
2842358	TC4C4308003A	-	-	5/16	5/16	7/16	2	.018	3
-	-	2831761	TR4C0319007A	3/4	3/4	1 1/2	4	.030	3

Finishers • Series 4C05 4C15 • Sharp Edge • Inch

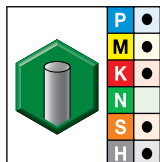
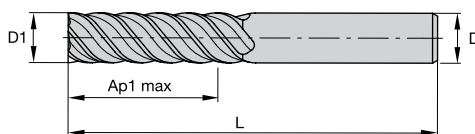


WP15PE

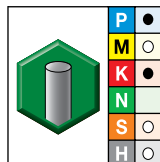
● first choice
○ alternate choice

order #	catalog #	D1	D	length of cut Ap1 max	length L	ZU
5577187	4C0503001ST	1/8	1/8	1/2	1 1/2	5
5577188	4C0505000ST	3/16	3/16	5/8	2	5
5577189	4C0507002ST	1/4	1/4	3/4	2 1/2	5
5577247	4C1507002ST	1/4	1/4	1 1/4	4	5
5577241	4C0510004ST	3/8	3/8	7/8	2 1/2	5
5577249	4C1510004ST	3/8	3/8	1 1/2	4	5
5577242	4C0513005ST	1/2	1/2	1	3	5
5577243	4C0513015ST	1/2	1/2	1 1/4	3	5
5577250	4C1513005ST	1/2	1/2	2	4 1/2	5
5577244	4C0516006ST	5/8	5/8	1 1/4	3 1/2	5
5577245	4C0519007ST	3/4	3/4	1 1/2	4	5
5577252	4C1519007ST	3/4	3/4	2 1/4	5	5
5577253	4C1525008ST	1	1	2 1/4	5	5

Finishers • Series 4SOF • Sharp Edge • Inch



TiAIN-RT

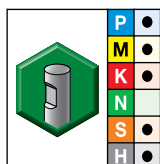
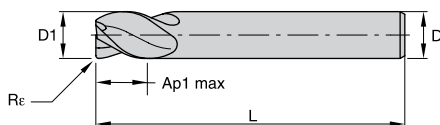


WP15PE

- first choice
- alternate choice

order #	catalog #	order #	catalog #	D1	D	length of cut Ap1 max	length L	Z U
-	-	3321647	TR4SOF19007	3/4	3/4	1 1/2	4	8

Finishers • Series DC03 • Radius • Metric

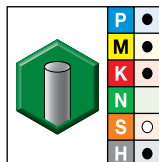
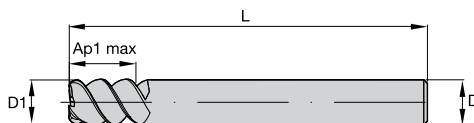


TiAIN-LW

- first choice
- alternate choice

order #	catalog #	D1	D	length of cut Ap1 max	length L	Re	ZU
1661856	DC0303002LW	3,0	6	4,00	50	0,25	3
1661858	DC0304002LW	4,0	6	5,00	54	0,25	3
1661862	DC0306002LW	6,0	6	7,00	54	0,45	3
1661866	DC0308003LW	8,0	8	9,00	58	0,45	3
1661868	DC0310004LW	10,0	10	11,00	66	0,45	3
1661870	DC0312005LW	12,0	12	12,00	73	0,45	3

Finishers • Series 4603 • Sharp Edge • Metric



● first choice
○ alternate choice

WP15PE

order #	catalog #	D1	D	length of cut Ap1 max	length L	Z U
1656750	460303002RT	3,0	6	8,00	57	3
1656758	460304002RT	4,0	6	11,00	57	3
1656773	460306002RT	6,0	6	13,00	57	3
1656781	460308003RT	8,0	8	19,00	63	3
1656791	460310004RT	10,0	10	22,00	72	3
1656799	460312005RT	12,0	12	26,00	83	3
1656807	460316006RT	16,0	16	32,00	92	3

INDEXABLE MILLING

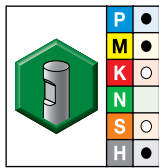
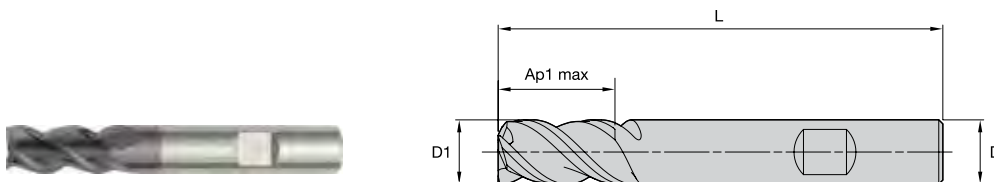
SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING

Finishers • Series D503 D513 • Square End • Metric



● first choice
○ alternate choice

TIAlN

order #	catalog #	D1	D	length of cut Ap1 max	length L	Z U
1661574	D50302002RW	2,0	6	3,00	50	3
6613012	D503025C2W	2,5	6	3,00	50	3
6613013	D503030C2W	3,0	6	4,00	50	3
1661578	D50303002RW	3,0	6	4,00	50	3
1661680	D51303002RW	3,0	6	7,00	57	3
6613014	D513035C2W	3,5	6	7,00	57	3
6613015	D503040C2W	4,0	6	5,00	54	3
1661583	D50304002RW	4,0	6	5,00	54	3
1661684	D51304002RW	4,0	6	8,00	57	3
1661588	D50305002RW	5,0	6	6,00	54	3
1661688	D51305002RW	5,0	6	10,00	57	3
6613016	D503060C2W	6,0	6	7,00	54	3
1661593	D50306002RW	6,0	6	7,00	54	3
1661692	D51306002RW	6,0	6	10,00	57	3
1661603	D50308003RW	8,0	8	9,00	58	3
6613017	D503080C3W	8,0	8	9,00	58	3
1661701	D51308003RW	8,0	8	16,00	63	3
6613018	D503100C4W	10,0	10	11,00	66	3
1661710	D51310004RW	10,0	10	19,00	72	3
6613019	D503120C5W	12,0	12	12,00	73	3
1661715	D51312005RW	12,0	12	22,00	83	3
1661720	D51314014RW	14,0	14	22,00	83	3
1661725	D51316006RW	16,0	16	26,00	92	3

INDEXABLE MILLING

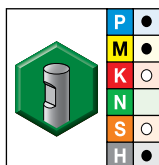
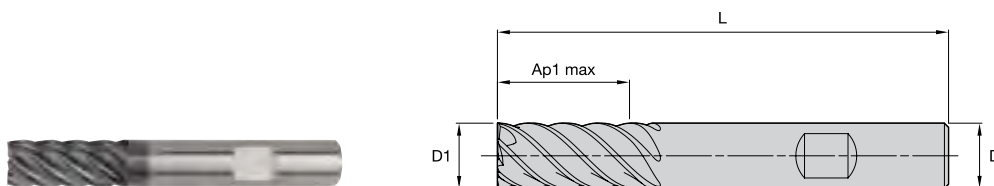
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Finishers • Series D507 D517 • Sharp Edge • Metric



● first choice
○ alternate choice

WP15PE

order #	catalog #	D1	D	length of cut Ap1 max	length L	ZU
5559100	D50706002W	6,0	6	10,00	54	6
5559108	D51706002W	6,0	6	13,00	57	6
5559101	D50708003W	8,0	8	12,00	58	6
5559109	D51708003W	8,0	8	19,00	63	6
5559102	D50710004W	10,0	10	14,00	66	6
5559110	D51710004W	10,0	10	22,00	72	6
5559103	D50712005W	12,0	12	16,00	73	6
5559111	D51712005W	12,0	12	26,00	83	6
5559112	D51714014W	14,0	14	26,00	83	6
5559105	D50716006W	16,0	16	22,00	82	6
5559113	D51716006W	16,0	16	32,00	92	6
5559114	D51718018W	18,0	18	32,00	92	6
5559107	D50720007W	20,0	20	26,00	92	6
5559115	D51720007W	20,0	20	38,00	104	6

INDEXABLE MILLING

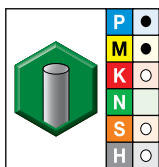
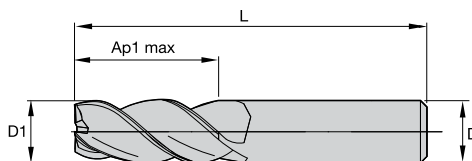
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Finishers • Series 4503 JJ • Sharp Edge • JIS



- first choice
- alternate choice

WP15PE

order #	catalog #	D1	D	length of cut Ap1 max	length L	ZU
5559170	450301001T	1,0	4	3,00	50	3
5559171	450301501T	1,5	4	3,00	50	3
5559172	450302001T	2,0	4	3,00	50	3
5559173	450302501T	2,5	4	4,00	50	3
5559174	450302511T	2,5	4	5,00	50	3
5559175	450303002T	3,0	6	8,00	50	3
5559176	450303502T	3,5	6	12,00	50	3
5559177	450304002T	4,0	6	12,00	50	3
5559178	450304502T	4,5	6	14,00	50	3
5559179	450305002T	5,0	6	14,00	50	3
5559180	450306002T	6,0	6	16,00	50	3
5559181	450308003T	8,0	8	20,00	63	3
5559182	450310004T	10,0	10	22,00	76	3
5559183	450312005T	12,0	12	25,00	76	3
5559184	450316006T	16,0	16	32,00	89	3
5559185	450320007T	20,0	20	38,00	104	3

INDEXABLE MILLING

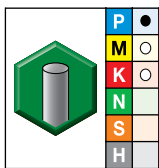
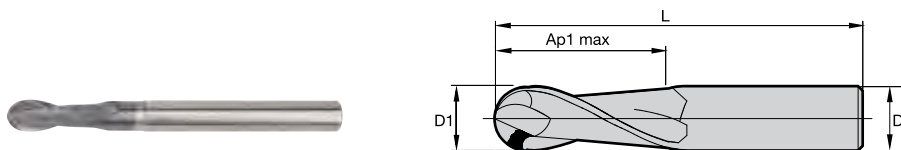
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Finishers • Series 4001 JJ • Ball Nose • JIS



- first choice
- alternate choice

WP15PE

order #	catalog #	D1	D	length of cut Ap1 max	length L	Z U
5559146	400101001T	1,0	4	3,00	50	2
5559147	400101501T	1,5	4	3,00	50	2
5559148	400102001T	2,0	4	3,00	50	2
5559149	400103002T	3,0	6	9,50	58	2
5559160	400104002T	4,0	6	12,00	76	2
5559161	400105002T	5,0	6	14,00	76	2
5559162	400106002T	6,0	6	16,00	100	2
5559163	400108003T	8,0	8	20,00	100	2
5559164	400110004T	10,0	10	22,00	100	2
5559165	400112005T	12,0	12	25,00	125	2
5559167	400116006T	16,0	16	32,00	150	2

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Finishers • Series 4S07 • Application Data • WP15PE • Inch

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Material Group	Side Milling (A)		WP15PE		Recommended feed per tooth (IPT = inch/th) for side milling (A).												
	A		Cutting Speed – vc			frac.	D1 – Diameter										
	ap	ae	min	max	SFM		1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	1	
						dec.	.1250	.1875	.2500	.3125	.3750	.4375	.5000	.6250	.7500	1.0000	
P	0	1 x D	0.2 x D	490	-	660	IPT	.0009	.0013	.0018	.0023	.0027	.0031	.0034	.0039	.0044	.0049
	1	1 x D	0.2 x D	490	-	660	IPT	.0009	.0013	.0018	.0023	.0027	.0031	.0034	.0039	.0044	.0049
	2	1 x D	0.2 x D	460	-	620	IPT	.0009	.0013	.0018	.0023	.0027	.0031	.0034	.0039	.0044	.0049
	3	1 x D	0.1 x D	390	-	520	IPT	.0007	.0011	.0015	.0020	.0023	.0026	.0029	.0034	.0039	.0045
	4	1 x D	0.1 x D	300	-	490	IPT	.0007	.0010	.0014	.0017	.0020	.0023	.0026	.0030	.0034	.0039
	5	1 x D	0.1 x D	200	-	330	IPT	.0006	.0009	.0012	.0016	.0018	.0021	.0023	.0027	.0031	.0036
M	6	1 x D	0.1 x D	160	-	250	IPT	.0005	.0008	.0010	.0013	.0015	.0017	.0019	.0022	.0025	.0028
	1	1 x D	0.1 x D	300	-	380	IPT	.0007	.0011	.0015	.0020	.0023	.0026	.0029	.0034	.0039	.0045
	2	1 x D	0.1 x D	200	-	260	IPT	.0006	.0009	.0012	.0016	.0018	.0021	.0023	.0027	.0031	.0036
K	3	1 x D	0.1 x D	200	-	230	IPT	.0005	.0008	.0010	.0013	.0015	.0017	.0019	.0022	.0025	.0028
	1	1 x D	0.1 x D	390	-	490	IPT	.0009	.0013	.0018	.0023	.0027	.0031	.0034	.0039	.0044	.0049
S	2	1 x D	0.1 x D	360	-	460	IPT	.0007	.0011	.0015	.0020	.0023	.0026	.0029	.0034	.0039	.0045
	3	1 x D	0.1 x D	360	-	430	IPT	.0006	.0009	.0012	.0016	.0018	.0021	.0023	.0027	.0031	.0036
	1	1 x D	0.1 x D	160	-	300	IPT	.0007	.0011	.0015	.0020	.0023	.0026	.0029	.0034	.0039	.0045
	2	1 x D	0.1 x D	80	-	130	IPT	.0004	.0006	.0008	.0010	.0012	.0014	.0015	.0018	.0021	.0024
H	3	1 x D	0.15 x D	80	-	130	IPT	.0004	.0006	.0008	.0010	.0012	.0014	.0015	.0018	.0021	.0024
	4	1 x D	0.15 x D	160	-	200	IPT	.0005	.0008	.0011	.0014	.0017	.0019	.0021	.0025	.0028	.0033
	1	1 x D	0.1 x D	260	-	460	IPT	.0007	.0010	.0014	.0017	.0020	.0023	.0026	.0030	.0034	.0039

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

Finishers • Series 4S05 4S07 • Application Data • TiCN-CT • Inch

Material Group													Recommended feed per tooth (IPT = inch/th) for side milling (A). D1 – Diameter								
			Uncoated		TiCN		TiAlN		AlTiN												
	Side Milling (A)		Cutting Speed – vc SFM		Cutting Speed – vc SFM		Cutting Speed – vc SFM		Cutting Speed – vc SFM		frac.	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1		
	ap	ae	min	max	min	max	min	max	min	max	dec.	.1880	.2500	.3130	.3750	.5000	.6250	.7500	1.000		
P	1	1 x D	0.2 x D	200	260	400	520	500	650	590	720	Fz	.0014	.0018	.0023	.0027	.0035	.0039	.0043	.0050	
	2	1 x D	0.2 x D	180	250	360	500	450	625	520	660	Fz	.0014	.0018	.0023	.0027	.0035	.0039	.0043	.0050	
	3	1 x D	0.1 x D	160	210	320	420	400	525	520	590	Fz	.0011	.0015	.0020	.0023	.0029	.0034	.0038	.0046	
	4	1 x D	0.1 x D	–	–	240	380	300	475	460	520	Fz	.0010	.0014	.0018	.0020	.0026	.0030	.0033	.0039	
	5	1 x D	0.1 x D	–	–	160	260	200	325	200	330	Fz	.0009	.0012	.0016	.0018	.0023	.0027	.0030	.0036	
	6	1 x D	0.1 x D	–	–	120	180	150	225	160	260	Fz	.0008	.0010	.0013	.0015	.0019	.0022	.0024	.0028	
M	1	1 x D	0.1 x D	100	130	200	265	260	330	260	330	Fz	.0011	.0015	.0020	.0023	.0029	.0034	.0038	.0046	
	2	1 x D	0.1 x D	–	–	160	210	200	260	200	260	Fz	.0009	.0012	.0016	.0018	.0023	.0027	.0030	.0036	
	3	1 x D	0.1 x D	–	–	160	210	200	260	200	260	Fz	.0008	.0010	.0013	.0015	.0019	.0022	.0024	.0028	
K	1	1 x D	0.1 x D	160	210	300	420	390	520	390	520	Fz	.0014	.0018	.0023	.0027	.0035	.0039	.0043	.0050	
	2	1 x D	0.1 x D	–	–	300	370	360	460	360	460	Fz	.0011	.0015	.0020	.0023	.0029	.0034	.0038	.0046	
	3	1 x D	0.1 x D	–	–	265	345	330	430	330	430	Fz	.0009	.0012	.0016	.0018	.0023	.0027	.0030	.0036	
S	1	1 x D	0.1 x D	–	–	120	220	160	300	300	380	Fz	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045	
	2	1 x D	0.1 x D	–	–	50	100	80	130	70	130	Fz	.0006	.0008	.0010	.0012	.0015	.0018	.0021	.0024	
	3	1 x D	0.15 x D	–	–	130	208	80	130	160	260	Fz	.0006	.0008	.0010	.0012	.0015	.0018	.0021	.0024	
	4	1 x D	0.15 x D	–	–	120	170	160	200	150	210	Fz	.0008	.0011	.0014	.0017	.0021	.0025	.0028	.0033	
H	1	1 x D	0.1 x D	–	–	210	360	260	450	330	460	Fz	.0010	.0014	.0018	.0020	.0026	.0030	.0033	.0039	

NOTE: Lower value of cutting speed is used for high-stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
For tools 2 x D < LOC < 3 x D ae = 0.25 x D, for tools with LOC longer than 3 x D ae = 0.1 x D.

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Finishers • Series 4C03 • Application Data • TiCN-CT • TiAlN • Inch

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Material Group		Side Milling (A) and Slotting (B)			Uncoated		TiCN		TiAlN		Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.										
		A		B	Cutting Speed – vc SFM		Cutting Speed – vc SFM		Cutting Speed – vc SFM		D1 – Diameter										
		ap	ae	ap	min	max	min	max	min	max	frac.	1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	1
P	0	1.5 x D	0.3 x D	0.5 x D	245	– 330	392	– 528	490	– 660	IPT	.0088	.0135	.0183	.0234	.0273	.0308	.0340	.0395	.0438	.0489
	1	1.5 x D	0.3 x D	0.5 x D	245	– 330	392	– 528	490	– 660	IPT	.0088	.0135	.0183	.0234	.0273	.0308	.0340	.0395	.0438	.0489
	2	1.5 x D	0.3 x D	0.5 x D	230	– 310	368	– 496	460	– 620	IPT	.0088	.0135	.0183	.0234	.0273	.0308	.0340	.0395	.0438	.0489
	3	1.5 x D	0.3 x D	0.5 x D	195	– 260	312	– 416	390	– 520	IPT	.0072	.0111	.0152	.0195	.0229	.0260	.0289	.0341	.0386	.0451
	4	1.5 x D	0.3 x D	0.3 x D	150	– 245	240	– 392	300	– 490	IPT	.0066	.0101	.0138	.0175	.0204	.0231	.0257	.0301	.0337	.0386
	5	1.5 x D	0.3 x D	0.5 x D	100	– 165	160	– 264	200	– 330	IPT	.0059	.0091	.0123	.0156	.0183	.0208	.0231	.0273	.0309	.0361
M	6	1.5 x D	0.3 x D	0.3 x D	80	– 125	128	– 200	160	– 250	IPT	.0050	.0076	.0103	.0131	.0153	.0173	.0191	.0223	.0249	.0281
	1	1.5 x D	0.3 x D	0.5 x D	150	– 190	240	– 304	300	– 380	IPT	.0072	.0111	.0152	.0195	.0229	.0260	.0289	.0341	.0386	.0451
	2	1.5 x D	0.3 x D	0.5 x D	100	– 130	160	– 208	200	– 260	IPT	.0059	.0091	.0123	.0156	.0183	.0208	.0231	.0273	.0309	.0361
K	3	1.5 x D	0.3 x D	0.5 x D	100	– 115	160	– 184	200	– 230	IPT	.0050	.0076	.0103	.0131	.0153	.0173	.0191	.0223	.0249	.0281
	1	1.5 x D	0.3 x D	0.5 x D	195	– 245	312	– 392	390	– 490	IPT	.0088	.0135	.0183	.0234	.0273	.0308	.0340	.0395	.0438	.0489
	2	1.5 x D	0.3 x D	0.5 x D	180	– 230	288	– 368	360	– 460	IPT	.0072	.0111	.0152	.0195	.0229	.0260	.0289	.0341	.0386	.0451
S	3	1.5 x D	0.3 x D	0.5 x D	180	– 215	288	– 344	360	– 430	IPT	.0059	.0091	.0123	.0156	.0183	.0208	.0231	.0273	.0309	.0361
	1	1.5 x D	0.3 x D	0.3 x D	80	– 150	128	– 240	160	– 300	IPT	.0072	.0111	.0152	.0195	.0229	.0260	.0289	.0341	.0386	.0451
	2	1.5 x D	0.3 x D	0.3 x D	40	– 65	64	– 104	80	– 130	IPT	.0039	.0060	.0081	.0103	.0121	.0138	.0153	.0182	.0206	.0243
	3	1.5 x D	0.3 x D	0.3 x D	40	– 65	64	– 104	80	– 130	IPT	.0039	.0060	.0081	.0103	.0121	.0138	.0153	.0182	.0206	.0243
H	4	1.5 x D	0.3 x D	0.5 x D	80	– 100	128	– 160	160	– 200	IPT	.0048	.0077	.0108	.0143	.0168	.0191	.0213	.0251	.0284	.0331
	1	1.5 x D	0.3 x D	0.3 x D	130	– 230	208	– 368	260	– 460	IPT	.0066	.0101	.0138	.0175	.0204	.0231	.0257	.0301	.0337	.0386

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.

Finishers • Series 4C43 • Application Data • TiCN-CT • TiAlN • Inch

Material Group		Side Milling (A) and Slotting (B)			Uncoated		TiCN		TiAlN		Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.									
		A		B	Cutting Speed – vc SFM		Cutting Speed – vc SFM		Cutting Speed – vc SFM		D1 – Diameter									
		ap	ae	ap	min	max	min	max	min	max	frac.	1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1
P	0	1.25 x D	0.3 x D	0.5 x D	245	– 330	392	– 528	490	– 660	IPT	.0009	.0013	.0018	.0023	.0027	.0034	.0039	.0044	.0049
	1	1.25 x D	0.3 x D	0.5 x D	245	– 330	392	– 528	490	– 660	IPT	.0009	.0013	.0018	.0023	.0027	.0034	.0039	.0044	.0049
	2	1.25 x D	0.3 x D	0.5 x D	230	– 310	368	– 496	460	– 620	IPT	.0009	.0013	.0018	.0023	.0027	.0034	.0039	.0044	.0049
	3	1.25 x D	0.3 x D	0.5 x D	195	– 260	312	– 416	390	– 520	IPT	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	4	1.25 x D	0.3 x D	0.3 x D	150	– 245	240	– 392	300	– 490	IPT	.0007	.0010	.0014	.0017	.0020	.0026	.0030	.0034	.0039
	5	1.25 x D	0.3 x D	0.5 x D	100	– 165	160	– 264	200	– 330	IPT	.0006	.0009	.0012	.0016	.0018	.0023	.0027	.0031	.0036
M	6	1.25 x D	0.3 x D	0.3 x D	80	– 125	128	– 200	160	– 250	IPT	.0005	.0008	.0010	.0013	.0015	.0019	.0022	.0025	.0028
	1	1.25 x D	0.3 x D	0.5 x D	150	– 190	240	– 304	300	– 380	IPT	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	2	1.25 x D	0.3 x D	0.5 x D	100	– 130	160	– 208	200	– 260	IPT	.0006	.0009	.0012	.0016	.0018	.0023	.0027	.0031	.0036
K	3	1.25 x D	0.3 x D	0.5 x D	100	– 115	160	– 184	200	– 230	IPT	.0005	.0008	.0010	.0013	.0015	.0019	.0022	.0025	.0028
	1	1.25 x D	0.3 x D	0.5 x D	195	– 245	312	– 392	390	– 490	IPT	.0009	.0013	.0018	.0023	.0027	.0034	.0039	.0044	.0049
	2	1.25 x D	0.3 x D	0.5 x D	180	– 230	288	– 368	360	– 460	IPT	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
S	3	1.25 x D	0.3 x D	0.5 x D	180	– 215	288	– 344	360	– 430	IPT	.0006	.0009	.0012	.0016	.0018	.0023	.0027	.0031	.0036
	1	1.25 x D	0.3 x D	0.3 x D	80	– 150	128	– 240	160	– 300	IPT	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	2	1.25 x D	0.3 x D	0.3 x D	40	– 65	64	– 104	80	– 130	IPT	.0004	.0006	.0008	.0010	.0012	.0015	.0018	.0021	.0024
	3	1.25 x D	0.3 x D	0.3 x D	40	– 65	64	– 104	80	– 130	IPT	.0004	.0006	.0008	.0010	.0012	.0015	.0018	.0021	.0024
H	4	1.25 x D	0.3 x D	0.5 x D	80	– 100	128	– 160	160	– 200	IPT	.0005	.0008	.0011	.0014	.0017	.0021	.0025	.0028	.0033
	1	1.25 x D	0.3 x D	0.3 x D	130	– 230	208	– 368	260	– 460	IPT	.0007	.0010	.0014	.0017	.0020	.0026	.0030	.0034	.0039

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.

Finishers • Series 4C05 4C15 • Application Data • WP15PE • Inch

Material Group	Side Milling (A)		WP15PE		Recommended feed per tooth (IPT = inch/th) for side milling (A).										
	A		Cutting Speed – vc			D1 – Diameter									
	ap	ae	min	max	frac. dec.	1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1	
	ap	ae	min	max	dec.	.1250	.1875	.2500	.3125	.3750	.5000	.6250	.7500	1.0000	
P	0	Ap1 max 0.1 x D	490	–	660	IPT	.0009	.0013	.0018	.0023	.0027	.0034	.0039	.0044	.0049
	1	Ap1 max 0.1 x D	490	–	660	IPT	.0009	.0013	.0018	.0023	.0027	.0034	.0039	.0044	.0049
	2	Ap1 max 0.1 x D	460	–	620	IPT	.0009	.0013	.0018	.0023	.0027	.0034	.0039	.0044	.0049
	3	Ap1 max 0.1 x D	390	–	520	IPT	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	4	Ap1 max 0.1 x D	300	–	490	IPT	.0007	.0010	.0014	.0017	.0020	.0026	.0030	.0034	.0039
	5	Ap1 max 0.1 x D	200	–	330	IPT	.0006	.0009	.0012	.0016	.0018	.0023	.0027	.0031	.0036
M	1	Ap1 max 0.1 x D	300	–	380	IPT	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	2	Ap1 max 0.1 x D	200	–	260	IPT	.0006	.0009	.0012	.0016	.0018	.0023	.0027	.0031	.0036
	3	Ap1 max 0.1 x D	200	–	230	IPT	.0005	.0008	.0010	.0013	.0015	.0019	.0022	.0025	.0028
K	1	Ap1 max 0.1 x D	390	–	490	IPT	.0009	.0013	.0018	.0023	.0027	.0034	.0039	.0044	.0049
	2	Ap1 max 0.1 x D	360	–	460	IPT	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	3	Ap1 max 0.1 x D	360	–	430	IPT	.0006	.0009	.0012	.0016	.0018	.0023	.0027	.0031	.0036
H	1	Ap1 max 0.1 x D	260	–	460	IPT	.0007	.0010	.0014	.0017	.0020	.0026	.0030	.0034	.0039
	2	Ap1 max 0.1 x D	230	–	390	IPT	.0005	.0008	.0010	.0013	.0015	.0019	.0022	.0025	.0028

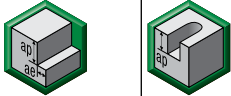

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For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

Finishers • Series 4S0F 4S1F • Application Data • WP15PE • TiAlN-RT • Inch

Material Group	Side Milling (A)		TiAlN			Recommended feed per tooth (IPT = inch/th) for side milling (A).						
	A		Cutting Speed – vc			D1 – Diameter						
	ap	ae	min	max	frac. dec.	1/4	3/8	1/2	5/8	3/4	1	
	ap	ae	min	max	dec.	.2500	.3750	.5000	.6250	.7500	1.000	
P	1	1.5 x D 0.07 x D	500	–	650	IPT	.0018	.0027	.0035	.0039	.0043	.0050
	2	1.5 x D 0.07 x D	450	–	625	IPT	.0018	.0027	.0035	.0039	.0043	.0050
	3	1.5 x D 0.07 x D	400	–	525	IPT	.0015	.0023	.0029	.0034	.0038	.0046
	4	1.5 x D 0.03 x D	300	–	475	IPT	.0014	.0020	.0026	.0030	.0033	.0039
	5	1.5 x D 0.05 x D	200	–	325	IPT	.0012	.0018	.0023	.0027	.0030	.0036
	6	1.5 x D 0.03 x D	150	–	225	IPT	.0010	.0015	.0019	.0022	.0024	.0028
M	1	1.5 x D 0.07 x D	260	–	330	IPT	.0015	.0023	.0029	.0034	.0038	.0046
	2	1.5 x D 0.07 x D	200	–	260	IPT	.0012	.0018	.0023	.0027	.0030	.0036
	3	1.5 x D 0.05 x D	200	–	260	IPT	.0010	.0015	.0019	.0022	.0024	.0028
K	1	1.5 x D 0.07 x D	390	–	520	IPT	.0018	.0027	.0035	.0039	.0043	.0050
	2	1.5 x D 0.07 x D	360	–	460	IPT	.0015	.0023	.0029	.0034	.0038	.0046
	3	1.5 x D 0.05 x D	330	–	430	IPT	.0012	.0018	.0023	.0027	.0030	.0036
S	1	1.5 x D 0.03 x D	160	–	300	IPT	.0015	.0023	.0029	.0034	.0039	.0045
	2	1.5 x D 0.02 x D	80	–	130	IPT	.0008	.0012	.0015	.0018	.0021	.0024
	3	1.5 x D 0.05 x D	80	–	130	IPT	.0008	.0012	.0015	.0018	.0021	.0024
	4	1.5 x D 0.05 x D	160	–	200	IPT	.0011	.0017	.0021	.0025	.0028	.0033
H	1	1.5 x D 0.03 x D	260	–	450	IPT	.0014	.0020	.0026	.0030	.0033	.0039


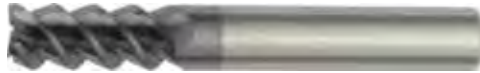
NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For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

Finishers • Series DC03 • Application Data • TiAlN-LW • Metric

																				
		Side Milling (A) and Slotting (B)			TiAlN			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.												
Material Group		A		B	Cutting Speed – vc m/min			mm	D1 – Diameter											
		ap	ae	ap	min	max	3,0		4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0		
P	0	0,75 x D	0,4 x D	0,5 x D	150	–	200	fz	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	
	1	0,75 x D	0,4 x D	0,5 x D	150	–	200	fz	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	
	2	0,75 x D	0,4 x D	0,5 x D	140	–	190	fz	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	
	3	0,75 x D	0,4 x D	0,5 x D	120	–	160	fz	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	
	4	0,75 x D	0,4 x D	0,3 x D	90	–	150	fz	0,016	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088	
	5	0,75 x D	0,4 x D	0,5 x D	60	–	100	fz	0,014	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	
M	1	0,75 x D	0,4 x D	0,5 x D	90	–	115	fz	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	
	2	0,75 x D	0,4 x D	0,5 x D	60	–	80	fz	0,014	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	
	3	0,75 x D	0,4 x D	0,5 x D	60	–	70	fz	0,012	0,016	0,020	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065	
K	1	0,75 x D	0,4 x D	0,5 x D	120	–	150	fz	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	
	2	0,75 x D	0,4 x D	0,5 x D	110	–	140	fz	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	
S	3	0,75 x D	0,4 x D	0,5 x D	110	–	130	fz	0,014	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	
	1	0,75 x D	0,4 x D	0,3 x D	50	–	90	fz	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	
	2	0,75 x D	0,4 x D	0,3 x D	25	–	40	fz	0,009	0,013	0,016	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054	
	3	0,75 x D	0,4 x D	0,3 x D	25	–	40	fz	0,009	0,013	0,016	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054	
H	4	0,75 x D	0,4 x D	0,5 x D	50	–	60	fz	0,011	0,016	0,021	0,026	0,037	0,045	0,052	0,058	0,064	0,069	0,074	
	1	0,75 x D	0,4 x D	0,3 x D	80	–	140	fz	0,016	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088	

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >12mm diameters.

Finishers • Series 4603 • Application Data • WP15PE • Metric

																				
		Side Milling (A) and Slotting (B)			WP15PE/TiAlN			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.												
Material Group		A		B	Cutting Speed – vc m/min			mm	D1 – Diameter											
		ap	ae	ap	min	max	3,0		4,0	5,0	6,0	8,0	10,0	12,0	16,0	18,0	20,0			
P	0	1,5 x D	0,3 x D	0,5 x D	150	–	200	fz	0,017	0,023	0,029	0,035	0,048	0,058	0,066	0,081	0,086	0,091		
	1	1,5 x D	0,3 x D	0,5 x D	150	–	200	fz	0,017	0,023	0,029	0,035	0,048	0,058	0,066	0,081	0,086	0,091		
	2	1,5 x D	0,3 x D	0,5 x D	140	–	190	fz	0,017	0,023	0,029	0,035	0,048	0,058	0,066	0,081	0,086	0,091		
	3	1,5 x D	0,3 x D	0,5 x D	120	–	160	fz	0,014	0,019	0,024	0,029	0,040	0,048	0,056	0,070	0,076	0,081		
	4	1,5 x D	0,3 x D	0,3 x D	90	–	150	fz	0,013	0,017	0,022	0,026	0,036	0,043	0,050	0,061	0,066	0,070		
	5	1,5 x D	0,3 x D	0,5 x D	60	–	100	fz	0,011	0,015	0,019	0,024	0,032	0,039	0,045	0,056	0,060	0,065		
M	1	1,5 x D	0,3 x D	0,5 x D	90	–	115	fz	0,014	0,019	0,024	0,029	0,040	0,048	0,056	0,070	0,076	0,081		
	2	1,5 x D	0,3 x D	0,5 x D	60	–	80	fz	0,011	0,015	0,019	0,024	0,032	0,039	0,045	0,056	0,060	0,065		
	3	1,5 x D	0,3 x D	0,5 x D	60	–	70	fz	0,010	0,013	0,016	0,020	0,027	0,032	0,037	0,046	0,049	0,052		
K	1	1,5 x D	0,3 x D	0,5 x D	120	–	150	fz	0,017	0,023	0,029	0,035	0,048	0,058	0,066	0,081	0,086	0,091		
	2	1,5 x D	0,3 x D	0,5 x D	110	–	140	fz	0,014	0,019	0,024	0,029	0,040	0,048	0,056	0,070	0,076	0,081		
S	3	1,5 x D	0,3 x D	0,5 x D	110	–	130	fz	0,011	0,015	0,019	0,024	0,032	0,039	0,045	0,056	0,060	0,065		
	1	1,5 x D	0,3 x D	0,3 x D	50	–	90	fz	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,087	0,095	0,101		
	2	1,5 x D	0,3 x D	0,3 x D	25	–	40	fz	0,009	0,013	0,016	0,019	0,026	0,032	0,037	0,046	0,050	0,054		
H	3	1,5 x D	0,3 x D	0,3 x D	25	–	40	fz	0,009	0,013	0,016	0,019	0,026	0,032	0,037	0,046	0,050	0,054		
	4	1,5 x D	0,3 x D	0,5 x D	50	–	60	fz	0,011	0,016	0,021	0,026	0,037	0,045	0,052	0,064	0,069	0,074		
	1	1,5 x D	0,3 x D	0,3 x D	80	–	140	fz	0,013	0,017	0,022	0,026	0,036	0,043	0,050	0,061	0,066	0,070		

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >12mm diameters.

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Finishers • Series D503 • Application Data • TiAlN • Metric

		Side Milling (A) and Slotting (B)			TiAlN			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.														
Material Group	A		B	Cutting Speed – vc m/min			mm	D1 – Diameter														
	ap	ae	ap	min	max	3,0		4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0					
P	0	0,75 x D	0,4 x D	0,5 x D	150	–	200	fz	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114			
	1	0,75 x D	0,4 x D	0,5 x D	150	–	200	fz	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114			
	2	0,75 x D	0,4 x D	0,5 x D	140	–	190	fz	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114			
	3	0,75 x D	0,4 x D	0,5 x D	120	–	160	fz	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101			
	4	0,75 x D	0,4 x D	0,3 x D	90	–	150	fz	0,016	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088			
	5	0,75 x D	0,4 x D	0,5 x D	60	–	100	fz	0,014	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081			
M	1	0,75 x D	0,4 x D	0,5 x D	90	–	115	fz	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101			
	2	0,75 x D	0,4 x D	0,5 x D	60	–	80	fz	0,014	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081			
	3	0,75 x D	0,4 x D	0,5 x D	60	–	70	fz	0,012	0,016	0,020	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065			
K	1	0,75 x D	0,4 x D	0,5 x D	120	–	150	fz	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114			
	2	0,75 x D	0,4 x D	0,5 x D	110	–	140	fz	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101			
	3	0,75 x D	0,4 x D	0,5 x D	110	–	130	fz	0,014	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081			
S	1	0,75 x D	0,4 x D	0,3 x D	50	–	90	fz	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101			
	2	0,75 x D	0,4 x D	0,3 x D	25	–	40	fz	0,009	0,013	0,016	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054			
	3	0,75 x D	0,4 x D	0,3 x D	25	–	40	fz	0,009	0,013	0,016	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054			
	4	0,75 x D	0,4 x D	0,5 x D	50	–	60	fz	0,011	0,016	0,021	0,026	0,037	0,045	0,052	0,058	0,064	0,069	0,074			
H	1	0,75 x D	0,4 x D	0,3 x D	80	–	140	fz	0,016	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088			

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on greater than 12mm diameters.

Finishers • Series D513 • Application Data • TiAlN • Metric

		Side Milling (A) and Slotting (B)			TiAlN			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.														
Material Group	A		B	Cutting Speed – vc m/min			mm	D1 – Diameter														
	ap	ae	ap	min	max	3,0		4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0					
P	0	1,25 x D	0,2 x D	0,25 x D	150	–	200	fz	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114			
	1	1,25 x D	0,2 x D	0,25 x D	150	–	200	fz	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114			
	2	1,25 x D	0,2 x D	0,25 x D	140	–	190	fz	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114			
	3	1,25 x D	0,2 x D	0,25 x D	120	–	160	fz	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101			
	4	1,25 x D	0,2 x D	0,25 x D	90	–	150	fz	0,016	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088			
	5	1,25 x D	0,2 x D	0,25 x D	60	–	100	fz	0,014	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081			
M	1	1,25 x D	0,2 x D	0,25 x D	90	–	115	fz	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101			
	2	1,25 x D	0,2 x D	0,25 x D	60	–	80	fz	0,014	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081			
	3	1,25 x D	0,2 x D	0,25 x D	60	–	70	fz	0,012	0,016	0,020	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065			
K	1	1,25 x D	0,2 x D	0,25 x D	120	–	150	fz	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114			
	2	1,25 x D	0,2 x D	0,25 x D	110	–	140	fz	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101			
	3	1,25 x D	0,2 x D	0,25 x D	110	–	130	fz	0,014	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081			
S	1	1,25 x D	0,2 x D	0,25 x D	50	–	90	fz	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101			
	2	1,25 x D	0,2 x D	0,25 x D	25	–	40	fz	0,009	0,013	0,016	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054			
	3	1,25 x D	0,2 x D	0,25 x D	25	–	40	fz	0,009	0,013	0,016	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054			
	4	1,25 x D	0,2 x D	0,25 x D	50	–	60	fz	0,011	0,016	0,021	0,026	0,037	0,045	0,052	0,058	0,064	0,069	0,074			
H	1	1,25 x D	0,2 x D	0,25 x D	80	–	140	fz	0,016	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088			

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >12mm diameters.

Finishers • Series D507 • Application Data • WP15PE • Metric

Material Group	Side Milling (A)		WP15PE			Recommended feed per tooth (fz = mm/th) for side milling (A).									
	A		Cutting Speed – vc m/min			mm	D1 – Diameter								
	ap	ae	min	max	4,0		6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	
	0	1,0 x D	0,2 x D	150	200	fz	0,028	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
P	1	1,0 x D	0,2 x D	150	200	fz	0,028	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	2	1,0 x D	0,2 x D	140	190	fz	0,028	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	3	1,0 x D	0,1 x D	120	160	fz	0,023	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	4	1,0 x D	0,1 x D	90	150	fz	0,021	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088
	5	1,0 x D	0,1 x D	60	100	fz	0,019	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081
	6	1,0 x D	0,1 x D	50	75	fz	0,016	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065
M	1	1,0 x D	0,1 x D	90	115	fz	0,023	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	2	1,0 x D	0,1 x D	60	80	fz	0,019	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081
	3	1,0 x D	0,1 x D	60	70	fz	0,016	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065
K	1	1,0 x D	0,1 x D	120	150	fz	0,028	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	2	1,0 x D	0,1 x D	110	140	fz	0,023	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	3	1,0 x D	0,1 x D	110	130	fz	0,019	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081
S	1	1,0 x D	0,1 x D	50	90	fz	0,023	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	2	1,0 x D	0,1 x D	25	40	fz	0,013	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054
	3	1,0 x D	0,15 x D	25	40	fz	0,013	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054
	4	1,0 x D	0,15 x D	50	60	fz	0,016	0,026	0,037	0,045	0,052	0,058	0,064	0,069	0,074
H	1	1,0 x D	0,1 x D	80	140	fz	0,021	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on diameters >12mm.

Finishers • Series D517 • Application Data • WP15PE • Metric

Material Group	Side Milling (A)		WP15PE			Recommended feed per tooth (fz = mm/th) for side milling (A).									
	A		Cutting Speed – vc m/min			mm	D1 – Diameter								
	ap	ae	min	max	4,0		6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	
	0	Ap1 max	0,05 x D	150	200	fz	0,028	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
P	1	Ap1 max	0,05 x D	150	200	fz	0,028	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	2	Ap1 max	0,05 x D	140	190	fz	0,028	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	3	Ap1 max	0,05 x D	120	160	fz	0,023	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	4	Ap1 max	0,05 x D	90	150	fz	0,021	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088
	5	Ap1 max	0,05 x D	60	100	fz	0,019	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081
	6	Ap1 max	0,05 x D	50	75	fz	0,016	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065
M	1	Ap1 max	0,05 x D	90	115	fz	0,023	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	2	Ap1 max	0,05 x D	60	80	fz	0,019	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081
	3	Ap1 max	0,05 x D	60	70	fz	0,016	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065
K	1	Ap1 max	0,05 x D	120	150	fz	0,028	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	2	Ap1 max	0,05 x D	110	140	fz	0,023	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	3	Ap1 max	0,05 x D	110	130	fz	0,019	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081
S	1	Ap1 max	0,04 x D	50	90	fz	0,023	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	2	Ap1 max	0,04 x D	25	40	fz	0,013	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054
	3	Ap1 max	0,05 x D	25	40	fz	0,013	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054
	4	Ap1 max	0,05 x D	50	60	fz	0,016	0,026	0,037	0,045	0,052	0,058	0,064	0,069	0,074
H	1	Ap1 max	0,04 x D	80	140	fz	0,021	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
For better surface finish, reduce feed per tooth.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on diameters >12mm.

Finishers • Series 4503 JJ • Application Data • WP15PE • Metric

Material Group																			
	Side Milling (A) and Slotting (B)			WP15PE			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.												
	A		B	Cutting Speed – vc m/min			D1 – Diameter												
	ap	ae	ap	min	max	mm	3,0	4,0	5,0	6,0	8,0	10,0	12,0	16,0	18,0	20,0			
P	0	1,5 x D	0,3 x D	0,5 x D	150	–	200	fz	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,101	0,108	0,114	
	1	1,5 x D	0,3 x D	0,5 x D	150	–	200	fz	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,101	0,108	0,114	
	2	1,5 x D	0,3 x D	0,5 x D	140	–	190	fz	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,101	0,108	0,114	
	3	1,5 x D	0,3 x D	0,5 x D	120	–	160	fz	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,087	0,095	0,101	
	4	1,5 x D	0,3 x D	0,3 x D	90	–	150	fz	0,016	0,021	0,027	0,033	0,045	0,054	0,062	0,077	0,083	0,088	
	5	1,5 x D	0,3 x D	0,5 x D	60	–	100	fz	0,014	0,019	0,024	0,029	0,040	0,048	0,056	0,070	0,076	0,081	
M	1	1,5 x D	0,3 x D	0,5 x D	90	–	115	fz	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,087	0,095	0,101	
	2	1,5 x D	0,3 x D	0,5 x D	60	–	80	fz	0,014	0,019	0,024	0,029	0,040	0,048	0,056	0,070	0,076	0,081	
K	1	1,5 x D	0,3 x D	0,5 x D	120	–	150	fz	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,101	0,108	0,114	
	2	1,5 x D	0,3 x D	0,5 x D	110	–	140	fz	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,087	0,095	0,101	
S	1	1,5 x D	0,3 x D	0,3 x D	50	–	90	fz	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,087	0,095	0,101	
	2	1,5 x D	0,3 x D	0,3 x D	25	–	40	fz	0,009	0,013	0,016	0,019	0,026	0,032	0,037	0,046	0,050	0,054	
	3	1,5 x D	0,3 x D	0,5 x D	25	–	40	fz	0,009	0,013	0,016	0,019	0,026	0,032	0,037	0,046	0,050	0,054	
	4	1,5 x D	0,3 x D	0,5 x D	50	–	60	fz	0,011	0,016	0,021	0,026	0,037	0,045	0,052	0,064	0,069	0,074	
H	1	1,5 x D	0,3 x D	0,3 x D	80	–	140	fz	0,016	0,021	0,027	0,033	0,045	0,054	0,062	0,077	0,083	0,088	

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >12mm diameters.

Finishers • Series 4001 JJ • Application Data • WP15PE • Metric

Material Group																						
	Side Milling (A) and Slotting (B)			WP15PE			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.															
	A		B	Cutting Speed – vc m/min			D1 – Diameter															
	ap	ae	ap	min	max	mm	2,0	3,0	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0			
P	0	1,25 x D	0,25 x D	0,5 x D	150	–	200	fz	0,012	0,019	0,026	0,032	0,039	0,054	0,065	0,075	0,083	0,091	0,097	0,103	0,111	
	1	1,25 x D	0,25 x D	0,5 x D	150	–	200	fz	0,012	0,019	0,026	0,032	0,039	0,054	0,065	0,075	0,083	0,091	0,097	0,103	0,111	
	2	1,25 x D	0,25 x D	0,5 x D	140	–	190	fz	0,012	0,019	0,026	0,032	0,039	0,054	0,065	0,075	0,083	0,091	0,097	0,103	0,111	
	3	1,25 x D	0,25 x D	0,5 x D	120	–	160	fz	0,010	0,016	0,021	0,027	0,033	0,045	0,054	0,063	0,071	0,078	0,085	0,091	0,102	
M	1	1,25 x D	0,25 x D	0,5 x D	90	–	150	fz	0,009	0,014	0,019	0,024	0,030	0,040	0,049	0,056	0,063	0,069	0,075	0,079	0,088	
	2	1,25 x D	0,25 x D	0,5 x D	60	–	80	fz	0,010	0,016	0,021	0,027	0,033	0,045	0,054	0,063	0,071	0,078	0,085	0,091	0,102	
K	1	1,25 x D	0,25 x D	0,5 x D	120	–	150	fz	0,012	0,019	0,026	0,032	0,039	0,054	0,065	0,075	0,083	0,091	0,097	0,103	0,111	
	2	1,25 x D	0,25 x D	0,5 x D	110	–	140	fz	0,010	0,016	0,021	0,027	0,033	0,045	0,054	0,063	0,071	0,078	0,085	0,091	0,102	
N	1	1,25 x D	0,25 x D	0,5 x D	500	–	2000	fz	0,018	0,027	0,036	0,045	0,054	0,072	0,090	0,108	0,126	0,144	0,162	0,180	0,225	
	2	1,25 x D	0,25 x D	0,5 x D	500	–	1500	fz	0,016	0,024	0,032	0,041	0,049	0,065	0,081	0,097	0,113	0,130	0,146	0,162	0,203	
	3	1,25 x D	0,25 x D	0,5 x D	250	–	1000	fz	0,016	0,024	0,032	0,041	0,049	0,065	0,081	0,097	0,113	0,130	0,146	0,162	0,203	
	4	1,25 x D	0,25 x D	0,5 x D	100	–	750	fz	0,018	0,027	0,036	0,045	0,054	0,072	0,090	0,108	0,126	0,144	0,162	0,180	0,225	

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >12mm diameters.

ALUFLASH end mills are for machining companies seeking a vibration-free tool capable of achieving advanced milling applications at accelerated RPMs.

Features and Benefits

Balanced by design to significantly limit vibrations at high RPMs.

“W” flute shape form evacuates chips to increase process security.

Parabolic core for increased tool stability and reduced deflection and risk of breakage.

Double rake gashing for improved chip evacuation and higher ramping capabilities and Z-axis machining.



ALUFLASH end mills will drill into the full material and execute advanced ramping angles at high-feed rates without RPM limitations.

SAFE

The ALUFLASH end mills' balanced design obliterates any apprehension of spindle damage.

ADVANCED

ALUFLASH provides advanced milling capabilities with steep ramping angles, drilling into the full material and cornering without vibration marks.

ACCELERATED

The ALUFLASH end mills enable machinists to increase cutting speeds to the machine capacity, creating limitless performance in any aluminum application.

ACCELERATED ALUMINUM MACHINING

PRODUCT

SOLID CARBIDE END MILL

GRADE

UNCOATED

FLUTE

2 & 3

DIAMETER RANGE

INCH

1/8–1"

METRIC

3–20mm

INDUSTRY



GENERAL
ENGINEERING



AEROSPACE

APPLICATIONS

MATERIALS

N



SIDE MILLING



SLOTTING



HELICAL
INTERPOLATION



RAMPING



DYNAMIC
MILLING



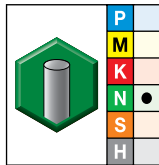
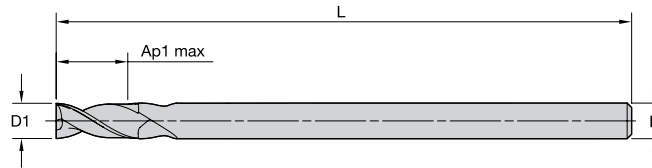
PLUNGING



DRILLING

INDEXABLE MILLING

ALUFLASH • Series 2A09 • Square End • 2 Flute • Regular Length • Cylindrical Shank • Inch



UNCOATED

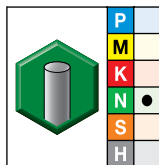
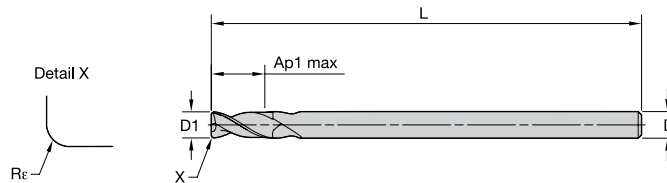
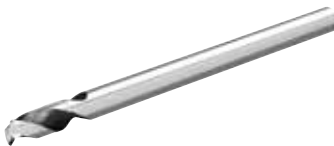
- first choice
- alternate choice

order #	catalog #	D1	D	length of cut Ap1 max	length L	Z U
6853394	2A09E03000SZT	1/8	1/8	1/4	2	2
6853396	2A09E05001SZT	3/16	3/16	5/16	2	2
6853398	2A09E07003SZT	1/4	1/4	3/8	2	2
6853421	2A09E08004SZT	5/16	5/16	5/8	2 1/2	2
6853423	2A09E10005SZT	3/8	3/8	1	3	2
6853426	2A09E13006SZT	1/2	1/2	1 1/4	3 1/2	2
6853431	2A09E19009SZT	3/4	3/4	1 5/8	4 1/4	2
6853435	2A09E2500ASZT	1	1	2 1/2	5 1/2	2

SOLID END MILLING

HOLEMAKING

ALUFLASH • Series 2A09 • Radius • 2 Flute • Regular Length • Cylindrical Shank • Inch



UNCOATED

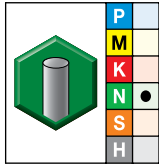
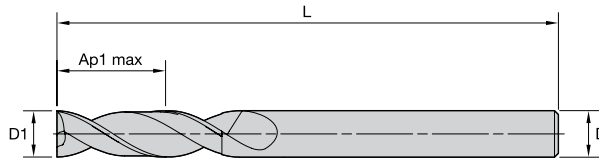
- first choice
- alternate choice

order #	catalog #	D1	D	length of cut Ap1 max	length L	Re	Z U
6853395	2A09E03000RAT	1/8	1/8	1/4	2	.015	2
6853397	2A09E05001RAT	3/16	3/16	5/16	2	.015	2
6853399	2A09E07003RAT	1/4	1/4	3/8	2	.015	2
6853400	2A09E07003RET	1/4	1/4	3/8	2	.030	2
6853422	2A09E08004RAT	5/16	5/16	5/8	2 1/2	.015	2
6853424	2A09E10005RAT	3/8	3/8	1	3	.015	2
6853425	2A09E10005RET	3/8	3/8	1	3	.030	2
6853427	2A09E13006RAT	1/2	1/2	1 1/4	3 1/2	.015	2
6853428	2A09E13006RET	1/2	1/2	1 1/4	3 1/2	.030	2
6853429	2A09E13006RGT	1/2	1/2	1 1/4	3 1/2	.060	2
6853430	2A09E13006RKT	1/2	1/2	1 1/4	3 1/2	.120	2
6853432	2A09E19009RET	3/4	3/4	1 5/8	4 1/4	.030	2
6853433	2A09E19009RGT	3/4	3/4	1 5/8	4 1/4	.060	2
6853434	2A09E19009RKT	3/4	3/4	1 5/8	4 1/4	.120	2
6853436	2A09E2500ARET	1	1	2 1/2	5 1/2	.030	2
6853437	2A09E2500ARGT	1	1	2 1/2	5 1/2	.060	2
6853438	2A09E2500ARKT	1	1	2 1/2	5 1/2	.120	2

TAPPING

TURNING

ALUFLASH • Series 2A19 • Square End • 2 Flute • Long Length • Cylindrical Shank • Inch

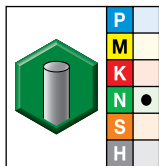
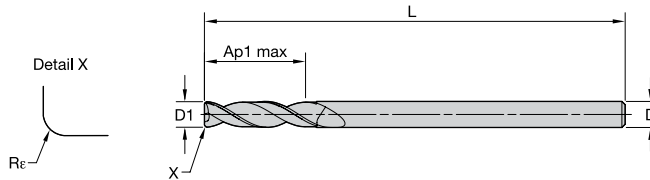


UNCOATED

- first choice
- alternate choice

order #	catalog #	D1	D	length of cut Ap1 max	length L	Z U
6853379	2A19E03010SZT	1/8	1/8	1/2	2	2
6853381	2A19E05011SZT	3/16	3/16	5/8	2	2
6853383	2A19E07013SZT	1/4	1/4	3/4	2 1/2	2
6853386	2A19E08014SZT	5/16	5/16	1 1/4	3	2
6853388	2A19E10015SZT	3/8	3/8	1 1/2	4	2
6853391	2A19E13016SZT	1/2	1/2	2	4	2

ALUFLASH • Series 2A19 • Radius • 2 Flute • Long Length • Cylindrical Shank • Inch

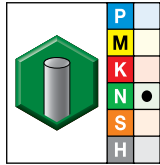
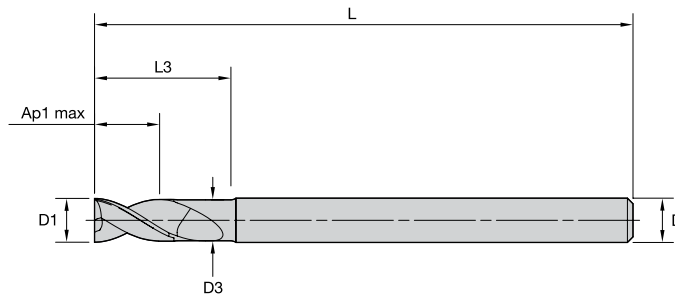


UNCOATED

- first choice
- alternate choice

order #	catalog #	D1	D	length of cut Ap1 max	length L	Re	Z U
6853380	2A19E03010RAT	1/8	1/8	1/2	2	.015	2
6853382	2A19E05011RAT	3/16	3/16	5/8	2	.015	2
6853384	2A19E07013RAT	1/4	1/4	3/4	2 1/2	.015	2
6853385	2A19E07013RET	1/4	1/4	3/4	2 1/2	.030	2
6853387	2A19E08014RAT	5/16	5/16	1 1/4	3	.015	2
6853389	2A19E10015RAT	3/8	3/8	1 1/2	4	.015	2
6853390	2A19E10015RET	3/8	3/8	1 1/2	4	.030	2
6853392	2A19E13016RAT	1/2	1/2	2	4	.015	2
6853393	2A19E13016RET	1/2	1/2	2	4	.030	2

ALUFLASH • Series 2AN9 • Square End • 2 Flute • Regular Length • Regular Neck • Cylindrical Shank • Inch

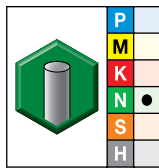
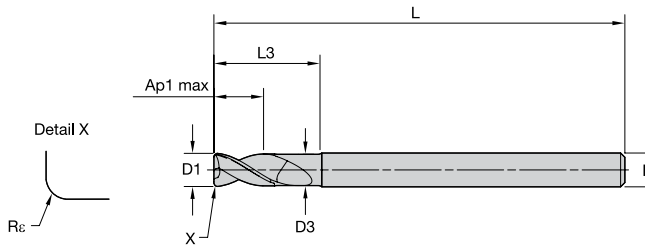


UNCOATED

- first choice
- alternate choice

order #	catalog #	D1	D	D3	length of cut Ap1 max	length L	L3	Z U
6859874	2AN9E03000SZT	1/8	1/8	.118	3/16	1 1/2	3/8	2
6859876	2AN9E05001SZT	3/16	3/16	.176	1/4	2 1/4	9/16	2
6859878	2AN9E07003SZT	1/4	1/4	.235	5/16	2 1/2	3/4	2
6859883	2AN9E08004SZT	5/16	5/16	.294	3/8	2 1/2	1	2
6859886	2AN9E10005SZT	3/8	3/8	.353	1/2	3	1 1/4	2
6859889	2AN9E13006SZT	1/2	1/2	.470	5/8	3 1/2	1 1/2	2
6859892	2AN9E16008SZT	5/8	5/8	.588	3/4	4	2	2
6859895	2AN9E19009SZT	3/4	3/4	.705	1	5	2 1/4	2
6859898	2AN9E2500ASZT	1	1	.940	1 1/4	5 1/2	2 1/2	2

ALUFLASH • Series 2AN9 • Radius • 2 Flute • Regular Length • Regular Neck • Cylindrical Shank • Inch

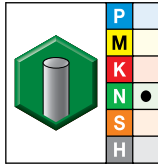
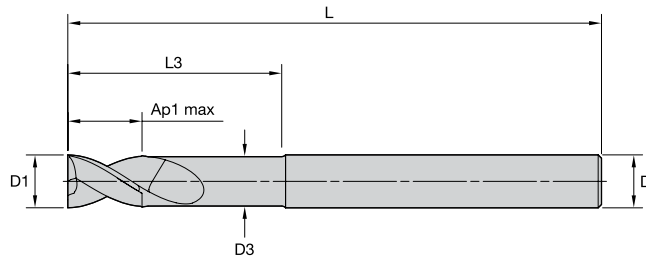


UNCOATED

- first choice
- alternate choice

order #	catalog #	D1	D	D3	length of cut Ap1 max	length L	L3	Rε	Z U
6859875	2AN9E03000RAT	1/8	1/8	.118	3/16	1 1/2	3/8	.015	2
6859877	2AN9E05001RAT	3/16	3/16	.176	1/4	2 1/4	9/16	.015	2
6859881	2AN9E07003RET	1/4	1/4	.235	5/16	2 1/2	3/4	.030	2
6859882	2AN9E07003RGT	1/4	1/4	.235	5/16	2 1/2	3/4	.060	2
6859884	2AN9E08004RET	5/16	5/16	.294	3/8	2 1/2	1	.030	2
6859885	2AN9E08004RGT	5/16	5/16	.294	3/8	2 1/2	1	.060	2
6859887	2AN9E10005RET	3/8	3/8	.353	1/2	3	1 1/4	.030	2
6859888	2AN9E10005RGT	3/8	3/8	.353	1/2	3	1 1/4	.060	2
6859890	2AN9E13006RET	1/2	1/2	.470	5/8	3 1/2	1 1/2	.030	2
6859891	2AN9E13006RGT	1/2	1/2	.470	5/8	3 1/2	1 1/2	.060	2
6859893	2AN9E16008RET	5/8	5/8	.588	3/4	4	2	.030	2
6859894	2AN9E16008RGT	5/8	5/8	.588	3/4	4	2	.060	2
6859896	2AN9E19009RET	3/4	3/4	.705	1	5	2 1/4	.030	2
6859897	2AN9E19009RGT	3/4	3/4	.705	1	5	2 1/4	.060	2
6859899	2AN9E2500ARET	1	1	.940	1 1/4	5 1/2	2 1/2	.030	2
6859900	2AN9E2500ARGT	1	1	.940	1 1/4	5 1/2	2 1/2	.060	2

ALUFLASH • Series 2AL9 • Square End • 2 Flute • Regular Length • Medium Neck • Cylindrical Shank • Inch

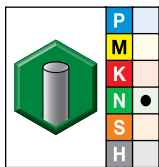
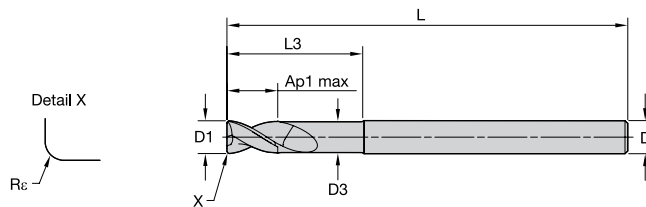


UNCOATED

- first choice
- alternate choice

order #	catalog #	D1	D	D3	length of cut Ap1 max	length L	L3	Z U
6859607	2AL9E07013SZT	1/4	1/4	.235	5/16	2 1/2	1	2
6859651	2AL9E08014SZT	5/16	5/16	.294	3/8	3	1 1/4	2
6859654	2AL9E10015SZT	3/8	3/8	.353	1/2	3	1 1/2	2
6859657	2AL9E13016SZT	1/2	1/2	.470	5/8	4	2	2
6859660	2AL9E16018SZT	5/8	5/8	.588	3/4	5	2 1/2	2
6859673	2AL9E19019SZT	3/4	3/4	.705	1	5	3	2
6859676	2AL9E2501ASZT	1	1	.940	1 1/4	5 1/2	3	2

ALUFLASH • Series 2AL9 • Radius • 2 Flute • Regular Length • Medium Neck • Cylindrical Shank • Inch

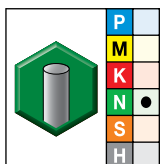
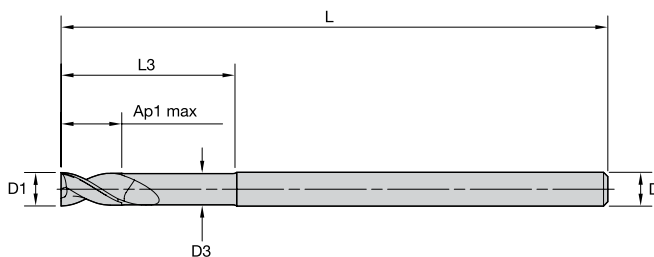


UNCOATED

- first choice
- alternate choice

order #	catalog #	D1	D	D3	length of cut Ap1 max	length L	L3	Re	Z U
6859606	2AL9E05011RAT	3/16	3/16	.176	1/4	2 1/4	3/4	.015	2
6859608	2AL9E07013RET	1/4	1/4	.235	5/16	2 1/2	1	.030	2
6859610	2AL9E07013RGT	1/4	1/4	.235	5/16	2 1/2	1	.060	2
6859652	2AL9E08014RET	5/16	5/16	.294	3/8	3	1 1/4	.030	2
6859653	2AL9E08014RGT	5/16	5/16	.294	3/8	3	1 1/4	.060	2
6859655	2AL9E10015RET	3/8	3/8	.353	1/2	3	1 1/2	.030	2
6859656	2AL9E10015RGT	3/8	3/8	.353	1/2	3	1 1/2	.060	2
6859658	2AL9E13016RET	1/2	1/2	.470	5/8	4	2	.030	2
6859659	2AL9E13016RGT	1/2	1/2	.470	5/8	4	2	.060	2
6859671	2AL9E16018RET	5/8	5/8	.588	3/4	5	2 1/2	.030	2
6859672	2AL9E16018RGT	5/8	5/8	.588	3/4	5	2 1/2	.060	2
6859674	2AL9E19019RET	3/4	3/4	.705	1	5	3	.030	2
6859675	2AL9E19019RGT	3/4	3/4	.705	1	5	3	.060	2
6859677	2AL9E2501ARET	1	1	.940	1 1/4	5 1/2	3	.030	2
6859678	2AL9E2501ARGT	1	1	.940	1 1/4	5 1/2	3	.060	2

ALUFLASH • Series 2AF9 • Square End • 2 Flute • Regular Length • Long Neck • Cylindrical Shank • Inch

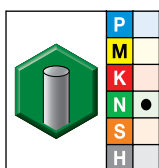
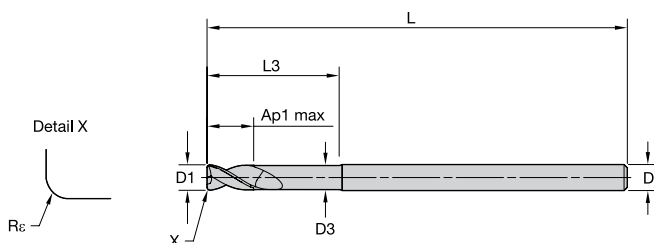


UNCOATED

- first choice
- alternate choice

order #	catalog #	D1	D	D3	length of cut Ap1 max	length L	L3	Z U
6859680	2AF9E03020SZT	1/8	1/8	.118	3/16	2	5/8	2
6859682	2AF9E05021SZT	3/16	3/16	.176	1/4	2 1/4	1	2
6859684	2AF9E07023SZT	1/4	1/4	.235	5/16	3	1 1/4	2
6859687	2AF9E08024SZT	5/16	5/16	.294	3/8	3	1 1/2	2
6859690	2AF9E10025SZT	3/8	3/8	.353	1/2	3 1/2	2	2
6859693	2AF9E13026SZT	1/2	1/2	.470	5/8	4 1/2	2 1/2	2
6859696	2AF9E16028SZT	5/8	5/8	.588	3/4	5	3 1/4	2
6859699	2AF9E19029SZT	3/4	3/4	.705	1	5 1/2	3 1/2	2
6859702	2AF9E2502ASZT	1	1	.940	1 1/4	6 1/2	3 3/4	2

ALUFLASH • Series 2AF9 • Radius • 2 Flute • Regular Length • Long Neck • Cylindrical Shank • Inch

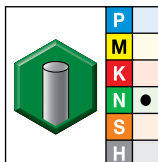
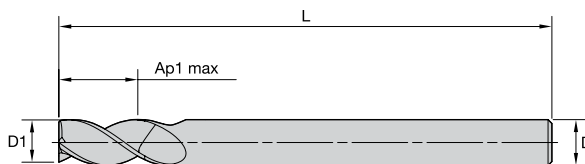


UNCOATED

- first choice
- alternate choice

order #	catalog #	D1	D	D3	length of cut Ap1 max	length L	L3	Re	Z U
6859681	2AF9E03020RAT	1/8	1/8	.118	3/16	2	5/8	.015	2
6859683	2AF9E05021RAT	3/16	3/16	.176	1/4	2 1/4	1	.015	2
6859685	2AF9E07023RET	1/4	1/4	.235	5/16	3	1 1/4	.030	2
6859686	2AF9E07023RGT	1/4	1/4	.235	5/16	3	1 1/4	.060	2
6859688	2AF9E08024RET	5/16	5/16	.294	3/8	3	1 1/2	.030	2
6859689	2AF9E08024RGT	5/16	5/16	.294	3/8	3	1 1/2	.060	2
6859691	2AF9E10025RET	3/8	3/8	.353	1/2	3 1/2	2	.030	2
6859692	2AF9E10025RGT	3/8	3/8	.353	1/2	3 1/2	2	.060	2
6859694	2AF9E13026RET	1/2	1/2	.470	5/8	4 1/2	2 1/2	.030	2
6859695	2AF9E13026RGT	1/2	1/2	.470	5/8	4 1/2	2 1/2	.060	2
6859697	2AF9E16028RET	5/8	5/8	.588	3/4	5	3 1/4	.030	2
6859698	2AF9E16028RGT	5/8	5/8	.588	3/4	5	3 1/4	.060	2
6859700	2AF9E19029RET	3/4	3/4	.705	1	5 1/2	3 1/2	.030	2
6859701	2AF9E19029RGT	3/4	3/4	.705	1	5 1/2	3 1/2	.060	2
6859703	2AF9E2502ARET	1	1	.940	1 1/4	6 1/2	3 3/4	.030	2
6859704	2AF9E2502ARGT	1	1	.940	1 1/4	6 1/2	3 3/4	.060	2

ALUFLASH • Series 3A09 • Square End • 3 Flute • Regular Length • Cylindrical Shank • Inch

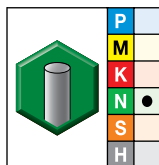
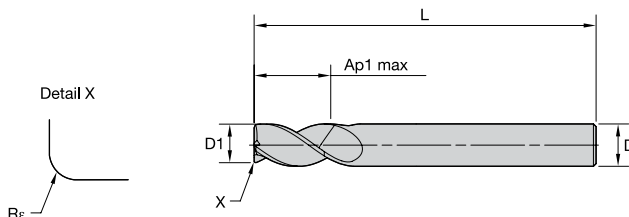


UNCOATED

- first choice
- alternate choice

order #	catalog #	D1	D	length of cut Ap1 max	length L	Z U
6853347	3A09E05001SZT	3/16	3/16	5/16	2	3
6853349	3A09E07003SZT	1/4	1/4	3/8	2	3
6853352	3A09E08004SZT	5/16	5/16	5/8	2 1/2	3
6853354	3A09E10005SZT	3/8	3/8	1	3	3
6853358	3A09E13006SZT	1/2	1/2	1 1/4	3 1/2	3
6853363	3A09E16008SZT	5/8	5/8	1 1/2	3 1/2	3
6853366	3A09E19009SZT	3/4	3/4	1 5/8	4	3
6853371	3A09E2500ASZT	1	1	2 1/2	5 1/2	3

ALUFLASH • Series 3A09 • Radius • 3 Flute • Regular Length • Cylindrical Shank • Inch



UNCOATED

- first choice
- alternate choice

order #	catalog #	D1	D	length of cut Ap1 max	length L	Re	Z U
6853348	3A09E05001RAT	3/16	3/16	5/16	2	.015	3
6853350	3A09E07003RAT	1/4	1/4	3/8	2	.015	3
6853351	3A09E07003RET	1/4	1/4	3/8	2	.030	3
6853353	3A09E08004RAT	5/16	5/16	5/8	2 1/2	.015	3
6853355	3A09E10005RAT	3/8	3/8	1	3	.015	3
6853356	3A09E10005RET	3/8	3/8	1	3	.030	3
6853357	3A09E10005RGT	3/8	3/8	1	3	.060	3
6853359	3A09E13006RAT	1/2	1/2	1 1/4	3 1/2	.015	3
6853360	3A09E13006RET	1/2	1/2	1 1/4	3 1/2	.030	3
6853361	3A09E13006RGT	1/2	1/2	1 1/4	3 1/2	.060	3
6853362	3A09E13006RKT	1/2	1/2	1 1/4	3 1/2	.120	3
6853364	3A09E16008RGT	5/8	5/8	1 1/2	3 1/2	.060	3
6853365	3A09E16008RKT	5/8	5/8	1 1/2	3 1/2	.120	3
6853367	3A09E19009RET	3/4	3/4	1 5/8	4	.030	3
6853368	3A09E19009RGT	3/4	3/4	1 5/8	4	.060	3
6853369	3A09E19009RKT	3/4	3/4	1 5/8	4	.120	3
6853370	3A09E19009RPT	3/4	3/4	1 5/8	4	.190	3
6853372	3A09E2500ARET	1	1	2 1/2	5 1/2	.030	3
6853373	3A09E2500ARGT	1	1	2 1/2	5 1/2	.060	3
6853374	3A09E2500ARJT	1	1	2 1/2	5 1/2	.090	3
6853375	3A09E2500ARKT	1	1	2 1/2	5 1/2	.120	3
6853376	3A09E2500ARPT	1	1	2 1/2	5 1/2	.190	3
6853377	3A09E2500ARQT	1	1	2 1/2	5 1/2	.250	3

INDEXABLE MILLING

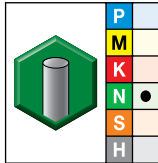
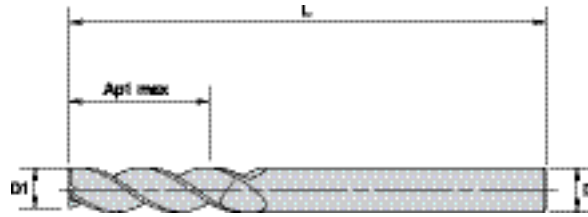
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

ALUFLASH • Series 3A19 • Square End • 3 Flute • Medium Length • Cylindrical Shank • Inch

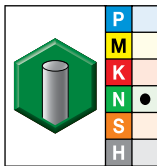
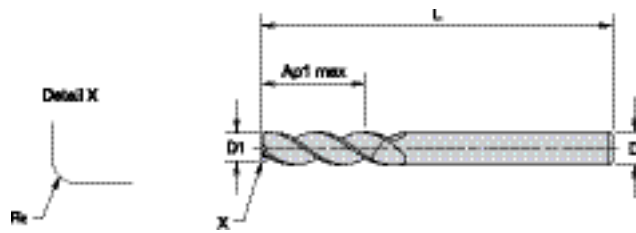


UNCOATED

- first choice
- alternate choice

order #	catalog #	D1	D	length of cut Ap1 max	length L	Z U
6853307	3A19E05011SZT	3/16	3/16	5/8	2	3
6853309	3A19E07013SZT	1/4	1/4	3/4	2 1/2	3
6853323	3A19E10015SZT	3/8	3/8	1 1/2	4	3
6853327	3A19E13016SZT	1/2	1/2	2	4	3
6853331	3A19E16018SZT	5/8	5/8	2	5	3
6853335	3A19E19019SZT	3/4	3/4	2 1/2	5	3
6853339	3A19E2501ASZT	1	1	3 1/4	6 1/2	3

ALUFLASH • Series 3A19 • Radius • 3 Flute • Medium Length • Cylindrical Shank • Inch

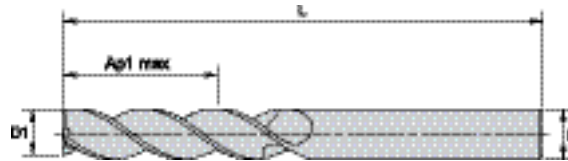


UNCOATED

- first choice
- alternate choice

order #	catalog #	D1	D	length of cut Ap1 max	length L	Re	Z U
6853308	3A19E05011RAT	3/16	3/16	5/8	2	.015	3
6853310	3A19E07013RAT	1/4	1/4	3/4	2 1/2	.015	3
6853321	3A19E07013RET	1/4	1/4	3/4	2 1/2	.030	3
6853322	3A19E07013RGT	1/4	1/4	3/4	2 1/2	.060	3
6853324	3A19E10015RAT	3/8	3/8	1 1/2	4	.015	3
6853325	3A19E10015RET	3/8	3/8	1 1/2	4	.030	3
6853326	3A19E10015RGT	3/8	3/8	1 1/2	4	.060	3
6853328	3A19E13016RET	1/2	1/2	2	4	.030	3
6853329	3A19E13016RGT	1/2	1/2	2	4	.060	3
6853330	3A19E13016RKT	1/2	1/2	2	4	.120	3
6853332	3A19E16018RET	5/8	5/8	2	5	.030	3
6853333	3A19E16018RGT	5/8	5/8	2	5	.060	3
6853334	3A19E16018RKT	5/8	5/8	2	5	.120	3
6853336	3A19E19019RET	3/4	3/4	2 1/2	5	.030	3
6853337	3A19E19019RGT	3/4	3/4	2 1/2	5	.060	3
6853338	3A19E19019RKT	3/4	3/4	2 1/2	5	.120	3
6853340	3A19E2501ARET	1	1	3 1/4	6 1/2	.030	3
6853341	3A19E2501ARGT	1	1	3 1/4	6 1/2	.060	3
6853342	3A19E2501ARJT	1	1	3 1/4	6 1/2	.090	3
6853343	3A19E2501ARKT	1	1	3 1/4	6 1/2	.120	3
6853344	3A19E2501ARPT	1	1	3 1/4	6 1/2	.190	3
6853345	3A19E2501ARQT	1	1	3 1/4	6 1/2	.250	3

ALUFLASH • Series 3A29 • Square End • 3 Flute • Long Length • Cylindrical Shank • Inch

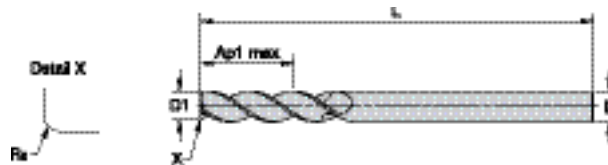


UNCOATED

- first choice
- alternate choice

order #	catalog #	D1	D	length of cut Ap1 max	length L	Z U
6853216	3A29E07023SZT	1/4	1/4	1	3 1/4	3
6853220	3A29E08024SZT	5/16	5/16	1 1/4	3	3
6853282	3A29E10025SZT	3/8	3/8	1 3/4	4	3
6853285	3A29E13026SZT	1/2	1/2	2 1/4	4 1/2	3
6853289	3A29E19029SZT	3/4	3/4	3	5 1/2	3
6853303	3A29E2502ASZT	1	1	4	7	3

ALUFLASH • Series 3A29 • Radius • 3 Flute • Long Length • Cylindrical Shank • Inch



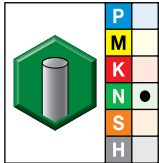
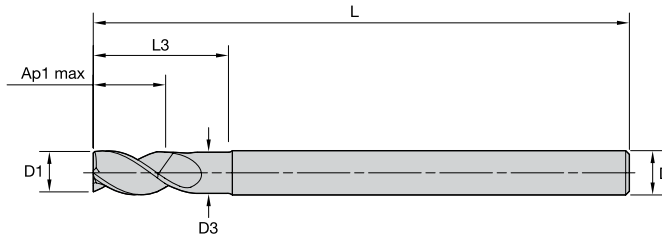
UNCOATED

- first choice
- alternate choice

order #	catalog #	D1	D	length of cut Ap1 max	length L	Rr	Z U
6853217	3A29E07023RAT	1/4	1/4	1	3 1/4	.015	3
6853218	3A29E07023RET	1/4	1/4	1	3 1/4	.030	3
6853219	3A29E07023RGT	1/4	1/4	1	3 1/4	.060	3
6853281	3A29E08024RAT	5/16	5/16	1 1/4	3	.015	3
6853283	3A29E10025RET	3/8	3/8	1 3/4	4	.030	3
6853284	3A29E10025RGT	3/8	3/8	1 3/4	4	.060	3
6853286	3A29E13026RET	1/2	1/2	2 1/4	4 1/2	.030	3
6853287	3A29E13026RGT	1/2	1/2	2 1/4	4 1/2	.060	3
6853288	3A29E13026RKT	1/2	1/2	2 1/4	4 1/2	.120	3
6853290	3A29E19029RET	3/4	3/4	3	5 1/2	.030	3
6853301	3A29E19029RGT	3/4	3/4	3	5 1/2	.060	3
6853302	3A29E19029RKT	3/4	3/4	3	5 1/2	.120	3
6853304	3A29E2502ARET	1	1	4	7	.030	3
6853305	3A29E2502ARGT	1	1	4	7	.060	3
6853306	3A29E2502ARKT	1	1	4	7	.120	3

INDEXABLE MILLING

ALUFLASH • Series 3AN9 • Square End • 3 Flute • Regular Length • Regular Neck • Cylindrical Shank • Inch



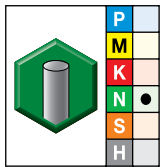
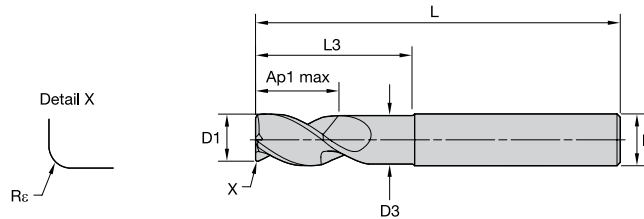
UNCOATED

- first choice
- alternate choice

order #	catalog #	D1	D	D3	length of cut Ap1 max	length L	L3	Z U
6859706	3AN9E05001SZT	3/16	3/16	.176	1/4	2 1/4	9/16	3
6859708	3AN9E07003SZT	1/4	1/4	.235	5/16	2 1/2	3/4	3
6859711	3AN9E08004SZT	5/16	5/16	.294	3/8	2 1/2	1	3
6859715	3AN9E10005SZT	3/8	3/8	.353	1/2	3	1 1/4	3
6859718	3AN9E13006SZT	1/2	1/2	.470	5/8	3 1/2	1 1/2	3
6859721	3AN9E16008SZT	5/8	5/8	.588	3/4	4	2	3
6859724	3AN9E19009SZT	3/4	3/4	.705	1	5	2 1/4	3
6859727	3AN9E2500ASZT	1	1	.940	1 1/4	5 1/2	2 1/2	3

HOLEMAKING

ALUFLASH • Series 3AN9 • Radius • 3 Flute • Regular Length • Regular Neck • Cylindrical Shank • Inch



UNCOATED

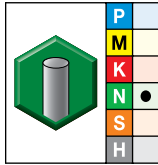
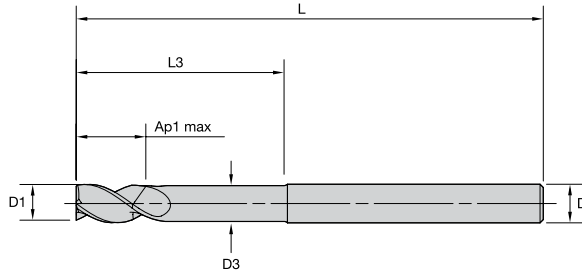
- first choice
- alternate choice

order #	catalog #	D1	D	D3	length of cut Ap1 max	length L	L3	R _e	Z U
6859707	3AN9E05001RAT	3/16	3/16	.176	1/4	2 1/4	9/16	.015	3
6859709	3AN9E07003RET	1/4	1/4	.235	5/16	2 1/2	3/4	.030	3
6859710	3AN9E07003RGT	1/4	1/4	.235	5/16	2 1/2	3/4	.060	3
6859712	3AN9E08004RET	5/16	5/16	.294	3/8	2 1/2	1	.030	3
6859714	3AN9E08004RGT	5/16	5/16	.294	3/8	2 1/2	1	.060	3
6859716	3AN9E10005RET	3/8	3/8	.353	1/2	3	1 1/4	.030	3
6859717	3AN9E10005RGT	3/8	3/8	.353	1/2	3	1 1/4	.060	3
6859719	3AN9E13006RET	1/2	1/2	.470	5/8	3 1/2	1 1/2	.030	3
6859720	3AN9E13006RGT	1/2	1/2	.470	5/8	3 1/2	1 1/2	.060	3
6859722	3AN9E16008RET	5/8	5/8	.588	3/4	4	2	.030	3
6859723	3AN9E16008RGT	5/8	5/8	.588	3/4	4	2	.060	3
6859725	3AN9E19009RET	3/4	3/4	.705	1	5	2 1/4	.030	3
6859726	3AN9E19009RGT	3/4	3/4	.705	1	5	2 1/4	.060	3
6859728	3AN9E2500ARET	1	1	.940	1 1/4	5 1/2	2 1/2	.030	3
6859729	3AN9E2500ARGT	1	1	.940	1 1/4	5 1/2	2 1/2	.060	3

TAPPING

TURNING

ALUFLASH • Series 3AF9 • Square End • 3 Flute • Regular Length • Long Neck • Cylindrical Shank • Inch

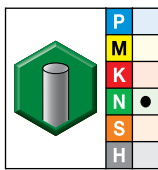
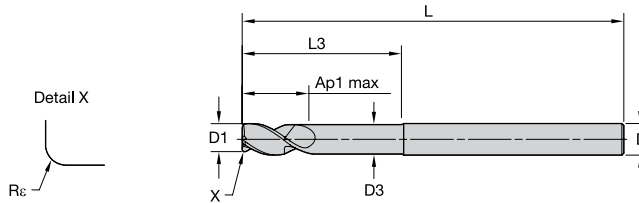


UNCOATED

- first choice
- alternate choice

order #	catalog #	D1	D	D3	length of cut Ap1 max	length L	L3	Z U
6859818	3AF9E05021SZT	3/16	3/16	.176	1/4	2 1/4	1	3
6859820	3AF9E07023SZT	1/4	1/4	.235	5/16	3	1 1/4	3
6859843	3AF9E08024SZT	5/16	5/16	.294	3/8	3	1 1/2	3
6859846	3AF9E10025SZT	3/8	3/8	.353	1/2	3 1/2	2	3
6859849	3AF9E13026SZT	1/2	1/2	.470	5/8	4 1/2	2 1/2	3
6859862	3AF9E16028SZT	5/8	5/8	.588	3/4	5	3 1/4	3
6859866	3AF9E19029SZT	3/4	3/4	.705	1	5 1/2	3 1/2	3
6859869	3AF9E2502ASZT	1	1	.940	1 1/4	6 1/2	3 3/4	3

ALUFLASH • Series 3AF9 • Radius • 3 Flute • Regular Length • Long Neck • Cylindrical Shank • Inch

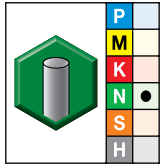
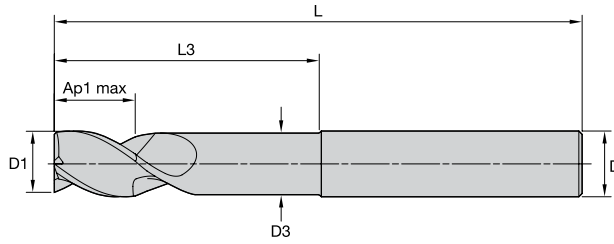


UNCOATED

- first choice
- alternate choice

order #	catalog #	D1	D	D3	length of cut Ap1 max	length L	L3	Rε	Z U
6859819	3AF9E05021RAT	3/16	3/16	.176	1/4	2 1/4	1	.015	3
6859841	3AF9E07023RET	1/4	1/4	.235	5/16	3	1 1/4	.030	3
6859842	3AF9E07023RGT	1/4	1/4	.235	5/16	3	1 1/4	.060	3
6859844	3AF9E08024RET	5/16	5/16	.294	3/8	3	1 1/2	.030	3
6859845	3AF9E08024RGT	5/16	5/16	.294	3/8	3	1 1/2	.060	3
6859847	3AF9E10025RET	3/8	3/8	.353	1/2	3 1/2	2	.030	3
6859848	3AF9E10025RGT	3/8	3/8	.353	1/2	3 1/2	2	.060	3
6859850	3AF9E13026RET	1/2	1/2	.470	5/8	4 1/2	2 1/2	.030	3
6859861	3AF9E13026RGT	1/2	1/2	.470	5/8	4 1/2	2 1/2	.060	3
6859864	3AF9E16028RET	5/8	5/8	.588	3/4	5	3 1/4	.030	3
6859865	3AF9E16028RGT	5/8	5/8	.588	3/4	5	3 1/4	.060	3
6859867	3AF9E19029RET	3/4	3/4	.705	1	5 1/2	3 1/2	.030	3
6859868	3AF9E19029RGT	3/4	3/4	.705	1	5 1/2	3 1/2	.060	3
6859870	3AF9E2502ARET	1	1	.940	1 1/4	6 1/2	3 3/4	.030	3
6859871	3AF9E2502ARGT	1	1	.940	1 1/4	6 1/2	3 3/4	.060	3

ALUFLASH • Series 3AL9 • Square End • 3 Flute • Regular Length • Medium Neck • Cylindrical Shank • Inch

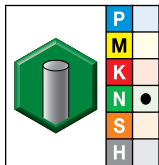
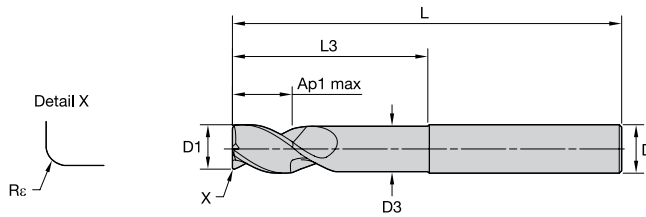


UNCOATED

- first choice
- alternate choice

order #	catalog #	D1	D	D3	length of cut Ap1 max	length L	L3	Z U
6859740	3AL9E05011SZT	3/16	3/16	.176	1/4	2 1/4	3/4	3
6859783	3AL9E07013SZT	1/4	1/4	.235	5/16	2 1/2	1	3
6859786	3AL9E08014SZT	5/16	5/16	.294	3/8	3	1 1/4	3
6859789	3AL9E10015SZT	3/8	3/8	.353	1/2	3	1 1/2	3
6859802	3AL9E13016SZT	1/2	1/2	.470	5/8	4	2	3
6859805	3AL9E16018SZT	5/8	5/8	.588	3/4	5	2 1/2	3
6859808	3AL9E19019SZT	3/4	3/4	.705	1	5	3	3
6859811	3AL9E2501ASZT	1	1	.940	1 1/4	5 1/2	3	3

ALUFLASH • Series 3AL9 • Radiused • 3 Flute • Regular Length • Medium Neck • Cylindrical Shank • Inch

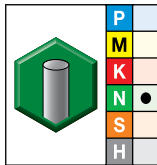
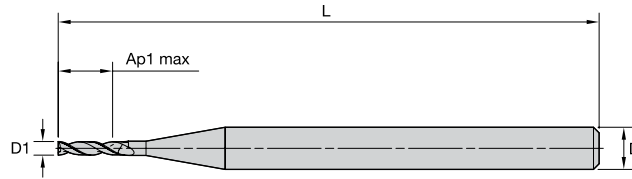


UNCOATED

- first choice
- alternate choice

order #	catalog #	D1	D	D3	length of cut Ap1 max	length L	L3	Re	Z U
6859781	3AL9E05011RAT	3/16	3/16	.176	1/4	2 1/4	3/4	.015	3
6859784	3AL9E07013RET	1/4	1/4	.235	5/16	2 1/2	1	.030	3
6859785	3AL9E07013RGT	1/4	1/4	.235	5/16	2 1/2	1	.060	3
6859787	3AL9E08014RET	5/16	5/16	.294	3/8	3	1 1/4	.030	3
6859788	3AL9E08014RGT	5/16	5/16	.294	3/8	3	1 1/4	.060	3
6859790	3AL9E10015RET	3/8	3/8	.353	1/2	3	1 1/2	.030	3
6859801	3AL9E10015RGT	3/8	3/8	.353	1/2	3	1 1/2	.060	3
6859803	3AL9E13016RET	1/2	1/2	.470	5/8	4	2	.030	3
6859804	3AL9E13016RGT	1/2	1/2	.470	5/8	4	2	.060	3
6859806	3AL9E16018RET	5/8	5/8	.588	3/4	5	2 1/2	.030	3
6859807	3AL9E16018RGT	5/8	5/8	.588	3/4	5	2 1/2	.060	3
6859809	3AL9E19019RET	3/4	3/4	.705	1	5	3	.030	3
6859810	3AL9E19019RGT	3/4	3/4	.705	1	5	3	.060	3
6859812	3AL9E2501ARET	1	1	.940	1 1/4	5 1/2	3	.030	3
6859813	3AL9E2501ARGT	1	1	.940	1 1/4	5 1/2	3	.060	3

ALUFLASH • Series 2A09 • Square End • 2 Flute • Regular Length • Cylindrical Shank • Metric

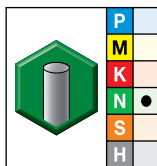
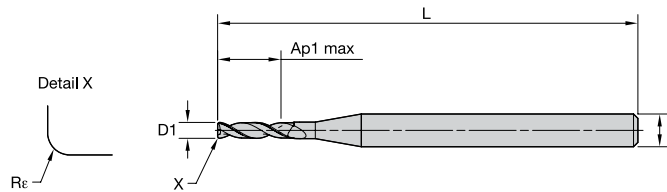


UNCOATED

- first choice
- alternate choice

order #	catalog #	D1	D	length of cut Ap1 max	length L	Z U
6853514	2A09M01000SZT	1,0	3	4,00	38	2
6853515	2A09M01500SZT	1,5	3	6,00	38	2
6853517	2A09M02000SZT	2,0	3	8,00	38	2
6853519	2A09M02500SZT	2,5	3	9,00	38	2
6853542	2A09M04001SZT	4,0	4	12,00	50	2
6853544	2A09M05002SZT	5,0	5	14,00	50	2
6853547	2A09M06003SZT	6,0	6	16,00	50	2
6853549	2A09M08004SZT	8,0	8	20,00	63	2
6853552	2A09M12006SZT	12,0	12	25,00	76	2
6853554	2A09M16008SZT	16,0	16	32,00	89	2
6853556	2A09M20009SZT	20,0	20	40,00	104	2

ALUFLASH • Series 2A09 • Radius • 2 Flute • Regular Length • Cylindrical Shank • Metric



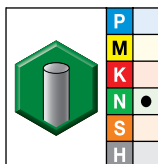
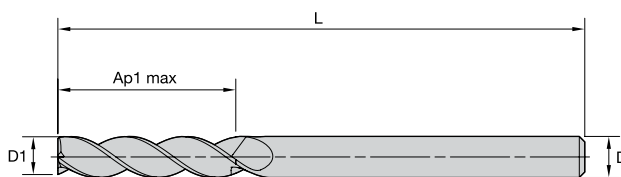
UNCOATED

- first choice
- alternate choice

order #	catalog #	D1	D	length of cut Ap1 max	length L	Re	Z U
6853516	2A09M01500RAT	1,5	3	6,00	38	0,20	2
6853518	2A09M02000RAT	2,0	3	8,00	38	0,20	2
6853520	2A09M02500RAT	2,5	3	9,00	38	0,20	2
6853541	2A09M03000RAT	3,0	3	12,00	38	0,20	2
6853543	2A09M04001RAT	4,0	4	12,00	50	0,20	2
6853546	2A09M05002RAT	5,0	5	14,00	50	0,20	2
6853548	2A09M06003RET	6,0	6	16,00	50	0,50	2
6853550	2A09M08004RET	8,0	8	20,00	63	0,50	2
6853551	2A09M10005RJT	10,0	10	22,00	76	1,00	2
6853553	2A09M12006RJT	12,0	12	25,00	76	1,00	2
6853555	2A09M16008RJT	16,0	16	32,00	89	1,00	2
6853557	2A09M20009RJT	20,0	20	40,00	104	1,00	2

INDEXABLE MILLING

ALUFLASH • Series 3A09 • Square End • 3 Flute • Regular Length • Cylindrical Shank • Metric



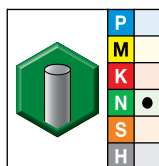
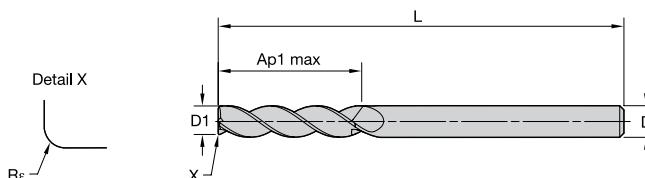
UNCOATED

- first choice
- alternate choice

order #	catalog #	D1	D	length of cut Ap1 max	length L	Z U
6853511	3A09M03000SZT	3,0	3	12,00	38	3

SOLID END MILLING

ALUFLASH • Series 3A09 • Radius • 3 Flute • Regular Length • Cylindrical Shank • Metric



UNCOATED

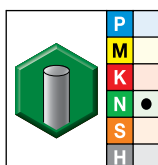
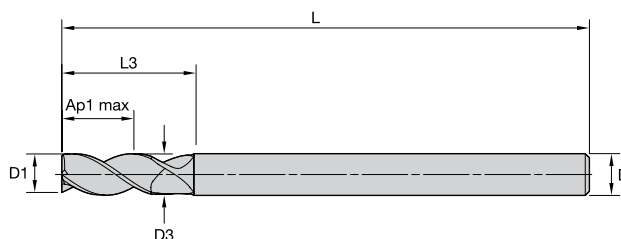
- first choice
- alternate choice

order #	catalog #	D1	D	length of cut Ap1 max	length L	Re	Z U
6853512	3A09M03000RAT	3,0	3	12,00	38	0,20	3
6853513	3A09M04001RET	4,0	4	12,00	63	0,50	3

HOLEMAKING

TAPPING

ALUFLASH • Series 3AN9 • Square End • 3 Flute • Regular Length • Regular Neck • Cylindrical Shank • Metric



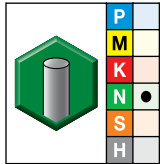
UNCOATED

- first choice
- alternate choice

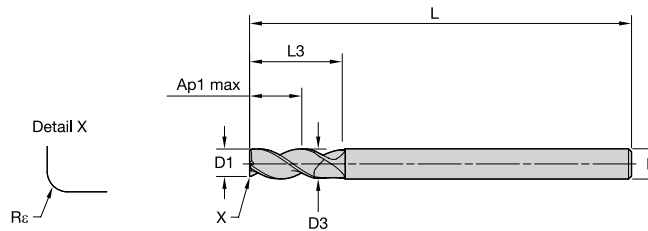
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6853460	3AN9M04001SZT	4,0	4	3,76	8,00	50	12,00	3
6853462	3AN9M05002SZT	5,0	5	4,70	10,00	63	15,00	3
6853465	3AN9M06003SZT	6,0	6	5,64	13,00	63	18,00	3
6853469	3AN9M08004SZT	8,0	8	7,52	18,00	76	24,00	3
6853474	3AN9M10005SZT	10,0	10	9,40	22,00	76	30,00	3
6853479	3AN9M12006SZT	12,0	12	11,28	25,00	76	36,00	3
6853486	3AN9M16008SZT	16,0	16	15,04	32,00	89	48,00	3
6853494	3AN9M20009SZT	20,0	20	18,80	40,00	115	60,00	3

TURNING

ALUFLASH • Series 3AN9 • Radius • 3 Flute • Regular Length • Regular Neck • Cylindrical Shank • Metric



UNCOATED



- first choice
- alternate choice

order #	catalog #	D1	D	D3	length of cut Ap1 max	length L	L3	Re	Z U
6853461	3AN9M04001RAT	4,0	4	3,76	8,00	50	12,00	0,20	3
6853463	3AN9M05002RAT	5,0	5	4,70	10,00	63	15,00	0,20	3
6853464	3AN9M05002RET	5,0	5	4,70	10,00	63	15,00	0,50	3
6853466	3AN9M06003RAT	6,0	6	5,64	13,00	63	18,00	0,20	3
6853467	3AN9M06003RET	6,0	6	5,64	13,00	63	18,00	0,50	3
6853468	3AN9M06003RJT	6,0	6	5,64	13,00	63	18,00	1,00	3
6853470	3AN9M08004RAT	8,0	8	7,52	18,00	76	24,00	0,20	3
6853471	3AN9M08004RET	8,0	8	7,52	18,00	76	24,00	0,50	3
6853473	3AN9M08004RHT	8,0	8	7,52	18,00	76	24,00	1,50	3
6853472	3AN9M08004RJT	8,0	8	7,52	18,00	76	24,00	1,00	3
6853475	3AN9M10005RAT	10,0	10	9,40	22,00	76	30,00	0,20	3
6853476	3AN9M10005RET	10,0	10	9,40	22,00	76	30,00	0,50	3
6853478	3AN9M10005RHT	10,0	10	9,40	22,00	76	30,00	1,50	3
6853477	3AN9M10005RJT	10,0	10	9,40	22,00	76	30,00	1,00	3
6853480	3AN9M12006RAT	12,0	12	11,28	25,00	76	36,00	0,20	3
6853481	3AN9M12006RET	12,0	12	11,28	25,00	76	36,00	0,50	3
6853483	3AN9M12006RHT	12,0	12	11,28	25,00	76	36,00	1,50	3
6853482	3AN9M12006RJT	12,0	12	11,28	25,00	76	36,00	1,00	3
6853484	3AN9M12006RKT	12,0	12	11,28	25,00	76	36,00	2,00	3
6853485	3AN9M12006RPT	12,0	12	11,28	25,00	76	36,00	3,00	3
6853487	3AN9M16008RAT	16,0	16	15,04	32,00	89	48,00	0,20	3
6853488	3AN9M16008RET	16,0	16	15,04	32,00	89	48,00	0,50	3
6853490	3AN9M16008RHT	16,0	16	15,04	32,00	89	48,00	1,50	3
6853489	3AN9M16008RJT	16,0	16	15,04	32,00	89	48,00	1,00	3
6853491	3AN9M16008RMT	16,0	16	15,04	32,00	89	48,00	2,50	3
6853492	3AN9M16008RPT	16,0	16	15,04	32,00	89	48,00	3,00	3
6853493	3AN9M16008RQT	16,0	16	15,04	32,00	89	48,00	4,00	3
6853495	3AN9M20009RAT	20,0	20	18,80	40,00	115	60,00	0,20	3
6853496	3AN9M20009RHT	20,0	20	18,80	40,00	115	60,00	1,50	3
6853497	3AN9M20009RKT	20,0	20	18,80	40,00	115	60,00	2,00	3
6853498	3AN9M20009RPT	20,0	20	18,80	40,00	115	60,00	3,00	3
6853499	3AN9M20009RQT	20,0	20	18,80	40,00	115	60,00	4,00	3
6853500	3AN9M20009RRT	20,0	20	18,80	40,00	115	60,00	5,00	3

INDEXABLE MILLING

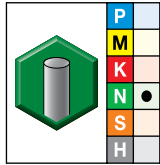
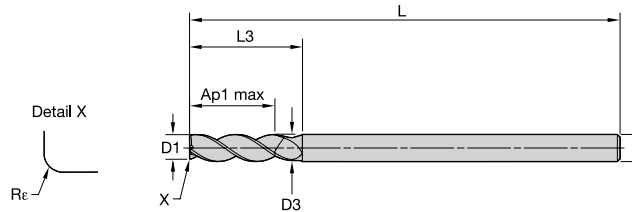
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

ALUFLASH • Series 3AP9 • Radius • 3 Flute • Long Length • Regular Neck • Cylindrical Shank • Metric

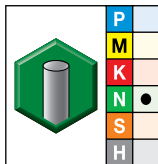
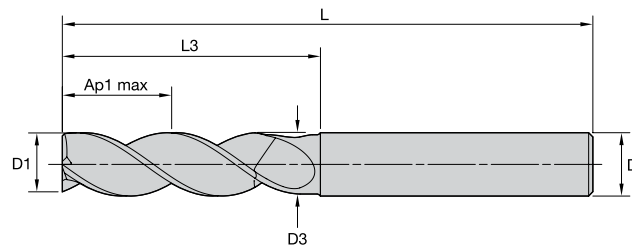


UNCOATED

- first choice
- alternate choice

order #	catalog #	D1	D	D3	length of cut Ap1 max	length L	L3	Re	Z U
6853439	3AP9M04011RAT	4,0	4	3,76	12,00	63	16,00	0,20	3
6853440	3AP9M05002RAT	5,0	5	4,70	15,00	63	20,00	0,20	3
6853441	3AP9M06013RET	6,0	6	5,64	18,00	76	24,00	0,50	3
6853442	3AP9M06013RJT	6,0	6	5,64	18,00	76	24,00	1,00	3
6853443	3AP9M08014RET	8,0	8	7,52	24,00	76	32,00	0,50	3
6853444	3AP9M08014RJT	8,0	8	7,52	24,00	76	32,00	1,00	3
6853445	3AP9M10015RET	10,0	10	9,40	30,00	89	40,00	0,50	3
6853446	3AP9M10015RHT	10,0	10	9,40	30,00	89	40,00	1,50	3
6853447	3AP9M10015RKT	10,0	10	9,40	30,00	89	40,00	2,00	3
6853449	3AP9M12016RET	12,0	12	11,28	36,00	100	48,00	0,50	3
6853450	3AP9M12016RHT	12,0	12	11,28	36,00	100	48,00	1,50	3
6853451	3AP9M12016RPT	12,0	12	11,28	36,00	100	48,00	3,00	3
6853452	3AP9M16018RET	16,0	16	15,04	48,00	110	64,00	0,50	3
6853453	3AP9M16018RHT	16,0	16	15,04	48,00	110	64,00	1,50	3
6853454	3AP9M16018RPT	16,0	16	15,04	48,00	110	64,00	3,00	3
6853455	3AP9M20019RET	20,0	20	18,80	60,00	150	80,00	0,50	3
6853456	3AP9M20019RHT	20,0	20	18,80	60,00	150	80,00	1,50	3
6853457	3AP9M20019RKT	20,0	20	18,80	60,00	150	80,00	2,00	3
6853458	3AP9M20019RPT	20,0	20	18,80	60,00	150	80,00	3,00	3
6853459	3AP9M20019RQT	20,0	20	18,80	60,00	150	80,00	4,00	3

ALUFLASH • Series 3AP9 • Square End • 3 Flute • Long Length • Regular Neck • Cylindrical Shank • Metric

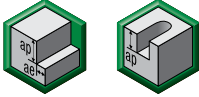



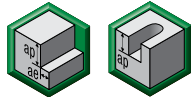

UNCOATED

- first choice
- alternate choice

order #	catalog #	D1	D	D3	length of cut Ap1 max	length L	L3	Z U
6853448	3AP9M12016SZT	12,0	12	11,28	36,00	100	48,00	3

ALUFLASH • Side Milling and Slotting • Application Data • Inch

																					
		Side Milling (A) and Slotting (B)			UNCOATED			Recommended feed per tooth (Fz = IPT) for side milling (A). For slotting (B), reduce Fz by 20%.													
		A		B	Cutting Speed – Vc SFM			D1 – Diameter													
Material Group	ap	ae	ap	min	Start	max	Fraction	1/8	5/32	3/16	1/4	5/16	3/8	1/2	9/16	5/8	23/32	3/4	1		
N	1	Ap1 max	0,5 x D1	1 x D1	1500	1800	6000	IPT	.0009	.0017	.0022	.0026	.0035	.0043	.0052	.0060	.0069	.0078	.0087	.0108	
	2	Ap1 max	0,5 x D1	1 x D1	1500	1800	4500	IPT	.0008	.0016	.0019	.0023	.0031	.0039	.0047	.0054	.0062	.0070	.0078	.0097	
	3	Ap1 max	0,5 x D1	1 x D1	1500	1800	4500	IPT	.0006	.0012	.0015	.0018	.0024	.0030	.0036	.0042	.0048	.0054	.0061	.0076	
	4	Ap1 max	0,5 x D1	1 x D1	1200	1350	2250	IPT	.0006	.0012	.0015	.0018	.0024	.0030	.0036	.0042	.0048	.0054	.0061	.0076	
	5	Ap1 max	0,5 x D1	1 x D1	750	1200	3000	IPT	.0008	.0016	.0020	.0023	.0031	.0039	.0047	.0054	.0062	.0070	.0078	.0097	

																					
		Side Milling (A) and Slotting (B)			UNCOATED			Recommended feed per tooth (Fz = IPT) for side milling (A). For slotting (B), reduce Fz by 20%.													
		A		B	Cutting Speed – Vc SFM			D1 – Diameter													
Material Group	ap	ae	ap	min	Start	max	Fraction	1/8	5/32	3/16	1/4	5/16	3/8	1/2	9/16	5/8	23/32	3/4	1		
N	1	Ap1 max	0,5 x D1	1 x D	1500	1800	6000	IPT	.0009	.0017	.0022	.0026	.0035	.0043	.0052	.0060	.0069	.0078	.0087	.0108	
	2	Ap1 max	0,5 x D1	1 x D	1500	1800	4500	IPT	.0008	.0016	.0019	.0023	.0031	.0039	.0047	.0054	.0062	.0070	.0078	.0097	
	3	Ap1 max	0,5 x D1	1 x D	1500	1800	4500	IPT	.0006	.0012	.0015	.0018	.0024	.0030	.0036	.0042	.0048	.0054	.0061	.0076	
	4	Ap1 max	0,5 x D1	1 x D	1200	1350	2250	IPT	.0006	.0012	.0015	.0018	.0024	.0030	.0036	.0042	.0048	.0054	.0061	.0076	
	5	Ap1 max	0,5 x D1	1 x D	750	1200	3000	IPT	.0008	.0016	.0020	.0023	.0031	.0039	.0047	.0054	.0062	.0070	.0078	.0097	

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

ALUFLASH • Ramping 2 Flute • Application Data • Inch

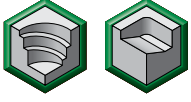

INDEXABLE MILLING

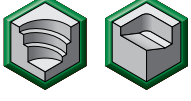

SOLID END MILLING

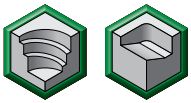

HOLEMAKING

TAPPING



TURNING

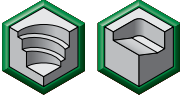

																		
		Helical Interpolation / Ramping 0° - 15°			UNCOATED													
		Cutting Speed – Vc SFM			Recommended feed per tooth (fz = IPT) for helical interpolation and ramping													
					Diameter – D1 [Ømin-Ømax]													
Material Group	Max Depth	min	Start	max	Fraction	1/8	5/32	3/16	1/4	5/16	3/8	1/2	9/16	5/8	23/32	3/4	1	
					Decimals	.180	.297	.356	.475	.594	.713	.950	1.047	1.188	1.346	1.425	1.900	
N	1	1.25 x D1	1500	1800	6000	IPT	.0009	.0017	.0022	.0026	.0035	.0043	.0052	.0060	.0069	.0078	.0087	.0108
	2	1.25 x D1	1500	1800	4500	IPT	.0008	.0016	.0019	.0023	.0031	.0039	.0047	.0054	.0062	.0070	.0078	.0097
	3	1.25 x D1	1500	1800	4500	IPT	.0006	.0012	.0015	.0018	.0024	.0030	.0036	.0042	.0048	.0054	.0061	.0076
	4	1.25 x D1	1200	1350	2250	IPT	.0006	.0012	.0015	.0018	.0024	.0030	.0036	.0042	.0048	.0054	.0061	.0076
	5	1.25 x D1	750	1200	3000	IPT	.0008	.0016	.0020	.0023	.0031	.0039	.0047	.0054	.0062	.0070	.0078	.0097

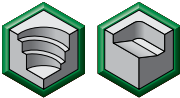

																		
		Helical Interpolation / Ramping 15° - 30°			UNCOATED													
		Cutting Speed – Vc SFM			Recommended feed per tooth (fz = IPT) for helical interpolation and ramping													
					Diameter – D1 [Ømin-Ømax]													
Material Group	Max Depth	min	Start	max	Fraction	1/8	5/32	3/16	1/4	5/16	3/8	1/2	9/16	5/8	23/32	3/4	1	
					Decimals	.180	.297	.356	.475	.594	.713	.950	1.047	1.188	1.346	1.425	1.900	
N	1	1.25 x D1	1500	1800	4800	IPT	.0006	.0013	.0016	.0019	.0026	.0032	.0039	.0045	.0052	.0058	.0065	.0081
	2	1.25 x D1	1500	1800	3600	IPT	.0006	.0012	.0014	.0018	.0023	.0029	.0035	.0041	.0047	.0053	.0058	.0073
	3	1.25 x D1	1500	1800	3600	IPT	.0005	.0009	.0011	.0014	.0018	.0023	.0027	.0032	.0036	.0041	.0045	.0057
	4	1.25 x D1	1200	1350	1800	IPT	.0005	.0009	.0011	.0014	.0018	.0023	.0027	.0032	.0036	.0041	.0045	.0057
	5	1.25 x D1	750	1200	2400	IPT	.0006	.0012	.0015	.0018	.0023	.0029	.0035	.0041	.0047	.0053	.0058	.0073

																		
		Helical Interpolation / Ramping 30° - 45°			UNCOATED													
		Cutting Speed – Vc SFM			Recommended feed per tooth (fz = IPT) for helical interpolation and ramping													
					Diameter – D1 [Ømin-Ømax]													
Material Group	Max Depth	min	Start	max	Fraction	1/8	5/32	3/16	1/4	5/16	3/8	1/2	9/16	5/8	23/32	3/4	1	
					Decimals	.180	.297	.356	.475	.594	.713	.950	1.047	1.188	1.346	1.425	1.900	
N	1	1.25 x D1	1260	1500	2400	IPT	.0005	.0010	.0013	.0016	.0021	.0026	.0031	.0036	.0042	.0047	.0052	.0065
	2	1.25 x D1	1260	1500	2400	IPT	.0005	.0009	.0011	.0014	.0019	.0023	.0028	.0033	.0037	.0042	.0047	.0058
	3	1.25 x D1	1260	1500	2400	IPT	.0004	.0007	.0009	.0011	.0015	.0018	.0022	.0025	.0029	.0033	.0036	.0045
	4	1.25 x D1	1020	1140	1350	IPT	.0004	.0007	.0009	.0011	.0015	.0018	.0022	.0025	.0029	.0033	.0036	.0045
	5	1.25 x D1	630	1020	1800	IPT	.0005	.0009	.0012	.0014	.0019	.0023	.0028	.0033	.0037	.0042	.0047	.0058

ALUFLASH • Ramping 3 Flute • Application Data • Inch

Material Group	Max Depth	Helical Interpolation / Ramping			 													
		0° - 15°			UNCOATED													
		Cutting Speed – Vc m/min			Recommended feed per tooth (fz = IPT) for helical interpolation and ramping – fz x 1													
					Diameter – D1 [Ømin-Ømax]													
		min	Start	max	Fraction	1/8	5/32	3/16	1/4	5/16	3/8	1/2	9/16	5/8	23/32	3/4	1	
					Decimals	.180	.180	.216	.288	.359	.431	.575	.633	.719	.814	.863	1.150	
N	1	1.25 x D1	1500	1800	6000	IPT	.0009	.0017	.0022	.0026	.0035	.0043	.0052	.0060	.0069	.0078	.0087	.0108
	2	1.25 x D1	1500	1800	4500	IPT	.0008	.0016	.0019	.0023	.0031	.0039	.0047	.0054	.0062	.0070	.0078	.0097
	3	1.25 x D1	1500	1800	4500	IPT	.0006	.0012	.0015	.0018	.0024	.0030	.0036	.0042	.0048	.0054	.0061	.0076
	4	1.25 x D1	1200	1350	2250	IPT	.0006	.0012	.0015	.0018	.0024	.0030	.0036	.0042	.0048	.0054	.0061	.0076
	5	1.25 x D1	750	1200	3000	IPT	.0008	.0016	.0020	.0023	.0031	.0039	.0047	.0054	.0062	.0070	.0078	.0097


Material Group	Max Depth	Helical Interpolation / Ramping			 													
		15° - 30°			UNCOATED													
		Cutting Speed – Vc m/min			Recommended feed per tooth (fz = IPT) for helical interpolation and ramping – fz x 1													
					Diameter – D1 [Ømin-Ømax]													
		min	Start	max	Fraction	1/8	5/32	3/16	1/4	5/16	3/8	1/2	9/16	5/8	23/32	3/4	1	
					Decimals	.180	.180	.216	.288	.359	.431	.575	.633	.719	.814	.863	1.150	
N	1	1.25 x D1	1500	1800	4800	IPT	.0006	.0013	.0016	.0019	.0026	.0032	.0039	.0045	.0052	.0058	.0065	.0081
	2	1.25 x D1	1500	1800	3600	IPT	.0006	.0012	.0014	.0018	.0023	.0029	.0035	.0041	.0047	.0053	.0058	.0073
	3	1.25 x D1	1500	1800	3600	IPT	.0005	.0009	.0011	.0014	.0018	.0023	.0027	.0032	.0036	.0041	.0045	.0057
	4	1.25 x D1	1200	1350	1800	IPT	.0005	.0009	.0011	.0014	.0018	.0023	.0027	.0032	.0036	.0041	.0045	.0057
	5	1.25 x D1	750	1200	2400	IPT	.0006	.0012	.0015	.0018	.0023	.0029	.0035	.0041	.0047	.0053	.0058	.0073

Material Group	Max Depth	Helical Interpolation / Ramping			 													
		30° - 45°			UNCOATED													
		Cutting Speed – Vc m/min			Recommended feed per tooth (fz = IPT) for helical interpolation and ramping – fz x 1													
					Diameter – D1 [Ømin-Ømax]													
		min	Start	max	Fraction	1/8	5/32	3/16	1/4	5/16	3/8	1/2	9/16	5/8	23/32	3/4	1	
					Decimals	.180	.180	.216	.288	.359	.431	.575	.633	.719	.814	.863	1.150	
N	1	1.25 x D1	1260	1500	2400	IPT	.0005	.0010	.0013	.0016	.0021	.0026	.0031	.0036	.0042	.0047	.0052	.0065
	2	1.25 x D1	1260	1500	2400	IPT	.0005	.0009	.0011	.0014	.0019	.0023	.0028	.0033	.0037	.0042	.0047	.0058
	3	1.25 x D1	1260	1500	2400	IPT	.0004	.0007	.0009	.0011	.0015	.0018	.0022	.0025	.0029	.0033	.0036	.0045
	4	1.25 x D1	1020	1140	1350	IPT	.0004	.0007	.0009	.0011	.0015	.0018	.0022	.0025	.0029	.0033	.0036	.0045
	5	1.25 x D1	630	1020	1800	IPT	.0005	.0009	.0012	.0014	.0019	.0023	.0028	.0033	.0037	.0042	.0047	.0058

ALUFLASH • Plunging • Application Data • Inch

INDEXABLE MILLING

SOLID END MILLING

																				
Plunging/Drilling				UNCOATED				Recommended feed per revolution (fn =IPR) for plunging 2-flute end mills												
				Cutting Speed – Vc SFM				D1 – Diameter												
Material Group	Max Depth	Applicable	Coolant	min	Start	max	Fraction	1/8	5/32	3/16	1/4	5/16	3/8	1/2	9/16	5/8	23/32	3/4	1	
N	1	1.5 x D	●	Required	360	780	1200	IPR	.0031	.0047	.0053	.0059	.0063	.0079	.0087	.0093	.0098	.0104	.0110	.0118
	2	1.5 x D	●	Required	360	750	840	IPR	.0031	.0047	.0053	.0059	.0063	.0079	.0087	.0093	.0098	.0104	.0110	.0118
	3	1.5 x D	●	Required	300	600	780	IPR	.0031	.0047	.0053	.0059	.0063	.0079	.0087	.0093	.0098	.0104	.0110	.0118
	4	1 x D	●	Required	180	450	780	IPR	.0024	.0031	.0039	.0047	.0055	.0063	.0079	.0083	.0087	.0093	.0098	.0110
	5	1.5 x D	●	Required	180	600	1200	IPR	.0031	.0047	.0053	.0059	.0063	.0079	.0087	.0093	.0098	.0104	.0110	.0118

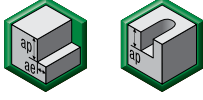

HOLEMAKING

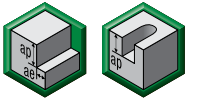

																				
Plunging/Drilling				UNCOATED				Recommended feed per revolution (fn =IPR) for plunging 3-flute end mills												
				Cutting Speed – Vc SFM				D1 – Diameter												
Material Group	Max Depth	Applicable	Coolant	min	Start	max	Fraction	1/8	5/32	3/16	1/4	5/16	3/8	1/2	9/16	5/8	23/32	3/4	1	
N	1	1.5 x D	●	Required	360	780	1200	IPR	.0022	.0033	.0037	.0041	.0044	.0055	.0061	.0065	.0069	.0073	.0077	.0083
	2	1.5 x D	●	Required	360	750	840	IPR	.0022	.0033	.0037	.0041	.0044	.0055	.0061	.0065	.0069	.0073	.0077	.0083
	3	1.5 x D	●	Required	300	600	780	IPR	.0022	.0033	.0037	.0041	.0044	.0055	.0061	.0065	.0069	.0073	.0077	.0083
	4	1 x D	●	Required	180	450	780	IPR	.0017	.0022	.0028	.0033	.0039	.0044	.0055	.0058	.0061	.0065	.0069	.0077
	5	1.5 x D	●	Required	180	600	1200	IPR	.0022	.0033	.0037	.0041	.0044	.0055	.0061	.0065	.0069	.0073	.0077	.0083

TAPPING

TURNING

ALUFLASH • Side Milling and Slotting • Application Data • Metric

																							
		Side Milling (A) and Slotting (B)		UNCOATED			Recommended feed per tooth (fz = mm/z) for side milling (A). For slotting (B), reduce fz by 20%.																
		A		B		Cutting Speed – Vc m/min			D1 – Diameter														
Material Group	ap	ae	ap	min	Start	max	mm	2,0	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0				
N	1	Ap1 max	0,5 x D1	1 x D	500	600	2000	fz	0,022	0,044	0,055	0,066	0,088	0,110	0,132	0,153	0,176	0,198	0,220	0,275			
	2	Ap1 max	0,5 x D1	1 x D	500	600	1500	fz	0,020	0,040	0,048	0,059	0,079	0,099	0,119	0,138	0,158	0,178	0,198	0,247			
	3	Ap1 max	0,5 x D1	1 x D	500	600	1500	fz	0,015	0,031	0,038	0,046	0,062	0,077	0,092	0,107	0,123	0,138	0,154	0,192			
	4	Ap1 max	0,5 x D1	1 x D	400	450	750	fz	0,015	0,031	0,038	0,046	0,062	0,077	0,092	0,107	0,123	0,138	0,154	0,192			
	5	Ap1 max	0,5 x D1	1 x D	250	400	1000	fz	0,020	0,040	0,050	0,059	0,079	0,099	0,119	0,138	0,158	0,178	0,198	0,247			

																							
		Side Milling (A) and Slotting (B)		UNCOATED			Recommended feed per tooth (fz = mm/z) for side milling (A). For slotting (B), reduce fz by 20%.																
		A		B		Cutting Speed – Vc m/min			D1 – Diameter														
Material Group	ap	ae	ap	min	Start	max	mm	2,0	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0				
N	1	Ap1 max	0,5 x D1	1 x D	500	600	2000	fz	0,022	0,044	0,055	0,066	0,088	0,110	0,132	0,153	0,176	0,198	0,220	0,275			
	2	Ap1 max	0,5 x D1	1 x D	500	600	1500	fz	0,020	0,040	0,048	0,059	0,079	0,099	0,119	0,138	0,158	0,178	0,198	0,247			
	3	Ap1 max	0,5 x D1	1 x D	500	600	1500	fz	0,015	0,031	0,038	0,046	0,062	0,077	0,092	0,107	0,123	0,138	0,154	0,192			
	4	Ap1 max	0,5 x D1	1 x D	400	450	750	fz	0,015	0,031	0,038	0,046	0,062	0,077	0,092	0,107	0,123	0,138	0,154	0,192			
	5	Ap1 max	0,5 x D1	1 x D	250	400	1000	fz	0,020	0,040	0,050	0,059	0,079	0,099	0,119	0,138	0,158	0,178	0,198	0,247			

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

ALUFLASH • Ramping 2 Flute • Application Data • Metric


INDEXABLE MILLING


SOLID END MILLING


HOLEMAKING

TAPPING



TURNING

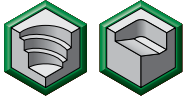

Material Group	Max Depth	Helical Interpolation / Ramping 0° - 15°																
		UNCOATED			Recommended feed per tooth (fz = mm/z) for helical interpolation and ramping													
		Cutting Speed – Vc m/min			Diameter – D1 [Ømin–Ømax]													
		min	Start	max	mm	3,0	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0	
			mm	2,5- 4,8	4,6- 7,6	5,8- 9,5	6,9- 11,4	9,2- 15,2	11,5- 19,0	13,8- 22,8	16,1- 26,6	18,4- 30,4	20,7- 34,2	23,0- 38,0	28,8- 47,5			
N	1	1,25 x D1	500	600	2000	fz	0,022	0,044	0,055	0,066	0,088	0,110	0,132	0,153	0,176	0,198	0,220	0,275
	2	1,25 x D1	500	600	1500	fz	0,020	0,040	0,048	0,059	0,079	0,099	0,119	0,138	0,158	0,178	0,198	0,247
	3	1,25 x D1	500	600	1500	fz	0,015	0,031	0,038	0,046	0,062	0,077	0,092	0,107	0,123	0,138	0,154	0,192
	4	1,25 x D1	400	450	750	fz	0,015	0,031	0,038	0,046	0,062	0,077	0,092	0,107	0,123	0,138	0,154	0,192
	5	1,25 x D1	250	400	1000	fz	0,020	0,040	0,050	0,059	0,079	0,099	0,119	0,138	0,158	0,178	0,198	0,247

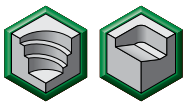

Material Group	Max Depth	Helical Interpolation / Ramping 15° - 30°																
		UNCOATED			Recommended feed per tooth (fz = mm/z) for helical interpolation and ramping													
		Cutting Speed – Vc m/min			Diameter – D1 [Ømin–Ømax]													
		min	Start	max	mm	3,0	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0	
			mm	2,5- 4,8	4,6- 7,6	5,8- 9,5	6,9- 11,4	9,2- 15,2	11,5- 19,0	13,8- 22,8	16,1- 26,6	18,4- 30,4	20,7- 34,2	23,0- 38,0	28,8- 47,5			
N	1	1,25 x D1	500	600	1600	fz	0,017	0,033	0,041	0,050	0,066	0,082	0,099	0,115	0,132	0,148	0,165	0,206
	2	1,25 x D1	500	600	1200	fz	0,015	0,030	0,036	0,045	0,059	0,074	0,089	0,104	0,119	0,134	0,148	0,185
	3	1,25 x D1	500	600	1200	fz	0,012	0,023	0,029	0,035	0,046	0,058	0,069	0,080	0,092	0,104	0,115	0,144
	4	1,25 x D1	400	450	600	fz	0,012	0,023	0,029	0,035	0,046	0,058	0,069	0,080	0,092	0,104	0,115	0,144
	5	1,25 x D1	250	400	800	fz	0,015	0,030	0,038	0,045	0,059	0,074	0,089	0,104	0,119	0,134	0,148	0,185

Material Group	Max Depth	Helical Interpolation / Ramping 30° - 45°																
		UNCOATED			Recommended feed per tooth (fz = mm/z) for helical interpolation and ramping													
		Cutting Speed – Vc m/min			Diameter – D1 [Ømin–Ømax]													
		min	Start	max	mm	3,0	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0	
			mm	2,5- 4,8	4,6- 7,6	5,8- 9,5	6,9- 11,4	9,2- 15,2	11,5- 19,0	13,8- 22,8	16,1- 26,6	18,4- 30,4	20,7- 34,2	23,0- 38,0	28,8- 47,5			
N	1	1,25 x D1	420	500	800	fz	0,013	0,026	0,033	0,040	0,053	0,066	0,079	0,092	0,106	0,119	0,132	0,165
	2	1,25 x D1	420	500	800	fz	0,012	0,024	0,029	0,036	0,048	0,059	0,071	0,083	0,095	0,107	0,119	0,148
	3	1,25 x D1	420	500	800	fz	0,009	0,018	0,023	0,028	0,037	0,046	0,055	0,064	0,074	0,083	0,092	0,115
	4	1,25 x D1	340	380	450	fz	0,009	0,018	0,023	0,028	0,037	0,046	0,055	0,064	0,074	0,083	0,092	0,115
	5	1,25 x D1	210	340	600	fz	0,012	0,024	0,030	0,036	0,048	0,059	0,071	0,083	0,095	0,107	0,119	0,148

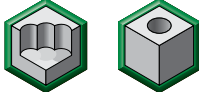

ALUFLASH • Ramping 3 Flute • Application Data • Metric

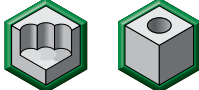

																		
		Helical Interpolation / Ramping 0° - 15°			UNCOATED													
		Recommended feed per tooth (fz = mm/z) for helical interpolation and ramping – fz x 1			Cutting Speed – Vc m/min													
Material Group	Max Depth				Diameter – D1 [Ømin-Ømax]													
		min	Start	max	mm	3,0	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0	
					mm	2,5-4,8	4,6-7,6	5,8-9,5	6,9-11,4	9,2-15,2	11,5-19,0	13,8-22,8	16,1-26,6	18,4-30,4	20,7-34,2	23,0-38,0	28,8-47,5	
N	1	1,25 x D1	500	600	2000	fz	0,022	0,044	0,055	0,066	0,088	0,110	0,132	0,153	0,176	0,198	0,220	0,275
	2	1,25 x D1	500	600	1500	fz	0,020	0,040	0,048	0,059	0,079	0,099	0,119	0,138	0,158	0,178	0,198	0,247
	3	1,25 x D1	500	600	1500	fz	0,015	0,031	0,038	0,046	0,062	0,077	0,092	0,107	0,123	0,138	0,154	0,192
	4	1,25 x D1	400	450	750	fz	0,015	0,031	0,038	0,046	0,062	0,077	0,092	0,107	0,123	0,138	0,154	0,192
	5	1,25 x D1	250	400	1000	fz	0,020	0,040	0,050	0,059	0,079	0,099	0,119	0,138	0,158	0,178	0,198	0,247

																		
		Helical Interpolation / Ramping 15° - 30°			UNCOATED													
		Recommended feed per tooth (fz = mm/z) for helical interpolation and ramping – fz x 1			Cutting Speed – Vc m/min													
Material Group	Max Depth				Diameter – D1 [Ømin-Ømax]													
		min	Start	max	mm	3,0	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0	
					mm	2,5-4,8	4,6-7,6	5,8-9,5	6,9-11,4	9,2-15,2	11,5-19,0	13,8-22,8	16,1-26,6	18,4-30,4	20,7-34,2	23,0-38,0	28,8-47,5	
N	1	1,25 x D1	500	600	1600	fz	0,017	0,033	0,041	0,050	0,066	0,082	0,099	0,115	0,132	0,148	0,165	0,206
	2	1,25 x D1	500	600	1200	fz	0,015	0,030	0,036	0,045	0,059	0,074	0,089	0,104	0,119	0,134	0,148	0,185
	3	1,25 x D1	500	600	1200	fz	0,012	0,023	0,029	0,035	0,046	0,058	0,069	0,080	0,092	0,104	0,115	0,144
	4	1,25 x D1	400	450	600	fz	0,012	0,023	0,029	0,035	0,046	0,058	0,069	0,080	0,092	0,104	0,115	0,144
	5	1,25 x D1	250	400	800	fz	0,015	0,030	0,038	0,045	0,059	0,074	0,089	0,104	0,119	0,134	0,148	0,185

																		
		Helical Interpolation / Ramping 30° - 45°			UNCOATED													
		Recommended feed per tooth (fz = mm/z) for helical interpolation and ramping – fz x 1			Cutting Speed – Vc m/min													
Material Group	Max Depth				Diameter – D1 [Ømin-Ømax]													
		min	Start	max	mm	3,0	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0	
					mm	2,5-4,8	4,6-7,6	5,8-9,5	6,9-11,4	9,2-15,2	11,5-19,0	13,8-22,8	16,1-26,6	18,4-30,4	20,7-34,2	23,0-38,0	28,8-47,5	
N	1	1,25 x D1	420	500	800	fz	0,013	0,026	0,033	0,040	0,053	0,066	0,079	0,092	0,106	0,119	0,132	0,165
	2	1,25 x D1	420	500	800	fz	0,012	0,024	0,029	0,036	0,048	0,059	0,071	0,083	0,095	0,107	0,119	0,148
	3	1,25 x D1	420	500	800	fz	0,009	0,018	0,023	0,028	0,037	0,046	0,055	0,064	0,074	0,083	0,092	0,115
	4	1,25 x D1	340	380	450	fz	0,009	0,018	0,023	0,028	0,037	0,046	0,055	0,064	0,074	0,083	0,092	0,115
	5	1,25 x D1	210	340	600	fz	0,012	0,024	0,030	0,036	0,048	0,059	0,071	0,083	0,095	0,107	0,119	0,148

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Plunging/Drilling				UNCOATED				Recommended feed per revolution (fn =mm/rev) for plunging 2-flute end mills												
				Cutting Speed – Vc m/min				D1 – Diameter												
Material Group	Max Depth	Applicable	Coolant	min	Start	max	mm	2,0	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0	
N	1	1,5 x D	●	Required	120	260	400	fn	0,080	0,120	0,135	0,150	0,160	0,200	0,220	0,235	0,250	0,265	0,280	0,300
	2	1,5 x D	●	Required	120	250	280	fn	0,080	0,120	0,135	0,150	0,160	0,200	0,220	0,235	0,250	0,265	0,280	0,300
	3	1,5 x D	●	Required	100	200	260	fn	0,080	0,120	0,135	0,150	0,160	0,200	0,220	0,235	0,250	0,265	0,280	0,300
	4	1 x D	●	Required	60	150	260	fn	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,210	0,220	0,235	0,250	0,280
	5	1,5 x D	●	Required	60	200	400	fn	0,080	0,120	0,135	0,150	0,160	0,200	0,220	0,235	0,250	0,265	0,280	0,300

																				
Plunging/Drilling				UNCOATED				Recommended feed per revolution (fn =mm/rev) for plunging 3-flute end mills												
				Cutting Speed – Vc m/min				D1 – Diameter												
Material Group	Max Depth	Applicable	Coolant	min	Start	max	mm	2,0	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0	
N	1	1,5 x D	●	Required	120	260	400	fn	0,056	0,084	0,095	0,105	0,112	0,140	0,154	0,165	0,175	0,186	0,196	0,210
	2	1,5 x D	●	Required	120	250	280	fn	0,056	0,084	0,095	0,105	0,112	0,140	0,154	0,165	0,175	0,186	0,196	0,210
	3	1,5 x D	●	Required	100	200	260	fn	0,056	0,084	0,095	0,105	0,112	0,140	0,154	0,165	0,175	0,186	0,196	0,210
	4	1 x D	●	Required	60	150	260	fn	0,042	0,056	0,070	0,084	0,098	0,112	0,140	0,147	0,154	0,165	0,175	0,196
	5	1,5 x D	●	Required	60	200	400	fn	0,056	0,084	0,095	0,105	0,112	0,140	0,154	0,165	0,175	0,186	0,196	0,210



The X-Feed solid end mill is for machining companies looking for a reliable high feed solution that can operate on all kind of steels with a hardness above 60 HRC or on heat-resistant alloys like titanium, INCONEL®, and stainless steels.

Features and Benefits



Low lead angle for high-speed applications.

6 flutes across the entire diameter range.

Long neck to reach the bottom of the deepest cavities.

Different edge preparations to machine ISO P and H material or ISO S and M categories.

The X-Feed milling line will deliver high feed-rates in multiple applications, from hardened steels up to 60 HRC, to the most demanding superalloys such as titanium or PH steels.

FAST

Constant 6-flute design to provide the high feed-rate on the entire diameter range.

LONG

With its 3 x D long neck, the X-Feed makes it possible to machine deep cavities with ease.

VERSATILE

The X-Feed range includes different geometries to machine steels, hardened steels, plus stainless steels and superalloys.

HIGH SPEED

PRODUCT

SOLID CARBIDE END MILL

GRADE

AITIN

FLUTE

6

DIAMETER RANGE

INCH

1/4-1"

METRIC

6-25mm

INDUSTRY



GENERAL ENGINEERING



AEROSPACE



ENERGY



TRANSPORTATION

APPLICATIONS

MATERIALS



FACING



RAMPING



HELICAL INTERPOLATION



SLOTTING

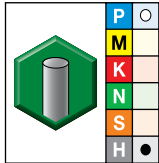
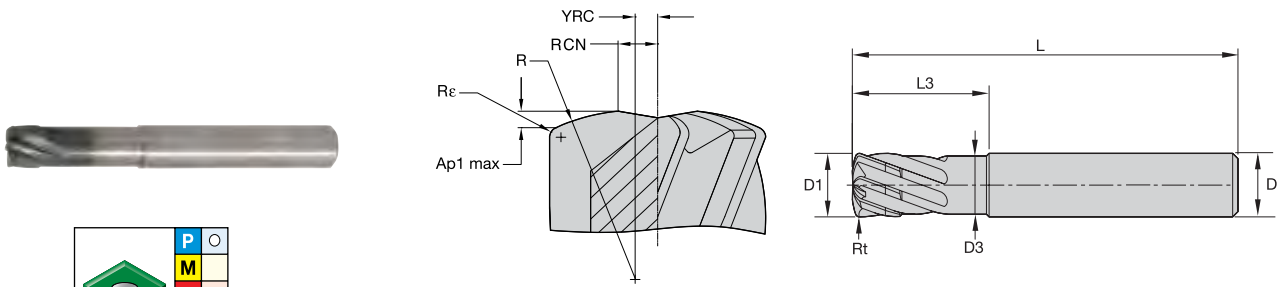


3D PROFILING



PLUNGING

X-Feed • Series 7FN6 • 37–52 HRC • High Feed • 6 Flute • Cylindrical Shank • Inch



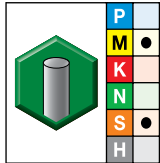
AITiN-MT1

- first choice
- alternate choice

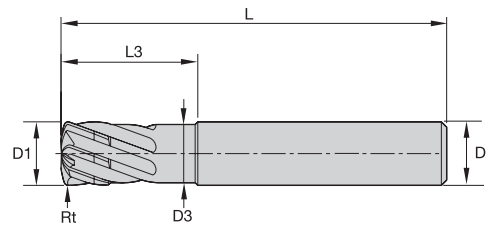
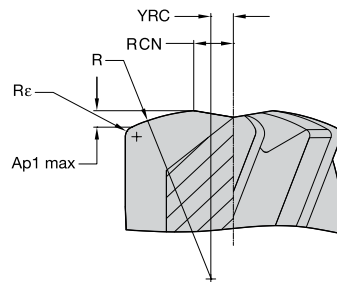
order #	catalog #	D1	D	D3	length of cut	length			Z U
					Ap1 max	L3	L	Rt	
3484760	TM7FN607002	1/4	1/4	.21	.013	3/4	2 1/2	.027	6
3484762	TM7FN610004	3/8	3/8	.34	.313	1 1/4	3 1/2	.040	6
3484763	TM7FN613005	1/2	1/2	.46	.375	1 1/2	4	.054	6
3484764	TM7FN616006	5/8	5/8	.59	.375	2	4 1/2	.067	6
3484765	TM7FN619007	3/4	3/4	.71	.438	2 1/2	5	.080	6

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

X-Feed • Series 7FNS • Stainless Steel/Hi Temp • High Feed • 6 Flute • Cylindrical Shank • Inch



AITIN-MT



- first choice
- alternate choice

order #	catalog #	D1	D	D3	L3	length		R ϵ	Rt	Z U
						L				
6441876	7FNS07002	1/4	1/4	.21	.73	2 1/2		.016	.027	6
6441877	7FNS10004	3/8	3/8	.34	1.23	3 1/2		.023	.040	6
6441878	7FNS13005	1/2	1/2	.46	1.48	4		.031	.054	6
6441879	7FNS16006	5/8	5/8	.59	1.98	4 1/2		.039	.067	6
6441880	7FNS19007	3/4	3/4	.71	2.48	5		.047	.080	6
6441881	7FNS25008	1	1	.96	2.98	5 1/2		.063	.106	6

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

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

X-Feed • Series 7FN7 • >52 HRC • High Feed • 6 Flute • Cylindrical Shank • Inch

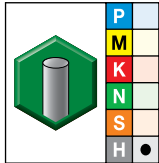
INDEXABLE MILLING

SOLID END MILLING

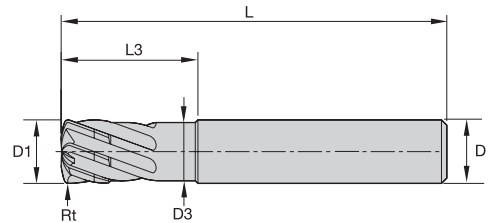
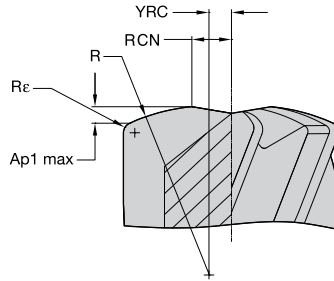
HOLEMAKING

TAPPING

TURNING



AITiN-MT1



- first choice
- alternate choice

order #	catalog #	D1	D	D3	length of cut Ap1 max	L3	length L	Rt	Z U
3484769	TM7FN710004	3/8	3/8	.34	.012	1 1/4	3 1/2	.036	6
3484770	TM7FN713005	1/2	1/2	.46	.016	1 1/2	4	.048	6
3484772	TM7FN719007	3/4	3/4	.71	.025	2 1/2	5	.072	6

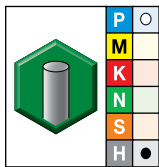
NOTE: YRC = distance from center line to the crown of the R radius.

RCN = distance from center line to the start of the cutting edge. This dimension can also help determine the minimum circle size when helical ramping.

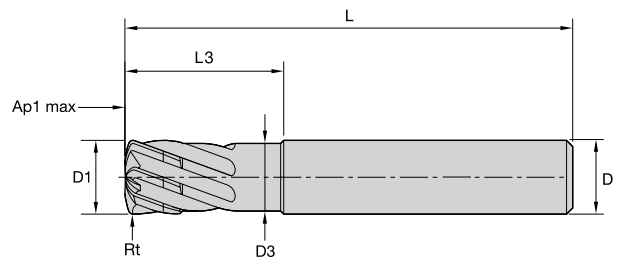
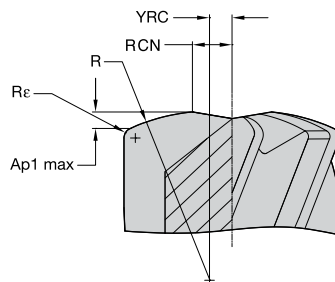
R = the head radius size.

Rε = the shoulder radius or radius at the corner of the cutter.

X-Feed • Series 70N6 71N6 • 37–52 HRC • High Feed • 6 Flute • Cylindrical Shank • Metric



AITiN-MT1



- first choice
- alternate choice

order #	catalog #	D1	D	D3	length of cut Ap1 max	L3	length L	Rε	Rt	Z U
3745400	71N606002MT	6,0	6	5,50	0,32	9,00	57	0,38	0,62	6
3341346	70N606002MT	6,0	6	5,50	0,32	18,00	63	0,38	0,62	6
3745401	71N608003MT	8,0	8	7,50	0,42	12,00	63	0,50	0,83	6
3341348	70N608003MT	8,0	8	7,50	0,42	24,00	76	0,50	0,83	6
3745402	71N610004MT	10,0	10	9,00	0,53	15,00	72	0,63	1,04	6
3101466	70N610004MT	10,0	10	9,00	0,53	30,00	89	0,63	1,04	6
3745413	71N612005MT	12,0	12	11,00	0,63	18,00	83	0,75	1,24	6
3101467	70N612005MT	12,0	12	11,00	0,63	36,00	100	0,75	1,24	6
3484748	70N616006MT	16,0	16	15,00	0,84	48,00	110	1,00	1,66	6
3484749	70N620007MT	20,0	20	19,00	1,05	60,00	125	1,25	2,07	6

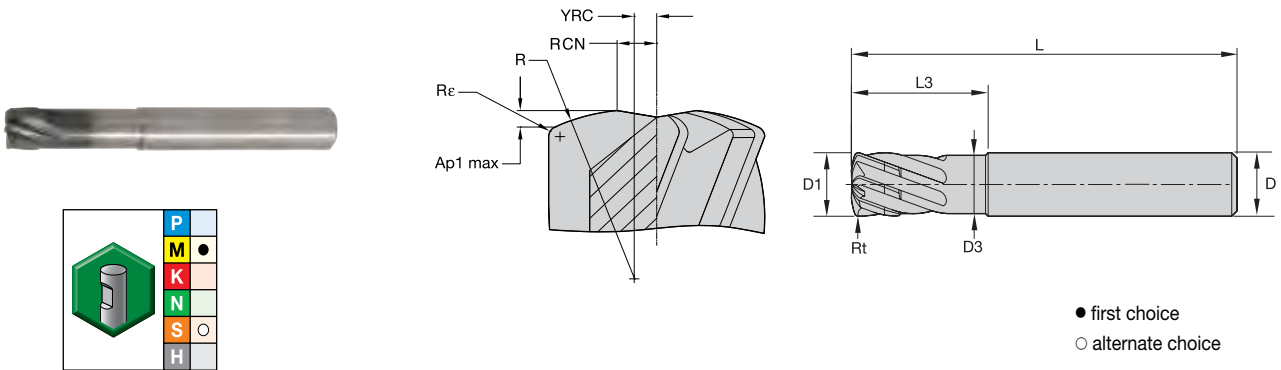
NOTE: YRC = distance from center line to the crown of the R radius.

RCN = distance from center line to the start of the cutting edge. This dimension can also help determine the minimum circle size when helical ramping.

R = the head radius size.

Rε = the shoulder radius or radius at the corner of the cutter.

X-Feed • Series 70NS • Stainless Steel/High-Temp • High Feed • 6 Flute • Cylindrical Shank • Metric



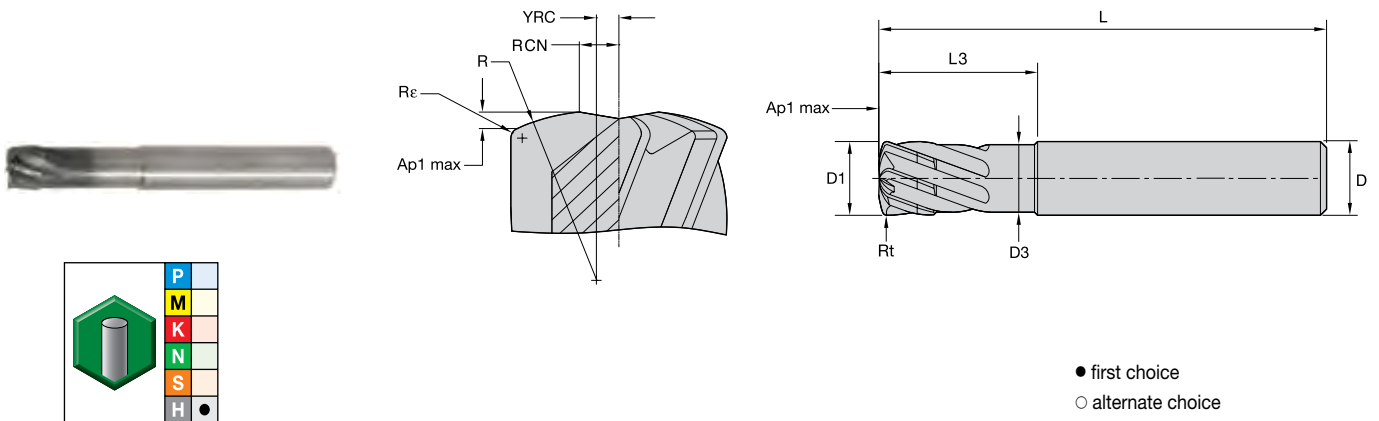
- first choice
- alternate choice

AITiN-MT

order #	catalog #	D1	D	D3	length of cut Ap1 max	L3	length L	Rε	Z U
6441882	70NS06002	6,0	6	5,50	0,32	17,75	63	0,38	6
6441883	70NS08003	8,0	8	7,50	0,42	23,75	76	0,50	6
6441884	70NS10004	10,0	10	9,00	0,53	29,50	89	0,63	6
6441885	70NS12005	12,0	12	11,00	0,63	35,50	100	0,75	6
6441886	70NS16006	16,0	16	15,00	0,84	47,50	110	1,00	6
6441887	70NS20007	20,0	20	19,00	1,05	59,50	125	1,25	6
6441888	70NS25008	25,0	25	23,50	1,31	74,25	150	1,56	6

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

X-Feed • Series 70N7 • >52 HRC • High Feed • 6 Flute • Cylindrical Shank • Metric



- first choice
- alternate choice

AITiN-MT1



order #	catalog #	D1	D	D3	length of cut Ap1 max	L3	length L	Rε	Rt	Z U
3484756	70N706002MT	6,0	6	5,50	0,20	18,00	63	0,38	0,58	6
3484757	70N708003MT	8,0	8	7,50	0,27	24,00	76	0,50	0,77	6
3484758	70N710004MT	10,0	10	9,00	0,33	30,00	89	0,63	0,96	6
3403492	70N712005MT	12,0	12	11,00	0,40	36,00	100	0,75	1,15	6
3477329	70N716006MT	16,0	16	15,00	0,54	48,00	110	1,00	1,54	6
3484759	70N720007MT	20,0	20	19,00	0,67	60,00	125	1,25	1,92	6

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

X-Feed • Series 7FN6 • Application Data • AlTiN-MT1 • Inch

INDEXABLE MILLING

SOLID END MILLING



													
		Profile Milling		AlTiN			Recommended feed per tooth (IPT = inch/th) for 3D milling/profiling (A)						
Material Group	A			Cutting Speed – vc SFM			D1 – Diameter						
		ap	ae	min		max	frac. dec.	1/4	5/16	3/8	1/2	5/8	3/4
P	4	0.05 x D	0.55 x D	528	–	594	IPT	.0130	.0160	.0190	.0250	.0260	.0280
H	1	0.05 x D	0.55 x D	462	–	528	IPT	.0130	.0160	.0190	.0250	.0260	.0280
	2	0.05 x D	0.55 x D	330	–	396	IPT	.0080	.0090	.0110	.0150	.0190	.0230

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

X-Feed • Series 7FNS • Application Data • AlTiN-MT • Inch

HOLEMAKING

TAPPING



														
		Profile Milling		AlTiN-MT			Recommended feed per tooth (IPT = inch/th) for 3D milling/profiling (A)							
Material Group	A			Cutting Speed – Vc SFM			D1 – Diameter							
		ap	ae	min		max	frac. dec.	1/4	5/16	3/8	1/2	5/8	3/4	1
M	1	0.5 x D	0.55 x D	290	–	375	IPT	.0118	.0156	.0188	.0213	.0281	.0338	.0450
	2	0.5 x D	0.55 x D	190	–	260	IPT	.0094	.0125	.0150	.0189	.0250	.0300	.0400
	3	0.5 x D	0.55 x D	190	–	230	IPT	.0094	.0125	.0150	.0189	.0250	.0300	.0400
S	1	0.5 x D	0.55 x D	160	–	300	IPT	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	2	0.5 x D	0.55 x D	80	–	130	IPT	.0008	.0010	.0012	.0015	.0018	.0021	.0024
	3	0.5 x D	0.55 x D	80	–	130	IPT	.0008	.0010	.0012	.0015	.0018	.0021	.0024
	4	0.5 x D	0.55 x D	160	–	200	IPT	.0011	.0014	.0017	.0021	.0025	.0028	.0033

TURNING

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



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

X-Feed • Series 7FN7 • Application Data • AlTiN-MT1 • Inch

Material Group													
	Profile Milling		AlTiN			Recommended feed per tooth (IPT = inch/th) for 3D milling/profiling (A)							
	A		Cutting Speed – vc SFM			D1 – Diameter							
	ap	ae	min		max	frac. dec.	1/4	5/16	3/8	1/2	5/8	3/4	
H	2	0.03 x D	0.55 x D	330	–	396	IPT	.0080	.0090	.0110	.0150	.0190	.0230
	3	0.03 x D	0.55 x D	265	–	330	IPT	.0080	.0090	.0110	.0150	.0190	.0230
	4	0.03 x D	0.55 x D	165	–	230	IPT	.0060	.0080	.0090	.0130	.0160	.0190

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

X-Feed • Lists 70N6 71N6 • Application Data • AlTiN-MT1 • Metric

Material Group													
	Profile Milling		AlTiN			Recommended feed per tooth (fz = mm/th) for 3D milling/profiling (A)							
	A		Cutting Speed – vc m/min			D1 – Diameter							
	ap	ae	min		max	mm	6,0	8,0	10,0	12,0	16,0	20,0	
P	4	0,05 x D	0,55 x D	160	–	180	fz	0,300	0,500	0,500	0,500	0,600	0,700
H	1	0,05 x D	0,55 x D	140	–	160	fz	0,300	0,500	0,500	0,500	0,600	0,700
	2	0,05 x D	0,55 x D	100	–	120	fz	0,200	0,300	0,300	0,400	0,500	0,600

Tool List 70N6										Ramping Guide for Circular and Linear Interpolation						
Geometrical Parameters										Circular Interpolation		Linear Interpolation				
										Allowed Range of Hole Diameter		Calculated Length (mm) per Ramp Angle				
Tool	diameter	ap max	Rfm	Rt	Rc	Xfm	Yfm	YD	Number	Smallest	Largest	Ramp Angle (degree)				
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	flutes			1	2	3	4	5
70N606003MT	6	0,32	6	0,62	0,375	0,32	0,75	1,32	6	8,64	12	18,12	9,06	6,03	4,52	3,61
70N608003MT	8	0,42	8	0,83	0,500	0,42	1,00	1,76	6	11,52	16	24,16	12,08	8,05	6,03	4,82
70N610004MT	10	0,53	10	1,04	0,625	0,53	1,25	2,20	6	14,4	20	30,20	15,09	10,06	7,54	6,02
70N612005MT	12	0,63	12	1,24	0,750	0,63	1,50	2,64	6	17,28	24	36,24	18,11	12,07	9,05	7,23
70N616006MT	16	0,84	16	1,66	1,000	0,84	2,00	3,52	6	23,04	32	48,31	24,15	16,09	12,06	9,64
70N620007MT	20	1,05	20	2,07	1,250	1,05	2,50	4,40	6	28,8	40	60,39	30,19	20,11	15,08	12,05
Recommended Feed											100%	70%	50%	30%	10%	

NOTE: Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters on diameters >12mm.

X-Feed • Series 70NS • Application Data • AlTiN-MT • Metric



INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

														
		Profile Milling		AlTiN-MT			Recommended feed per tooth (fz = mm/th) for 3D milling/profiling (A)							
Material Group	A		Cutting Speed – Vc m/min			mm	D1 – Diameter							
	ap	ae	min		max		6,0	8,0	10,0	12,0	16,0	20,0	25,0	
M	1	0,05 x D	0,55 x D	90	–	115	fz	0,300	0,400	0,500	0,540	0,720	0,900	1,125
	2	0,05 x D	0,55 x D	60	–	80	fz	0,240	0,320	0,400	0,480	0,640	0,800	1,000
	3	0,05 x D	0,55 x D	60	–	70	fz	0,240	0,320	0,400	0,480	0,640	0,800	1,000
S	1	0,05 x D	0,55 x D	50	–	90	fz	0,270	0,360	0,450	0,500	0,650	0,800	1,000
	2	0,05 x D	0,55 x D	25	–	40	fz	0,240	0,320	0,400	0,480	0,600	0,700	0,900
	3	0,05 x D	0,55 x D	25	–	40	fz	0,180	0,240	0,300	0,350	0,430	0,500	0,600
	4	0,05 x D	0,55 x D	50	–	60	fz	0,210	0,280	0,350	0,420	0,560	0,700	0,875

70NS Metric															
Geometrical Parameters									Ramping Guide for Circular and Linear Interpolation						
									Circular Interpolation		Linear Interpolation				
									Allowed Range of Hole Diameter		Calculated Length (mm) per Ramp Angle				
Ramp Angle (degree)															
diameter	Ap1 max	Rfm	Rt	Rc	Xfm	Yfm	YD	Number	Smallest	Largest	1	2	3	4	5
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	flutes							
6	0,32	6	0,67	0,375	0,338	0,75	1,26	6	8,52	12	18,12	9,06	6,03	4,52	3,61
8	0,42	8	0,89	0,500	0,450	1,00	1,68	6	11,36	16	24,16	12,08	8,05	6,03	4,82
10	0,53	10	1,12	0,625	0,562	1,25	2,10	6	14,2	20	30,20	15,09	10,06	7,54	6,02
12	0,63	12	1,34	0,750	0,674	1,50	2,52	6	17,04	24	36,24	18,11	12,07	9,05	7,23
16	0,84	16	1,79	1,000	0,915	2,00	3,36	6	22,72	32	48,31	24,15	16,09	12,06	9,64
20	1,05	20	2,23	1,250	1,124	2,50	4,20	6	28,4	40	60,39	30,19	20,11	15,08	12,05
25	1,25	25	2,90	1,5625	1,405	3,1250	5,25	6	35,5	50	70,61	35,80	23,85	17,88	14,29
Recommended Feed											30%	30%	30%	30%	10%

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on diameters greater than 12mm.

X-Feed • Series 70N7 • Application Data • AlTiN-MT1 • Metric

Material Group												
	Profile Milling		AlTiN			Recommended feed per tooth (fz = mm/th) for 3D milling/ profiling (A)						
	A		Cutting Speed – vc m/min			D1 – Diameter						
	ap	ae	min		max	mm	6,0	8,0	10,0	12,0	16,0	20,0
H 2	0,03 x D	0,55 x D	100	–	120	fz	0,200	0,300	0,300	0,400	0,500	0,600
3	0,03 x D	0,55 x D	80	–	100	fz	0,200	0,300	0,300	0,400	0,500	0,600
4	0,03 x D	0,55 x D	50	–	70	fz	0,150	0,200	0,250	0,300	0,400	0,500

Tool List 70N7															
Geometrical Parameters									Ramping Guide for Circular and Linear Interpolation						
									Circular Interpolation		Linear Interpolation				
diameter Ap1 max Rfm Rt Rc Xfm Yfm YD Number [mm] [mm] [mm] [mm] [mm] [mm] [mm] [mm] flutes									Allowed Range of Hole Diameter		Calculated Length (mm) per Ramp Angle				
											Ramp Angle (degree)				
									Smallest	Largest	1	2	3	4	5
6	0,20	9	0,58	0,375	0,20	0,75	1,26	6	8,52	12	11,51	5,75	3,83	2,87	2,30
8	0,27	12	0,77	0,500	0,27	1,00	1,68	6	11,36	16	15,34	7,67	5,11	3,83	3,06
10	0,33	15	0,96	0,625	0,33	1,25	2,10	6	14,2	20	19,18	9,58	6,39	4,79	3,83
12	0,40	18	1,15	0,750	0,40	1,50	2,52	6	17,04	24	23,01	11,50	7,66	5,74	4,59
16	0,54	24	1,54	1,000	0,54	2,00	3,36	6	22,72	32	30,68	15,34	10,22	7,66	6,12
20	0,67	30	1,92	1,250	0,67	2,50	4,20	6	28,4	40	38,35	19,17	12,77	9,57	7,65
Recommended Feed											100%	70%	50%	30%	10%

NOTE: Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on diameters >12mm.

Vision Plus end mills are focused on delivering productivity in primarily the die and mold industry, in roughing or finishing operations for hardened steel up to 67 HRC.

Features and Benefits

Negative rakes to make the cutting edge robust.

High helix angles to reduce chip thickness and guarantee wall straightness in finishing operations.

Specific substrate engineered to perform on high hardness steels.



The Vision Plus series offers a variety of tools to machine the most complex components including various end face geometries.

ROBUST

Dedicated design to attack all types of hardened steels up to 67 HRC.

SPECIFIC

Specifically engineered design to compete in the die and mold industry, in all applications of hardened steels and high alloyed steels.

PRODUCTIVE

Vision Plus end mills include geometries and edge preparations designed to increase feed-rates and achieve higher metal removal rates.

HARD MACHINING MADE EASY

PRODUCT

SOLID CARBIDE END MILL

GRADE

WU10PE
AT1N

FLUTE

2-6

DIAMETER RANGE

METRIC

0,3-25mm

INCH

1/8-1"

INDUSTRY

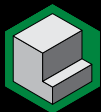


APPLICATIONS

MATERIALS

P

H



SIDE MILLING



3D PROFILING

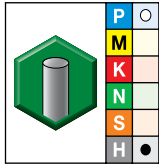
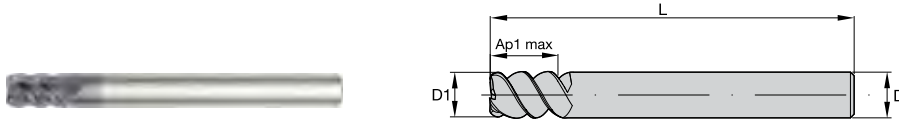


HELICAL
INTERPOLATION



RAMPING

Vision Plus • Series 7S05 • Sharp Edge • Cylindrical Shank • Inch



- first choice
- alternate choice

AITIN-MT1

order #	catalog #	D1	D	length of cut Ap1 max	length L	ZU
3083618	TM7S0507002	1/4	1/4	3/8	3	4
3321600	TM7S1507002	1/4	1/4	5/8	3	4
3043480	TM7S0508000	5/16	5/16	1/2	4	4
3054914	TM7S1508000	5/16	5/16	3/4	4	4
3082394	TM7S2508000	5/16	5/16	1 1/8	4	4
3100520	TM7S0510004	3/8	3/8	9/16	4	4
3048589	TM7S1510004	3/8	3/8	15/16	4	5
3054915	TM7S2510004	3/8	3/8	1 5/16	4	5
3047518	TM7S0513005	1/2	1/2	3/4	5	4
3084183	TM7S1513005	1/2	1/2	1 1/4	5	6
3081614	TM7S2513005	1/2	1/2	1 3/4	5	6
3063997	TM7S1516006	5/8	5/8	1 9/16	5	6
3050197	TM7S2516006	5/8	5/8	2 3/16	5	6
3091702	TM7S1519007	3/4	3/4	1 7/8	6	6
3321602	TM7S2519007	3/4	3/4	2 5/8	6	6
3104294	TM7S2525008	1	1	3 1/2	6	6

INDEXABLE MILLING

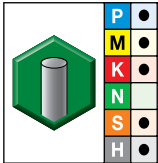
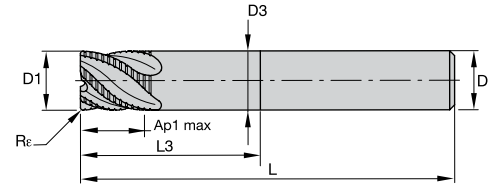
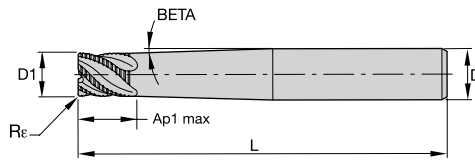
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Vision Plus • Series 7S7R • Radius • Cylindrical Shank • Inch

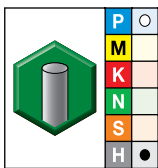
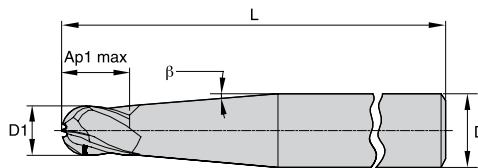


AITiN-MT1

- first choice
- alternate choice

order #	catalog #	D1	D	D3	length of cut		length		Rε	BETA	ZU
					Ap1 max	L3	L				
3096974	TM7S7R10005A	3/8	1/2	—	3/8	3/8	5		.030	2.500	4
3116105	TM7S7R13006A	1/2	5/8	.470	1/2	—	5		.040	—	4
3044789	TM7S7R19007A	3/4	3/4	.713	3/4	2 1/4	6		.050	—	6

Vision Plus • Series 7S5F • Ball Nose • Cylindrical Shank • Inch

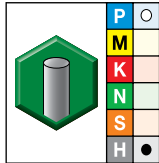
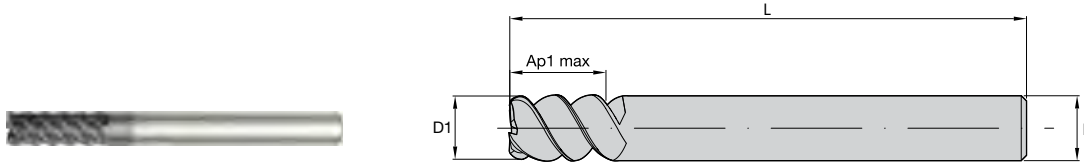


AITiN-MT1

- first choice
- alternate choice

order #	catalog #	D1	D	length of cut		length	BETA	ZU
				Ap1 max	L			
3047519	TM7S5F03002	1/8	1/4	1/8	3		2.5	4
3062915	TM7S5F05002	3/16	1/4	3/16	3		2.5	4
3058580	TM7S5F07004	1/4	3/8	1/4	4		2.5	4
3061865	TM7S5F08004	5/16	3/8	5/16	4		2.5	4
3058738	TM7S5F10005	3/8	1/2	3/8	5		2.5	4
3062363	TM7S5F13006	1/2	5/8	1/2	5		2.5	4

Vision Plus • Series 7505 7515 7525 7545 • Sharp Edge • Cylindrical Shank • Metric

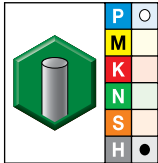
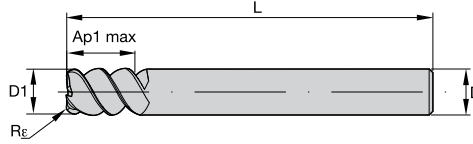


- first choice
- alternate choice

TiAlN-LT1

order #	catalog #	D1	D	length of cut Ap1 max	length L	ZU
2499570	754503002LT	3,0	6	4,50	50	4
2499567	750503002LT	3,0	6	4,50	57	4
2499571	754504002LT	4,0	6	6,00	50	4
2499568	750504002LT	4,0	6	6,00	57	4
2499572	754505002LT	5,0	6	7,50	50	4
2499569	750505002LT	5,0	6	7,50	76	4
1848805	754506002LT	6,0	6	9,00	50	4
1724462	750506002LT	6,0	6	9,00	76	4
1724468	751506002LT	6,0	6	15,00	76	4
1724487	752506002LT	6,0	6	21,00	76	4
1860603	754508003LT	8,0	8	12,00	63	4
1724463	750508003LT	8,0	8	12,00	100	4
1724469	751508003LT	8,0	8	20,00	100	4
1724489	752508003LT	8,0	8	28,00	100	4
1860604	754510004LT	10,0	10	15,00	76	4
1724464	750510004LT	10,0	10	15,00	100	4
1724481	751510004LT	10,0	10	25,00	100	5
1724490	752510004LT	10,0	10	35,00	100	5
1860605	754512005LT	12,0	12	18,00	76	4
1724465	750512005LT	12,0	12	18,00	125	4
1724482	751512005LT	12,0	12	30,00	125	6
1724531	752512005LT	12,0	12	42,00	125	6
1860606	754516006LT	16,0	16	24,00	89	4
1724483	751516006LT	16,0	16	40,00	125	6
1724533	752516006LT	16,0	16	56,00	125	6
1724484	751520007LT	20,0	20	50,00	150	6
1724536	752520007LT	20,0	20	70,00	150	6
1747878	751525008LT	25,0	25	63,00	150	6
1747931	752525008LT	25,0	25	88,00	150	6

Vision Plus • Series 7585 7595 • Radius • Cylindrical Shank • Metric



● first choice
○ alternate choice

TiAlN-LT1

order #	catalog #	D1	D	length of cut Ap1 max	length L	Re	ZU
2540317	759503002LT	3,0	6	4,50	50	0,25	4
2540318	759503012LT	3,0	6	4,50	50	0,50	4
2540319	759504002LT	4,0	6	6,00	50	0,25	4
2540320	759504012LT	4,0	6	6,00	50	0,50	4
2540321	759505002LT	5,0	6	7,50	50	0,25	4
2540322	759505012LT	5,0	6	7,50	50	0,50	4
1862105	759506002LT	6,0	6	9,00	50	0,25	4
1862106	759506012LT	6,0	6	9,00	50	0,50	4
2541273	759506022LT	6,0	6	9,00	50	0,75	4
2541274	759506032LT	6,0	6	9,00	50	1,00	4
1860609	758506002LT	6,0	6	9,00	76	0,25	4
1860610	758506012LT	6,0	6	9,00	76	0,50	4
1862107	759508003LT	8,0	8	12,00	63	0,50	4
2541275	759508023LT	8,0	8	12,00	63	0,75	4
1862108	759508013LT	8,0	8	12,00	63	1,00	4
2541276	759508033LT	8,0	8	12,00	63	1,50	4
1860611	758508003LT	8,0	8	12,00	100	0,50	4
1860612	758508013LT	8,0	8	12,00	100	1,00	4
1862109	759510004LT	10,0	10	15,00	76	0,50	4
1862110	759510014LT	10,0	10	15,00	76	1,00	4
2541277	759510024LT	10,0	10	15,00	76	1,50	4
2541278	759510034LT	10,0	10	15,00	76	2,00	4
1860623	758510004LT	10,0	10	15,00	100	0,50	4
1860624	758510014LT	10,0	10	15,00	100	1,00	4
1862111	759512005LT	12,0	12	18,00	76	0,50	4
2541279	759512025LT	12,0	12	18,00	76	1,00	4
2541280	759512035LT	12,0	12	18,00	76	2,00	4
1860625	758512005LT	12,0	12	18,00	125	0,50	4
1862113	759516006LT	16,0	16	24,00	89	0,50	4
1860628	758516016LT	16,0	16	24,00	125	1,50	4
2541293	759520027LT	20,0	20	30,00	104	1,00	4

INDEXABLE MILLING

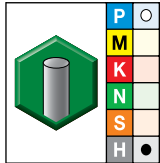
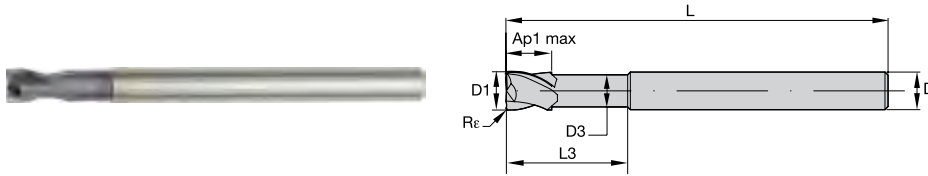
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Vision Plus • Series 75N2 • Radius • Cylindrical Shank • Metric

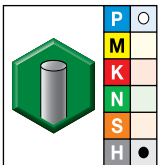
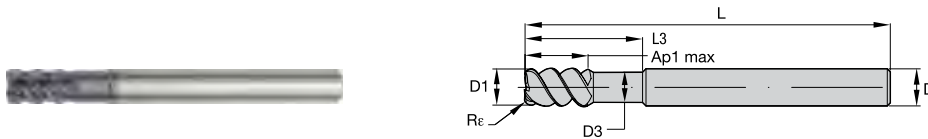


WU10PE

- first choice
- alternate choice

order #	catalog #	D1	D	D3	length of cut Ap1 max	L3	length L	Re	ZU
2544530	75N203022RT	3,0	6	2,80	3,00	9,00	75	0,30	2
2544737	75N204022RT	4,0	6	3,70	4,00	12,00	75	0,30	2
2545166	75N206062RT	6,0	6	5,50	6,00	18,00	75	1,00	2

Vision Plus • Series 75N5 • Neck • Cylindrical Shank • Metric

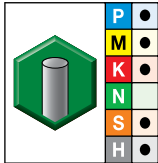
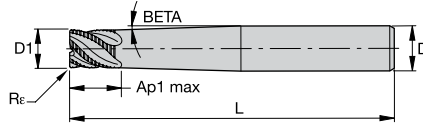


TiAlN-LT1

- first choice
- alternate choice

order #	catalog #	D1	D	D3	length of cut Ap1 max	L3	length L	Re	ZU
2544367	75N503022LT	3,0	6	2,7	4,50	9,00	57	0,25	4
2544368	75N503042LT	3,0	6	2,7	4,50	9,00	57	0,50	4
2544369	75N504022LT	4,0	6	3,7	6,00	12,00	57	0,25	4
2544370	75N504042LT	4,0	6	3,7	6,00	12,00	57	0,50	4
2544371	75N505022LT	5,0	6	4,6	7,50	15,00	76	0,25	4
2544372	75N505042LT	5,0	6	4,6	7,50	15,00	76	0,50	4
1862119	75N506002LT	6,0	6	5,4	9,00	18,00	76	—	4
2544443	75N506022LT	6,0	6	5,4	9,00	18,00	76	0,25	4
2544444	75N506042LT	6,0	6	5,4	9,00	18,00	76	0,50	4
2544446	75N506082LT	6,0	6	5,4	9,00	18,00	76	1,00	4
1862120	75N508003LT	8,0	8	7,4	12,00	24,00	100	—	4
2544447	75N508023LT	8,0	8	7,4	12,00	24,00	100	0,50	4
2544448	75N508033LT	8,0	8	7,4	12,00	24,00	100	1,00	4
2544449	75N508043LT	8,0	8	7,4	12,00	24,00	100	1,50	4
2544450	75N508053LT	8,0	8	7,4	12,00	24,00	100	2,00	4
1862121	75N510004LT	10,0	10	9,4	15,00	30,00	100	—	4
2544452	75N510024LT	10,0	10	9,2	15,00	30,00	100	0,50	4
2544483	75N510034LT	10,0	10	9,2	15,00	30,00	100	1,00	4
2544484	75N510044LT	10,0	10	9,2	15,00	30,00	100	1,50	4
2544485	75N510054LT	10,0	10	9,2	15,00	30,00	100	2,00	4
1862122	75N512005LT	12,0	12	11,4	18,00	36,00	125	—	4
2544486	75N512025LT	12,0	12	11,0	18,00	36,00	125	0,50	4
2544487	75N512035LT	12,0	12	11,0	18,00	36,00	125	1,00	4
2544489	75N512055LT	12,0	12	11,0	18,00	36,00	125	2,00	4
1862123	75N516006LT	16,0	16	15,4	24,00	48,00	125	—	4
2544490	75N516026LT	16,0	16	15,0	24,00	48,00	125	0,50	4
1862124	75N520007LT	20,0	20	19,4	30,00	60,00	150	—	4
2544523	75N520047LT	20,0	20	19,0	30,00	60,00	150	2,00	4

Vision Plus • Series 7670 • Radius • Cylindrical Shank • Metric

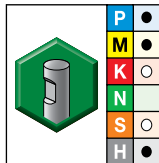
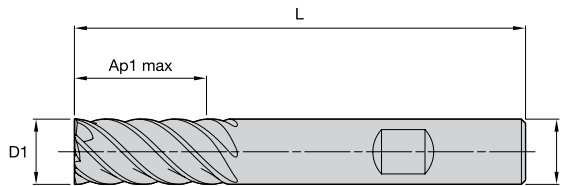
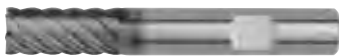


TIAlN-LT1

- first choice
- alternate choice

order #	catalog #	D1	D	D3	length of cut Ap1 max	length L	R _ε	ZU
1724621	767016006LT	16,0	16	15,00	16,00	125	1,00	6

Vision Plus • Series D518 • Sharp Edge • Weldon® • Metric

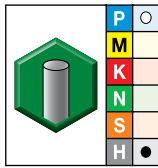
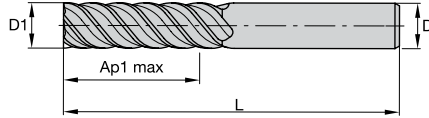


WP15PE

- first choice
- alternate choice

order #	catalog #	D1	D	length of cut Ap1 max	length L	ZU
5559116	D51804002W	4,0	6	11,00	57	4
5559117	D51805002W	5,0	6	13,00	57	4
5559118	D51806002W	6,0	6	13,00	57	6
5559120	D51808003W	8,0	8	19,00	63	6
5559122	D51810004W	10,0	10	22,00	72	6
5559123	D51812005W	12,0	12	26,00	83	6
5559124	D51814014W	14,0	14	26,00	83	6
5559125	D51816006W	16,0	16	32,00	92	8
5559127	D51820007W	20,0	20	38,00	104	8
5559128	D51825008W	25,0	25	45,00	121	8

Vision Plus • Series D618 • Sharp Edge • Cylindrical Shank • Metric

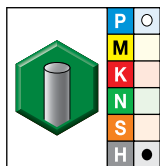
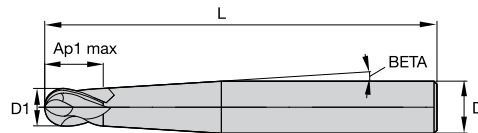


- first choice
- alternate choice

WU10PE

order #	catalog #	D1	D	length of cut Ap1 max	length L	ZU
2256338	D61803002RJ	3,0	4	8,00	50	4
2257304	D61804002RJ	4,0	6	12,00	57	4
2256340	D61805002RJ	5,0	6	13,00	57	4
2256341	D61806002RJ	6,0	6	15,00	60	6
2256353	D61808003RJ	8,0	8	20,00	75	6
2256354	D61810004RJ	10,0	10	25,00	80	6
2256355	D61812005RJ	12,0	12	30,00	100	6
2256356	D61816006RJ	16,0	16	40,00	110	6
2256357	D61820007RJ	20,0	20	45,00	120	6

Vision Plus • Series 7050 7060 • Ball Nose • Cylindrical Shank • Metric

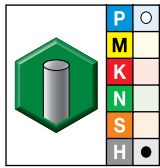
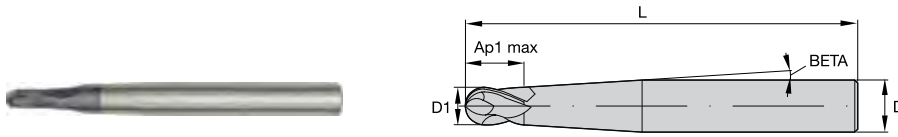


- first choice
- alternate choice

WU10PE

order #	catalog #	D1	D	length of cut Ap1 max	length L	BETA	ZU
1724321	705002001RT	2,0	4	2,00	63	2.5	4
1724323	705003002RT	3,0	6	3,00	75	2.5	4
1724324	705004002RT	4,0	6	4,00	75	2.5	4
2495916	706004002RT	4,0	6	4,00	75	1.5	4
1724325	705005002RT	5,0	6	5,00	75	2.5	4
1724326	705006004RT	6,0	10	6,00	100	2.5	4
2495918	706006004RT	6,0	10	6,00	100	1.5	4
1724327	705008004RT	8,0	10	8,00	100	2.5	4
1724328	705010005RT	10,0	12	10,00	125	2.5	4
1724330	705016006RT	16,0	16	16,00	125	—	4

Vision Plus • Series 7061 • Ball Nose • Cylindrical Shank • Metric

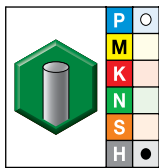
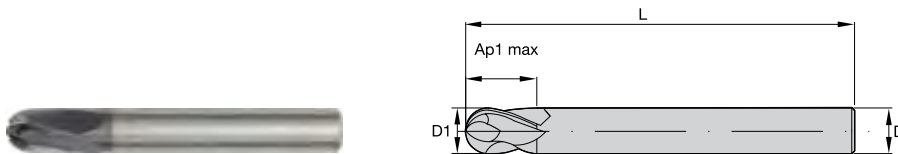


WU10PE

● first choice
○ alternate choice

order #	catalog #	D1	D	length of cut Ap1 max	length L	BETA	ZU
2495994	706101001RT	1,0	4	1,00	63	3.5	2
2495995	706102001RT	2,0	4	2,00	63	3.5	2
2495997	706103002RT	3,0	6	3,00	75	1.5	2
2495998	706104002RT	4,0	6	4,00	75	1.5	2
2496000	706106004RT	6,0	10	6,00	100	1.5	2
2496001	706108004RT	8,0	10	8,00	100	1.5	2

Vision Plus • Series 7150 • Ball Nose • Cylindrical Shank • Metric

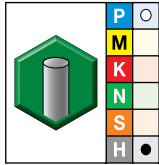
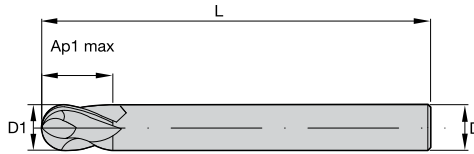
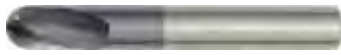


WU10PE

● first choice
○ alternate choice

order #	catalog #	D1	D	length of cut Ap1 max	length L	ZU
1859882	715003000RT	3,0	3	3,00	38	4
1859904	715004001RT	4,0	4	4,00	50	4
1859906	715005001RT	5,0	5	5,00	50	4
1859907	715006002RT	6,0	6	6,00	50	4
1859908	715008003RT	8,0	8	8,00	63	4
1859909	715010004RT	10,0	10	10,00	76	4
1859910	715012005RT	12,0	12	12,00	76	4

Vision Plus • Series 7151 • Ball Nose • Cylindrical Shank • Metric

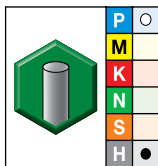
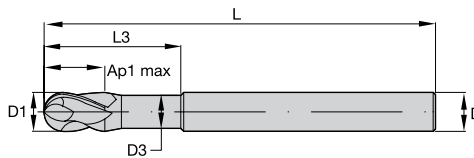


WU10PE

- first choice
- alternate choice

order #	catalog #	D1	D	length of cut Ap1 max	length L	ZU
1860036	715101000RT	1,0	3	3,00	38	2
1860090	715102000RT	2,0	3	3,00	38	2
1860106	715103000RT	3,0	3	3,00	38	2
1860109	715104001RT	4,0	4	4,00	50	2
1860111	715105001RT	5,0	5	5,00	50	2
1860112	715106002RT	6,0	6	6,00	50	2
1860133	715108003RT	8,0	8	8,00	63	2
1860134	715110004RT	10,0	10	10,00	76	2
1860135	715112005RT	12,0	12	12,00	76	2

Vision Plus • Series 70N1 • Ball Nose • Neck • Cylindrical Shank • Metric

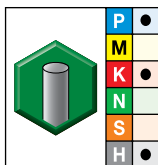
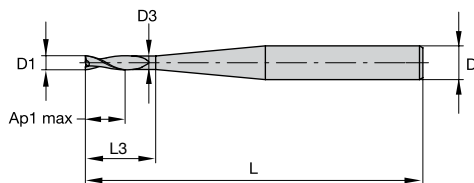


WU10PE

- first choice
- alternate choice

order #	catalog #	D1	D	D3	length of cut Ap1 max	length L	ZU
2545190	70N101001RT	1,0	4	0,80	1,00	63	2
2545191	70N101501RT	1,5	4	1,30	1,50	63	2
2545192	70N102002RT	2,0	6	1,80	2,00	76	2
2545213	70N103002RT	3,0	6	2,80	3,00	76	2
2545214	70N104002RT	4,0	6	3,70	4,00	76	2
2545215	70N105002RT	5,0	6	4,60	5,00	76	2
2545216	70N106002RT	6,0	6	5,50	6,00	76	2
2545217	70N108003RT	8,0	8	7,50	8,00	100	2
2545218	70N110004RT	10,0	10	9,50	10,00	100	2
2545219	70N112005RT	12,0	12	11,50	12,00	125	2

Vision Plus Micro • Series 7N02 7N12 7N22 • Sharp Edge • Cylindrical Shank • Metric



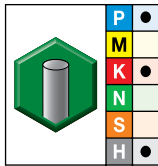
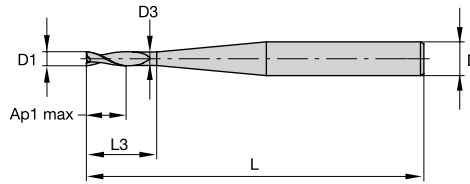
● first choice
○ alternate choice

WU10PE

order #	catalog #	D1	D	D3	length of cut Ap1 max	L3	length L	ZU
2256390	7N0200302RJ	0,3	6	0,24	0,40	0,40	50	2
2256438	7N2200400RJ	0,4	3	0,34	0,60	2,00	38	2
2256439	7N2200410RJ	0,4	3	0,34	0,60	4,00	38	2
2256391	7N0200402RJ	0,4	6	0,34	0,60	0,60	50	2
2256440	7N2200500RJ	0,5	3	0,44	0,70	2,00	38	2
2256441	7N2200510RJ	0,5	3	0,44	0,70	4,00	38	2
2256442	7N2200520RJ	0,5	3	0,44	0,70	6,00	38	2
2256392	7N0200502RJ	0,5	6	0,44	0,70	1,50	50	2
2256443	7N2200600RJ	0,6	3	0,54	0,90	2,00	38	2
2256444	7N2200610RJ	0,6	3	0,54	0,90	4,00	38	2
2256445	7N2200620RJ	0,6	3	0,54	0,90	6,00	38	2
2256393	7N0200602RJ	0,6	6	0,54	0,90	1,80	50	2
2256447	7N2200711RJ	0,7	4	0,64	1,00	4,00	50	2
2256448	7N2200721RJ	0,7	4	0,64	1,00	6,00	50	2
2256449	7N2200801RJ	0,8	4	0,74	1,20	4,00	50	2
2256450	7N2200811RJ	0,8	4	0,74	1,20	6,00	50	2
2256451	7N2200821RJ	0,8	4	0,74	1,20	8,00	50	2
2256394	7N0200802RJ	0,8	6	0,74	1,20	2,40	50	2
2256455	7N2201001RJ	1,0	4	0,94	1,50	6,00	50	2
2256456	7N2201011RJ	1,0	4	0,94	1,50	8,00	50	2
2256457	7N2201021RJ	1,0	4	0,94	1,50	10,00	50	2
2256458	7N2201031RJ	1,0	4	0,94	1,50	12,00	50	2
2256395	7N0201002RJ	1,0	6	0,94	1,50	2,50	50	2
2256406	7N1201002RJ	1,0	6	0,94	1,50	5,00	60	2
2256459	7N2201201RJ	1,2	4	1,14	1,80	6,00	50	2
2256460	7N2201211RJ	1,2	4	1,14	1,80	8,00	50	2
2256462	7N2201231RJ	1,2	4	1,14	1,80	12,00	50	2
2256396	7N0201202RJ	1,2	6	1,14	1,80	3,00	50	2
2256407	7N1201202RJ	1,2	6	1,14	1,80	6,00	60	2
2256463	7N2201401RJ	1,4	4	1,34	2,10	6,00	50	2
2256464	7N2201411RJ	1,4	4	1,34	2,10	8,00	50	2
2256465	7N2201421RJ	1,4	4	1,35	2,10	10,00	50	2
2256467	7N2201441RJ	1,4	4	1,34	2,10	16,00	50	2
2256397	7N0201402RJ	1,4	6	1,34	2,10	3,50	50	2
2256468	7N2201501RJ	1,5	4	1,44	2,30	6,00	50	2
2256469	7N2201511RJ	1,5	4	1,44	2,30	10,00	50	2
2256470	7N2201521RJ	1,5	4	1,44	2,30	12,00	50	2
2256471	7N2201531RJ	1,5	4	1,44	2,30	16,00	50	2
2256472	7N2201541RJ	1,5	4	1,44	2,30	18,00	63	2
2256473	7N2201551RJ	1,5	4	1,44	2,30	20,00	63	2
2256398	7N0201502RJ	1,5	6	1,44	2,30	3,80	50	2
2256409	7N1201502RJ	1,5	6	1,44	2,30	7,50	60	2
3454428	7N2201571RJ	1,6	4	1,54	2,80	11,70	50	2
2256479	7N2201701RJ	1,7	4	1,64	2,60	6,00	50	2
2256481	7N2201721RJ	1,7	4	1,64	2,60	12,00	50	2
2256484	7N2201801RJ	1,8	4	1,74	2,70	6,00	50	2
2256485	7N2201811RJ	1,8	4	1,74	2,70	10,00	50	2
2256486	7N2201821RJ	1,8	4	1,74	2,70	12,00	50	2
2256487	7N2201831RJ	1,8	4	1,74	2,70	16,00	50	2
2256400	7N0201802RJ	1,8	6	1,74	2,70	4,50	50	2
2256489	7N2201901RJ	1,9	4	1,84	2,80	6,00	50	2
2256494	7N2202001RJ	2,0	4	1,96	3,00	6,00	50	2

Vision Plus Micro • Series 7N02 7N12 7N22 • Sharp Edge • Cylindrical Shank • Metric

(continued)



- first choice
- alternate choice

WU10PE

order #	catalog #	D1	D	D3	length of cut Ap1 max	L3	length L	ZU
2256495	7N2202011RJ	2,0	4	1,96	3,00	10,00	50	2
2256496	7N2202021RJ	2,0	4	1,96	3,00	16,00	50	2
2256497	7N2202031RJ	2,0	4	1,96	3,00	20,00	63	2
2256498	7N2202041RJ	2,0	4	1,96	3,00	20,00	75	2
2256401	7N0202002RJ	2,0	6	1,94	3,00	5,00	50	2
2256412	7N1202002RJ	2,0	6	1,96	3,00	10,00	60	2
3454429	7N2202051RJ	2,1	4	2,00	3,00	8,00	50	2
2256499	7N2202501RJ	2,5	4	2,40	3,70	8,00	50	2
2256500	7N2202511RJ	2,5	4	2,40	3,70	10,00	50	2
2256501	7N2202521RJ	2,5	4	2,44	3,70	16,00	63	2
2256502	7N2202531RJ	2,5	4	2,44	3,70	20,00	63	2
2256503	7N2202541RJ	2,5	4	2,44	3,70	30,00	80	2
2256402	7N0202502RJ	2,5	6	2,44	3,70	5,00	50	2
2256504	7N2203002RJ	3,0	6	2,94	4,50	8,00	50	2
2256505	7N2203012RJ	3,0	6	2,94	4,50	10,00	50	2
2256506	7N2203022RJ	3,0	6	2,94	4,50	16,00	63	2
2256507	7N2203032RJ	3,0	6	2,94	4,50	20,00	63	2
2256508	7N2203042RJ	3,0	6	2,94	4,50	20,00	80	2
3454434	7N2203062RJ	3,1	6	3,00	4,50	25,00	76	2

INDEXABLE MILLING

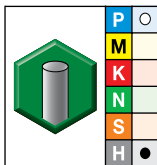
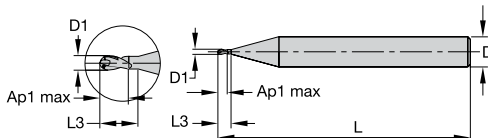
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Vision Plus Micro • Series 7N01 • Ball Nose • Cylindrical Shank • Metric

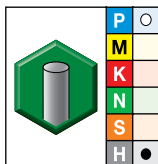
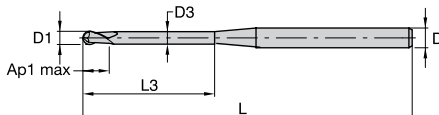


- first choice
- alternate choice

WU10PE

order #	catalog #	D1	D	length of cut Ap1 max	length L	ZU
2256358	7N0100302RJ	0,3	6	0,30	50	2
2256359	7N0100402RJ	0,4	6	0,40	50	2
2256360	7N0100502RJ	0,5	6	0,50	50	2
2256361	7N0100602RJ	0,6	6	0,60	50	2
2256362	7N0100802RJ	0,8	6	0,80	50	2
2256363	7N0101002RJ	1,0	6	2,50	50	2
2256364	7N0101202RJ	1,2	6	1,20	50	2
2256366	7N0101502RJ	1,5	6	1,50	50	2
2256369	7N0102002RJ	2,0	6	2,00	50	2
2256370	7N0102502RJ	2,5	6	2,50	50	2
2256371	7N0103002RJ	3,0	6	3,00	50	2
2256372	7N0104002RJ	4,0	6	4,00	50	2
2256373	7N0106002RJ	6,0	6	6,00	50	2

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- first choice
- alternate choice

WU10PE

order #	catalog #	D1	D	D3	length of cut Ap1 max	L3	length L	ZU
3665122	7N2100501RT	0,5	4	0,44	1,00	5,00	63	2
3665141	7N2100801RT	0,8	4	0,74	1,30	8,00	63	2
3665142	7N2101001RT	1,0	4	0,94	1,60	10,00	63	2
3665164	7N2101501RT	1,5	4	1,44	2,40	16,00	63	2
3665166	7N2102001RT	2,0	4	1,94	3,20	20,00	63	2
3665168	7N2103001RT	3,0	4	2,90	4,50	30,00	63	2

Vision Plus • Series 7S05 • Application Data • AlTiN-MT1 • Inch

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

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Material Group	Side Milling (A) and Slotting (B)			AITiN			Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.								
	A		B	Cutting Speed – vc SFM			D1 – Diameter								
	ap	ae	ap	min	–	max	frac. dec.	1/4	5/16	3/8	1/2	5/8	3/4	1	
	P	3	1 x D	0.4 x D	1 x D	390	–	520	IPT	.0017	.0021	.0025	.0032	.0037	.0042
	4	1 x D	0.4 x D	0.75 x D	300	–	490	IPT	.0015	.0019	.0022	.0029	.0033	.0036	.0043
H	1	1 x D	0.4 x D	0.75 x D	260	–	460	IPT	.0015	.0019	.0022	.0029	.0033	.0036	.0043
	2	1 x D	0.3 x D	0.5 x D	230	–	390	IPT	.0011	.0014	.0017	.0021	.0024	.0027	.0031
	3	1 x D	0.15 x D	0.3 x D	200	–	300	IPT	.0009	.0011	.0013	.0017	.0020	.0022	.0027
	4	1 x D	0.1 x D	0.15 x D	160	–	230	IPT	.0006	.0008	.0009	.0011	.0013	.0015	.0018

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 When using tools with 6 flutes, reduce slotting ap by 60%.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters on diameters >1/2".

Vision Plus • Series 7S7R • Application Data • AlTiN-MT1 • Inch

Material Group	Side Milling (A) and Slotting (B)			AITiN			Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.										
	A		B	Cutting Speed – vc SFM			D1 – Diameter										
	ap	ae	ap	min		max	frac.	5/32	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1	
	ap	ae	ap	min		max	dec.	.1563	.1875	.2500	.3125	.3750	.5000	.6250	.7500	1.000	
P	3	0.8 x D	0.5 x D	0.75 x D	390	–	520	IPT	.0009	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	4	0.8 x D	0.4 x D	0.5 x D	300	–	490	IPT	.0008	.0010	.0014	.0017	.0020	.0026	.0030	.0034	.0039
	5	0.8 x D	0.5 x D	0.75 x D	200	–	330	IPT	.0007	.0009	.0012	.0016	.0018	.0023	.0027	.0031	.0036
	6	0.8 x D	0.4 x D	0.5 x D	160	–	250	IPT	.0006	.0008	.0010	.0013	.0015	.0019	.0022	.0025	.0028
M	1	0.8 x D	0.5 x D	0.75 x D	300	–	380	IPT	.0009	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	2	0.8 x D	0.4XD	0.75 x D	200	–	260	IPT	.0007	.0009	.0012	.0016	.0018	.0023	.0027	.0031	.0036
	3	0.8 x D	0.4 x D	0.75 x D	200	–	230	IPT	.0006	.0008	.0010	.0013	.0015	.0019	.0022	.0025	.0028
K	1	0.8 x D	0.5 x D	0.75 x D	390	–	490	IPT	.0011	.0013	.0018	.0023	.0027	.0034	.0039	.0044	.0049
	2	0.8 x D	0.5 x D	0.75 x D	360	–	460	IPT	.0009	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	3	0.8 x D	0.4 x D	0.75 x D	360	–	430	IPT	.0007	.0009	.0012	.0016	.0018	.0023	.0027	.0031	.0036
S	1	0.8 x D	0.4 x D	0.75 x D	160	–	300	IPT	.0009	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	2	0.8 x D	0.4 x D	0.75 x D	80	–	130	IPT	.0005	.0006	.0008	.0010	.0012	.0015	.0018	.0021	.0024
	3	0.8 x D	0.25 x D	0.3 x D	80	–	130	IPT	.0005	.0006	.0008	.0010	.0012	.0015	.0018	.0021	.0024
	4	0.8 x D	0.3 x D	0.5 x D	160	–	200	IPT	.0006	.0008	.0011	.0014	.0017	.0021	.0025	.0028	.0033
H	1	0.8 x D	0.5 x D	0.5 x D	260	–	460	IPT	.0008	.0010	.0014	.0017	.0020	.0026	.0030	.0034	.0039
	2	0.8 x D	0.2 x D	0.3 x D	230	–	390	IPT	.0006	.0008	.0010	.0013	.0015	.0019	.0022	.0025	.0028
	3	0.8 x D	0.15 x D	0.2 x D	200	–	300	IPT	.0005	.0006	.0008	.0010	.0012	.0015	.0018	.0021	.0024

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
When using tools with 6 flutes, reduce slotting ap by 40%.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters on diameters >1/2.

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Vision Plus • Series 7S5F • Application Data • AlTiN-MT1 • Inch

INDEXABLE MILLING

SOLID END MILLING

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Material Group	Profile Milling		AITiN Cutting Speed – vc SFM		Recommended feed per tooth (IPT = inch/th) for 3D milling/profiling (A)											
	ap	ae	min	max	frac. dec.	D1 – Diameter										
						1/8	5/32	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	
	3	4	1	2	3	4	1	2	3	4	1	2	3	4		
P	0.5 x D	0.5 x D	910	–	1210	IPT	.0031	.0039	.0048	.0065	.0084	.0098	.0112	.0124	.0147	.0166
	0.5 x D	0.5 x D	680	–	1130	IPT	.0029	.0036	.0044	.0059	.0075	.0088	.0099	.0110	.0129	.0145
H	0.5 x D	0.5 x D	600	–	1060	IPT	.0029	.0036	.0044	.0059	.0075	.0088	.0099	.0110	.0129	.0145
	0.5 x D	0.5 x D	530	–	910	IPT	.0022	.0027	.0033	.0044	.0056	.0066	.0074	.0082	.0096	.0107
	0.5 x D	0.5 x D	450	–	680	IPT	.0017	.0021	.0026	.0035	.0044	.0052	.0059	.0066	.0078	.0089
	0.5 x D	0.5 x D	380	–	530	IPT	.0011	.0014	.0017	.0023	.0030	.0035	.0039	.0044	.0052	.0058

Material Group	Profile Milling		AITiN Cutting Speed – vc SFM		Recommended feed per tooth (IPT = inch/th) for 3D milling/profiling (A)											
	ap	ae	min	max	frac. dec.	D1 – Diameter										
						1/8	5/32	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	
	3	4	1	2	3	4	1	2	3	4	1	2	3	4		
P	0.1 x D	0.1 x D	790	–	1050	IPT	.0022	.0027	.0033	.0046	.0059	.0069	.0078	.0087	.0102	.0116
	0.1 x D	0.1 x D	590	–	980	IPT	.0020	.0025	.0030	.0041	.0052	.0061	.0069	.0077	.0090	.0101
H	0.1 x D	0.1 x D	520	–	920	IPT	.0020	.0025	.0030	.0041	.0052	.0061	.0069	.0077	.0090	.0101
	0.1 x D	0.1 x D	460	–	790	IPT	.0015	.0019	.0023	.0031	.0039	.0046	.0052	.0057	.0067	.0075
	0.1 x D	0.1 x D	390	–	590	IPT	.0012	.0015	.0018	.0024	.0031	.0036	.0041	.0046	.0054	.0062
	0.1 x D	0.1 x D	330	–	460	IPT	.0008	.0010	.0012	.0016	.0021	.0024	.0027	.0031	.0036	.0041

Material Group	Profile Milling		AITiN Cutting Speed – vc SFM		Recommended feed per tooth (IPT = inch/th) for 3D milling/profiling (A)											
	ap	ae	min	max	frac. dec.	D1 – Diameter										
						1/8	5/32	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	
	3	4	1	2	3	4	1	2	3	4	1	2	3	4		
P	0.2 x D	0.2 x D	510	–	680	IPT	.0009	.0012	.0014	.0020	.0025	.0030	.0034	.0038	.0044	.0050
	0.2 x D	0.2 x D	380	–	640	IPT	.0009	.0011	.0013	.0018	.0023	.0027	.0030	.0033	.0039	.0044
H	0.2 x D	0.2 x D	340	–	600	IPT	.0009	.0011	.0013	.0018	.0023	.0027	.0030	.0033	.0039	.0044
	0.2 x D	0.2 x D	300	–	510	IPT	.0007	.0008	.0010	.0013	.0017	.0020	.0022	.0025	.0029	.0032
	0.2 x D	0.2 x D	260	–	380	IPT	.0005	.0006	.0008	.0011	.0013	.0016	.0018	.0020	.0024	.0027
	0.2 x D	0.2 x D	210	–	300	IPT	.0003	.0004	.0005	.0007	.0009	.0010	.0012	.0013	.0016	.0018

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 For better surface finish, reduce feed per tooth.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters on diameters >1/2".

Vision Plus • Series 7505 7545 7515 7525 • Application Data • TiAlN-LT1 • Metric

Material Group	Side Milling (A) and Slotting (B)		TiAlN		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.																	
	A		B		Cutting Speed – vc m/min			mm	D1 – Diameter													
	ap	ae	ap	min	max	4,0	5,0		6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0					
	ap	ae	ap	min	max	mm	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0					
P	3	1 x D	0,4 x D	1 x D	120	–	160	fz	0,026	0,033	0,040	0,055	0,067	0,077	0,087	0,096	0,104	0,111	0,125			
	4	1 x D	0,4 x D	0,75 x D	90	–	150	fz	0,024	0,030	0,036	0,049	0,059	0,069	0,077	0,084	0,091	0,097	0,107			
H	1	1 x D	0,4 x D	0,75 x D	80	–	140	fz	0,024	0,030	0,036	0,049	0,059	0,069	0,077	0,084	0,091	0,097	0,107			
	2	1 x D	0,3 x D	0,5 x D	70	–	120	fz	0,018	0,022	0,027	0,037	0,044	0,051	0,057	0,063	0,067	0,071	0,078			
	3	1 x D	0,15 x D	0,3 x D	60	–	90	fz	0,014	0,018	0,021	0,029	0,035	0,041	0,046	0,051	0,055	0,059	0,067			
	4	1 x D	0,1 x D	0,15 x D	50	–	70	fz	0,009	0,012	0,014	0,019	0,023	0,027	0,031	0,034	0,037	0,039	0,044			

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
For better surface finish, reduce feed per tooth.

Vision Plus • Series 7515 • Application Data • TiAlN-LT1 • Metric

Material Group	Side Milling (A) and Slotting (B)		TiAlN		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.																	
	A		B		Cutting Speed – vc m/min			mm	D1 – Diameter													
	ap	ae	ap	min	max	3,0	4,0		5,0	6,0	8,0	10,0	12,0	16,0	20,0	25,0						
	ap	ae	ap	min	max	mm	3,0	4,0	5,0	6,0	8,0	10,0	12,0	16,0	20,0	25,0						
P	3	2 x D	0,3 x D	0,75 x D	160	–	180	fz	0,019	0,026	0,033	0,040	0,055	0,067	0,077	0,096	0,111	0,125				
	4	2 x D	0,25 x D	0,5 x D	140	–	160	fz	0,017	0,024	0,030	0,036	0,049	0,059	0,069	0,084	0,097	0,107				
H	1	2 x D	0,25 x D	0,5 x D	120	–	140	fz	0,017	0,024	0,030	0,036	0,049	0,059	0,069	0,084	0,097	0,107				
	2	2 x D	0,2 x D	0,4 x D	80	–	130	fz	0,013	0,018	0,022	0,027	0,037	0,044	0,051	0,063	0,071	0,078				
	3	2 x D	0,1 x D	0,2 x D	70	–	100	fz	0,010	0,014	0,018	0,021	0,029	0,035	0,041	0,051	0,059	0,067				
	4	2 x D	0,05 x D	0,05 x D	50	–	70	fz	0,007	0,009	0,012	0,014	0,019	0,023	0,027	0,034	0,039	0,044				

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
For better surface finish, reduce feed per tooth.

Vision Plus • Series 7525 • Application Data • TiAlN-LT1 • Metric

Material Group	Side Milling (A) and Slotting (B)		TiAlN		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.																	
	A		B		Cutting Speed – vc m/min			mm	D1 – Diameter													
	ap	ae	ap	min	max	3,0	4,0		5,0	6,0	8,0	10,0	12,0	16,0	20,0	25,0						
	ap	ae	ap	min	max	mm	3,0	4,0	5,0	6,0	8,0	10,0	12,0	16,0	20,0	25,0						
P	3	3 x D	0,2 x D	0,5 x D	160	–	180	fz	0,019	0,026	0,033	0,040	0,055	0,067	0,077	0,096	0,111	0,125				
	4	3 x D	0,2 x D	0,3 x D	140	–	160	fz	0,017	0,024	0,030	0,036	0,049	0,059	0,069	0,084	0,097	0,107				
H	1	3 x D	0,2 x D	0,3 x D	120	–	140	fz	0,017	0,024	0,030	0,036	0,049	0,059	0,069	0,084	0,097	0,107				
	2	3 x D	0,15 x D	0,2 x D	80	–	130	fz	0,013	0,018	0,022	0,027	0,037	0,044	0,051	0,063	0,071	0,078				
	3	3 x D	0,05 x D	–	70	–	100	fz	0,010	0,014	0,018	0,021	0,029	0,035	0,041	0,051	0,059	0,067				
	4	3 x D	0,03 x D	–	50	–	70	fz	0,007	0,009	0,012	0,014	0,019	0,023	0,027	0,034	0,039	0,044				

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
For better surface finish, reduce feed per tooth.

Vision Plus • Series 7585 7595 • Application Data • TiAlN-LT1 • Metric

Material Group		Side Milling (A) and Slotting (B)		TiAlN			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.													
		A		B	Cutting Speed – vc m/min			mm	D1 – Diameter											
		ap	ae	ap	min	max	4,0		5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0		
		1 x D	0,4 x D	1 x D			fz													
P	3	1 x D	0,4 x D	1 x D	120	–	160	fz	0,019	0,033	0,040	0,055	0,067	0,077	0,077	0,096	0,096	0,111	0,125	
	4	1 x D	0,4 x D	0,75 x D	90	–	150	fz	0,017	0,030	0,036	0,049	0,059	0,069	0,069	0,084	0,084	0,097	0,107	
H	1	1 x D	0,4 x D	0,75 x D	80	–	140	fz	0,017	0,030	0,036	0,049	0,059	0,069	0,069	0,084	0,084	0,097	0,107	
	2	1 x D	0,3 x D	0,5 x D	70	–	120	fz	0,013	0,022	0,027	0,037	0,044	0,051	0,051	0,063	0,063	0,071	0,078	
	3	1 x D	0,15 x D	0,3 x D	60	–	90	fz	0,010	0,018	0,021	0,029	0,035	0,041	0,041	0,051	0,051	0,059	0,067	
	4	1 x D	0,1 x D	0,15 x D	50	–	70	fz	0,007	0,012	0,014	0,019	0,023	0,027	0,027	0,034	0,034	0,039	0,044	

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
For better surface finish, reduce feed per tooth.

Vision Plus™ • Series 75N2 • Application Data • WU10PE • Metric

Material Group		Side Milling (A) and Slotting (B)		WU10PE			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.								
		A		B	Cutting Speed – vc m/min			mm	D1 – Diameter						
		ap	ae	ap	min	max	3,0		4,0	5,0	6,0	8,0	10,0	12,0	
		0,75 x D	0,1 x D	0,4 x D			fz								
P	3	0,75 x D	0,1 x D	0,4 x D	160	–	180	fz	0,017	0,023	0,030	0,036	0,050	0,061	0,070
	4	0,75 x D	0,1 x D	0,4 x D	140	–	160	fz	0,016	0,021	0,027	0,033	0,045	0,054	0,062
H	1	0,75 x D	0,1 x D	0,4 x D	120	–	140	fz	0,016	0,021	0,027	0,033	0,045	0,054	0,062
	2	0,75 x D	0,05 x D	0,3 x D	100	–	130	fz	0,016	0,020	0,025	0,029	0,034	0,037	0,040
	3	0,75 x D	0,03 x D	0,2 x D	70	–	100	fz	0,013	0,016	0,019	0,023	0,026	0,029	0,032
	4	0,75 x D	0,01 x D	0,1 x D	50	–	70	fz	0,008	0,011	0,013	0,015	0,018	0,019	0,021

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.

Vision Plus • Series 75N5 Finishing • Application Data • WU10PE • Metric

Material Group		Side Milling (A) and Slotting (B)		TiAlN			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.													
		A		B	Cutting Speed – vc m/min			mm	D1 – Diameter											
		ap	ae	ap	min	max	4,0		5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0		
		1 x D	0,4 x D	1 x D			fz													
P	3	1 x D	0,4 x D	1 x D	120	–	160	fz	0,026	0,033	0,040	0,055	0,067	0,077	0,087	0,096	0,104	0,111	0,125	
	4	1 x D	0,4 x D	0,75 x D	90	–	150	fz	0,024	0,030	0,036	0,049	0,059	0,069	0,077	0,084	0,091	0,097	0,107	
H	1	1 x D	0,4 x D	0,75 x D	80	–	140	fz	0,024	0,030	0,036	0,049	0,059	0,069	0,077	0,084	0,091	0,097	0,107	
	2	1 x D	0,3 x D	0,5 x D	70	–	120	fz	0,018	0,022	0,027	0,037	0,044	0,051	0,057	0,063	0,067	0,071	0,078	
	3	1 x D	0,15 x D	0,3 x D	60	–	90	fz	0,014	0,018	0,021	0,029	0,035	0,041	0,046	0,051	0,055	0,059	0,067	
	4	1 x D	0,1 x D	0,15 x D	50	–	70	fz	0,009	0,012	0,014	0,019	0,023	0,027	0,031	0,034	0,037	0,039	0,044	

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
For better surface finish, reduce feed per tooth.

Vision Plus • Series 7670 • Application Data • TiAlN-LT1 • Metric

Material Group	Side Milling (A) and Slotting (B)		TiAlN		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 10%.												
	A		B		Cutting Speed – vc m/min	mm	D1 – Diameter										
	ap	ae	ap	ae			4,0	5,0	6,0	8,0	10,0	12,0	16,0	20,0	25,0		
	min	max	min	max	4,0	5,0	6,0	8,0	10,0	12,0	16,0	20,0	25,0				
P	3	0,8 x D	0,5 x D	0,75 x D	160	–	180	fz	0,020	0,025	0,031	0,043	0,051	0,063	0,078	0,101	0,114
	4	0,8 x D	0,4 x D	0,5 x D	140	–	160	fz	0,018	0,023	0,028	0,038	0,046	0,056	0,069	0,088	0,098
	5	0,8 x D	0,5 x D	0,75 x D	60	–	100	fz	0,016	0,021	0,025	0,034	0,041	0,051	0,063	0,081	0,091
M	1	0,8 x D	0,5 x D	0,75 x D	80	–	100	fz	0,020	0,025	0,031	0,043	0,051	0,063	0,078	0,101	0,114
	2	0,8 x D	0,4 x D	0,75 x D	60	–	80	fz	0,016	0,021	0,025	0,034	0,041	0,051	0,063	0,081	0,091
	3	0,8 x D	0,4 x D	0,75 x D	60	–	80	fz	0,014	0,017	0,021	0,029	0,034	0,042	0,051	0,065	0,071
K	1	0,8 x D	0,5 x D	0,75 x D	120	–	160	fz	0,024	0,031	0,037	0,051	0,061	0,075	0,091	0,114	0,124
	2	0,8 x D	0,5 x D	0,75 x D	110	–	140	fz	0,020	0,025	0,031	0,043	0,051	0,063	0,078	0,101	0,114
	3	0,8 x D	0,4 x D	0,75 x D	100	–	130	fz	0,016	0,021	0,025	0,034	0,041	0,051	0,063	0,081	0,091
S	1	0,8 x D	0,4 x D	0,75 x D	50	–	90	fz	0,023	0,030	0,036	0,050	0,061	0,070	0,087	0,101	0,114
	2	0,8 x D	0,25 x D	0,3 x D	25	–	40	fz	0,013	0,016	0,019	0,026	0,032	0,037	0,046	0,054	0,061
	3	0,8 x D	0,4 x D	0,75 x D	25	–	40	fz	0,013	0,016	0,019	0,026	0,032	0,037	0,046	0,054	0,061
H	1	0,8 x D	0,5 x D	0,5 x D	120	–	140	fz	0,018	0,023	0,028	0,038	0,046	0,056	0,069	0,088	0,098
	2	0,8 x D	0,2 x D	0,3 x D	80	–	130	fz	0,014	0,017	0,021	0,029	0,034	0,042	0,051	0,065	0,071
	3	0,8 x D	0,15 x D	0,2 x D	70	–	100	fz	0,011	0,014	0,017	0,023	0,027	0,034	0,041	0,052	0,057

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
For rougher tool with 6 flutes, use ap in slotting 60% of table value.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters on diameters >12mm.

Vision Plus™ • Series D518 • Application Data • WP15PE • Metric

Material Group	Side Milling (A)		WP15PE		Recommended feed per tooth (fz = mm/th) for side milling (A).													
	A		Cutting Speed – vc m/min		mm	D1 – Diameter												
	ap	ae	min	max		4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0		
	min	max	min	max	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0			
P	0	Ap1 max	0,05 x D	150	–	200	fz	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124
	1	Ap1 max	0,05 x D	150	–	200	fz	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124
	2	Ap1 max	0,05 x D	140	–	190	fz	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124
	3	Ap1 max	0,05 x D	120	–	160	fz	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	4	Ap1 max	0,05 x D	90	–	150	fz	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088	0,098
	5	Ap1 max	0,05 x D	60	–	100	fz	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091
M	1	Ap1 max	0,05 x D	90	–	115	fz	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	2	Ap1 max	0,05 x D	60	–	80	fz	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091
	3	Ap1 max	0,05 x D	60	–	70	fz	0,016	0,020	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065	0,071
K	1	Ap1 max	0,05 x D	120	–	150	fz	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124
	2	Ap1 max	0,05 x D	110	–	140	fz	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	3	Ap1 max	0,05 x D	110	–	130	fz	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091
S	1	Ap1 max	0,04 x D	50	–	90	fz	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	2	Ap1 max	0,04 x D	25	–	40	fz	0,013	0,016	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054	0,061
	3	Ap1 max	0,05 x D	25	–	40	fz	0,013	0,016	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054	0,061
	4	Ap1 max	0,05 x D	50	–	60	fz	0,016	0,021	0,026	0,037	0,045	0,052	0,058	0,064	0,069	0,074	0,084
H	1	Ap1 max	0,04 x D	80	–	140	fz	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088	0,098
	2	Ap1 max	0,05 x D	70	–	120	fz	0,016	0,020	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065	0,071

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
For better surface finish, reduce feed per tooth.

Vision Plus • Series D618 • Application Data • WU10PE • Metric

Material Group	A		WU10PE			Recommended feed per tooth (fz = mm/th) for side milling (A).										
	A		Cutting Speed – vc m/min			mm	D1 – Diameter									
	ap	ae	min	–	max		3,0	4,0	5,0	6,0	8,0	10,0	12,0	16,0	20,0	
	3	2 x D	0,15 x D	120	–	160	fz	0,019	0,026	0,033	0,040	0,055	0,067	0,077	0,096	0,111
P	4	2 x D	0,15 x D	90	–	150	fz	0,017	0,024	0,030	0,036	0,049	0,059	0,069	0,084	0,097
	1	2 x D	0,15 x D	80	–	140	fz	0,017	0,024	0,030	0,036	0,049	0,059	0,069	0,084	0,097
H	2	2 x D	0,15 x D	70	–	120	fz	0,013	0,018	0,022	0,027	0,037	0,044	0,051	0,063	0,071
	3	2 x D	0,1 x D	60	–	90	fz	0,010	0,014	0,018	0,021	0,029	0,035	0,041	0,051	0,059
	4	2 x D	0,05 x D	50	–	70	fz	0,007	0,009	0,012	0,014	0,019	0,023	0,027	0,034	0,039

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
For better surface finish, reduce feed per tooth.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on diameters >12mm.

Vision Plus • Series 7050 7060 Roughing • Application Data • WU10PE • Metric

Material Group	A		WU10PE			Recommended feed per tooth (Fz=mm/th) for 3D milling/profiling (A) - roughing										
	A		Cutting Speed – vc m/min			mm	D1 – Diameter									
	ap	ae	Min	–	Max		2,0	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0	
	3	0,2 x D	0,1 x D	208	–	234	Fz	0,015	0,023	0,031	0,049	0,067	0,081	0,094	0,117	0,136
P	4	0,2 x D	0,1 x D	182	–	208	Fz	0,014	0,021	0,029	0,044	0,060	0,073	0,084	0,103	0,118
	1	0,15 x D	0,1 x D	140	–	196	Fz	0,021	0,032	0,043	0,066	0,090	0,109	0,125	0,154	0,177
H	2	0,1 x D	0,075 x D	119	–	204	Fz	0,024	0,036	0,048	0,074	0,101	0,121	0,140	0,171	0,194
	3	0,05 x D	0,05 x D	138	–	207	Fz	0,027	0,041	0,055	0,084	0,114	0,138	0,161	0,200	0,233
	4	0,05 x D	0,05 x D	115	–	161	Fz	0,018	0,027	0,037	0,056	0,076	0,092	0,107	0,133	0,154

NOTE: Please use the reference table to optimize your cutting speed based on the average cutting angle of the application.

Vision Plus • Series 7050 7060 Semi-Finishing • Application Data • WU10PE • Metric

Material Group	A		WU10PE			Recommended feed per tooth (fz = mm/th) for 3D milling/profiling (A) – semi-finishing											
	A		Cutting Speed – vc m/min			mm	D1 – Diameter										
	ap	ae	min	–	max		1,0	2,0	2,5	3,0	4,0	5,0	6,0	8,0	10,0	12,0	
	3	0,1 x D	0,1 x D	240	–	320	fz	0,017	0,034	0,043	0,052	0,070	0,089	0,109	0,150	0,182	0,211
P	4	0,1 x D	0,1 x D	180	–	300	fz	0,016	0,031	0,040	0,048	0,064	0,081	0,099	0,134	0,162	0,187
	1	0,1 x D	0,1 x D	160	–	280	fz	0,016	0,031	0,040	0,048	0,064	0,081	0,099	0,134	0,162	0,187
H	2	0,1 x D	0,1 x D	140	–	240	fz	0,012	0,024	0,030	0,036	0,048	0,061	0,074	0,101	0,121	0,140
	3	0,1 x D	0,1 x D	120	–	180	fz	0,009	0,019	0,024	0,028	0,038	0,048	0,058	0,079	0,096	0,112
	4	0,1 x D	0,1 x D	100	–	140	fz	0,006	0,012	0,016	0,019	0,025	0,032	0,039	0,053	0,064	0,074

NOTE: Please use the reference table to optimize your cutting speed based on the average cutting angle of the application.

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Vision Plus • Series 7050 7060 Finishing • Application Data • WU10PE • Metric

Material Group	A		WU10PE Cutting Speed – vc m/min		mm	Recommended feed per tooth (Fz=mm/th) for 3D milling/profiling (A) - finishing										
	ap	ae	Min	Max		D1 - Diameter										
						2,0	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0		
P	3	0,04 x D	0,04 x D	416	–	468	Fz	0,052	0,080	0,108	0,168	0,231	0,279	0,324	0,403	0,466
	4	0,04 x D	0,04 x D	364	–	416	Fz	0,048	0,073	0,099	0,152	0,207	0,249	0,288	0,355	0,406
H	1	0,03 x D	0,03 x D	290	–	406	Fz	0,052	0,078	0,106	0,162	0,221	0,266	0,308	0,379	0,434
	2	0,03 x D	0,03 x D	203	–	348	Fz	0,039	0,059	0,080	0,122	0,166	0,199	0,230	0,281	0,320
	3	0,02 x D	0,02 x D	216	–	324	Fz	0,033	0,050	0,067	0,102	0,139	0,168	0,196	0,244	0,284
	4	0,02 x D	0,02 x D	180	–	252	Fz	0,022	0,033	0,045	0,068	0,093	0,112	0,130	0,162	0,187

NOTE: Please use the reference table to optimize your cutting speed based on the average cutting angle of the application.

Vision Plus • Series 7061 Roughing • Application Data • WU10PE • Metric

Material Group	A		WU10PE Cutting Speed – vc m/min		mm	Recommended feed per tooth (Fz=mm/th) for 3D milling/profiling (A) - roughing										
	ap	ae	Min	Max		D1 - Diameter										
						2,0	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0		
P	3	0,2D	0,1D	208	–	234	Fz	0,015	0,023	0,031	0,049	0,067	0,081	0,094	0,117	0,136
	4	0,2D	0,1D	182	–	208	Fz	0,014	0,021	0,029	0,044	0,060	0,073	0,084	0,103	0,118
H	1	0,15D	0,1D	140	–	196	Fz	0,021	0,032	0,043	0,066	0,090	0,109	0,125	0,154	0,177
	2	0,1D	0,075D	119	–	204	Fz	0,024	0,036	0,048	0,074	0,101	0,121	0,140	0,171	0,194
	3	0,05D	0,05D	138	–	207	Fz	0,027	0,041	0,055	0,084	0,114	0,138	0,161	0,200	0,233
	4	0,05D	0,05D	115	–	161	Fz	0,018	0,027	0,037	0,056	0,076	0,092	0,107	0,133	0,154

NOTE: Please use the reference table to optimize your cutting speed based on the average cutting angle of the application.

Vision Plus • Series 7061 Semi-Finishing • Application Data • WU10PE • Metric

Material Group	A		WU10PE Cutting Speed – vc m/min		mm	Recommended feed per tooth (fz = mm/th) for 3D milling/profiling (A) – semi-finishing											
	ap	ae	min	max		D1 – Diameter											
						1,0	2,0	2,5	3,0	4,0	5,0	6,0	8,0	10,0	12,0		
P	3	0,1 x D	0,05 x D	240	–	320	fz	0,017	0,034	0,043	0,052	0,070	0,089	0,109	0,150	0,182	0,211
	4	0,1 x D	0,1 x D	180	–	300	fz	0,016	0,031	0,040	0,048	0,064	0,081	0,099	0,134	0,162	0,187
H	1	0,1 x D	0,1 x D	160	–	280	fz	0,016	0,031	0,040	0,048	0,064	0,081	0,099	0,134	0,162	0,187
	2	0,1 x D	0,1 x D	140	–	240	fz	0,012	0,024	0,030	0,036	0,048	0,061	0,074	0,101	0,121	0,140
	3	0,1 x D	0,1 x D	120	–	180	fz	0,009	0,019	0,024	0,028	0,038	0,048	0,058	0,079	0,096	0,112
	4	0,1 x D	0,1 x D	100	–	140	fz	0,006	0,012	0,016	0,019	0,025	0,032	0,039	0,053	0,064	0,074

NOTE: Please use the reference table to optimize your cutting speed based on the average cutting angle of the application.

Vision Plus • Series 7061 Finishing • Application Data • WU10PE • Metric

Material Group	A		WU10PE Recommended feed per tooth (Fz=mm/th) for 3D milling/profiling (A) - finishing													
	A		Cutting Speed – vc m/min			mm	D1 - Diameter									
	ap	ae	Min	–	Max		2,0	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0	
	ap	ae	Min	–	Max	Fz	Fz	Fz	Fz	Fz	Fz	Fz	Fz	Fz	Fz	
P	3	0,04 x D	0,04 x D	416	–	468	Fz	0,052	0,080	0,108	0,168	0,231	0,279	0,324	0,403	0,466
	4	0,04 x D	0,04 x D	364	–	416	Fz	0,048	0,073	0,099	0,152	0,207	0,249	0,288	0,355	0,406
H	1	0,03 x D	0,03 x D	290	–	406	Fz	0,052	0,078	0,106	0,162	0,221	0,266	0,308	0,379	0,434
	2	0,03 x D	0,03 x D	203	–	348	Fz	0,039	0,059	0,080	0,122	0,166	0,199	0,230	0,281	0,320
	3	0,02 x D	0,02 x D	216	–	324	Fz	0,033	0,050	0,067	0,102	0,139	0,168	0,196	0,244	0,284
	4	0,02 x D	0,02 x D	180	–	252	Fz	0,022	0,033	0,045	0,068	0,093	0,112	0,130	0,162	0,187

NOTE: Please use the reference table to optimize your cutting speed based on the average cutting angle of the application.

Vision Plus • Series 7150 Roughing • Application Data • WU10PE • Metric

Material Group	A		WU10PE Recommended feed per tooth (Fz=mm/th) for 3D milling/profiling (A) - roughing													
	A		Cutting Speed – vc m/min			mm	D1 - Diameter									
	ap	ae	Min	–	Max		2,0	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0	
	ap	ae	Min	–	Max	Fz	Fz	Fz	Fz	Fz	Fz	Fz	Fz	Fz	Fz	
P	3	0,2 x D	0,1 x D	208	–	234	Fz	0,015	0,023	0,031	0,049	0,067	0,081	0,094	0,117	0,136
	4	0,2 x D	0,1 x D	182	–	208	Fz	0,014	0,021	0,029	0,044	0,060	0,073	0,084	0,103	0,118
H	1	0,15 x D	0,1 x D	140	–	196	Fz	0,021	0,032	0,043	0,066	0,090	0,109	0,125	0,154	0,177
	2	0,1 x D	0,075 x D	119	–	204	Fz	0,024	0,036	0,048	0,074	0,101	0,121	0,140	0,171	0,194
	3	0,05 x D	0,05 x D	138	–	207	Fz	0,027	0,041	0,055	0,084	0,114	0,138	0,161	0,200	0,233
	4	0,05 x D	0,05 x D	115	–	161	Fz	0,018	0,027	0,037	0,056	0,076	0,092	0,107	0,133	0,154

NOTE: Please use the reference table to optimize your cutting speed based on the average cutting angle of the application.

Vision Plus • Series 7150 Semi-Finishing • Application Data • WU10PE • Metric

Material Group	A		WU10PE Recommended feed per tooth (fz = mm/th) for 3D milling/profiling (A) – semi-finishing														
	A		Cutting Speed – vc m/min			mm	D1 – Diameter										
	ap	ae	min	–	max		1,0	2,0	2,5	3,0	4,0	5,0	6,0	8,0	10,0	12,0	
	ap	ae	min	–	max	fz	fz	fz	fz	fz	fz	fz	fz	fz	fz	fz	
P	3	0,1 x D	0,1 x D	240	–	320	fz	0,017	0,034	0,043	0,052	0,070	0,089	0,109	0,150	0,182	0,211
	4	0,1 x D	0,1 x D	180	–	300	fz	0,016	0,031	0,040	0,048	0,064	0,081	0,099	0,134	0,162	0,187
H	1	0,1 x D	0,1 x D	160	–	280	fz	0,016	0,031	0,040	0,048	0,064	0,081	0,099	0,134	0,162	0,187
	2	0,1 x D	0,1 x D	140	–	240	fz	0,012	0,024	0,030	0,036	0,048	0,061	0,074	0,101	0,121	0,140
	3	0,1 x D	0,1 x D	120	–	180	fz	0,009	0,019	0,024	0,028	0,038	0,048	0,058	0,079	0,096	0,112
	4	0,1 x D	0,1 x D	100	–	140	fz	0,006	0,012	0,016	0,019	0,025	0,032	0,039	0,053	0,064	0,074

NOTE: Please use the reference table to optimize your cutting speed based on the average cutting angle of the application.

Vision Plus • Series 7150 Finishing • Application Data • WU10PE • Metric

Material Group	A		WU10PE Recommended feed per tooth (Fz=mm/th) for 3D milling/profiling (A) - finishing													
	A		Cutting Speed – vc m/min			mm	D1 - Diameter									
	ap	ae	Min	–	Max		2,0	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0	
						Fz										
P	3	0,04 x D	0,04 x D	416	–	468	Fz	0,052	0,080	0,108	0,168	0,231	0,279	0,324	0,403	0,466
	4	0,04 x D	0,04 x D	364	–	416	Fz	0,048	0,073	0,099	0,152	0,207	0,249	0,288	0,355	0,406
H	1	0,03 x D	0,03 x D	290	–	406	Fz	0,052	0,078	0,106	0,162	0,221	0,266	0,308	0,379	0,434
	2	0,03 x D	0,03 x D	203	–	348	Fz	0,039	0,059	0,080	0,122	0,166	0,199	0,230	0,281	0,320
	3	0,02 x D	0,02 x D	216	–	324	Fz	0,033	0,050	0,067	0,102	0,139	0,168	0,196	0,244	0,284
	4	0,02 x D	0,02 x D	180	–	252	Fz	0,022	0,033	0,045	0,068	0,093	0,112	0,130	0,162	0,187

NOTE: Please use the reference table to optimize your cutting speed based on the average cutting angle of the application.

Vision Plus • Series 7151 Roughing • Application Data • WU10PE • Metric

Material Group	A		WU10PE Recommended feed per tooth (Fz=mm/th) for 3D milling/profiling (A) - roughing													
	A		Cutting Speed – vc m/min			mm	D1 - Diameter									
	ap	ae	Min	–	Max		2,0	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0	
						Fz										
P	3	0,2 x D	0,1 x D	208	–	234	Fz	0,015	0,023	0,031	0,049	0,067	0,081	0,094	0,117	0,136
	4	0,2 x D	0,1 x D	182	–	208	Fz	0,014	0,021	0,029	0,044	0,060	0,073	0,084	0,103	0,118
H	1	0,15 x D	0,1 x D	140	–	196	Fz	0,021	0,032	0,043	0,066	0,090	0,109	0,125	0,154	0,177
	2	0,1 x D	0,075 x D	119	–	204	Fz	0,024	0,036	0,048	0,074	0,101	0,121	0,140	0,171	0,194
	3	0,05 x D	0,05 x D	138	–	207	Fz	0,027	0,041	0,055	0,084	0,114	0,138	0,161	0,200	0,233
	4	0,05 x D	0,05 x D	115	–	161	Fz	0,018	0,027	0,037	0,056	0,076	0,092	0,107	0,133	0,154

NOTE: Please use the reference table to optimize your cutting speed based on the average cutting angle of the application.

Vision Plus • Series 7151 Semi-Finishing • Application Data • WU10PE • Metric

Material Group	A		WU10PE Recommended feed per tooth (fz = mm/th) for 3D milling/profiling (A) – semi-finishing														
	A		Cutting Speed – vc m/min			mm	D1 – Diameter										
	ap	ae	min	–	max		1,0	2,0	2,5	3,0	4,0	5,0	6,0	8,0	10,0	12,0	
						fz											
P	3	0,1 x D	0,05 x D	240	–	320	fz	0,017	0,034	0,043	0,052	0,070	0,089	0,109	0,150	0,182	0,211
	4	0,1 x D	0,1 x D	180	–	300	fz	0,016	0,031	0,040	0,048	0,064	0,081	0,099	0,134	0,162	0,187
H	1	0,1 x D	0,1 x D	160	–	280	fz	0,016	0,031	0,040	0,048	0,064	0,081	0,099	0,134	0,162	0,187
	2	0,1 x D	0,1 x D	140	–	240	fz	0,012	0,024	0,030	0,036	0,048	0,061	0,074	0,101	0,121	0,140
	3	0,1 x D	0,1 x D	120	–	180	fz	0,009	0,019	0,024	0,028	0,038	0,048	0,058	0,079	0,096	0,112
	4	0,1 x D	0,1 x D	100	–	140	fz	0,006	0,012	0,016	0,019	0,025	0,032	0,039	0,053	0,064	0,074

NOTE: Please use the reference table to optimize your cutting speed based on the average cutting angle of the application.

Vision Plus • Series 7151 Finishing • Application Data • WU10PE • Metric

Material Group	A		WU10PE Recommended feed per tooth (Fz=mm/th) for 3D milling/profiling (A) - finishing													
	ap	ae	Cutting Speed – vc m/min			mm	D1 - Diameter									
			Min	Max	2,0		3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0		
	P	3	0,04 x D	0,04 x D	416	–	468	Fz	0,052	0,080	0,108	0,168	0,231	0,279	0,324	0,403
4		0,04 x D	0,04 x D	364	–	416	Fz	0,048	0,073	0,099	0,152	0,207	0,249	0,288	0,355	0,406
H	1	0,03 x D	0,03 x D	290	–	406	Fz	0,052	0,078	0,106	0,162	0,221	0,266	0,308	0,379	0,434
	2	0,03 x D	0,03 x D	203	–	348	Fz	0,039	0,059	0,080	0,122	0,166	0,199	0,230	0,281	0,320
	3	0,02 x D	0,02 x D	216	–	324	Fz	0,033	0,050	0,067	0,102	0,139	0,168	0,196	0,244	0,284
	4	0,02 x D	0,02 x D	180	–	252	Fz	0,022	0,033	0,045	0,068	0,093	0,112	0,130	0,162	0,187

NOTE: Please use the reference table to optimize your cutting speed based on the average cutting angle of the application.

Vision Plus • Series 70N1 Roughing • Application Data • WU10PE • Metric

Material Group	A		WU10PE Recommended feed per tooth (Fz=mm/th) for 3D milling/profiling (A) - roughing													
	ap	ae	Cutting Speed – vc m/min			mm	D1 - Diameter									
			Min	Max	2,0		3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0		
	P	3	0,2 x D	0,1 x D	208	–	234	Fz	0,015	0,023	0,031	0,049	0,067	0,081	0,094	0,117
4		0,2 x D	0,1 x D	182	–	208	Fz	0,014	0,021	0,029	0,044	0,060	0,073	0,084	0,103	0,118
H	1	0,15 x D	0,1 x D	140	–	196	Fz	0,021	0,032	0,043	0,066	0,090	0,109	0,125	0,154	0,177
	2	0,1 x D	0,075 x D	119	–	204	Fz	0,024	0,036	0,048	0,074	0,101	0,121	0,140	0,171	0,194
	3	0,05 x D	0,05 x D	138	–	207	Fz	0,027	0,041	0,055	0,084	0,114	0,138	0,161	0,200	0,233
	4	0,05 x D	0,05 x D	115	–	161	Fz	0,018	0,027	0,037	0,056	0,076	0,092	0,107	0,133	0,154

NOTE: Please use the reference table to optimize your cutting speed based on the average cutting angle of the application.

Vision Plus • Series 70N1 Semi-Finishing • Application Data • WU10PE • Metric

Material Group	A		WU10PE Recommended feed per tooth (fz = mm/th) for 3D milling/profiling (A) – semi-finishing														
	ap	ae	Cutting Speed – vc m/min			mm	D1 – Diameter										
			min	max	1,0		2,0	2,5	3,0	4,0	5,0	6,0	8,0	10,0	12,0		
	P	3	0,1 x D	0,1 x D	240	–	320	fz	0,017	0,034	0,043	0,052	0,070	0,089	0,109	0,150	0,182
4		0,1 x D	0,1 x D	180	–	300	fz	0,016	0,031	0,040	0,048	0,064	0,081	0,099	0,134	0,162	0,187
H	1	0,1 x D	0,1 x D	160	–	280	fz	0,016	0,031	0,040	0,048	0,064	0,081	0,099	0,134	0,162	0,187
	2	0,1 x D	0,1 x D	140	–	240	fz	0,012	0,024	0,030	0,036	0,048	0,061	0,074	0,101	0,121	0,140
	3	0,1 x D	0,1 x D	120	–	180	fz	0,009	0,019	0,024	0,028	0,038	0,048	0,058	0,079	0,096	0,112
	4	0,1 x D	0,1 x D	100	–	140	fz	0,006	0,012	0,016	0,019	0,025	0,032	0,039	0,053	0,064	0,074

NOTE: Please use the reference table to optimize your cutting speed based on the average cutting angle of the application.

Vision Plus • Series 70N1 Finishing • Application Data • WU10PE • Metric

Material Group																
	A		WU10PE			Recommended feed per tooth (Fz=mm/th) for 3D milling/profiling (A) - finishing										
			Cutting Speed – vc		mm	D1 - Diameter										
	ap	ae	Min	Max		2,0	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0		
P	3	0,04 x D	0,04 x D	416	–	468	Fz	0,052	0,080	0,108	0,168	0,231	0,279	0,324	0,403	0,466
	4	0,04 x D	0,04 x D	364	–	416	Fz	0,048	0,073	0,099	0,152	0,207	0,249	0,288	0,355	0,406
H	1	0,03 x D	0,03 x D	290	–	406	Fz	0,052	0,078	0,106	0,162	0,221	0,266	0,308	0,379	0,434
	2	0,03 x D	0,03 x D	203	–	348	Fz	0,039	0,059	0,080	0,122	0,166	0,199	0,230	0,281	0,320
	3	0,02 x D	0,02 x D	216	–	324	Fz	0,033	0,050	0,067	0,102	0,139	0,168	0,196	0,244	0,284
	4	0,02 x D	0,02 x D	180	–	252	Fz	0,022	0,033	0,045	0,068	0,093	0,112	0,130	0,162	0,187

NOTE: Please use the reference table to optimize your cutting speed based on the average cutting angle of the application.

INDEXABLE MILLING

SOLID END MILLING

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INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Material Group	Side Milling (A) and Slotting (B)		WU10PE			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.												
	A		B		Cutting Speed – vc m/min			D1 – Diameter										
	ap	ae	ap	min	max	mm	0,3	0,4	0,5	0,6	0,8	1,0	1,5	2,0	2,5	3,0		
	ap	ae	ap	min	max	mm	fz	fz	fz	fz	fz	fz	fz	fz	fz	fz	fz	
P	0	1,25 x D	0,25 x D	0,75 x D	150	–	200	fz	0,002	0,003	0,003	0,004	0,005	0,007	0,010	0,014	0,017	0,021
	1	1,25 x D	0,25 x D	0,75 x D	150	–	200	fz	0,002	0,003	0,003	0,004	0,005	0,007	0,010	0,014	0,017	0,021
	2	1,25 x D	0,25 x D	0,75 x D	140	–	190	fz	0,002	0,003	0,003	0,004	0,005	0,007	0,010	0,014	0,017	0,021
	3	1,25 x D	0,25 x D	0,75 x D	120	–	160	fz	0,002	0,002	0,003	0,003	0,004	0,006	0,008	0,011	0,014	0,017
	4	1,25 x D	0,25 x D	0,5 x D	90	–	150	fz	0,002	0,002	0,003	0,003	0,004	0,005	0,008	0,010	0,013	0,016
K	1	1,25 x D	0,25 x D	0,75 x D	60	–	100	fz	0,001	0,002	0,002	0,003	0,004	0,005	0,007	0,009	0,012	0,014
	2	1,25 x D	0,25 x D	0,5 x D	120	–	150	fz	0,002	0,003	0,003	0,004	0,005	0,007	0,010	0,014	0,017	0,021
H	1	1,25 x D	0,25 x D	0,5 x D	110	–	140	fz	0,002	0,002	0,003	0,003	0,004	0,006	0,008	0,011	0,014	0,017
	2	1,25 x D	0,25 x D	0,3 x D	80	–	140	fz	0,002	0,002	0,003	0,003	0,004	0,005	0,008	0,010	0,013	0,016
	3	1,25 x D	0,25 x D	0,25 x D	70	–	120	fz	0,001	0,002	0,002	0,002	0,003	0,004	0,006	0,008	0,010	0,012
	3	1,25 x D	0,25 x D	0,25 x D	60	–	90	fz	0,001	0,001	0,002	0,002	0,002	0,003	0,005	0,006	0,008	0,009

Material Group	Side Milling (A) and Slotting (B)		WU10PE			Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.												
	A		B		Cutting Speed – vc SFM			D1 – Diameter										
	ap	ae	ap	min	max	mm	0,3	0,4	0,5	0,6	0,8	1,0	1,5	2,0	2,5	3,0		
	ap	ae	ap	min	max	mm	IPT	IPT	IPT	IPT	IPT	IPT	IPT	IPT	IPT	IPT	IPT	
P	0	1.25 x D	0.25 x D	0.75 x D	492	–	656	IPT	.0001	.0001	.0001	.0002	.0002	.0003	.0004	.0005	.0007	.0008
	1	1.25 x D	0.25 x D	0.75 x D	492	–	656	IPT	.0001	.0001	.0001	.0002	.0002	.0003	.0004	.0005	.0007	.0008
	2	1.25 x D	0.25 x D	0.75 x D	459	–	623	IPT	.0001	.0001	.0001	.0002	.0002	.0003	.0004	.0005	.0007	.0008
	3	1.25 x D	0.25 x D	0.75 x D	394	–	525	IPT	.0001	.0001	.0001	.0001	.0002	.0002	.0003	.0004	.0006	.0007
	4	1.25 x D	0.25 x D	0.5 x D	295	–	492	IPT	.0001	.0001	.0001	.0001	.0002	.0002	.0003	.0004	.0005	.0006
K	1	1.25 x D	0.25 x D	0.5 x D	197	–	328	IPT	.0001	.0001	.0001	.0001	.0001	.0002	.0003	.0004	.0005	.0006
	2	1.25 x D	0.25 x D	0.75 x D	394	–	492	IPT	.0001	.0001	.0001	.0002	.0002	.0003	.0004	.0005	.0007	.0008
H	1	1.25 x D	0.25 x D	0.5 x D	361	–	459	IPT	.0001	.0001	.0001	.0001	.0002	.0002	.0003	.0004	.0006	.0007
	2	1.25 x D	0.25 x D	0.3 x D	262	–	459	IPT	.0001	.0001	.0001	.0001	.0002	.0002	.0003	.0004	.0005	.0006
	3	1.25 x D	0.25 x D	0.25 x D	230	–	394	IPT	.0000	.0001	.0001	.0001	.0001	.0002	.0002	.0003	.0004	.0005
	3	1.25 x D	0.25 x D	0.25 x D	197	–	295	IPT	.0000	.0000	.0001	.0001	.0001	.0001	.0002	.0002	.0003	.0004

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 For tools with reach > 3 x D, reduce fz by 20%.
 For tools with reach > 5 x D, reduce fz by 30%.

Vision Plus • Series 7N01 • Application Data • WU10PE • Metric

Material Group	Profile Milling		WU10PE			Recommended feed per tooth (fz = mm/th) for 3D milling/profiling (A) – finishing									
	A		Cutting Speed – vc m/min			mm	D1 – Diameter								
	ap	ae	min	max	0,5		0,6	0,8	1,0	1,5	2,0	2,5	3,0		
P	3	0,04 x D	0,04 x D	432	–	576	fz	0,012	0,015	0,020	0,025	0,038	0,051	0,064	0,078
	4	0,04 x D	0,04 x D	324	–	540	fz	0,012	0,014	0,019	0,023	0,035	0,047	0,059	0,072
H	1	0,03 x D	0,03 x D	288	–	504	fz	0,012	0,014	0,019	0,023	0,035	0,047	0,059	0,072
	2	0,03 x D	0,03 x D	252	–	432	fz	0,009	0,011	0,014	0,018	0,027	0,036	0,045	0,054
	3	0,02 x D	0,02 x D	216	–	324	fz	0,007	0,008	0,011	0,014	0,021	0,028	0,035	0,043
	4	0,02 x D	0,02 x D	180	–	252	fz	0,005	0,006	0,007	0,009	0,014	0,019	0,024	0,028

Material Group	Profile Milling		WU10PE			Recommended feed per tooth (fz = mm/th) for 3D milling/profiling (A) – semi-finishing									
	A		Cutting Speed – vc m/min			mm	D1 – Diameter								
	ap	ae	min	max	0,5		0,6	0,8	1,0	1,5	2,0	2,5	3,0		
P	3	0,1 x D	0,05 x D	300	–	400	fz	0,008	0,010	0,013	0,017	0,025	0,034	0,043	0,052
	4	0,1 x D	0,05 x D	225	–	375	fz	0,008	0,009	0,012	0,016	0,023	0,031	0,040	0,048
H	1	0,07 x D	0,1 x D	200	–	350	fz	0,008	0,009	0,012	0,016	0,023	0,031	0,040	0,048
	2	0,05 x D	0,04 x D	175	–	300	fz	0,006	0,007	0,009	0,012	0,018	0,024	0,030	0,036
	3	0,03 x D	0,03 x D	150	–	225	fz	0,005	0,006	0,007	0,009	0,014	0,019	0,024	0,028
	4	0,03 x D	0,03 x D	125	–	175	fz	0,003	0,004	0,005	0,006	0,009	0,012	0,016	0,019

Material Group	Profile Milling		WU10PE			Recommended feed per tooth (fz = mm/th) for 3D milling/profiling (A) – roughing									
	A		Cutting Speed – vc m/min			mm	D1 – Diameter								
	ap	ae	min	max	0,5		0,6	0,8	1,0	1,5	2,0	2,5	3,0		
P	3	0,2 x D	0,1 x D	216	–	288	fz	0,004	0,005	0,007	0,008	0,013	0,017	0,021	0,026
	4	0,2 x D	0,1 x D	162	–	270	fz	0,004	0,005	0,006	0,008	0,012	0,016	0,020	0,024
H	1	0,15 x D	0,1 x D	144	–	252	fz	0,004	0,005	0,006	0,008	0,012	0,016	0,020	0,024
	2	0,1 x D	0,075 x D	126	–	216	fz	0,003	0,004	0,005	0,006	0,009	0,012	0,015	0,018
	3	0,05 x D	0,05 x D	108	–	162	fz	0,002	0,003	0,004	0,005	0,007	0,009	0,012	0,014
	4	0,05 x D	0,05 x D	90	–	126	fz	0,002	0,002	0,002	0,003	0,005	0,006	0,008	0,009

NOTE: Please use reference table for correction of vc based on averages degree of the mold.

Vision Plus • Series 7N21 Roughing • Application Data • WU10PE • Metric

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Material Group	A		WU10PE		Recommended feed per tooth (Fz=mm/th) for 3D milling/profiling (A) - roughing										
	ap	ae	Cutting Speed – vc		mm	D1 - Diameter									
			Min	Max		0,5	0,6	0,8	1,0	1,5	2,0	2,5	3,0		
			m/min		Fz										
P	3	0,2 x D	0,1 x D	208	–	234	Fz	0,0037	0,0044	0,0059	0,0075	0,0113	0,0152	0,0192	0,0232
	4	0,2 x D	0,1 x D	182	–	208	Fz	0,0035	0,0042	0,0056	0,0070	0,0105	0,0141	0,0177	0,0213
H	1	0,15 x D	0,1 x D	140	–	196	Fz	0,0052	0,0062	0,0083	0,0104	0,0157	0,0211	0,0265	0,0319
	2	0,1 x D	0,075 x D	119	–	204	Fz	0,0059	0,0070	0,0094	0,0118	0,0178	0,0238	0,0299	0,0360
	3	0,05 x D	0,05 x D	138	–	207	Fz	0,0066	0,0080	0,0106	0,0133	0,0201	0,0269	0,0338	0,0408
	4	0,05 x D	0,05 x D	115	–	161	Fz	0,0044	0,0053	0,0071	0,0089	0,0134	0,0179	0,0226	0,0272

NOTE: Please use the reference table to optimize your cutting speed based on the average cutting angle of the application.

Vision Plus • Series 7N21 Semi-Finishing • Application Data • WU10PE • Metric

Material Group	Profile Milling		WU10PE			Recommended feed per tooth (fz = mm/th) for 3D milling/profiling (A) – finishing									
	A		Cutting Speed – vc m/min			mm	D1 – Diameter								
	ap	ae	min	max	0,5		0,6	0,8	1,0	1,5	2,0	2,5	3,0		
	P	3	0,04 x D	0,04 x D	432	–	576	fz	0,012	0,015	0,020	0,025	0,038	0,051	0,064
	4	0,04 x D	0,04 x D	324	–	540	fz	0,012	0,014	0,019	0,023	0,035	0,047	0,059	0,072
H	1	0,03 x D	0,03 x D	288	–	504	fz	0,012	0,014	0,019	0,023	0,035	0,047	0,059	0,072
	2	0,03 x D	0,03 x D	252	–	432	fz	0,009	0,011	0,014	0,018	0,027	0,036	0,045	0,054
	3	0,02 x D	0,02 x D	216	–	324	fz	0,007	0,008	0,011	0,014	0,021	0,028	0,035	0,043
	4	0,02 x D	0,02 x D	180	–	252	fz	0,005	0,006	0,007	0,009	0,014	0,019	0,024	0,028

Material Group	Profile Milling		WU10PE			Recommended feed per tooth (fz = mm/th) for 3D milling/profiling (A) – semi-finishing									
	A		Cutting Speed – vc m/min			mm	D1 – Diameter								
	ap	ae	min	max	0,5		0,6	0,8	1,0	1,5	2,0	2,5	3,0		
	P	3	0,1 x D	0,05 x D	300	–	400	fz	0,008	0,010	0,013	0,017	0,025	0,034	0,043
	4	0,1 x D	0,05 x D	225	–	375	fz	0,008	0,009	0,012	0,016	0,023	0,031	0,040	0,048
H	1	0,07 x D	0,1 x D	200	–	350	fz	0,008	0,009	0,012	0,016	0,023	0,031	0,040	0,048
	2	0,05 x D	0,04 x D	175	–	300	fz	0,006	0,007	0,009	0,012	0,018	0,024	0,030	0,036
	3	0,03 x D	0,03 x D	150	–	225	fz	0,005	0,006	0,007	0,009	0,014	0,019	0,024	0,028
	4	0,03 x D	0,03 x D	125	–	175	fz	0,003	0,004	0,005	0,006	0,009	0,012	0,016	0,019

Material Group	Profile Milling		WU10PE			Recommended feed per tooth (fz = mm/th) for 3D milling/profiling (A) – roughing									
	A		Cutting Speed – vc m/min			mm	D1 – Diameter								
	ap	ae	min	max	0,5		0,6	0,8	1,0	1,5	2,0	2,5	3,0		
	P	3	0,2 x D	0,1 x D	216	–	288	fz	0,004	0,005	0,007	0,008	0,013	0,017	0,021
	4	0,2 x D	0,1 x D	162	–	270	fz	0,004	0,005	0,006	0,008	0,012	0,016	0,020	0,024
H	1	0,15 x D	0,1 x D	144	–	252	fz	0,004	0,005	0,006	0,008	0,012	0,016	0,020	0,024
	2	0,1 x D	0,075 x D	126	–	216	fz	0,003	0,004	0,005	0,006	0,009	0,012	0,015	0,018
	3	0,05 x D	0,05 x D	108	–	162	fz	0,002	0,003	0,004	0,005	0,007	0,009	0,012	0,014
	4	0,05 x D	0,05 x D	90	–	126	fz	0,002	0,002	0,002	0,003	0,005	0,006	0,008	0,009

NOTE: Please use reference table for correction of vc based on averages degree of the mold.

Vision Plus • Series 7N21 Finishing • Application Data • WU10PE • Metric

Material Group	A		WU10PE Recommended feed per tooth (Fz=mm/th) for 3D milling/profiling (A) - finishing												
	A		Cutting Speed – vc m/min			mm	D1 - Diameter								
	ap	ae	Min	Max	0,5		0,6	0,8	1,0	1,5	2,0	2,5	3,0		
						Fz	Fz	Fz	Fz	Fz	Fz	Fz	Fz		
P	3	0,04 x D	0,04 x D	416	–	468	Fz	0,0127	0,0153	0,0204	0,0256	0,0389	0,0522	0,0659	0,0796
	4	0,04 x D	0,04 x D	364	–	416	Fz	0,0119	0,0143	0,0191	0,0239	0,0361	0,0484	0,0609	0,0734
H	1	0,03 x D	0,03 x D	290	–	406	Fz	0,0127	0,0153	0,0204	0,0255	0,0386	0,0517	0,0650	0,0784
	2	0,03 x D	0,03 x D	203	–	348	Fz	0,0096	0,0116	0,0154	0,0193	0,0292	0,0391	0,0491	0,0592
	3	0,02 x D	0,02 x D	216	–	324	Fz	0,0081	0,0097	0,0130	0,0163	0,0245	0,0328	0,0413	0,0497
	4	0,02 x D	0,02 x D	180	–	252	Fz	0,0054	0,0065	0,0087	0,0108	0,0164	0,0219	0,0275	0,0331

Please use the reference table to optimize your cutting speed based on the average cutting angle of the application.

INDEXABLE MILLING

SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING



HSS End Mills

High-Performance Solid End Milling

The next generation of premium cobalt HSS roughers are designed specifically for titanium and stainless steels. They are engineered with an eccentric relief (ER) grind to provide a stronger cutting edge that requires less torque to operate. The unique proprietary chipbreaker geometry will break and control the chip, enabling higher metal removal rates and greater productivity. The HSS rougher offers the best-in-class performance for difficult-to-machine workpiece materials.

Features and Benefits

High cobalt and vanadium content PM HSS providing superior wear resistance and red hardness.

Different edge preparations and geometries to machine a wide range of materials.

Center cutting offering excellent performance in roughing applications, especially in titanium.



WavCut™ tools for machining titanium are best suited for applications in aerospace and energy, providing high metal removal rates (MRR) and increased tool life. The special wave design of these 4- and 6-fluted end mills requires less horsepower during roughing and semi-finishing, and provides excellent chip formation. Since chips evacuate easily, WavCut tools do not recut chips, thus increasing tool life. Also, the edges change the radial cutting edge position without changing the diameter.

HIGH

SOPHISTICATED PERFORMANCE

Sophisticated roughing profiles capable of dealing with chip formation issues.

High-performance finishers with specific geometries for different workpiece materials.

EFFICIENT

Increase stock removal rates over regular roughing tools due to reduced horsepower consumption.

HIGH SPEED STEEL

PRODUCT

SOLID CARBIDE END MILL

GRADE

UNCOATED
TiCN

FLUTE

4-8

DIAMETER RANGE

INCH

1/2-2"

METRIC

6-50mm

INDUSTRY



GENERAL
ENGINEERING



AEROSPACE



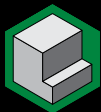
ENERGY



TRANSPORTATION

APPLICATIONS

MATERIALS



SIDE MILLING



RAMPING



HELICAL
INTERPOLATION



SLOTING

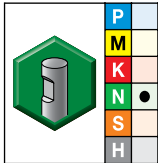
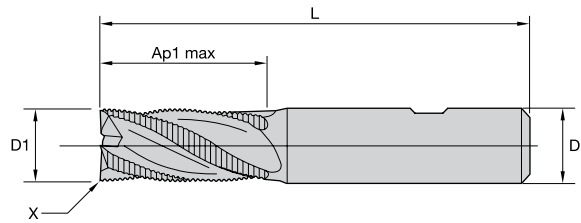
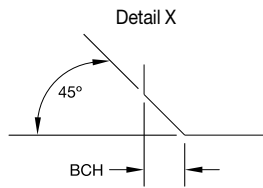


DYNAMIC
MILLING



PLUNGING

HSS Roughers • Series 6AOR • Chamfer • Weldon® • Inch



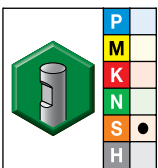
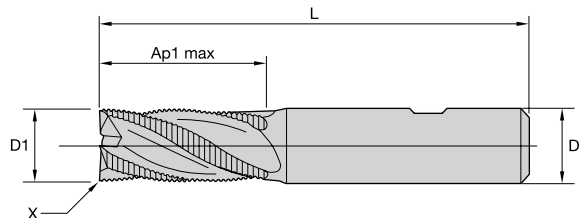
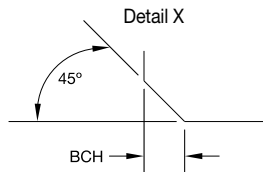
- first choice
- alternate choice

TiCN

order #	catalog #	D1	D	length of cut Ap1 max	length L	BCH	ZU
2840160	TC6A0R13005	1/2	1/2	1 1/4	3 1/4	.014	3
2840121	TC6A1R13005	1/2	1/2	2	4	.014	3
2840146	TC6A0R19007	3/4	3/4	1 5/8	3 7/8	.014	3
2840087	TC6A3R19007	3/4	3/4	2 1/4	4 1/2	.014	3
2840108	TC6A1R19007	3/4	3/4	3	5 1/4	.014	3
2840138	TC6A0R25008	1	1	2	4 1/2	.020	3
1839782	TC6A3R25008	1	1	3	5 1/2	.020	3
2840103	TC6A1R25008	1	1	4	6 1/2	.020	3
2840132	TC6A0R32009	1 1/4	1 1/4	2	4 1/2	.020	3
2840073	TC6A3R32009	1 1/4	1 1/4	3	5 1/2	.020	3
2840099	TC6A1R32009	1 1/4	1 1/4	4	6 1/2	.020	3

NOTE: For application data, please see page B364.

HSS Roughers • Series 6TOR • Chamfer • Weldon® • Inch



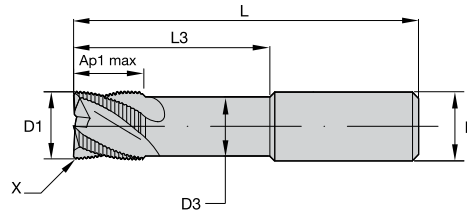
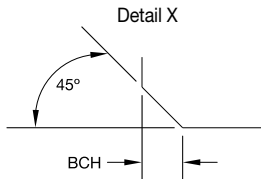
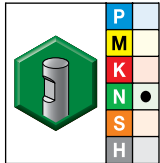
- first choice
- alternate choice

TiAlN

order #	catalog #	D1	D	length of cut Ap1 max	length L	BCH	ZU
2836219	TF6TOR13005	1/2	1/2	1 1/4	3 1/4	.035	4
2836188	TF6T1R13005	1/2	1/2	2	4	.035	4
2836212	TF6TOR16006	5/8	5/8	1 5/8	3 3/4	.047	4
2836206	TF6TOR19007	3/4	3/4	1 5/8	3 7/8	.047	4
2836151	TF6T3R19007	3/4	3/4	2 1/4	4 1/2	.047	4
2836176	TF6T1R19007	3/4	3/4	3	5 1/4	.047	4
2836204	TF6TOR25008	1	1	2	4 1/2	.059	5
2836145	TF6T3R25008	1	1	3	5 1/2	.059	5
2836169	TF6T1R25008	1	1	4	6 1/2	.059	5
2836199	TF6TOR32009	1 1/4	1 1/4	2	4 1/2	.059	6
2836138	TF6T3R32009	1 1/4	1 1/4	3	5 1/2	.059	6
2836163	TF6T1R32009	1 1/4	1 1/4	4	6 1/2	.059	6
2836193	TF6TOR38009	1 1/2	1 1/4	2	4 1/2	.059	6
2836132	TF6T3R38009	1 1/2	1 1/4	3	5 1/2	.059	6

NOTE: For application data, please see page B364.

HSS Roughers • Series 6ANR • Chamfer • Neck • Weldon® • Inch



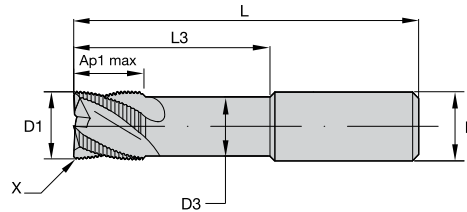
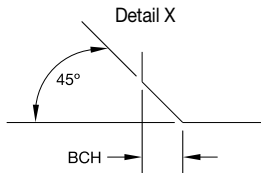
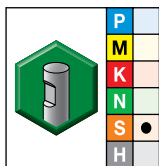
- first choice
- alternate choice

TiCN

order #	catalog #	D1	D	D3	length of cut Ap1 max	L3	length L	BCH	ZU
2840040	TC6ANR13005	1/2	1/2	.470	1 1/4	2	4	.014	3
2840034	TC6ANR13015	1/2	1/2	.470	1 1/4	3	5	.014	3
2840007	TC6ANR19007	3/4	3/4	.705	1 5/8	4	6 1/4	.014	3
2840000	TC6ANR19017	3/4	3/4	.705	1 5/8	6	8 1/4	.014	3
2839994	TC6ANR25008	1	1	.940	2	4	6 1/2	.020	3
1907409	TC6ANR25018	1	1	.940	2	6	8 1/2	.020	3

NOTE: For application data, please see page B364.

HSS Roughers • Series 6TNR • Chamfer • Neck • Weldon® • Inch



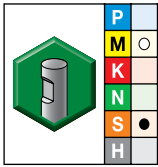
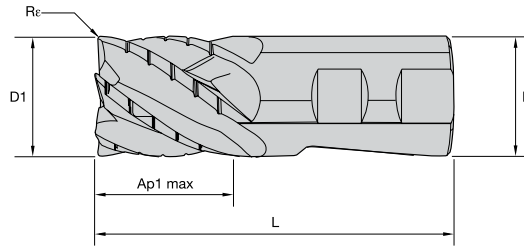
- first choice
- alternate choice

TiAlN

order #	catalog #	D1	D	D3	length of cut Ap1 max	L3	length L	BCH	ZU
2836087	TF6TNR16016	5/8	5/8	.588	1 5/8	4	6 1/8	.047	4
2836081	TF6TNR19007	3/4	3/4	.705	1 5/8	4	6 1/4	.047	4
2836075	TF6TNR19017	3/4	3/4	.705	1 5/8	6	8 1/4	.047	4
2836068	TF6TNR25008	1	1	.940	2	4	6 1/2	.059	5
2836063	TF6TNR25018	1	1	.940	2	6	8 1/2	.059	5
2836059	TF6TNR32009	1 1/4	1 1/4	1.175	2	4	6 1/2	.059	6
2836054	TF6TNR32019	1 1/4	1 1/4	1.175	2	6	8 1/2	.059	6

NOTE: For application data, please see page B365.

HSS ER Roughers • Series 620E • Radius • Whistle Notch • Weldon® NAS 986 • Inch



- first choice
- alternate choice

UNCOATED

order #	catalog #	D1	D	length of cut Ap1 max	length L	Re	ZU
5329387	620E32009CW	1 1/4	1 1/4	2	4 1/2	.060	6
5599913	620E32009EW	1 1/4	1 1/4	2	4 1/2	.120	6
5329388	623E32009CW	1 1/4	1 1/4	3	5 1/2	.060	6
5599914	623E32009EW	1 1/4	1 1/4	3	5 1/2	.120	6
5599915	621E32009EW	1 1/4	1 1/4	4	6 1/2	.120	6
5329554	623E3800ACW	1 1/2	1 1/2	3	6 1/4	.060	6
5329555	621E3800ACW	1 1/2	1 1/2	4	7 1/4	.060	6
5329556	625E51022CW	2	2	2	5 3/4	.060	6
5599972	625E51022EW	2	2	2	5 3/4	.120	6
5329557	625E51032CW	2	2	3	6 3/4	.060	6
5599973	625E51032EW	2	2	3	6 3/4	.120	6
5329558	625E51042CW	2	2	4	7 3/4	.060	6
5599974	625E51042EW	2	2	4	7 3/4	.120	6
5329559	625E51062CW	2	2	6	9 3/4	.060	6
5599975	625E51062EW	2	2	6	9 3/4	.120	6

NOTE: For application data, please see page B366.

INDEXABLE MILLING

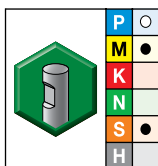
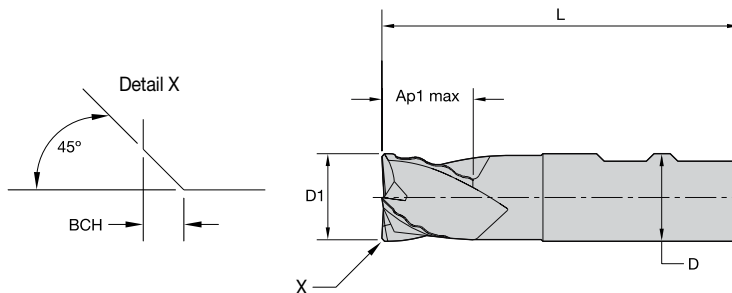
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

WavCut I • Series 620W • Chamfer • Weldon® • Inch



● first choice
○ alternate choice

UNCOATED

order #	catalog #	D1	D	length of cut Ap1 max	length L	BCH	ZU
2709800	620W19077	3/4	3/4	1 5/8	3 7/8	.039	4
2709779	620W25078	1	1	2	4 1/2	.039	4
2709772	620W25088	1	1	2	4 1/2	.039	6
2709389	623W25078	1	1	3	5 1/2	.039	4
3032729	623W25088	1	1	3	5 1/2	.039	6
2709606	621W25088	1	1	4	6 1/2	.039	6
2709613	621W25078	1	1	4	6 1/2	.039	4
2709747	620W32089	1 1/4	1 1/4	2	4 1/2	.039	6
2709375	623W32089	1 1/4	1 1/4	3	5 1/2	.039	6
2709583	621W32089	1 1/4	1 1/4	4	6 1/2	.039	6
2709487	622W32089	1 1/4	1 1/4	6	8 1/2	.039	6
2709562	621W38089	1 1/2	1 1/4	4	6 1/2	.039	6
2709233	625W51722	2	2	2	5 3/4	.039	6
2709219	625W51732	2	2	3	6 3/4	.039	6
2709206	625W51742	2	2	4	7 3/4	.039	6
2709200	625W51762	2	2	6	9 3/4	.039	6
2709191	625W51782	2	2	8	11 3/4	.039	6

NOTE: For application data, please see page B367.

INDEXABLE MILLING

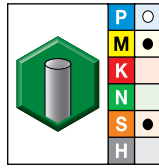
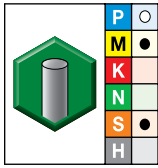
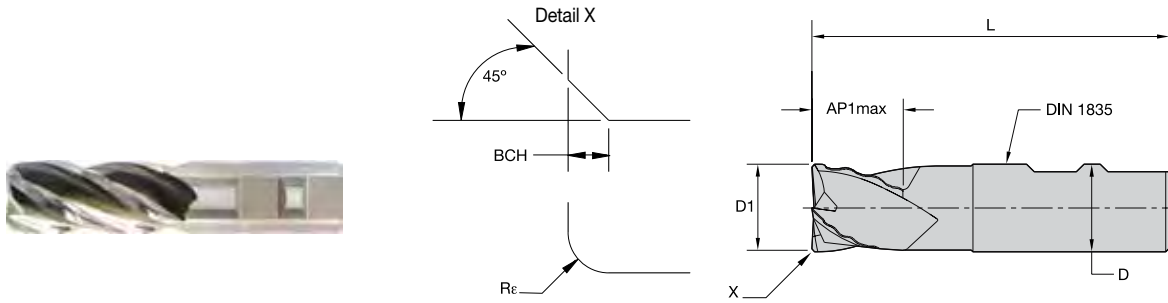
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

WavCut II • Series 620V • Weldon® • Inch

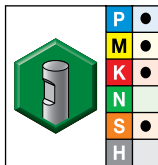
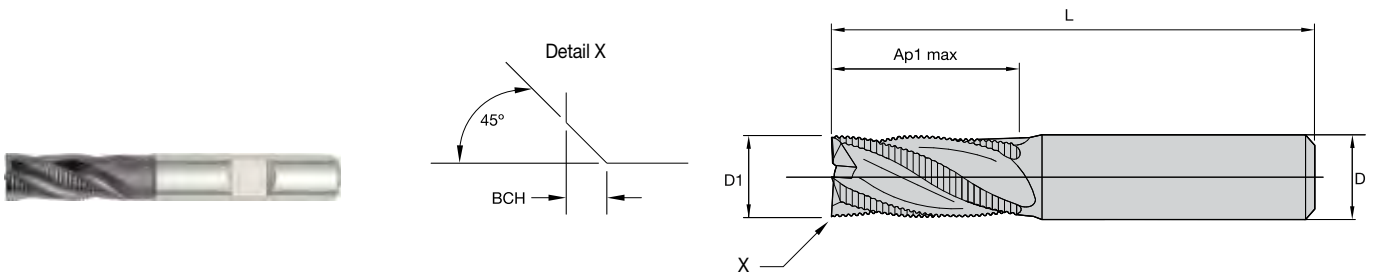


- first choice
- alternate choice

UNCOATED		TiAlN		D1	D	length of cut Ap1 max	length L	Re	BCH	Z U
order #	catalog #	order #	catalog #							
		2686847	TF620V19077	3/4	3/4	1 5/8	3 7/8	—	.039	4
2709865	620V25088	—	—	1	1	2	4 1/2	—	.039	6
3887310	620V25288	—	—	1	1	2	4 1/2	.060	—	6
2709872	620V25078	—	—	1	1	2	4 1/2	—	.039	4
3887449	621V25288	—	—	1	1	4	6 1/2	.060	—	6
2709837	620V32089	—	—	1 1/4	1 1/4	2	4 1/2	—	.039	6
2709844	620V32079	—	—	1 1/4	1 1/4	2	4 1/2	—	.039	4
3185195	623V32079	—	—	1 1/4	1 1/4	3	5 1/2	—	.039	4
2709428	623V32089	—	—	1 1/4	1 1/4	3	5 1/2	—	.039	6
2709662	621V32089	—	—	1 1/4	1 1/4	4	6 1/2	—	.039	6
2709669	621V32079	—	—	1 1/4	1 1/4	4	6 1/2	—	.039	4
3887452	622V32289	—	—	1 1/4	1 1/4	6	8 1/2	.060	—	6
3887451	621V38289	—	—	1 1/2	1 1/4	4	6 1/2	.060	—	6
2709641	621V38089	—	—	1 1/2	1 1/4	4	6 1/2	—	.039	6
3887453	622V38289	—	—	1 1/2	1 1/4	6	8 1/2	.060	—	6
3887457	625V51232	—	—	2	2	3	6 3/4	.060	—	6
3887458	625V51242	—	—	2	2	4	7 3/4	.060	—	6
3887460	625V51282	—	—	2	2	8	11 3/4	.060	—	6

NOTE: For application data, please see page B368.

HSS Roughers • List 6N06 • Chamfer • Weldon® • Metric



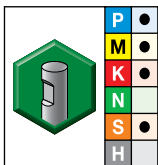
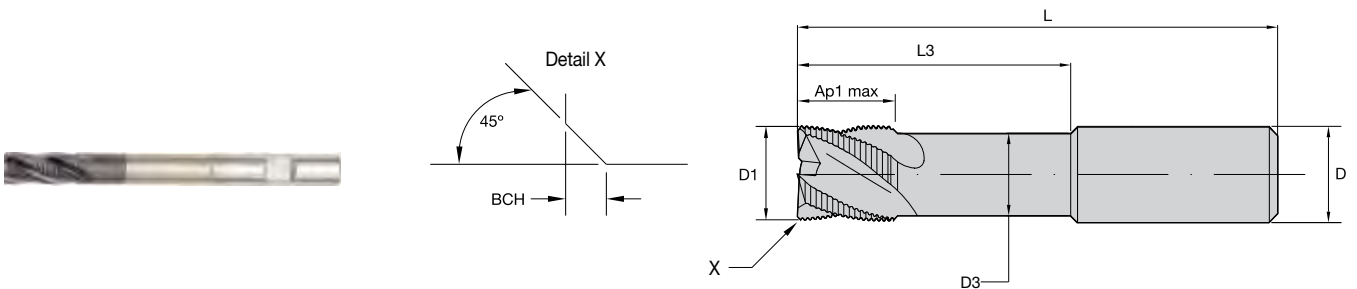
- first choice
- alternate choice

TiAlN-LW

order #	catalog #	D1	D	length of cut Ap1 max	length L	BCH	ZU
1660373	6N0606002LW	6,0	6	13,00	57	0,25	4
1660389	6N0608004LW	8,0	10	19,00	69	0,25	4
1660397	6N0609004LW	9,0	10	19,00	69	0,25	4
1660405	6N0610004LW	10,0	10	22,00	72	0,25	4
1660421	6N0612005LW	12,0	12	26,00	83	0,35	4
1660437	6N0614005LW	14,0	12	26,00	83	0,35	4
1660453	6N0616006LW	16,0	16	32,00	92	0,35	4
1660479	6N0620007LW	20,0	20	38,00	104	0,35	4
1660487	6N0622007LW	22,0	20	38,00	104	0,50	5
1660497	6N0625008LW	25,0	25	45,00	121	0,50	5
1660507	6N0630008LW	30,0	25	45,00	121	0,50	5

NOTE: For application data, please see page B369.

HSS Roughers • List 6NL6 • Chamfer • Neck • Weldon • Metric



- first choice
- alternate choice

TiAlN-LW

order #	catalog #	D1	D	D3	length of cut Ap1 max	L3	length L	BCH	ZU
1660623	6NL612005LW	12,0	12	12	26,00	78,00	125	0,35	4
1660629	6NL616006LW	16,0	16	15	32,00	87,00	138	0,35	4
1660635	6NL620007LW	20,0	20	20	38,00	108,00	160	0,35	4
1660640	6NL625008LW	25,0	25	25	45,00	155,00	216	0,50	5

NOTE: For application data, please see page B369.

WavCut I • List 664W • Chamfer • Weldon® • Metric

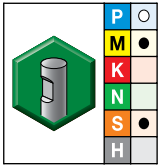
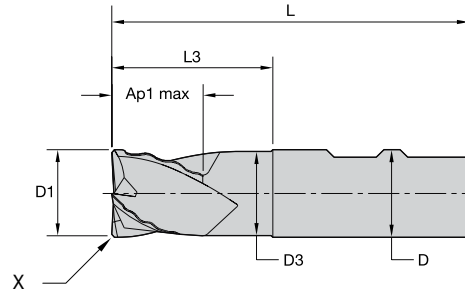
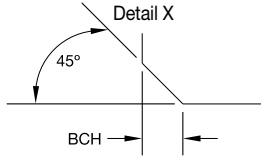
INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING



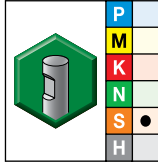
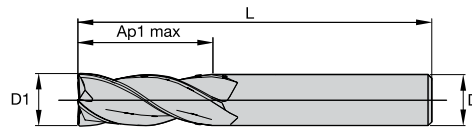
- first choice
- alternate choice

UNCOATED-WW

order #	catalog #	D1	D	D3	length of cut Ap1 max	L3	length L	BCH	ZU
3871691	664W25008WW	25,0	25	23	26,00	46,00	102	1,00	5
3871692	660W25008WW	25,0	25	23	45,00	65,00	121	1,00	5
3871833	661W25008WW	25,0	25	23	90,00	110,00	166	1,00	6
3871835	660W32009WW	32,0	32	30	53,00	73,00	133	1,00	6
3871836	661W32009WW	32,0	32	30	100,00	110,00	170	1,00	6
3871837	664W40009WW	40,0	32	—	38,00	58,00	118	1,00	6
3871839	661W40009WW	40,0	32	—	100,00	110,00	170	1,00	6
3871840	664W50000WW	50,0	50	47	40,00	60,00	140	1,00	6
3871841	660W50000WW	50,0	50	47	75,00	95,00	175	1,00	6
3871842	661W50000WW	50,0	50	47	110,00	130,00	210	1,00	8

NOTE: For application data, please see page B370.

HSS Finishers • Series 3405 • Sharp Edge • Weldon® • Inch



UNCOATED

- first choice
- alternate choice

order #	catalog #	D1	D	length of cut Ap1 max	length L	ZU
2866063	341513005	1/2	1/2	2	4	4
2865982	343725008	1	1	3	5 1/2	6
2866036	341725008	1	1	4	6 1/2	6
2866051	341525008	1	1	4	6 1/2	4
2866006	342725008	1	1	6	8 1/2	6
2865978	343732009	1 1/4	1 1/4	3	5 1/2	6
2866033	341732009	1 1/4	1 1/4	4	6 1/2	6
2866003	342732009	1 1/4	1 1/4	6	8 1/2	6
2865999	342738009	1 1/2	1 1/4	6	8 1/2	6
2865960	345751020	2	2	2	5 3/4	6
2865955	345751040	2	2	4	7 3/4	6
2865951	345751060	2	2	6	9 3/4	6

NOTE: For application data, please see page B370.

INDEXABLE MILLING

SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING

HSS Roughers • Series 6AOR • Application Data • TiCN • Inch

Material Group	Side Milling (A) and Slotting (B)		Uncoated			TiCN			Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.						
	A		B		Cutting Speed – vc SFM			Cutting Speed – vc SFM			D1 – Diameter				
	ap	ae	ap	ap	min	–	max	min	–	max	frac. dec.	1/2	3/4	1	1 1/4
	N	1	1.25 x D	0.5 x D	1 x D	1050	–	1750	1500	–	2500	IPT	.0055	.0075	.0085
	2	1.25 x D	0.5 x D	1 x D	840	–	1400	1200	–	2000	IPT	.0050	.0068	.0077	.0090

NOTE: Side milling applications – For longest length tools, reduce ae by 30%.
 Slot milling applications – For longest length tools, reduce ap by 30%.
 Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on diameters >1/2".

HSS Roughers • Series 6TOR • Application Data • TiAlN • Inch

Material Group	Side Milling (A) and Slotting (B)		TiAlN			Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.								
	A		B		Cutting Speed – vc SFM			D1 – Diameter						
	ap	ae	ap	ap	min	–	max	frac. dec.	1/2	5/8	3/4	1	1 1/4	1 1/2
	S	3	1.25 x D	0.5 x D	1 x D	50	–	90	IPT	.0028	.0033	.0036	.0040	.0050
	4	1.25 x D	0.3 x D	0.5 x D	50	–	90	IPT	.0026	.0030	.0033	.0036	.0045	.0055




NOTE: Side milling applications – For longest length tools, reduce ae by 30%.
 Slot milling applications – For longest length tools, reduce ap by 30%.
 Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on diameters >1/2".

HSS Roughers • Series 6ANR • Application Data • TiCN • Inch

Material Group	Side Milling (A) and Slotting (B)		TiCN			Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.						
	A		B		Cutting Speed – vc SFM			D1 – Diameter				
	ap	ae	ap	ap	min	–	max	frac. dec.	1/2	3/4	1	1 1/4
	N	1	1 x D	0.3 x D	0.75 x D	1500	–	2500	IPT	.0055	.0075	.0085
	2	1 x D	0.3 x D	0.5 x D	1200	–	2000	IPT	.0050	.0068	.0077	.0090

NOTE: Side milling applications – For longest length tools, reduce ae by 30%.
 Slot milling applications – For longest length tools, reduce ap by 30%.
 Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on diameters >1/2".

HSS Roughers • Series 6TNR • Application Data • TiAlN • Inch

Material Group												
	Side Milling (A) and Slotting (B)					TiAlN			Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.			
	A		B			Cutting Speed – vc SFM			D1 – Diameter			
	ap	ae	ap	min	max	frac.	5/8	3/4	1	1 1/4		
3	0.75 x D	0.4 x D	0.5 x D	50	–	90	dec.	.6250	.7500	1.0000	1.2500	
4	0.75 x D	0.3 x D	0.3 x D	50	–	90	IPT	.0033	.0036	.0040	.0050	
S	0.75 x D	0.3 x D	0.3 x D	50	–	90	IPT	.0030	.0033	.0036	.0045	

NOTE: Side milling applications – For longest length tools, reduce ae by 30%.
 Slot milling applications – For longest length tools, reduce ap by 30%.
 Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on diameters >1/2".

INDEXABLE MILLING

SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING

HSS ER Roughers • Series 620E • Application Data • Uncoated • Inch

Material Group	Side Milling (A) and Slotting (B)			Uncoated			Recommended feed per tooth (IPT=inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.				
	A		B	Cutting Speed – vc SFM			D1 – Diameter				
	ap	ae	ap	min		max	frac.	1 1/4	1 1/2	2	
	dec.										
M	1	1.5 x D	0.5 x D	1 x D	40	–	60	IPT	.0052	.0053	.0053
	2	1.5 x D	0.5 x D	1 x D	40	–	60	IPT	.0042	.0042	.0043
S	4	1.5 x D	0.5 x D	1 x D	16	–	50	IPT	.0038	.0039	.0039

NOTE: Side milling applications – for longest length tools, reduce ae by 30%.

Slot milling applications – for longest length tools, reduce ap by 30%.

Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.

Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.

INDEXABLE MILLING




SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

WavCut™ I • Series 620W • Application Data • Uncoated • Inch

Material Group	 												
	Side Milling (A) and Slotting (B)			Uncoated		Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.							
	A		B	Cutting Speed – vc SFM			D1 – Diameter						
	ap	ae	ap	min	–	max	frac. dec.	3/4	1	1 1/4	1 1/2	2	
P	5	1.5 x D	0.4 x D	1 x D	30	–	50	IPT	.0030	.0040	.0045	.0050	.0055
M	1	1.5 x D	0.4 x D	1 x D	30	–	50	IPT	.0040	.0045	.0050	.0055	.0060
	2	1.5 x D	0.4 x D	1 x D	30	–	40	IPT	.0035	.0040	.0045	.0050	.0055
S	4	1.5 x D	0.4 x D	0.75 x D	50	–	70	IPT	.0033	.0040	.0050	.0055	.0060

NOTE: Side milling applications – For longest length tools, reduce ae by 30%.
 Slot milling applications – For longest length tools, reduce ap by 30%.
 Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on diameters >1/2".

INDEXABLE MILLING

SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING

WavCut II • Series 620V • Application Data • Uncoated - TiAlN • Inch

Material Group	A		B	Uncoated			TiAlN			Recommended feed per tooth (Fz=inch/th) for side milling (A). For slotting (B), reduce Fz by 20%.						
	ap	ae	ap	Cutting Speed – vc SFM			Cutting Speed – vc SFM			D1 - Diameter						
				Min	Max		Min	Max		frac.	3/4	1	1 1/4	1 1/2	2	
	5	1.5 x D	0.4 x D	1 x D	30	–	50	80	–	110	90	.7500	1.0000	1.2500	1.5000	2.0000
P	1	1.5 x D	0.4 x D	1 x D	30	–	50	80	–	110	Fz	.0030	.0040	.0045	.0050	.0055
	2	1.5 x D	0.4 x D	1 x D	30	–	40	80	–	100	Fz	.0035	.0040	.0045	.0050	.0055
M	1	1.5 x D	0.4 x D	1 x D	30	–	40	80	–	100	Fz	.0035	.0040	.0045	.0050	.0055
S	4	1.5 x D	0.4 x D	0.75 x D	50	–	70	50	–	90	Fz	.0033	.0040	.0050	.0055	.0060

NOTE: Side milling applications - For longest length tools, reduce ae by 30%.
 Slot milling applications - For longest length tools, reduce ap by 30%.
 Lower value of cutting speed is used for high-stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on diameters greater than 1/2".

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

HSS Roughers • Series 6N06 • Application Data • TiAlN-LW • Metric

Material Group	Side Milling (A) and Slotting (B)		TiCN		TiAlN		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.													
	A		Cutting Speed – vc m/min		Cutting Speed – vc m/min		mm	D1 – Diameter												
	ap	ae	ap	min	max	min		max	6,0	8,0	10,0	12,0	16,0	18,0	20,0	25,0	30,0			
	ap	ae	ap	min	max	min	max	fz	fz	fz	fz	fz	fz	fz	fz	fz	fz			
P	1	1,5 x D	0,5 x D	1 x D	56	–	64	70	–	80	fz	0,046	0,062	0,072	0,079	0,097	0,104	0,109	0,119	0,143
	2	1,5 x D	0,5 x D	1 x D	48	–	64	60	–	80	fz	0,046	0,062	0,072	0,079	0,097	0,104	0,109	0,119	0,143
	3	1,5 x D	0,5 x D	1 x D	40	–	56	50	–	70	fz	0,038	0,052	0,061	0,067	0,084	0,091	0,097	0,109	0,131
	5	1,5 x D	0,5 x D	1 x D	20	–	28	25	–	35	fz	0,031	0,042	0,048	0,054	0,067	0,073	0,078	0,087	0,105
M	1	1,5 x D	0,5 x D	1 x D	20	–	28	25	–	35	fz	0,038	0,052	0,061	0,067	0,084	0,091	0,097	0,109	0,131
	2	1,5 x D	0,5 x D	1 x D	20	–	24	25	–	30	fz	0,031	0,042	0,048	0,054	0,067	0,073	0,078	0,087	0,105
	3	1,5 x D	0,5 x D	1 x D	12	–	16	15	–	20	fz	0,026	0,035	0,040	0,045	0,055	0,059	0,062	0,068	0,082
K	1	1,5 x D	0,5 x D	1 x D	56	–	64	70	–	80	fz	0,046	0,062	0,072	0,079	0,097	0,104	0,109	0,119	0,143
	2	1,5 x D	0,5 x D	1 x D	40	–	56	50	–	70	fz	0,038	0,052	0,061	0,067	0,084	0,091	0,097	0,109	0,131
S	1	1,5 x D	0,5 x D	1 x D	12	–	24	15	–	30	fz	0,038	0,052	0,061	0,067	0,084	0,091	0,097	0,109	0,131
	2	1,5 x D	0,5 x D	1 x D	4	–	12	5	–	15	fz	0,021	0,027	0,032	0,036	0,045	0,048	0,052	0,059	0,071
	3	1,5 x D	0,5 x D	1 x D	12	–	22	15	–	28	fz	0,031	0,042	0,048	0,054	0,067	0,073	0,078	0,087	0,105
	4	1,5 x D	0,5 x D	1 x D	12	–	22	15	–	28	fz	0,027	0,038	0,045	0,050	0,062	0,067	0,071	0,080	0,096

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on diameters >12mm.

HSS Roughers • Series 6NL6 • Application Data • TiAlN-LW • Metric

Material Group	Side Milling (A) and Slotting (B)		TiAlN		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.									
	A		Cutting Speed – vc m/min		mm	D1 – Diameter								
	ap	ae	ap	min		max	10,0	12,0	16,0	20,0	25,0			
	ap	ae	ap	min	max	fz	fz	fz	fz	fz				
P	1	1,5 x D	0,5 x D	1 x D	70	–	80	fz	0,063	0,070	0,085	0,096	0,104	
	2	1,5 x D	0,5 x D	1 x D	60	–	80	fz	0,063	0,070	0,085	0,096	0,104	
	3	1,5 x D	0,5 x D	1 x D	50	–	70	fz	0,053	0,059	0,073	0,085	0,096	
	5	1,5 x D	0,5 x D	1 x D	25	–	35	fz	0,042	0,047	0,059	0,068	0,076	
M	1	1,5 x D	0,5 x D	1 x D	25	–	35	fz	0,053	0,059	0,073	0,085	0,096	
	2	1,5 x D	0,5 x D	1 x D	25	–	30	fz	0,042	0,047	0,059	0,068	0,076	
	3	1,5 x D	0,5 x D	1 x D	15	–	20	fz	0,035	0,039	0,048	0,054	0,060	
K	1	1,5 x D	0,5 x D	1 x D	70	–	80	fz	0,063	0,070	0,085	0,096	0,104	
	2	1,5 x D	0,5 x D	1 x D	50	–	70	fz	0,053	0,059	0,073	0,085	0,096	
S	1	1,5 x D	0,5 x D	1 x D	15	–	30	fz	0,053	0,059	0,073	0,085	0,096	
	2	1,5 x D	0,5 x D	1 x D	5	–	15	fz	0,028	0,031	0,039	0,045	0,051	
	3	1,5 x D	0,5 x D	1 x D	15	–	30	fz	0,042	0,047	0,059	0,068	0,076	
	4	1,5 x D	0,5 x D	1 x D	10	–	20	fz	0,039	0,043	0,054	0,062	0,070	

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on diameters >12mm.

WavCut I • Series 664W 660W 661W • Application Data • Uncoated-WW • Metric

		Side Milling (A) and Slotting (B)			Uncoated			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.				
Material Group		A		B	Cutting Speed – vc m/min			mm	D1 – Diameter			
		ap	ae	ap	min	–	max		25,0	32,0	40,0	50,0
P	5	1,5 x D	0,4 x D	1 x D	10	–	14	fz	0,091	0,105	0,124	0,146
M	1	1,5 x D	0,4 x D	1 x D	10	–	14	fz	0,114	0,131	0,155	0,182
	2	1,5 x D	0,4 x D	1 x D	10	–	12	fz	0,091	0,105	0,124	0,146
S	3	1,5 x D	0,4 x D	0,75 x D	6	–	11	fz	0,091	0,105	0,124	0,146
	4	1,5 x D	0,4 x D	0,75 x D	6	–	11	fz	0,084	0,096	0,114	0,134

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on diameters >12mm.

WavCut I • Series 3405 • Application Data • Uncoated-WW • Metric

		Side Milling (A) and Slotting (B)			Uncoated		TiAlN		Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.										
Material Group		A		B	Cutting Speed – vc SFM		Cutting Speed – vc SFM		D1 – Diameter										
		ap	ae	ap	min	max	min	max	frac.	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2	2		
S	3	1.5 x D	0.1 x D	0.5 x D	50	–	80	50	–	90	IPT	.0020	.0025	.0029	.0032	.0038	.0042	.0045	.0048
	4	1.5 x D	0.1 x D	0.4 x D	40	–	60	50	–	90	IPT	.0018	.0023	.0026	.0029	.0035	.0038	.0041	.0044

NOTE: Side milling applications – For longest reach (L3) tools, reduce ae by 30%.
 Slot milling applications – For longest reach (L3) tools, reduce ap by 30%.
 For cutting aluminum with high silicon, coating is recommended.
 Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on diameters >1/2".





Holemaking

Selection Guide and Grade Descriptions	C4–C6
Solid Carbide Drills	C8–C46
VariDrill.....	C8–C29
TOP DRILL S+.....	C30–C35
TOP DRILL Deep Hole Drills.....	C36–C46
Modular Drills	C48–87
TOP DRILL Modular X.....	C48–C67
TOP DRILL M1.....	C68–C87
Indexable Drills	C88–C117
Top Cut 4.....	C88–C117

Added Value for Your Performance

Optimized Purchase

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

Control of Total Tooling Costs

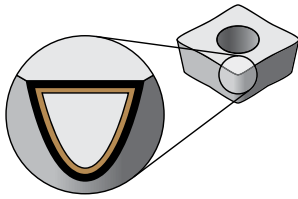
- Process-safe regrinding service.
- Reduction of stocks through efficient modular concepts.
- Multiple platforms per application to achieve the most cost-efficient solution.

- Solid Carbide Drills
- Modular Drills
- Indexable Drills

Select the Correct Holemaking Product Platform for Your Application

diameter	hourly rate					
	low (rough)		normal (M/C)		high (fine)	
	hole quality					
inch	IT11	IT10	IT9	IT8	IT7	IT6
0.118"						
0.236"						
0.354"						
0.472"						
0.591"						
0.709"						
0.827"						
0.945"						
1.063"						
1.181"						
1.299"						
1.417"						
1.535"						
1.654"						
1.772"						
2.283"						
2.008"						
2.126"						
2.244"						
2.362"						
2.598"						
2.716"						
2.834"						
2.952"						
4.331"						

Grades and Grade Descriptions



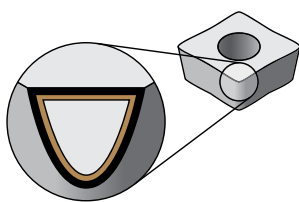
Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

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

wear resistance ← → toughness

Grade	Coating	Grade Description	Performance Index																								
			05	10	15	20	25	30	35	40	45																
WK15PD		<p>Composition: With a newly developed unique multilayered PVD AlCrN coating and a high-quality submicron carbide substrate, this grade gives the highest level of wear resistance at high cutting speeds.</p> <p>Application: This grade offers extraordinary wear resistance in drilling of cast iron materials. With its high hot hardness, it allows for high-speed machining.</p>																									
			K																								
WM15PD		<p>Composition: With PVD AlTiN coating for wear resistance along with unalloyed, sub-micron tungsten carbide containing 10% cobalt.</p> <p>Application: For use in cast iron, stainless steel, non-ferrous, and super alloys. Grade capable to operate at higher temperatures to guarantee high performance at faster cutting speeds.</p>	P																								
			M																								
			K																								
			N																								
			S																								
			H																								
WU20PD		<p>Composition: With a multilayered PVD TiN-TiAlN coating, a high-quality, sub-micron, carbide substrate and a state-of-the-art surface condition, this grade gives the highest level of wear resistance at high cutting speeds.</p> <p>Application: First choice for alloyed and high-alloyed steels and cast irons. A state-of-the-art surface condition enables superior chip evacuation even when MQL is applied.</p>	P																								
			K																								
WU25PD		<p>Composition: With a multilayered PVD TiN-TiAlN coating and a high-quality, sub-micron, carbide substrate, this grade gives a high level of wear resistance at medium to high cutting speeds.</p> <p>Application: First choice for high reliability in all materials. This grade should be used at medium to high speeds and feeds. It is a general-purpose grade that performs very well for alloyed and high-alloy steel and cast iron, but can also be used with excellent performance in all other material groups.</p>	P																								
			M																								
			K																								
			N																								
			S																								
			H																								
WP40PD		<p>Composition: With a multilayered TiN-TiAlN coating and a high-quality, tough substrate containing 11% cobalt.</p> <p>Application: For use in steel, cast iron, stainless steel, and super alloys. This grade is suitable for critical operations and unstable conditions.</p>	P																								
			M																								
			K																								
			N																								
			S																								
			H																								
WN10HD		<p>Composition: This uncoated fine-grain carbide with high hardness offers excellent abrasive wear resistance.</p> <p>Application: First choice for precision drilling of non-ferrous materials.</p>																									
			K																								
			N																								

Grades and Grade Descriptions



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


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

wear resistance ← → toughness

Coating	Grade Description		05	10	15	20	25	30	35	40	45
WN15HD	Composition: Submicron grain size tungsten carbide for excellent wear resistance and edge retention. Application: For use in aluminum and non-ferrous materials										
		K									
		N									
WPK10CH	Composition: With an advanced CVD TiCN-Al ₂ O ₃ coating combined with a cobalt-enriched carbide substrate, this grade offers a balanced combination of deformation resistance and edge toughness. Application: Offers outstanding abrasion and crater wear resistance for high-speed machining of steels and cast irons. Use for very high cutting speeds with low to medium feed rates.										
		P									
		K									
WN10PH	Composition: Submicron grain size tungsten carbide with PVD TiB ₂ coating for excellent wear resistance. Application: For use in aluminum and non-ferrous applications.										
		N									
WU20PH	Composition: With a wear-resistant TiAlN coating and unalloyed, submicron tungsten carbide containing 10% cobalt. Application: This is a universal grade for use in steel, cast iron, stainless steel, and super alloys at medium machining speeds.										
		P									
		M									
		K									
		N									
		S									
WU25CH	Composition: Advanced CVD TiCN-Al ₂ O ₃ coating together with a newly engineered, tough carbide substrate. Ensures adequate deformation resistance and excellent edge strength and offers very good wear resistance over a wide range of machining conditions. Application: high-productivity grade with high speeds and feeds. First choice for high productivity with excellent reliability in steels, stainless steels, and cast irons.										
		P									
		M									
WU40PH	Composition: With a multilayered PVD TiN-TiAlN coating and a tough substrate, this grade withstands interruptions and provides high wear resistance for long tool life. Application: First choice for high reliability in most materials. This grade should be used at medium speeds and high feeds due to sharper edges and as a grade for high-toughness applications. It covers steel, stainless steel, cast iron, and high-temp alloys under certain conditions.										
		P									
		M									



The VariDrill solid carbide drill is a versatile drill designed for use in multi-material drilling operations.



The point design offers the ultimate solution for multi-material drilling

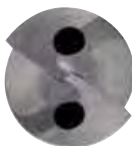
Low runout on the shank

Marginless design to distribute cutting forces evenly for less chipping on the cutting edge

WU25PD grade to enhance wear-resistance

The VariDrill solid carbide drill series is a multi-material drill offered in a wide range of sizes from .39–.787" (1–20mm) in 0.1mm steps in 3 x D, 5 x D, and 8 x D, with and without coolant channels.

WU25PD



Delivers a smooth surface finish across multiple materials:

Steel, stainless steel, aluminum, cast iron, and high-temp alloys.

MULTI-MATERIAL DRILLING

PRODUCT

GRADE

WU25PD

DIAMETER RANGE

.0394–.7874" (1–20mm)
.0591–.7874" (1.5–20mm)

INDUSTRY



MATERIALS

FIRST CHOICE



Applications



DRILLING



STACKED PLATES



PLAIN SHANK: $\leq H6$



HELIX ANGLE: 30°



DIN 6537



DIN 6535



THROUGH COOLANT



FLOOD COOLANT



THROUGH COOLANT: MQL



SERIES

VDS201

COOLANT

Non-Coolant

LENGTH RATIO

3 x D

DIAMETER RANGE

.0394–.7874" (1–20mm)

VDS202

Non-Coolant

5 x D

.0394–.7874" (1–20mm)

VDS401

Through Coolant

3 x D

.0591–.7874" (1.5–20mm)

VDS402

Through Coolant

5 x D

.0591–.7874" (1.5–20mm)

VDS403

Through Coolant

8 x D

.0591–.7874" (1.5–20mm)

PRECISION SHANK

Low Runout
Increase the overall drill stability

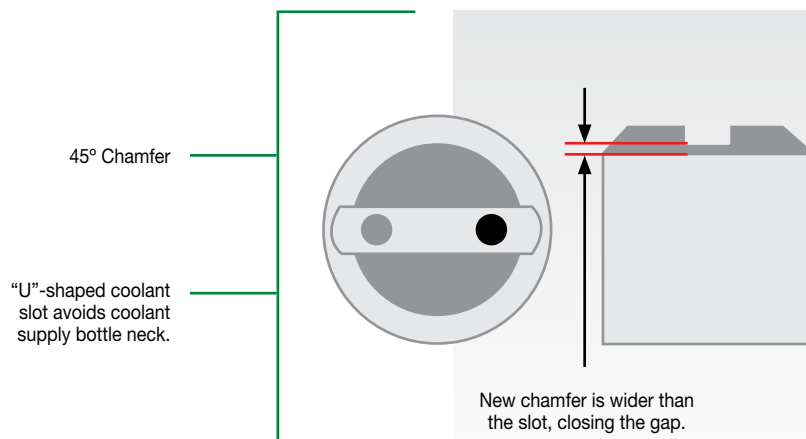


VariDrill™ • Catalog Numbering System

Each character in our catalog number signifies a specific trait of that product.
Use the following key columns and corresponding images to easily identify which attributes apply.

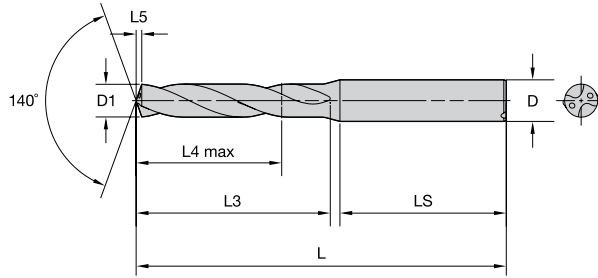
VDS	4	0	1	A	06350	WU25PD
VariDrill Spiral	Flute Style - Coolant	Point	Length	Shank	Diameter in Inch	
	<p>2 = 2 Flute Spiral Non- Coolant</p> <p>4 = 2 Flute Spiral Coolant</p>	<p>0 = Conventional Cone Point</p>	<p>1 = ~ 3 x D 2 = ~ 5 x D 3 = ~ 8 x D</p>	<p>A = Cylindrical Shank, DIN 6535 - 2mm steps</p> <p>F = Whistle Notch 2, DIN 6535 - 2mm steps</p>	<p>03000 = 3,000mm 06350 = 1/4"</p>	<p>WIDIA™; Universal, Application 25 = roughing carbide, PVD coated, Drill</p>

New type "A"

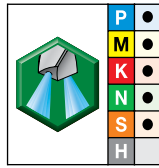
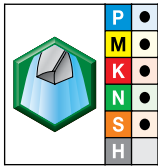


New standard back end fulfills the requirements of DIN 6535 and 69090-03 for variable use of internal coolant or MQL.

VariDrill™ • 3 x D • VDS201A / VDS401A • A-Shank



For information on L, L3, and L4 max, see page C46.



● first choice
○ alternate choice

grade WU25PD TiAlN		grade WU25PD TiAlN		D1 diameter				L4 max	L3	L5	L	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4144195	VDS201A01000	-	-	1,000	.0394	-	-	5	7	0,2	58	28	4
4144196	VDS201A01016	-	-	1,016	.0400	-	-	5	7	0,1	58	28	4
4144197	VDS201A01041	-	-	1,041	.0410	-	-	5	7	0,2	58	28	4
4144198	VDS201A01067	-	-	1,067	.0420	-	-	5	7	0,2	58	28	4
4144199	VDS201A01092	-	-	1,092	.0430	-	-	5	7	0,2	58	28	4
4144200	VDS201A01100	-	-	1,100	.0433	-	-	5	7	0,2	58	28	4
4144201	VDS201A01181	-	-	1,181	.0465	-	-	5	7	0,2	58	28	4
4144202	VDS201A01191	-	-	1,191	.0469	3/64	-	5	7	0,2	58	28	4
4144523	VDS201A01200	-	-	1,200	.0472	-	-	5	7	0,2	58	28	4
4144524	VDS201A01300	-	-	1,300	.0512	-	-	5	7	0,2	58	28	4
4144526	VDS201A01397	-	-	1,397	.0550	-	-	5	7	0,2	58	28	4
4144527	VDS201A01400	-	-	1,400	.0551	-	-	5	7	0,2	58	28	4
4144528	VDS201A01500	4140270	VDS401A01500	1,500	.0591	-	-	6	9	0,2	58	28	4
4144529	VDS201A01600	-	-	1,600	.0630	-	-	6	9	0,3	58	28	4
-	-	4140271	VDS401A01600	1,600	.0630	-	-	6	9	0,2	58	28	4
4144530	VDS201A01700	4140272	VDS401A01700	1,700	.0669	-	-	6	9	0,3	58	28	4
4144531	VDS201A01800	4140423	VDS401A01800	1,800	.0709	-	-	6	9	0,3	58	28	4
4144532	VDS201A01900	4140424	VDS401A01900	1,900	.0748	-	-	6	9	0,3	58	28	4
4144533	VDS201A01984	4140425	VDS401A01984	1,984	.0781	5/64	-	10	13	0,3	58	28	4
4144534	VDS201A02000	4140426	VDS401A02000	2,000	.0787	-	-	10	13	0,3	58	28	4
4144535	VDS201A02100	4140427	VDS401A02100	2,100	.0827	-	-	10	13	0,3	58	28	4
4144536	VDS201A02200	4140428	VDS401A02200	2,200	.0866	-	-	10	13	0,3	58	28	4
4144537	VDS201A02300	4140429	VDS401A02300	2,300	.0906	-	-	10	13	0,4	58	28	4
4144538	VDS201A02383	4140430	VDS401A02383	2,383	.0938	3/32	-	12	17	0,4	58	28	4
4144539	VDS201A02400	4140431	VDS401A02400	2,400	.0945	-	-	12	17	0,4	58	28	4
4144540	VDS201A02439	4140432	VDS401A02439	2,439	.0960	-	41	12	17	0,4	58	28	4
4144541	VDS201A02489	4140433	VDS401A02489	2,489	.0980	-	40	12	17	0,4	58	28	4
4144542	VDS201A02500	4140434	VDS401A02500	2,500	.0984	-	-	12	17	0,4	58	28	4
4144543	VDS201A02578	4140435	VDS401A02578	2,578	.1015	-	38	12	17	0,4	58	28	4
4144544	VDS201A02600	4140436	VDS401A02600	2,600	.1024	-	-	12	17	0,4	58	28	4
4144545	VDS201A02642	4140437	VDS401A02642	2,642	.1040	-	37	12	17	0,4	58	28	4
4144546	VDS201A02700	4140438	VDS401A02700	2,700	.1063	-	-	12	17	0,4	58	28	4
4144547	VDS201A02705	4140439	VDS401A02705	2,705	.1065	-	36	12	17	0,4	58	28	4
4144548	VDS201A02779	4140440	VDS401A02779	2,779	.1094	7/64	-	12	17	0,4	58	28	4
4144549	VDS201A02800	4140441	VDS401A02800	2,800	.1102	-	-	12	17	0,5	58	28	4
4144550	VDS201A02820	4140442	VDS401A02820	2,820	.1110	-	34	12	17	0,5	58	28	4
4144551	VDS201A02870	4140443	VDS401A02870	2,870	.1130	-	33	12	17	0,5	58	28	4
4144552	VDS201A02900	4140444	VDS401A02900	2,900	.1142	-	-	12	17	0,5	58	28	4
4144553	VDS201A02947	4140445	VDS401A02947	2,947	.1160	-	32	12	17	0,5	58	28	4
4143907	VDS201A03000	4140299	VDS401A03000	3,000	.1181	-	-	14	20	0,5	62	36	6
4143908	VDS201A03048	4140300	VDS401A03048	3,048	.1200	-	31	14	20	0,5	62	36	6
4143909	VDS201A03100	4140301	VDS401A03100	3,100	.1220	-	-	14	20	0,5	62	36	6
4143910	VDS201A03175	4140302	VDS401A03175	3,175	.1250	1/8	-	14	20	0,5	62	36	6
4143911	VDS201A03200	4140303	VDS401A03200	3,200	.1260	-	-	14	20	0,5	62	36	6
4143912	VDS201A03264	4140304	VDS401A03264	3,264	.1285	-	30	14	20	0,5	62	36	6
4143913	VDS201A03300	4140305	VDS401A03300	3,300	.1299	-	-	14	20	0,5	62	36	6
4143914	VDS201A03400	4140306	VDS401A03400	3,400	.1339	-	-	14	20	0,6	62	36	6
4143915	VDS201A03455	4140307	VDS401A03455	3,455	.1360	-	29	14	20	0,6	62	36	6

VariDrill • 3 x D • VDS201A / VDS401A • A-Shank

INDEXABLE MILLING

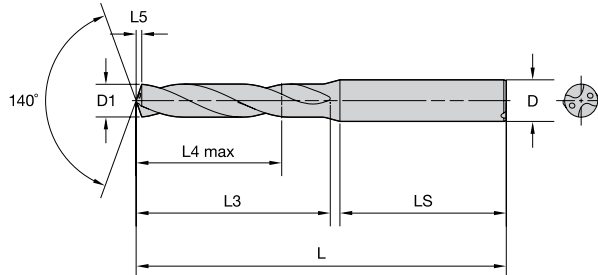
SOLID END MILLING

HOLEMAKING

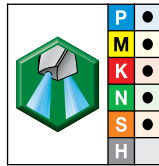
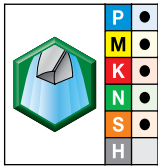
TAPPING

TURNING

(continued)



For information on L, L3, and L4 max, see page C46.

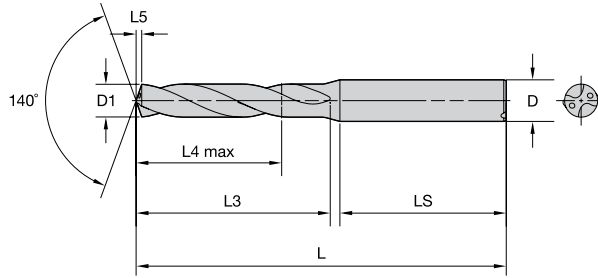


● first choice
○ alternate choice

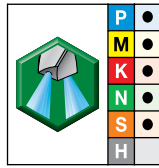
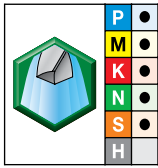
grade WU25PD TiAlN		grade WU25PD TiAlN		D1 diameter				L4 max	L3	L5	L	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4143916	VDS201A03500	4140308	VDS401A03500	3,500	.1378	—	—	14	20	0,6	62	36	6
4143917	VDS201A03571	4140309	VDS401A03571	3,571	.1406	9/64	—	14	20	0,6	62	36	6
4143918	VDS201A03600	4140310	VDS401A03600	3,600	.1417	—	—	14	20	0,6	62	36	6
4143919	VDS201A03658	4140311	VDS401A03658	3,658	.1440	—	27	14	20	0,6	62	36	6
4143920	VDS201A03700	4140312	VDS401A03700	3,700	.1457	—	—	14	20	0,6	62	36	6
4143921	VDS201A03734	4140313	VDS401A03734	3,734	.1470	—	26	14	20	0,6	62	36	6
4143922	VDS201A03800	4140314	VDS401A03800	3,800	.1496	—	—	17	24	0,6	66	36	6
4143923	VDS201A03900	4140315	VDS401A03900	3,900	.1535	—	—	17	24	0,6	66	36	6
4143924	VDS201A03970	4140316	VDS401A03970	3,970	.1563	5/32	—	17	24	0,7	66	36	6
4143925	VDS201A04000	4140317	VDS401A04000	4,000	.1575	—	—	17	24	0,7	66	36	6
4143926	VDS201A04039	4140318	VDS401A04039	4,039	.1590	—	21	17	24	0,7	66	36	6
4143927	VDS201A04090	4140319	VDS401A04090	4,090	.1610	—	20	17	24	0,7	66	36	6
4143928	VDS201A04100	4140320	VDS401A04100	4,100	.1614	—	—	17	24	0,7	66	36	6
4143929	VDS201A04200	4140321	VDS401A04200	4,200	.1654	—	—	17	24	0,7	66	36	6
4143930	VDS201A04217	—	—	4,217	.1660	—	19	17	24	0,7	66	36	6
4143931	VDS201A04300	4140323	VDS401A04300	4,300	.1693	—	—	17	24	0,7	66	36	6
4143932	VDS201A04366	4140324	VDS401A04366	4,366	.1719	11/64	—	17	24	0,7	66	36	6
4143933	VDS201A04400	4140325	VDS401A04400	4,400	.1732	—	—	17	24	0,7	66	36	6
4143934	VDS201A04500	4140326	VDS401A04500	4,500	.1772	—	—	17	24	0,7	66	36	6
4143935	VDS201A04600	4140328	VDS401A04600	4,600	.1811	—	—	17	24	0,8	66	36	6
4143936	VDS201A04623	4140329	VDS401A04623	4,623	.1820	—	14	17	24	0,8	66	36	6
4143937	VDS201A04700	4140330	VDS401A04700	4,700	.1850	—	13	17	24	0,8	66	36	6
4143938	VDS201A04763	4140331	VDS401A04763	4,763	.1875	3/16	—	20	28	0,8	66	36	6
4143939	VDS201A04800	4140332	VDS401A04800	4,800	.1890	—	12	20	28	0,8	66	36	6
4143940	VDS201A04852	4140333	VDS401A04852	4,852	.1910	—	11	20	28	0,8	66	36	6
4143941	VDS201A04900	4140334	VDS401A04900	4,900	.1929	—	—	20	28	0,8	66	36	6
4143942	VDS201A05000	4140335	VDS401A05000	5,000	.1969	—	—	20	28	0,8	66	36	6
4143943	VDS201A05100	4140336	VDS401A05100	5,100	.2008	—	—	20	28	0,9	66	36	6
4143944	VDS201A05106	4140337	VDS401A05106	5,106	.2010	—	7	20	28	0,9	66	36	6
4143945	VDS201A05159	4140338	VDS401A05159	5,159	.2031	13/64	—	20	28	0,9	66	36	6
4143946	VDS201A05200	4140339	VDS401A05200	5,200	.2047	—	—	20	28	0,9	66	36	6
4143947	VDS201A05300	4140340	VDS401A05300	5,300	.2087	—	—	20	28	0,9	66	36	6
4143948	VDS201A05400	4140341	VDS401A05400	5,400	.2126	—	—	20	28	0,9	66	36	6
4143949	VDS201A05410	4140342	VDS401A05410	5,410	.2130	—	3	20	28	0,9	66	36	6
4143950	VDS201A05500	4140343	VDS401A05500	5,500	.2165	—	—	20	28	0,9	66	36	6
4143951	VDS201A05558	4140344	VDS401A05558	5,558	.2188	7/32	—	20	28	0,9	66	36	6
4143952	VDS201A05600	4140345	VDS401A05600	5,600	.2205	—	—	20	28	0,9	66	36	6
4143953	VDS201A05616	4140346	VDS401A05616	5,616	.2211	—	2	20	28	0,9	66	36	6
4143954	VDS201A05700	4140347	VDS401A05700	5,700	.2244	—	—	20	28	1,0	66	36	6
4143955	VDS201A05800	4140348	VDS401A05800	5,800	.2283	—	—	20	28	1,0	66	36	6
4143956	VDS201A05900	4140349	VDS401A05900	5,900	.2323	—	—	20	28	1,0	66	36	6
4143957	VDS201A05954	4140350	VDS401A05954	5,954	.2344	15/64	—	20	28	1,0	66	36	6
4143958	VDS201A06000	4140351	VDS401A06000	6,000	.2362	—	—	20	28	1,0	66	36	6
4143959	VDS201A06100	4140352	VDS401A06100	6,100	.2402	—	—	24	34	1,0	79	36	8
4143960	VDS201A06200	4140353	VDS401A06200	6,200	.2441	—	—	24	34	1,0	79	36	8
4143961	VDS201A06300	4140354	VDS401A06300	6,300	.2480	—	—	24	34	1,1	79	36	8
4143962	VDS201A06350	4140355	VDS401A06350	6,350	.2500	1/4	E	24	34	1,1	79	36	8
4143963	VDS201A06400	4140356	VDS401A06400	6,400	.2520	—	—	24	34	1,1	79	36	8

VariDrill • 3 x D • VDS201A / VDS401A • A-Shank

(continued)



For information on L, L3, and L4 max, see page C46.



● first choice
○ alternate choice

grade WU25PD TiAlN		grade WU25PD TiAlN		D1 diameter				L4 max	L3	L5	L	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4143964	VDS201A06500	4140357	VDS401A06500	6,500	.2559	—	—	24	34	1,1	79	36	8
4143965	VDS201A06528	4140358	VDS401A06528	6,528	.2570	—	F	24	34	1,1	79	36	8
4143966	VDS201A06600	4140359	VDS401A06600	6,600	.2598	—	—	24	34	1,1	79	36	8
4143967	VDS201A06630	4140360	VDS401A06630	6,630	.2610	—	G	24	34	1,1	79	36	8
4143968	VDS201A06700	4140361	VDS401A06700	6,700	.2638	—	—	24	34	1,1	79	36	8
4143969	VDS201A06746	4140362	VDS401A06746	6,746	.2656	17/64	—	24	34	1,1	79	36	8
4143970	VDS201A06800	4140363	VDS401A06800	6,800	.2677	—	—	24	34	1,1	79	36	8
4143971	VDS201A06900	4140364	VDS401A06900	6,900	.2717	—	—	24	34	1,2	79	36	8
4143972	VDS201A07000	4140365	VDS401A07000	7,000	.2756	—	—	24	34	1,2	79	36	8
4143973	VDS201A07100	4140366	VDS401A07100	7,100	.2795	—	—	29	41	1,2	79	36	8
4143974	VDS201A07145	4140367	VDS401A07145	7,145	.2813	9/32	—	29	41	1,2	79	36	8
4143975	VDS201A07200	4140368	VDS401A07200	7,200	.2835	—	—	29	41	1,2	79	36	8
4143976	VDS201A07300	4140369	VDS401A07300	7,300	.2874	—	—	29	41	1,2	79	36	8
4143977	VDS201A07400	4140370	VDS401A07400	7,400	.2913	—	—	29	41	1,3	79	36	8
4143978	VDS201A07500	4140371	VDS401A07500	7,500	.2953	—	—	29	41	1,3	79	36	8
4143979	VDS201A07541	4140372	VDS401A07541	7,541	.2969	19/64	—	29	41	1,3	79	36	8
4143980	VDS201A07600	4140373	VDS401A07600	7,600	.2992	—	—	29	41	1,3	79	36	8
4143981	VDS201A07700	4140374	VDS401A07700	7,700	.3031	—	—	29	41	1,3	79	36	8
4143982	VDS201A07800	4140375	VDS401A07800	7,800	.3071	—	—	29	41	1,3	79	36	8
4143983	VDS201A07900	4140376	VDS401A07900	7,900	.3110	—	—	29	41	1,3	79	36	8
4143984	VDS201A07938	4140377	VDS401A07938	7,938	.3125	5/16	—	29	41	1,3	79	36	8
4143985	VDS201A08000	4140378	VDS401A08000	8,000	.3150	—	—	29	41	1,4	79	36	8
4143986	VDS201A08100	4140379	VDS401A08100	8,100	.3189	—	—	35	47	1,4	89	40	10
4143987	VDS201A08200	4140380	VDS401A08200	8,200	.3228	—	—	35	47	1,4	89	40	10
4143988	VDS201A08300	4140381	VDS401A08300	8,300	.3268	—	—	35	47	1,4	89	40	10
4143989	VDS201A08334	4140382	VDS401A08334	8,334	.3281	21/64	—	35	47	1,4	89	40	10
4143990	VDS201A08400	4140383	VDS401A08400	8,400	.3307	—	—	35	47	1,4	89	40	10
4143991	VDS201A08433	4140384	VDS401A08433	8,433	.3320	—	Q	35	47	1,4	89	40	10
4143992	VDS201A08500	4140385	VDS401A08500	8,500	.3346	—	—	35	47	1,4	89	40	10
4143993	VDS201A08600	4140386	VDS401A08600	8,600	.3386	—	—	35	47	1,5	89	40	10
4143994	VDS201A08700	4140387	VDS401A08700	8,700	.3425	—	—	35	47	1,5	89	40	10
4143995	VDS201A08733	4140388	VDS401A08733	8,733	.3438	11/32	—	35	47	1,5	89	40	10
4143996	VDS201A08800	4140389	VDS401A08800	8,800	.3465	—	—	35	47	1,5	89	40	10
4143997	VDS201A08900	4140390	VDS401A08900	8,900	.3504	—	—	35	47	1,5	89	40	10
4143998	VDS201A09000	4140391	VDS401A09000	9,000	.3543	—	—	35	47	1,5	89	40	10
4143999	VDS201A09100	—	—	9,100	.3583	—	—	35	47	1,5	89	40	10
—	—	4140392	VDS401A09100	9,100	.3583	—	—	35	47	1,6	89	40	10
4144000	VDS201A09129	4140393	VDS401A09129	9,129	.3594	23/64	—	35	47	1,6	89	40	10
4144001	VDS201A09200	4140394	VDS401A09200	9,200	.3622	—	—	35	47	1,6	89	40	10
4144002	VDS201A09300	4140395	VDS401A09300	9,300	.3661	—	—	35	47	1,6	89	40	10
4144003	VDS201A09347	4140396	VDS401A09347	9,347	.3680	—	U	35	47	1,6	89	40	10
4144004	VDS201A09400	4140397	VDS401A09400	9,400	.3701	—	—	35	47	1,6	89	40	10
4144005	VDS201A09500	4140398	VDS401A09500	9,500	.3740	—	—	35	47	1,6	89	40	10
4144006	VDS201A09525	4140399	VDS401A09525	9,525	.3750	3/8	—	35	47	1,6	89	40	10
4144007	VDS201A09600	4140400	VDS401A09600	9,600	.3780	—	—	35	47	1,6	89	40	10
4144008	VDS201A09700	4140401	VDS401A09700	9,700	.3819	—	—	35	47	1,7	89	40	10
4144009	VDS201A09800	4140402	VDS401A09800	9,800	.3858	—	—	35	47	1,7	89	40	10
4144010	VDS201A09900	4140403	VDS401A09900	9,900	.3898	—	—	35	47	1,7	89	40	10

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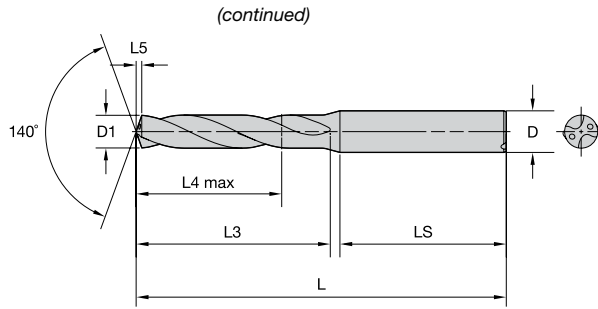
INDEXABLE MILLING

SOLID END MILLING

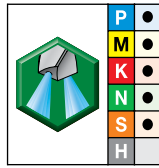
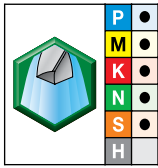
HOLEMAKING

TAPPING

TURNING



For information on L, L3, and L4 max, see page C46.

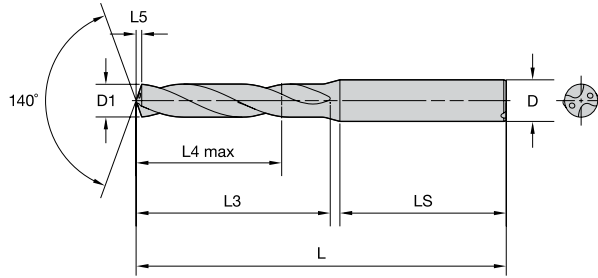


● first choice
○ alternate choice

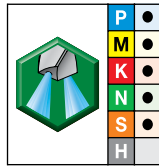
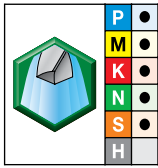
grade WU25PD TiAlN		grade WU25PD TiAlN		D1 diameter				L4 max	L3	L5	L	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4144011	VDS201A09921	4140404	VDS401A09921	9,921	.3906	25/64	—	35	47	1,7	89	40	10
4144172	VDS201A10000	4140001	VDS401A10000	10,000	.3937	—	—	35	47	1,7	89	40	10
4144423	VDS201A10100	4140002	VDS401A10100	10,100	.3976	—	—	40	55	1,7	102	45	12
4144424	VDS201A10200	4140163	VDS401A10200	10,200	.4016	—	—	40	55	1,7	102	45	12
4144425	VDS201A10300	4140164	VDS401A10300	10,300	.4055	—	—	40	55	1,8	102	45	12
4144426	VDS201A10320	4140165	VDS401A10320	10,320	.4063	13/32	—	40	55	1,8	102	45	12
4144427	VDS201A10400	4140166	VDS401A10400	10,400	.4094	—	—	40	55	1,8	102	45	12
4144428	VDS201A10500	4140167	VDS401A10500	10,500	.4134	—	—	40	55	1,8	102	45	12
4144429	VDS201A10600	4140168	VDS401A10600	10,600	.4173	—	—	40	55	1,8	102	45	12
4144430	VDS201A10700	4140169	VDS401A10700	10,700	.4213	—	—	40	55	1,8	102	45	12
4144431	VDS201A10716	4140170	VDS401A10716	10,716	.4219	27/64	—	40	55	1,8	102	45	12
4144432	VDS201A10800	4140171	VDS401A10800	10,800	.4252	—	—	40	55	1,9	102	45	12
4144433	VDS201A10900	4140172	VDS401A10900	10,900	.4291	—	—	40	55	1,9	102	45	12
4144434	VDS201A11000	4140173	VDS401A11000	11,000	.4331	—	—	40	55	1,9	102	45	12
4144435	VDS201A11100	4140174	VDS401A11100	11,100	.4370	—	—	40	55	1,9	102	45	12
4144436	VDS201A11113	4140175	VDS401A11113	11,113	.4375	7/16	—	40	55	1,9	102	45	12
4144437	VDS201A11200	4140176	VDS401A11200	11,200	.4409	—	—	40	55	1,9	102	45	12
4144438	VDS201A11300	4140177	VDS401A11300	11,300	.4449	—	—	40	55	1,9	102	45	12
4144439	VDS201A11400	4140178	VDS401A11400	11,400	.4488	—	—	40	55	2,0	102	45	12
4144440	VDS201A11500	4140179	VDS401A11500	11,500	.4528	—	—	40	55	2,0	102	45	12
4144441	VDS201A11509	4140180	VDS401A11509	11,509	.4531	29/64	—	40	55	2,0	102	45	12
4144442	VDS201A11600	4140181	VDS401A11600	11,600	.4567	—	—	40	55	2,0	102	45	12
4144443	VDS201A11700	4140182	VDS401A11700	11,700	.4606	—	—	40	55	2,0	102	45	12
4144444	VDS201A11800	4140183	VDS401A11800	11,800	.4646	—	—	40	55	2,0	102	45	12
4144445	VDS201A11900	4140184	VDS401A11900	11,900	.4685	—	—	40	55	2,0	102	45	12
4144446	VDS201A11908	4140185	VDS401A11908	11,908	.4688	15/32	—	40	55	2,0	102	45	12
4144447	VDS201A12000	4140186	VDS401A12000	12,000	.4724	—	—	40	55	2,1	102	45	12
4144448	VDS201A12100	4140187	VDS401A12100	12,100	.4764	—	—	43	60	2,1	107	45	14
4144449	VDS201A12200	4140188	VDS401A12200	12,200	.4803	—	—	43	60	2,1	107	45	14
4144450	VDS201A12300	4140189	VDS401A12300	12,300	.4843	—	—	43	60	2,1	107	45	14
4144451	VDS201A12304	4140190	VDS401A12304	12,304	.4844	31/64	—	43	60	2,1	107	45	14
4144452	VDS201A12400	4140191	VDS401A12400	12,400	.4882	—	—	43	60	2,1	107	45	14
4144453	VDS201A12500	4140192	VDS401A12500	12,500	.4921	—	—	43	60	2,2	107	45	14
4144454	VDS201A12600	4140194	VDS401A12600	12,600	.4961	—	—	43	60	2,2	107	45	14
4144455	VDS201A12700	4140195	VDS401A12700	12,700	.5000	1/2	—	43	60	2,2	107	45	14
4144456	VDS201A12800	4140196	VDS401A12800	12,800	.5039	—	—	43	60	2,2	107	45	14
4144457	VDS201A12900	4140197	VDS401A12900	12,900	.5079	—	—	43	60	2,2	107	45	14
4144458	VDS201A13000	4140198	VDS401A13000	13,000	.5118	—	—	43	60	2,2	107	45	14
4144459	VDS201A13096	4140199	VDS401A13096	13,096	.5156	33/64	—	43	60	2,3	107	45	14
4144460	VDS201A13100	4140200	VDS401A13100	13,100	.5157	—	—	43	60	2,3	107	45	14
4144461	VDS201A13200	4140201	VDS401A13200	13,200	.5197	—	—	43	60	2,3	107	45	14
4144462	VDS201A13300	4140202	VDS401A13300	13,300	.5236	—	—	43	60	2,3	107	45	14
4144463	VDS201A13400	4140203	VDS401A13400	13,400	.5276	—	—	43	60	2,3	107	45	14
4144464	VDS201A13500	4140204	VDS401A13500	13,500	.5315	—	—	43	60	2,3	107	45	14
4144465	VDS201A13600	4140205	VDS401A13600	13,600	.5354	—	—	43	60	2,3	107	45	14
4144466	VDS201A13700	4140206	VDS401A13700	13,700	.5394	—	—	43	60	2,4	107	45	14
4144467	VDS201A13800	4140207	VDS401A13800	13,800	.5433	—	—	43	60	2,4	107	45	14
4144468	VDS201A13891	—	—	13,891	.5469	35/64	—	43	60	2,4	107	45	14

VariDrill™ • 3 x D • VDS201A / VDS401A • A-Shank

(continued)



For information on L, L3, and L4 max, see page C46.

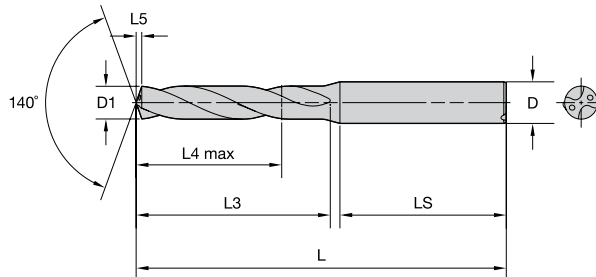


● first choice
○ alternate choice

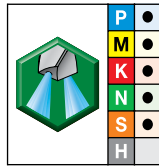
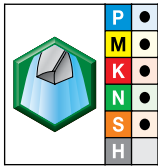
grade WU25PD TiAlN		grade WU25PD TiAlN		D1 diameter				L4 max	L3	L5	L	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4144469	VDS201A13900	4140209	VDS401A13900	13,900	.5472	—	—	43	60	2,4	107	45	14
4144470	VDS201A14000	4140210	VDS401A14000	14,000	.5512	—	—	43	60	2,4	107	45	14
4144471	VDS201A14100	4140211	VDS401A14100	14,100	.5551	—	—	45	65	2,4	115	48	16
4144472	VDS201A14200	4140212	VDS401A14200	14,200	.5591	—	—	45	65	2,5	115	48	16
4144473	VDS201A14288	4140213	VDS401A14288	14,288	.5625	9/16	—	45	65	2,5	115	48	16
4144474	VDS201A14300	4140214	VDS401A14300	14,300	.5630	—	—	45	65	2,5	115	48	16
4144475	VDS201A14400	4140215	VDS401A14400	14,400	.5669	—	—	45	65	2,5	115	48	16
4144476	VDS201A14500	4140216	VDS401A14500	14,500	.5709	—	—	45	65	2,5	115	48	16
4144477	VDS201A14600	4140217	VDS401A14600	14,600	.5748	—	—	45	65	2,5	115	48	16
4144478	VDS201A14684	4140218	VDS401A14684	14,684	.5781	37/64	—	45	65	2,5	115	48	16
4144479	VDS201A14700	4140219	VDS401A14700	14,700	.5787	—	—	45	65	2,5	115	48	16
4144480	VDS201A14800	4140220	VDS401A14800	14,800	.5827	—	—	45	65	2,6	115	48	16
4144481	VDS201A14900	4140221	VDS401A14900	14,900	.5866	—	—	45	65	2,6	115	48	16
4144482	VDS201A15000	4140222	VDS401A15000	15,000	.5906	—	—	45	65	2,6	115	48	16
4144483	VDS201A15083	4140223	VDS401A15083	15,083	.5938	19/32	—	45	65	2,6	115	48	16
4144484	VDS201A15100	4140224	VDS401A15100	15,100	.5945	—	—	45	65	2,6	115	48	16
4144485	VDS201A15200	4140225	VDS401A15200	15,200	.5984	—	—	45	65	2,6	115	48	16
4144486	VDS201A15300	4140226	VDS401A15300	15,300	.6024	—	—	45	65	2,6	115	48	16
4144487	VDS201A15400	4140227	VDS401A15400	15,400	.6063	—	—	45	65	2,7	115	48	16
4144488	VDS201A15479	4140228	VDS401A15479	15,479	.6094	39/64	—	45	65	2,7	115	48	16
4144489	VDS201A15500	4140229	VDS401A15500	15,500	.6102	—	—	45	65	2,7	115	48	16
4144490	VDS201A15600	4140230	VDS401A15600	15,600	.6142	—	—	45	65	2,7	115	48	16
4144491	VDS201A15700	4140231	VDS401A15700	15,700	.6181	—	—	45	65	2,7	115	48	16
4144492	VDS201A15800	4140232	VDS401A15800	15,800	.6220	—	—	45	65	2,7	115	48	16
4144493	VDS201A15875	4140233	VDS401A15875	15,875	.6250	5/8	—	45	65	2,8	115	48	16
4144494	VDS201A15900	4140234	VDS401A15900	15,900	.6260	—	—	45	65	2,8	115	48	16
4144495	VDS201A16000	4140235	VDS401A16000	16,000	.6299	—	—	45	65	2,8	115	48	16
4144496	VDS201A16100	4140236	VDS401A16100	16,100	.6339	—	—	51	73	2,8	123	48	18
4144497	VDS201A16200	4140237	VDS401A16200	16,200	.6378	—	—	51	73	2,8	123	48	18
4144498	VDS201A16271	—	—	16,271	.6406	41/64	—	51	73	2,8	123	48	18
4144499	VDS201A16300	4140239	VDS401A16300	16,300	.6417	—	—	51	73	2,8	123	48	18
4144500	VDS201A16400	4140241	VDS401A16400	16,400	.6457	—	—	51	73	2,8	123	48	18
4144501	VDS201A16500	4140242	VDS401A16500	16,500	.6496	—	—	51	73	2,9	123	48	18
4144503	VDS201A16600	4140243	VDS401A16600	16,600	.6535	—	—	51	73	2,9	123	48	18
4144504	VDS201A16670	4140244	VDS401A16670	16,670	.6563	21/32	—	51	73	2,9	123	48	18
4144505	VDS201A16700	4140245	VDS401A16700	16,700	.6575	—	—	51	73	2,9	123	48	18
4144506	VDS201A16800	4140246	VDS401A16800	16,800	.6614	—	—	51	73	2,9	123	48	18
4144507	VDS201A16900	4140247	VDS401A16900	16,900	.6654	—	—	51	73	2,9	123	48	18
4144508	VDS201A17000	—	—	17,000	.6693	—	—	51	73	3,0	123	48	18
—	—	4140248	VDS401A17000	17,000	.6693	—	—	51	73	2,9	123	48	18
4144509	VDS201A17100	4140249	VDS401A17100	17,100	.6732	—	—	51	73	3,0	123	48	18
4144510	VDS201A17200	4140250	VDS401A17200	17,200	.6772	—	—	51	73	3,0	123	48	18
4144511	VDS201A17300	4140251	VDS401A17300	17,300	.6811	—	—	51	73	3,0	123	48	18
4144512	VDS201A17400	4140252	VDS401A17400	17,400	.6850	—	—	51	73	3,0	123	48	18
4144513	VDS201A17463	4140253	VDS401A17463	17,463	.6875	11/16	—	51	73	3,0	123	48	18
4144514	VDS201A17500	4140254	VDS401A17500	17,500	.6890	—	—	51	73	3,0	123	48	18
4144515	VDS201A17600	4140255	VDS401A17600	17,600	.6929	—	—	51	73	3,1	123	48	18
4144516	VDS201A17700	4140256	VDS401A17700	17,700	.6969	—	—	51	73	3,1	123	48	18

VariDrill • 3 x D • VDS201A / VDS401A • A-Shank

(continued)



For information on L, L3, and L4 max, see page C46.



● first choice
○ alternate choice

grade WU25PD TiAlN		grade WU25PD TiAlN		D1 diameter				L4 max	L3	L5	L	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4144517	VDS201A17800	4140257	VDS401A17800	17,800	.7008	—	—	51	73	3,1	123	48	18
4144518	VDS201A17859	—	—	17,859	.7031	45/64	—	51	73	3,1	123	48	18
4144519	VDS201A17900	—	—	17,900	.7047	—	—	51	73	3,1	123	48	18
4144590	VDS201A18000	4140449	VDS401A18000	18,000	.7087	—	—	51	73	3,1	123	48	18
4144591	VDS201A18100	4140450	VDS401A18100	18,100	.7126	—	—	55	79	3,1	131	50	20
4144592	VDS201A18200	4140451	VDS401A18200	18,200	.7165	—	—	55	79	3,2	131	50	20
4144593	VDS201A18258	4140452	VDS401A18258	18,258	.7188	23/32	—	55	79	3,2	131	50	20
4144594	VDS201A18300	4140463	VDS401A18300	18,300	.7205	—	—	55	79	3,2	131	50	20
—	—	4140464	VDS401A18400	18,400	.7244	—	—	55	79	3,2	131	50	20
4144596	VDS201A18500	4140465	VDS401A18500	18,500	.7283	—	—	55	79	3,2	131	50	20
4144597	VDS201A18600	4140466	VDS401A18600	18,600	.7323	—	—	55	79	3,2	131	50	20
4144598	VDS201A18654	4140467	VDS401A18654	18,654	.7344	47/64	—	55	79	3,2	131	50	20
4144599	VDS201A18700	—	—	18,700	.7362	—	—	55	79	3,3	131	50	20
—	—	4140468	VDS401A18700	18,700	.7362	—	—	55	79	3,2	131	50	20
4144600	VDS201A18800	4140469	VDS401A18800	18,800	.7402	—	—	55	79	3,3	131	50	20
4144601	VDS201A18900	4140470	VDS401A18900	18,900	.7441	—	—	55	79	3,3	131	50	20
4144602	VDS201A19000	4140471	VDS401A19000	19,000	.7480	—	—	55	79	3,3	131	50	20
4144603	VDS201A19050	4140472	VDS401A19050	19,050	.7500	3/4	—	55	79	3,3	131	50	20
4144604	VDS201A19100	4140473	VDS401A19100	19,100	.7520	—	—	55	79	3,3	131	50	20
4144605	VDS201A19200	4140474	VDS401A19200	19,200	.7559	—	—	55	79	3,3	131	50	20
4144606	VDS201A19300	4140475	VDS401A19300	19,300	.7598	—	—	55	79	3,4	131	50	20
4144607	VDS201A19400	4140476	VDS401A19400	19,400	.7638	—	—	55	79	3,4	131	50	20
4144608	VDS201A19500	4140477	VDS401A19500	19,500	.7677	—	—	55	79	3,4	131	50	20
—	—	4140478	VDS401A19600	19,600	.7717	—	—	55	79	3,4	131	50	20
4144610	VDS201A19700	4140479	VDS401A19700	19,700	.7756	—	—	55	79	3,4	131	50	20
4144611	VDS201A19800	4140480	VDS401A19800	19,800	.7795	—	—	55	79	3,4	131	50	20
4144612	VDS201A19900	4140481	VDS401A19900	19,900	.7835	—	—	55	79	3,5	131	50	20
4144613	VDS201A20000	4140482	VDS401A20000	20,000	.7874	—	—	55	79	3,5	131	50	20

INDEXABLE MILLING

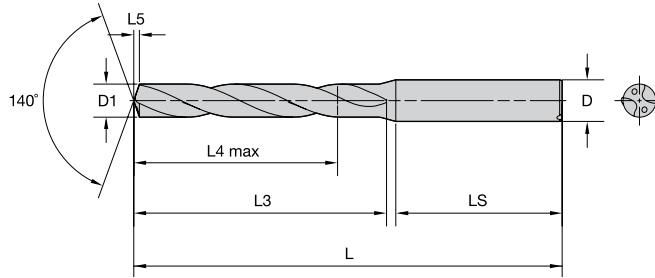
SOLID END MILLING

HOLEMAKING

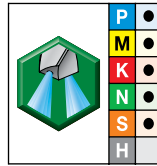
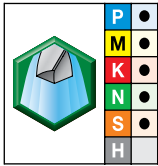
TAPPING

TURNING

VariDrill • 5 x D • VDS202A / VDS402A • A-Shank



For information on L, L3, and L4 max, see page C46.



● first choice
○ alternate choice

grade WU25PD TiAlN		grade WU25PD TiAlN		D1 diameter									
order #	catalog #	order #	catalog #	mm	in	fraction	wire size	L4 max	L3	L5	L	LS	D
4148000	VDS202A01000	-	-	1,000	.0394	-	-	6	9	0,1	58	28	4
4148001	VDS202A01016	-	-	1,016	.0400	-	-	6	9	0,1	58	28	4
4148002	VDS202A01041	-	-	1,041	.0410	-	-	6	9	0,2	58	28	4
4148003	VDS202A01067	-	-	1,067	.0420	-	-	6	9	0,2	58	28	4
4148005	VDS202A01100	-	-	1,100	.0433	-	-	6	9	0,2	58	28	4
4148006	VDS202A01181	-	-	1,181	.0465	-	-	6	9	0,2	58	28	4
4148007	VDS202A01191	-	-	1,191	.0469	3/64	-	6	9	0,2	58	28	4
4148008	VDS202A01200	-	-	1,200	.0472	-	-	6	9	0,2	58	28	4
4148009	VDS202A01300	-	-	1,300	.0512	-	-	6	9	0,2	58	28	4
4148010	VDS202A01321	-	-	1,321	.0520	-	-	6	9	0,2	58	28	4
4148011	VDS202A01397	-	-	1,397	.0550	-	-	6	9	0,2	58	28	4
4148012	VDS202A01400	-	-	1,400	.0551	-	-	6	9	0,2	58	28	4
4148013	VDS202A01500	4142871	VDS402A01500	1,500	.0591	-	-	9	12	0,2	58	28	4
4148014	VDS202A01600	4142884	VDS402A01600	1,600	.0630	-	-	9	12	0,2	58	28	4
4148015	VDS202A01700	4142887	VDS402A01700	1,700	.0669	-	-	9	12	0,3	58	28	4
4148016	VDS202A01800	4142890	VDS402A01800	1,800	.0709	-	-	9	12	0,3	58	28	4
4148017	VDS202A01900	4142893	VDS402A01900	1,900	.0748	-	-	9	12	0,3	58	28	4
4148018	VDS202A01984	4142896	VDS402A01984	1,984	.0781	5/64	-	14	18	0,3	58	28	4
4148019	VDS202A02000	4142899	VDS402A02000	2,000	.0787	-	-	14	18	0,3	58	28	4
4148020	VDS202A02100	4142902	VDS402A02100	2,100	.0827	-	-	14	18	0,3	58	28	4
4148021	VDS202A02200	4142905	VDS402A02200	2,200	.0866	-	-	14	18	0,3	58	28	4
4148022	VDS202A02300	4142908	VDS402A02300	2,300	.0906	-	-	14	18	0,4	58	28	4
4148023	VDS202A02383	4142911	VDS402A02383	2,383	.0938	3/32	-	17	22	0,4	58	28	4
4148024	VDS202A02400	4142924	VDS402A02400	2,400	.0945	-	-	17	22	0,4	58	28	4
4148025	VDS202A02439	4142927	VDS402A02439	2,439	.0960	-	41	17	22	0,4	58	28	4
4148026	VDS202A02489	4142930	VDS402A02489	2,489	.0980	-	40	17	22	0,4	58	28	4
4148027	VDS202A02500	4142933	VDS402A02500	2,500	.0984	-	-	17	22	0,4	58	28	4
4148028	VDS202A02578	4142936	VDS402A02578	2,578	.1015	-	38	17	22	0,4	58	28	4
4148029	VDS202A02600	4142939	VDS402A02600	2,600	.1024	-	-	17	22	0,4	58	28	4
4148030	VDS202A02642	4142942	VDS402A02642	2,642	.1040	-	37	17	22	0,4	58	28	4
4148031	VDS202A02700	4142945	VDS402A02700	2,700	.1063	-	-	17	22	0,4	58	28	4
4148032	VDS202A02705	-	-	2,705	.1065	-	36	17	22	0,4	58	28	4
4148033	VDS202A02779	4142951	VDS402A02779	2,779	.1094	7/64	-	17	22	0,4	58	28	4
4148034	VDS202A02800	4142964	VDS402A02800	2,800	.1102	-	-	17	22	0,5	58	28	4
4148035	VDS202A02820	4142967	VDS402A02820	2,820	.1110	-	34	17	22	0,5	58	28	4
4148036	VDS202A02870	4142970	VDS402A02870	2,870	.1130	-	33	17	22	0,5	58	28	4
4148037	VDS202A02900	4142973	VDS402A02900	2,900	.1142	-	-	17	22	0,5	58	28	4
4148038	VDS202A02947	4142976	VDS402A02947	2,947	.1160	-	32	17	22	0,5	58	28	4
4148142	VDS202A03000	4142844	VDS402A03000	3,000	.1181	-	-	23	28	0,5	66	36	6
4148143	VDS202A03048	4142846	VDS402A03048	3,048	.1200	-	31	23	28	0,5	66	36	6
4148144	VDS202A03100	4142847	VDS402A03100	3,100	.1220	-	-	23	28	0,5	66	36	6
4148145	VDS202A03175	4142849	VDS402A03175	3,175	.1250	1/8	-	23	28	0,5	66	36	6
4148146	VDS202A03200	4142851	VDS402A03200	3,200	.1260	-	-	23	28	0,5	66	36	6
4148147	VDS202A03264	4142864	VDS402A03264	3,264	.1285	-	30	23	28	0,5	66	36	6
4148148	VDS202A03300	4142865	VDS402A03300	3,300	.1299	-	-	23	28	0,5	66	36	6
4148149	VDS202A03400	4142867	VDS402A03400	3,400	.1339	-	-	23	28	0,6	66	36	6
4148150	VDS202A03455	4142869	VDS402A03455	3,455	.1360	-	29	23	28	0,6	66	36	6
4148151	VDS202A03500	4142872	VDS402A03500	3,500	.1378	-	-	23	28	0,6	66	36	6

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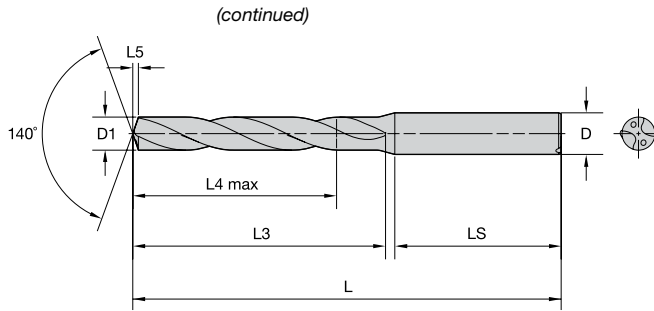
INDEXABLE MILLING

SOLID END MILLING

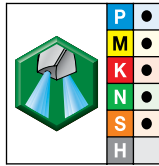
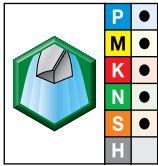
HOLEMAKING

TAPPING

TURNING



For information on L, L3, and L4 max, see page C46.

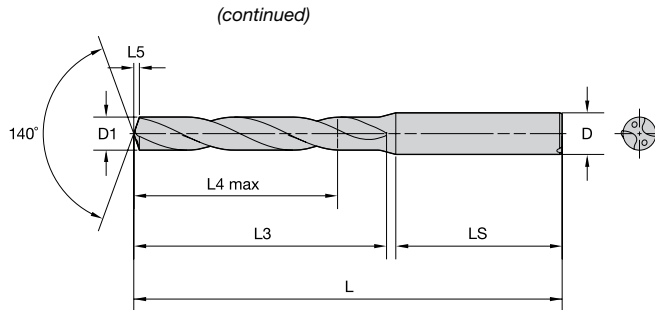


● first choice

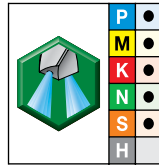
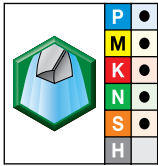
○ alternate choice

grade WU25PD TiAlN		grade WU25PD TiAlN		D1 diameter									
order #	catalog #	order #	catalog #	mm	in	fraction	wire size	L4 max	L3	L5	L	LS	D
4148152	VDS202A03571	4142885	VDS402A03571	3,571	.1406	9/64	—	23	28	0,6	66	36	6
4148153	VDS202A03600	4142888	VDS402A03600	3,600	.1417	—	—	23	28	0,6	66	36	6
4148154	VDS202A03658	4142891	VDS402A03658	3,658	.1440	—	27	23	28	0,6	66	36	6
4148155	VDS202A03700	4142894	VDS402A03700	3,700	.1457	—	—	23	28	0,6	66	36	6
4148156	VDS202A03734	4142897	VDS402A03734	3,734	.1470	—	26	23	28	0,6	66	36	6
4148157	VDS202A03800	4142900	VDS402A03800	3,800	.1496	—	—	29	36	0,6	74	36	6
4148158	VDS202A03900	4142903	VDS402A03900	3,900	.1535	—	—	29	36	0,6	74	36	6
4148159	VDS202A03970	4142906	VDS402A03970	3,970	.1563	5/32	—	29	36	0,7	74	36	6
4148160	VDS202A04000	4142909	VDS402A04000	4,000	.1575	—	—	29	36	0,7	74	36	6
4148161	VDS202A04039	4142912	VDS402A04039	4,039	.1590	—	21	29	36	0,7	74	36	6
4148162	VDS202A04090	4142925	VDS402A04090	4,090	.1610	—	20	29	36	0,7	74	36	6
4148163	VDS202A04100	4142928	VDS402A04100	4,100	.1614	—	—	29	36	0,7	74	36	6
4148164	VDS202A04200	4142931	VDS402A04200	4,200	.1654	—	—	29	36	0,7	74	36	6
4148165	VDS202A04217	4142934	VDS402A04217	4,217	.1660	—	19	29	36	0,7	74	36	6
4148166	VDS202A04300	4142937	VDS402A04300	4,300	.1693	—	—	29	36	0,7	74	36	6
4148167	VDS202A04366	4142940	VDS402A04366	4,366	.1719	11/64	—	29	36	0,7	74	36	6
4148168	VDS202A04400	4142943	VDS402A04400	4,400	.1732	—	—	29	36	0,7	74	36	6
4148169	VDS202A04500	4142946	VDS402A04500	4,500	.1772	—	—	29	36	0,7	74	36	6
4148170	VDS202A04600	4142949	VDS402A04600	4,600	.1811	—	—	29	36	0,8	74	36	6
4148171	VDS202A04623	4142952	VDS402A04623	4,623	.1820	—	14	29	36	0,8	74	36	6
4148172	VDS202A04700	4142965	VDS402A04700	4,700	.1850	—	13	29	36	0,8	74	36	6
4148173	VDS202A04763	4142968	VDS402A04763	4,763	.1875	3/16	—	35	44	0,8	82	36	6
4148174	VDS202A04800	4142971	VDS402A04800	4,800	.1890	—	12	35	44	0,8	82	36	6
4148175	VDS202A04852	4142974	VDS402A04852	4,852	.1910	—	11	35	44	0,8	82	36	6
4148176	VDS202A04900	4142977	VDS402A04900	4,900	.1929	—	—	35	44	0,8	82	36	6
4148177	VDS202A05000	4142979	VDS402A05000	5,000	.1969	—	—	35	44	0,8	82	36	6
4148178	VDS202A05100	4142981	VDS402A05100	5,100	.2008	—	—	35	44	0,9	82	36	6
4148179	VDS202A05106	4142984	VDS402A05106	5,106	.2010	—	7	35	44	0,9	82	36	6
4148180	VDS202A05159	4142996	VDS402A05159	5,159	.2031	13/64	—	35	44	0,9	82	36	6
4148181	VDS202A05200	4142997	VDS402A05200	5,200	.2047	—	—	35	44	0,9	82	36	6
4148182	VDS202A05300	4142999	VDS402A05300	5,300	.2087	—	—	35	44	0,9	82	36	6
4148183	VDS202A05400	4143000	VDS402A05400	5,400	.2126	—	—	35	44	0,9	82	36	6
4148184	VDS202A05410	4143001	VDS402A05410	5,410	.2130	—	3	35	44	0,9	82	36	6
4148185	VDS202A05500	4143002	VDS402A05500	5,500	.2165	—	—	35	44	0,9	82	36	6
4148186	VDS202A05558	4143003	VDS402A05558	5,558	.2188	7/32	—	35	44	0,9	82	36	6
4148187	VDS202A05600	4143004	VDS402A05600	5,600	.2205	—	—	35	44	0,9	82	36	6
4148188	VDS202A05616	4143005	VDS402A05616	5,616	.2211	—	2	35	44	0,9	82	36	6
4148189	VDS202A05700	4143006	VDS402A05700	5,700	.2244	—	—	35	44	1,0	82	36	6
4148190	VDS202A05800	4143007	VDS402A05800	5,800	.2283	—	—	35	44	1,0	82	36	6
4148191	VDS202A05900	4143008	VDS402A05900	5,900	.2323	—	—	35	44	1,0	82	36	6
4148192	VDS202A05954	4143009	VDS402A05954	5,954	.2344	15/64	—	35	44	1,0	82	36	6
4148193	VDS202A06000	4143010	VDS402A06000	6,000	.2362	—	—	35	44	1,0	82	36	6
4148194	VDS202A06100	4143011	VDS402A06100	6,100	.2402	—	—	43	53	1,0	91	36	8
4148195	VDS202A06200	4143012	VDS402A06200	6,200	.2441	—	—	43	53	1,0	91	36	8
4148196	VDS202A06300	4143023	VDS402A06300	6,300	.2480	—	—	43	53	1,1	91	36	8
4148197	VDS202A06350	4143024	VDS402A06350	6,350	.2500	1/4	E	43	53	1,1	91	36	8
4148198	VDS202A06400	4143025	VDS402A06400	6,400	.2520	—	—	43	53	1,1	91	36	8
4148199	VDS202A06500	4143026	VDS402A06500	6,500	.2559	—	—	43	53	1,1	91	36	8

VariDrill • 5 x D • VDS202A / VDS402A • A-Shank



For information on L, L3, and L4 max, see page C46.



● first choice
○ alternate choice

grade WU25PD TiAlN		grade WU25PD TiAlN		D1 diameter									
order #	catalog #	order #	catalog #	mm	in	fraction	wire size	L4 max	L3	L5	L	LS	D
4148200	VDS202A06528	4143027	VDS402A06528	6,528	.2570	—	F	43	53	1,1	91	36	8
4148201	VDS202A06600	4143028	VDS402A06600	6,600	.2598	—	—	43	53	1,1	91	36	8
4148202	VDS202A06630	4143029	VDS402A06630	6,630	.2610	—	G	43	53	1,1	91	36	8
4148203	VDS202A06700	4143030	VDS402A06700	6,700	.2638	—	—	43	53	1,1	91	36	8
4148204	VDS202A06746	4143031	VDS402A06746	6,746	.2656	17/64	—	43	53	1,1	91	36	8
4148205	VDS202A06800	4143032	VDS402A06800	6,800	.2677	—	—	43	53	1,1	91	36	8
4148206	VDS202A06900	4143043	VDS402A06900	6,900	.2717	—	—	43	53	1,2	91	36	8
4148207	VDS202A07000	4143044	VDS402A07000	7,000	.2756	—	—	43	53	1,2	91	36	8
4148208	VDS202A07100	4143045	VDS402A07100	7,100	.2795	—	—	43	53	1,2	91	36	8
4148209	VDS202A07145	4143046	VDS402A07145	7,145	.2813	9/32	—	43	53	1,2	91	36	8
4148210	VDS202A07200	4143047	VDS402A07200	7,200	.2835	—	—	43	53	1,2	91	36	8
4148211	VDS202A07300	4143048	VDS402A07300	7,300	.2874	—	—	43	53	1,2	91	36	8
4148212	VDS202A07400	4143049	VDS402A07400	7,400	.2913	—	—	43	53	1,3	91	36	8
4148213	VDS202A07500	4143050	VDS402A07500	7,500	.2953	—	—	43	53	1,3	91	36	8
4148214	VDS202A07541	4143051	VDS402A07541	7,541	.2969	19/64	—	43	53	1,3	91	36	8
4148215	VDS202A07600	4143052	VDS402A07600	7,600	.2992	—	—	43	53	1,3	91	36	8
4148216	VDS202A07700	4143063	VDS402A07700	7,700	.3031	—	—	43	53	1,3	91	36	8
4148217	VDS202A07800	4143064	VDS402A07800	7,800	.3071	—	—	43	53	1,3	91	36	8
4148218	VDS202A07900	4143065	VDS402A07900	7,900	.3110	—	—	43	53	1,3	91	36	8
4148219	VDS202A07938	4143066	VDS402A07938	7,938	.3125	5/16	—	43	53	1,3	91	36	8
4148220	VDS202A08000	4143067	VDS402A08000	8,000	.3150	—	—	43	53	1,4	91	36	8
4148221	VDS202A08100	4143068	VDS402A08100	8,100	.3189	—	—	49	61	1,4	103	40	10
4148222	VDS202A08200	4143069	VDS402A08200	8,200	.3228	—	—	49	61	1,4	103	40	10
4148223	VDS202A08300	4143070	VDS402A08300	8,300	.3268	—	—	49	61	1,4	103	40	10
4148224	VDS202A08334	4143071	VDS402A08334	8,334	.3281	21/64	—	49	61	1,4	103	40	10
4148225	VDS202A08400	4143072	VDS402A08400	8,400	.3307	—	—	49	61	1,4	103	40	10
4148226	VDS202A08433	4143083	VDS402A08433	8,433	.3320	—	Q	49	61	1,4	103	40	10
4148227	VDS202A08500	4143084	VDS402A08500	8,500	.3346	—	—	49	61	1,4	103	40	10
4148228	VDS202A08600	4143085	VDS402A08600	8,600	.3386	—	—	49	61	1,5	103	40	10
4148229	VDS202A08700	4143086	VDS402A08700	8,700	.3425	—	—	49	61	1,5	103	40	10
4148230	VDS202A08733	4143087	VDS402A08733	8,733	.3438	11/32	—	49	61	1,5	103	40	10
4148231	VDS202A08800	4143088	VDS402A08800	8,800	.3465	—	—	49	61	1,5	103	40	10
4148232	VDS202A08900	4143089	VDS402A08900	8,900	.3504	—	—	49	61	1,5	103	40	10
4148233	VDS202A09000	4143090	VDS402A09000	9,000	.3543	—	—	49	61	1,5	103	40	10
4148234	VDS202A09100	4143091	VDS402A09100	9,100	.3583	—	—	49	61	1,6	103	40	10
4148235	VDS202A09129	4143092	VDS402A09129	9,129	.3594	23/64	—	49	61	1,6	103	40	10
4148236	VDS202A09200	4143103	VDS402A09200	9,200	.3622	—	—	49	61	1,6	103	40	10
4148237	VDS202A09300	4143104	VDS402A09300	9,300	.3661	—	—	49	61	1,6	103	40	10
4148238	VDS202A09347	4143105	VDS402A09347	9,347	.3680	—	U	49	61	1,6	103	40	10
4148239	VDS202A09400	4143106	VDS402A09400	9,400	.3701	—	—	49	61	1,6	103	40	10
4148240	VDS202A09500	4143107	VDS402A09500	9,500	.3740	—	—	49	61	1,6	103	40	10
4148241	VDS202A09525	4143108	VDS402A09525	9,525	.3750	3/8	—	49	61	1,6	103	40	10
4148242	VDS202A09600	4143109	VDS402A09600	9,600	.3780	—	—	49	61	1,6	103	40	10
4148243	VDS202A09700	4143110	VDS402A09700	9,700	.3819	—	—	49	61	1,7	103	40	10
4148244	VDS202A09800	4143111	VDS402A09800	9,800	.3858	—	—	49	61	1,7	103	40	10
4148245	VDS202A09900	4143112	VDS402A09900	9,900	.3898	—	—	49	61	1,7	103	40	10
4148246	VDS202A09921	4143113	VDS402A09921	9,921	.3906	25/64	—	49	61	1,7	103	40	10
4148258	VDS202A10000	4142823	VDS402A10000	10,000	.3937	—	—	49	61	1,7	103	40	10

VariDrill • 5 x D • VDS202A / VDS402A • A-Shank

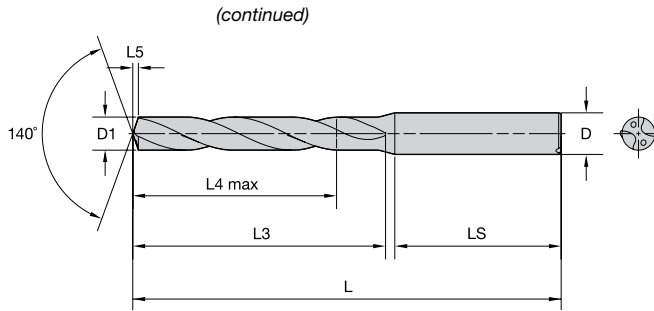
INDEXABLE MILLING

SOLID END MILLING

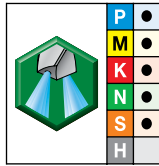
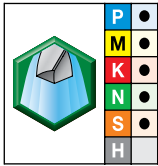
HOLEMAKING

TAPPING

TURNING



For information on L, L3, and L4 max, see page C46.

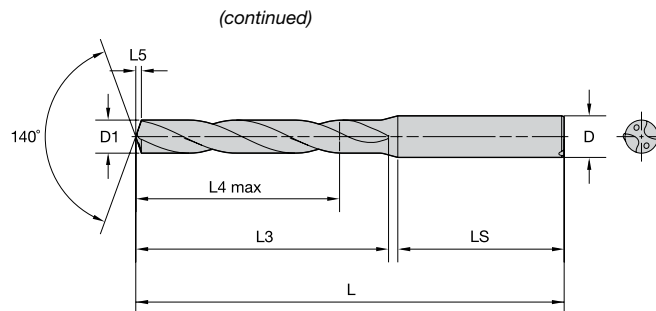


● first choice

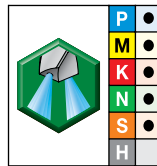
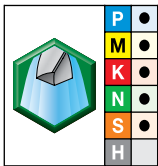
○ alternate choice

grade WU25PD TiAlN		grade WU25PD TiAlN		D1 diameter			wire size	L4 max	L3	L5	L	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction							
4148259	VDS202A10100	4142825	VDS402A10100	10,100	.3976	—	—	56	71	1,7	118	45	12
4148260	VDS202A10200	4142827	VDS402A10200	10,200	.4016	—	—	56	71	1,7	118	45	12
4148261	VDS202A10300	4142829	VDS402A10300	10,300	.4055	—	—	56	71	1,8	118	45	12
4148262	VDS202A10320	4142831	VDS402A10320	10,320	.4063	13/32	—	56	71	1,8	118	45	12
4148283	VDS202A10400	4142832	VDS402A10400	10,400	.4094	—	—	56	71	1,8	118	45	12
4148284	VDS202A10500	4142834	VDS402A10500	10,500	.4134	—	—	56	71	1,8	118	45	12
4148285	VDS202A10600	4142836	VDS402A10600	10,600	.4173	—	—	56	71	1,8	118	45	12
4148286	VDS202A10700	4142838	VDS402A10700	10,700	.4213	—	—	56	71	1,8	118	45	12
4148287	VDS202A10716	4142840	VDS402A10716	10,716	.4219	27/64	—	56	71	1,8	118	45	12
4148288	VDS202A10800	4142842	VDS402A10800	10,800	.4252	—	—	56	71	1,9	118	45	12
4148289	VDS202A10900	4142855	VDS402A10900	10,900	.4291	—	—	56	71	1,9	118	45	12
4148290	VDS202A11000	4142857	VDS402A11000	11,000	.4331	—	—	56	71	1,9	118	45	12
4148291	VDS202A11100	4142858	VDS402A11100	11,100	.4370	—	—	56	71	1,9	118	45	12
4148292	VDS202A11113	4142861	VDS402A11113	11,113	.4375	7/16	—	56	71	1,9	118	45	12
4148293	VDS202A11200	4142862	VDS402A11200	11,200	.4409	—	—	56	71	1,9	118	45	12
4148294	VDS202A11300	4142873	VDS402A11300	11,300	.4449	—	—	56	71	1,9	118	45	12
4148295	VDS202A11400	4142874	VDS402A11400	11,400	.4488	—	—	56	71	2,0	118	45	12
4148296	VDS202A11500	4142875	VDS402A11500	11,500	.4528	—	—	56	71	2,0	118	45	12
4148297	VDS202A11509	4142876	VDS402A11509	11,509	.4531	29/64	—	56	71	2,0	118	45	12
4148298	VDS202A11600	4142877	VDS402A11600	11,600	.4567	—	—	56	71	2,0	118	45	12
4148299	VDS202A11700	4142878	VDS402A11700	11,700	.4606	—	—	56	71	2,0	118	45	12
4148300	VDS202A11800	4142879	VDS402A11800	11,800	.4646	—	—	56	71	2,0	118	45	12
4148301	VDS202A11900	4142880	VDS402A11900	11,900	.4685	—	—	56	71	2,0	118	45	12
4148302	VDS202A11908	4142881	VDS402A11908	11,908	.4688	15/32	—	56	71	2,0	118	45	12
4148313	VDS202A12000	4142882	VDS402A12000	12,000	.4724	—	—	56	71	2,1	118	45	12
4148314	VDS202A12100	4142913	VDS402A12100	12,100	.4764	—	—	60	77	2,1	124	45	14
4148315	VDS202A12200	4142914	VDS402A12200	12,200	.4803	—	—	60	77	2,1	124	45	14
4148316	VDS202A12300	4142915	VDS402A12300	12,300	.4843	—	—	60	77	2,1	124	45	14
4148317	VDS202A12304	4142916	VDS402A12304	12,304	.4844	31/64	—	60	77	2,1	124	45	14
4148318	VDS202A12400	4142917	VDS402A12400	12,400	.4882	—	—	60	77	2,1	124	45	14
4148319	VDS202A12500	4142918	VDS402A12500	12,500	.4921	—	—	60	77	2,2	124	45	14
4148320	VDS202A12600	4142919	VDS402A12600	12,600	.4961	—	—	60	77	2,2	124	45	14
4148321	VDS202A12700	4142920	VDS402A12700	12,700	.5000	1/2	—	60	77	2,2	124	45	14
4148322	VDS202A12800	4142921	VDS402A12800	12,800	.5039	—	—	60	77	2,2	124	45	14
4148343	VDS202A12900	4142922	VDS402A12900	12,900	.5079	—	—	60	77	2,2	124	45	14
4148344	VDS202A13000	4142953	VDS402A13000	13,000	.5118	—	—	60	77	2,2	124	45	14
4148345	VDS202A13096	4142954	VDS402A13096	13,096	.5156	33/64	—	60	77	2,3	124	45	14
4148346	VDS202A13100	4142955	VDS402A13100	13,100	.5157	—	—	60	77	2,3	124	45	14
4148347	VDS202A13200	4142956	VDS402A13200	13,200	.5197	—	—	60	77	2,3	124	45	14
4148348	VDS202A13300	4142957	VDS402A13300	13,300	.5236	—	—	60	77	2,3	124	45	14
4148349	VDS202A13400	4142958	VDS402A13400	13,400	.5276	—	—	60	77	2,3	124	45	14
4148350	VDS202A13500	4142959	VDS402A13500	13,500	.5315	—	—	60	77	2,3	124	45	14
4148351	VDS202A13600	4142960	VDS402A13600	13,600	.5354	—	—	60	77	2,3	124	45	14
4148352	VDS202A13700	4142961	VDS402A13700	13,700	.5394	—	—	60	77	2,4	124	45	14
4148353	VDS202A13800	4142962	VDS402A13800	13,800	.5433	—	—	60	77	2,4	124	45	14
4148354	VDS202A13891	4142983	VDS402A13891	13,891	.5469	35/64	—	60	77	2,4	124	45	14
4148355	VDS202A13900	4142984	VDS402A13900	13,900	.5472	—	—	60	77	2,4	124	45	14
4148356	VDS202A14000	4142985	VDS402A14000	14,000	.5512	—	—	60	77	2,4	124	45	14

VariDrill • 5 x D • VDS202A / VDS402A • A-Shank



For information on L, L3, and L4 max, see page C46.

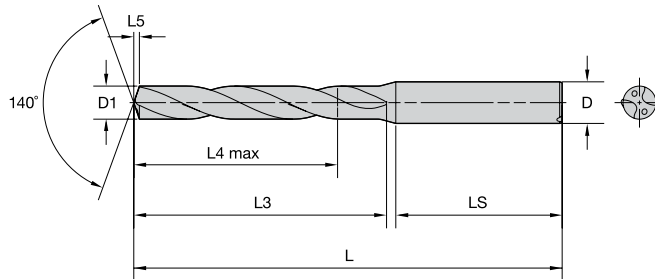


● first choice
○ alternate choice

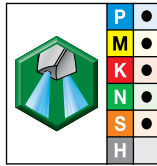
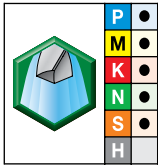
grade WU25PD TiAlN		grade WU25PD TiAlN		D1 diameter				L4 max	L3	L5	L	LS	D
order #	catalog #	order #	catalog #	mm	in	fraction	wire size						
4148357	VDS202A14100	4142986	VDS402A14100	14,100	.5551	—	—	63	83	2,4	133	48	16
4148358	VDS202A14200	4142987	VDS402A14200	14,200	.5591	—	—	63	83	2,5	133	48	16
4148359	VDS202A14288	4142988	VDS402A14288	14,288	.5625	9/16	—	63	83	2,5	133	48	16
4148360	VDS202A14300	4142989	VDS402A14300	14,300	.5630	—	—	63	83	2,5	133	48	16
4148361	VDS202A14400	4142990	VDS402A14400	14,400	.5669	—	—	63	83	2,5	133	48	16
4148362	VDS202A14500	4142991	VDS402A14500	14,500	.5709	—	—	63	83	2,5	133	48	16
4148363	VDS202A14600	4142992	VDS402A14600	14,600	.5748	—	—	63	83	2,5	133	48	16
4148364	VDS202A14684	4143013	VDS402A14684	14,684	.5781	37/64	—	63	83	2,5	133	48	16
4148365	VDS202A14700	4143014	VDS402A14700	14,700	.5787	—	—	63	83	2,5	133	48	16
4148366	VDS202A14800	4143015	VDS402A14800	14,800	.5827	—	—	63	83	2,6	133	48	16
4148367	VDS202A14900	4143016	VDS402A14900	14,900	.5866	—	—	63	83	2,6	133	48	16
4148368	VDS202A15000	4143017	VDS402A15000	15,000	.5906	—	—	63	83	2,6	133	48	16
4148369	VDS202A15083	4143018	VDS402A15083	15,083	.5938	19/32	—	63	83	2,6	133	48	16
4148370	VDS202A15100	4143019	VDS402A15100	15,100	.5945	—	—	63	83	2,6	133	48	16
4148371	VDS202A15200	4143020	VDS402A15200	15,200	.5984	—	—	63	83	2,6	133	48	16
4148372	VDS202A15300	4143021	VDS402A15300	15,300	.6024	—	—	63	83	2,6	133	48	16
—	—	4143022	VDS402A15400	15,400	.6063	—	—	63	83	2,7	133	48	16
—	—	4143033	VDS402A15479	15,479	.6094	39/64	—	63	83	2,7	133	48	16
4148375	VDS202A15500	4143034	VDS402A15500	15,500	.6102	—	—	63	83	2,7	133	48	16
4148376	VDS202A15600	4143035	VDS402A15600	15,600	.6142	—	—	63	83	2,7	133	48	16
4148377	VDS202A15700	4143036	VDS402A15700	15,700	.6181	—	—	63	83	2,7	133	48	16
4148378	VDS202A15800	4143037	VDS402A15800	15,800	.6220	—	—	63	83	2,7	133	48	16
4148379	VDS202A15875	4143038	VDS402A15875	15,875	.6250	5/8	—	63	83	2,8	133	48	16
4148380	VDS202A15900	4143039	VDS402A15900	15,900	.6260	—	—	63	83	2,8	133	48	16
4148381	VDS202A16000	4143040	VDS402A16000	16,000	.6299	—	—	63	83	2,8	133	48	16
4148382	VDS202A16100	4143041	VDS402A16100	16,100	.6339	—	—	71	93	2,8	143	48	18
4148383	VDS202A16200	4143042	VDS402A16200	16,200	.6378	—	—	71	93	2,8	143	48	18
4148384	VDS202A16271	4143053	VDS402A16271	16,271	.6406	41/64	—	71	93	2,8	143	48	18
4148385	VDS202A16300	4143054	VDS402A16300	16,300	.6417	—	—	71	93	2,8	143	48	18
—	—	4143055	VDS402A16400	16,400	.6457	—	—	71	93	2,8	143	48	18
4148387	VDS202A16500	4143056	VDS402A16500	16,500	.6496	—	—	71	93	2,9	143	48	18
4148388	VDS202A16600	4143057	VDS402A16600	16,600	.6535	—	—	71	93	2,9	143	48	18
4148389	VDS202A16670	4143058	VDS402A16670	16,670	.6563	21/32	—	71	93	2,9	143	48	18
—	—	4143059	VDS402A16700	16,700	.6575	—	—	71	93	2,9	143	48	18
4148391	VDS202A16800	4143060	VDS402A16800	16,800	.6614	—	—	71	93	2,9	143	48	18
—	—	4143061	VDS402A16900	16,900	.6654	—	—	71	93	2,9	143	48	18
4148393	VDS202A17000	4143062	VDS402A17000	17,000	.6693	—	—	71	93	3,0	143	48	18
4148394	VDS202A17100	4143073	VDS402A17100	17,100	.6732	—	—	71	93	3,0	143	48	18
—	—	4143074	VDS402A17200	17,200	.6772	—	—	71	93	3,0	143	48	18
4148396	VDS202A17300	4143075	VDS402A17300	17,300	.6811	—	—	71	93	3,0	143	48	18
—	—	4143076	VDS402A17400	17,400	.6850	—	—	71	93	3,0	143	48	18
4148398	VDS202A17463	4143077	VDS402A17463	17,463	.6875	11/16	—	71	93	3,0	143	48	18
4148399	VDS202A17500	4143078	VDS402A17500	17,500	.6890	—	—	71	93	3,0	143	48	18
4148400	VDS202A17600	4143079	VDS402A17600	17,600	.6929	—	—	71	93	3,1	143	48	18
4148401	VDS202A17700	4143080	VDS402A17700	17,700	.6969	—	—	71	93	3,1	143	48	18
4148402	VDS202A17800	4143081	VDS402A17800	17,800	.7008	—	—	71	93	3,1	143	48	18
—	—	4143082	VDS402A17859	17,859	.7031	45/64	—	71	93	3,1	143	48	18
—	—	4143093	VDS402A17900	17,900	.7047	—	—	71	93	3,1	143	48	18

VariDrill • 5 x D • VDS202A / VDS402A • A-Shank

(continued)



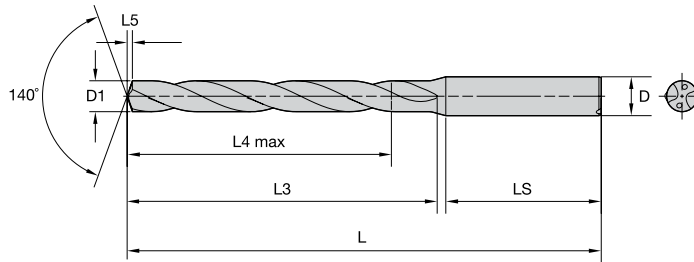
For information on L, L3, and L4 max, see page C46.



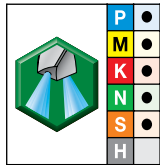
● first choice
○ alternate choice

grade WU25PD TiAlN		grade WU25PD TiAlN		D1 diameter									
order #	catalog #	order #	catalog #	mm	in	fraction	wire size	L4 max	L3	L5	L	LS	D
4147921	VDS202A18000	4142803	VDS402A18000	18,000	.7087	—	—	71	93	3,1	143	48	18
4147922	VDS202A18100	4142804	VDS402A18100	18,100	.7126	—	—	77	101	3,1	153	50	20
4148303	VDS202A18200	4142805	VDS402A18200	18,200	.7165	—	—	77	101	3,2	153	50	20
4148304	VDS202A18258	4142806	VDS402A18258	18,258	.7188	23/32	—	77	101	3,2	153	50	20
—	—	4142807	VDS402A18300	18,300	.7205	—	—	77	101	3,2	153	50	20
—	—	4142808	VDS402A18400	18,400	.7244	—	—	77	101	3,2	153	50	20
4148307	VDS202A18500	4142809	VDS402A18500	18,500	.7283	—	—	77	101	3,2	153	50	20
—	—	4142810	VDS402A18600	18,600	.7323	—	—	77	101	3,2	153	50	20
—	—	4142811	VDS402A18654	18,654	.7344	47/64	—	77	101	3,2	153	50	20
—	—	4142812	VDS402A18700	18,700	.7362	—	—	77	101	3,3	153	50	20
4148311	VDS202A18800	4142824	VDS402A18800	18,800	.7402	—	—	77	101	3,3	153	50	20
—	—	4142826	VDS402A18900	18,900	.7441	—	—	77	101	3,3	153	50	20
4148323	VDS202A19000	4142828	VDS402A19000	19,000	.7480	—	—	77	101	3,3	153	50	20
4148324	VDS202A19050	4142830	VDS402A19050	19,050	.7500	3/4	—	77	101	3,3	153	50	20
4148325	VDS202A19100	4142833	VDS402A19100	19,100	.7520	—	—	77	101	3,3	153	50	20
—	—	4142835	VDS402A19200	19,200	.7559	—	—	77	101	3,3	153	50	20
4148327	VDS202A19300	4142837	VDS402A19300	19,300	.7598	—	—	77	101	3,4	153	50	20
4148328	VDS202A19400	4142839	VDS402A19400	19,400	.7638	—	—	77	101	3,4	153	50	20
4148329	VDS202A19500	4142841	VDS402A19500	19,500	.7677	—	—	77	101	3,4	153	50	20
—	—	4142853	VDS402A19600	19,600	.7717	—	—	77	101	3,4	153	50	20
—	—	4142854	VDS402A19700	19,700	.7756	—	—	77	101	3,4	153	50	20
4148332	VDS202A19800	4142856	VDS402A19800	19,800	.7795	—	—	77	101	3,4	153	50	20
4148333	VDS202A19900	4142859	VDS402A19900	19,900	.7835	—	—	77	101	3,5	153	50	20
4148334	VDS202A20000	4142860	VDS402A20000	20,000	.7874	—	—	77	101	3,5	153	50	20

VariDrill • 8 x D • VDS403A • A-Shank



For information on L, L3, and L4 max, see page C46.



● first choice
○ alternate choice

grade WU25PD TiAlN		D1 diameter					L4 max	L3	L5	L	LS	D
order #	catalog #	mm	in	fraction	wire size							
6023126	VDS403A01000	1,000	.0394	—	—	10	12	0,2	58	28	4	
6023129	VDS403A01100	1,100	.0433	—	—	10	12	0,2	58	28	4	
6023132	VDS403A01200	1,200	.0472	—	—	10	12	0,2	58	28	4	
6023133	VDS403A01300	1,300	.0512	—	—	10	12	0,2	58	28	4	
6023134	VDS403A01321	1,321	.0520	—	55	10	12	0,2	58	28	4	
6023136	VDS403A01400	1,400	.0551	—	—	10	12	0,2	58	28	4	
4143700	VDS403A01500	1,500	.0591	—	—	15	18	0,2	58	28	4	
4143701	VDS403A01600	1,600	.0630	—	—	15	18	0,2	58	28	4	
4143702	VDS403A01700	1,700	.0669	—	—	15	18	0,3	58	28	4	
4143723	VDS403A01800	1,800	.0709	—	—	15	18	0,3	58	28	4	
4143724	VDS403A01900	1,900	.0748	—	—	15	18	0,3	58	28	4	
4143725	VDS403A01984	1,984	.0781	5/64	—	22	26	0,3	66	28	4	
4143726	VDS403A02000	2,000	.0787	—	—	22	26	0,3	66	28	4	
4143727	VDS403A02100	2,100	.0827	—	—	22	26	0,3	66	28	4	
4143728	VDS403A02200	2,200	.0866	—	—	22	26	0,3	66	28	4	
4143729	VDS403A02300	2,300	.0906	—	—	22	26	0,4	66	28	4	
4143730	VDS403A02383	2,383	.0938	3/32	—	25	30	0,4	66	28	4	
4143731	VDS403A02400	2,400	.0945	—	—	25	30	0,4	66	28	4	
4143732	VDS403A02439	2,439	.0960	—	41	25	30	0,4	66	28	4	
4143733	VDS403A02489	2,489	.0980	—	40	25	30	0,4	66	28	4	
4143734	VDS403A02500	2,500	.0984	—	—	25	30	0,4	66	28	4	
4143735	VDS403A02578	2,578	.1015	—	38	25	30	0,4	66	28	4	
4143736	VDS403A02600	2,600	.1024	—	—	25	30	0,4	66	28	4	
4143737	VDS403A02642	2,642	.1040	—	37	25	30	0,4	66	28	4	
4143738	VDS403A02700	2,700	.1063	—	—	25	30	0,4	66	28	4	
4143739	VDS403A02705	2,705	.1065	—	36	25	30	0,4	66	28	4	
4143740	VDS403A02779	2,779	.1094	7/64	—	25	30	0,5	66	28	4	
4143741	VDS403A02800	2,800	.1102	—	—	25	30	0,5	66	28	4	
4143742	VDS403A02820	2,820	.1110	—	34	25	30	0,5	66	28	4	
4143743	VDS403A02870	2,870	.1130	—	33	25	30	0,5	66	28	4	
4143744	VDS403A02900	2,900	.1142	—	—	25	30	0,5	66	28	4	
4143745	VDS403A02947	2,947	.1160	—	32	25	30	0,5	66	28	4	
4143746	VDS403A03000	3,000	.1181	—	—	33	40	0,5	78	36	6	
4143747	VDS403A03048	3,048	.1200	—	31	33	40	0,5	78	36	6	
4143748	VDS403A03100	3,100	.1220	—	—	33	40	0,5	78	36	6	
4143749	VDS403A03175	3,175	.1250	1/8	—	33	40	0,5	78	36	6	
4143750	VDS403A03200	3,200	.1260	—	—	33	40	0,5	78	36	6	
4143751	VDS403A03264	3,264	.1285	—	30	33	40	0,5	78	36	6	
4143752	VDS403A03300	3,300	.1299	—	30	33	40	0,5	78	36	6	
4143753	VDS403A03400	3,400	.1339	—	—	33	40	0,6	78	36	6	
4143754	VDS403A03455	3,455	.1360	—	29	33	40	0,6	78	36	6	
4143755	VDS403A03500	3,500	.1378	—	21	33	40	0,6	78	36	6	
4143756	VDS403A03571	3,571	.1406	9/64	—	33	40	0,6	78	36	6	
4143757	VDS403A03600	3,600	.1417	—	—	33	40	0,6	78	36	6	
4143758	VDS403A03658	3,658	.1440	—	27	33	40	0,6	78	36	6	
4143759	VDS403A03700	3,700	.1457	—	—	33	40	0,6	78	36	6	
4143760	VDS403A03734	3,734	.1470	—	26	33	40	0,6	78	36	6	
4143761	VDS403A03800	3,800	.1496	—	—	41	49	0,6	87	36	6	
4143762	VDS403A03900	3,900	.1535	—	—	41	49	0,6	87	36	6	
4143763	VDS403A03970	3,970	.1563	5/32	—	41	49	0,7	87	36	6	
4143764	VDS403A04000	4,000	.1575	—	—	41	49	0,7	87	36	6	
4143765	VDS403A04039	4,039	.1590	—	21	41	49	0,7	87	36	6	

INDEXABLE MILLING

SOLID END MILLING

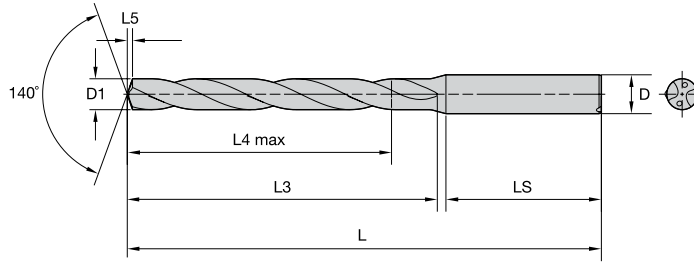
HOLEMAKING

TAPPING

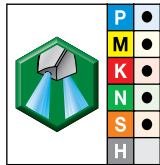
TURNING

VariDrill • 8 x D • VDS403A • A-Shank

(continued)



For information on L, L3, and L4 max, see page C46.

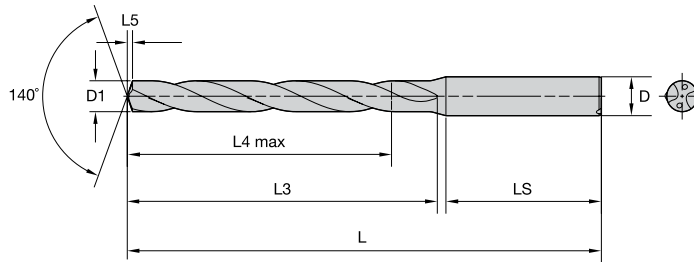


● first choice
○ alternate choice

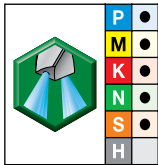
grade WU25PD TiAlN		D1 diameter					L4 max	L3	L5	L	LS	D
order #	catalog #	mm	in	fraction	wire size							
4143766	VDS403A04090	4,090	.1610	—	20	41	49	0,7	87	36	6	
4143767	VDS403A04100	4,100	.1614	—	—	41	49	0,7	87	36	6	
4143768	VDS403A04200	4,200	.1654	—	—	41	49	0,7	87	36	6	
4143769	VDS403A04217	4,217	.1660	—	19	41	49	0,7	87	36	6	
4143770	VDS403A04300	4,300	.1693	—	14	41	49	0,7	87	36	6	
4143771	VDS403A04366	4,366	.1719	11/64	—	41	49	0,7	87	36	6	
4143772	VDS403A04400	4,400	.1732	—	—	41	49	0,7	87	36	6	
4143773	VDS403A04500	4,500	.1772	—	—	41	49	0,7	87	36	6	
4143774	VDS403A04600	4,600	.1811	—	19	41	49	0,8	87	36	6	
4143775	VDS403A04623	4,623	.1820	—	14	41	49	0,8	87	36	6	
4143776	VDS403A04700	4,700	.1850	—	13	41	49	0,8	87	36	6	
4143777	VDS403A04763	4,763	.1875	3/16	13	48	56	0,8	94	36	6	
4143778	VDS403A04800	4,800	.1890	—	12	48	56	0,8	94	36	6	
4143779	VDS403A04852	4,852	.1910	—	11	48	56	0,8	94	36	6	
4143780	VDS403A04900	4,900	.1929	—	—	48	56	0,8	94	36	6	
4143781	VDS403A05000	5,000	.1969	—	—	48	56	0,8	94	36	6	
4143782	VDS403A05100	5,100	.2008	—	—	48	56	0,9	94	36	6	
4143783	VDS403A05106	5,106	.2010	—	7	48	56	0,9	94	36	6	
4143784	VDS403A05159	5,159	.2031	13/64	—	48	56	0,9	94	36	6	
4143785	VDS403A05200	5,200	.2047	—	—	48	56	0,9	94	36	6	
4143786	VDS403A05300	5,300	.2087	—	12	48	56	0,9	94	36	6	
4143787	VDS403A05400	5,400	.2126	—	7	48	56	0,9	94	36	6	
4143788	VDS403A05410	5,410	.2130	—	3	48	56	0,9	94	36	6	
4143789	VDS403A05500	5,500	.2165	—	3	48	56	0,9	94	36	6	
4143790	VDS403A05558	5,558	.2188	7/32	2	48	56	0,9	94	36	6	
4143791	VDS403A05600	5,600	.2205	—	—	48	56	0,9	94	36	6	
4143792	VDS403A05616	5,616	.2211	—	2	48	56	0,9	94	36	6	
4143793	VDS403A05700	5,700	.2244	—	—	48	56	1,0	94	36	6	
4143794	VDS403A05800	5,800	.2283	—	—	48	56	1,0	94	36	6	
4143795	VDS403A05900	5,900	.2323	—	—	48	56	1,0	94	36	6	
4143796	VDS403A05954	5,954	.2344	15/64	—	48	56	1,0	94	36	6	
4143797	VDS403A06000	6,000	.2362	—	—	48	56	1,0	94	36	6	
4143798	VDS403A06100	6,100	.2402	—	—	57	67	1,0	105	36	8	
4143799	VDS403A06200	6,200	.2441	—	F	57	67	1,0	105	36	8	
4143800	VDS403A06300	6,300	.2480	—	—	57	67	1,1	105	36	8	
4143801	VDS403A06350	6,350	.2500	1/4	E	57	67	1,1	105	36	8	
4143802	VDS403A06400	6,400	.2520	—	—	57	67	1,1	105	36	8	
4143803	VDS403A06500	6,500	.2559	—	—	57	67	1,1	105	36	8	
4143804	VDS403A06528	6,528	.2570	—	F	57	67	1,1	105	36	8	
4143805	VDS403A06600	6,600	.2598	—	E	57	67	1,1	105	36	8	
4143806	VDS403A06630	6,630	.2610	—	G	57	67	1,1	105	36	8	
4143807	VDS403A06700	6,700	.2638	—	—	57	67	1,1	105	36	8	
4143808	VDS403A06746	6,746	.2656	17/64	—	57	67	1,1	105	36	8	
4143809	VDS403A06800	6,800	.2677	—	—	57	67	1,1	105	36	8	
4143810	VDS403A06900	6,900	.2717	—	—	57	67	1,2	105	36	8	
4143811	VDS403A07000	7,000	.2756	—	—	57	67	1,2	105	36	8	
4143812	VDS403A07100	7,100	.2795	—	—	61	72	1,2	110	36	8	
4143813	VDS403A07145	7,145	.2813	9/32	—	61	72	1,2	110	36	8	
4143814	VDS403A07200	7,200	.2835	—	—	61	72	1,2	110	36	8	
4143815	VDS403A07300	7,300	.2874	—	—	61	72	1,2	110	36	8	
4143816	VDS403A07400	7,400	.2913	—	—	61	72	1,3	110	36	8	
4143817	VDS403A07500	7,500	.2953	—	—	61	72	1,3	110	36	8	

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(continued)



For information on L, L3, and L4 max, see page C46.

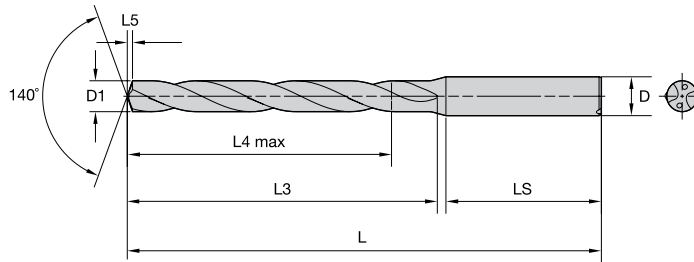


● first choice
○ alternate choice

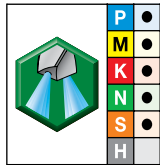
grade WU25PD TiAlN		D1 diameter					L4 max	L3	L5	L	LS	D
order #	catalog #	mm	in	fraction	wire size							
4143818	VDS403A07541	7,541	.2969	19/64	—	61	72	1,3	110	36	8	
4143819	VDS403A07600	7,600	.2992	—	—	61	72	1,3	110	36	8	
4143820	VDS403A07700	7,700	.3031	—	—	61	72	1,3	110	36	8	
4143821	VDS403A07800	7,800	.3071	—	—	61	72	1,3	110	36	8	
4143822	VDS403A07900	7,900	.3110	—	—	61	72	1,3	110	36	8	
4143823	VDS403A07938	7,938	.3125	5/16	Q	61	72	1,3	110	36	8	
4143824	VDS403A08000	8,000	.3150	—	—	61	72	1,4	110	36	8	
4143825	VDS403A08100	8,100	.3189	—	—	68	80	1,4	122	40	10	
4143826	VDS403A08200	8,200	.3228	—	—	68	80	1,4	122	40	10	
4143827	VDS403A08300	8,300	.3268	—	—	68	80	1,4	122	40	10	
4143828	VDS403A08334	8,334	.3281	21/64	—	68	80	1,4	122	40	10	
4143829	VDS403A08400	8,400	.3307	—	—	68	80	1,4	122	40	10	
4143830	VDS403A08433	8,433	.3320	—	Q	68	80	1,4	122	40	10	
4143831	VDS403A08500	8,500	.3346	—	—	68	80	1,4	122	40	10	
4143832	VDS403A08600	8,600	.3386	—	—	68	80	1,5	122	40	10	
4143833	VDS403A08700	8,700	.3425	—	—	68	80	1,5	122	40	10	
4143834	VDS403A08733	8,733	.3438	11/32	—	68	80	1,5	122	40	10	
4143835	VDS403A08800	8,800	.3465	—	—	68	80	1,5	122	40	10	
4143836	VDS403A08900	8,900	.3504	—	—	68	80	1,5	122	40	10	
4143837	VDS403A09000	9,000	.3543	—	—	68	80	1,5	122	40	10	
4143838	VDS403A09100	9,100	.3583	—	—	68	80	1,6	122	40	10	
4143839	VDS403A09129	9,129	.3594	23/64	—	68	80	1,6	122	40	10	
4143840	VDS403A09200	9,200	.3622	—	—	68	80	1,6	122	40	10	
4143841	VDS403A09300	9,300	.3661	—	—	68	80	1,6	122	40	10	
4143842	VDS403A09347	9,347	.3680	—	U	68	80	1,6	122	40	10	
4143843	VDS403A09400	9,400	.3701	—	—	68	80	1,6	122	40	10	
4143844	VDS403A09500	9,500	.3740	—	—	68	80	1,6	122	40	10	
4143845	VDS403A09525	9,525	.3750	3/8	—	68	80	1,6	122	40	10	
4143846	VDS403A09600	9,600	.3780	—	U	68	80	1,6	122	40	10	
4143847	VDS403A09700	9,700	.3819	—	—	68	80	1,7	122	40	10	
4143848	VDS403A09800	9,800	.3858	—	—	68	80	1,7	122	40	10	
4143849	VDS403A09900	9,900	.3898	—	—	68	80	1,7	122	40	10	
4143850	VDS403A09921	9,921	.3906	25/64	—	68	80	1,7	122	40	10	
4143421	VDS403A10000	10,000	.3937	—	—	68	80	1,7	122	40	10	
4143422	VDS403A10100	10,100	.3976	—	—	79	94	1,7	141	45	12	
4143473	VDS403A10200	10,200	.4016	—	—	79	94	1,7	141	45	12	
4143474	VDS403A10300	10,300	.4055	—	—	79	94	1,8	141	45	12	
4143475	VDS403A10320	10,320	.4063	13/32	—	79	94	1,8	141	45	12	
4143476	VDS403A10400	10,400	.4094	—	—	79	94	1,8	141	45	12	
4143477	VDS403A10500	10,500	.4134	—	—	79	94	1,8	141	45	12	
4143478	VDS403A10600	10,600	.4173	—	—	79	94	1,8	141	45	12	
4143479	VDS403A10700	10,700	.4213	—	—	79	94	1,8	141	45	12	
4143480	VDS403A10716	10,716	.4219	27/64	—	79	94	1,8	141	45	12	
4143481	VDS403A10800	10,800	.4252	—	—	79	94	1,9	141	45	12	
4143482	VDS403A10900	10,900	.4291	—	—	79	94	1,9	141	45	12	
4143483	VDS403A11000	11,000	.4331	—	—	79	94	1,9	141	45	12	
4143484	VDS403A11100	11,100	.4370	—	—	79	94	1,9	141	45	12	
4143485	VDS403A11113	11,113	.4375	7/16	—	79	94	1,9	141	45	12	
4143486	VDS403A11200	11,200	.4409	—	—	79	94	1,9	141	45	12	
4143487	VDS403A11300	11,300	.4449	—	—	79	94	1,9	141	45	12	
4143488	VDS403A11400	11,400	.4488	—	—	79	94	2,0	141	45	12	
4143489	VDS403A11500	11,500	.4528	—	—	79	94	2,0	141	45	12	

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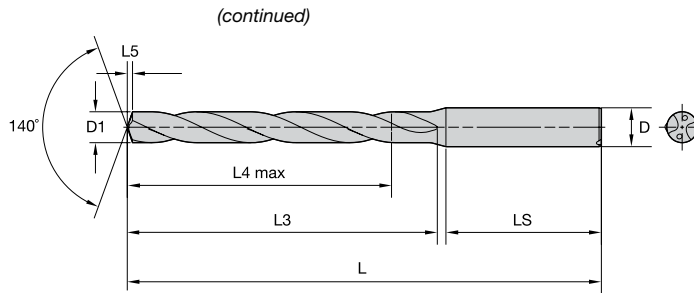
For information on L, L3, and L4 max, see page C46.



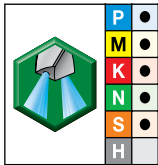
● first choice
○ alternate choice

grade WU25PD TiAlN		D1 diameter					L4 max	L3	L5	L	LS	D
order #	catalog #	mm	in	fraction	wire size							
4143490	VDS403A11509	11,509	.4531	29/64	—	79	94	2,0	141	45	12	
4143491	VDS403A11600	11,600	.4567	—	—	79	94	2,0	141	45	12	
4143492	VDS403A11700	11,700	.4606	—	—	79	94	2,0	141	45	12	
4143493	VDS403A11800	11,800	.4646	—	—	79	94	2,0	141	45	12	
4143494	VDS403A11900	11,900	.4685	—	—	79	94	2,0	141	45	12	
4143495	VDS403A11908	11,908	.4688	15/32	—	79	94	2,0	141	45	12	
4143496	VDS403A12000	12,000	.4724	—	—	79	94	2,1	141	45	12	
4143497	VDS403A12100	12,100	.4764	—	—	91	108	2,1	155	45	14	
4143498	VDS403A12200	12,200	.4803	—	—	91	108	2,1	155	45	14	
4143499	VDS403A12300	12,300	.4843	—	—	91	108	2,1	155	45	14	
4143500	VDS403A12304	12,304	.4844	31/64	—	91	108	2,1	155	45	14	
4143501	VDS403A12400	12,400	.4882	—	—	91	108	2,1	155	45	14	
4143502	VDS403A12500	12,500	.4921	—	—	91	108	2,2	155	45	14	
4143503	VDS403A12600	12,600	.4961	—	—	91	108	2,2	155	45	14	
4143504	VDS403A12700	12,700	.5000	1/2	—	91	108	2,2	155	45	14	
4143505	VDS403A12800	12,800	.5039	—	—	91	108	2,2	155	45	14	
4143506	VDS403A12900	12,900	.5079	—	—	91	108	2,2	155	45	14	
4143507	VDS403A13000	13,000	.5118	—	—	91	108	2,2	155	45	14	
4143508	VDS403A13096	13,096	.5156	33/64	—	91	108	2,3	155	45	14	
4143509	VDS403A13100	13,100	.5157	—	—	91	108	2,3	155	45	14	
4143510	VDS403A13200	13,200	.5197	—	—	91	108	2,3	155	45	14	
4143511	VDS403A13300	13,300	.5236	—	—	91	108	2,3	155	45	14	
4143512	VDS403A13400	13,400	.5276	—	—	91	108	2,3	155	45	14	
4143513	VDS403A13500	13,500	.5315	—	—	91	108	2,3	155	45	14	
4143514	VDS403A13600	13,600	.5354	—	—	91	108	2,3	155	45	14	
4143515	VDS403A13700	13,700	.5394	—	—	91	108	2,4	155	45	14	
4143516	VDS403A13800	13,800	.5433	—	—	91	108	2,4	155	45	14	
4143517	VDS403A13891	13,891	.5469	35/64	—	91	108	2,4	155	45	14	
4143518	VDS403A13900	13,900	.5472	—	—	91	108	2,4	155	45	14	
4143519	VDS403A14000	14,000	.5512	—	—	91	108	2,4	155	45	14	
4143520	VDS403A14100	14,100	.5551	—	—	101	121	2,4	171	48	16	
4143521	VDS403A14200	14,200	.5591	—	—	101	121	2,5	171	48	16	
4143522	VDS403A14288	14,288	.5625	9/16	—	101	121	2,5	171	48	16	
4143523	VDS403A14300	14,300	.5630	—	—	101	121	2,5	171	48	16	
4143524	VDS403A14400	14,400	.5669	—	—	101	121	2,5	171	48	16	
4143525	VDS403A14500	14,500	.5709	—	—	101	121	2,5	171	48	16	
4143526	VDS403A14600	14,600	.5748	—	—	101	121	2,5	171	48	16	
4143527	VDS403A14684	14,684	.5781	37/64	—	101	121	2,5	171	48	16	
4143528	VDS403A14700	14,700	.5787	—	—	101	121	2,5	171	48	16	
4143529	VDS403A14800	14,800	.5827	—	—	101	121	2,6	171	48	16	
4143530	VDS403A14900	14,900	.5866	—	—	101	121	2,6	171	48	16	
4143531	VDS403A15000	15,000	.5906	—	—	101	121	2,6	171	48	16	
4143532	VDS403A15083	15,083	.5938	19/32	—	101	121	2,6	171	48	16	
4143533	VDS403A15100	15,100	.5945	—	—	101	121	2,6	171	48	16	
4143534	VDS403A15200	15,200	.5984	—	—	101	121	2,6	171	48	16	
4143535	VDS403A15300	15,300	.6024	—	—	101	121	2,6	171	48	16	
4143536	VDS403A15400	15,400	.6063	—	—	101	121	2,7	171	48	16	
4143537	VDS403A15479	15,479	.6094	39/64	—	101	121	2,7	171	48	16	
4143538	VDS403A15500	15,500	.6102	—	—	128	146	2,7	197	48	16	
4143539	VDS403A15600	15,600	.6142	—	—	101	121	2,7	171	48	16	
4143540	VDS403A15700	15,700	.6181	—	—	101	121	2,7	171	48	16	
4143541	VDS403A15800	15,800	.6220	—	—	101	121	2,7	171	48	16	

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For information on L, L3, and L4 max, see page C46.



● first choice
○ alternate choice

grade WU25PD TiAlN		D1 diameter					L4 max	L3	L5	L	LS	D
order #	catalog #	mm	in	fraction	wire size							
4143542	VDS403A15875	15,875	.6250	5/8	—	101	121	2,8	171	48	16	
4143543	VDS403A15900	15,900	.6260	—	—	101	121	2,8	171	48	16	
4143544	VDS403A16000	16,000	.6299	—	—	101	121	2,8	171	48	16	
4143546	VDS403A16200	16,200	.6378	—	—	113	135	2,8	185	48	18	
4143547	VDS403A16271	16,271	.6406	41/64	—	113	135	2,8	185	48	18	
4143548	VDS403A16300	16,300	.6417	—	—	113	135	2,8	185	48	18	
4143549	VDS403A16400	16,400	.6457	—	—	113	135	2,8	185	48	18	
4143550	VDS403A16500	16,500	.6496	—	—	113	135	2,9	185	48	18	
4143551	VDS403A16600	16,600	.6535	—	—	113	135	2,9	185	48	18	
4143552	VDS403A16670	16,670	.6563	21/32	—	113	135	2,9	185	48	18	
4143553	VDS403A16700	16,700	.6575	—	—	113	135	2,9	185	48	18	
4143554	VDS403A16800	16,800	.6614	—	—	113	135	2,9	185	48	18	
4143555	VDS403A16900	16,900	.6654	—	—	113	135	2,9	185	48	18	
4143556	VDS403A17000	17,000	.6693	—	—	113	135	3,0	185	48	18	
4143557	VDS403A17100	17,100	.6732	—	—	113	135	3,0	185	48	18	
4143558	VDS403A17200	17,200	.6772	—	—	113	135	3,0	185	48	18	
4143559	VDS403A17300	17,300	.6811	—	—	113	135	3,0	185	48	18	
4143560	VDS403A17400	17,400	.6850	—	—	113	135	3,0	185	48	18	
4143561	VDS403A17463	17,463	.6875	11/16	—	113	135	3,0	185	48	18	
4143562	VDS403A17500	17,500	.6890	—	—	113	135	3,0	185	48	18	
4143563	VDS403A17600	17,600	.6929	—	—	113	135	3,1	185	48	18	
4143564	VDS403A17700	17,700	.6969	—	—	113	135	3,1	185	48	18	
4143565	VDS403A17800	17,800	.7008	—	—	113	135	3,1	185	48	18	
4144209	VDS403A18000	18,000	.7087	—	—	113	135	3,1	185	48	18	
4144211	VDS403A18100	18,100	.7126	—	—	124	148	3,1	200	50	20	
4144212	VDS403A18200	18,200	.7165	—	—	124	148	3,2	200	50	20	
4144246	VDS403A18300	18,300	.7205	—	—	124	148	3,2	200	50	20	
4144248	VDS403A18400	18,400	.7244	—	—	124	148	3,2	200	50	20	
4144250	VDS403A18500	18,500	.7283	—	—	124	148	3,2	200	50	20	
4144252	VDS403A18600	18,600	.7323	—	—	124	148	3,2	200	50	20	
4144256	VDS403A18700	18,700	.7362	—	—	124	148	3,3	200	50	20	
4144258	VDS403A18800	18,800	.7402	—	—	124	148	3,3	200	50	20	
4144260	VDS403A18900	18,900	.7441	—	—	124	148	3,3	200	50	20	
4144262	VDS403A19000	19,000	.7480	—	—	124	148	3,3	200	50	20	
4144275	VDS403A19050	19,050	.7500	3/4	—	124	148	3,3	200	50	20	
4144277	VDS403A19100	19,100	.7520	—	—	124	148	3,3	200	50	20	
4144281	VDS403A19300	19,300	.7598	—	—	124	148	3,4	200	50	20	
4144283	VDS403A19400	19,400	.7638	—	—	124	148	3,4	200	50	20	
4144285	VDS403A19500	19,500	.7677	—	—	124	148	3,4	200	50	20	
4144289	VDS403A19700	19,700	.7756	—	—	124	148	3,4	200	50	20	
4144291	VDS403A19800	19,800	.7795	—	—	124	148	3,4	200	50	20	
4144303	VDS403A19900	19,900	.7835	—	—	124	148	3,5	200	50	20	
4144305	VDS403A20000	20,000	.7874	—	—	124	148	3,5	200	50	20	

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Solid Carbide Drills • VariDrill™ Series

Application Data • VDS2 Series • WU25PD • Flood Coolant • Inch

Material Group		Cutting Speed – vc Range – SFM			Tool Diameter (inch)	Recommended Feed Rate (f) by Diameter									
		min	-	max		.0469-3/64	.0781-5/64	.125-1/8	.188-3/16	.250-1/4	.313-5/16	.375-3/8	.500-1/2	.625-5/8	.750-3/4
		P	0	230		-	380	IPR	.001-.003	.002-.004	.002-.004	.003-.005	.004-.007	.004-.009	.005-.010
	1	200	-	330	IPR	.002-.004	.002-.004	.002-.005	.004-.006	.004-.009	.005-.010	.006-.012	.007-.014	.009-.017	.011-.021
	2	260	-	330	IPR	.002-.004	.002-.004	.002-.005	.003-.006	.005-.009	.006-.010	.007-.012	.008-.014	.009-.017	.012-.021
	3	160	-	300	IPR	.002-.004	.002-.005	.003-.006	.004-.007	.005-.009	.006-.011	.007-.013	.009-.015	.010-.019	.013-.023
	4	160	-	330	IPR	.002-.005	.002-.005	.002-.006	.003-.007	.005-.009	.006-.011	.007-.013	.007-.015	.009-.019	.011-.023
	5	100	-	200	IPR	.001-.002	.002-.002	.002-.003	.002-.004	.003-.006	.004-.007	.005-.009	.006-.009	.007-.013	.009-.016
	6	100	-	200	IPR	.001-.002	.002-.002	.002-.003	.002-.004	.003-.006	.004-.007	.005-.009	.006-.009	.007-.013	.009-.016
M	1	70	-	130	IPR	.001-.002	.001-.002	.002-.003	.002-.004	.003-.006	.004-.005	.004-.006	.005-.006	.006-.007	.006-.008
	2	100	-	160	IPR	.001-.002	.001-.003	.002-.003	.002-.004	.003-.005	.004-.006	.004-.006	.005-.007	.006-.008	.006-.009
	3	70	-	130	IPR	.001-.002	.001-.002	.002-.003	.002-.004	.003-.004	.004-.005	.004-.006	.005-.006	.006-.007	.006-.008
K	1	260	-	560	IPR	.004-.007	.004-.008	.004-.009	.005-.009	.006-.012	.008-.015	.009-.017	.010-.019	.012-.024	.015-.029
	2	300	-	390	IPR	.002-.005	.003-.006	.004-.007	.005-.007	.006-.010	.008-.012	.009-.014	.010-.016	.012-.019	.015-.024
	3	260	-	430	IPR	.002-.004	.002-.005	.003-.006	.004-.007	.005-.010	.006-.012	.007-.014	.007-.016	.010-.019	.012-.024
N	1	300	-	890	IPR	.002-.005	.002-.005	.003-.006	.004-.006	.005-.009	.006-.009	.008-.011	.009-.014	.011-.016	.013-.019
	2	300	-	890	IPR	.002-.003	.002-.005	.003-.006	.004-.008	.005-.009	.006-.011	.008-.013	.009-.014	.011-.017	.013-.020
	3	300	-	740	IPR	.004-.005	.004-.006	.005-.006	.005-.006	.006-.008	.006-.009	.008-.011	.009-.013	.011-.016	.013-.017
	4	300	-	890	IPR	.002-.003	.002-.005	.003-.006	.004-.006	.005-.009	.006-.011	.008-.011	.009-.014	.011-.016	.013-.019
S	1	70	-	100	IPR	.001-.002	.001-.002	.001-.002	.002-.003	.002-.004	.003-.005	.004-.005	.004-.006	.005-.006	.006-.007
	2	30	-	100	IPR	.001-.001	.001-.001	.001-.002	.001-.002	.002-.003	.003-.004	.003-.004	.004-.005	.004-.006	.004-.006
	3	70	-	130	IPR	.001-.001	.001-.001	.001-.002	.001-.002	.002-.003	.003-.004	.003-.004	.004-.005	.004-.006	.004-.006
	4	70	-	160	IPR	.001-.001	.001-.001	.001-.002	.001-.002	.002-.003	.003-.004	.003-.004	.004-.005	.004-.006	.004-.006
H	1	20	-	30	IPR	.001-.001	.001-.001	.001-.002	.001-.002	.002-.003	.003-.004	.003-.004	.004-.005	.004-.006	.004-.006
	2	10	-	30	IPR	.001-.001	.001-.001	.001-.002	.001-.002	.002-.003	.003-.004	.003-.004	.003-.004	.004-.005	.004-.006


Application Data • VDS2 Series • WU25PD™ • Flood Coolant • Metric

Material Group		Cutting Speed – vc Range – m/min			Tool Diameter (mm)	Recommended Feed Rate (f) by Diameter									
		min	-	max		1.0	2.0	3.0	4.0	6.0	8.0	10.0	12.0	16.0	20.0
		P	0	70		-	115	mm/r	0.03-0.08	0.04-0.09	0.05-0.11	0.08-0.14	0.09-0.19	0.11-0.22	0.13-0.26
	1	60	-	100	mm/r	0.04-0.09	0.05-0.11	0.06-0.13	0.09-0.16	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	80	-	100	mm/r	0.04-0.09	0.05-0.11	0.06-0.13	0.08-0.16	0.12-0.22	0.14-0.26	0.17-0.31	0.20-0.35	0.24-0.42	0.31-0.53
	3	50	-	90	mm/r	0.05-0.11	0.06-0.13	0.07-0.15	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
	4	50	-	100	mm/r	0.04-0.12	0.05-0.13	0.06-0.15	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
	5	30	-	60	mm/r	0.03-0.05	0.04-0.06	0.05-0.07	0.06-0.10	0.08-0.14	0.10-0.18	0.12-0.22	0.14-0.24	0.18-0.32	0.23-0.41
	6	30	-	60	mm/r	0.03-0.05	0.04-0.06	0.05-0.07	0.06-0.10	0.08-0.14	0.10-0.18	0.12-0.22	0.14-0.24	0.18-0.32	0.23-0.41
M	1	20	-	40	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
	2	30	-	50	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
	3	20	-	40	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	1	80	-	170	mm/r	0.09-0.18	0.10-0.20	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
	2	90	-	120	mm/r	0.06-0.13	0.08-0.15	0.10-0.17	0.12-0.19	0.16-0.25	0.20-0.31	0.23-0.36	0.25-0.40	0.31-0.48	0.38-0.60
	3	80	-	130	mm/r	0.05-0.11	0.06-0.13	0.07-0.15	0.09-0.19	0.12-0.25	0.14-0.30	0.17-0.35	0.19-0.40	0.25-0.48	0.30-0.60
N	1	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
	2	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
	3	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
	4	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	1	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
	2	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
	3	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
	4	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
H	1	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
	2	10	-	30	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

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


nominal size range	Metric tolerance	
	D1 tolerance	D tolerance h6
1-3	0.000/-0.014 (h8)	0.000/-0.006
>3-6	0.000/-0.012 (h7)	0.000/-0.008
>6-10	0.000/-0.015 (h7)	0.000/-0.009
>10-18	0.000/-0.018 (h7)	0.000/-0.011
>18-20	0.000/-0.021 (h7)	0.000/-0.013

Application Data • VDS4 Series • WU25PD • Through Coolant • Inch



Material Group	Cutting Speed – vc Range – SFM			Recommended Feed Rate (f) by Diameter											
	min	-	max	Tool Diameter (inch)	.0469-3/64	.0781-5/64	.125-1/8	.188-3/16	.250-1/4	.313-5/16	.375-3/8	.500-1/2	.625-5/8	.750-3/4	
P	0	230	-	380	IPR	.001-.003	.002-.004	.002-.004	.003-.005	.004-.007	.004-.009	.005-.010	.006-.012	.007-.014	.009-.018
	1	230	-	460	IPR	.002-.004	.002-.005	.003-.006	.003-.006	.004-.009	.005-.010	.006-.012	.007-.014	.009-.017	.011-.021
	2	300	-	460	IPR	.002-.004	.002-.005	.003-.006	.003-.006	.005-.009	.006-.010	.007-.012	.008-.014	.009-.017	.012-.021
	3	200	-	330	IPR	.002-.004	.002-.005	.003-.006	.004-.007	.005-.009	.006-.011	.007-.013	.009-.015	.010-.019	.013-.023
	4	160	-	330	IPR	.002-.004	.002-.005	.003-.006	.003-.007	.005-.009	.006-.011	.007-.013	.007-.015	.009-.019	.011-.023
	5	100	-	200	IPR	.001-.002	.002-.002	.002-.006	.002-.004	.003-.006	.004-.007	.005-.009	.006-.009	.007-.013	.009-.016
6	130	-	230	IPR	.001-.002	.002-.002	.002-.003	.002-.004	.003-.006	.004-.007	.005-.009	.006-.009	.007-.013	.009-.016	
M	1	70	-	130	IPR	.001-.002	.001-.002	.002-.003	.002-.004	.003-.004	.004-.005	.004-.006	.005-.006	.006-.007	.006-.008
	2	100	-	160	IPR	.001-.002	.001-.003	.002-.003	.002-.004	.003-.005	.004-.006	.004-.006	.005-.007	.006-.008	.006-.009
	3	70	-	130	IPR	.001-.002	.001-.002	.002-.003	.002-.004	.003-.004	.004-.005	.004-.006	.005-.006	.006-.007	.006-.008
K	1	260	-	560	IPR	.003-.006	.004-.007	.004-.009	.005-.009	.006-.012	.008-.015	.009-.017	.010-.019	.012-.024	.015-.029
	2	260	-	460	IPR	.004-.006	.004-.006	.005-.006	.005-.007	.006-.010	.008-.012	.009-.014	.010-.016	.012-.019	.015-.024
	3	260	-	430	IPR	.002-.005	.003-.006	.003-.007	.004-.007	.005-.010	.006-.012	.007-.014	.007-.016	.009-.019	.012-.024
N	1	290	-	1030	IPR	.002-.005	.002-.005	.003-.006	.004-.006	.005-.010	.006-.012	.008-.011	.009-.013	.011-.016	.013-.019
	2	290	-	890	IPR	.002-.003	.002-.005	.003-.006	.004-.008	.005-.009	.006-.011	.008-.013	.009-.014	.011-.017	.013-.020
	3	290	-	890	IPR	.004-.005	.004-.006	.005-.006	.005-.006	.006-.009	.008-.011	.009-.013	.011-.016	.013-.017	.013-.019
	4	290	-	590	IPR	.002-.003	.002-.005	.003-.006	.004-.008	.005-.009	.006-.011	.008-.013	.009-.014	.011-.016	.013-.019
S	1	30	-	100	IPR	.001-.002	.001-.002	.001-.002	.002-.003	.002-.004	.003-.005	.004-.005	.004-.006	.005-.006	.006-.007
	2	30	-	80	IPR	.001-.001	.001-.001	.001-.002	.001-.002	.002-.003	.003-.004	.003-.004	.004-.005	.004-.006	.004-.006
	3	30	-	100	IPR	.001-.001	.001-.001	.001-.002	.001-.002	.002-.003	.003-.004	.003-.004	.004-.005	.004-.006	.004-.006
	4	30	-	130	IPR	.001-.001	.001-.001	.001-.002	.001-.002	.002-.003	.003-.004	.003-.004	.004-.005	.004-.006	.004-.006
H	1	20	-	30	IPR	.001-.001	.001-.001	.001-.002	.001-.002	.002-.003	.003-.004	.003-.004	.004-.005	.004-.006	.004-.006
	2	10	-	30	IPR	.001-.001	.001-.001	.001-.002	.001-.002	.002-.003	.002-.004	.003-.004	.003-.004	.004-.005	.004-.006

Application Data • VDS4 Series • WU25PD™ • Through Coolant • Metric



Material Group	Cutting Speed – vc Range – m/min			Recommended Feed Rate (f) by Diameter											
	min	-	max	Tool Diameter (mm)	1,0	2,0	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0	
P	0	70	-	115	mm/r	0.03-0.08	0.04-0.09	0.05-0.11	0.08-0.14	0.09-0.19	0.11-0.22	0.13-0.26	0.15-0.30	0.19-0.36	0.24-0.46
	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	90	-	140	mm/r	0.04-0.09	0.05-0.12	0.07-0.14	0.08-0.16	0.12-0.22	0.17-0.31	0.20-0.35	0.24-0.42	0.31-0.53	
	3	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
	4	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
	5	30	-	60	mm/r	0.03-0.05	0.04-0.06	0.05-0.07	0.06-0.10	0.08-0.14	0.10-0.18	0.12-0.22	0.14-0.24	0.18-0.32	0.23-0.41
6	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	1	20	-	40	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
	2	30	-	50	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
	3	20	-	40	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
K	1	80	-	170	mm/r	0.08-0.16	0.09-0.17	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
	2	80	-	140	mm/r	0.10-0.14	0.11-0.15	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
	3	80	-	130	mm/r	0.05-0.13	0.07-0.15	0.08-0.17	0.09-0.19	0.12-0.25	0.14-0.30	0.17-0.35	0.19-0.40	0.24-0.48	0.30-0.60
N	1	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
	2	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
	3	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
	4	90	-	180	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	1	10	-	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
	2	10	-	25	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
	3	10	-	30	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
	4	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
H	1	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
	2	10	-	30	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

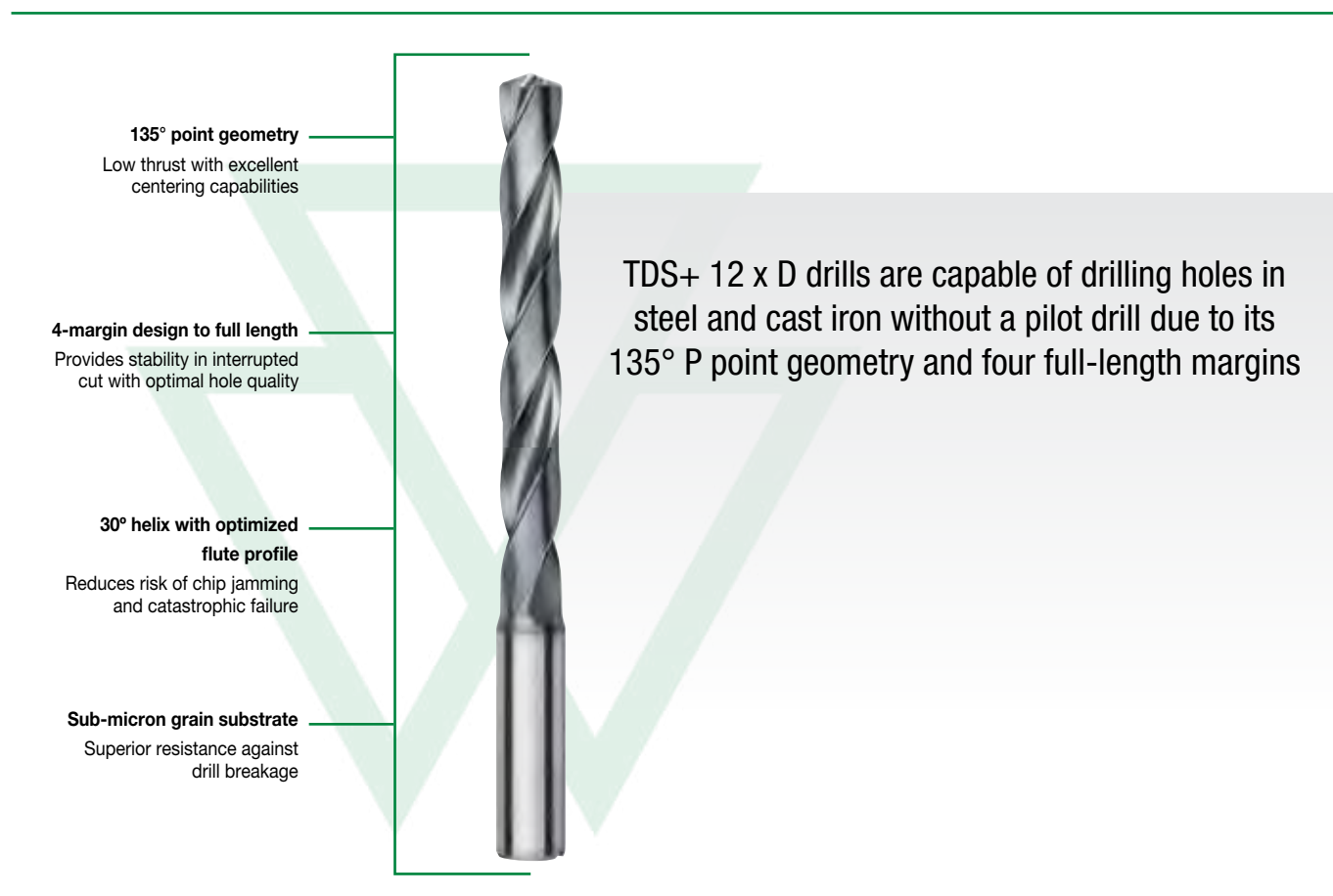
nominal size range	Inch tolerance	
	D1 tolerance	D tolerance h6
.0394-.1181	.0000/-.0006 (h8)	.0000/-.0002
>.1181-.2362	.0000/-.0005 (h7)	.0000/-.0003
>.2362-.3937	.0000/-.0006 (h7)	.0000/-.0004
>.3937-.7087	.0000/-.0007 (h7)	.0000/-.0004
>.7087-.7874	.0000/-.0008 (h7)	.0000/-.0005

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

TOP DRILL S+™

Solid Carbide Drills 12 x D • TDS+

TDS+ solid carbide drills are for shop floors seeking a drill with optimal performance and hole quality in steel, stainless steel, and cast iron materials using one universal geometry and grade.



WU20PD



Sub-micron grain carbide
TiAlN multilayer for steel, stainless steel, and cast iron

OPTIMAL PERFORMANCE

PRODUCT

TDS P Point with 135° P point angle for excellent centering and low thrust

DIAMETER RANGE

.1181–.7874" (3–20mm)

INDUSTRY



MATERIALS

FIRST CHOICE



SECOND CHOICE



APPLICATIONS



DRILLING



INCLINED EXIT



STACKED PLATES



DRILLING DEPTH: 12X



2 FLUTE/4 MARGIN/COOLANT



THROUGH COOLANT



MQL (MINIMUM QUANTITY LUBRICANT)



HELIX ANGLE: 30°



PLAIN SHANK: ≤H6



DIN 6535

SERIES

TDS504

COOLANT

Through Coolant

LENGTH RATIO

12 x D

DIAMETER RANGE

.1181–.7874" (3–20mm)

Shank Style

A - Shank DIN 6535 HA
(round cylindrical, 2mm steps)

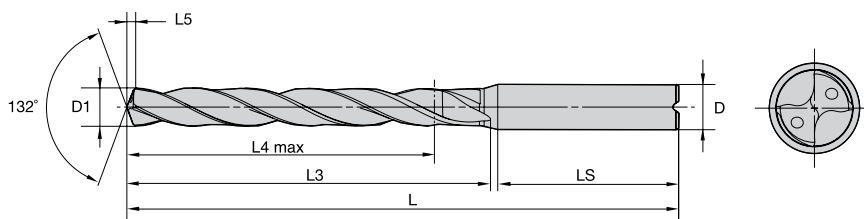


TDS+ • Catalog Numbering System

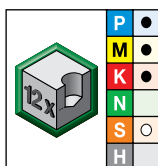
Each character in our catalog number signifies a specific trait of that product.
Use the following key columns and corresponding images to easily identify which attributes apply.

TDS	5	0	4	A	06350	WU20PD
Top Drill Spiral	Flute Style - Coolant	Point	Length	Shank	Diameter in letric	
	5 = 2 Flute Through Coolant	0 = Conventional Cone Point 1 = Conventional Cone Point with Chamfer	1 = ~ 3 x D 2 = ~ 5 x D 3 = ~ 8 x D 4 = ~ 12 x D	A = Cylindrical Shank, DIN 6535 - 2mm steps F = Whistle Notch 2, DIN 6535 - 2mm steps	03000 = 3,000mm 06350 = 1/4" = E	WIDIA™; Universal, Application 20 = medium carbide, PVD coated, Drill

TOP DRILL S+™ • 12 x D • TDS504A • A-Shank



For information on L, L3, and L4 max, see page C46



● first choice
○ alternate choice

grade WU20PD TiAlN		D1 diameter				L	L4 max	L3	L5	LS	D
order #	catalog #	mm	in	fraction	wire size						
4173459	TDS504A03000	3,000	.1181	—	—	93	44	52,0	0,6	36	6
4173460	TDS504A03175	3,175	.1250	1/8	—	93	44	52,0	0,7	36	6
4173461	TDS504A03264	3,264	.1285	—	30	93	44	53,0	0,7	36	6
4173545	TDS504A03455	3,455	.1360	—	29	93	44	53,0	0,7	36	6
4173462	TDS504A03500	3,500	.1378	—	—	93	44	53,0	0,7	36	6
4173546	TDS504A03734	3,734	.1470	—	26	93	45	54,0	0,8	36	6
4173463	TDS504A03970	3,970	.1563	5/32	—	107	56	66,0	0,8	36	6
4173464	TDS504A04000	4,000	.1575	—	—	107	56	66,0	0,8	36	6
4173465	TDS504A04500	4,500	.1772	—	—	107	56	67,0	0,9	36	6
4173466	TDS504A04600	4,600	.1811	—	—	107	57	68,0	1,0	36	6
4173467	TDS504A04763	4,763	.1875	3/16	—	125	69	82,0	1,0	36	6
4173468	TDS504A04800	4,800	.1890	—	12	125	69	82,0	1,0	36	6
4173469	TDS504A05000	5,000	.1969	—	—	125	70	83,0	1,1	36	6
4173470	TDS504A05100	5,100	.2008	—	—	125	70	83,0	1,1	36	6
4173471	TDS504A05200	5,200	.2047	—	—	125	70	83,0	1,1	36	6
4173472	TDS504A05300	5,300	.2087	—	—	125	71	84,0	1,1	36	6
4173473	TDS504A05410	5,410	.2130	—	3	125	71	84,0	1,1	36	6
4173474	TDS504A05500	5,500	.2165	—	—	125	71	84,0	1,2	36	6
4173475	TDS504A05558	5,558	.2188	7/32	—	125	71	84,0	1,2	36	6
4173476	TDS504A05600	5,600	.2205	—	—	125	72	85,0	1,2	36	6
4173477	TDS504A05700	5,700	.2244	—	—	125	72	85,0	1,2	36	6
4173478	TDS504A05800	5,800	.2283	—	—	125	71	85,0	1,2	36	6
4173479	TDS504A06000	6,000	.2362	—	—	125	72	86,0	1,3	36	6
4173480	TDS504A06200	6,200	.2441	—	—	139	82	97,0	1,3	36	8
4173481	TDS504A06350	6,350	.2500	1/4	E	139	83	98,0	1,3	36	8
4173482	TDS504A06500	6,500	.2559	—	—	139	83	98,0	1,4	36	8
4173484	TDS504A06600	6,600	.2598	—	—	139	84	99,0	1,4	36	8
4173485	TDS504A06746	6,746	.2656	17/64	—	139	83	99,0	1,4	36	8
4173486	TDS504A06800	6,800	.2677	—	—	139	83	99,0	1,4	36	8
4173487	TDS504A06909	6,909	.2720	—	I	139	84	100,0	1,5	36	8
4173488	TDS504A07000	7,000	.2756	—	—	139	84	100,0	1,5	36	8
4173489	TDS504A07145	7,145	.2813	9/32	—	153	94	111,0	1,5	36	8
4173490	TDS504A07500	7,500	.2953	—	—	153	95	112,0	1,6	36	8
4173491	TDS504A07541	7,541	.2969	19/64	—	153	95	112,0	1,6	36	8
4173492	TDS504A07700	7,700	.3031	—	—	153	96	113,0	1,6	36	8
4173493	TDS504A07800	7,800	.3071	—	—	153	95	113,0	1,7	36	8
4173494	TDS504A07938	7,938	.3125	5/16	—	153	96	114,0	1,7	36	8
4173495	TDS504A08000	8,000	.3150	—	—	153	96	114,0	1,7	36	8
4173496	TDS504A08100	8,100	.3189	—	—	185	116	136,0	1,7	40	10
4173497	TDS504A08334	8,334	.3281	21/64	—	185	117	137,0	1,8	40	10
4173498	TDS504A08433	8,433	.3320	—	Q	185	117	137,0	1,8	40	10
4173499	TDS504A08500	8,500	.3346	—	—	185	117	137,0	1,8	40	10
4173500	TDS504A08700	8,700	.3425	—	—	185	118	138,0	1,9	40	10
4173501	TDS504A08733	8,733	.3438	11/32	—	185	117	138,0	1,9	40	10
4173502	TDS504A09000	9,000	.3543	—	—	185	118	139,0	1,9	40	10
4173503	TDS504A09100	9,100	.3583	—	—	185	118	139,0	1,9	40	10
4173504	TDS504A09129	9,129	.3594	23/64	—	185	118	139,0	1,9	40	10
4173547	TDS504A09347	9,347	.3680	—	U	185	119	140,0	2,0	40	10

TOP DRILL S+™ • 12 x D • TDS504A • A-Shank

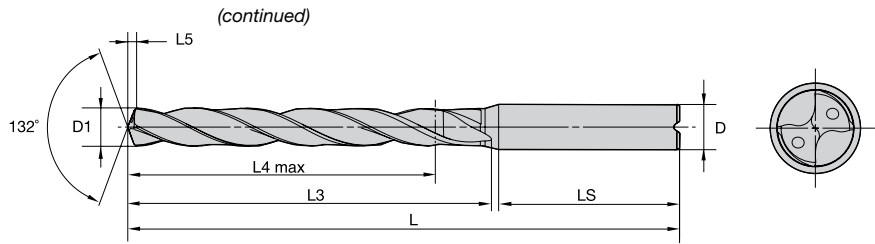
INDEXABLE MILLING

SOLID END MILLING

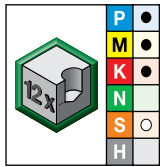
HOLEMAKING

TAPPING

TURNING



For information on L, L3, and L4 max, see page C46



● first choice
○ alternate choice

grade WU20PD TiAlN		D1 diameter				L	L4 max	L3	L5	LS	D
order #	catalog #	mm	in	fraction	wire size						
4173505	TDS504A09500	9,500	.3740	—	—	185	119	140,0	2,0	40	10
4173506	TDS504A09525	9,525	.3750	3/8	—	185	119	140,0	2,0	40	10
4173507	TDS504A09921	9,921	.3906	25/64	—	185	120	142,0	2,1	40	10
4173508	TDS504A10000	10,000	.3937	—	—	185	120	142,0	2,1	40	10
4173509	TDS504A10200	10,200	.4016	—	—	218	140	164,0	2,2	45	12
4173510	TDS504A10300	10,300	.4055	—	—	218	141	165,0	2,2	45	12
4173511	TDS504A10320	10,320	.4063	13/32	—	218	141	165,0	2,2	45	12
4173512	TDS504A10500	10,500	.4134	—	—	218	141	165,0	2,2	45	12
4173513	TDS504A10716	10,716	.4219	27/64	—	218	142	166,0	2,3	45	12
4173514	TDS504A10800	10,800	.4252	—	—	218	141	166,0	2,3	45	12
4173515	TDS504A11000	11,000	.4331	—	—	218	142	167,0	2,4	45	12
4173516	TDS504A11113	11,113	.4375	7/16	—	218	142	167,0	2,4	45	12
4173517	TDS504A11500	11,500	.4528	—	—	218	143	168,0	2,5	45	12
4173518	TDS504A11800	11,800	.4646	—	—	218	143	169,0	2,5	45	12
4173519	TDS504A12000	12,000	.4724	—	—	218	144	170,0	2,6	45	12
4173520	TDS504A12100	12,100	.4764	—	—	246	164	192,0	2,6	45	14
4148906	TDS504A12500	12,500	.4921	—	—	246	165	193,0	2,7	45	14
4173522	TDS504A12700	12,700	.5000	1/2	—	246	166	194,0	2,7	45	14
4173523	TDS504A13000	13,000	.5118	—	—	246	166	195,0	2,8	45	14
4173524	TDS504A13100	13,100	.5157	—	—	246	166	195,0	2,8	45	14
4173525	TDS504A13500	13,500	.5315	—	—	246	167	196,0	2,9	45	14
4173526	TDS504A14000	14,000	.5512	—	—	246	168	198,0	3,0	45	14
4173527	TDS504A14100	14,100	.5551	—	—	277	188	220,0	3,0	48	16
4173528	TDS504A14288	14,288	.5625	9/16	—	277	188	220,0	3,1	48	16
4173529	TDS504A14500	14,500	.5709	—	—	277	189	221,0	3,1	48	16
4173530	TDS504A14684	14,684	.5781	37/64	—	277	190	222,0	3,2	48	16
4173531	TDS504A15000	15,000	.5906	—	—	277	190	223,0	3,2	48	16
4173533	TDS504A15875	15,875	.6250	5/8	—	277	192	225,0	3,4	48	16
4173534	TDS504A16000	16,000	.6299	—	—	277	192	226,0	3,4	48	16
4173535	TDS504A16500	16,500	.6496	—	—	305	213	249,0	3,6	48	18
4173536	TDS504A17000	17,000	.6693	—	—	305	214	250,0	3,7	48	18
4173537	TDS504A17463	17,463	.6875	11/16	—	305	215	252,0	3,8	48	18
4173538	TDS504A17500	17,500	.6890	—	—	305	215	252,0	3,8	48	18
4173539	TDS504A18000	18,000	.7087	—	—	305	216	253,0	3,9	48	18
4173541	TDS504A19000	19,000	.7480	—	—	334	238	278,0	4,1	50	20
4173543	TDS504A19500	19,500	.7677	—	—	334	239	280,0	4,2	50	20
4173544	TDS504A20000	20,000	.7874	—	—	334	240	281,0	4,3	50	20

Application Data • TDS+ Series • WU20PD™ • Through Coolant • Inch

Material Group		Cutting Speed – vc Range – SFM			Recommended Feed Rate (f) by Diameter								
		min	-	max	Tool Diameter (inch)	.125-1/8	.188-3/16	.250-1/4	.313-5/16	.375-3/8	.500-1/2	.625-5/8	.750-3/4
P	0	260	-	520	IPR	.002-.005	.003-.005	.004-.007	.004-.009	.005-.010	.006-.012	.007-.014	.009-.018
	1	230	-	460	IPR	.003-.006	.003-.006	.004-.009	.005-.010	.006-.012	.007-.014	.009-.017	.011-.021
	2	300	-	460	IPR	.003-.006	.003-.006	.005-.009	.006-.010	.007-.012	.008-.014	.009-.017	.012-.021
	3	200	-	330	IPR	.003-.006	.004-.007	.005-.009	.006-.011	.007-.013	.009-.015	.010-.019	.013-.023
	4	160	-	330	IPR	.003-.006	.003-.007	.005-.009	.006-.011	.007-.013	.007-.015	.009-.019	.011-.023
	5	160	-	260	IPR	.003-.005	.004-.006	.005-.007	.006-.009	.008-.011	.009-.012	.011-.015	.013-.017
M	1	100	-	160	IPR	.002-.003	.002-.004	.003-.004	.004-.005	.004-.006	.005-.006	.006-.007	.006-.008
	2	130	-	200	IPR	.002-.003	.002-.004	.003-.005	.004-.006	.004-.006	.005-.007	.006-.008	.006-.009
	3	100	-	160	IPR	.002-.003	.002-.004	.003-.004	.004-.005	.004-.006	.005-.006	.006-.007	.006-.008
K	1	260	-	560	IPR	.004-.009	.005-.009	.006-.012	.008-.015	.009-.017	.010-.019	.012-.024	.015-.029
	2	260	-	460	IPR	.005-.006	.005-.007	.006-.010	.008-.012	.009-.014	.010-.016	.012-.019	.015-.024
	3	260	-	430	IPR	.003-.007	.004-.007	.005-.010	.006-.012	.007-.014	.007-.016	.009-.019	.012-.024
N	1	300	-	1030	IPR	.003-.006	.004-.006	.005-.008	.006-.009	.008-.011	.009-.013	.011-.016	.013-.019
	2	300	-	890	IPR	.003-.006	.004-.008	.005-.009	.006-.011	.008-.013	.009-.014	.011-.017	.013-.020
	3	300	-	890	IPR	.005-.006	.005-.006	.006-.008	.006-.009	.008-.011	.009-.013	.011-.016	.013-.017
	4	300	-	590	IPR	.003-.006	.001-.008	.005-.009	.006-.011	.008-.013	.009-.014	.011-.016	.013-.019
S	1	30	-	100	IPR	.001-.002	.002-.003	.002-.004	.003-.005	.004-.005	.004-.006	.005-.006	.006-.007
	2	30	-	80	IPR	.001-.002	.001-.002	.002-.003	.003-.004	.003-.004	.004-.005	.004-.006	.004-.006
	3	30	-	100	IPR	.001-.002	.001-.002	.002-.003	.002-.004	.003-.004	.003-.004	.004-.005	.004-.006
	4	30	-	130	IPR	.001-.002	.001-.002	.002-.003	.003-.004	.003-.004	.004-.005	.004-.006	.004-.006

Application Data • TDS+ Series • WU20PD™ • Through Coolant • Metric

Material Group		Cutting Speed – vc Range – m/min			Recommended Feed Rate (f) by Diameter								
		min	-	max	Tool Diameter (mm)	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	0	80	-	160	mm/r	0,06-0,12	0,07-0,14	0,09-0,19	0,11-0,22	0,13-0,26	0,15-0,30	0,19-0,36	0,24-0,46
	1	70	-	140	mm/r	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	90	-	140	mm/r	0,07-0,14	0,08-0,16	0,12-0,22	0,14-0,26	0,17-0,31	0,20-0,35	0,24-0,42	0,31-0,53
	3	60	-	100	mm/r	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
	4	50	-	100	mm/r	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
	5	50	-	80	mm/r	0,08-0,13	0,10-0,15	0,12-0,19	0,16-0,24	0,20-0,27	0,24-0,30	0,28-0,38	0,32-0,44
M	1	30	-	50	mm/r	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
	2	40	-	60	mm/r	0,04-0,08	0,06-0,10	0,08-0,12	0,09-0,14	0,10-0,16	0,12-0,18	0,14-0,20	0,16-0,22
	3	30	-	50	mm/r	0,04-0,07	0,05-0,09	0,08-0,11	0,09-0,12	0,10-0,14	0,12-0,16	0,14-0,18	0,16-0,20
K	1	80	-	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
	2	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
	3	80	-	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
N	1	90	-	315	mm/r	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
	2	90	-	270	mm/r	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
	3	90	-	270	mm/r	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
	4	90	-	180	mm/r	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	1	10	-	30	mm/r	0,03-0,06	0,04-0,08	0,06-0,10	0,08-0,12	0,09-0,13	0,10-0,14	0,12-0,16	0,14-0,18
	2	10	-	25	mm/r	0,02-0,04	0,03-0,06	0,05-0,08	0,07-0,10	0,08-0,11	0,09-0,12	0,10-0,14	0,11-0,16
	3	10	-	30	mm/r	0,02-0,04	0,02-0,05	0,04-0,07	0,06-0,09	0,07-0,10	0,08-0,11	0,09-0,13	0,10-0,15
	4	10	-	40	mm/r	0,02-0,04	0,03-0,06	0,05-0,08	0,07-0,10	0,08-0,11	0,09-0,12	0,10-0,14	0,11-0,16

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

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

TOP DRILL™ Deep Hole

Solid Carbide Deep Hole Drills • TDD

TDD solid carbide deep hole drills consistently deliver high MRRs in steel and cast iron materials using one universal grade.

132° cone point geometry

Improves hole quality, and productivity.

4-margin design

Improves process stability, increases tool life, enables interrupted cuts.

30° helix with optimized flute profile

Reduces risk of chip jamming and catastrophic failure.

Ultra-fine grain substrate

Superior resistance against drill breakage.



The Solid Carbide Deep Hole Drills are enhanced with a cone point geometry which enables the drill to outperform gun drills and HSS deep hole drills in deep hole applications up to 30 x D.

WU20PD



Ultra-fine grain carbide
TiAlN multilayer for steel and cast iron

CONSISTENT PERFORMANCE

PRODUCT

POINT GEOMETRY/GRADE

UP 132° cone point geometry, low thrust, excellent centering

DIAMETER RANGE

.1181–.5118" (3,0–13,0mm)

INDUSTRY



MATERIALS

FIRST CHOICE



SECOND CHOICE



APPLICATIONS



DRILLING



INCLINED EXIT



STACKED PLATES



2 FLUTE/4 MARGIN/ COOLANT



THROUGH COOLANT



MQL (MINIMUM QUANTITY LUBRICANT)



HELIX ANGLE: 30°



PLAIN SHANK: ≤H5

SERIES

LENGTH RATIO

DIAMETER RANGE

TDD105Z (H101Z)

15 x D

.1181–.5118" (3,0–13,0mm)

TDD106Z (H102Z)

20 x D

.1181–.5118" (3,0–13,0mm)

TDD107Z (H103Z)

25 x D

.1181–.5118" (3,0–13,0mm)

TDD108Z (H104Z)

30 x D

.1181–.5118" (3,0–13,0mm)

Z-SHANK

Round cylindrical, 1mm steps

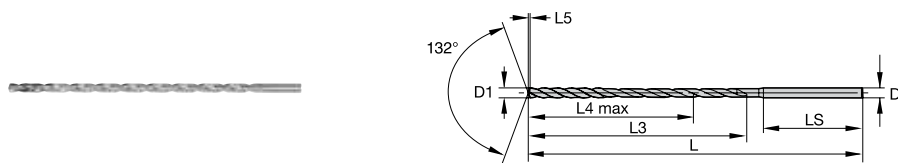


TDD • Catalog Numbering System

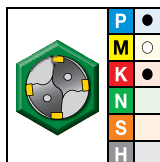
Each character in our catalog number signifies a specific trait of that product.
Use the following key columns and corresponding images to easily identify which attributes apply.

TD	D	105	Z	06350	WU20PD
Top Drill	Deep Hole Drills	Length	Shank	Diameter in Inch	
TD = Top Drill		5 = 15 x D (H101) 6 = 20 x D (H102) 7 = 25 x D (H103) 8 = 30 x D (H104)	Z = Cylindrical Shank, 1mm steps	03000 = 3,000mm 06350 = 1/4"	WIDIA™ , Universal, PVD, Drilling

TOP DRILL Deep Hole • 15 x D • TDD105 • 2 Flute



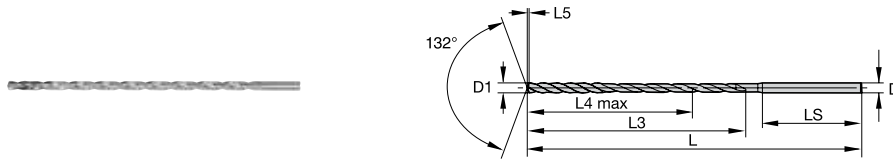
For information on L, L3, and L4 max, see page C46



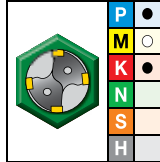
● first choice
○ alternate choice

grade WU20PD TiAlN		D1 diameter				D	L3	L4 max	L5	LS	L
order #	catalog #	mm	in	fraction	wire size						
3899626	TDD105Z03000	3,000	.1181	—	—	3	52	45	0,6	30	86
3899627	TDD105Z03175	3,175	.1250	1/8	—	4	67	58	0,6	32	105
3899628	TDD105Z03500	3,500	.1378	—	—	4	68	59	0,7	32	105
3899629	TDD105Z03571	3,571	.1406	9/64	—	4	68	59	0,7	32	105
3899630	TDD105Z03800	3,800	.1496	—	—	4	69	60	0,8	32	105
3899631	TDD105Z03970	3,970	.1563	5/32	—	4	70	60	0,8	32	105
3899632	TDD105Z04000	4,000	.1575	—	—	4	70	60	0,8	32	105
3899683	TDD105Z04039	4,039	.1590	—	21	5	84	73	0,8	34	124
3899684	TDD105Z04300	4,300	.1693	—	—	5	85	74	0,9	34	124
3899685	TDD105Z04500	4,500	.1772	—	—	5	85	74	0,9	34	124
3899686	TDD105Z04623	4,623	.1820	—	14	5	86	75	1,0	34	124
3899687	TDD105Z04763	4,763	.1875	3/16	—	5	86	75	1,0	34	124
3899688	TDD105Z05000	5,000	.1969	—	—	5	87	75	1,0	34	124
3899689	TDD105Z05159	5,159	.2031	13/64	—	6	101	88	1,1	36	143
3899690	TDD105Z05410	5,410	.2130	—	3	6	102	89	1,1	36	143
3899691	TDD105Z05500	5,500	.2165	—	—	6	102	89	1,1	36	143
3899692	TDD105Z05558	5,558	.2188	7/32	—	6	102	89	1,2	36	143
3899693	TDD105Z05800	5,800	.2283	—	—	6	103	89	1,2	36	143
3899694	TDD105Z06000	6,000	.2362	—	—	6	104	90	1,2	36	143
3899695	TDD105Z06200	6,200	.2441	—	—	7	118	103	1,3	38	162
3899696	TDD105Z06350	6,350	.2500	1/4	E	7	119	104	1,3	38	162
3899697	TDD105Z06500	6,500	.2559	—	—	7	119	104	1,4	38	162
3899698	TDD105Z06528	6,528	.2570	—	F	7	119	104	1,4	38	162
3899699	TDD105Z06746	6,746	.2656	17/64	—	7	120	104	1,4	38	162
3899700	TDD105Z06800	6,800	.2677	—	—	7	120	104	1,4	38	162
3899701	TDD105Z06909	6,909	.2720	—	I	7	121	105	1,4	38	162
3899702	TDD105Z07000	7,000	.2756	—	—	7	121	105	1,5	38	162
3900612	TDD105Z07145	7,145	.2813	9/32	—	8	135	118	1,5	40	181
3900633	TDD105Z07500	7,500	.2953	—	—	8	136	119	1,6	40	181
3899764	TDD106Z07500	7,500	.2953	—	—	8	174	157	1,6	40	221
3900635	TDD105Z07938	7,938	.3125	5/16	—	8	138	120	1,7	40	181
3900636	TDD105Z08000	8,000	.3150	—	—	8	138	120	1,7	40	181
3900637	TDD105Z08334	8,334	.3281	21/64	—	9	153	134	1,8	42	200
3900638	TDD105Z08433	8,433	.3320	—	Q	9	153	134	1,8	42	200
3900639	TDD105Z08500	8,500	.3346	—	—	9	153	134	1,8	42	200
3900640	TDD105Z08733	8,733	.3438	11/32	—	9	154	134	1,8	42	200
3900641	TDD105Z09000	9,000	.3543	—	—	9	155	135	1,9	42	200
3900643	TDD105Z09500	9,500	.3740	—	—	10	170	149	2,0	44	219
3900644	TDD105Z09525	9,525	.3750	3/8	—	10	170	149	2,0	44	219
3900645	TDD105Z09750	9,750	.3839	—	—	10	171	149	2,1	44	219
3900647	TDD105Z10000	10,000	.3937	—	—	10	172	150	2,1	44	219
3900648	TDD105Z10200	10,200	.4016	—	—	11	186	163	2,2	46	238
3900649	TDD105Z10320	10,317	.4062	13/32	—	11	187	164	2,2	46	238
3900650	TDD105Z10500	10,500	.4134	—	—	11	187	164	2,2	46	238
3900652	TDD105Z11000	11,000	.4331	—	—	11	189	165	2,3	46	238
3900653	TDD105Z11113	11,113	.4375	7/16	—	12	203	178	2,4	48	257
3900654	TDD105Z11500	11,500	.4528	—	—	12	204	179	2,4	48	257
3900656	TDD105Z12000	12,000	.4724	—	—	12	206	180	2,5	48	257
3900657	TDD105Z12304	12,304	.4844	31/64	—	13	221	194	2,6	50	276
3900658	TDD105Z12500	12,500	.4921	—	—	13	221	194	2,7	50	276
3900659	TDD105Z12700	12,700	.5000	1/2	—	13	222	195	2,7	50	276
3900660	TDD105Z13000	13,000	.5118	—	—	13	223	195	2,8	50	276

TOP DRILL Deep Hole • 20 x D • TDD106 • 2 Flute



For information on L, L3, and L4 max, see page C46



● first choice
○ alternate choice

grade WU20PD TiAlN		D1 diameter				D	L3	L4 max	L5	LS	L
order #	catalog #	mm	in	fraction	wire size						
3899782	TDD106Z03000	3,000	.1181	—	—	3	67	60	0,6	30	101
3899803	TDD106Z03175	3,175	.1250	1/8	—	4	83	74	0,6	32	125
3899804	TDD106Z03500	3,500	.1378	—	—	4	86	77	0,7	32	125
3899805	TDD106Z03571	3,571	.1406	9/64	—	4	86	77	0,7	32	125
3899806	TDD106Z03800	3,800	.1496	—	—	4	88	79	0,8	32	125
3899807	TDD106Z03970	3,970	.1563	5/32	—	4	89	79	0,8	32	125
3899808	TDD106Z04000	4,000	.1575	—	—	4	90	80	0,8	32	125
3899809	TDD106Z04039	4,039	.1590	—	21	5	104	93	0,8	34	149
3899810	TDD106Z04300	4,300	.1693	—	—	5	106	95	0,9	34	149
3899811	TDD106Z04500	4,500	.1772	—	—	5	108	97	0,9	34	149
3899812	TDD106Z04623	4,623	.1820	—	14	5	109	98	1,0	34	149
3899813	TDD106Z04763	4,763	.1875	3/16	—	5	110	99	1,0	34	149
3899814	TDD106Z05000	5,000	.1969	—	—	5	112	100	1,0	34	149
3899815	TDD106Z05159	5,159	.2031	13/64	—	6	127	114	1,1	36	173
3899816	TDD106Z05410	5,410	.2130	—	3	6	129	116	1,1	36	173
3899818	TDD106Z05500	5,500	.2165	—	—	6	130	117	1,1	36	173
3899819	TDD106Z05558	5,558	.2188	7/32	—	6	130	117	1,2	36	173
3899820	TDD106Z05800	5,800	.2283	—	—	6	132	118	1,2	36	173
3899821	TDD106Z06000	6,000	.2362	—	—	6	134	120	1,2	36	173
3899822	TDD106Z06200	6,200	.2441	—	—	7	149	134	1,3	38	197
3899823	TDD106Z06350	6,350	.2500	1/4	E	7	151	136	1,3	38	197
3899824	TDD106Z06500	6,500	.2559	—	—	7	152	137	1,4	38	197
3899825	TDD106Z06528	6,528	.2570	—	F	7	152	137	1,4	38	197
3899826	TDD106Z06746	6,746	.2656	17/64	—	7	154	138	1,4	38	197
3899827	TDD106Z06800	6,800	.2677	—	—	7	154	138	1,4	38	197
3899829	TDD106Z07000	7,000	.2756	—	—	7	156	140	1,5	38	197
3899763	TDD106Z07145	7,145	.2813	9/32	—	8	171	154	1,5	40	221
3899765	TDD106Z07541	7,541	.2969	19/64	—	8	174	157	1,6	40	221
3899766	TDD106Z07938	7,938	.3125	5/16	—	8	177	159	1,7	40	221
3899767	TDD106Z08000	8,000	.3150	—	—	8	178	160	1,7	40	221
3899769	TDD106Z08433	8,433	.3320	—	Q	9	195	176	1,8	42	245
3899770	TDD106Z08500	8,500	.3346	—	—	9	196	177	1,8	42	245
3899771	TDD106Z08733	8,733	.3438	11/32	—	9	198	178	1,8	42	245
3899772	TDD106Z09000	9,000	.3543	—	—	9	200	180	1,9	42	245
3899784	TDD106Z09500	9,500	.3740	—	—	10	218	197	2,0	44	269
3899785	TDD106Z09525	9,525	.3750	3/8	—	10	218	197	2,0	44	269
3899787	TDD106Z09921	9,921	.3906	25/64	—	10	221	199	2,1	44	269
3899788	TDD106Z10000	10,000	.3937	—	—	10	222	200	2,1	44	269
3899789	TDD106Z10200	10,200	.4016	—	—	11	237	214	2,2	46	293
3899790	TDD106Z10320	10,317	.4062	13/32	—	11	238	215	2,2	46	293
3899791	TDD106Z10500	10,500	.4134	—	—	11	240	217	2,2	46	293
3899792	TDD106Z10716	10,716	.4219	27/64	—	11	242	219	2,3	46	293
3899793	TDD106Z11000	11,000	.4331	—	—	11	244	220	2,3	46	293
3899794	TDD106Z11113	11,113	.4375	7/16	—	12	259	234	2,4	48	317
3899795	TDD106Z11500	11,500	.4528	—	—	12	262	237	2,4	48	317
3899797	TDD106Z12000	12,000	.4724	—	—	12	266	240	2,5	48	317
3899799	TDD106Z12500	12,500	.4921	—	—	13	284	257	2,7	50	341
3899800	TDD106Z12700	12,700	.5000	1/2	—	13	285	258	2,7	50	341
3899801	TDD106Z13000	13,000	.5118	—	—	13	288	260	2,8	50	341

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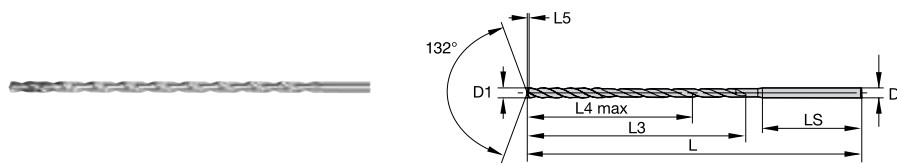
SOLID END MILLING

HOLEMAKING

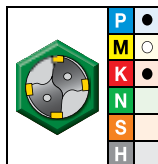
TAPPING

TURNING

TOP DRILL Deep Hole • 25 x D • TDD107 • 2 Flute



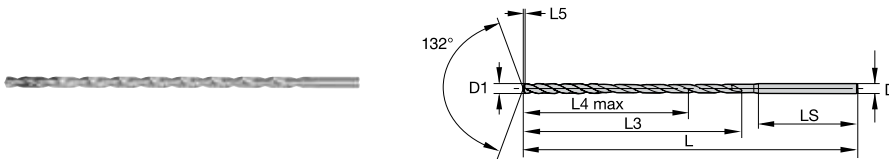
For information on L, L3, and L4 max, see page C46



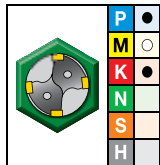
● first choice
○ alternate choice

grade WU20PD TiAlN		D1 diameter				D	L3	L4 max	L5	LS	L
order #	catalog #	mm	in	fraction	wire size						
3899708	TDD107Z03000	3,000	.1181	—	—	3	82	75	0,6	30	116
3899709	TDD107Z03175	3,175	.1250	1/8	—	4	99	90	0,6	32	145
3899710	TDD107Z03500	3,500	.1378	—	—	4	103	94	0,7	32	145
3899712	TDD107Z03800	3,800	.1496	—	—	4	107	98	0,8	32	145
3899733	TDD107Z03970	3,970	.1563	5/32	—	4	109	99	0,8	32	145
3899734	TDD107Z04000	4,000	.1575	—	—	4	110	100	0,8	32	145
3899737	TDD107Z04500	4,500	.1772	—	—	5	130	119	0,9	34	174
3899739	TDD107Z04763	4,763	.1875	3/16	—	5	134	123	1,0	34	174
3899740	TDD107Z05000	5,000	.1969	—	—	5	137	125	1,0	34	174
3899743	TDD107Z05500	5,500	.2165	—	—	6	157	144	1,1	36	203
3899744	TDD107Z05558	5,558	.2188	7/32	—	6	158	145	1,2	36	203
3899745	TDD107Z05800	5,800	.2283	—	—	6	161	147	1,2	36	203
3899746	TDD107Z06000	6,000	.2362	—	—	6	164	150	1,2	36	203
3899748	TDD107Z06350	6,350	.2500	1/4	E	7	182	167	1,3	38	232
3899749	TDD107Z06500	6,500	.2559	—	—	7	184	169	1,4	38	232
3899750	TDD107Z06528	6,528	.2570	—	F	7	185	170	1,4	38	232
3899753	TDD107Z06909	6,909	.2720	—	I	7	190	174	1,4	38	232
3899754	TDD107Z07000	7,000	.2756	—	—	7	191	175	1,5	38	232
3899567	TDD107Z07541	7,541	.2969	19/64	—	8	212	195	1,6	40	261
3899569	TDD107Z08000	8,000	.3150	—	—	8	218	200	1,7	40	261
3899571	TDD107Z08433	8,433	.3320	—	Q	9	237	218	1,8	42	290
3899572	TDD107Z08500	8,500	.3346	—	—	9	238	219	1,8	42	290
3899604	TDD107Z09000	9,000	.3543	—	—	9	245	225	1,9	42	290
3899606	TDD107Z09500	9,500	.3740	—	—	10	265	244	2,0	44	319
3899607	TDD107Z09525	9,525	.3750	3/8	—	10	266	245	2,0	44	319
3899610	TDD107Z10000	10,000	.3937	—	—	10	272	250	2,1	44	319
3899611	TDD107Z10300	10,300	.4055	—	—	11	290	267	2,2	46	348
3899612	TDD107Z10320	10,320	.4063	13/32	—	11	290	267	2,2	46	348
3899613	TDD107Z10500	10,500	.4134	—	—	11	292	269	2,2	46	348
3899614	TDD107Z10716	10,716	.4219	27/64	—	11	295	272	2,3	46	348
3899615	TDD107Z11000	11,000	.4331	—	—	11	299	275	2,3	46	348
3899616	TDD107Z11113	11,113	.4375	7/16	—	12	314	289	2,4	48	377
3899617	TDD107Z11500	11,500	.4528	—	—	12	319	294	2,4	48	377
3899619	TDD107Z12000	12,000	.4724	—	—	12	326	300	2,5	48	377
3899621	TDD107Z12500	12,500	.4921	—	—	13	346	319	2,7	50	406
3899622	TDD107Z12700	12,700	.5000	1/2	—	13	349	322	2,7	50	406
3899623	TDD107Z13000	13,000	.5118	—	—	13	353	325	2,8	50	406

TOP DRILL Deep Hole • 30 x D • TDD108 • 2 Flute



For information on L, L3, and L4 max, see page C46



- first choice
- alternate choice

grade WU20PD TiAlN		D1 diameter					D	L3	L4 max	L5	LS	L
order #	catalog #	mm	in	fraction	wire size							
3899539	TDD108Z03000	3,000	.1181	—	—	3	97	90	0,6	30	131	
3899540	TDD108Z03175	3,175	.1250	1/8	—	4	115	106	0,6	32	165	
3899541	TDD108Z03500	3,500	.1378	—	—	4	121	112	0,7	32	165	
3899573	TDD108Z03800	3,800	.1496	—	—	4	126	117	0,8	32	165	
3899574	TDD108Z03970	3,970	.1563	5/32	—	4	129	119	0,8	32	165	
3899575	TDD108Z04000	4,000	.1575	—	—	4	130	120	0,8	32	165	
3899576	TDD108Z04039	4,039	.1590	—	21	5	144	133	0,8	34	199	
3899577	TDD108Z04300	4,300	.1693	—	—	5	149	138	0,9	34	199	
3899578	TDD108Z04500	4,500	.1772	—	—	5	153	142	0,9	34	199	
3899579	TDD108Z04623	4,623	.1820	—	14	5	155	144	1,0	34	199	
3899580	TDD108Z04763	4,763	.1875	3/16	—	5	157	146	1,0	34	199	
3899581	TDD108Z05000	5,000	.1969	—	—	5	162	150	1,0	34	199	
3899582	TDD108Z05159	5,159	.2031	13/64	—	6	179	166	1,1	36	233	
3899583	TDD108Z05410	5,410	.2130	—	3	6	183	170	1,1	36	233	
3899584	TDD108Z05500	5,500	.2165	—	—	6	185	172	1,1	36	233	
3899586	TDD108Z05800	5,800	.2283	—	—	6	190	176	1,2	36	233	
3899587	TDD108Z06000	6,000	.2362	—	—	6	194	180	1,2	36	233	
3899588	TDD108Z06200	6,200	.2441	—	—	7	211	196	1,3	38	267	
3899589	TDD108Z06350	6,350	.2500	1/4	E	7	214	199	1,3	38	267	
3899590	TDD108Z06500	6,500	.2559	—	—	7	217	202	1,4	38	267	
3899592	TDD108Z06746	6,746	.2656	17/64	—	7	221	205	1,4	38	267	
3899593	TDD108Z06800	6,800	.2677	—	—	7	222	206	1,4	38	267	
3899594	TDD108Z06909	6,909	.2720	—	I	7	224	208	1,4	38	267	
3899595	TDD108Z07000	7,000	.2756	—	—	7	226	210	1,5	38	267	
3899600	TDD108Z07145	7,145	.2813	9/32	—	8	242	225	1,5	40	301	
3899601	TDD108Z07500	7,500	.2953	—	—	8	249	232	1,6	40	301	
3899653	TDD108Z07938	7,938	.3125	5/16	—	8	257	239	1,7	40	301	
3899654	TDD108Z08000	8,000	.3150	—	—	8	258	240	1,7	40	301	
3899657	TDD108Z08500	8,500	.3346	—	—	9	281	262	1,8	42	335	
3899659	TDD108Z09000	9,000	.3543	—	—	9	290	270	1,9	42	335	
3899661	TDD108Z09500	9,500	.3740	—	—	10	313	292	2,0	44	369	
3899662	TDD108Z09525	9,525	.3750	3/8	—	10	313	292	2,0	44	369	
3899663	TDD108Z09750	9,750	.3839	—	—	10	317	295	2,1	44	369	
3899665	TDD108Z10000	10,000	.3937	—	—	10	322	300	2,1	44	369	
3899666	TDD108Z10200	10,200	.4016	—	—	11	339	316	2,2	46	403	
3899667	TDD108Z10320	10,317	.4062	13/32	—	11	341	318	2,2	46	403	
3899668	TDD108Z10500	10,500	.4134	—	—	11	345	322	2,2	46	403	
3899670	TDD108Z11000	11,000	.4331	—	—	11	354	330	2,3	46	403	
3899671	TDD108Z11113	11,113	.4375	7/16	—	12	370	345	2,4	48	437	
3899672	TDD108Z11500	11,500	.4528	—	—	12	377	352	2,4	48	437	
3899674	TDD108Z12000	12,000	.4724	—	—	12	386	360	2,5	48	437	
3899675	TDD108Z12304	12,304	.4844	31/64	—	13	405	378	2,6	50	471	
3899676	TDD108Z12500	12,500	.4921	—	—	13	409	382	2,7	50	471	
3899677	TDD108Z12700	12,700	.5000	1/2	—	13	412	385	2,7	50	471	
3899678	TDD108Z13000	13,000	.5118	—	—	13	418	390	2,8	50	471	

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Application Data • TDD Series • WU20PD • Through Coolant • Inch

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

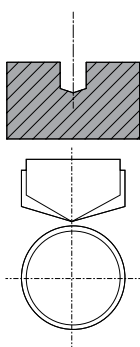
Application Data • TDD Series • WU20PD™ • Through Coolant • Metric

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

Inch tolerance			
D1	D1 tolerance m7	D	D tolerance h6
> .1181-.2362	.0000/-.0005	> .1181-.2362	.0000/-.0003
> .2362-.3937	.0000/-.0006	> .2362-.3937	.0000/-.0004
> .3937-.5118	.0000/-.0007	> .3937-.5118	.0000/-.0004

Metric tolerance			
nominal size range	D1 tolerance	D1 tolerance	D tolerance h6
>3-6	0,000/-0,012	>3-6	0,000/-0,008
>6-10	0,000/-0,015	>6-10	0,000/-0,009
>10-13	0,000/-0,018	>10-13	0,000/-0,011

Deep-Hole Drills Application Rules

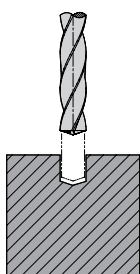


1) Pilot Drill Hole — IMPORTANT!

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

Recommendations:

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

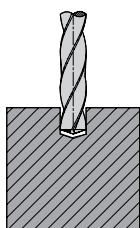


2) Feed TDD10* into Pilot Hole

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

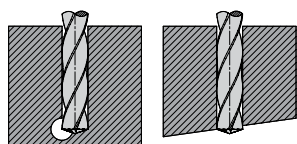
Recommendations:

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



3) Drill Hole

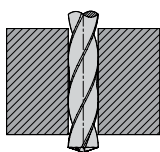
Cutting Parameters: Start recommended speed and feed rate at $.039"$ (1mm) from the bottom of the pilot hole, clockwise.



Recommendations:

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

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



4) Drill Retraction

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

Recommendations:

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

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

5) Vertical Applications

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



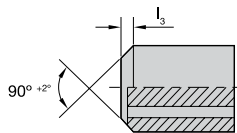
Horizontal drilling process preferred for optimum chip evacuation.

Deep-Hole Drills Application Rules



6) Coolant

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



MQL back end according to DIN 69090-3

7) Minimal Quantity Lubrication

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



8) Shanks

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

Achieve the best tool performance with hydraulic chucks.

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

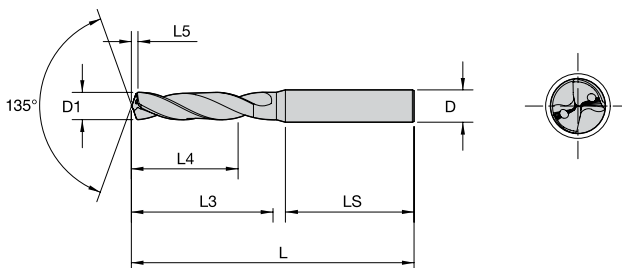
Shank Designs to DIN 6535



Form HE,
2° angle design F



Form HA,
straight design A



inch Ø		DIN 6535		SHORT* ~3 x D			LONG* ~5 x D			EXTRA LONG** ~8 x D		
D1 min	D1 max	D	LS	L	L3	L4 max	L	L3	L4 max	L	L3	L4 max
.0394	.0551	.1575	1.10	2.28	.28	.20	2.28	.35	.24	2.28	.47	.39
.0552	.0748	.1575	1.10	2.28	.35	.24	2.28	.47	.35	2.28	.71	.59
.0748	.0906	.1575	1.10	2.28	.51	.35	2.28	.71	.55	2.60	1.02	.87
.0906	.1177	.1575	1.10	2.28	.67	.47	2.28	.87	.67	2.60	1.18	.98
.1181	.1476	.2362	1.42	2.44	.79	.55	2.60	1.10	.91	3.07	1.57	1.30
.1477	.1870	.2362	1.42	2.60	.94	.67	2.91	1.42	1.14	3.43	1.93	1.61
.1870	.2362	.2362	1.42	2.60	1.10	.79	3.23	1.73	1.38	3.70	2.20	1.89
.2363	.2756	.3150	1.42	3.11	1.34	.94	3.58	2.09	1.69	4.13	2.64	2.24
.2756	.3150	.3150	1.42	3.11	1.61	1.14	3.58	2.09	1.69	4.33	2.83	2.40
.3150	.3937	.3937	1.57	3.50	1.85	1.38	4.06	2.40	1.93	4.80	3.15	2.68
.3937	.4724	.4724	1.77	4.02	2.17	1.57	4.65	2.80	2.20	5.55	3.70	3.11
.4725	.5512	.5512	1.77	4.21	2.36	1.69	4.88	3.03	2.36	6.10	4.25	3.58
.5512	.6299	.6299	1.89	4.53	2.56	1.77	5.24	3.27	2.48	6.73	4.76	3.98
.6300	.7087	.7087	1.89	4.84	2.87	2.01	5.63	3.66	2.80	7.28	5.32	4.45
.7087	.7874	.7874	1.97	5.16	3.11	2.17	6.02	3.98	3.03	7.87	5.83	4.88
.7874	.8661	.7874	1.97	5.55	3.39	2.36	6.57	4.41	3.35	8.54	6.38	5.35
.8662	.9843	.9843	2.20	6.02	3.74	2.56	7.24	4.96	3.86	9.37	7.09	5.91

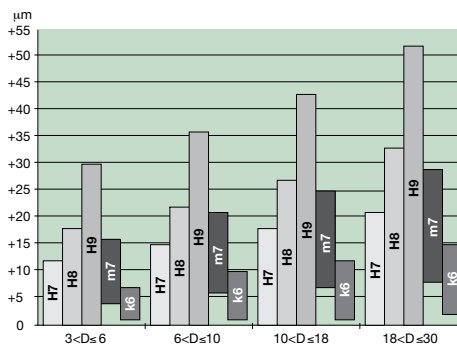
mm Ø		DIN 6535		SHORT* ~3 x D			REGULAR* ~5 x D			LONG** ~8 x D		
D1 min	D1 max	D	LS min	L	L3	L4	L	L3	L4	L	L3	L4
1,000	1,400	4	28	58	7	5	58	9	6	58	12	10
1,401	1,900	4	28	58	9	6	58	12	9	58	18	15
1,901	2,300	4	28	58	13	9	58	18	14	66	26	22
2,301	2,990	4	28	58	17	12	58	22	17	66	30	25
3,000	3,750	6	36	62	20	14	66	28	23	78	40	33
3,751	4,750	6	36	66	24	17	74	36	29	87	49	41
4,751	6,000	6	36	66	28	20	82	44	35	94	56	48
6,001	7,000	8	36	79	34	24	91	53	43	105	67	57
7,001	8,000	8	36	79	41	29	91	53	43	110	72	61
8,001	10,000	10	40	89	47	35	103	61	49	122	80	68
10,001	12,000	12	45	102	55	40	118	71	56	141	94	79
12,001	14,000	14	45	107	60	43	124	77	60	155	108	91
14,001	16,000	16	48	115	65	45	133	83	63	171	121	101
16,001	18,000	18	48	123	73	51	143	93	71	185	135	113
18,001	20,000	20	50	131	79	55	153	101	77	200	148	124
20,001	22,000	20	50	141	86	60	167	112	85	217	162	136
22,001	25,000	25	56	153	95	65	184	126	98	238	180	150

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

Tolerances of Drills and Holes

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

Tolerances of diameter D1 on:
Spiral Flute
TDG Drill





widia.com

WIDIA 

TOP DRILL™ Modular X

TDMX

The TDMX modular drill will deliver maximum clamping stability between the carbide insert and the pocket seat, enabling safe operations under unstable conditions using material-specific point geometries and grades.

Extra stable pocket seat design to increase stability to securely face high demanding applications.

Coolant channels exit behind the cutting edge to ensure the best coolant delivery.

Two standard screws clamp and unclamp the insert, without disassembling the tool from the holder.

Margin lands on the entire body length to ensure straightness and increased hole quality.

Polished flutes
Improved chip evacuation.

The TDMX modular drilling line features material-specific inserts seated in an advanced pocket seat design which maximizes the insert clamping rigidity and enables higher productivity even under unstable machining conditions.

TDMX heads can be re-conditioned to increase the total life cycle of the tool.

PK



First choice for steel and cast iron drilling.

FPE



Flat bottom drilling, stacked plates, piloting for deep hole drilling.

MS



First choice for stainless steel and super alloys.

MODULAR STABILITY

PRODUCT

POINT GEOMETRY/GRADE

FPE / WP40PD
PK / WP40PD
MS / WM15PD

DIAMETER RANGE

.629–1.574" (16–40mm)

INDUSTRY



MATERIALS

FIRST CHOICE



APPLICATIONS



DRILLING



INCLINED
ENTRY



INCLINED
EXIT



CROSS
HOLES



STACKED
PLATES



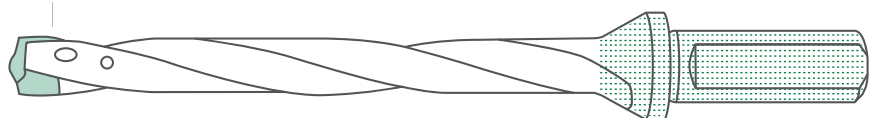
FLAT
BOTTOM

STEEL BODIES



FLANGED SHANK

Increase overall drill stability in deep-drilling applications. Suitable for machining and turning centers.



TDMX Inserts • Catalog Numbering System

Each character in our catalog number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.

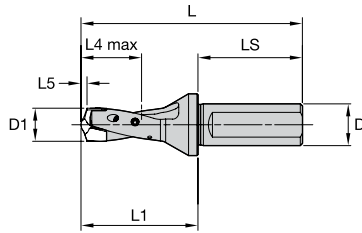
TDMX	08130	PK	WP40PD
Top Drill Modular X	Insert Diameter	Insert Geometry	Grade
	Inch = .813"	PK = steel and cast iron	WIDIA™; P = Primarily steel Application 30 & 40 = tough carbide, PVD coated, Modular Drilling Insert

TDMX Bodies • Catalog Numbering System

Each character in our catalog number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.

TDMX	0788	R5	SL	100
Top Drill Modular X	Drill Body Diameter	L/D Ratio	Shank Style	Shank Diameter
	Inch = .788"	5 x D	Side Lock	1.00"

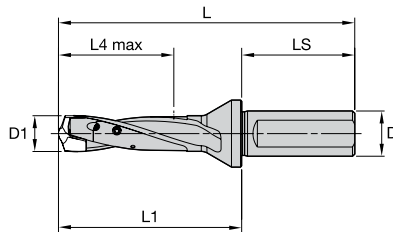
TOP DRILL Modular X • 1.5 x D • Side Lock Shank • Inch



order number	catalog number	SSC	D1	D1 max	LS	D	L	L1	L4 max
6680912	TDMX0630R1SL075	A	.6300	.6692	1.97	.75	4.17	2.20	1.02
6680914	TDMX0670R1SL075	B	.6693	.7086	1.97	.75	4.29	2.32	1.06
6680915	TDMX0709R1SL100	C	.7087	.7480	2.20	1.00	4.65	2.44	1.14
6680916	TDMX0749R1SL100	D	.7481	.7874	2.20	1.00	4.76	2.56	1.18
6680917	TDMX0788R1SL100	E	.7875	.8267	2.20	1.00	4.88	2.68	1.26
6680918	TDMX0827R1SL100	F	.8268	.8661	2.20	1.00	5.00	2.80	1.30
6680919	TDMX0867R1SL100	G	.8662	.9055	2.20	1.00	5.12	2.91	1.38
6680920	TDMX0906R1SL100	H	.9056	.9448	2.20	1.00	5.24	3.03	1.42
6680931	TDMX0945R1SL125	I	.9449	.9842	2.36	1.25	5.51	3.15	1.50
6680932	TDMX0985R1SL125	J	.9843	1.0236	2.36	1.25	5.63	3.27	1.54
6680933	TDMX1024R1SL125	K	1.0237	1.0629	2.36	1.25	5.75	3.39	1.61
6680934	TDMX1063R1SL125	L	1.0630	1.1023	2.36	1.25	5.87	3.50	1.65
6680935	TDMX1103R1SL125	M	1.1024	1.1417	2.36	1.25	5.98	3.62	1.73
6680937	TDMX1142R1SL125	N	1.1418	1.1811	2.36	1.25	6.10	3.74	1.77
6680938	TDMX1182R1SL125	O	1.1812	1.2204	2.36	1.25	6.22	3.86	1.85
6680940	TDMX1221R1SL125	P	1.2205	1.2598	2.36	1.25	6.34	3.98	1.89

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the inserts.
L5 is dependent on the insert.

TOP DRILL Modular X • 3 x D • Side Lock Shank • Inch



order number	catalog number	SSC	D1	D1 max	LS	D	L	L1	L4 max
6572186	TDMX0630R3SL075	A	.6300	.6692	1.97	.75	5.16	3.19	2.01
6572187	TDMX0670R3SL075	B	.6693	.7086	1.97	.75	5.35	3.39	2.13
6572188	TDMX0709R3SL100	C	.7087	.7480	2.20	1.00	5.75	3.54	2.24
6572189	TDMX0749R3SL100	D	.7481	.7874	2.20	1.00	5.94	3.74	2.36
6572190	TDMX0788R3SL100	E	.7875	.8267	2.20	1.00	6.10	3.90	2.48
6572191	TDMX0827R3SL100	F	.8268	.8661	2.20	1.00	6.30	4.09	2.60
6572192	TDMX0867R3SL100	G	.8662	.9055	2.20	1.00	6.46	4.25	2.72
6572193	TDMX0906R3SL100	H	.9056	.9448	2.20	1.00	6.65	4.45	2.83
6572194	TDMX0945R3SL125	I	.9449	.9842	2.36	1.25	6.97	4.61	2.95
6572195	TDMX0985R3SL125	J	.9843	1.0236	2.36	1.25	7.17	4.80	3.07
6572196	TDMX1024R3SL125	K	1.0237	1.0629	2.36	1.25	7.32	4.96	3.19
6572197	TDMX1063R3SL125	L	1.0630	1.1023	2.36	1.25	7.52	5.16	3.31
6572198	TDMX1103R3SL125	M	1.1024	1.1417	2.36	1.25	7.68	5.32	3.43
6572199	TDMX1142R3SL125	N	1.1418	1.1811	2.36	1.25	7.87	5.51	3.54
6572200	TDMX1182R3SL125	O	1.1812	1.2204	2.36	1.25	8.03	5.67	3.66
6572201	TDMX1221R3SL125	P	1.2205	1.2598	2.36	1.25	8.23	5.87	3.78
6572202	TDMX1260R3SL150	Q	1.2599	1.3385	2.76	1.50	8.98	6.22	4.02
6572203	TDMX1339R3SL150	R	1.3386	1.4173	2.76	1.50	9.33	6.57	4.25
6572204	TDMX1418R3SL150	S	1.4174	1.4960	2.76	1.50	9.69	6.93	4.49
6572205	TDMX1497R3SL150	T	1.4961	1.5748	2.76	1.50	10.04	7.28	4.72

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the inserts.
L5 is dependent on the insert.

INDEXABLE MILLING

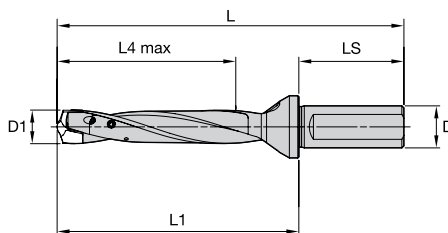
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

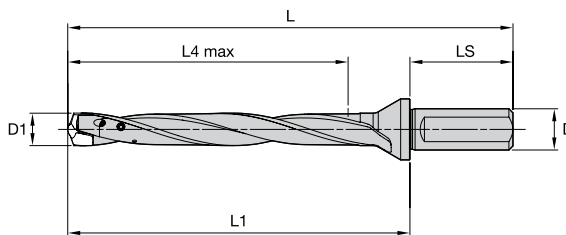
TOP DRILL Modular X • 5 x D • Side Lock Shank • Inch



order number	catalog number	SSC	D1	D1 max	LS	D	L	L1	L4 max
6572206	TDMX0630R5SL075	A	.6300	.6692	1.97	.75	6.50	4.53	3.35
6572207	TDMX0670R5SL075	B	.6693	.7086	1.97	.75	6.77	4.80	3.54
6572208	TDMX0709R5SL100	C	.7087	.7480	2.20	1.00	7.24	5.04	3.74
6572210	TDMX0749R5SL100	D	.7481	.7874	2.20	1.00	7.52	5.32	3.94
6572231	TDMX0788R5SL100	E	.7875	.8267	2.20	1.00	7.76	5.55	4.13
6572232	TDMX0827R5SL100	F	.8268	.8661	2.20	1.00	8.03	5.83	4.33
6572233	TDMX0867R5SL100	G	.8662	.9055	2.20	1.00	8.27	6.06	4.53
6572234	TDMX0906R5SL100	H	.9056	.9448	2.20	1.00	8.54	6.34	4.72
6572235	TDMX0945R5SL125	I	.9449	.9842	2.36	1.25	8.94	6.57	4.92
6572236	TDMX0985R5SL125	J	.9843	1.0236	2.36	1.25	9.21	6.85	5.12
6572237	TDMX1024R5SL125	K	1.0237	1.0629	2.36	1.25	9.45	7.09	5.32
6572238	TDMX1063R5SL125	L	1.0630	1.1023	2.36	1.25	9.72	7.36	5.51
6572239	TDMX1103R5SL125	M	1.1024	1.1417	2.36	1.25	9.96	7.60	5.71
6572240	TDMX1142R5SL125	N	1.1418	1.1811	2.36	1.25	10.24	7.87	5.91
6572241	TDMX1182R5SL125	O	1.1812	1.2204	2.36	1.25	10.47	8.11	6.10
6572242	TDMX1221R5SL125	P	1.2205	1.2598	2.36	1.25	10.75	8.39	6.30
6572243	TDMX1260R5SL150	Q	1.2599	1.3385	2.76	1.50	11.65	8.90	6.69
6572244	TDMX1339R5SL150	R	1.3386	1.4173	2.76	1.50	12.17	9.41	7.09
6572245	TDMX1418R5SL150	S	1.4174	1.4960	2.76	1.50	12.68	9.92	7.48
6572246	TDMX1497R5SL150	T	1.4961	1.5748	2.76	1.50	13.19	10.43	7.87

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the inserts.
L5 is dependent on the insert.

TOP DRILL Modular X • 8 x D • Side Lock Shank • Inch



order number	catalog number	SSC	D1	D1 max	LS	D	L	L1	L4 max
6572247	TDMX0630R8SL075	A	.6300	.6692	1.97	.75	8.50	6.54	5.35
6572248	TDMX0670R8SL075	B	.6693	.7086	1.97	.75	8.90	6.93	5.67
6572249	TDMX0709R8SL100	C	.7087	.7480	2.20	1.00	9.49	7.28	5.98
6572250	TDMX0749R8SL100	D	.7481	.7874	2.20	1.00	9.88	7.68	6.30
6572251	TDMX0788R8SL100	E	.7875	.8267	2.20	1.00	10.24	8.03	6.61
6572252	TDMX0827R8SL100	F	.8268	.8661	2.20	1.00	10.63	8.43	6.93
6572253	TDMX0867R8SL100	G	.8662	.9055	2.20	1.00	10.98	8.78	7.24
6572254	TDMX0906R8SL100	H	.9056	.9448	2.20	1.00	11.38	9.17	7.56
6572255	TDMX0945R8SL125	I	.9449	.9842	2.36	1.25	11.89	9.53	7.87
6572256	TDMX0985R8SL125	J	.9843	1.0236	2.36	1.25	12.28	9.92	8.19
6572257	TDMX1024R8SL125	K	1.0237	1.0629	2.36	1.25	12.64	10.28	8.50
6572258	TDMX1063R8SL125	L	1.0630	1.1023	2.36	1.25	13.03	10.67	8.82
6572259	TDMX1103R8SL125	M	1.1024	1.1417	2.36	1.25	13.39	11.02	9.13
6572260	TDMX1142R8SL125	N	1.1418	1.1811	2.36	1.25	13.78	11.42	9.45
6572261	TDMX1182R8SL125	O	1.1812	1.2204	2.36	1.25	14.13	11.77	9.76
6572262	TDMX1221R8SL125	P	1.2205	1.2598	2.36	1.25	14.53	12.17	10.08
6572263	TDMX1260R8SL150	Q	1.2599	1.3385	2.76	1.50	15.67	12.91	10.71
6572264	TDMX1339R8SL150	R	1.3386	1.4173	2.76	1.50	16.42	13.66	11.34
6572265	TDMX1418R8SL150	S	1.4174	1.4960	2.76	1.50	17.17	14.41	11.97
6572266	TDMX1497R8SL150	T	1.4961	1.5748	2.76	1.50	17.91	15.16	12.60

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the inserts.
L5 is dependent on the insert.

INDEXABLE MILLING

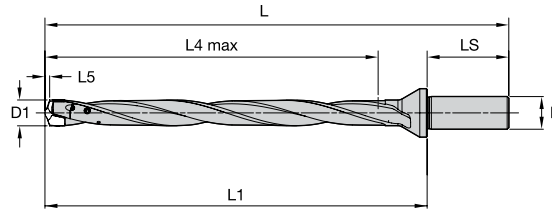
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

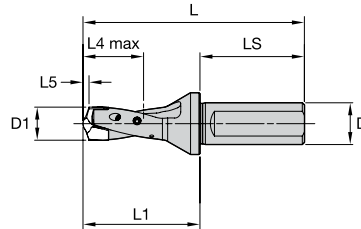
TOP DRILL Modular X • 12 x D • Flanged Round Shank • Inch



order number	catalog number	SSC	D1	D1 max	LS	D	L	L1	L4 max
6680978	TDMX0630R12SF075	A	.6300	.6692	1.97	.75	11.18	9.21	8.03
6680979	TDMX0670R12SF075	B	.6693	.7086	1.97	.75	11.73	9.76	8.50
6680980	TDMX0709R12SF100	C	.7087	.7480	2.20	1.00	12.48	10.28	8.98
6681001	TDMX0749R12SF100	D	.7481	.7874	2.20	1.00	13.03	10.83	9.45
6681002	TDMX0788R12SF100	E	.7875	.8267	2.20	1.00	13.54	11.34	9.92
6681003	TDMX0827R12SF100	F	.8268	.8661	2.20	1.00	14.09	11.89	10.39
6681004	TDMX0867R12SF100	G	.8662	.9055	2.20	1.00	14.61	12.40	10.87
6681005	TDMX0906R12SF100	H	.9056	.9448	2.20	1.00	15.16	12.95	11.34
6681006	TDMX0945R12SF125	I	.9449	.9842	2.36	1.25	15.83	13.46	11.81
6681007	TDMX0985R12SF125	J	.9843	1.0236	2.36	1.25	16.38	14.02	12.28
6681008	TDMX1024R12SF125	K	1.0237	1.0629	2.36	1.25	16.89	14.53	12.76
6681010	TDMX1063R12SF125	L	1.0630	1.1023	2.36	1.25	17.44	15.08	13.23
6681011	TDMX1103R12SF125	M	1.1024	1.1417	2.36	1.25	17.95	15.59	13.70
6681012	TDMX1142R12SF125	N	1.1418	1.1811	2.36	1.25	18.50	16.14	14.17
6681013	TDMX1182R12SF125	O	1.1812	1.2204	2.36	1.25	19.02	16.65	14.65
6681015	TDMX1221R12SF125	P	1.2205	1.2598	2.36	1.25	19.57	17.20	15.12

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the inserts.
L5 is dependent on the insert.

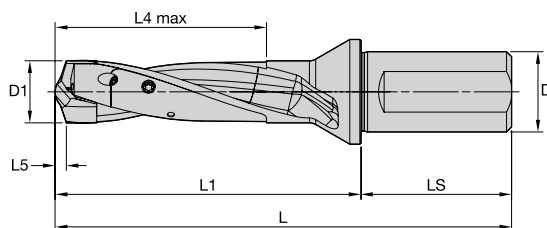
TOP DRILL Modular X • 1.5 x D • Side Lock Shank • Metric



order number	catalog number	SSC	D1	D1 max	LS	D	L	L1	L4 max
6680951	TDMX160R1SL20M	A	16,000	16,999	50	20	106	56	26
6680952	TDMX170R1SL20M	B	17,000	17,999	50	20	109	59	27
6680953	TDMX180R1SL25M	C	18,000	18,999	56	25	118	62	29
6680954	TDMX190R1SL25M	D	19,000	19,999	56	25	121	65	30
6680955	TDMX200R1SL25M	E	20,000	20,999	56	25	124	68	32
6680956	TDMX210R1SL25M	F	21,000	21,999	56	25	127	71	33
6680957	TDMX220R1SL25M	G	22,000	22,999	56	25	130	74	35
6680958	TDMX230R1SL25M	H	23,000	23,999	56	25	133	77	36
6680959	TDMX240R1SL32M	I	24,000	24,999	60	32	140	80	38
6680960	TDMX250R1SL32M	J	25,000	25,999	60	32	143	83	39
6680971	TDMX260R1SL32M	K	26,000	26,999	60	32	146	86	41
6680972	TDMX270R1SL32M	L	27,000	27,999	60	32	149	89	42
6680973	TDMX280R1SL32M	M	28,000	28,999	60	32	152	92	44
6680974	TDMX290R1SL32M	N	29,000	29,999	60	32	155	95	45
6680975	TDMX300R1SL32M	O	30,000	30,999	60	32	158	98	47
6680976	TDMX310R1SL32M	P	31,000	31,999	60	32	161	101	48

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the inserts.
L5 is dependent on the insert.

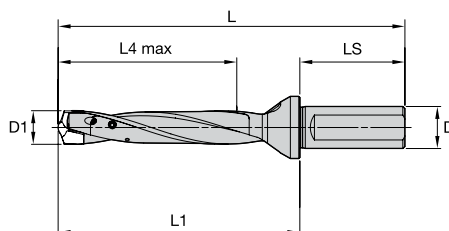
TOP DRILL Modular X • 3 x D • Side Lock Shank • Metric



order number	catalog number	SSC	D1	D1 max	LS	D	L	L1	L4 max
6572091	TDMX160R3SL20M	A	16,000	16,999	50	20	131	81	51
6572092	TDMX170R3SL20M	B	17,000	17,999	50	20	136	86	54
6572093	TDMX180R3SL25M	C	18,000	18,999	56	25	146	90	57
6572094	TDMX190R3SL25M	D	19,000	19,999	56	25	151	95	60
6572096	TDMX200R3SL25M	E	20,000	20,999	56	25	155	99	63
6572097	TDMX210R3SL25M	F	21,000	21,999	56	25	160	104	66
6572098	TDMX220R3SL25M	G	22,000	22,999	56	25	164	108	69
6572099	TDMX230R3SL25M	H	23,000	23,999	56	25	169	113	72
6572100	TDMX240R3SL32M	I	24,000	24,999	60	32	177	117	75
6572101	TDMX250R3SL32M	J	25,000	25,999	60	32	182	122	78
6572102	TDMX260R3SL32M	K	26,000	26,999	60	32	186	126	81
6572104	TDMX270R3SL32M	L	27,000	27,999	60	32	191	131	84
6572105	TDMX280R3SL32M	M	28,000	28,999	60	32	195	135	87
6572106	TDMX290R3SL32M	N	29,000	29,999	60	32	200	140	90
6572107	TDMX300R3SL32M	O	30,000	30,999	60	32	204	144	93
6572108	TDMX310R3SL32M	P	31,000	31,999	60	32	209	149	96
6572109	TDMX320R3SL40M	Q	32,000	33,999	70	40	228	158	102
6572110	TDMX340R3SL40M	R	34,000	35,999	70	40	237	167	108
6572121	TDMX360R3SL40M	S	36,000	37,999	70	40	246	176	114
6572122	TDMX380R3SL40M	T	38,000	40,000	70	40	255	185	120

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the inserts.
L5 is dependent on the insert.

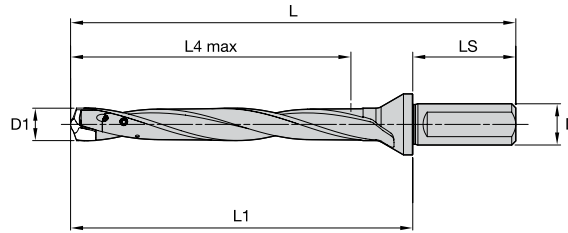
TOP DRILL Modular X • 5 x D • Side Lock Shank • Metric



order number	catalog number	SSC	D1	D1 max	LS	D	L	L1	L4 max
6572125	TDMX160R5SL20M	A	16,000	16,999	50	20	165	115	85
6572126	TDMX170R5SL20M	B	17,000	17,999	50	20	172	122	90
6572127	TDMX180R5SL25M	C	18,000	18,999	56	25	184	128	95
6572128	TDMX190R5SL25M	D	19,000	19,999	56	25	191	135	100
6572129	TDMX200R5SL25M	E	20,000	20,999	56	25	197	141	105
6572130	TDMX210R5SL25M	F	21,000	21,999	56	25	204	148	110
6572141	TDMX220R5SL25M	G	22,000	22,999	56	25	210	154	115
6572142	TDMX230R5SL25M	H	23,000	23,999	56	25	217	161	120
6572143	TDMX240R5SL32M	I	24,000	24,999	60	32	227	167	125
6572144	TDMX250R5SL32M	J	25,000	25,999	60	32	234	174	130
6572145	TDMX260R5SL32M	K	26,000	26,999	60	32	240	180	135
6572146	TDMX270R5SL32M	L	27,000	27,999	60	32	247	187	140
6572147	TDMX280R5SL32M	M	28,000	28,999	60	32	253	193	145
6572148	TDMX290R5SL32M	N	29,000	29,999	60	32	260	200	150
6572149	TDMX300R5SL32M	O	30,000	30,999	60	32	266	206	155
6572150	TDMX310R5SL32M	P	31,000	31,999	60	32	273	213	160
6572151	TDMX320R5SL40M	Q	32,000	33,999	70	40	296	226	170
6572152	TDMX340R5SL40M	R	34,000	35,999	70	40	309	239	180
6572153	TDMX360R5SL40M	S	36,000	37,999	70	40	322	252	190
6572154	TDMX380R5SL40M	T	38,000	40,000	70	40	335	265	200

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the inserts.
L5 is dependent on the insert.

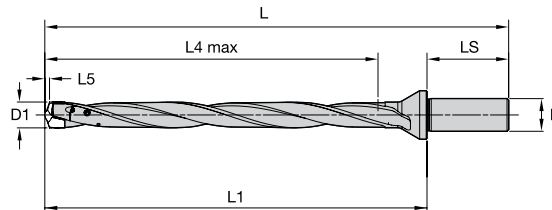
TOP DRILL Modular X • 8 x D • Side Lock Shank • Metric



order number	catalog number	SSC	D1	D1 max	LS	D	L	L1	L4 max
6572155	TDMX160R8SL20M	A	16,000	16,999	50	20	216	166	136
6572156	TDMX170R8SL20M	B	17,000	17,999	50	20	226	176	144
6572157	TDMX180R8SL25M	C	18,000	18,999	56	25	241	185	152
6572158	TDMX190R8SL25M	D	19,000	19,999	56	25	251	195	160
6572159	TDMX200R8SL25M	E	20,000	20,999	56	25	260	204	168
6572160	TDMX210R8SL25M	F	21,000	21,999	56	25	270	214	176
6572171	TDMX220R8SL25M	G	22,000	22,999	56	25	279	223	184
6572172	TDMX230R8SL25M	H	23,000	23,999	56	25	289	233	192
6572173	TDMX240R8SL32M	I	24,000	24,999	60	32	302	242	200
6572174	TDMX250R8SL32M	J	25,000	25,999	60	32	312	252	208
6572175	TDMX260R8SL32M	K	26,000	26,999	60	32	321	261	216
6572176	TDMX270R8SL32M	L	27,000	27,999	60	32	331	271	224
6572177	TDMX280R8SL32M	M	28,000	28,999	60	32	340	280	232
6572178	TDMX290R8SL32M	N	29,000	29,999	60	32	350	290	240
6572179	TDMX300R8SL32M	O	30,000	30,999	60	32	359	299	248
6572180	TDMX310R8SL32M	P	31,000	31,999	60	32	369	309	256
6572181	TDMX320R8SL40M	Q	32,000	33,999	70	40	398	328	272
6572182	TDMX340R8SL40M	R	34,000	35,999	70	40	417	374	288
6572183	TDMX360R8SL40M	S	36,000	37,999	70	40	436	366	304
6572184	TDMX380R8SL40M	T	38,000	40,000	70	40	455	385	320

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the inserts.
L5 is dependent on the insert.

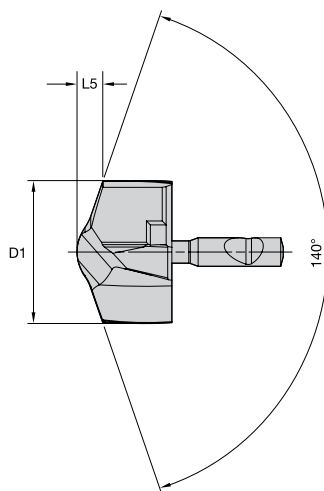
TOP DRILL Modular X • 12 x D • Flanged Round Shank • Metric



order number	catalog number	SSC	D1	D1 max	LS	D	L	L1	L4 max
6681017	TDMX160R12SF20M	A	16,000	16,999	50	20	284	234	204
6681018	TDMX170R12SF20M	B	17,000	17,999	50	20	298	248	216
6681019	TDMX180R12SF25M	C	18,000	18,999	56	25	317	261	228
6681020	TDMX190R12SF25M	D	19,000	19,999	56	25	331	275	240
6681041	TDMX200R12SF25M	E	20,000	20,999	56	25	344	288	252
6681042	TDMX210R12SF25M	F	21,000	21,999	56	25	358	302	264
6681043	TDMX220R12SF25M	G	22,000	22,999	56	25	371	315	276
6681044	TDMX230R12SF25M	H	23,000	23,999	56	25	385	329	288
6681045	TDMX240R12SF32M	I	24,000	24,999	60	32	402	342	300
6681046	TDMX250R12SF32M	J	25,000	25,999	60	32	416	356	312
6681047	TDMX260R12SF32M	K	26,000	26,999	60	32	429	369	324
6681049	TDMX270R12SF32M	L	27,000	27,999	60	32	443	383	336
6681050	TDMX280R12SF32M	M	28,000	28,999	60	32	456	396	348
6681051	TDMX290R12SF32M	N	29,000	29,999	60	32	470	410	360
6681052	TDMX300R12SF32M	O	30,000	30,999	60	32	483	423	372
6681053	TDMX310R12SF32M	P	31,000	31,999	60	32	497	437	384

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the inserts.
L5 is dependent on the insert.

TOP DRILL™ Modular X • Inserts • PK



● first choice

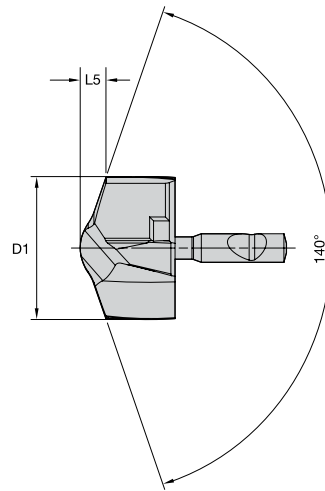
○ alternate choice

P	■	●
M	■	○
K	■	●
N	■	○
S	■	○
H	■	○

catalog number	D1		L5		SSC	WP40PD
	mm	in	mm	in		
TDMX16000PKM	16,00	.630	3,21	.126	A	6568446
TDMX16200PKM	16,20	.638	3,25	.128	A	6568447
TDMX16281PKM	16,28	.641	3,26	.128	A	6568448
TDMX16500PKM	16,50	.650	3,30	.130	A	6568449
TDMX16667PKM	16,67	.656	3,33	.131	A	6568450
TDMX17000PKM	17,00	.669	3,39	.134	B	6568461
TDMX17064PKM	17,06	.672	3,41	.134	B	6568462
TDMX17463PKM	17,46	.688	3,48	.137	B	6568464
TDMX17500PKM	17,50	.689	3,49	.137	B	6568465
TDMX17600PKM	17,60	.693	3,50	.138	B	6568467
TDMX17800PKM	17,80	.701	3,54	.139	B	6568471
TDMX17859PKM	17,86	.703	3,55	.140	B	6568472
TDMX18000PKM	18,00	.709	3,58	.141	C	6568473
TDMX18255PKM	18,26	.719	3,64	.143	C	6568474
TDMX18500PKM	18,50	.728	3,68	.145	C	6568475
TDMX18651PKM	18,65	.734	3,71	.146	C	6568476
TDMX18800PKM	18,80	.740	3,74	.147	C	6568477
TDMX19000PKM	19,00	.748	3,78	.149	D	6568478
TDMX19050PKM	19,05	.750	3,78	.149	D	6568479
TDMX19200PKM	19,20	.756	3,81	.150	D	6568480
TDMX19270PKM	19,27	.759	3,82	.150	D	6568481
TDMX19450PKM	19,45	.766	3,86	.152	D	6568482
TDMX19500PKM	19,50	.768	3,87	.152	D	6568483
TDMX19700PKM	19,70	.776	3,90	.154	D	6568484
TDMX19840PKM	19,84	.781	3,93	.155	D	6568485
TDMX20000PKM	20,00	.787	3,97	.156	E	6568813
TDMX20100PKM	20,10	.791	3,99	.157	E	6568814
TDMX20200PKM	20,20	.795	4,01	.158	E	6568815
TDMX20239PKM	20,24	.797	4,02	.158	E	6568816
TDMX20300PKM	20,30	.799	4,03	.159	E	6568817
TDMX20400PKM	20,40	.803	4,05	.159	E	6568818
TDMX20500PKM	20,50	.807	4,06	.160	E	6568819
TDMX20600PKM	20,60	.811	4,08	.161	E	6568820
TDMX20650PKM	20,65	.813	4,09	.161	E	6568841
TDMX20700PKM	20,70	.815	4,10	.161	E	6568842
TDMX20800PKM	20,80	.819	4,12	.162	E	6568843
TDMX20900PKM	20,90	.823	4,14	.163	E	6568844
TDMX21000PKM	21,00	.827	4,16	.164	F	6568845
TDMX21430PKM	21,43	.844	4,23	.167	F	6568846
TDMX21500PKM	21,50	.847	4,25	.167	F	6568847
TDMX22000PKM	22,00	.866	4,35	.171	G	6568848
TDMX22225PKM	22,23	.875	4,39	.173	G	6568849
TDMX22450PKM	22,45	.884	4,44	.175	G	6568850
TDMX22500PKM	22,50	.886	4,44	.175	G	6568851
TDMX23000PKM	23,00	.906	4,54	.179	H	6568852
TDMX23500PKM	23,50	.925	4,63	.182	H	6568853
TDMX23813PKM	23,81	.938	4,68	.184	H	6568854
TDMX24000PKM	24,00	.945	4,73	.186	I	6568856
TDMX24500PKM	24,50	.965	4,82	.190	I	6568857
TDMX24605PKM	24,61	.969	4,84	.191	I	6568858
TDMX25000PKM	25,00	.984	4,91	.193	J	6568859
TDMX25400PKM	25,40	1.000	4,99	.197	J	6568860

TOP DRILL™ Modular X • Inserts • PK

(continued)



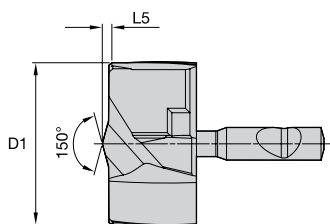
- first choice
- alternate choice

P	■	●
M	■	○
K	■	●
N	■	
S	■	
H	■	

catalog number	D1		L5		SSC	WP40PD
	mm	in	mm	in		
TDMX25500PKM	25,50	1.004	5,01	.197	J	6568861
TDMX25670PKM	25,67	1.011	5,04	.198	J	6568862
TDMX25700PKM	25,70	1.012	5,04	.198	J	6568863
TDMX25760PKM	25,76	1.014	5,05	.199	J	6568864
TDMX25796PKM	25,80	1.016	5,06	.199	J	6568865
TDMX26000PKM	26,00	1.024	5,11	.201	K	6568866
TDMX26192PKM	26,19	1.031	5,15	.203	K	6568867
TDMX26400PKM	26,40	1.039	5,18	.204	K	6568868
TDMX26500PKM	26,50	1.043	5,20	.205	K	6568869
TDMX26589PKM	26,59	1.047	5,22	.206	K	6568870
TDMX27000PKM	27,00	1.063	5,29	.208	L	6568871
TDMX27500PKM	27,50	1.083	5,38	.212	L	6568872
TDMX27780PKM	27,78	1.094	5,43	.214	L	6568873
TDMX28000PKM	28,00	1.102	5,49	.216	M	6568874
TDMX28176PKM	28,18	1.109	5,52	.217	M	6568875
TDMX28500PKM	28,50	1.122	5,58	.220	M	6568876
TDMX28575PKM	28,58	1.125	5,59	.220	M	6568877
TDMX29000PKM	29,00	1.142	5,67	.223	N	6568878
TDMX29367PKM	29,37	1.156	5,74	.226	N	6568879
TDMX29500PKM	29,50	1.161	5,76	.227	N	6568880
TDMX29764PKM	29,76	1.172	5,81	.229	N	6568891
TDMX30000PKM	30,00	1.181	5,87	.231	O	6568892
TDMX30163PKM	30,16	1.188	5,90	.232	O	6568893
TDMX30500PKM	30,50	1.201	5,96	.235	O	6568896
TDMX30955PKM	30,96	1.219	6,04	.238	O	6568897
TDMX31000PKM	31,00	1.221	6,05	.238	P	6568898
TDMX31500PKM	31,50	1.240	6,14	.242	P	6568899
TDMX31750PKM	31,75	1.250	6,18	.243	P	6568900
TDMX32000PKM	32,00	1.260	6,25	.246	Q	6568901
TDMX32500PKM	32,50	1.280	6,34	.250	Q	6568902
TDMX33000PKM	33,00	1.299	6,43	.253	Q	6568903
TDMX33338PKM	33,34	1.313	6,49	.256	Q	6568904
TDMX34000PKM	34,00	1.339	6,61	.260	R	6568905
TDMX34130PKM	34,13	1.344	6,64	.261	R	6568906
TDMX34925PKM	34,93	1.375	6,78	.267	R	6568907
TDMX35000PKM	35,00	1.378	6,79	.267	R	6568908
TDMX35500PKM	35,50	1.398	6,89	.271	R	6568909
TDMX36000PKM	36,00	1.417	7,00	.276	S	6568910
TDMX36500PKM	36,50	1.437	7,09	.279	S	6568911
TDMX37000PKM	37,00	1.457	7,18	.283	S	6568912
TDMX37500PKM	37,50	1.476	7,27	.286	S	6568913
TDMX38000PKM	38,00	1.496	7,36	.290	T	6568914
TDMX38100PKM	38,10	1.500	7,38	.291	T	6568915
TDMX38500PKM	38,50	1.516	7,46	.294	T	6568916
TDMX39000PKM	39,00	1.535	7,55	.297	T	6568917
TDMX39289PKM	39,29	1.547	7,60	.299	T	6568918
TDMX39500PKM	39,50	1.555	7,64	.301	T	6568919
TDMX40000PKM	40,00	1.575	7,73	.304	T	6568920

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

TOP DRILL™ Modular X • Inserts • FPE



● first choice

○ alternate choice

P	Blue	●
M	Yellow	○
K	Red	●
N	Green	○
S	Orange	○
H	Grey	○

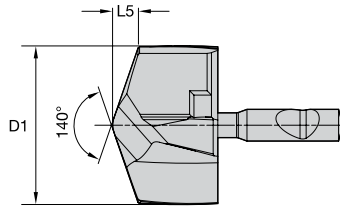
catalog number	D1		L5		SSC	WP40PD
	mm	in	mm	in		
TDMX16000FPEM	16,00	.630	1,16	.046	A	6693048
TDMX16281FPEM	16,28	.641	1,17	.046	A	6693049
TDMX16500FPEM	16,50	.650	1,17	.046	A	6693050
TDMX16667FPEM	16,67	.656	1,17	.046	A	6693111
TDMX17000FPEM	17,00	.669	1,18	.047	B	6693112
TDMX17064FPEM	17,06	.672	1,18	.047	B	6693113
TDMX17500FPEM	17,50	.689	1,19	.047	B	6693114
TDMX18000FPEM	18,00	.709	1,28	.050	C	6693115
TDMX18500FPEM	18,50	.728	1,28	.050	C	6693116
TDMX19000FPEM	19,00	.748	1,29	.051	D	6693117
TDMX19050FPEM	19,05	.750	1,29	.051	D	6693118
TDMX19500FPEM	19,50	.768	1,30	.051	D	6693119
TDMX19840FPEM	19,84	.781	1,31	.052	D	6693120
TDMX20000FPEM	20,00	.787	1,39	.055	E	6693131
TDMX20500FPEM	20,50	.807	1,40	.055	E	6693132
TDMX21000FPEM	21,00	.827	1,40	.055	F	6693133
TDMX21500FPEM	21,50	.847	1,41	.056	F	6693134
TDMX22000FPEM	22,00	.866	1,50	.059	G	6693135
TDMX22500FPEM	22,50	.886	1,51	.059	G	6693136
TDMX23000FPEM	23,00	.906	1,51	.059	H	6693137
TDMX23500FPEM	23,50	.925	1,52	.060	H	6693138
TDMX24000FPEM	24,00	.945	1,61	.063	I	6693139
TDMX24500FPEM	24,50	.965	1,62	.064	I	6693140
TDMX25000FPEM	25,00	.984	1,62	.064	J	6693151
TDMX25400FPEM	25,40	1.000	1,63	.064	J	6693152
TDMX25500FPEM	25,50	1.004	1,63	.064	J	6693153
TDMX26000FPEM	26,00	1.024	1,72	.068	K	6693154
TDMX26400FPEM	26,40	1.039	1,72	.068	K	6693194
TDMX26500FPEM	26,50	1.043	1,72	.068	K	6693155
TDMX27000FPEM	27,00	1.063	1,73	.068	L	6693156
TDMX27500FPEM	27,50	1.083	1,74	.069	L	6693157
TDMX28000FPEM	28,00	1.102	1,83	.072	M	6693158
TDMX28500FPEM	28,50	1.122	1,83	.072	M	6693160
TDMX29000FPEM	29,00	1.142	1,84	.072	N	6693161
TDMX29500FPEM	29,50	1.161	1,85	.073	N	6693162
TDMX30000FPEM	30,00	1.181	1,93	.076	O	6693163
TDMX30500FPEM	30,50	1.201	1,94	.076	O	6693164
TDMX31000FPEM	31,00	1.221	1,94	.076	P	6693165
TDMX31500FPEM	31,50	1.240	1,95	.077	P	6693166
TDMX31750FPEM	31,75	1.250	1,95	.077	P	6693167
TDMX32000FPEM	32,00	1.260	2,08	.082	Q	6693168
TDMX32500FPEM	32,50	1.280	2,08	.082	Q	6693169
TDMX33000FPEM	33,00	1.299	2,09	.082	Q	6693170
TDMX34000FPEM	34,00	1.339	2,10	.083	R	6693181
TDMX35000FPEM	35,00	1.378	2,11	.083	R	6693182
TDMX35500FPEM	35,50	1.398	2,12	.084	R	6693183
TDMX36000FPEM	36,00	1.417	2,29	.090	S	6693184
TDMX36500FPEM	36,50	1.437	2,29	.090	S	6693185
TDMX37000FPEM	37,00	1.457	2,30	.091	S	6693186
TDMX37500FPEM	37,50	1.476	2,30	.091	S	6693187
TDMX38000FPEM	38,00	1.496	2,31	.091	T	6693188
TDMX38100FPEM	38,10	1.500	2,31	.091	T	6693189
TDMX38500FPEM	38,50	1.516	2,32	.091	T	6693190
TDMX39000FPEM	39,00	1.535	2,32	.091	T	6693191
TDMX39500FPEM	39,50	1.555	2,33	.092	T	6693192
TDMX40000FPEM	40,00	1.575	2,33	.092	T	6693193

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

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

Metric tolerance	
D1	tolerance k8
8-10	0,000/+0,022
>10-17	0,000/+0,027
>17-18	0,000/+0,027
>18-21	0,000/+0,033

TOP DRILL™ Modular X • Inserts • MS



- first choice
- alternate choice

P	Blue	●
M	Yellow	○
K	Red	○
N	Green	○
S	Orange	●
H	Grey	○

catalog number	D1		L5		SSC	WM15PD
	mm	in	mm	in		
TDMX16000MSM	16,00	.630	2,84	.112	A	6568922
TDMX16200MSM	16,20	.638	2,88	.113	A	6568923
TDMX16281MSM	16,28	.641	2,89	.114	A	6568924
TDMX16500MSM	16,50	.650	2,93	.115	A	6568925
TDMX16667MSM	16,67	.656	2,96	.117	A	6568926
TDMX17000MSM	17,00	.669	3,01	.119	B	6568927
TDMX17064MSM	17,06	.672	3,02	.119	B	6568929
TDMX17463MSM	17,46	.688	3,09	.122	B	6568930
TDMX17500MSM	17,50	.689	3,10	.122	B	6568931
TDMX17600MSM	17,60	.693	3,12	.123	B	6568932
TDMX17800MSM	17,80	.701	3,15	.124	B	6568933
TDMX17859MSM	17,86	.703	3,16	.124	B	6568934
TDMX18000MSM	18,00	.709	3,19	.126	C	6568935
TDMX18255MSM	18,26	.719	3,24	.128	C	6568938
TDMX18500MSM	18,50	.728	3,28	.129	C	6568939
TDMX18651MSM	18,65	.734	3,30	.130	C	6568940
TDMX18800MSM	18,80	.740	3,33	.131	C	6568941
TDMX19000MSM	19,00	.748	3,36	.132	D	6568942
TDMX19050MSM	19,05	.750	3,37	.133	D	6568943
TDMX19200MSM	19,20	.756	3,40	.134	D	6568944
TDMX19270MSM	19,27	.759	3,41	.134	D	6568945
TDMX19450MSM	19,45	.766	3,44	.135	D	6568946
TDMX19500MSM	19,50	.768	3,45	.136	D	6568947
TDMX19700MSM	19,70	.776	3,48	.137	D	6568948
TDMX19840MSM	19,84	.781	3,51	.138	D	6568949
TDMX20000MSM	20,00	.787	3,54	.139	E	6568961
TDMX20100MSM	20,10	.791	3,56	.140	E	6568962
TDMX20200MSM	20,20	.795	3,57	.141	E	6568963
TDMX20239MSM	20,24	.797	3,58	.141	E	6568964
TDMX20300MSM	20,30	.799	3,59	.141	E	6568965
TDMX20400MSM	20,40	.803	3,61	.142	E	6568966
TDMX20500MSM	20,50	.807	3,63	.143	E	6568967
TDMX20600MSM	20,60	.811	3,64	.143	E	6568968
TDMX20650MSM	20,65	.813	3,65	.144	E	6568969
TDMX20700MSM	20,70	.815	3,66	.144	E	6568973
TDMX20800MSM	20,80	.819	3,68	.145	E	6568980
TDMX20900MSM	20,90	.823	3,69	.145	E	6568981
TDMX21000MSM	21,00	.827	3,71	.146	F	6568982
TDMX21430MSM	21,43	.844	3,79	.149	F	6568983
TDMX21500MSM	21,50	.847	3,80	.150	F	6568984
TDMX22000MSM	22,00	.866	3,89	.153	G	6568985
TDMX22225MSM	22,23	.875	3,93	.155	G	6568986
TDMX22450MSM	22,45	.884	3,97	.156	G	6568987
TDMX22500MSM	22,50	.886	3,97	.156	G	6568988
TDMX23000MSM	23,00	.906	4,06	.160	H	6568989
TDMX23500MSM	23,50	.925	4,15	.163	H	6568990
TDMX23813MSM	23,81	.938	4,20	.165	H	6568991
TDMX24000MSM	24,00	.945	4,24	.167	I	6568993
TDMX24500MSM	24,50	.965	4,32	.170	I	6568994
TDMX24605MSM	24,61	.969	4,34	.171	I	6568995
TDMX25000MSM	25,00	.984	4,41	.174	J	6568996
TDMX25400MSM	25,40	1.000	4,48	.176	J	6568998
TDMX25500MSM	25,50	1.004	4,49	.177	J	6568999
TDMX25670MSM	25,67	1.011	4,52	.178	J	6569000
TDMX25700MSM	25,70	1.012	4,53	.178	J	6569001
TDMX25760MSM	25,76	1.014	4,54	.179	J	6569002
TDMX25796MSM	25,80	1.016	4,55	.179	J	6569003
TDMX26000MSM	26,00	1.024	4,59	.181	K	6569006
TDMX26192MSM	26,19	1.031	4,62	.182	K	6569007
TDMX26400MSM	26,40	1.039	4,65	.183	K	6569008
TDMX26500MSM	26,50	1.043	4,67	.184	K	6569009
TDMX26589MSM	26,59	1.047	4,69	.185	K	6569010
TDMX27000MSM	27,00	1.063	4,76	.187	L	6569502
TDMX27500MSM	27,50	1.083	4,84	.191	L	6569503

INDEXABLE MILLING

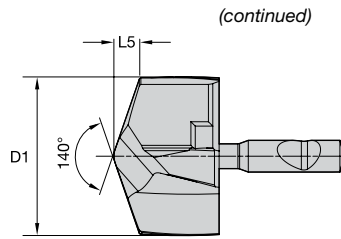
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

TOP DRILL™ Modular X • Inserts • MS



- first choice
- alternate choice

P	Blue	●
M	Yellow	○
K	Red	○
N	Green	○
S	Orange	●
H	Grey	○

catalog number	D1		L5		SSC	WM15PD
	mm	in	mm	in		
TDMX27780MSM	27,78	1.094	4,89	.193	L	6569504
TDMX28000MSM	28,00	1.102	4,93	.194	M	6569505
TDMX28176MSM	28,18	1.109	4,96	.195	M	6569506
TDMX28500MSM	28,50	1.122	5,02	.198	M	6569507
TDMX28575MSM	28,58	1.125	5,03	.198	M	6569508
TDMX29000MSM	29,00	1.142	5,11	.201	N	6569509
TDMX29367MSM	29,37	1.156	5,17	.204	N	6569510
TDMX29500MSM	29,50	1.161	5,19	.204	N	6569521
TDMX29764MSM	29,76	1.172	5,24	.206	N	6569522
TDMX30000MSM	30,00	1.181	5,28	.208	O	6569523
TDMX30163MSM	30,16	1.188	5,31	.209	O	6569524
TDMX30500MSM	30,50	1.201	5,37	.211	O	6569525
TDMX30955MSM	30,96	1.219	5,45	.215	O	6569526
TDMX31000MSM	31,00	1.221	5,45	.215	P	6569527
TDMX31500MSM	31,50	1.240	5,54	.218	P	6569528
TDMX31750MSM	31,75	1.250	5,58	.220	P	6569529
TDMX32000MSM	32,00	1.260	5,63	.222	Q	6569530
TDMX32500MSM	32,50	1.280	5,72	.225	Q	6569531
TDMX33000MSM	33,00	1.299	5,80	.228	Q	6569532
TDMX33338MSM	33,34	1.313	5,86	.231	Q	6569533
TDMX34000MSM	34,00	1.339	5,98	.235	R	6569534
TDMX34130MSM	34,13	1.344	6,00	.236	R	6569535
TDMX34925MSM	34,93	1.375	6,13	.241	R	6569536
TDMX35000MSM	35,00	1.378	6,15	.242	R	6569537
TDMX35500MSM	35,50	1.398	6,23	.245	R	6569538
TDMX36000MSM	36,00	1.417	6,33	.249	S	6569539
TDMX36500MSM	36,50	1.437	6,41	.252	S	6569540
TDMX37000MSM	37,00	1.457	6,50	.256	S	6569551
TDMX37500MSM	37,50	1.476	6,59	.259	S	6569552
TDMX38000MSM	38,00	1.496	6,67	.263	T	6569553
TDMX38100MSM	38,10	1.500	6,69	.263	T	6569554
TDMX38289MSM	38,29	1.507	6,72	.265	T	6569557
TDMX38500MSM	38,50	1.516	6,76	.266	T	6569555
TDMX39000MSM	39,00	1.535	6,84	.269	T	6569556
TDMX39500MSM	39,50	1.555	6,93	.273	T	6569558
TDMX40000MSM	40,00	1.575	7,01	.276	T	6569559

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

Application Data • PK • WP40PD™ • Inch

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

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

Application Data • PK • WP40PD • Metric

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

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

Application Data • FPE • WP40PD™ • Inch

Material Group		Cutting Speed – Vc Range – SFM			Recommended Feed Rate (f) by Diameter					
		min	Starting Value	max	Tool Diameter (inch)	.630	.787	1.000	1.260	1.575
P	1	360	460	560	IPR	.007-.010	.007-.011	.009-.015	.010-.017	.013-.030
	2	330	390	460	IPR	.007-.010	.009-.011	.011-.015	.013-.017	.013-.030
	3	260	330	390	IPR	.006-.009	.007-.010	.009-.013	.010-.015	.013-.026
	4	230	300	360	IPR	.005-.009	.006-.010	.007-.013	.008-.015	.010-.026
M	1	130	200	260	IPR	.004-.007	.005-.008	.006-.010	.007-.011	.008-.012
	2	110	180	230	IPR	.004-.007	.005-.008	.006-.010	.007-.011	.008-.012
	3	70	130	200	IPR	.004-.007	.005-.008	.006-.010	.007-.011	.008-.012
K	1	300	440	570	IPR	.007-.010	.009-.011	.011-.015	.013-.017	.013-.030
	2	260	390	460	IPR	.007-.010	.009-.011	.011-.015	.013-.017	.013-.030
S	3	230	360	410	IPR	.007-.010	.008-.011	.009-.015	.010-.017	.011-.022
	1	70	130	200	IPR	.004-.007	.005-.008	.006-.010	.007-.011	.008-.012
	3	50	100	150	IPR	.004-.007	.005-.008	.006-.010	.007-.011	.008-.012

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

Application Data • FPE • WP40PD • Metric

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

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

Application Data • MS • WM15PD™ • Inch

Material Group		Cutting Speed – Vc Range – SFM			Recommended Feed Rate (f) by Diameter					
		min	Starting Value	max	Tool Diameter (inch)	0.630	0.787	1.000	1.260	1.575
		M	1	131	262	361	IPR	.004 – .010	.005 – .012	.005 – .013
	2	115	180	246	IPR	.004 – .010	.005 – .012	.005 – .013	.006 – .014	.006 – .015
	3	66	115	164	IPR	.004 – .010	.005 – .012	.005 – .013	.006 – .014	.006 – .015
K	1	295	443	574	IPR	.007 – .010	.009 – .019	.011 – .015	.013 – .017	.013 – .020
	2	262	394	459	IPR	.007 – .010	.009 – .019	.011 – .015	.013 – .017	.013 – .020
	3	230	361	410	IPR	.007 – .010	.009 – .019	.009 – .015	.010 – .017	.011 – .020
N	1	295	508	722	IPR	.010 – .020	.011 – .022	.013 – .025	.013 – .028	.013 – .028
	2	295	508	722	IPR	.010 – .020	.011 – .022	.013 – .025	.013 – .028	.013 – .028
	3	262	394	525	IPR	.010 – .020	.011 – .022	.013 – .025	.013 – .028	.013 – .028
	4	295	508	722	IPR	.010 – .020	.011 – .022	.013 – .025	.013 – .028	.013 – .028
	5	525	656	787	IPR	.010 – .020	.011 – .022	.013 – .025	.013 – .028	.013 – .028
	6	525	656	787	IPR	.010 – .020	.011 – .022	.013 – .025	.013 – .028	.013 – .028
S	1	66	131	197	IPR	.003 – .005	.004 – .006	.004 – .007	.005 – .008	.006 – .010
	2	49	98	148	IPR	.003 – .005	.004 – .006	.004 – .007	.005 – .008	.006 – .010
	3	49	98	148	IPR	.003 – .005	.004 – .006	.004 – .007	.005 – .008	.006 – .010
	4	33	82	131	IPR	.003 – .005	.005 – .008	.006 – .010	.007 – .011	.008 – .012

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

Application Data • MS • WM15PD • Metric

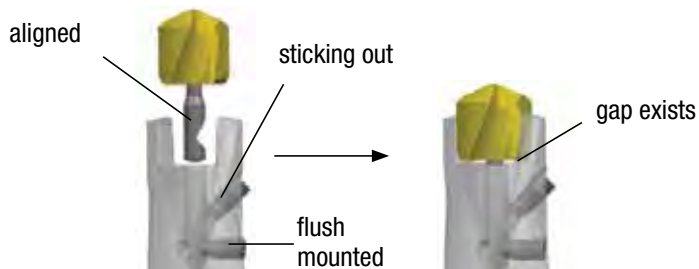
Material Group		Cutting Speed – Vc Range – m/min			Recommended Feed Rate (f) by Diameter					
		min	Starting Value	max	Tool Diameter (mm)	16,0	20,0	25,4	32,0	40,0
		M	1	40	80	110	mm/r	0,11 – 0,26	0,13 – 0,28	0,13 – 0,32
	2	35	55	75	mm/r	0,11 – 0,26	0,13 – 0,28	0,13 – 0,32	0,14 – 0,35	0,15 – 0,37
	3	20	35	50	mm/r	0,11 – 0,26	0,13 – 0,28	0,13 – 0,32	0,14 – 0,35	0,15 – 0,37
K	1	90	135	175	mm/r	0,19 – 0,25	0,22 – 0,29	0,29 – 0,38	0,32 – 0,43	0,33 – 0,50
	2	80	120	140	mm/r	0,19 – 0,25	0,22 – 0,29	0,29 – 0,38	0,32 – 0,43	0,33 – 0,50
	3	70	110	125	mm/r	0,18 – 0,26	0,21 – 0,29	0,23 – 0,37	0,25 – 0,42	0,27 – 0,46
N	1	90	155	220	mm/r	0,25 – 0,50	0,28 – 0,56	0,32 – 0,63	0,32 – 0,70	0,32 – 0,70
	2	90	155	220	mm/r	0,25 – 0,50	0,28 – 0,56	0,32 – 0,63	0,32 – 0,70	0,32 – 0,70
	3	80	120	160	mm/r	0,25 – 0,50	0,28 – 0,56	0,32 – 0,63	0,32 – 0,70	0,32 – 0,70
	4	90	155	220	mm/r	0,25 – 0,50	0,28 – 0,56	0,32 – 0,63	0,32 – 0,70	0,32 – 0,70
	5	160	200	240	mm/r	0,25 – 0,50	0,28 – 0,56	0,32 – 0,63	0,32 – 0,70	0,32 – 0,70
	6	160	200	240	mm/r	0,25 – 0,50	0,28 – 0,56	0,32 – 0,63	0,32 – 0,70	0,32 – 0,70
S	1	20	40	60	mm/r	0,07 – 0,12	0,09 – 0,14	0,11 – 0,17	0,13 – 0,20	0,16 – 0,25
	2	15	30	45	mm/r	0,07 – 0,12	0,09 – 0,14	0,11 – 0,17	0,13 – 0,20	0,16 – 0,25
	3	15	30	45	mm/r	0,07 – 0,12	0,09 – 0,14	0,11 – 0,17	0,13 – 0,20	0,16 – 0,25
	4	10	25	40	mm/r	0,07 – 0,12	0,13 – 0,20	0,16 – 0,25	0,18 – 0,28	0,21 – 0,31

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

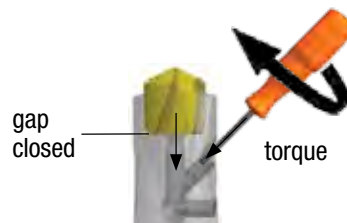
Assembling and Disassembling Instructions

Assembly

1 Insert positioning



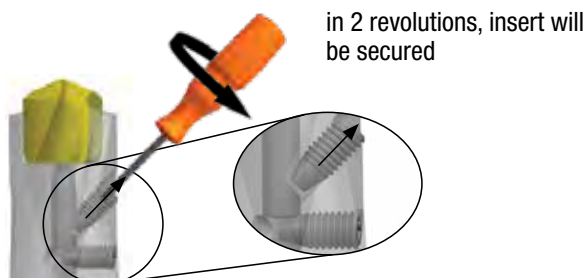
2 Insert clamping



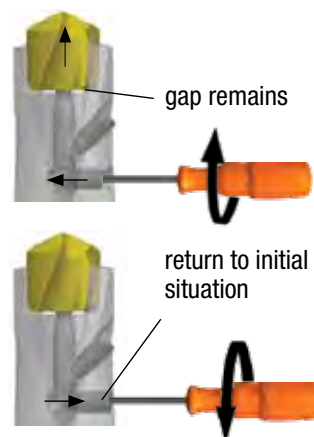
Drill diameter	Torque
ø .6300–.7874"	1.1 ft. lbs.
ø .7875–.9448"	1.5 ft. lbs.
ø .9449–1.1023"	2.2 ft. lbs.
ø 1.1024–1.5748"	3.3 ft. lbs.

Disassembly

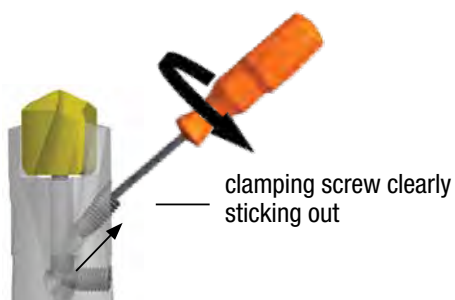
1 Clamping screw loosening



2 Insert pushing out



3 Further clamping screw loosening



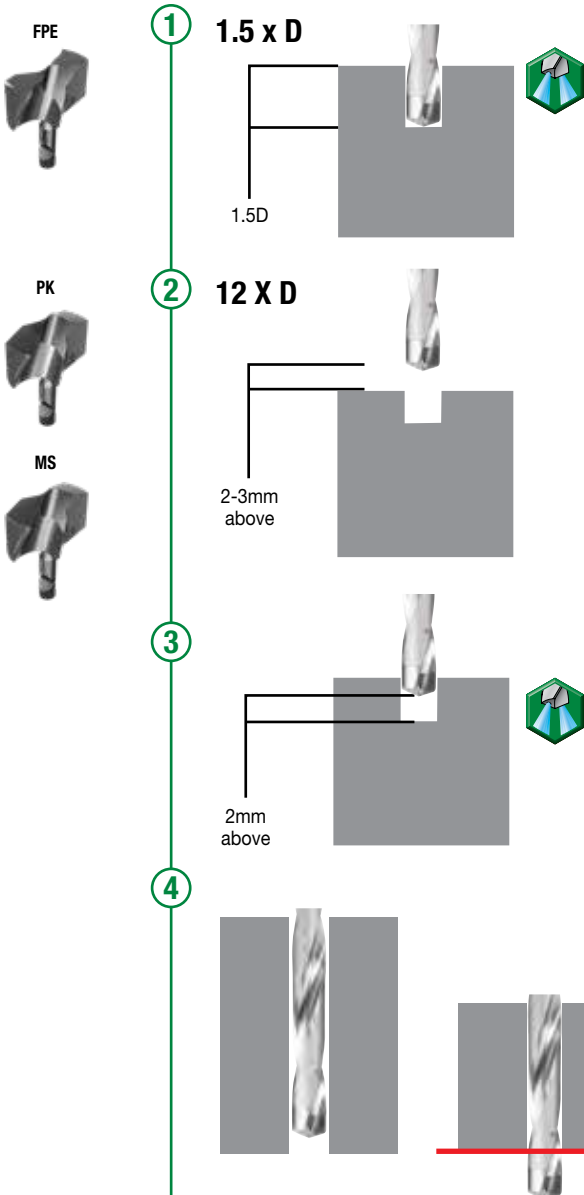
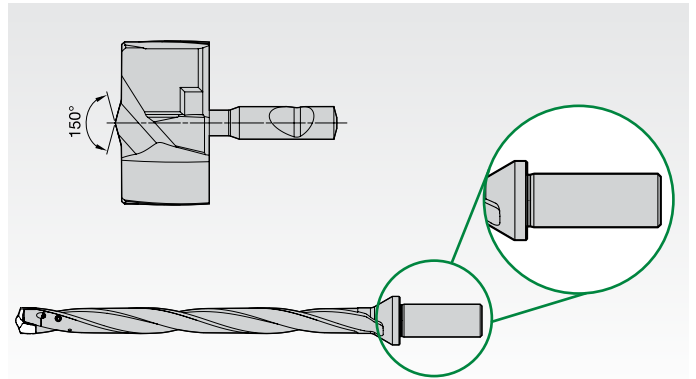
4 Insert removal



Application Guidelines

Deep-Hole Drilling from 12 x D

- Use the FPE(M) geometry in combination with the 1.5 x D body for pilot hole.
- The point angle of spot drill should be greater than point angle of the insert (>140°).
- The 150° point on the FPE(M) insert is perfect as spot for the regular 140° insert.
- The 12 x D body has a cylindrical straight shank with flange.
- Shank tolerance h6.
- Best used in combination with a hydraulic chuck to minimize the runout.



Step 1

Use 1.5 x D FPE geometry drill to create a guide hole with thru coolant and ensure no chips are stuck in the hole.

Step 2

Use 12 x D PK(M), MS(M) geometry drill for deep hole.

- Spindle RPM 500 max (If horizontal machine spindle direction CCW) and 2-3 above the work piece rapid traverse.
- Feed in recommended feed rate and position 2.0mm above the pilot hole depth.

Step 3

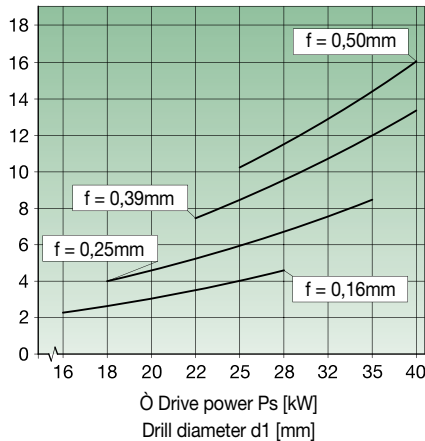
- Switch on the through coolant and ensure coolant flow and spindle rotation CW, recommended spindle RPM.

Step 4

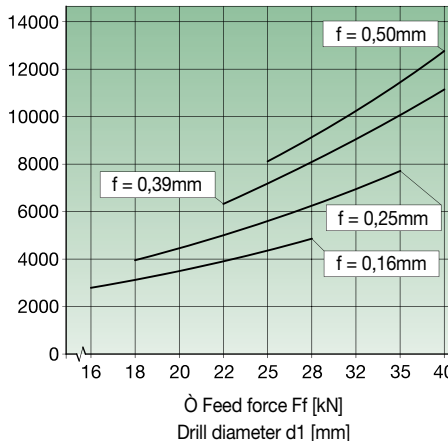
- Feed in for the entire depth with recommended cutting parameters (feed reduction 25% near exit).
- Ensure the carbide head does not come out of the hole if through.
- For best surface finish Vf, 2.0 to 3.0mm per min is recommended during retraction.

TDMX Application Notes • Power and Coolant Requirements

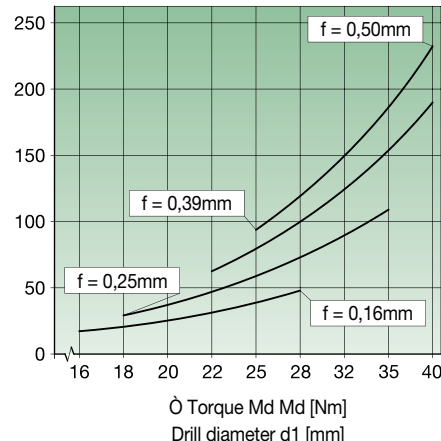
Drive Power (kW)



Feed Force (kN)



Torque (Nm)



NOTE: The diagrams above are used to determine the drive power, feed force, and torque. They are based on cutting force measurement in tempered steels in Cgr. 6. Tensile strength: $R_m = 600 \text{ N/mm}^2$. The base cutting speed used is: $v_c = 80 \text{ m/min}$.

TDMX • Regrinding Length • FPE • Inch

SSC	diameter range D	L min.	L new
A	.6300-.6692	.3858	.4252
B	.6693-.7086	.3858	.4252
C	.7087-.7480	.4173	.4606
D	.7481-.7874	.4173	.4606
E	.7875-.8267	.4488	.4961
F	.8268-.8661	.4488	.4961
G	.8662-.9055	.4764	.5276
H	.9056-.9448	.4764	.5276
I	.9449-.9842	.5118	.5669
J	.9843-1.0236	.5118	.5669
K	1.0237-1.0629	.5433	.6024
L	1.063-1.1023	.5433	.6024
M	1.1024-1.1417	.5827	.6457
N	1.1418-1.1811	.5827	.6457
O	1.1812-1.2204	.6142	.6811
P	1.2205-1.2598	.6142	.6811
Q	1.2599-1.3385	.7008	.7756
R	1.3386-1.4173	.7008	.7756
S	1.4174-1.4960	.7638	.8465
T	1.4961-1.5748	.7638	.8465

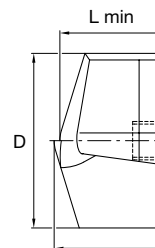
TDMX • Regrinding Length • PK and MS • Inch

SSC	diameter range D	L min.	L new
A	.63-.6692	.4409	.4921
B	.6693-.7086	.4409	.4921
C	.7087-.748	.4803	.5354
D	.7481-.7874	.4803	.5354
E	.7875-.8267	.5197	.5787
F	.8268-.8661	.5197	.5787
G	.8662-.9055	.5591	.622
H	.9056-.9448	.5591	.622
I	.9449-.9842	.5984	.6654
J	.9843-1.0236	.5984	.6654
K	1.0237-1.0629	.6378	.7087
L	1.063-1.1023	.6378	.7087
M	1.1024-1.1417	.6772	.752
N	1.1418-1.1811	.6772	.752
O	1.1812-1.2204	.7165	.7953
P	1.2205-1.2598	.7165	.7953
Q	1.2599-1.3385	.7913	.878
R	1.3386-1.4173	.7913	.878
S	1.4174-1.496	.8701	.9646
T	1.4961-1.5748	.8701	.9646

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

The following coolant pressure is recommended:

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



L new

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

TDMX Application Guidelines



Up to 1D



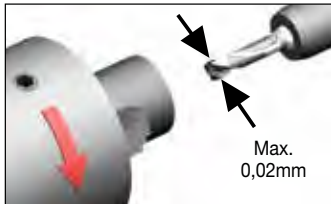
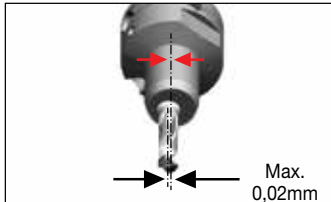
Recommended



Recommended



Dry not recommended

Application Recommendation	Work Piece Shape	Remarks																		
Flat Face Recommended		1.5 x D , 3 x D and 5 x D - No Feed Reduction 8 x D No Feed Reduction Optional 25% Reduction 12 x D 25% entry and exit Reduction																		
Stacked Plates Recommended		Minimize as much as possible the space between the two plates. The FPE geometry is a problem solver in this situation																		
Inclined Entry Recommended		<table border="1"> <thead> <tr> <th colspan="2">1.5 x D, 3 x D and 5 x D</th> <th>8 x D and 12 x D</th> </tr> <tr> <th>INCLINATION</th> <th>FEEDRATE</th> <td rowspan="5">Pilot Drilling or Pre-Machining on all surfaces recommended</td> </tr> </thead> <tbody> <tr> <td>1°</td> <td>90%</td> </tr> <tr> <td>2°</td> <td>75%</td> </tr> <tr> <td>3°</td> <td>50%</td> </tr> <tr> <td>>3°</td> <td>Pilot Drilling or Pre-Machining</td> </tr> </tbody> </table>	1.5 x D, 3 x D and 5 x D		8 x D and 12 x D	INCLINATION	FEEDRATE	Pilot Drilling or Pre-Machining on all surfaces recommended	1°	90%	2°	75%	3°	50%	>3°	Pilot Drilling or Pre-Machining				
1.5 x D, 3 x D and 5 x D		8 x D and 12 x D																		
INCLINATION	FEEDRATE	Pilot Drilling or Pre-Machining on all surfaces recommended																		
1°	90%																			
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Inclined Exit Recommended		<table border="1"> <thead> <tr> <th colspan="2">1.5 x D, 3 x D and 5 x D</th> <th>8 x D and 12 x D</th> </tr> <tr> <th>INCLINATION</th> <th>FEEDRATE</th> <th>FEEDRATE</th> </tr> </thead> <tbody> <tr> <td>5°</td> <td>100%</td> <td>75%</td> </tr> <tr> <td>>5°</td> <td>75% - 50%</td> <td>75% - 50%</td> </tr> <tr> <td>>20° Cast Iron</td> <td>50%</td> <td>50%</td> </tr> <tr> <td>>20° Steel</td> <td>Not Recommended</td> <td>Not Recommended</td> </tr> </tbody> </table>	1.5 x D, 3 x D and 5 x D		8 x D and 12 x D	INCLINATION	FEEDRATE	FEEDRATE	5°	100%	75%	>5°	75% - 50%	75% - 50%	>20° Cast Iron	50%	50%	>20° Steel	Not Recommended	Not Recommended
1.5 x D, 3 x D and 5 x D		8 x D and 12 x D																		
INCLINATION	FEEDRATE	FEEDRATE																		
5°	100%	75%																		
>5°	75% - 50%	75% - 50%																		
>20° Cast Iron	50%	50%																		
>20° Steel	Not Recommended	Not Recommended																		
Cross Holes Recommended		Cross hole out of center and center edge in contact - Recommended Cross hole on center and < drill diameter - Recommended Cross hole on center and > drill diameter - Exercise Caution Cross hole on center and = drill diameter - Exercise Caution Cross hole out of center and center edge not in contact - Not Recommended																		
Convex / Concave Surface		Always pre-machine the surface																		
Half Cylindrical Not Recommended		<p>Usage Precautions Core deviation</p> <p>1) For Turning Machines</p>  <p>Set deviation amount under 0,02mm between workpiece and drill.</p> <p>2) For Machining Centers</p>  <p>Do not use any arbor with a damaged attachment surface. Center of arbor deviation must be within 0,02mm.</p>																		
Hole Expansion Not Recommended																				
Pipe Material Not Recommended																				
Cored hole Not Recommended																				

TOP DRILL M1™

Universal Modular Drilling • TDM1

The TDM1 modular drill is for customers seeking an easy-to-use system capable of operating on a variety of materials with one single point geometry, and a tool body featuring a quick-change, front-clamping mechanism.

140° cone point geometry

Low thrust with excellent centering capabilities

Front-locking system

Easy to change and apply

Differential flute design

Good stability and easy evacuation of chips

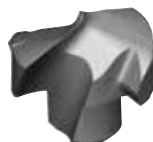
Sub-micron grain substrate

Longer life and superior resistance against drill breakage



The TDM1 modular drill is designed with a front-locking mechanism, point geometry UP, and wear-resistant PVD coating for consistent hole quality.

WU25PD



Sub-micron grain carbide

TiAlN multilayer for steel, stainless steel, and cast iron

MODULAR VERSATILITY

PRODUCT

TDM1 is a front clamping drill with universal point geometry and grade suited for PMK materials.

DIAMETER RANGE

.313-.984" (8-25,99mm)

INDUSTRY



MATERIALS

FIRST CHOICE



SECOND CHOICE



APPLICATIONS



DRILLING



THROUGH COOLANT



2 FLUTE/2 MARGIN/ COOLANT

STEEL BODIES

SERIES	COOLANT	LENGTH RATIO	DIAMETER RANGE
TDM1	Through Coolant	3 x D	.313-.984" (7,94-25,99mm)
TDM1	Through Coolant	5 x D	.313-.984" (7,94-25,99mm)
TDM1	Through Coolant	8 x D	.313-.984" (7,94-25,99mm)

Shank Style

SCF & SS Shank for inch tools

SCF Shank for metric tools



TDM1 Inserts • Catalog Numbering System

Each character in our catalog number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.

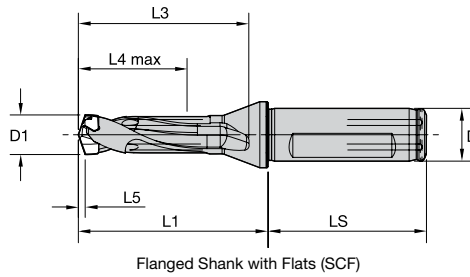
TDM1	2599	UPM	WU25PD
Top Drill Modular	Insert Diameter	Insert Geometry	Grade
	mm = 25.99 Inch = 1.023"	PK = steel and cast iron	WIDIA™ ; Universal, Application 25 = wear resistant carbide, PVD coated, Modular Drill Insert

TDM1 Bodies • Catalog Numbering System

Each character in our catalog number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.

TDM1	0984	R8	SCF	100
Top Drill Modular	Drill Body Diameter	L/D Ratio	Shank Style	Shank Diameter
	Inch = .984"	8 x D	Flanged shanks with flat SCF	1.00"

TOP DRILL M1™ • 3 x D • Flanged Shank • Inch



order number	catalog number	D1	D1 max	D	L1	L3	L4 max	L5	LS	SSC
4098937	TDM0313R3SCF050	.313	.3343	.5000	1.63	1.41	1.00	.057	1.77	W10
4098938	TDM0335R3SCF050	.335	.3539	.5000	1.75	1.53	1.06	.062	1.77	W11
4098939	TDM0354R3SCF050	.354	.3736	.5000	1.88	1.66	1.12	.065	1.77	W12
4098940	TDM0374R3SCF050	.374	.3933	.5000	1.88	1.66	1.18	.068	1.77	W13
4098941	TDM0394R3SCF063	.394	.4130	.6250	2.00	1.78	1.24	.072	1.89	W14
4098942	TDM0413R3SCF063	.413	.4327	.6250	2.00	1.78	1.30	.076	1.89	W15
4099013	TDM0433R3SCF063	.433	.4524	.6250	2.13	1.91	1.36	.079	1.89	W16
4099014	TDM0453R3SCF063	.453	.4723	.6250	2.25	2.03	1.42	.082	1.89	W17
4099015	TDM0472R3SCF063	.472	.4917	.6250	2.38	2.16	1.48	.087	1.89	W18
4099016	TDM0492R3SCF063	.492	.5114	.6250	2.38	2.16	1.54	.090	1.89	W19
4099017	TDM0512R3SCF063	.512	.5311	.6250	2.50	2.28	1.59	.093	1.89	W20
4099018	TDM0532R3SCF063	.532	.5508	.6250	2.50	2.28	1.65	.098	1.89	W21
4099019	TDM0551R3SCF063	.551	.5705	.6250	2.63	2.41	1.71	.101	1.89	W22
4099020	TDM0571R3SCF063	.571	.5902	.6250	2.75	2.53	1.77	.104	1.89	W23
4099021	TDM0591R3SCF075	.591	.6295	.7500	2.88	2.66	1.89	.107	1.97	W24
4099022	TDM0630R3SCF075	.630	.6689	.7500	3.00	2.78	2.01	.113	1.97	W25
4099023	TDM0669R3SCF075	.669	.7083	.7500	3.25	3.03	2.13	.121	1.97	W26
4099024	TDM0709R3SCF075	.709	.7476	.7500	3.38	3.16	2.24	.129	1.97	W27
4099025	TDM0748R3SCF075	.748	.7870	.7500	3.50	3.28	2.36	.134	1.97	W28
4099026	TDM0787R3SCF100	.787	.8264	1.0000	3.75	3.53	2.48	.143	2.20	W29
4099027	TDM0827R3SCF100	.827	.8657	1.0000	3.88	3.66	2.60	.151	2.20	W30
4099028	TDM0866R3SCF100	.866	.9051	1.0000	4.00	3.78	2.72	.156	2.20	W31
4099029	TDM0906R3SCF100	.906	.9445	1.0000	4.25	4.03	2.84	.167	2.20	W32
4099030	TDM0945R3SCF100	.945	.9839	1.0000	4.38	4.16	2.95	.173	2.20	W33
4099031	TDM0984R3SCF100	.984	1.0232	1.0000	4.50	4.28	3.07	.178	2.20	W34

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

INDEXABLE MILLING

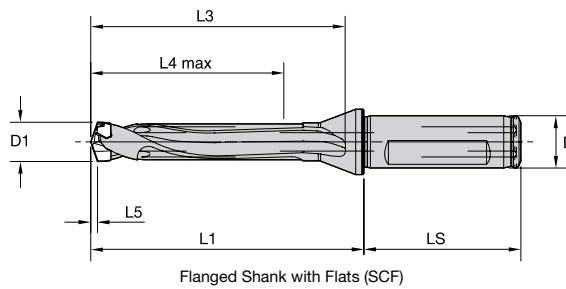
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

TOP DRILL M1™ • 5 x D • Flanged Shank • Inch



order number	catalog number	D1	D1 max	D	L1	L3	L4 max	L5	LS	SSC
4099032	TDM0313R5SCF050	.313	.3346	.5000	2.38	2.16	1.67	.057	1.77	W10
4099033	TDM0335R5SCF050	.335	.3542	.5000	2.50	2.28	1.77	.054	1.77	W11
4099034	TDM0354R5SCF050	.354	.3736	.5000	2.63	2.41	1.87	.065	1.77	W12
4099035	TDM0374R5SCF050	.374	.3933	.5000	2.75	2.53	1.97	.068	1.77	W13
4099036	TDM0394R5SCF063	.394	.4133	.6250	2.88	2.66	2.07	.064	1.89	W14
4099037	TDM0413R5SCF063	.413	.4327	.6250	3.00	2.78	2.17	.076	1.89	W15
4099038	TDM0433R5SCF063	.433	.4524	.6250	3.13	2.91	2.26	.079	1.89	W16
4099039	TDM0453R5SCF063	.453	.4723	.6250	3.25	3.03	2.36	.082	1.89	W17
4099040	TDM0472R5SCF063	.472	.4920	.6250	3.37	3.16	2.46	.079	1.89	W18
4099041	TDM0492R5SCF063	.492	.5114	.6250	3.50	3.28	2.56	.090	1.89	W19
4099042	TDM0512R5SCF063	.512	.5311	.6250	3.63	3.41	2.66	.093	1.89	W20
4099043	TDM0532R5SCF063	.532	.5508	.6250	3.75	3.53	2.76	.098	1.89	W21
4099044	TDM0551R5SCF063	.551	.5705	.6250	3.88	3.66	2.85	.101	1.89	W22
4099045	TDM0571R5SCF063	.571	.5902	.6250	4.00	3.78	2.95	.104	1.89	W23
4099046	TDM0591R5SCF075	.591	.6295	.7500	4.25	4.03	3.15	.107	1.97	W24
4099047	TDM0630R5SCF075	.630	.6689	.7500	4.50	4.28	3.35	.113	1.97	W25
4099048	TDM0669R5SCF075	.669	.7083	.7500	4.75	4.53	3.54	.121	1.97	W26
4099049	TDM0709R5SCF075	.709	.7476	.7500	5.00	4.78	3.74	.129	1.97	W27
4099050	TDM0748R5SCF075	.748	.7870	.7500	5.25	5.03	3.94	.134	1.97	W28
4099051	TDM0787R5SCF100	.787	.8264	1.0000	5.38	5.16	4.13	.143	2.20	W29
4099052	TDM0827R5SCF100	.827	.8657	1.0000	5.75	5.53	4.33	.151	2.20	W30
4099053	TDM0866R5SCF100	.866	.9051	1.0000	6.00	5.78	4.53	.156	2.20	W31
4099054	TDM0906R5SCF100	.906	.9445	1.0000	6.13	5.91	4.72	.167	2.20	W32
4099055	TDM0945R5SCF100	.945	.9839	1.0000	6.38	6.16	4.92	.173	2.20	W33
4099056	TDM0984R5SCF100	.984	1.0232	1.0000	6.75	6.53	5.12	.178	2.20	W34

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

INDEXABLE MILLING

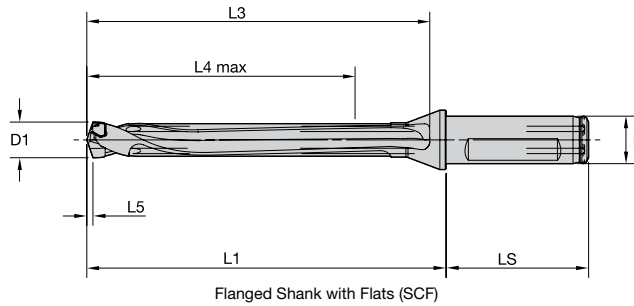
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

TOP DRILL M1™ • 8 x D • Flanged Shank • Inch



order number	catalog number	D1	D1 max	D	L1	L3	L4 max	L5	LS	SSC
4099057	TDM0313R8SCF050	.313	.3343	.5000	3.38	3.16	2.68	.057	1.77	W10
4099058	TDM0335R8SCF050	.335	.3539	.5000	3.50	3.28	2.83	.062	1.77	W11
4099059	TDM0354R8SCF050	.354	.3736	.5000	3.75	3.53	2.99	.065	1.77	W12
4099060	TDM0374R8SCF050	.374	.3933	.5000	4.00	3.78	3.15	.068	1.77	W13
4099061	TDM0394R8SCF063	.394	.4130	.6250	4.13	3.91	3.31	.072	1.89	W14
4099062	TDM0413R8SCF063	.413	.4327	.6250	4.25	4.03	3.46	.076	1.89	W15
4099063	TDM0433R8SCF063	.433	.4524	.6250	4.50	4.28	3.62	.079	1.89	W16
4099064	TDM0453R8SCF063	.453	.4720	.6250	4.63	4.41	3.78	.083	1.89	W17
4099065	TDM0472R8SCF063	.472	.4917	.6250	4.88	4.66	3.94	.087	1.89	W18
4099066	TDM0492R8SCF063	.492	.5114	.6250	5.00	4.78	4.09	.090	1.89	W19
4099067	TDM0512R8SCF063	.512	.5311	.6250	5.13	4.91	4.25	.093	1.89	W20
4099068	TDM0532R8SCF063	.532	.5508	.6250	5.38	5.16	4.41	.098	1.89	W21
4099069	TDM0551R8SCF063	.551	.5705	.6250	5.63	5.41	4.57	.101	1.89	W22
4099070	TDM0571R8SCF063	.571	.5902	.6250	5.75	5.53	4.72	.104	1.89	W23
4099071	TDM0591R8SCF075	.591	.6298	.7500	6.13	5.91	5.13	.107	1.97	W24
4099072	TDM0630R8SCF075	.630	.6689	.7500	6.50	6.28	5.35	.113	1.97	W25
4099073	TDM0669R8SCF075	.669	.7083	.7500	6.88	6.66	5.67	.121	1.97	W26
4099074	TDM0709R8SCF075	.709	.7476	.7500	7.25	7.03	5.98	.129	1.97	W27
4099075	TDM0748R8SCF075	.748	.7870	.7500	7.50	7.28	6.30	.134	1.97	W28
4099077	TDM0827R8SCF100	.827	.8657	1.0000	8.25	8.03	6.93	.151	2.20	W30
4099078	TDM0866R8SCF100	.866	.9054	1.0000	8.63	8.41	7.24	.144	2.20	W31
4099079	TDM0906R8SCF100	.906	.9445	1.0000	9.00	8.78	7.56	.167	2.20	W32
4099080	TDM0945R8SCF100	.945	.9839	1.0000	9.38	9.16	7.87	.173	2.20	W33
4099081	TDM0984R8SCF100	.984	1.0232	1.0000	9.75	9.53	8.19	.178	2.20	W34

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

INDEXABLE MILLING

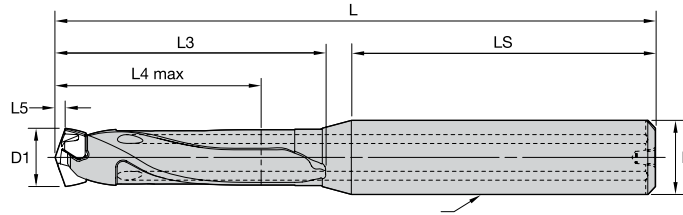
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

TOP DRILL M1™ • 3 x D • Straight Round Shank • Inch



Round Shank (no flats)
For information on L, L3, L4 max, L5, LS, and D, see the Modular Drill foldout table.

order number	catalog number	D1	D1 max	D	L	L3	L4 max	L5	LS	SSC
3851478	TDM0313R3SS038	.313	.3343	.3750	3.13	1.42	1.00	.060	1.59	W10
3851480	TDM0335R3SS038	.335	.3539	.3750	3.25	1.54	1.06	.065	1.59	W11
3851482	TDM0354R3SS038	.354	.3736	.3750	3.38	1.67	1.12	.069	1.59	W12
3851545	TDM0374R3SS044	.374	.3933	.4375	3.38	1.59	1.18	.072	1.67	W13
3851544	TDM0374R3SS038	.375	.3936	.3750	3.38	1.67	1.18	.060	1.59	W13
3851548	TDM0394R3SS044	.394	.4130	.4375	3.63	1.84	1.24	.076	1.67	W14
3851550	TDM0413R3SS044	.413	.4327	.4375	3.75	1.96	1.30	.081	1.67	W15
3851552	TDM0433R3SS044	.433	.4524	.4375	3.88	2.09	1.36	.084	1.67	W16
3851554	TDM0453R3SS050	.453	.4720	.5000	3.88	1.97	1.42	.086	1.79	W17
3851556	TDM0472R3SS050	.472	.4917	.5000	4.00	2.09	1.48	.092	1.79	W18
3851558	TDM0492R3SS050	.492	.5114	.5000	4.13	2.22	1.54	.095	1.79	W19
3851559	TDM0492R3SS056	.492	.5114	.5625	4.13	2.22	1.54	.095	1.79	W19
3851562	TDM0512R3SS056	.512	.5311	.5625	4.25	2.34	1.60	.098	1.79	W20
3851564	TDM0532R3SS056	.532	.5508	.5625	4.25	2.34	1.65	.104	1.79	W21
3851566	TDM0551R3SS056	.551	.5705	.5625	4.50	2.59	1.71	.107	1.79	W22
3851568	TDM0571R3SS063	.571	.5902	.6250	4.50	2.47	1.77	.109	1.91	W23
3851570	TDM0591R3SS063	.591	.6295	.6250	4.75	2.72	1.89	.113	1.91	W24
3851572	TDM0630R3SS069	.630	.6689	.6875	4.88	2.85	2.01	.119	1.91	W25
3851574	TDM0669R3SS069	.669	.7083	.6875	5.00	2.97	2.12	.127	1.91	W26
3851576	TDM0709R3SS075	.709	.7476	.7500	5.25	3.13	2.24	.136	2.00	W27
3851578	TDM0748R3SS075	.748	.7870	.7500	5.50	3.38	2.36	.142	2.00	W28
3851580	TDM0787R3SS081	.787	.8264	.8125	5.75	3.63	2.48	.150	2.00	W29
3992477	TDM0827R3SS088	.827	.8657	.8750	5.87	3.69	2.60	.150	2.07	W30
3992478	TDM0866R3SS088	.866	.9051	.8750	6.00	3.81	2.72	.154	2.07	W31
3992479	TDM0906R3SS094	.906	.9445	.9375	6.25	3.98	2.83	.165	2.15	W32
3992481	TDM0984R3SS100	.984	1.0232	1.0000	7.37	4.26	3.07	.177	3.00	W34

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

INDEXABLE MILLING

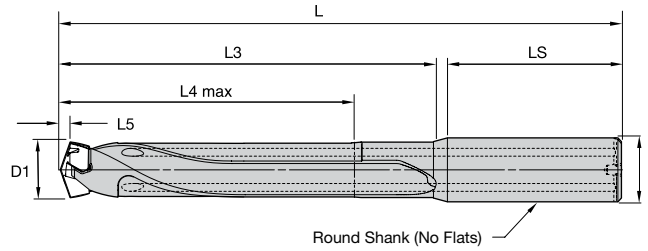
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

TOP DRILL M1™ • 5 x D • Straight Round Shank • Inch



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

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

INDEXABLE MILLING

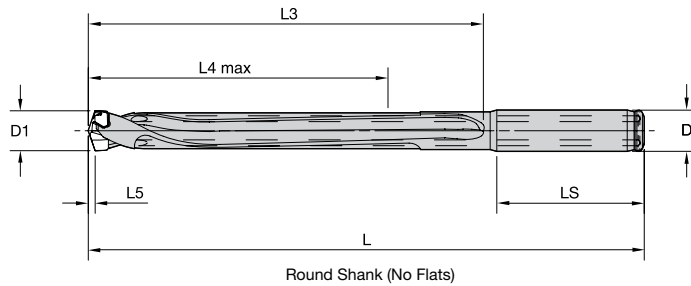
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

TOP DRILL M1™ • 8 x D • Straight Round Shank • Inch



order number	catalog number	D1	D1 max	D	L	L3	L4 max	L5	LS	SSC
3992536	TDM0313R8SS038	.313	.3343	.3750	4.87	3.17	2.68	.055	1.59	W10
3992537	TDM0335R8SS038	.335	.3539	.3750	5.13	3.42	2.83	.063	1.59	W11
3992539	TDM0374R8SS038	.374	.3933	.3750	5.37	3.67	3.15	.067	1.59	W13
3992540	TDM0374R8SS044	.374	.3933	.4375	5.37	3.59	3.15	.067	1.67	W13
3992541	TDM0394R8SS044	.394	.4130	.4375	5.75	3.96	3.31	.071	1.67	W14
3992542	TDM0413R8SS044	.433	.4327	.4375	6.00	4.21	4.33	.068	1.67	K
3992543	TDM0433R8SS044	.433	.4524	.4375	6.25	4.46	3.62	.079	1.67	W16
3992544	TDM0453R8SS050	.453	.4720	.5000	6.50	4.56	3.78	.083	1.79	W17
3992545	TDM0472R8SS050	.472	.4917	.5000	6.75	4.84	3.94	.087	1.79	W18
3992546	TDM0492R8SS050	.492	.5114	.5000	7.00	5.08	4.09	.091	1.79	W19
3992548	TDM0512R8SS056	.512	.5311	.5625	7.13	5.22	4.25	.091	1.79	W20
3992549	TDM0532R8SS056	.532	.5508	.5625	7.25	5.34	4.41	.098	1.79	W21
3992550	TDM0551R8SS056	.551	.5705	.5625	7.37	5.47	4.57	.098	1.79	W22
3992551	TDM0571R8SS063	.571	.5902	.6250	7.50	5.47	4.72	.102	1.91	W23
3992552	TDM0591R8SS063	.591	.6295	.6250	7.75	5.72	5.04	.106	1.91	W24
3992553	TDM0630R8SS069	.630	.6689	.6875	8.00	5.97	5.35	.114	1.91	W25
3992554	TDM0669R8SS069	.669	.7083	.6875	8.75	6.72	5.67	.118	1.91	W26
3992556	TDM0748R8SS075	.748	.7870	.7500	9.63	7.51	6.30	.134	2.00	W28
3992557	TDM0787R8SS081	.787	.8264	.8125	10.00	7.88	6.61	.142	2.00	W29
3992558	TDM0827R8SS088	.827	.8657	.8750	10.25	8.06	6.93	.150	2.07	W30
3992560	TDM0906R8SS094	.906	.9445	.9375	11.13	8.86	7.56	.165	2.15	W32
3992561	TDM0945R8SS100	.945	.9839	1.0000	12.25	9.13	7.87	.169	3.00	W33
3992562	TDM0984R8SS100	.984	1.0232	1.0000	12.63	9.51	8.19	.177	3.00	W34

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

INDEXABLE MILLING

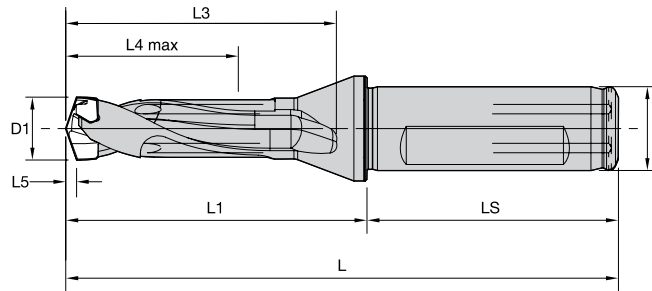
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

TOP DRILL M1™ • 3 x D • Flanged Shank • Metric



Round Shank (No Flats)

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

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

INDEXABLE MILLING

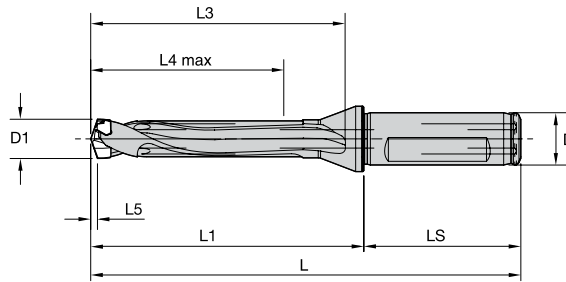
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

TOP DRILL M1™ • 5 x D • Flanged Shank • Metric



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

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

INDEXABLE MILLING

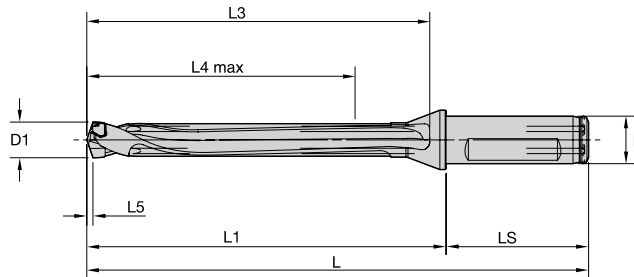
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

TOP DRILL M1™ • 8 x D • Flanged Shank • Metric



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

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

INDEXABLE MILLING

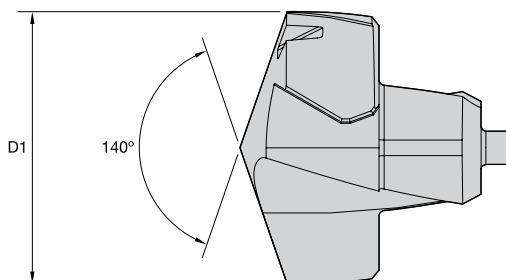
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

TOP DRILL M1™ • Inserts • UP

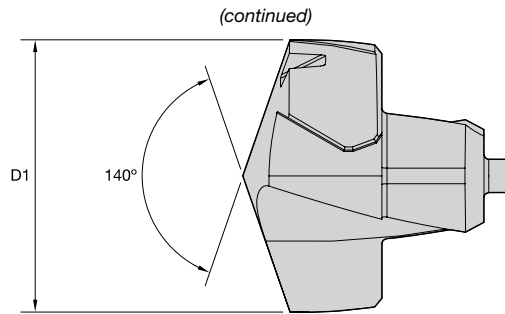


● first choice

○ alternate choice

grade WU25PD TiAlN		D1		
order #	catalog #	mm	in	SSC
3850959	TDM0794UPM	7,94	.313	W10
3848984	TDM0800UPM	8,00	.315	W10
3848985	TDM0810UPM	8,10	.319	W10
3850960	TDM0816UPM	8,16	.321	W10
3850961	TDM0820UPM	8,20	.323	W10
3848986	TDM0830UPM	8,30	.327	W10
3850962	TDM0833UPM	8,33	.328	W10
3848987	TDM0840UPM	8,40	.331	W10
3850963	TDM0843UPM	8,43	.332	W10
3848988	TDM0850UPM	8,50	.335	W11
3848989	TDM0860UPM	8,60	.339	W11
3850964	TDM0861UPM	8,61	.339	W11
3848990	TDM0870UPM	8,70	.343	W11
3850965	TDM0873UPM	8,73	.344	W11
3848991	TDM0880UPM	8,80	.347	W11
3850966	TDM0884UPM	8,84	.348	W11
3848992	TDM0890UPM	8,90	.350	W11
3849043	TDM0900UPM	9,00	.354	W12
3850967	TDM0909UPM	9,09	.358	W12
3849044	TDM0910UPM	9,10	.358	W12
3850968	TDM0913UPM	9,13	.359	W12
3849045	TDM0920UPM	9,20	.362	W12
3849046	TDM0930UPM	9,30	.366	W12
3850969	TDM0935UPM	9,35	.368	W12
3849047	TDM0940UPM	9,40	.370	W12
3849048	TDM0950UPM	9,50	.374	W13
3850970	TDM0953UPM	9,53	.375	W13
3850971	TDM0956UPM	9,56	.376	W13
3850972	TDM0958UPM	9,58	.377	W13
3849049	TDM0960UPM	9,60	.378	W13
3850973	TDM0970UPM	9,70	.382	W13
3850974	TDM0980UPM	9,80	.386	W13
3849050	TDM0990UPM	9,90	.390	W13
3850975	TDM0992UPM	9,92	.391	W13
3849051	TDM1000UPM	10,00	.394	W14
3850976	TDM1002UPM	10,02	.395	W14
3850977	TDM1008UPM	10,08	.397	W14
3849052	TDM1010UPM	10,10	.398	W14
3849053	TDM1020UPM	10,20	.402	W14
3850978	TDM1026UPM	10,26	.404	W14
3849054	TDM1030UPM	10,30	.406	W14
3850979	TDM1032UPM	10,32	.406	W14
3849055	TDM1040UPM	10,40	.409	W14
3850980	TDM1049UPM	10,49	.413	W14
3849056	TDM1050UPM	10,50	.413	W15
3849057	TDM1060UPM	10,60	.417	W15
3849058	TDM1070UPM	10,70	.421	W15
3850981	TDM1072UPM	10,72	.422	W15

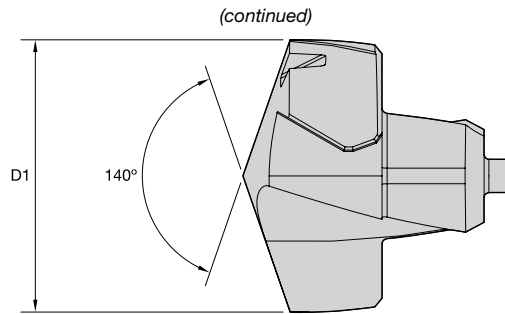
TOP DRILL M1™ • Inserts • UP



● first choice
○ alternate choice

grade WU25PD TiAlN		D1		
order #	catalog #	mm	in	SSC
3849059	TDM1080UPM	10,80	.425	W15
3849060	TDM1090UPM	10,90	.429	W15
3849061	TDM1100UPM	11,00	.433	W16
3849062	TDM1110UPM	11,10	.437	W16
3850982	TDM1111UPM	11,11	.438	W16
3849063	TDM1120UPM	11,20	.441	W16
3849064	TDM1130UPM	11,30	.445	W16
3849065	TDM1140UPM	11,40	.449	W16
3849066	TDM1150UPM	11,50	.453	W17
3850983	TDM1151UPM	11,51	.453	W17
3849067	TDM1160UPM	11,60	.457	W17
3850984	TDM1161UPM	11,61	.457	W17
3849068	TDM1170UPM	11,70	.461	W17
3849069	TDM1180UPM	11,80	.465	W17
3849070	TDM1190UPM	11,90	.469	W17
3850985	TDM1191UPM	11,91	.469	W17
3849071	TDM1200UPM	12,00	.473	W18
3849072	TDM1210UPM	12,10	.476	W18
3849073	TDM1220UPM	12,20	.480	W18
3850986	TDM1230UPM	12,30	.484	W18
3849074	TDM1240UPM	12,40	.488	W18
3850987	TDM1247UPM	12,47	.491	W18
3849075	TDM1250UPM	12,50	.492	W19
3849076	TDM1260UPM	12,60	.496	W19
3850988	TDM1270UPM	12,70	.500	W19
3849077	TDM1280UPM	12,80	.504	W19
3850989	TDM1290UPM	12,90	.508	W19
3849078	TDM1300UPM	13,00	.512	W20
3850990	TDM1310UPM	13,10	.516	W20
3849079	TDM1320UPM	13,20	.520	W20
3849080	TDM1330UPM	13,30	.524	W20
3849081	TDM1340UPM	13,40	.528	W20
3850991	TDM1349UPM	13,49	.531	W20
3849082	TDM1350UPM	13,50	.532	W21
3849083	TDM1360UPM	13,60	.535	W21
3849084	TDM1370UPM	13,70	.539	W21
3849085	TDM1380UPM	13,80	.543	W21
3850992	TDM1389UPM	13,89	.547	W21
3850993	TDM1390UPM	13,90	.547	W21
3849086	TDM1400UPM	14,00	.551	W22
3849087	TDM1410UPM	14,10	.555	W22
3849088	TDM1420UPM	14,20	.559	W22
3850994	TDM1429UPM	14,29	.563	W22
3849089	TDM1430UPM	14,30	.563	W22
3849090	TDM1440UPM	14,40	.567	W22
3849091	TDM1450UPM	14,50	.571	W23
3849092	TDM1460UPM	14,60	.575	W23
3850995	TDM1467UPM	14,67	.577	W23

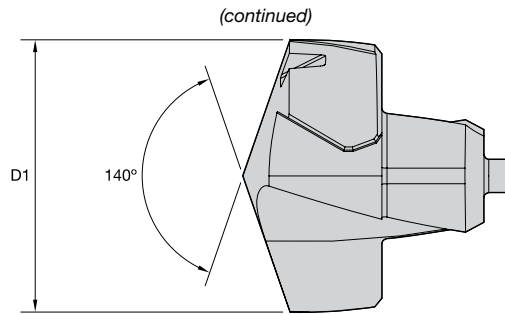
TOP DRILL M1™ • Inserts • UP



- first choice
- alternate choice

grade WU25PD TiAlN		D1		
order #	catalog #	mm	in	SSC
3850996	TDM1468UPM	14,68	.578	W23
3849093	TDM1470UPM	14,70	.579	W23
3849094	TDM1480UPM	14,80	.583	W23
3849095	TDM1490UPM	14,90	.587	W23
3849096	TDM1500UPM	15,00	.591	W24
3850997	TDM1508UPM	15,08	.594	W24
3849097	TDM1510UPM	15,10	.595	W24
3849098	TDM1520UPM	15,20	.598	W24
3849099	TDM1530UPM	15,30	.602	W24
3849100	TDM1540UPM	15,40	.606	W24
3850998	TDM1548UPM	15,48	.609	W24
3849101	TDM1550UPM	15,50	.610	W24
3849102	TDM1560UPM	15,60	.614	W24
3849103	TDM1570UPM	15,70	.618	W24
3849104	TDM1580UPM	15,80	.622	W24
3850999	TDM1588UPM	15,88	.625	W24
3849105	TDM1600UPM	16,00	.630	W25
3851000	TDM1603UPM	16,03	.631	W25
3851001	TDM1608UPM	16,08	.633	W25
3849106	TDM1610UPM	16,10	.634	W25
4010625	TDM1618UPM	16,18	.637	W25
3849107	TDM1620UPM	16,20	.638	W25
3851002	TDM1627UPM	16,27	.641	W25
3849108	TDM1630UPM	16,30	.642	W25
3849109	TDM1640UPM	16,40	.646	W25
3849110	TDM1650UPM	16,50	.650	W25
3849111	TDM1660UPM	16,60	.654	W25
3851003	TDM1667UPM	16,67	.656	W25
3849112	TDM1670UPM	16,70	.658	W25
3849113	TDM1680UPM	16,80	.661	W25
3851004	TDM1687UPM	16,87	.664	W25
3849114	TDM1690UPM	16,90	.665	W25
3849119	TDM1700UPM	17,00	.669	W26
3851005	TDM1707UPM	17,07	.672	W26
3849120	TDM1710UPM	17,10	.673	W26
3849121	TDM1720UPM	17,20	.677	W26
3849122	TDM1730UPM	17,30	.681	W26
3849193	TDM1740UPM	17,40	.685	W26
3851006	TDM1746UPM	17,46	.688	W26
3849194	TDM1750UPM	17,50	.689	W26
3849195	TDM1760UPM	17,60	.693	W26
3849196	TDM1770UPM	17,70	.697	W26
3849197	TDM1780UPM	17,80	.701	W26
3851007	TDM1786UPM	17,86	.703	W26
3849198	TDM1790UPM	17,90	.705	W26
3849199	TDM1800UPM	18,00	.709	W27
3849200	TDM1810UPM	18,10	.713	W27
3849201	TDM1820UPM	18,20	.717	W27

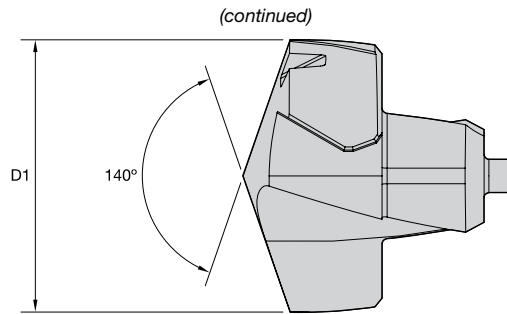
TOP DRILL M1™ • Inserts • UP



● first choice
○ alternate choice

grade WU25PD TiAlN		D1		
order #	catalog #	mm	in	SSC
3851008	TDM1826UPM	18,26	.719	W27
3849202	TDM1830UPM	18,30	.721	W27
3849203	TDM1840UPM	18,40	.724	W27
3849204	TDM1850UPM	18,50	.728	W27
3849205	TDM1860UPM	18,60	.732	W27
3851009	TDM1865UPM	18,65	.734	W27
3849206	TDM1870UPM	18,70	.736	W27
3849207	TDM1880UPM	18,80	.740	W27
3849208	TDM1890UPM	18,90	.744	W27
3849209	TDM1900UPM	19,00	.748	W28
3851010	TDM1905UPM	19,05	.750	W28
3849210	TDM1910UPM	19,10	.752	W28
3849211	TDM1920UPM	19,20	.756	W28
3851011	TDM1923UPM	19,23	.757	W28
3851012	TDM1925UPM	19,25	.758	W28
3851013	TDM1928UPM	19,28	.759	W28
3849212	TDM1930UPM	19,30	.760	W28
3851014	TDM1935UPM	19,35	.762	W28
3849213	TDM1940UPM	19,40	.764	W28
3851015	TDM1945UPM	19,45	.766	W28
3849214	TDM1950UPM	19,50	.768	W28
3849215	TDM1960UPM	19,60	.772	W28
3849216	TDM1970UPM	19,70	.776	W28
3849217	TDM1980UPM	19,80	.780	W28
3851016	TDM1984UPM	19,84	.781	W28
3849218	TDM1990UPM	19,90	.784	W28
3849219	TDM2000UPM	20,00	.788	W29
3849220	TDM2010UPM	20,10	.791	W29
3849221	TDM2020UPM	20,20	.795	W29
3851017	TDM2024UPM	20,24	.797	W29
3849222	TDM2030UPM	20,30	.799	W29
3849223	TDM2040UPM	20,40	.803	W29
3849224	TDM2050UPM	20,50	.807	W29
3849225	TDM2060UPM	20,60	.811	W29
3851018	TDM2064UPM	20,64	.813	W29
3849226	TDM2070UPM	20,70	.815	W29
3849227	TDM2080UPM	20,80	.819	W29
3849228	TDM2090UPM	20,90	.823	W29
3849229	TDM2099UPM	20,99	.826	W29
4003225	TDM2100UPM	21,00	.827	W30
4003203	TDM2144UPM	21,44	.844	W30
3969291	TDM2150UPM	21,50	.846	W30
4003226	TDM2200UPM	22,00	.866	W31
4003204	TDM2223UPM	22,23	.875	W31
4003205	TDM2245UPM	22,45	.884	W31
4003227	TDM2250UPM	22,50	.887	W31
4003228	TDM2300UPM	23,00	.906	W32
4003229	TDM2350UPM	23,50	.925	W32

TOP DRILL M1™ • Inserts • UP



- first choice
- alternate choice

grade WU25PD TiAlN		D1		
order #	catalog #	mm	in	SSC
4003206	TDM2381UPM	23,81	.938	W32
4003230	TDM2400UPM	24,00	.945	W33
4003231	TDM2450UPM	24,50	.965	W33
4003207	TDM2461UPM	24,61	.969	W33
4003232	TDM2500UPM	25,00	.984	W34
4003208	TDM2540UPM	25,40	1,000	W34
4002444	TDM2550UPM	25,50	1,004	W34
4003209	TDM2568UPM	25,68	1,011	W34
4003210	TDM2581UPM	25,81	1,016	W34
3992013	TDM2599UPM	25,99	1,023	W34

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

Application Data • UP • WU25PD • Inch

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

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

Application Data • UP • WU25PD™ • Metric

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

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

Application Data • Victory™ TOP DRILL M1™

How to attach inserts



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



2) Remove dust using air blast.



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



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



5) Set the wrench properly.*



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



7) Slowly turn the wrench in a clockwise direction.



8) Complete.

How to detach inserts



1) Remove dust from insert using air blast.



2) Set the wrench properly.*



3) Fit the wrench to insert slot.



4) Turn the wrench in a counterclockwise direction.



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



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

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

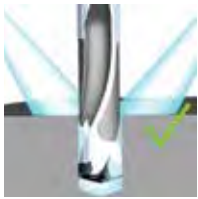
Application Data • Victory™ TOP DRILL M1™

Cautions

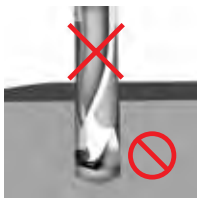
Coolant



1) Internal coolant is recommended.



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

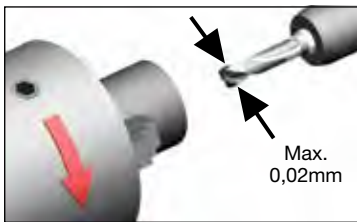


3) Dry cutting is not recommended. Limited applicability in cast iron materials, MQL strongly recommended.

Usage Precautions

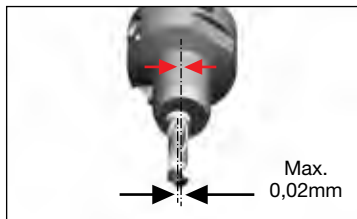
Core deviation

1) For Turning Machines



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

2) For Machining Centers



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

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

Top Cut 4™

Efficient Indexable Drill • TC4

Top Cut 4 indexable drills are equipped with centering capabilities and inboard and outboard inserts delivering outstanding flexibility and versatility in multiple materials.

Large Coolant Holes
Improves coolant in the cutting zone and facilitates easy chip evacuation.

Large Optimized Chip Flutes to enable chip flow and reduce vibrations.

Rigid Cross Section – Sturdy Body
Higher tool life even in tough conditions.



Top Cut 4 indexable drill portfolio encompasses dual four-edged front inserts, instead of traditional drill point geometry, enabling it to perform in a variety of applications on multiple materials.

FOUR CHIP BREAKERS IN FOUR GRADES

-V34



P K

First choice for machining steel, cast iron and short chipping materials. Suitable for severe cutting conditions.

-V36



P M K N

This insert is suitable for situations with low power consumption.

-V38



P M S

First choice for long chipping materials in titanium and stainless steel.

-DU



P M K

First choice for low-powered applications, machining of steel, cast iron and stainless steel.

FLEXIBLE AND VERSATILE

PRODUCT

Top Cut 4™ is an efficient drill which performs on PMKN materials with true four cutting edges.

DIAMETER RANGE

.472–2.677" (12–68mm)

INDUSTRY



MATERIALS



APPLICATIONS



DRILLING



INCLINED ENTRY



INCLINED EXIT



CROSS HOLES



BLIND



HALF-CYLINDRICAL DRILLING



CORNER DRILLING 45°



X-OFFSET

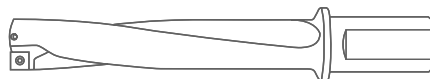
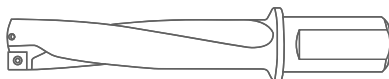


CONVEX



CHAIN DRILLING

STEEL BODIES

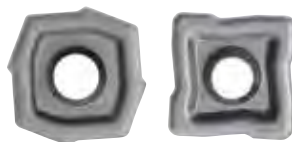


INSERTS

GRADES

WN10PH, WPK10CH,
WU25CH, WU20PH,
WU40PH

FLANGED SR SHANK



Top Cut 4™ Catalog Numbering System

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

Metric Body

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

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

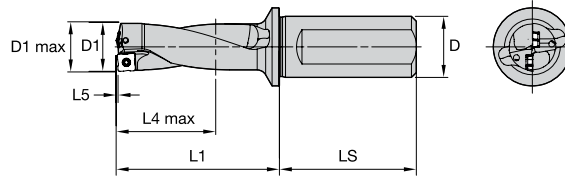
TCF Tool Family Top Cut 4	08 Size In-Circle D1	03 Insert Thickness	08 Insert Corner Radius	D Insert Size	P Insert Positioning C = Central P = Periphery	V34 Insert Geometry	WU25CH Grade
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Insert Geometry – V34 for steel or cast iron or V36 for stainless steel and long chipping steel.

Insert Guide for Grades

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

Top Cut 4 • 2 x D • SLR Shank • Inch



order number	catalog number	D1	D1 max	D	L1	L4 max	L5	LS	SSC	periphery insert	center insert
5537879	TCF0473R2SLR075A	.473	.493	.75	1.688	.963	.017	1.969	A	TCF040204AP	TCF040203AC
5537880	TCF0500R2SLR075A	.500	.520	.75	1.776	1.018	.018	1.969	A	TCF040204AP	TCF040203AC
5537881	TCF0531R2SLR075A	.531	.551	.75	1.876	1.081	.019	1.969	A	TCF040204AP	TCF040203AC
5578226	TCF0563R2SLR075B	.563	.583	.75	1.923	1.146	.020	1.969	B	TCF050204BP	TCF060203BC
5578227	TCF0594R2SLR075B	.594	.614	.75	2.021	1.210	.022	1.969	B	TCF050204BP	TCF060203BC
5578228	TCF0625R2SLR075B	.625	.645	.75	2.118	1.273	.023	1.969	B	TCF050204BP	TCF060203BC
5578229	TCF0656R2SLR075B	.656	.676	.75	2.215	1.336	.024	1.969	B	TCF050204BP	TCF060203BC
5578300	TCF0688R2SLR075B	.688	.708	.75	2.315	1.401	.025	1.969	B	TCF050204BP	TCF060203BC
5578301	TCF0703R2SLR075B	.703	.723	.75	2.362	1.431	.025	1.969	B	TCF050204BP	TCF060203BC
5578302	TCF0719R2SLR075B	.719	.739	.75	2.412	1.463	.026	1.969	B	TCF050204BP	TCF060203BC
5578303	TCF0734R2SLR075B	.734	.754	.75	2.459	1.494	.026	1.969	B	TCF050204BP	TCF060203BC
5578379	TCF0750R2SLR100C	.750	.770	1.00	2.510	1.527	.027	2.205	C	TCF070306CP	TCF070304CC
5578400	TCF0781R2SLR100C	.781	.801	1.00	2.607	1.590	.028	2.205	C	TCF070306CP	TCF070304CC
5578401	TCF0813R2SLR100C	.813	.833	1.00	2.707	1.655	.029	2.205	C	TCF070306CP	TCF070304CC
5578402	TCF0844R2SLR100C	.844	.864	1.00	2.804	1.718	.030	2.205	C	TCF070306CP	TCF070304CC
5578403	TCF0875R2SLR100C	.875	.895	1.00	2.901	1.781	.031	2.205	C	TCF070306CP	TCF070304CC
5578404	TCF0906R2SLR100C	.906	.926	1.00	2.998	1.844	.032	2.205	C	TCF070306CP	TCF070304CC
5578405	TCF0938R2SLR100C	.938	.958	1.00	3.097	1.908	.032	2.205	C	TCF070306CP	TCF070304CC
5537845	TCF0969R2SLR100D	.969	1.008	1.00	3.100	1.973	.035	2.205	D	TCF080308DP	TCF090305DC
5537846	TCF0984R2SLR100D	.984	1.023	1.00	3.146	2.004	.036	2.205	D	TCF080308DP	TCF090305DC
5537847	TCF1000R2SLR100D	1.000	1.039	1.00	3.194	2.036	.036	2.205	D	TCF080308DP	TCF090305DC
5537848	TCF1031R2SLR125D	1.031	1.070	1.25	3.327	2.099	.037	2.362	D	TCF080308DP	TCF090305DC
5537849	TCF1063R2SLR125D	1.063	1.102	1.25	3.424	2.164	.038	2.362	D	TCF080308DP	TCF090305DC
5537910	TCF1094R2SLR125D	1.094	1.133	1.25	3.518	2.227	.039	2.362	D	TCF080308DP	TCF090305DC
5537911	TCF1125R2SLR125D	1.125	1.164	1.25	3.612	2.290	.040	2.362	D	TCF080308DP	TCF090305DC
5537912	TCF1156R2SLR125D	1.156	1.195	1.25	3.706	2.353	.041	2.362	D	TCF080308DP	TCF090305DC
5537965	TCF1188R2SLR125E	1.188	1.227	1.25	3.685	2.419	.043	2.362	E	TCF100408EP	TCF120405EC
5537966	TCF1210R2SLR125E	1.210	1.249	1.25	3.750	2.464	.044	2.362	E	TCF100408EP	TCF120405EC
5537967	TCF1219R2SLR125E	1.219	1.258	1.25	3.776	2.482	.044	2.362	E	TCF100408EP	TCF120405EC
5537968	TCF1250R2SLR125E	1.250	1.289	1.25	3.867	2.545	.045	2.362	E	TCF100408EP	TCF120405EC
5537969	TCF1280R2SLR125E	1.281	1.320	1.25	3.958	2.608	.046	2.362	E	TCF100408EP	TCF120405EC
5538060	TCF1313R2SLR125E	1.313	1.352	1.25	4.052	2.673	.047	2.362	E	TCF100408EP	TCF120405EC
5538061	TCF1375R2SLR125E	1.375	1.414	1.25	4.233	2.799	.049	2.362	E	TCF100408EP	TCF120405EC
5538062	TCF1406R2SLR150E	1.406	1.445	1.50	4.364	2.862	.050	2.756	E	TCF100408EP	TCF120405EC
5538063	TCF1438R2SLR150E	1.438	1.438	1.50	4.457	2.926	.050	2.756	E	TCF100408EP	TCF120405EC
5578651	TCF1469R2SLR150F	1.469	1.508	1.50	4.550	2.991	.054	2.756	F	TCF120412FP	TCF150406FC
5578652	TCF1500R2SLR150F	1.500	1.539	1.50	4.641	3.055	.055	2.756	F	TCF120412FP	TCF150406FC
5578653	TCF1531R2SLR150F	1.531	1.570	1.50	4.732	3.118	.056	2.756	F	TCF120412FP	TCF150406FC
5578654	TCF1563R2SLR150F	1.563	1.602	1.50	4.826	3.183	.057	2.756	F	TCF120412FP	TCF150406FC
5578655	TCF1625R2SLR150F	1.625	1.664	1.50	5.007	3.308	.058	2.756	F	TCF120412FP	TCF150406FC
5578656	TCF1656R2SLR150F	1.656	1.695	1.50	5.098	3.371	.059	2.756	F	TCF120412FP	TCF150406FC
5578657	TCF1688R2SLR150F	1.688	1.727	1.50	5.192	3.436	.060	2.756	F	TCF120412FP	TCF150406FC
5578658	TCF1750R2SLR150F	1.750	1.789	1.50	5.373	3.562	.062	2.756	F	TCF120412FP	TCF150406FC
5578765	TCF1813R2SLR150G	1.813	1.852	1.50	5.379	3.692	.066	2.756	G	TCF150512GP	TCF180508GC
5578766	TCF1875R2SLR150G	1.875	1.914	1.50	5.554	3.818	.068	2.756	G	TCF150512GP	TCF180508GC
5578767	TCF1938R2SLR150G	1.938	1.977	1.50	5.732	3.945	.069	2.756	G	TCF150512GP	TCF180508GC
5578768	TCF2000R2SLR150G	2.000	2.039	1.50	5.907	4.071	.071	2.756	G	TCF150512GP	TCF180508GC
5578769	TCF2125R2SLR150G	2.125	2.164	1.50	6.261	4.324	.075	2.756	G	TCF150512GP	TCF180508GC
5578790	TCF2219R2SLR150G	2.219	2.258	1.50	6.527	4.515	.077	2.756	G	TCF150512GP	TCF180508GC
5538500	TCF2250R2SLR150H	2.250	2.289	1.50	6.392	4.581	.081	2.756	H	TCF180614HP	TCF210608HC
5538501	TCF2375R2SLR150H	2.375	2.414	1.50	6.734	4.835	.085	2.756	H	TCF180614HP	TCF210608HC
5538502	TCF2500R2SLR150H	2.500	2.539	1.50	7.074	5.088	.088	2.756	H	TCF180614HP	TCF210608HC

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

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the inserts.
 NOTE: Drilling in stacked plates possible in certain applications. Ask for technical support.
 Drill shipped with insert screws and Torx wrench.
 See pages C103-C112 for inserts.
 SSC = Pocket Seat Reference.
 SLR = Side Lock.
 D1 max is an achievable diameter using x-offset.

WARNING

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

Indexable Drills • Top Cut 4™ Series

INDEXABLE MILLING

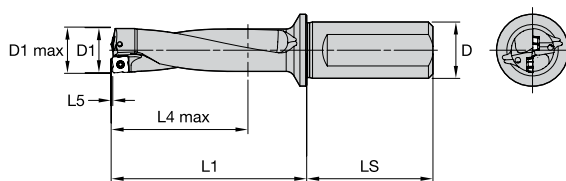
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Top Cut 4 • 3 x D • SLR Shank • Inch



order number	catalog number	D1	D1 max	D	L1	L4 max	L5	LS	SSC	periphery insert	center insert
5537882	TCF0473R3SLR075A	.473	.493	.75	2.161	1.436	.017	1.969	A	TCF040204AP	TCF040203AC
5537883	TCF0500R3SLR075A	.500	.520	.75	2.276	1.518	.018	1.969	A	TCF040204AP	TCF040203AC
5537884	TCF0531R3SLR075A	.531	.551	.75	2.407	1.612	.019	1.969	A	TCF040204AP	TCF040203AC
5578304	TCF0563R3SLR075B	.563	.583	.75	2.486	1.709	.020	1.969	B	TCF050204BP	TCF060203BC
5578305	TCF0594R3SLR075B	.594	.614	.75	2.615	1.804	.022	1.969	B	TCF050204BP	TCF060203BC
5578306	TCF0625R3SLR075B	.625	.645	.75	2.743	1.898	.023	1.969	B	TCF050204BP	TCF060203BC
5578307	TCF0656R3SLR075B	.656	.676	.75	2.871	1.992	.024	1.969	B	TCF050204BP	TCF060203BC
5578308	TCF0688R3SLR075B	.688	.708	.75	3.003	2.089	.025	1.969	B	TCF050204BP	TCF060203BC
5578309	TCF0703R3SLR075B	.703	.723	.75	3.065	2.134	.025	1.969	B	TCF050204BP	TCF060203BC
5578310	TCF0719R3SLR075B	.719	.739	.75	3.131	2.182	.026	1.969	B	TCF050204BP	TCF060203BC
5578311	TCF0734R3SLR075B	.734	.754	.75	3.193	2.228	.026	1.969	B	TCF050204BP	TCF060203BC
5578406	TCF0750R3SLR100C	.750	.770	1.00	3.260	2.277	.027	2.205	C	TCF070306CP	TCF070304CC
5578407	TCF0781R3SLR100C	.781	.801	1.00	3.388	2.371	.028	2.205	C	TCF070306CP	TCF070304CC
5578408	TCF0813R3SLR100C	.813	.833	1.00	3.520	2.468	.029	2.205	C	TCF070306CP	TCF070304CC
5578409	TCF0844R3SLR100C	.844	.864	1.00	3.648	2.562	.030	2.205	C	TCF070306CP	TCF070304CC
5578410	TCF0875R3SLR100C	.875	.895	1.00	3.776	2.656	.031	2.205	C	TCF070306CP	TCF070304CC
5578411	TCF0906R3SLR100C	.906	.926	1.00	3.904	2.750	.032	2.205	C	TCF070306CP	TCF070304CC
5578412	TCF0938R3SLR100C	.938	.958	1.00	4.035	2.846	.032	2.205	C	TCF070306CP	TCF070304CC
5537913	TCF0969R3SLR100D	.969	1.008	1.00	4.069	2.942	.035	2.205	D	TCF080308DP	TCF090305DC
5537914	TCF0984R3SLR100D	.984	1.023	1.00	4.130	2.988	.036	2.205	D	TCF080308DP	TCF090305DC
5537915	TCF1000R3SLR100D	1.000	1.039	1.00	4.194	3.036	.036	2.205	D	TCF080308DP	TCF090305DC
5537916	TCF1031R3SLR125D	1.031	1.070	1.25	4.358	3.130	.037	2.362	D	TCF080308DP	TCF090305DC
5537917	TCF1063R3SLR125D	1.063	1.102	1.25	4.487	3.227	.038	2.362	D	TCF080308DP	TCF090305DC
5537918	TCF1094R3SLR125D	1.094	1.133	1.25	4.612	3.321	.039	2.362	D	TCF080308DP	TCF090305DC
5537919	TCF1125R3SLR125D	1.125	1.164	1.25	4.737	3.415	.040	2.362	D	TCF080308DP	TCF090305DC
5537920	TCF1156R3SLR125D	1.156	1.195	1.25	4.862	3.509	.041	2.362	D	TCF080308DP	TCF090305DC
5538064	TCF1188R3SLR125E	1.188	1.227	1.25	4.873	3.607	.043	2.362	E	TCF100408EP	TCF120405EC
5538065	TCF1210R3SLR125E	1.210	1.249	1.25	4.960	3.674	.044	2.362	E	TCF100408EP	TCF120405EC
5538066	TCF1219R3SLR125E	1.219	1.258	1.25	4.995	3.701	.044	2.362	E	TCF100408EP	TCF120405EC
5538067	TCF1250R3SLR125E	1.250	1.289	1.25	5.117	3.795	.045	2.362	E	TCF100408EP	TCF120405EC
5538068	TCF1280R3SLR125E	1.281	1.320	1.25	5.239	3.889	.046	2.362	E	TCF100408EP	TCF120405EC
5538069	TCF1313R3SLR125E	1.313	1.352	1.25	5.365	3.986	.047	2.362	E	TCF100408EP	TCF120405EC
5538080	TCF1375R3SLR125E	1.375	1.414	1.25	5.608	4.174	.049	2.362	E	TCF100408EP	TCF120405EC
5538081	TCF1406R3SLR150E	1.406	1.445	1.50	5.770	4.268	.050	2.756	E	TCF100408EP	TCF120405EC
5538082	TCF1438R3SLR150E	1.438	1.477	1.50	5.895	4.364	.050	2.756	E	TCF100408EP	TCF120405EC
5578659	TCF1469R3SLR150F	1.469	1.508	1.50	6.019	4.460	.054	2.756	F	TCF120412FP	TCF150406FC
5578670	TCF1500R3SLR150F	1.500	1.539	1.50	6.141	4.555	.055	2.756	F	TCF120412FP	TCF150406FC
5578671	TCF1531R3SLR150F	1.531	1.570	1.50	6.263	4.649	.056	2.756	F	TCF120412FP	TCF150406FC
5578672	TCF1563R3SLR150F	1.563	1.602	1.50	6.389	4.746	.057	2.756	F	TCF120412FP	TCF150406FC
5578673	TCF1625R3SLR150F	1.625	1.664	1.50	6.632	4.933	.058	2.756	F	TCF120412FP	TCF150406FC
5578674	TCF1656R3SLR150F	1.656	1.695	1.50	6.754	5.027	.059	2.756	F	TCF120412FP	TCF150406FC
5578675	TCF1688R3SLR150F	1.688	1.727	1.50	6.880	5.124	.060	2.756	F	TCF120412FP	TCF150406FC
5578676	TCF1750R3SLR150F	1.750	1.789	1.50	7.123	5.312	.062	2.756	F	TCF120412FP	TCF150406FC
5578791	TCF1813R3SLR150G	1.813	1.852	1.50	7.192	5.505	.066	2.756	G	TCF150512GP	TCF180508GC
5578792	TCF1875R3SLR150G	1.875	1.914	1.50	7.429	5.693	.068	2.756	G	TCF150512GP	TCF180508GC
5578793	TCF1938R3SLR150G	1.938	1.977	1.50	7.670	5.883	.069	2.756	G	TCF150512GP	TCF180508GC
5578794	TCF2000R3SLR150G	2.000	2.039	1.50	7.832	6.071	.071	2.756	G	TCF150512GP	TCF180508GC
5578795	TCF2125R3SLR150G	2.125	2.164	1.50	8.307	6.450	.075	2.756	G	TCF150512GP	TCF180508GC
5578796	TCF2219R3SLR150G	2.219	2.258	1.50	8.665	6.734	.077	2.756	G	TCF150512GP	TCF180508GC
5538503	TCF2250R3SLR150H	2.250	2.289	1.50	8.642	6.831	.081	2.756	H	TCF180614HP	TCF210608HC
5538504	TCF2375R3SLR150H	2.375	2.414	1.50	9.109	7.210	.085	2.756	H	TCF180614HP	TCF210608HC
5538505	TCF2500R3SLR150H	2.500	2.539	1.50	9.574	7.588	.088	2.756	H	TCF180614HP	TCF210608HC

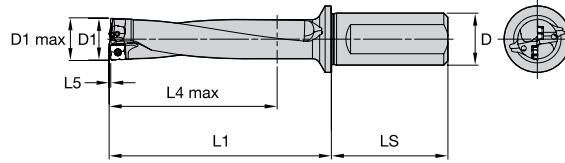
D	LS	
	mm	in
.75	50	1.9685
1.00	56	2.2047
1.25	60	2.3622
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Top Cut 4 • 4 x D • SLR Shank • Inch



order number	catalog number	D1	D1 max	D	L1	L4 max	L5	LS	SSC	periphery insert	center insert
5537885	TCF0473R4SLR075A	.473	.493	.75	2.634	1.909	.017	1.969	A	TCF040204AP	TCF040203AC
5537886	TCF0500R4SLR075A	.500	.520	.75	2.776	2.018	.018	1.969	A	TCF040204AP	TCF040203AC
5537887	TCF0531R4SLR075A	.531	.551	.75	2.938	2.143	.019	1.969	A	TCF040204AP	TCF040203AC
5578312	TCF0563R4SLR075B	.563	.583	.75	3.049	2.272	.020	1.969	B	TCF050204BP	TCF060203BC
5578313	TCF0594R4SLR075B	.594	.614	.75	3.209	2.398	.022	1.969	B	TCF050204BP	TCF060203BC
5578314	TCF0625R4SLR075B	.625	.645	.75	3.368	2.523	.023	1.969	B	TCF050204BP	TCF060203BC
5578315	TCF0656R4SLR075B	.656	.676	.75	3.527	2.648	.024	1.969	B	TCF050204BP	TCF060203BC
5578316	TCF0688R4SLR075B	.688	.708	.75	3.691	2.777	.025	1.969	B	TCF050204BP	TCF060203BC
5578317	TCF0703R4SLR075B	.703	.723	.75	3.768	2.837	.025	1.969	B	TCF050204BP	TCF060203BC
5578318	TCF0719R4SLR075B	.719	.739	.75	3.850	2.901	.026	1.969	B	TCF050204BP	TCF060203BC
5578319	TCF0734R4SLR075B	.734	.754	.75	3.927	2.962	.026	1.969	B	TCF050204BP	TCF060203BC
5578413	TCF0750R4SLR100C	.750	.770	1.00	4.010	3.027	.027	2.205	C	TCF070306CP	TCF070304CC
5578414	TCF0781R4SLR100C	.781	.801	1.00	4.169	3.152	.028	2.205	C	TCF070306CP	TCF070304CC
5578415	TCF0813R4SLR100C	.813	.833	1.00	4.333	3.281	.029	2.205	C	TCF070306CP	TCF070304CC
5578416	TCF0844R4SLR100C	.844	.864	1.00	4.492	3.406	.030	2.205	C	TCF070306CP	TCF070304CC
5578417	TCF0875R4SLR100C	.875	.895	1.00	4.651	3.531	.031	2.205	C	TCF070306CP	TCF070304CC
5578418	TCF0906R4SLR100C	.906	.926	1.00	4.810	3.656	.032	2.205	C	TCF070306CP	TCF070304CC
5578419	TCF0938R4SLR100C	.938	.958	1.00	4.973	3.784	.032	2.205	C	TCF070306CP	TCF070304CC
5537921	TCF0969R4SLR100D	.969	1.008	1.00	5.038	3.911	.035	2.205	D	TCF080308DP	TCF090305DC
5537922	TCF0984R4SLR100D	.984	1.023	1.00	5.114	3.972	.036	2.205	D	TCF080308DP	TCF090305DC
5537923	TCF1000R4SLR100D	1.000	1.039	1.00	5.194	4.036	.036	2.205	D	TCF080308DP	TCF090305DC
5537924	TCF1031R4SLR125D	1.031	1.070	1.25	5.389	4.161	.037	2.362	D	TCF080308DP	TCF090305DC
5537925	TCF1063R4SLR125D	1.063	1.102	1.25	5.550	4.290	.038	2.362	D	TCF080308DP	TCF090305DC
5537926	TCF1094R4SLR125D	1.094	1.133	1.25	5.706	4.415	.039	2.362	D	TCF080308DP	TCF090305DC
5537927	TCF1125R4SLR125D	1.125	1.164	1.25	5.862	4.540	.040	2.362	D	TCF080308DP	TCF090305DC
5537928	TCF1156R4SLR125D	1.156	1.195	1.25	6.018	4.665	.041	2.362	D	TCF080308DP	TCF090305DC
5538083	TCF1188R4SLR125E	1.188	1.227	1.25	6.061	4.795	.043	2.362	E	TCF100408EP	TCF120405EC
5538084	TCF1210R4SLR125E	1.210	1.249	1.25	6.170	4.884	.044	2.362	E	TCF100408EP	TCF120405EC
5538085	TCF1219R4SLR125E	1.219	1.258	1.25	6.214	4.920	.044	2.362	E	TCF100408EP	TCF120405EC
5538086	TCF1250R4SLR125E	1.250	1.289	1.25	6.367	5.045	.045	2.362	E	TCF100408EP	TCF120405EC
5538087	TCF1280R4SLR125E	1.281	1.320	1.25	6.520	5.170	.046	2.362	E	TCF100408EP	TCF120405EC
5538088	TCF1313R4SLR125E	1.313	1.352	1.25	6.678	5.299	.047	2.362	E	TCF100408EP	TCF120405EC
5538089	TCF1375R4SLR125E	1.375	1.414	1.25	6.983	5.549	.049	2.362	E	TCF100408EP	TCF120405EC
5538090	TCF1406R4SLR150E	1.406	1.445	1.50	7.176	5.674	.050	2.756	E	TCF100408EP	TCF120405EC
5538091	TCF1438R4SLR150E	1.438	1.477	1.50	7.333	5.802	.050	2.756	E	TCF100408EP	TCF120405EC
5578677	TCF1469R4SLR150F	1.469	1.508	1.50	7.488	5.929	.054	2.756	F	TCF120412FP	TCF150406FC
5578678	TCF1500R4SLR150F	1.500	1.539	1.50	7.641	6.054	.055	2.756	F	TCF120412FP	TCF150406FC
5578679	TCF1531R4SLR150F	1.531	1.570	1.50	7.794	6.180	.056	2.756	F	TCF120412FP	TCF150406FC
5578680	TCF1563R4SLR150F	1.563	1.602	1.50	7.952	6.309	.057	2.756	F	TCF120412FP	TCF150406FC
5578681	TCF1625R4SLR150F	1.625	1.664	1.50	8.257	6.558	.058	2.756	F	TCF120412FP	TCF150406FC
5578682	TCF1656R4SLR150F	1.656	1.695	1.50	8.410	6.683	.059	2.756	F	TCF120412FP	TCF150406FC
5578683	TCF1688R4SLR150F	1.688	1.727	1.50	8.568	6.812	.060	2.756	F	TCF120412FP	TCF150406FC
5578684	TCF1750R4SLR150F	1.750	1.789	1.50	8.873	7.062	.062	2.756	F	TCF120412FP	TCF150406FC
5578797	TCF1813R4SLR150G	1.813	1.852	1.50	9.005	7.318	.066	2.756	G	TCF150512GP	TCF180508GC
5578798	TCF1875R4SLR150G	1.875	1.914	1.50	9.304	7.568	.068	2.756	G	TCF150512GP	TCF180508GC
5578799	TCF1938R4SLR150G	1.938	1.977	1.50	9.608	7.821	.069	2.756	G	TCF150512GP	TCF180508GC
5578800	TCF2000R4SLR150G	2.000	2.039	1.50	9.907	8.071	.071	2.756	G	TCF150512GP	TCF180508GC
5578801	TCF2125R4SLR150G	2.125	2.164	1.50	10.511	8.574	.075	2.756	G	TCF150512GP	TCF180508GC
5578802	TCF2219R4SLR150G	2.219	2.258	1.50	10.965	8.953	.077	2.756	G	TCF150512GP	TCF180508GC
5538506	TCF2250R4SLR150H	2.250	2.289	1.50	10.892	9.081	.081	2.756	H	TCF180614HP	TCF210608HC
5538507	TCF2375R4SLR150H	2.375	2.414	1.50	11.484	9.585	.085	2.756	H	TCF180614HP	TCF210608HC
5538508	TCF2500R4SLR150H	2.500	2.539	1.50	12.074	10.088	.088	2.756	H	TCF180614HP	TCF210608HC

D	LS	
	mm	in
.75	50	1.9685
1.00	56	2.2047
1.25	60	2.3622
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Indexable Drills • Top Cut 4™ Series

INDEXABLE MILLING

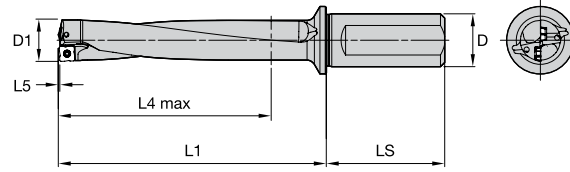
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Top Cut 4 • 5 x D • SLR Shank • Inch



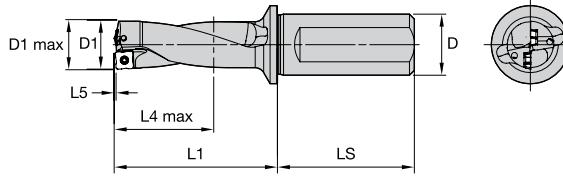
order number	catalog number	D1	D	L1	L4 max	L5	LS	SSC	periphery insert	center insert
5537888	TCF0473R5SLR075A	.473	.75	3.107	2.382	.017	1.969	A	TCF040204AP	TCF040203AC
5537889	TCF0500R5SLR075A	.500	.75	3.276	2.518	.018	1.969	A	TCF040204AP	TCF040203AC
5537890	TCF0531R5SLR075A	.531	.75	3.469	2.674	.019	1.969	A	TCF040204AP	TCF040203AC
5578320	TCF0563R5SLR075B	.563	.75	3.612	2.835	.020	1.969	B	TCF050204BP	TCF060203BC
5578321	TCF0594R5SLR075B	.594	.75	3.803	2.992	.022	1.969	B	TCF050204BP	TCF060203BC
5578322	TCF0625R5SLR075B	.625	.75	3.993	3.148	.023	1.969	B	TCF050204BP	TCF060203BC
5578323	TCF0656R5SLR075B	.656	.75	4.183	3.304	.024	1.969	B	TCF050204BP	TCF060203BC
5578324	TCF0688R5SLR075B	.688	.75	4.379	3.465	.025	1.969	B	TCF050204BP	TCF060203BC
5578325	TCF0703R5SLR075B	.703	.75	4.471	3.540	.025	1.969	B	TCF050204BP	TCF060203BC
5578326	TCF0719R5SLR075B	.719	.75	4.569	3.620	.026	1.969	B	TCF050204BP	TCF060203BC
5578327	TCF0734R5SLR075B	.734	.75	4.661	3.696	.026	1.969	B	TCF050204BP	TCF060203BC
5578420	TCF0750R5SLR100C	.750	1.00	4.760	3.777	.027	2.205	C	TCF070306CP	TCF070304CC
5578421	TCF0781R5SLR100C	.781	1.00	4.950	3.933	.028	2.205	C	TCF070306CP	TCF070304CC
5578422	TCF0813R5SLR100C	.813	1.00	5.146	4.094	.029	2.205	C	TCF070306CP	TCF070304CC
5578423	TCF0844R5SLR100C	.844	1.00	5.336	4.250	.030	2.205	C	TCF070306CP	TCF070304CC
5578424	TCF0875R5SLR100C	.875	1.00	5.526	4.406	.031	2.205	C	TCF070306CP	TCF070304CC
5578425	TCF0906R5SLR100C	.906	1.00	5.716	4.562	.032	2.205	C	TCF070306CP	TCF070304CC
5578426	TCF0938R5SLR100C	.938	1.00	5.911	4.722	.032	2.205	C	TCF070306CP	TCF070304CC
5537929	TCF0969R5SLR100D	.969	1.00	6.007	4.880	.035	2.205	D	TCF080308DP	TCF090305DC
5537930	TCF0984R5SLR100D	.984	1.00	6.098	4.956	.036	2.205	D	TCF080308DP	TCF090305DC
5537931	TCF1000R5SLR100D	1.000	1.00	6.194	5.036	.036	2.205	D	TCF080308DP	TCF090305DC
5537932	TCF1031R5SLR125D	1.031	1.25	6.420	5.192	.037	2.362	D	TCF080308DP	TCF090305DC
5537933	TCF1063R5SLR125D	1.063	1.25	6.613	5.353	.038	2.362	D	TCF080308DP	TCF090305DC
5537934	TCF1094R5SLR125D	1.094	1.25	6.800	5.509	.039	2.362	D	TCF080308DP	TCF090305DC
5537935	TCF1125R5SLR125D	1.125	1.25	6.987	5.665	.040	2.362	D	TCF080308DP	TCF090305DC
5537936	TCF1156R5SLR125D	1.156	1.25	7.174	5.821	.041	2.362	D	TCF080308DP	TCF090305DC
5538092	TCF1188R5SLR125E	1.188	1.25	7.249	5.983	.043	2.362	E	TCF100408EP	TCF120405EC
5538093	TCF1210R5SLR125E	1.210	1.25	7.380	6.094	.044	2.362	E	TCF100408EP	TCF120405EC
5538094	TCF1219R5SLR125E	1.219	1.25	7.433	6.139	.044	2.362	E	TCF100408EP	TCF120405EC
5538095	TCF1250R5SLR125E	1.250	1.25	7.617	6.295	.045	2.362	E	TCF100408EP	TCF120405EC
5538096	TCF1280R5SLR125E	1.281	1.25	7.801	6.451	.046	2.362	E	TCF100408EP	TCF120405EC
5538097	TCF1313R5SLR125E	1.313	1.25	7.991	6.612	.047	2.362	E	TCF100408EP	TCF120405EC
5538098	TCF1375R5SLR125E	1.375	1.25	8.358	6.924	.049	2.362	E	TCF100408EP	TCF120405EC
5538099	TCF1406R5SLR150E	1.406	1.50	8.582	7.080	.050	2.756	E	TCF100408EP	TCF120405EC
5538100	TCF1438R5SLR150E	1.438	1.50	8.771	7.240	.050	2.756	E	TCF100408EP	TCF120405EC
5578685	TCF1469R5SLR150F	1.469	1.50	8.957	7.398	.054	2.756	F	TCF120412FP	TCF150406FC
5578686	TCF1500R5SLR150F	1.500	1.50	9.141	7.554	.055	2.756	F	TCF120412FP	TCF150406FC
5578687	TCF1531R5SLR150F	1.531	1.50	9.325	7.711	.056	2.756	F	TCF120412FP	TCF150406FC
5578688	TCF1563R5SLR150F	1.563	1.50	9.515	7.872	.057	2.756	F	TCF120412FP	TCF150406FC
5578689	TCF1625R5SLR150F	1.625	1.50	9.882	8.183	.058	2.756	F	TCF120412FP	TCF150406FC
5578690	TCF1656R5SLR150F	1.656	1.50	10.066	8.339	.059	2.756	F	TCF120412FP	TCF150406FC
5578691	TCF1688R5SLR150F	1.688	1.50	10.256	8.500	.060	2.756	F	TCF120412FP	TCF150406FC
5578693	TCF1750R5SLR150G	1.750	1.50	10.623	8.812	.062	2.756	F	TCF120412FP	TCF150406FC
5578803	TCF1813R5SLR150G	1.813	1.50	10.818	9.131	.066	2.756	G	TCF150512GP	TCF180508GC
5578804	TCF1875R5SLR150G	1.875	1.50	11.179	9.443	.068	2.756	G	TCF150512GP	TCF180508GC
5578805	TCF1938R5SLR150G	1.938	1.50	11.546	9.759	.069	2.756	G	TCF150512GP	TCF180508GC
5578806	TCF2000R5SLR150G	2.000	1.50	11.907	10.071	.071	2.756	G	TCF150512GP	TCF180508GC
5578807	TCF2125R5SLR150G	2.125	1.50	12.636	10.699	.075	2.756	G	TCF150512GP	TCF180508GC
5578808	TCF2219R5SLR150G	2.219	1.50	13.184	11.172	.077	2.756	G	TCF150512GP	TCF180508GC
5538509	TCF2250R5SLR150H	2.250	1.50	13.142	11.331	.081	2.756	H	TCF180614HP	TCF210608HC
5538510	TCF2375R5SLR150H	2.375	1.50	13.859	11.960	.085	2.756	H	TCF180614HP	TCF210608HC
5538511	TCF2500R5SLR150H	2.500	1.50	14.574	12.588	.088	2.756	H	TCF180614HP	TCF210608HC

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

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the inserts.
 NOTE: Drilling in stacked plates possible in certain applications. Ask for technical support.
 Drill shipped with insert screws and Torx wrench.
 See pages C103-C112 for inserts.
 SSC = Pocket Seat Reference.
 SLR = Side Lock.
 D1 max is an achievable diameter using x-offset.

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

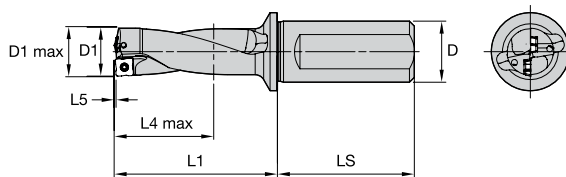
Top Cut 4 • 2 x D • SLR Shanks • Metric



order number	catalog number	D1	D1 max	D	L1	L4 max	L5	LS	SSC	periphery insert	center insert
5537778	TCF120R2SLR20MA	12,00	12,50	20	43,4	24,4	0,43	50,00	A	TCF040204AP	TCF040203AC
5537779	TCF125R2SLR20MA	12,50	13,00	20	44,5	25,5	0,45	50,00	A	TCF040204AP	TCF040203AC
5537860	TCF127R2SLR20MA	12,70	13,20	20	45,9	25,9	0,46	50,00	A	TCF040204AP	TCF040203AC
5537861	TCF130R2SLR20MA	13,00	13,50	20	46,5	26,5	0,47	50,00	A	TCF040204AP	TCF040203AC
5537862	TCF135R2SLR20MA	13,50	14,00	20	48,5	27,5	0,48	50,00	A	TCF040204AP	TCF040203AC
5577828	TCF140R2SLR25MB	14,00	14,50	25	48,5	28,5	0,49	56,00	B	TCF050204BP	TCF060203BC
5577829	TCF145R2SLR25MB	14,50	15,00	25	49,5	29,5	0,52	56,00	B	TCF050204BP	TCF060203BC
5577920	TCF150R2SLR25MB	15,00	15,50	25	51,5	30,5	0,55	56,00	B	TCF050204BP	TCF060203BC
5577921	TCF155R2SLR25MB	15,50	16,00	25	53,6	31,6	0,56	56,00	B	TCF050204BP	TCF060203BC
5577922	TCF160R2SLR25MB	16,00	16,50	25	54,6	32,6	0,58	56,00	B	TCF050204BP	TCF060203BC
5577923	TCF165R2SLR25MB	16,50	17,00	25	56,6	33,6	0,60	56,00	B	TCF050204BP	TCF060203BC
5577924	TCF170R2SLR25MB	17,00	17,50	25	57,6	34,6	0,61	56,00	B	TCF050204BP	TCF060203BC
5577925	TCF175R2SLR25MB	17,50	18,00	25	59,6	35,6	0,63	56,00	B	TCF050204BP	TCF060203BC
5577926	TCF180R2SLR25MB	18,00	18,50	25	60,6	36,6	0,64	56,00	B	TCF050204BP	TCF060203BC
5577927	TCF185R2SLR25MB	18,50	19,00	25	62,7	37,7	0,65	56,00	B	TCF050204BP	TCF060203BC
5578820	TCF190R2SLR25MC	19,00	19,50	25	63,7	38,7	0,68	56,00	C	TCF070306CP	TCF070304CC
5578821	TCF195R2SLR25MC	19,50	20,00	25	65,7	39,7	0,71	56,00	C	TCF070306CP	TCF070304CC
5578822	TCF200R2SLR25MC	20,00	20,50	25	66,7	40,7	0,72	56,00	C	TCF070306CP	TCF070304CC
5578823	TCF205R2SLR25MC	20,50	21,00	25	68,7	41,7	0,74	56,00	C	TCF070306CP	TCF070304CC
5578824	TCF210R2SLR25MC	21,00	21,50	25	70,8	42,8	0,75	56,00	C	TCF070306CP	TCF070304CC
5578825	TCF220R2SLR25MC	22,00	22,50	25	73,8	44,8	0,78	56,00	C	TCF070306CP	TCF070304CC
5578826	TCF225R2SLR25MC	22,50	23,00	25	74,8	45,8	0,79	56,00	C	TCF070306CP	TCF070304CC
5578827	TCF230R2SLR25MC	23,00	23,50	25	76,8	46,8	0,80	56,00	C	TCF070306CP	TCF070304CC
5537167	TCF240R2SLR25MD	24,00	25,00	25	76,9	48,9	0,87	56,00	D	TCF080308DP	TCF090305DC
5537168	TCF250R2SLR32MD	25,00	26,00	32	80,9	50,9	0,91	60,00	D	TCF080308DP	TCF090305DC
5537169	TCF260R2SLR32MD	26,00	27,00	32	83,9	52,9	0,94	60,00	D	TCF080308DP	TCF090305DC
5537820	TCF265R2SLR32MD	26,50	27,50	32	86,0	54,0	0,95	60,00	D	TCF080308DP	TCF090305DC
5537821	TCF270R2SLR32MD	27,00	28,00	32	87,0	55,0	0,97	60,00	D	TCF080308DP	TCF090305DC
5537822	TCF280R2SLR32MD	28,00	29,00	32	90,0	57,0	0,99	60,00	D	TCF080308DP	TCF090305DC
5537823	TCF290R2SLR32MD	29,00	30,00	32	93,0	59,0	1,02	60,00	D	TCF080308DP	TCF090305DC
5537937	TCF300R2SLR32ME	30,00	31,00	32	93,1	61,1	1,09	60,00	E	TCF100408EP	TCF120405EC
5537938	TCF310R2SLR32ME	31,00	32,00	32	96,1	63,1	1,12	60,00	E	TCF100408EP	TCF120405EC
5537939	TCF320R2SLR32ME	32,00	33,00	32	99,2	65,2	1,15	60,00	E	TCF100408EP	TCF120405EC
5537940	TCF330R2SLR40ME	33,00	34,00	40	103,2	67,2	1,18	70,00	E	TCF100408EP	TCF120405EC
5537941	TCF340R2SLR40ME	34,00	35,00	40	106,2	69,2	1,21	70,00	E	TCF100408EP	TCF120405EC
5537942	TCF350R2SLR40ME	35,00	36,00	40	109,2	71,2	1,24	70,00	E	TCF100408EP	TCF120405EC
5537943	TCF360R2SLR40ME	36,00	37,00	40	112,3	73,3	1,27	70,00	E	TCF100408EP	TCF120405EC
5578539	TCF370R2SLR40MF	37,00	38,00	40	115,3	75,3	1,35	70,00	F	TCF120412FP	TCF150406FC
5578600	TCF375R2SLR40MF	37,50	38,50	40	116,4	76,4	1,36	70,00	F	TCF120412FP	TCF150406FC
5578601	TCF380R2SLR40MF	38,00	39,00	40	118,4	77,4	1,38	70,00	F	TCF120412FP	TCF150406FC
5578602	TCF390R2SLR40MF	39,00	40,00	40	121,4	79,4	1,41	70,00	F	TCF120412FP	TCF150406FC
5578603	TCF400R2SLR40MF	40,00	41,00	40	123,4	81,4	1,45	70,00	F	TCF120412FP	TCF150406FC
5578604	TCF410R2SLR40MF	41,00	42,00	40	126,5	83,5	1,48	70,00	F	TCF120412FP	TCF150406FC
5578605	TCF420R2SLR40MF	42,00	43,00	40	129,5	85,5	1,51	70,00	F	TCF120412FP	TCF150406FC
5578606	TCF430R2SLR40MF	43,00	44,00	40	132,5	87,5	1,53	70,00	F	TCF120412FP	TCF150406FC
5578607	TCF440R2SLR40MF	44,00	45,00	40	135,6	89,6	1,56	70,00	F	TCF120412FP	TCF150406FC
5578608	TCF450R2SLR40MF	45,00	46,00	40	138,6	91,6	1,59	70,00	F	TCF120412FP	TCF150406FC
5578694	TCF460R2SLR40MG	46,00	47,00	40	136,7	93,7	1,67	70,00	G	TCF150512GP	TCF180508GC
5578695	TCF470R2SLR40MG	47,00	48,00	40	139,7	95,7	1,70	70,00	G	TCF150512GP	TCF180508GC
5578696	TCF480R2SLR40MG	48,00	49,00	40	142,7	97,7	1,73	70,00	G	TCF150512GP	TCF180508GC
5578697	TCF490R2SLR40MG	49,00	50,00	40	145,8	99,8	1,76	70,00	G	TCF150512GP	TCF180508GC
5578698	TCF500R2SLR40MG	50,00	51,00	40	147,8	101,8	1,79	70,00	G	TCF150512GP	TCF180508GC
5578699	TCF505R2SLR40MG	50,50	51,50	40	149,8	102,8	1,80	70,00	G	TCF150512GP	TCF180508GC
5578710	TCF510R2SLR40MG	51,00	52,00	40	150,8	103,8	1,81	70,00	G	TCF150512GP	TCF180508GC
5578711	TCF520R2SLR40MG	52,00	53,00	40	153,8	105,8	1,84	70,00	G	TCF150512GP	TCF180508GC
5578712	TCF530R2SLR40MG	53,00	54,00	40	156,9	107,9	1,87	70,00	G	TCF150512GP	TCF180508GC
5578713	TCF540R2SLR40MG	54,00	55,00	40	159,9	109,9	1,89	70,00	G	TCF150512GP	TCF180508GC
5578714	TCF550R2SLR40MG	55,00	56,00	40	161,9	111,9	1,92	70,00	G	TCF150512GP	TCF180508GC
5578715	TCF560R2SLR40MG	56,00	57,00	40	164,9	113,9	1,94	70,00	G	TCF150512GP	TCF180508GC
5538613	TCF570R2SLR40MH	57,00	58,00	40	162,1	116,1	2,06	70,00	H	TCF180614HP	TCF210608HC
5538614	TCF580R2SLR40MH	58,00	59,00	40	165,1	118,1	2,09	70,00	H	TCF180614HP	TCF210608HC
5538615	TCF590R2SLR40MH	59,00	60,00	40	168,1	120,1	2,12	70,00	H	TCF180614HP	TCF210608HC
5538616	TCF600R2SLR40MH	60,00	61,00	40	170,1	122,1	2,15	70,00	H	TCF180614HP	TCF210608HC
5538617	TCF610R2SLR40MH	61,00	62,00	40	173,2	124,2	2,18	70,00	H	TCF180614HP	TCF210608HC

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

(continued)



order number	catalog number	D1	D1 max	D	L1	L4 max	L5	LS	SSC	periphery insert	center insert
5538618	TCF620R2SLR40MH	62,00	63,00	40	176,2	126,2	2,20	70,00	H	TCF180614HP	TCF210608HC
5538619	TCF630R2SLR40MH	63,00	64,00	40	179,2	128,2	2,23	70,00	H	TCF180614HP	TCF210608HC
5538630	TCF640R2SLR40MH	64,00	65,00	40	181,3	130,3	2,26	70,00	H	TCF180614HP	TCF210608HC
5538631	TCF650R2SLR40MH	65,00	66,00	40	184,3	132,3	2,28	70,00	H	TCF180614HP	TCF210608HC
5538632	TCF660R2SLR40MH	66,00	67,00	40	187,3	134,3	2,31	70,00	H	TCF180614HP	TCF210608HC
5538633	TCF670R2SLR40MH	67,00	68,00	40	189,3	136,3	2,33	70,00	H	TCF180614HP	TCF210608HC
5538634	TCF680R2SLR40MH	68,00	69,00	40	192,4	138,4	2,36	70,00	H	TCF180614HP	TCF210608HC

D	LS	
	mm	in
.75	50	1,9685
1.00	56	2,2047
1.25	60	2,3622
1.50	70	2,7559

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

NOTE: Drilling in stacked plates possible in certain applications. Ask for technical support.

Drill shipped with insert screws and Torx wrench.

See pages C103-C112 for inserts.

SSC = Pocket Seat Reference.

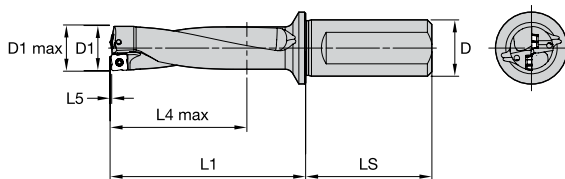
SLR = Slide Lock.

D1 max is an achievable diameter using x-offset.

WARNING

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

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



order number	catalog number	D1	D1 max	D	L1	L4 max	L5	LS	SSC	periphery insert	center insert
5537863	TCF120R3SLR20MA	12,00	12,50	20	55,4	36,4	0,43	50,00	A	TCF040204AP	TCF040203AC
5537864	TCF125R3SLR20MA	12,50	13,00	20	57,0	38,0	0,45	50,00	A	TCF040204AP	TCF040203AC
5537866	TCF127R3SLR20MA	12,70	13,20	20	58,6	38,6	0,46	50,00	A	TCF040204AP	TCF040203AC
5537867	TCF130R3SLR20MA	13,00	13,50	20	59,5	39,5	0,47	50,00	A	TCF040204AP	TCF040203AC
5537868	TCF135R3SLR20MA	13,50	14,00	20	61,0	41,0	0,48	50,00	A	TCF040204AP	TCF040203AC
5577928	TCF140R3SLR25MB	14,00	14,50	25	62,5	42,5	0,49	56,00	B	TCF050204BP	TCF060203BC
5577929	TCF145R3SLR25MB	14,50	15,00	25	64,0	44,0	0,52	56,00	B	TCF050204BP	TCF060203BC
5577930	TCF150R3SLR25MB	15,00	15,50	25	66,5	45,5	0,55	56,00	B	TCF050204BP	TCF060203BC
5577931	TCF155R3SLR25MB	15,50	16,00	25	69,1	47,1	0,56	56,00	B	TCF050204BP	TCF060203BC
5577932	TCF160R3SLR25MB	16,00	16,50	25	70,6	48,6	0,58	56,00	B	TCF050204BP	TCF060203BC
5577933	TCF165R3SLR25MB	16,50	17,00	25	73,1	50,1	0,60	56,00	B	TCF050204BP	TCF060203BC
5577934	TCF170R3SLR25MB	17,00	17,50	25	74,6	51,6	0,61	56,00	B	TCF050204BP	TCF060203BC
5577935	TCF175R3SLR25MB	17,50	18,00	25	77,1	53,1	0,63	56,00	B	TCF050204BP	TCF060203BC
5577936	TCF180R3SLR25MB	18,00	18,50	25	78,6	54,6	0,64	56,00	B	TCF050204BP	TCF060203BC
5577937	TCF185R3SLR25MB	18,50	19,00	25	81,2	56,2	0,65	56,00	B	TCF050204BP	TCF060203BC
5578828	TCF190R3SLR25MC	19,00	19,50	25	82,7	57,7	0,68	56,00	C	TCF070306CP	TCF070304CC
5578829	TCF195R3SLR25MC	19,50	20,00	25	85,2	59,2	0,71	56,00	C	TCF070306CP	TCF070304CC
5578830	TCF200R3SLR25MC	20,00	20,50	25	86,7	60,7	0,72	56,00	C	TCF070306CP	TCF070304CC
5578831	TCF205R3SLR25MC	20,50	21,00	25	89,2	62,2	0,74	56,00	C	TCF070306CP	TCF070304CC
5578832	TCF210R3SLR25MC	21,00	21,50	25	91,8	63,8	0,75	56,00	C	TCF070306CP	TCF070304CC
5578833	TCF220R3SLR25MC	22,00	22,50	25	95,8	66,8	0,78	56,00	C	TCF070306CP	TCF070304CC
5578834	TCF225R3SLR25MC	22,50	23,00	25	97,3	68,3	0,79	56,00	C	TCF070306CP	TCF070304CC
5578835	TCF230R3SLR25MC	23,00	23,50	25	99,8	69,8	0,80	56,00	C	TCF070306CP	TCF070304CC
5537824	TCF240R3SLR25MD	24,00	25,00	25	100,9	72,9	0,87	56,00	D	TCF080308DP	TCF090305DC
5537825	TCF250R3SLR32MD	25,00	26,00	32	105,9	75,9	0,91	60,00	D	TCF080308DP	TCF090305DC
5537826	TCF260R3SLR32MD	26,00	27,00	32	109,9	78,9	0,94	60,00	D	TCF080308DP	TCF090305DC
5537827	TCF265R3SLR32MD	26,50	27,50	32	112,5	80,5	0,95	60,00	D	TCF080308DP	TCF090305DC
5537828	TCF270R3SLR32MD	27,00	28,00	32	114,0	82,0	0,97	60,00	D	TCF080308DP	TCF090305DC
5537829	TCF280R3SLR32MD	28,00	29,00	32	118,0	85,0	0,99	60,00	D	TCF080308DP	TCF090305DC
5537830	TCF290R3SLR32MD	29,00	30,00	32	122,0	88,0	1,02	60,00	D	TCF080308DP	TCF090305DC
5537944	TCF300R3SLR32ME	30,00	31,00	32	123,1	91,1	1,09	60,00	E	TCF100408EP	TCF120405EC
5537945	TCF310R3SLR32ME	31,00	32,00	32	127,1	94,1	1,12	60,00	E	TCF100408EP	TCF120405EC
5537946	TCF320R3SLR32ME	32,00	33,00	32	131,2	97,2	1,15	60,00	E	TCF100408EP	TCF120405EC
5537947	TCF330R3SLR40ME	33,00	34,00	40	136,2	100,2	1,18	70,00	E	TCF100408EP	TCF120405EC
5537948	TCF340R3SLR40ME	34,00	35,00	40	140,2	103,2	1,21	70,00	E	TCF100408EP	TCF120405EC
5537949	TCF350R3SLR40ME	35,00	36,00	40	144,2	106,2	1,24	70,00	E	TCF100408EP	TCF120405EC
5537950	TCF360R3SLR40ME	36,00	37,00	40	148,3	109,3	1,27	70,00	E	TCF100408EP	TCF120405EC
5578609	TCF370R3SLR40MF	37,00	38,00	40	152,3	112,3	1,35	70,00	F	TCF120412FP	TCF150406FC
5578610	TCF375R3SLR40MF	37,50	38,50	40	153,9	113,9	1,36	70,00	F	TCF120412FP	TCF150406FC
5578611	TCF380R3SLR40MF	38,00	39,00	40	156,4	115,4	1,38	70,00	F	TCF120412FP	TCF150406FC
5578612	TCF390R3SLR40MF	39,00	40,00	40	160,4	118,4	1,41	70,00	F	TCF120412FP	TCF150406FC
5578613	TCF400R3SLR40MF	40,00	41,00	40	163,4	121,4	1,45	70,00	F	TCF120412FP	TCF150406FC
5578614	TCF410R3SLR40MF	41,00	42,00	40	167,5	124,5	1,48	70,00	F	TCF120412FP	TCF150406FC
5578615	TCF420R3SLR40MF	42,00	43,00	40	171,5	127,5	1,51	70,00	F	TCF120412FP	TCF150406FC
5578616	TCF430R3SLR40MF	43,00	44,00	40	175,5	130,5	1,53	70,00	F	TCF120412FP	TCF150406FC
5578617	TCF440R3SLR40MF	44,00	45,00	40	179,6	133,6	1,56	70,00	F	TCF120412FP	TCF150406FC
5578618	TCF450R3SLR40MF	45,00	46,00	40	183,6	136,6	1,59	70,00	F	TCF120412FP	TCF150406FC
5578716	TCF460R3SLR40MG	46,00	47,00	40	182,7	139,7	1,67	70,00	G	TCF150512GP	TCF180508GC
5578717	TCF470R3SLR40MG	47,00	48,00	40	186,7	142,7	1,70	70,00	G	TCF150512GP	TCF180508GC
5578718	TCF480R3SLR40MG	48,00	49,00	40	190,7	145,7	1,73	70,00	G	TCF150512GP	TCF180508GC
5578719	TCF490R3SLR40MG	49,00	50,00	40	194,8	148,8	1,76	70,00	G	TCF150512GP	TCF180508GC
5578720	TCF500R3SLR40MG	50,00	51,00	40	197,8	151,8	1,79	70,00	G	TCF150512GP	TCF180508GC
5578721	TCF505R3SLR40MG	50,50	51,50	40	200,3	153,3	1,80	70,00	G	TCF150512GP	TCF180508GC
5578722	TCF510R3SLR40MG	51,00	52,00	40	201,8	154,8	1,81	70,00	G	TCF150512GP	TCF180508GC
5578723	TCF520R3SLR40MG	52,00	53,00	40	205,8	157,8	1,84	70,00	G	TCF150512GP	TCF180508GC
5578724	TCF530R3SLR40MG	53,00	54,00	40	209,9	160,9	1,87	70,00	G	TCF150512GP	TCF180508GC
5578726	TCF540R3SLR40MG	54,00	55,00	40	213,9	163,9	1,89	70,00	G	TCF150512GP	TCF180508GC
5578727	TCF550R3SLR40MG	55,00	56,00	40	216,9	166,9	1,92	70,00	G	TCF150512GP	TCF180508GC
5578728	TCF560R3SLR40MG	56,00	57,00	40	220,9	169,9	1,94	70,00	G	TCF150512GP	TCF180508GC
5538635	TCF570R3SLR40MH	57,00	58,00	40	219,1	173,1	2,06	70,00	H	TCF180614HP	TCF210608HC
5538636	TCF580R3SLR40MH	58,00	59,00	40	223,1	176,1	2,09	70,00	H	TCF180614HP	TCF210608HC
5538637	TCF590R3SLR40MH	59,00	60,00	40	227,1	179,1	2,12	70,00	H	TCF180614HP	TCF210608HC
5538638	TCF600R3SLR40MH	60,00	61,00	40	230,1	182,1	2,15	70,00	H	TCF180614HP	TCF210608HC
5538639	TCF610R3SLR40MH	61,00	62,00	40	234,2	185,2	2,18	70,00	H	TCF180614HP	TCF210608HC

INDEXABLE MILLING

SOLID END MILLING

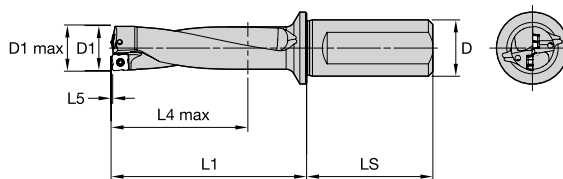
HOLEMAKING

TAPPING

TURNING

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

(continued)



order number	catalog number	D1	D1 max	D	L1	L4 max	L5	LS	SSC	periphery insert	center insert
5538640	TCF620R3SLR40MH	62,00	63,00	40	238,2	188,2	2,20	70,00	H	TCF180614HP	TCF210608HC
5538641	TCF630R3SLR40MH	63,00	64,00	40	242,2	191,2	2,23	70,00	H	TCF180614HP	TCF210608HC
5538642	TCF640R3SLR40MH	64,00	65,00	40	245,3	194,3	2,26	70,00	H	TCF180614HP	TCF210608HC
5538643	TCF650R3SLR40MH	65,00	66,00	40	249,3	197,3	2,28	70,00	H	TCF180614HP	TCF210608HC
5538644	TCF660R3SLR40MH	66,00	67,00	40	253,3	200,3	2,31	70,00	H	TCF180614HP	TCF210608HC
5538645	TCF670R3SLR40MH	67,00	68,00	40	256,3	203,3	2,33	70,00	H	TCF180614HP	TCF210608HC
5538646	TCF680R3SLR40MH	68,00	69,00	40	260,4	206,4	2,36	70,00	H	TCF180614HP	TCF210608HC

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

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

NOTE: Drilling in stacked plates possible in certain applications. Ask for technical support.

Drill shipped with insert screws and Torx wrench.

See pages C103-C112 for inserts.

SSC = Pocket Seat Reference.

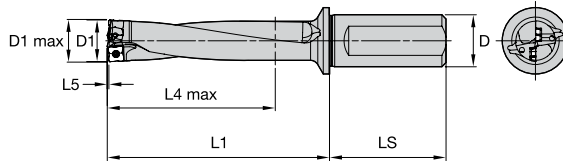
SLR = Slide Lock.

D1 max is an achievable diameter using x-offset.

WARNING

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

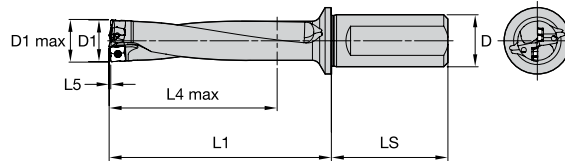
Top Cut 4 • 4 x D • SLR Shanks • Metric



order number	catalog number	D1	D1 max	D	L1	L4 max	L5	LS	SSC	periphery insert	center insert
5537869	TCF120R4SLR20MA	12,00	12,50	20	67,4	48,4	0,43	50,00	A	TCF040204AP	TCF040203AC
5537870	TCF125R4SLR20MA	12,50	13,00	20	69,5	50,5	0,45	50,00	A	TCF040204AP	TCF040203AC
5537871	TCF127R4SLR20MA	12,70	13,20	20	71,3	51,3	0,46	50,00	A	TCF040204AP	TCF040203AC
5537872	TCF130R4SLR20MA	13,00	13,50	20	72,5	52,5	0,47	50,00	A	TCF040204AP	TCF040203AC
5537873	TCF135R4SLR20MA	13,50	14,00	20	75,5	54,5	0,48	50,00	A	TCF040204AP	TCF040203AC
5577938	TCF140R4SLR25MB	14,00	14,50	25	76,5	56,5	0,49	56,00	B	TCF050204BP	TCF060203BC
5577939	TCF145R4SLR25MB	14,50	15,00	25	78,5	58,5	0,52	56,00	B	TCF050204BP	TCF060203BC
5577940	TCF150R4SLR25MB	15,00	15,50	25	81,5	60,5	0,55	56,00	B	TCF050204BP	TCF060203BC
5577941	TCF155R4SLR25MB	15,50	16,00	25	84,6	62,6	0,56	56,00	B	TCF050204BP	TCF060203BC
5577942	TCF160R4SLR25MB	16,00	16,50	25	86,6	64,6	0,58	56,00	B	TCF050204BP	TCF060203BC
5577943	TCF165R4SLR25MB	16,50	17,00	25	89,6	66,6	0,60	56,00	B	TCF050204BP	TCF060203BC
5577944	TCF170R4SLR25MB	17,00	17,50	25	91,6	68,6	0,61	56,00	B	TCF050204BP	TCF060203BC
5577945	TCF175R4SLR25MB	17,50	18,00	25	94,6	70,6	0,63	56,00	B	TCF050204BP	TCF060203BC
5577946	TCF180R4SLR25MB	18,00	18,50	25	96,6	72,6	0,64	56,00	B	TCF050204BP	TCF060203BC
5577947	TCF185R4SLR25MB	18,50	19,00	25	99,7	74,7	0,65	56,00	B	TCF050204BP	TCF060203BC
5578836	TCF190R4SLR25MC	19,00	19,50	25	101,7	76,7	0,68	56,00	C	TCF070306CP	TCF070304CC
5578837	TCF195R4SLR25MC	19,50	20,00	25	104,7	78,7	0,71	56,00	C	TCF070306CP	TCF070304CC
5578838	TCF200R4SLR25MC	20,00	20,50	25	106,7	80,7	0,72	56,00	C	TCF070306CP	TCF070304CC
5578839	TCF205R4SLR25MC	20,50	21,00	25	109,7	82,7	0,74	56,00	C	TCF070306CP	TCF070304CC
5578840	TCF210R4SLR25MC	21,00	21,50	25	112,8	84,8	0,75	56,00	C	TCF070306CP	TCF070304CC
5578841	TCF220R4SLR25MC	22,00	22,50	25	117,8	88,8	0,78	56,00	C	TCF070306CP	TCF070304CC
5578842	TCF225R4SLR25MC	22,50	23,00	25	119,8	90,8	0,79	56,00	C	TCF070306CP	TCF070304CC
5578843	TCF230R4SLR25MC	23,00	23,50	25	122,8	92,8	0,80	56,00	C	TCF070306CP	TCF070304CC
5537831	TCF240R4SLR25MD	24,00	25,00	25	124,9	96,9	0,87	56,00	D	TCF080308DP	TCF090305DC
5537832	TCF250R4SLR32MD	25,00	26,00	32	130,9	100,9	0,91	60,00	D	TCF080308DP	TCF090305DC
5537833	TCF260R4SLR32MD	26,00	27,00	32	135,9	104,9	0,94	60,00	D	TCF080308DP	TCF090305DC
5537834	TCF265R4SLR32MD	26,50	27,50	32	139,0	107,0	0,95	60,00	D	TCF080308DP	TCF090305DC
5537835	TCF270R4SLR32MD	27,00	28,00	32	141,0	109,0	0,97	60,00	D	TCF080308DP	TCF090305DC
5537836	TCF280R4SLR32MD	28,00	29,00	32	146,0	113,0	0,99	60,00	D	TCF080308DP	TCF090305DC
5537837	TCF290R4SLR32MD	29,00	30,00	32	151,0	117,0	1,02	60,00	D	TCF080308DP	TCF090305DC
5537951	TCF300R4SLR32ME	30,00	31,00	32	153,1	121,1	1,09	60,00	E	TCF100408EP	TCF120405EC
5537952	TCF310R4SLR32ME	31,00	32,00	32	158,1	125,1	1,12	60,00	E	TCF100408EP	TCF120405EC
5537953	TCF320R4SLR32ME	32,00	33,00	32	163,2	129,2	1,15	60,00	E	TCF100408EP	TCF120405EC
5537954	TCF330R4SLR40ME	33,00	34,00	40	165,2	133,2	1,18	70,00	E	TCF100408EP	TCF120405EC
5537955	TCF340R4SLR40ME	34,00	35,00	40	174,2	137,2	1,21	70,00	E	TCF100408EP	TCF120405EC
5537956	TCF350R4SLR40ME	35,00	36,00	40	179,2	141,2	1,24	70,00	E	TCF100408EP	TCF120405EC
5537957	TCF360R4SLR40ME	36,00	37,00	40	184,3	145,3	1,27	70,00	E	TCF100408EP	TCF120405EC
5578619	TCF370R4SLR40MF	37,00	38,00	40	189,3	149,3	1,35	70,00	F	TCF120412FP	TCF150406FC
5578620	TCF375R4SLR40MF	37,50	38,50	40	191,4	151,4	1,36	70,00	F	TCF120412FP	TCF150406FC
5578621	TCF380R4SLR40MF	38,00	39,00	40	194,4	153,4	1,38	70,00	F	TCF120412FP	TCF150406FC
5578622	TCF390R4SLR40MF	39,00	40,00	40	199,4	157,4	1,41	70,00	F	TCF120412FP	TCF150406FC
5578623	TCF400R4SLR40MF	40,00	41,00	40	203,4	161,4	1,45	70,00	F	TCF120412FP	TCF150406FC
5578624	TCF410R4SLR40MF	41,00	42,00	40	208,5	165,5	1,48	70,00	F	TCF120412FP	TCF150406FC
5578625	TCF420R4SLR40MF	42,00	43,00	40	213,5	169,5	1,51	70,00	F	TCF120412FP	TCF150406FC
5578626	TCF430R4SLR40MF	43,00	44,00	40	218,5	173,5	1,53	70,00	F	TCF120412FP	TCF150406FC
5578627	TCF440R4SLR40MF	44,00	45,00	40	223,6	177,6	1,56	70,00	F	TCF120412FP	TCF150406FC
5578628	TCF450R4SLR40MF	45,00	46,00	40	228,6	181,6	1,59	70,00	F	TCF120412FP	TCF150406FC
5578729	TCF460R4SLR40MG	46,00	47,00	40	228,7	185,7	1,67	70,00	G	TCF150512GP	TCF180508GC
5578730	TCF470R4SLR40MG	47,00	48,00	40	233,7	189,7	1,70	70,00	G	TCF150512GP	TCF180508GC
5578731	TCF480R4SLR40MG	48,00	49,00	40	238,7	193,7	1,73	70,00	G	TCF150512GP	TCF180508GC
5578732	TCF490R4SLR40MG	49,00	50,00	40	243,8	197,8	1,76	70,00	G	TCF150512GP	TCF180508GC
5578733	TCF500R4SLR40MG	50,00	51,00	40	247,8	201,8	1,79	70,00	G	TCF150512GP	TCF180508GC
5578734	TCF505R4SLR40MG	50,50	51,50	40	250,8	203,8	1,80	70,00	G	TCF150512GP	TCF180508GC
5578735	TCF510R4SLR40MG	51,00	52,00	40	252,8	205,8	1,81	70,00	G	TCF150512GP	TCF180508GC
5578736	TCF520R4SLR40MG	52,00	53,00	40	257,8	209,8	1,84	70,00	G	TCF150512GP	TCF180508GC
5578737	TCF530R4SLR40MG	53,00	54,00	40	262,9	213,9	1,87	70,00	G	TCF150512GP	TCF180508GC
5578738	TCF540R4SLR40MG	54,00	55,00	40	267,9	217,9	1,89	70,00	G	TCF150512GP	TCF180508GC
5578739	TCF550R4SLR40MG	55,00	56,00	40	271,9	221,9	1,92	70,00	G	TCF150512GP	TCF180508GC
5578750	TCF560R4SLR40MG	56,00	57,00	40	276,9	225,9	1,94	70,00	G	TCF150512GP	TCF180508GC
5538647	TCF570R4SLR40MH	57,00	58,00	40	276,1	230,1	2,06	70,00	H	TCF180614HP	TCF210608HC
5538648	TCF580R4SLR40MH	58,00	59,00	40	281,1	234,1	2,09	70,00	H	TCF180614HP	TCF210608HC
5538649	TCF590R4SLR40MH	59,00	60,00	40	286,1	238,1	2,12	70,00	H	TCF180614HP	TCF210608HC
5538650	TCF600R4SLR40MH	60,00	61,00	40	290,1	242,1	2,15	70,00	H	TCF180614HP	TCF210608HC
5538651	TCF610R4SLR40MH	61,00	62,00	40	295,2	246,2	2,18	70,00	H	TCF180614HP	TCF210608HC

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

(continued)



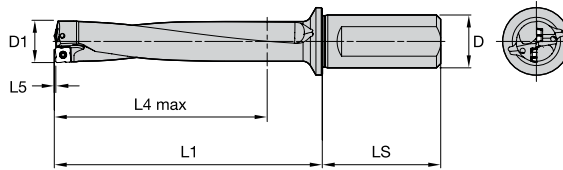
order number	catalog number	D1	D1 max	D	L1	L4 max	L5	LS	SSC	periphery insert	center insert
5538652	TCF620R4SLR40MH	62,00	63,00	40	300,2	250,2	2,20	70,00	H	TCF180614HP	TCF210608HC
5538653	TCF630R4SLR40MH	63,00	64,00	40	305,2	254,2	2,23	70,00	H	TCF180614HP	TCF210608HC
5538654	TCF640R4SLR40MH	64,00	65,00	40	309,3	258,3	2,26	70,00	H	TCF180614HP	TCF210608HC
5538655	TCF650R4SLR40MH	65,00	66,00	40	314,3	262,3	2,28	70,00	H	TCF180614HP	TCF210608HC
5538656	TCF660R4SLR40MH	66,00	67,00	40	319,3	266,3	2,31	70,00	H	TCF180614HP	TCF210608HC
5538657	TCF670R4SLR40MH	67,00	68,00	40	323,3	270,3	2,33	70,00	H	TCF180614HP	TCF210608HC
5538658	TCF680R4SLR40MH	68,00	69,00	40	328,4	274,4	2,36	70,00	H	TCF180614HP	TCF210608HC

D	LS	
	mm	in
.75	50	1,9685
1.00	56	2,2047
1.25	60	2,3622
1.50	70	2,7559

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the inserts.
 NOTE: Drilling in stacked plates possible in certain applications. Ask for technical support.
 Drill shipped with insert screws and Torx wrench.
 See pages C103-C112 for inserts.
 SSC = Pocket Seat Reference.
 SLR = Slide Lock.
 D1 max is an achievable diameter using x-offset.

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

Top Cut 4 • 5 x D • SLR Shank • Metric



order number	catalog number	D1	D	L1	L4 max	L5	LS	SSC	periphery insert	center insert
5537874	TCF120R5SLR20MA	12,00	20	79,4	60,4	0,43	50,00	A	TCF040204AP	TCF040203AC
5537875	TCF125R5SLR20MA	12,50	20	82,0	63,0	0,45	50,00	A	TCF040204AP	TCF040203AC
5537876	TCF127R5SLR20MA	12,70	20	84,0	64,0	0,46	50,00	A	TCF040204AP	TCF040203AC
5537877	TCF130R5SLR20MA	13,00	20	85,5	65,5	0,47	50,00	A	TCF040204AP	TCF040203AC
5537878	TCF135R5SLR20MA	13,50	20	89,0	68,0	0,48	50,00	A	TCF040204AP	TCF040203AC
5577948	TCF140R5SLR25MB	14,00	25	90,5	70,5	0,49	56,00	B	TCF050204BP	TCF060203BC
5577949	TCF145R5SLR25MB	14,50	25	93,0	73,0	0,52	56,00	B	TCF050204BP	TCF060203BC
5577950	TCF150R5SLR25MB	15,00	25	96,5	75,5	0,55	56,00	B	TCF050204BP	TCF060203BC
5577951	TCF155R5SLR25MB	15,50	25	100,1	78,1	0,56	56,00	B	TCF050204BP	TCF060203BC
5577952	TCF160R5SLR25MB	16,00	25	102,6	80,6	0,58	56,00	B	TCF050204BP	TCF060203BC
5577953	TCF165R5SLR25MB	16,50	25	106,1	83,1	0,60	56,00	B	TCF050204BP	TCF060203BC
5577954	TCF170R5SLR25MB	17,00	25	108,6	85,6	0,61	56,00	B	TCF050204BP	TCF060203BC
5577955	TCF175R5SLR25MB	17,50	25	112,1	88,1	0,63	56,00	B	TCF050204BP	TCF060203BC
5577956	TCF180R5SLR25MB	18,00	25	114,6	90,6	0,64	56,00	B	TCF050204BP	TCF060203BC
5577957	TCF185R5SLR25MB	18,50	25	118,2	93,2	0,65	56,00	B	TCF050204BP	TCF060203BC
5578844	TCF190R5SLR25MC	19,00	25	120,7	95,7	0,68	56,00	C	TCF070306CP	TCF070304CC
5578845	TCF195R5SLR25MC	19,50	25	124,2	98,2	0,71	56,00	C	TCF070306CP	TCF070304CC
5578846	TCF200R5SLR25MC	20,00	25	126,7	100,7	0,72	56,00	C	TCF070306CP	TCF070304CC
5578847	TCF205R5SLR25MC	20,50	25	130,2	103,2	0,74	56,00	C	TCF070306CP	TCF070304CC
5578848	TCF210R5SLR25MC	21,00	25	133,8	105,8	0,75	56,00	C	TCF070306CP	TCF070304CC
5578849	TCF220R5SLR25MC	22,00	25	139,8	110,8	0,78	56,00	C	TCF070306CP	TCF070304CC
5578850	TCF225R5SLR25MC	22,50	25	142,3	113,3	0,79	56,00	C	TCF070306CP	TCF070304CC
5578851	TCF230R5SLR25MC	23,00	25	145,8	115,8	0,80	56,00	C	TCF070306CP	TCF070304CC
5537838	TCF240R5SLR25MD	24,00	25	148,9	120,9	0,87	56,00	D	TCF080308DP	TCF090305DC
5537839	TCF250R5SLR32MD	25,00	32	155,9	125,9	0,91	60,00	D	TCF080308DP	TCF090305DC
5537840	TCF260R5SLR32MD	26,00	32	161,9	130,9	0,94	60,00	D	TCF080308DP	TCF090305DC
5537841	TCF265R5SLR32MD	26,50	32	165,5	133,5	0,95	60,00	D	TCF080308DP	TCF090305DC
5537842	TCF270R5SLR32MD	27,00	32	168,0	136,0	0,97	60,00	D	TCF080308DP	TCF090305DC
5537843	TCF280R5SLR32MD	28,00	32	174,0	141,0	0,99	60,00	D	TCF080308DP	TCF090305DC
5537844	TCF290R5SLR32MD	29,00	32	180,0	146,0	1,02	60,00	D	TCF080308DP	TCF090305DC
5537958	TCF300R5SLR32ME	30,00	32	183,1	151,1	1,09	60,00	E	TCF100408EP	TCF120405EC
5537959	TCF310R5SLR32ME	31,00	32	189,1	156,1	1,12	60,00	E	TCF100408EP	TCF120405EC
5537960	TCF320R5SLR32ME	32,00	32	195,2	161,2	1,15	60,00	E	TCF100408EP	TCF120405EC
5537961	TCF330R5SLR40ME	33,00	40	202,2	166,2	1,18	70,00	E	TCF100408EP	TCF120405EC
5537962	TCF340R5SLR40ME	34,00	40	208,2	171,2	1,21	70,00	E	TCF100408EP	TCF120405EC
5537963	TCF350R5SLR40ME	35,00	40	214,2	176,2	1,24	70,00	E	TCF100408EP	TCF120405EC
5537964	TCF360R5SLR40ME	36,00	40	220,3	181,3	1,27	70,00	E	TCF100408EP	TCF120405EC
5578629	TCF370R5SLR40MF	37,00	40	226,3	186,3	1,35	70,00	F	TCF120412FP	TCF150406FC
5578640	TCF375R5SLR40MF	37,50	40	228,9	188,9	1,36	70,00	F	TCF120412FP	TCF150406FC
5578641	TCF380R5SLR40MF	38,00	40	232,4	191,4	1,38	70,00	F	TCF120412FP	TCF150406FC
5578642	TCF390R5SLR40MF	39,00	40	238,4	196,4	1,41	70,00	F	TCF120412FP	TCF150406FC
5578643	TCF400R5SLR40MF	40,00	40	243,4	201,4	1,45	70,00	F	TCF120412FP	TCF150406FC
5578644	TCF410R5SLR40MF	41,00	40	249,5	206,5	1,48	70,00	F	TCF120412FP	TCF150406FC
5578645	TCF420R5SLR40MF	42,00	40	255,5	211,5	1,51	70,00	F	TCF120412FP	TCF150406FC
5578646	TCF430R5SLR40MF	43,00	40	261,5	216,5	1,53	70,00	F	TCF120412FP	TCF150406FC
5578647	TCF440R5SLR40MF	44,00	40	267,6	221,6	1,56	70,00	F	TCF120412FP	TCF150406FC
5578648	TCF450R5SLR40MF	45,00	40	273,6	226,6	1,59	70,00	F	TCF120412FP	TCF150406FC
5578751	TCF460R5SLR40MG	46,00	40	274,7	231,7	1,67	70,00	G	TCF150512GP	TCF180508GC
5578752	TCF470R5SLR40MG	47,00	40	280,7	236,7	1,70	70,00	G	TCF150512GP	TCF180508GC
5578753	TCF480R5SLR40MG	48,00	40	286,7	241,7	1,73	70,00	G	TCF150512GP	TCF180508GC
5578754	TCF490R5SLR40MG	49,00	40	292,8	246,8	1,76	70,00	G	TCF150512GP	TCF180508GC
5578755	TCF500R5SLR40MG	50,00	40	297,8	251,8	1,79	70,00	G	TCF150512GP	TCF180508GC
5578756	TCF505R5SLR40MG	50,50	40	301,3	254,3	1,80	70,00	G	TCF150512GP	TCF180508GC
5578757	TCF510R5SLR40MG	51,00	40	303,8	256,8	1,81	70,00	G	TCF150512GP	TCF180508GC
5578758	TCF520R5SLR40MG	52,00	40	309,8	261,8	1,84	70,00	G	TCF150512GP	TCF180508GC
5578759	TCF530R5SLR40MG	53,00	40	315,9	266,9	1,87	70,00	G	TCF150512GP	TCF180508GC
5578760	TCF540R5SLR40MG	54,00	40	321,9	271,9	1,89	70,00	G	TCF150512GP	TCF180508GC
5578761	TCF550R5SLR40MG	55,00	40	326,9	276,9	1,92	70,00	G	TCF150512GP	TCF180508GC
5578762	TCF560R5SLR40MG	56,00	40	332,9	281,9	1,94	70,00	G	TCF150512GP	TCF180508GC
5538659	TCF570R5SLR40MH	57,00	40	333,1	287,1	2,06	70,00	H	TCF180614HP	TCF210608HC
5538660	TCF580R5SLR40MH	58,00	40	339,1	292,1	2,09	70,00	H	TCF180614HP	TCF210608HC
5538661	TCF590R5SLR40MH	59,00	40	345,1	297,1	2,12	70,00	H	TCF180614HP	TCF210608HC
5538662	TCF600R5SLR40MH	60,00	40	350,1	302,1	2,15	70,00	H	TCF180614HP	TCF210608HC
5538663	TCF610R5SLR40MH	61,00	40	356,2	307,2	2,18	70,00	H	TCF180614HP	TCF210608HC

INDEXABLE MILLING

SOLID END MILLING

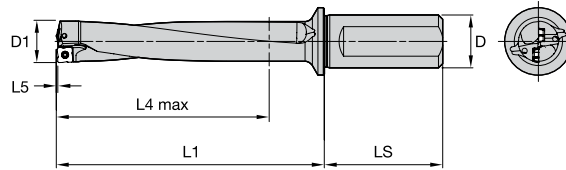
HOLEMAKING

TAPPING

TURNING

Top Cut 4 • 5 x D • SLR Shank • Metric

(continued)



order number	catalog number	D1	D	L1	L4 max	L5	LS	SSC	periphery insert	center insert
5538684	TCF620R5SLR40MH	62,00	40	362,2	312,2	2,20	70,00	H	TCF180614HP	TCF210608HC
5538685	TCF630R5SLR40MH	63,00	40	368,2	317,2	2,23	70,00	H	TCF180614HP	TCF210608HC
5538686	TCF640R5SLR40MH	64,00	40	373,3	322,3	2,26	70,00	H	TCF180614HP	TCF210608HC
5538687	TCF650R5SLR40MH	65,00	40	379,3	327,3	2,28	70,00	H	TCF180614HP	TCF210608HC
5538688	TCF660R5SLR40MH	66,00	40	385,3	332,3	2,31	70,00	H	TCF180614HP	TCF210608HC
5538689	TCF670R5SLR40MH	67,00	40	390,3	337,3	2,33	70,00	H	TCF180614HP	TCF210608HC
5538700	TCF680R5SLR40MH	68,00	40	396,4	342,4	2,36	70,00	H	TCF180614HP	TCF210608HC

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

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

NOTE: Drilling in stacked plates possible in certain applications. Ask for technical support.

Drill shipped with insert screws and Torx wrench.

See pages C103-C112 for inserts.

SSC = Pocket Seat Reference.

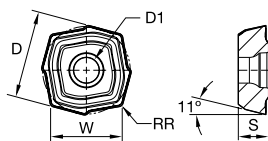
SLR = Side Lock.

D1 max is an achievable diameter using x-offset.

WARNING

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

Top Cut 4 • Center Inserts • Roughing V34



● first choice

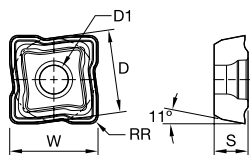
○ alternate choice

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

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

NOTE: For application-specific insert selection, please refer to the application data on page C113.
SSC = Pocket Seat Reference. To correspond with the SSC on the toolholder.

Top Cut 4 • Periphery Inserts • Roughing V34



● first choice

○ alternate choice

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

catalog number	D		D1		W		S		RR		SSC	WPK10CH	WU25CH	WU40PH
	mm	in	mm	in	mm	in	mm	in	mm	in				
TCF040204APV34	4,14	.163	2,10	.083	4,40	.173	2,00	.079	0,400	.015	A	5541843	5541841	5541842
TCF050204BPV34	5,07	.200	2,40	.094	5,40	.213	2,40	.094	0,400	.015	B	5542620	5542608	5542609
TCF070306CPV34	6,67	.263	2,60	.102	7,10	.280	2,80	.110	0,600	.023	C	5542648	5542646	5542647
TCF080308DPV34	8,08	.318	2,80	.110	8,60	.339	3,00	.118	0,800	.031	D	5538600	5538558	5538559
TCF100408EPV34	9,96	.392	3,40	.134	10,60	.417	3,60	.142	0,800	.031	E	5538610	5538608	5538609
TCF120412FPV34	12,59	.496	4,80	.189	13,40	.528	4,20	.165	1,200	.046	F	5542629	5542627	5542628
TCF150512GPV34	15,13	.596	6,00	.236	16,10	.634	5,40	.213	1,200	.046	G	5542601	5542479	5542600
TCF180614HPV34	18,04	.710	7,50	.295	19,20	.756	6,50	.256	1,400	.054	H	5542008	5542006	5542007

NOTE: For application-specific insert selection, please refer to the application data on page C113.
SSC = Pocket Seat Reference. To correspond with the SSC on the toolholder.

INDEXABLE MILLING

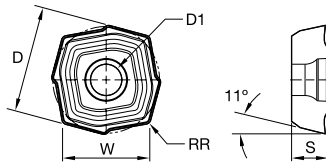
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Top Cut 4 • Center Inserts • Aluminum V36



- first choice
- alternate choice

P	■
M	■
K	■
N	●
S	■
H	■

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

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

INDEXABLE MILLING

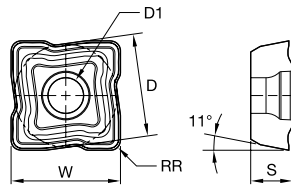
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Top Cut 4 • Periphery Inserts • Aluminum V36



- first choice
- alternate choice

P	■
M	■
K	■
N	●
S	■
H	■

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

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

INDEXABLE MILLING

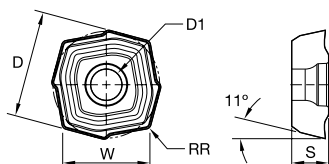
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Top Cut 4 • Center Inserts • Roughing V36



- first choice
- alternate choice

P	●	○
M	●	○
K	●	○
N	○	○
S	○	○
H	○	○

catalog number	D		D1		W		S		RR		SSC	WU25CH	WU40PH
	mm	in	mm	in	mm	in	mm	in	mm	in			
TCF040203ACV36	4,47	.176	2,10	.083	3,65	.144	2,00	.079	0,300	.011	A	5541819	5541840
TCF060203BCV36	6,00	.236	2,40	.094	4,90	.193	2,40	.095	0,300	.011	B	5542606	5542607
TCF070304CCV36	7,59	.299	2,60	.102	6,20	.244	2,80	.110	0,400	.015	C	5542644	5542645
TCF090305DCV36	9,55	.376	2,80	.110	7,80	.307	3,00	.118	0,500	.019	D	5538556	5538557
TCF120405ECV36	12,00	.473	3,40	.134	9,80	.386	3,60	.142	0,500	.019	E	5538606	5538607
TCF150406FCV36	14,94	.588	4,80	.189	12,20	.480	4,20	.165	0,600	.023	F	5542625	5542626
TCF180508GCV36	17,88	.704	6,00	.236	14,60	.575	5,40	.213	0,800	.031	G	5542477	5542478
TCF210608HCV36	21,68	.853	7,50	.295	17,70	.697	6,50	.256	0,800	.031	H	5542004	5542005

NOTE: For application-specific insert selection, please refer to the application data on page C113.
SSC = Pocket Seat Reference. To correspond with the SSC on the toolholder.

INDEXABLE MILLING

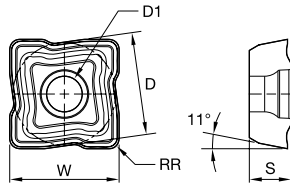
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Top Cut 4 • Periphery Inserts • Roughing V36



● first choice
○ alternate choice

P	Blue	○	●
M	Yellow	○	●
K	Red	○	●
N	Green	○	●
S	Orange	○	●
H	Grey	○	●

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

NOTE: For application-specific insert selection, please refer to the application data on page C113.
SSC = Pocket Seat Reference. To correspond with the SSC on the toolholder.

INDEXABLE MILLING

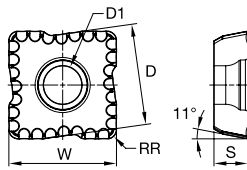
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Top Cut 4 • Center Inserts • Long Chip Materials V38



- first choice
- alternate choice

P	●
M	●
K	○
N	○
S	○
H	○

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

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

INDEXABLE MILLING

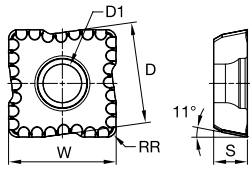
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Top Cut 4 • Periphery Inserts • Long Chip Materials V38



- first choice
- alternate choice

P	●	●
M	●	●
K	○	○
N	○	○
S	○	○
H	○	○

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

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

INDEXABLE MILLING

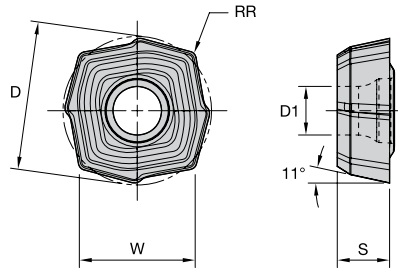
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Top Cut 4 • Center Inserts • Universal DU



- first choice
- alternate choice

P	●
M	●
K	●
N	●
S	●
H	●

catalog number	D		D1		W		S		RR		SSC	WU20PH
	mm	in	mm	in	mm	in	mm	in	mm	in		
TCF070304CCDU	7,59	.299	2,60	.102	6,20	.244	2,80	.110	0,400	.015	C	6858590
TCF090305DCDU	9,55	.376	2,80	.110	7,80	.307	3,00	.118	0,500	.019	D	6858611
TCF120405ECDU	12,00	.473	3,40	.134	9,80	.386	3,60	.142	0,500	.019	E	6858612
TCF150406FCDU	14,94	.588	4,80	.189	12,20	.480	4,20	.165	0,600	.023	F	6858613

NOTE: For application-specific insert selection, please refer to the application data on page C113.
SSC = Pocket Seat Reference. To correspond with the SSC on the toolholder.

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

INDEXABLE MILLING

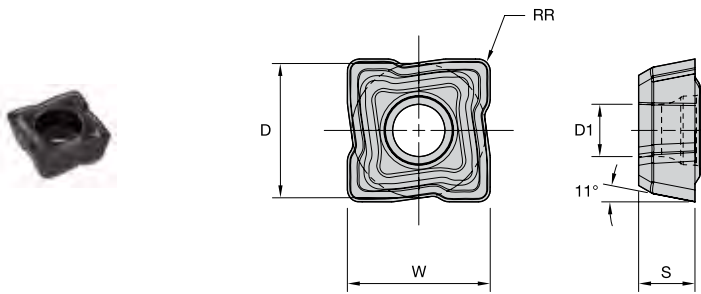
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Top Cut 4 • Periphery Inserts • Universal DU



- first choice
- alternate choice

P	●
M	●
K	●
N	●
S	●
H	●

catalog number	D		D1		W		S		RR		SSC	WU20PH
	mm	in	mm	in	mm	in	mm	in	mm	in		
TCF070306CPDU	6,67	.263	2,60	.102	7,10	.280	2,80	.110	0,600	.023	C	6858586
TCF080308DPDU	8,08	.318	2,80	.110	8,60	.339	3,00	.118	0,800	.031	D	6858587
TCF100408EPDU	9,96	.392	3,40	.134	10,60	.417	3,60	.142	0,800	.031	E	6858588
TCF120412FPDU	12,59	.496	4,80	.189	13,40	.528	4,20	.165	1,200	.046	F	6858589

NOTE: For application-specific insert selection, please refer to the application data on page C113.
SSC = Pocket Seat Reference. To correspond with the SSC on the toolholder.

Top Cut 4 • Insert Selection Guide

Material Group	Geometry	Light Machining		General Purpose		Heavy Machining	
		periphery insert	center insert	periphery insert	center insert	periphery insert	center insert
P1	V38/DU	WU25CH	WU40PH/WU20PH	WU40PH/WU20PH	WU40PH/WU20PH	WU40PH/WU20PH	WU40PH/WU20PH
P2-P4	V34/DU	WPK10CH	WU40PH/WU20PH	WU25CH/WU20PH	WU40PH/WU20PH	WU40PH/WU20PH	WU40PH/WU20PH
P5-P6	V36/DU	WU25CH	WU40PH/WU20PH	WU40PH/WU20PH	WU40PH/WU20PH	WU40PH/WU20PH	WU40PH/WU20PH
M1-M3	V36/DU	WU25CH	WU40PH/WU20PH	WU40PH/WU20PH	WU40PH/WU20PH	WU40PH/WU20PH	WU40PH/WU20PH
K1-K3	V34/DU	WPK10CH	WU40PH/WU20PH	WU40PH/WU20PH	WU40PH/WU20PH	WU40PH/WU20PH	WU40PH/WU20PH
N1-N4	V36	WN10PH	WN10PH	WN10PH	WN10PH	WN10PH	WN10PH
S1-S4	V38/DU	WU40PH/WU20PH	WU40PH/WU20PH	WU40PH/WU20PH	WU40PH/WU20PH	WU40PH/WU20PH	WU40PH/WU20PH

NOTE: All speed conditions are for stable conditions. For unstable conditions, it is suggested to reduce starting speeds by 10%. For interrupted cuts, reduce speed by 20%.
 For 4 x D, it is highly recommended to start with feed and speed values reduced by 10% less than above data.
 For 5 x D, diameter range 12–23,99mm (insert sizes A to C), it is highly recommended to start with feed and speed values reduced by 20% less than above data.
 For 5 x D, diameter range 25–68mm (inserts sizes D to H), it is highly recommended to start with feed and speed values reduced by 15% less than above data.
 For 4 x D and 5 x D, it is recommended to reduce feed rate during entry and exit by 30–50%.

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Top Cut 4 • Cutting Data • Inch

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Material Group	Geometry	Grade		Cutting Speed – SFM			Tool Diameter	Recommended Feed Rate per Revolution			
		center	periphery	min	Start	max		.473–.531" Insert Size A	.563–.734" Insert Size B	.750–.938" Insert Size C	.969–1.156" Insert Size D
P0	-V38	WU40PH	WU25CH	360	540	780	IPR	0.0024–0.0031	0.0031–0.0043	0.0039–0.0051	0.0043–0.0055
	-DU	WU20PH	WU20PH	290	430	625	IPR	-	-	0.0031–0.0041	0.0034–0.0044
P1	-V38	WU40PH	WU25CH	360	540	780	IPR	0.0024–0.0039	0.0031–0.0051	0.0039–0.0059	0.0043–0.0063
	-DU	WU20PH	WU20PH	290	430	625	IPR	-	-	0.0031–0.0047	0.0034–0.0050
P2	-V34	WU40PH	WU25CH	360	570	840	IPR	0.0024–0.0039	0.0031–0.0059	0.0039–0.0063	0.0043–0.0067
	-DU	WU20PH	WU20PH	290	450	675	IPR	-	-	0.0031–0.0050	0.0034–0.0054
P3	-V34	WU40PH	WPK10CH	360	600	930	IPR	0.0031–0.0059	0.0039–0.0063	0.0043–0.0071	0.0047–0.0079
	-DU	WU20PH	WU20PH	290	480	745	IPR	-	-	0.0034–0.0067	0.0037–0.0063
P4	-V34	WU40PH	WPK10CH	360	570	930	IPR	0.0031–0.0059	0.0039–0.0063	0.0043–0.0071	0.0047–0.0079
	-DU	WU20PH	WU20PH	290	450	745	IPR	-	-	0.0034–0.0067	0.0037–0.0063
P5	-V36	WU40PH	WU25CH	360	540	750	IPR	0.0024–0.0039	0.0031–0.0055	0.0039–0.0059	0.0043–0.0063
	-DU	WU20PH	WU20PH	290	430	600	IPR	-	-	0.0031–0.0047	0.0034–0.0050
P6	-V36	WU40PH	WU25CH	360	480	630	IPR	0.0024–0.0039	0.0031–0.0055	0.0039–0.0059	0.0043–0.0063
	-DU	WU20PH	WU20PH	290	385	500	IPR	-	-	0.0031–0.0047	0.0034–0.0050
M1	-V38	WU40PH	WU40PH	360	480	720	IPR	0.0024–0.0047	0.0028–0.0051	0.0031–0.0059	0.0039–0.0063
	-DU	WU20PH	WU20PH	290	385	575	IPR	-	-	0.0025–0.0047	0.0031–0.0050
M2	-V38	WU40PH	WU40PH	330	420	630	IPR	0.0024–0.0047	0.0028–0.0051	0.0031–0.0059	0.0039–0.0063
	-DU	WU20PH	WU20PH	265	340	500	IPR	-	-	0.0025–0.0047	0.0031–0.0050
M3	-V36	WU40PH	WU40PH	300	360	600	IPR	0.0024–0.0047	0.0028–0.0051	0.0031–0.0059	0.0039–0.0063
	-DU	WU20PH	WU20PH	240	290	480	IPR	-	-	0.0025–0.0047	0.0031–0.0050
K1	-V34	WU25CH	WPK10CH	360	600	840	IPR	0.0031–0.0055	0.0031–0.0063	0.0039–0.0071	0.0047–0.0094
	-DU	WU20PH	WU20PH	290	480	675	IPR	-	-	0.0031–0.0057	0.0038–0.0075
K2	-V34	WU40PH	WPK10CH	300	540	780	IPR	0.0031–0.0055	0.0031–0.0063	0.0039–0.0071	0.0047–0.0094
	-DU	WU20PH	WU20PH	240	430	625	IPR	-	-	0.0031–0.0057	0.0038–0.0075
K3	-V34	WU40PH	WPK10CH	300	510	720	IPR	0.0031–0.0055	0.0031–0.0063	0.0039–0.0071	0.0047–0.0094
	-DU	WU20PH	WU20PH	240	400	575	IPR	-	-	0.0031–0.0057	0.0038–0.0075
N1	-V36	WN10PH	WN10PH	450	900	1350	IPR	0.0024–0.0039	0.0031–0.0055	0.0039–0.0059	0.0043–0.0063
	-V36	WN10PH	WN10PH	450	900	1350	IPR	0.0024–0.0039	0.0031–0.0055	0.0039–0.0059	0.0043–0.0063
N2	-V36	WN10PH	WN10PH	450	900	1350	IPR	0.0024–0.0039	0.0031–0.0055	0.0039–0.0059	0.0043–0.0063
	-V36	WN10PH	WN10PH	450	900	1350	IPR	0.0024–0.0039	0.0031–0.0055	0.0039–0.0059	0.0043–0.0063
N3	-V36	WN10PH	WN10PH	450	900	1350	IPR	0.0024–0.0039	0.0031–0.0055	0.0039–0.0059	0.0043–0.0063
	-V36	WN10PH	WN10PH	450	900	1350	IPR	0.0024–0.0039	0.0031–0.0055	0.0039–0.0059	0.0043–0.0063
S3	-V38	WU40PH	WU40PH	60	90	135	IPR	0.0031–0.0047	0.0031–0.0051	0.0039–0.0059	0.0047–0.0075
	-DU	WU20PH	WU20PH	50	70	100	IPR	-	-	0.0031–0.0047	0.0038–0.006
S4	-V38	WU40PH	WU40PH	105	120	195	IPR	0.0031–0.0047	0.0031–0.0051	0.0039–0.0059	0.0047–0.0075
	-DU	WU20PH	WU20PH	85	95	150	IPR	-	-	0.0031–0.0047	0.0038–0.006

Material Group	Geometry	Grade		Cutting Speed – SFM			Tool Diameter	Recommended Feed Rate per Revolution			
		center	periphery	min	Start	max		1.188–1.438" Insert Size E	1.469–1.750" Insert Size F	1.813–2.219" Insert Size G	2.250–2.500" Insert Size H
P0	-V38	WU40PH	WU25CH	360	540	780	IPR	0.0051–0.0063	0.0059–0.0071	0.0063–0.0091	0.0067–0.0094
	-DU	WU20PH	WU20PH	290	430	624	IPR	0.0040–0.0050	0.0047–0.0057	-	-
P1	-V38	WU40PH	WU25CH	360	540	780	IPR	0.0051–0.0071	0.0059–0.0079	0.0063–0.0106	0.0067–0.0114
	-DU	WU20PH	WU20PH	290	430	625	IPR	0.0040–0.0057	0.0047–0.0063	-	-
P2	-V34	WU40PH	WU25CH	360	570	840	IPR	0.0051–0.0079	0.0059–0.0083	0.0063–0.0110	0.0067–0.0118
	-DU	WU20PH	WU20PH	290	450	675	IPR	0.0040–0.0063	0.0047–0.0063	-	-
P3	-V34	WU40PH	WPK10CH	360	600	930	IPR	0.0053–0.0094	0.0063–0.0094	0.0071–0.0118	0.0075–0.0126
	-DU	WU20PH	WU20PH	290	480	745	IPR	0.0042–0.0075	0.0050–0.0075	-	-
P4	-V34	WU40PH	WPK10CH	360	570	930	IPR	0.0055–0.0087	0.0063–0.0094	0.0071–0.0118	0.0075–0.0126
	-DU	WU20PH	WU20PH	290	450	745	IPR	0.0044–0.0069	0.0050–0.0075	-	-
P5	-V36	WU40PH	WU25CH	360	540	750	IPR	0.0051–0.0071	0.0059–0.0079	0.0063–0.0110	0.0067–0.0118
	-DU	WU20PH	WU20PH	290	430	600	IPR	0.0040–0.0057	0.0047–0.0063	-	-
P6	-V36	WU40PH	WU25CH	360	480	630	IPR	0.0051–0.0071	0.0059–0.0079	0.0063–0.0110	0.0067–0.0114
	-DU	WU20PH	WU20PH	290	380	500	IPR	0.0040–0.0057	0.0047–0.0063	-	-
M1	-V38	WU40PH	WU40PH	360	480	720	IPR	0.0047–0.0079	0.0055–0.0098	0.0063–0.0110	0.0063–0.0118
	-DU	WU20PH	WU20PH	290	385	575	IPR	0.0038–0.0063	0.0044–0.0078	-	-
M2	-V38	WU40PH	WU40PH	330	420	630	IPR	0.0047–0.0079	0.0055–0.0098	0.0063–0.0110	0.0063–0.0118
	-DU	WU20PH	WU20PH	265	330	500	IPR	0.0038–0.0063	0.0044–0.0078	-	-
M3	-V36	WU40PH	WU40PH	300	360	600	IPR	0.0047–0.0079	0.0055–0.0098	0.0063–0.0110	0.0063–0.0118
	-DU	WU20PH	WU20PH	240	290	480	IPR	0.0038–0.0063	0.0044–0.0098	-	-
K1	-V34	WU25CH	WPK10CH	360	600	840	IPR	0.0055–0.0102	0.0063–0.0118	0.0071–0.0126	0.0079–0.0142
	-DU	WU20PH	WU20PH	290	480	670	IPR	0.0044–0.0081	0.0050–0.0094	-	-
K2	-V34	WU40PH	WPK10CH	300	540	780	IPR	0.0055–0.0102	0.0063–0.0118	0.0071–0.0126	0.0079–0.0142
	-DU	WU20PH	WU20PH	240	430	625	IPR	0.0044–0.0081	0.0050–0.0094	-	-
K3	-V34	WU40PH	WPK10CH	300	510	720	IPR	0.0055–0.0102	0.0063–0.0118	0.0071–0.0126	0.0079–0.0142
	-DU	WU20PH	WU20PH	240	400	575	IPR	0.0044–0.0081	0.0050–0.0094	-	-
N1	-V36	WN10PH	WN10PH	450	900	1350	IPR	0.0051–0.0071	0.0059–0.0079	0.0063–0.0110	0.0067–0.0118
	-V36	WN10PH	WN10PH	450	900	1350	IPR	0.0051–0.0071	0.0059–0.0079	0.0063–0.0110	0.0067–0.0118
N2	-V36	WN10PH	WN10PH	450	900	1350	IPR	0.0051–0.0071	0.0059–0.0079	0.0063–0.0110	0.0067–0.0118
	-V36	WN10PH	WN10PH	450	900	1350	IPR	0.0051–0.0071	0.0059–0.0079	0.0063–0.0110	0.0067–0.0118
N3	-V36	WN10PH	WN10PH	450	900	1350	IPR	0.0051–0.0071	0.0059–0.0079	0.0063–0.0110	0.0067–0.0118
	-V36	WN10PH	WN10PH	450	900	1350	IPR	0.0051–0.0071	0.0059–0.0079	0.0063–0.0110	0.0067–0.0118
S3	-V38	WU40PH	WU40PH	60	90	135	IPR	0.0055–0.0083	0.0063–0.0094	0.0071–0.0102	0.0079–0.0118
	-DU	WU20PH	WU20PH	50	70	100	IPR	0.0044–0.083	0.0050–0.0075	-	-
S4	-V38	WU40PH	WU40PH	105	120	195	IPR	0.0055–0.0083	0.0063–0.0094	0.0071–0.0102	0.0079–0.0118
	-DU	WU20PH	WU20PH	85	95	150	IPR	0.0044–0.0664	0.0050–0.0075	-	-

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

Top Cut 4 • Cutting Data • Metric

Material Group	Geometry	Grade		Cutting Speed – vc			Recommended Feed Rate per Revolution				
				m/min			Tool Diameter	12,00–13,99	14,00–18,99	19,00–23,99	24,00–29,99
		center	periphery	min	Start	max		Insert Size A	Insert Size B	Insert Size C	Insert Size D
P0	-V38	WU40PH	WU25CH	120	180	260	mm/rev	0,06–0,08	0,08–0,11	0,10–0,13	0,11–0,14
	-DU	WU20PH	WU20PH	90	150	200	mm/rev	–	–	0,07–0,10	0,08–0,10
P1	-V38	WU40PH	WU25CH	120	180	260	mm/rev	0,06–0,10	0,08–0,13	0,10–0,15	0,11–0,16
	-DU	WU20PH	WU20PH	90	150	200	mm/rev	–	–	0,07–0,11	0,08–0,11
P2	-V34	WU40PH	WU25CH	120	190	280	mm/rev	0,06–0,10	0,08–0,15	0,10–0,16	0,11–0,17
	-DU	WU20PH	WU20PH	90	150	220	mm/rev	–	–	0,07–0,12	0,08–0,13
P3	-V34	WU40PH	WPK10CH	120	200	310	mm/rev	0,08–0,15	0,10–0,16	0,11–0,18	0,12–0,20
	-DU	WU20PH	WU20PH	90	160	220	mm/rev	–	–	0,08–0,13	0,09–0,15
P4	-V34	WU40PH	WPK10CH	120	190	310	mm/rev	0,08–0,15	0,10–0,16	0,11–0,18	0,12–0,20
	-DU	WU20PH	WU20PH	90	150	220	mm/rev	–	–	0,08–0,13	0,09–0,15
P5	-V36	WU40PH	WU25CH	120	180	250	mm/rev	0,06–0,10	0,08–0,14	0,10–0,15	0,11–0,16
	-DU	WU20PH	WU20PH	90	150	220	mm/rev	–	–	0,07–0,11	0,08–0,12
P6	-V36	WU40PH	WU25CH	120	160	210	mm/rev	0,06–0,10	0,08–0,14	0,10–0,15	0,11–0,16
	-DU	WU20PH	WU20PH	90	130	165	mm/rev	–	–	0,07–0,11	0,08–0,12
M1	-V38	WU40PH	WU40PH	120	160	240	mm/rev	0,06–0,11	0,07–0,11	0,08–0,12	0,10–0,14
	-DU	WU20PH	WU20PH	90	130	190	mm/rev	–	–	0,06–0,09	0,07–0,10
M2	-V38	WU40PH	WU40PH	110	140	210	mm/rev	0,06–0,10	0,07–0,11	0,08–0,12	0,10–0,14
	-DU	WU20PH	WU20PH	110	140	190	mm/rev	–	–	0,06–0,09	0,07–0,10
M3	-V36	WU40PH	WU40PH	100	120	200	mm/rev	0,06–0,10	0,07–0,11	0,08–0,12	0,10–0,14
	-DU	WU20PH	WU20PH	80	100	160	mm/rev	–	–	0,06–0,09	0,07–0,10
K1	-V34	WU25CH	WPK10CH	120	200	280	mm/rev	0,08–0,14	0,08–0,16	0,10–0,18	0,12–0,24
	-DU	WU20PH	WU20PH	90	160	220	mm/rev	–	–	0,07–0,13	0,09–0,18
K2	-V34	WU40PH	WPK10CH	100	180	260	mm/rev	0,08–0,14	0,08–0,16	0,10–0,18	0,12–0,24
	-DU	WU20PH	WU20PH	80	140	200	mm/rev	–	–	0,07–0,13	0,09–0,18
K3	-V34	WU40PH	WPK10CH	100	170	240	mm/rev	0,08–0,14	0,08–0,16	0,10–0,18	0,12–0,24
	-DU	WU20PH	WU20PH	80	140	190	mm/rev	–	–	0,07–0,13	0,09–0,18
N1	-V36	WN10PH	WN10PH	250	350	500	mm/rev	0,06–0,10	0,08–0,14	0,10–0,15	0,11–0,16
	-V36	WN10PH	WN10PH	150	300	450	mm/rev	0,06–0,10	0,08–0,14	0,10–0,15	0,11–0,16
N3	-V36	WN10PH	WN10PH	80	120	150	mm/rev	0,06–0,10	0,07–0,11	0,08–0,12	0,10–0,14
	-V38	WU40PH	WU40PH	20	30	45	mm/rev	0,08–0,12	0,08–0,13	0,10–0,15	0,12–0,19
S3	-DU	WU20PH	WU20PH	20	30	40	mm/rev	–	–	0,07–0,11	0,09–0,14
	-V38	WU40PH	WU40PH	35	40	65	mm/rev	0,08–0,12	0,08–0,13	0,10–0,15	0,12–0,19
S4	-DU	WU20PH	WU20PH	30	40	60	mm/rev	–	–	0,07–0,11	0,09–0,14

Material Group	Geometry	Grade		Cutting Speed – vc			Tool Diameter	30,00–36,99	37,00–45,99	46,00–56,99	57,00–68,00
				m/min				Insert Size E	Insert Size F	Insert Size G	Insert Size H
		center	periphery	min	Start	max	Insert Size E	Insert Size F	Insert Size G	Insert Size H	
P0	-V38	WU40PH	WU25CH	120	180	260	mm/rev	0,13–0,16	0,15–0,18	0,16–0,23	0,17–0,24
	-DU	WU20PH	WU20PH	90	140	200	mm/rev	0,09–0,12	0,11–0,13	–	–
P1	-V38	WU40PH	WU25CH	120	180	260	mm/rev	0,13–0,17	0,15–0,19	0,16–0,24	0,17–0,25
	-DU	WU20PH	WU20PH	90	140	200	mm/rev	0,09–0,13	0,11–0,14	–	–
P2	-V34	WU40PH	WU25CH	120	190	280	mm/rev	0,13–0,20	0,15–0,21	0,16–0,28	0,17–0,30
	-DU	WU20PH	WU20PH	90	150	220	mm/rev	0,09–0,15	0,11–0,15	–	–
P3	-V34	WU40PH	WPK10CH	120	200	310	mm/rev	0,16–0,24	0,16–0,24	0,18–0,30	0,19–0,32
	-DU	WU20PH	WU20PH	90	160	250	mm/rev	0,12–0,16	0,12–0,18	–	–
P4	-V34	WU40PH	WPK10CH	120	190	310	mm/rev	0,14–0,22	0,16–0,24	0,18–0,30	0,19–0,32
	-DU	WU20PH	WU20PH	90	150	250	mm/rev	0,12–0,16	0,12–0,18	–	–
P5	-V36	WU40PH	WU25CH	120	180	250	mm/rev	0,13–0,18	0,15–0,20	0,16–0,28	0,17–0,30
	-DU	WU20PH	WU20PH	90	140	200	mm/rev	0,09–0,13	0,11–0,15	–	–
P6	-V36	WU40PH	WU25CH	120	160	210	mm/rev	0,13–0,18	0,15–0,20	0,16–0,28	0,17–0,29
	-DU	WU20PH	WU20PH	90	120	160	mm/rev	0,09–0,13	0,11–0,15	–	–
M1	-V38	WU40PH	WU40PH	120	160	240	mm/rev	0,12–0,17	0,14–0,21	0,16–0,23	0,16–0,24
	-DU	WU20PH	WU20PH	90	120	190	mm/rev	0,09–0,13	0,10–0,15	–	–
M2	-V38	WU40PH	WU40PH	110	140	210	mm/rev	0,12–0,17	0,14–0,21	0,16–0,23	0,16–0,24
	-DU	WU20PH	WU20PH	90	110	160	mm/rev	0,09–0,13	0,10–0,15	–	–
M3	-V36	WU40PH	WU40PH	100	120	200	mm/rev	0,12–0,17	0,14–0,21	0,16–0,23	0,16–0,24
	-DU	WU20PH	WU20PH	80	90	160	mm/rev	0,09–0,13	0,10–0,15	–	–
K1	-V34	WU25CH	WPK10CH	120	200	280	mm/rev	0,14–0,26	0,16–0,30	0,18–0,32	0,20–0,36
	-DU	WU20PH	WU20PH	90	160	220	mm/rev	0,10–0,19	0,12–0,22	–	–
K2	-V34	WU40PH	WPK10CH	100	180	260	mm/rev	0,14–0,26	0,16–0,30	0,18–0,32	0,20–0,36
	-DU	WU20PH	WU20PH	80	140	200	mm/rev	0,10–0,19	0,12–0,22	–	–
K3	-V34	WU40PH	WPK10CH	100	170	240	mm/rev	0,14–0,26	0,16–0,30	0,18–0,32	0,20–0,36
	-DU	WU20PH	WU20PH	80	130	190	mm/rev	0,10–0,19	0,12–0,22	–	–
N1	-V36	WN10PH	WN10PH	250	350	500	mm/rev	0,13–0,18	0,15–0,20	0,16–0,28	0,17–0,30
	-V36	WN10PH	WN10PH	150	300	450	mm/rev	0,13–0,18	0,15–0,20	0,16–0,28	0,17–0,30
N3	-V36	WN10PH	WN10PH	80	120	150	mm/rev	0,12–0,17	0,14–0,21	0,16–0,23	0,16–0,24
	-V38	WU40PH	WU40PH	20	30	45	mm/rev	0,14–0,21	0,16–0,24	0,18–0,26	0,20–0,30
S3	-DU	WU20PH	WU20PH	20	25	40	mm/rev	0,10–0,15	0,12–0,18	–	–
	-V38	WU40PH	WU40PH	35	40	65	mm/rev	0,14–0,21	0,16–0,24	0,18–0,26	0,20–0,30
S4	-DU	WU20PH	WU20PH	30	35	50	mm/rev	0,10–0,15	0,12–0,18	–	–

NOTE: All speed conditions are for stable conditions. For unstable conditions, it is suggested to reduce starting speeds by 10%. For interrupted cuts, reduce speed by 20%.
 For 4 x D, it is highly recommended to start with feed and speed values reduced by 10% less than above data.
 For 5 x D, diameter range 12–23,99mm (insert sizes A to C), it is highly recommended to start with feed and speed values reduced by 20% less than above data.
 For 5 x D, diameter range 25–68mm (insert sizes D to H), it is highly recommended to start with feed and speed values reduced by 15% less than above data.
 For 4 x D and 5 x D, it is recommended to reduce feed rate during entry and exit by 30–50%.

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

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

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

Top Cut 4 • Screw Torque

SSC	periphery insert	center insert	Torx size	tightening torque Nm	tightening torque ft. lbs
A	TCF040204AP	TCF040203AC	T5	0,40	.295
B	TCF050204BP	TCF060203BC	T6	0,53	.390
C	TCF070306CP	TCF070304CC	T7	0,90	.663
D	TCF080308DP	TCF090305DC	T8	1,10	.811
E	TCF100408EP	TCF120405EC	T9	2,00	1.475
F	TCF120412FP	TCF150406FC	T15	4,00	2.950
F	TCF120412FP	TCF150406FC	T15	4,00	2.950
G	TCF150512GP	TCF180508GC	T20	6,30	4.646
H	TCF180614HP	TCF210608HC	T25	8,80	6.490
H	TCF180614HP	TCF210608HC	T25	8,80	6.490

Application Data • Top Cut 4™

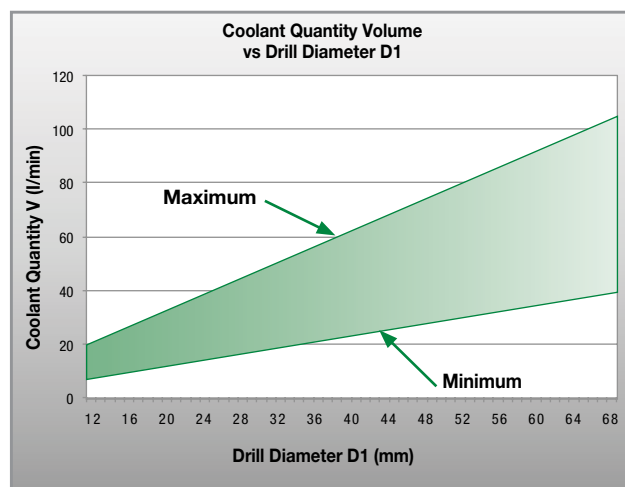
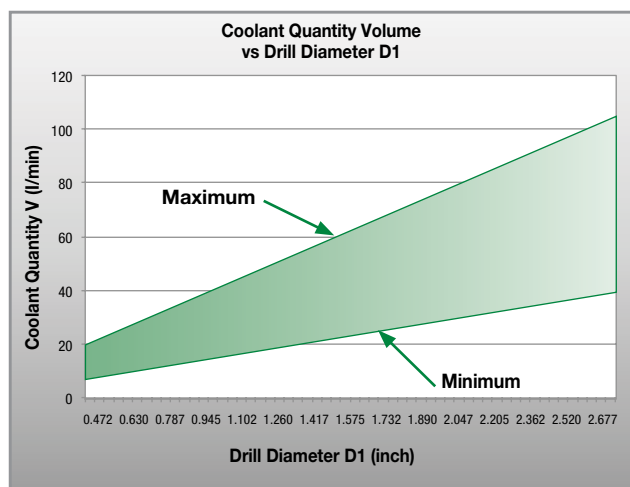
Top Cut 4 • Drill Depth • 2 x D/3 x D • Hole Tolerance Table

Insert size	Diameter Range (mm)	Hole Tolerance (mm)
A	12,00–13,99	+/- 0,20
B	14,00–18,99	+/- 0,20
C	19,00–23,99	+/- 0,20
D	24,00–29,99	+/- 0,20
E	30,00–36,99	+/- 0,20
F	37,00–45,99	+/- 0,25
G	46,00–56,99	+/- 0,25
H	57,00–68,00	+/- 0,28

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

Insert size	Diameter Range (mm)	Hole Tolerance (mm)
A	12,00–13,99	+/- 0,35
B	14,00–18,99	+/- 0,35
C	19,00–23,99	+/- 0,35
D	24,00–29,99	+/- 0,35
E	30,00–36,99	+/- 0,35
F	37,00–45,99	+/- 0,38
G	46,00–56,99	+/- 0,38
H	57,00–68,00	+/- 0,42

Coolant Requirement/Recommendation











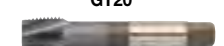
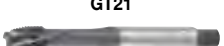

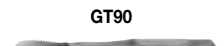
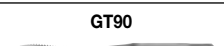
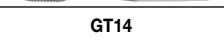
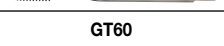
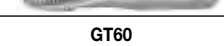











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★ ★ ★ ★ ★ ★ Good Better Best	hole		thread		coolant		size range min-max	grade/ coating	material				chamfer		helix angle	dimension
	through	blind	cutting	forming	flood	through			carbide	HSS-E-PM	HSS-E	HSS	type	form		
																
Spiral-Point and Left-Hand Spiral-Flute Taps																
	X		X		X		#2-3/4"	WU32MG, WS34MG	X				plug	D	L15°	ANSI 302A
	X		X		X		#6-1/2"	WU32MG	X				plug	D	L15°	DIN/ANSI
	X		X		X		M3-M12	WU32MG, WS34MG	X				plug	D	L15°	ANSI 302A
	X		X		X		M3-M42	WU32MG, WS34MG	X				plug	D	L15°	DIN 371, 374, 376
	X		X		X		M24-M42	WU32MG	X				plug	D	L15°	DIN 376, XL
	X		X			X	M5-M14	WU32MG, WS34MG	X				plug	D	L15°	DIN 371, 376
	X		X		X		M3-M20	WS32MG	X				plug	D	L8°	DIN 371, 376
	X		X		X		#2-3/4"	WU32MG, WS39MG	X				plug	D	L15°	ANSI 302A
	X		X		X		M2.5-M12	WU32MG, WS39MG	X				plug	D	L15°	ANSI 302A
	X		X		X		M3-M12	WN35MG	X				plug	B	0°	DIN 371, 376
	X		X		X		#2-1"	WS34MG	X				plug	D	L15°	ANSI 302A
	X		X		X		M2.5-M12	WS34MG	X				plug	D	L15°	ANSI 302A
	X		X	X			M3-M16	WN48EG		X			plug	B	0°	DIN 371, 376
	X		X		X		#2-1/2"	WN44EG		X			plug	D	L15°	DIN/ANSI
	X		X		X		M3-M12	WN44EG		X			plug	D	L15°	DIN/ANSI
	X		X		X		M3-M20	WP31MG	X				plug	B	0°	DIN 371, 374, 376
	X		X		X		#2-2"	WP42EG, WP49EG, WU41EG		X			plug	B	0°	ANSI 302A
	X		X		X		#4-3/4"	WP42EG, WP49EG		X			plug	B	0°	DIN/ANSI
	X		X			X	1/4-1"	WP42EG		X			plug	B	0°	DIN/ANSI

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Steel <35 HRC	Steel >36-48 HRC	PH and Ferritic Stainless Steel <35 HRC	PH and Ferritic Stainless Steel >35 HRC	Stainless Steel	Gray Cast Iron	Ductile Cast Iron	Wrought Aluminum	Cast Aluminum	Copper, Copper Alloys	Iron Based	Cobalt Based	Nickel Based	Titanium Alloys	Hardened Steels 49-55 HRC	Hardened Steels 56-68 HRC		
Spiral-Point and Left-Hand Spiral-Flute Taps (continued)																	
***		***		***		**	*	*		**						D99	D126
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***		***		***		**	*	*		**						D100	D126
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											***	***				D97	-
											***	***				D115	D126
											***	***				D114	D126
													***			D97	-
													***			D105	D126
													***			D104	D126
							***	*	*							D97	-
							***	**								D109	D126
							***	**								D108	D126
	***		***	*	*	*					*					D97	D126
**	*	*		**	*	**	*	**	**	*						D67-D69	-
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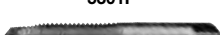
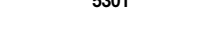
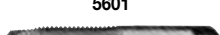

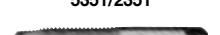
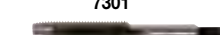
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series	hole		thread		coolant		size range min-max	grade/ coating	material				chamfer		helix angle	dimension
	through	blind	cutting	forming	flood	through			carbide	HSS-E-PM	HSS-E	HSS	type	form		
																
Spiral-Point and Left-Hand Spiral-Flute Taps (continued)																
 VTSP060	X		X		X		#4-1"	WU41EG, WP49EG			X		plug	B	0°	DIN 371, 376
 VTSP055	X		X		X		M3-M30	WP42EG, WP49EG, WU41EG			X		plug	B	0°	ANSI 302A
 VTSP095	X		X		X		M3-M20	WP42EG, WP49EG			X		plug	B	0°	DIN/ANSI
 VTSP099	X		X			X	M6-M20	WP42EG			X		plug	B	0°	DIN/ANSI
 VTSP065	X		X		X		M2-M36	WP42EG, WP49EG, WU41EG			X		plug	B	0°	DIN 371, 374, 376
 VTSP075	X		X		X		M3-M20	WU41EG			X		plug	B	0°	JIS
 5301/2301	X		X		X		#0-3/4"	TiCN, TiN, Oxide, Uncoated			X		plug	—	0°	ANSI 302
 5301F	X		X		X		1/4-1"	Uncoated			X		plug	—	0°	ANSI 302
 5301	X		X		X		#6-3/8"	Uncoated			X		plug	—	0°	Extend 6"
 5601	X		X		X		#6-3/4"	Oxide/ Nitride			X		plug	—	0°	ANSI 302
 5302		X	X		X		#0-5/16"	Uncoated			X	bottoming	—	0°	ANSI 302	
 5351/2351	X		X		X		M2-M18	TiCN, TiN, Uncoated			X		plug	—	0°	ANSI 302
 7301	X		X		X		#4-3/4"	Uncoated			X		plug	—	0°	ANSI 302

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	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 and Ferritic Stainless Steel <35 HRC	PH and Ferritic Stainless Steel >35 HRC	Stainless Steel	Gray Cast Iron	Ductile Cast Iron	Wrought Aluminum	Cast Aluminum	Copper, Copper Alloys	Iron Based	Cobalt Based	Nickel Based	Titanium Alloys	Hardened Steels 49-55 HRC	Hardened Steels 56-68 HRC		
Spiral-Point and Left-Hand Spiral-Flute Taps (continued)																		
	★★	★	★		★★	★	★★	★	★★	★★	★						-	-
	★★	★	★		★★	★	★★	★	★★	★★	★						D71	-
	★★	★	★		★★	★	★★	★	★★	★★	★						D72	-
	★★	★	★		★★	★	★★	★	★★	★★	★						-	-
	★★	★	★		★★	★	★★	★	★★	★★	★						-	-
	★		★		★		★	★	★	★							D22-D23	-
	★		★		★		★	★	★	★							D26	-
	★		★		★		★	★	★	★							D26	-
	★		★		★		★	★	★	★							D25	-
	★		★		★		★	★	★	★							D28	-
	★		★		★		★	★	★	★							D24	-
	★	★	★	★	★	★	★	★	★	★							D27	-

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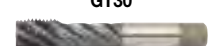

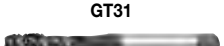
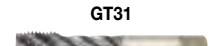
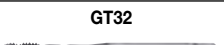
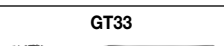
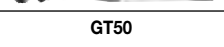
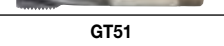
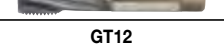
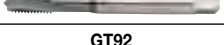
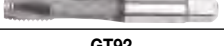




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series	hole		thread		coolant		size range min-max	grade/ coating	material				chamfer		helix angle	dimension
	through	blind	cutting	forming	flood	through			carbide	HSS-E-PM	HSS-E	HSS	type	form		
																
Spiral-Flute Taps																
 GT30		X	X		X		#2-1"	WU32MG, WS34MG		X			semi-bottom	C	45°	ANSI 302A
 GT30		X	X		X		#6-1/2"	WU32MG		X			semi-bottom	C	45°	DIN/ANSI
 GT30		X	X		X		M3-M42	WU32MG, WS34MG		X			semi-bottom	C	45°	DIN 371, 374, 376
 GT30		X	X		X		M24-M42	WU32MG		X			semi-bottom	C	45°	DIN 376, XL
 GT30		X	X		X		M3-M16	WU32MG, WS34MG		X			semi-bottom	C	45°	ANSI 302A
 GT31		X	X			X	1/4-1/2"	WU32MG		X			semi-bottom	C	45°	DIN/ANSI
 GT31		X	X			X	M5-M42	WU32MG, WS34MG		X			semi-bottom	C	45°	DIN 371, 376
 GT31		X	X			X	M24-M42	WU32MG		X			semi-bottom	C	45°	DIN 376, XL
 GT32		X	X		X		M5-M16	WU32MG		X			bottoming	E	45°	DIN 371, 374, 376
 GT33		X	X			X	M5-M16	WU32MG		X			bottoming	E	45°	DIN 371, 374, 376
 GT50		X	X		X		M24-M42	WU32MG		X			semi-bottom	C	15°	DIN 376, XL
 GT51		X	X			X	M24-M42	WU32MG		X			semi-bottom	C	15°	DIN 376, XL
 GT12		X	X		X		M3-M20	WS32MG		X			semi-bottom	C	10°	DIN 371, 376
 GT92		X	X		X		#2-3/4"	WU32MG, WS39MG		X			3-4 pitches	-	11°	ANSI 302A
 GT92		X	X		X		M2.5-M12	WU32MG, WS39MG		X			3-4 pitches	-	11°	ANSI 302A
 GT94		X	X		X		#4-5/8"	WU32MG, WS39MG		X			bottom	E	11°	ANSI 302A
 GT16		X	X		X		M3-M12	WN35MG		X			semi-bottom	C	30°	DIN 371
 GT62		X	X		X		#2-1"	WS34MG		X			semi-bottom	C	10°	ANSI 302A
 GT62		X	X		X		M2.5-M12	WS34MG		X			semi-bottom	C	10°	ANSI 302A

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	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 and Ferritic Stainless Steel <35 HRC	PH and Ferritic Stainless Steel >35 HRC	Stainless Steel	Gray Cast Iron	Ductile Cast Iron	Wrought Aluminum	Cast Aluminum	Copper, Copper Alloys	Iron Based	Cobalt Based	Nickel Based	Titanium Alloys	Hardened Steels 49-55 HRC	Hardened Steels 56-68 HRC		
Spiral-Flute Taps (continued)																		
	★★★		★★★		★★★		★★	★	★		★★						D101	D126
	★★★		★★★		★★★		★★	★	★		★★						-	-
	★★★		★★★		★★★		★★	★	★		★★						-	-
	★★★		★★★		★★★		★★	★	★		★★						-	-
	★★★		★★★		★★★		★★	★	★		★★						D012	D126
	★★★		★★★		★★★		★★	★	★		★★						-	D126
	★★★		★★★		★★★		★★	★	★		★★						-	D126
	★★★		★★★		★★★		★★	★	★		★★						-	D126
	★★★		★★★		★★★		★★	★	★		★★						-	D126
	★★★		★★★		★★★		★★	★	★		★★						-	D126
												★★★	★★★				D97	-
												★★★	★★★				D117	D126
												★★★	★★★				D116	D126
												★★★	★★★				D118	D126
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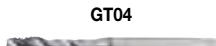
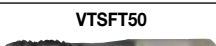


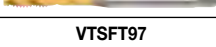




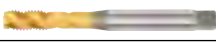



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series	hole		thread		coolant		size range min-max	grade/ coating	material				chamfer		helix angle	dimension
	through	blind	cutting	forming	flood	through			carbide	HSS-E-PM	HSS-E	HSS	type	form		
																
Spiral-Flute Taps (continued)																
 GT80		X	X		X		M3-M20	WN48EG			X		semi-bottom	C	45°	DIN 371, 376
 GT82		X	X		X		#2-1/2"	WN44EG			X		semi-bottom	C	45°	DIN/ANSI
 GT82		X	X		X		M3-M12	WN44EG			X		semi-bottom	C	45°	DIN/ANSI
 GT86		X	X		X		#2-1/2"	WN44EG			X		semi-bottom	C	25°	DIN/ANSI
 GT86		X	X		X		M3-M12	WN44EG			X		semi-bottom	C	25°	DIN/ANSI
 GT02		X	X		X		M3-M20	WP31MG		X			semi-bottom	C	25°	DIN 371, 374, 376
 GT04		X	X		X		M3-M20	WH36MG		X			semi-bottom	C	42°	DIN 371, 374, 376
 VTSFT50		X	X		X		#2-2"	WP42EG, WP49EG, WU41EG			X		semi-bottom	C	45°	ANSI 302A
 VTSFT51		X	X		X		#4-3/4"	WP49EG			X		bottoming	E	45°	ANSI 302A
 VTSFT90		X	X		X		#4-3/4"	WP42EG, WP49EG			X		semi-bottom	C	45°	DIN/ANSI
 VTSFT97		X	X			X	1/4-1"	WP42EG			X		semi-bottom	C	45°	DIN/ANSI
 VTSFT60		X	X		X		#4-1"	WU41EG, WP49EG			X		semi-bottom	C	45°	DIN 371, 376
 VTSFT55		X	X		X		M3-M30	WP42EG, WP49EG, WU41EG			X		semi-bottom	C	45°	ANSI 302A
 VTSFT55		X	X		X		M3-M18	WP49EG			X		bottoming	E	45°	ANSI 302A
 VTSFT65		X	X		X		M2-M33	WP42EG, WP49EG, WU41EG			X		semi-bottom	C	45°	DIN 371, 374, 376
 VTSFT65		X	X		X		M3-M20	WP42EG, WP49EG			X		bottoming	E	45°	DIN 371, 374, 376
 VTSFT95		X	X		X		M3-M20	WP42EG, WP49EG			X		semi-bottom	C	45°	DIN/ANSI
 VTSFT99		X	X			X	M6-M20	WP42EG			X		semi-bottom	C	45°	DIN/ANSI
 VTSFT75		X	X		X		M3-M20	WU41EG			X		semi-bottom	C	45°	JIS

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	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 and Ferritic Stainless Steel <35 HRC	PH and Ferritic Stainless Steel >35 HRC	Stainless Steel	Gray Cast Iron	Ductile Cast Iron	Wrought Aluminum	Cast Aluminum	Copper, Copper Alloys	Iron Based	Cobalt Based	Nickel Based	Titanium Alloys	Hardened Steels 48-55 HRC	Hardened Steels 56-68 HRC		
Spiral-Flute Taps (continued)																		
								***									D97	-
								***	**								D111	D126
								***	**								D110	D126
								***	**								D113	D126
								***	**								D112	D126
		***		***	*	*	*					*					D97	D126
		***		***											***		D97	D126
	**	*	*		**	*	**	*	**	**	*						D78-D79	D126
	**	*	*		**	*	**	*	**	**	*						D79	D126
	**	*	*		**	*	**	*	**	**	*						D74	D126
	**	*	*		**	*	**	*	**	**	*						D77	D126
	**	*	*		**	*	**	*	**	**	*						-	-
	**	*	*		**	*	**	*	**	**	*						D75	-
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	**	*	*		**	*	**	*	**	**	*						-	-
	**	*	*		**	*	**	*	**	**	*						D76	-
	**	*	*		**	*	**	*	**	**	*						D77	-
	**	*	*		**	*	**	*	**	**	*						-	-

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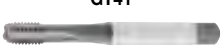
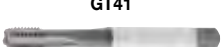

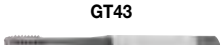
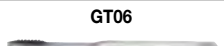
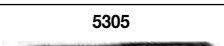
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- ★ Good
- ★★ Better
- ★★★ Best

series	hole		thread		coolant		size range min-max	grade/ coating	material				chamfer		helix angle	dimension
	through	blind	cutting	forming	flood	through			carbide	HSS-E-PM	HSS-E	HSS	type	form		
Spiral-Flute Taps (continued)																
 2314/5314	X		X		X		#4-3/4"	TiN, Uncoated				X	plug	—	45°	ANSI 302A
 2314/5314		X	X		X		#4-3/4"	TiN, Uncoated				X	bottoming	—	45°	ANSI 302A
 2364/5364	X		X		X		M3-M12	TiN, Uncoated				X	plug	—	45°	ANSI 302A
 2364/5364		X	X		X		M3-M12	TiN, Uncoated				X	bottom	—	45°	ANSI 302A
 5344	X		X		X		#10-3/4"	Oxide			X		plug	—	45°	ANSI 302A
 5344		X	X		X		#6-3/4"	Oxide			X		bottom	—	45°	ANSI 302A
Straight-Flute Taps																
 GT40	X	X	X		X		#10-3/4"	WU32MG	X				semi-bottom	C	0°	ANSI 302A
 GT40	X	X	X		X		#6-1/2"	WU32MG	X				semi-bottom	C	0°	DIN/ANSI
 GT40	X	X	X		X		M3-M16	WU32MG	X				semi-bottom	C	0°	ANSI 302A
 GT40	X	X	X		X		M4-M22	WU32MG	X				semi-bottom	C	0°	DIN 371, 376
 GT41	X	X	X			X	1/4-1/2"	WU32MG	X				semi-bottom	C	0°	DIN/ANSI
 GT41	X	X	X			X	M4-M20	WU32MG	X				semi-bottom	C	0°	DIN 371, 374, 376
 GT42		X	X		X		M5-M20	WU32MG	X				bottoming	E	0°	DIN 371, 374, 376
 GT43		X	X			X	M5-M20	WU32MG	X				bottoming	E	0°	DIN 371, 374, 376
 GT06	X	X	X		X		M6-M16	WS32MG	X				semi-bottom	C	0°	DIN 371, 374, 376
 5305	X		X		X		#0-12	Oxide, Uncoated			X		taper	—	0°	ANSI 302

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	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 and Ferritic Stainless Steel <35 HRC	PH and Ferritic Stainless Steel >35 HRC	Stainless Steel	Gray Cast Iron	Ductile Cast Iron	Wrought Aluminum	Cast Aluminum	Copper, Copper Alloys	Iron Based	Cobalt Based	Nickel Based	Titanium Alloys	Hardened Steels 49-55 HRC	Hardened Steels 56-68 HRC		
Spiral-Flute Taps (continued)																		
	★		★		★		★	★	★	★							D30	—
	★		★		★		★	★	★	★							D31	—
	★		★		★		★	★	★	★							D29	—
	★		★		★		★	★	★	★							D29	—
	★		★		★		★	★	★	★							—	—
	★		★		★		★	★	★	★							D32	—
Straight-Flute Taps (continued)																		
						★★★	★★★		★★★	★★							D103	D126
						★★★	★★★		★★★	★★							—	—
						★★★	★★★		★★★	★★							—	—
						★★★	★★★		★★★	★★							—	—
						★★★	★★★		★★★	★★							—	D126
						★★★	★★★		★★★	★★							—	D126
						★★★	★★★		★★★	★★							—	D126
						★★★	★★★		★★★	★★							—	D126
															★★★		D97	D126
	★		★		★	★	★	★	★	★							D37	—

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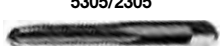
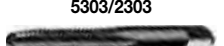


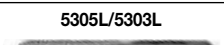
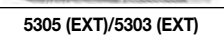
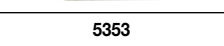
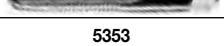
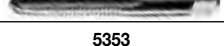
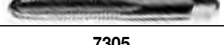
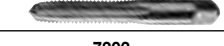

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series	hole		thread		coolant		size range min-max	grade/ coating	material				chamfer		helix angle	dimension
	through	blind	cutting	forming	flood	through			carbide	HSS-E-PM	HSS-E	HSS	type	form		
																
★ Good																
★★ Better																
★★★ Best																
Straight-Flute Taps (continued)																
	X		X		X		1/4-1-1/2"	Oxide, Uncoated				X	taper	—	0°	ANSI 302
	X		X		X		M2-M36	Uncoated				X	taper	—	0°	ANSI 302
	X		X		X		#0-12	TiCN, TiN, Oxide, Uncoated				X	plug	—	0°	ANSI 302
	X		X		X		1/4-1-1/2"	TiCN, TiN, Oxide, Uncoated				X	plug	—	0°	ANSI 302
		X	X		X		#0-12	TiCN, TiN, Oxide, Uncoated				X	bottom	—	0°	ANSI 302
		X	X		X		1/4-1-1/2"	TiCN, TiN, Oxide, Uncoated				X	bottom	—	0°	ANSI 302
	X	X	X		X		#0-12	Uncoated				X	taper, plug, & bottoming	—	0°	ANSI 302
	X	X	X		X		1/4-1-1/2"	Uncoated				X	taper, plug, & bottoming	—	0°	ANSI 302
	X	X	X		X		1/4-3/4"	Uncoated				X	taper, plug, & bottoming	—	0°	ANSI 302
	X	X	X		X		#6-3/8"	Uncoated				X	bottoming	—	0°	ANSI 302
	X		X		X		M1.6-M36	TiCN, TiN, Uncoated				X	plug	—	0°	ANSI 302
	X	X	X		X		M3-M20	Uncoated				X	taper, plug, & bottoming	—	0°	ANSI 302
		X	X		X		M3-M36	TiCN, TiN, Uncoated				X	bottoming	—	0°	ANSI 302
	X	X	X		X		#4-12	Uncoated				X	taper, plug, & bottoming	—	0°	ANSI 302
	X	X	X		X		1/4-1-1/2"	Uncoated				X	taper, plug, & bottoming	—	0°	ANSI 302
	X	X	X		X		M6-M24	Uncoated				X	taper, plug, & bottoming	—	0°	ANSI 302

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	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 and Ferritic Stainless Steel <35 HRC	PH and Ferritic Stainless Steel >35 HRC	Stainless Steel	Gray Cast Iron	Ductile Cast Iron	Wrought Aluminum	Cast Aluminum	Copper, Copper Alloys	Iron Based	Cobalt Based	Nickel Based	Titanium Alloys	Hardened Steels 48-55 HRC	Hardened Steels 56-68 HRC		
Straight-Flute Taps (continued)																		
	★		★		★	★	★	★	★	★							D33	—
	★		★		★	★	★	★	★	★							D40	—
	★		★		★	★	★	★	★	★							D38	—
	★		★		★	★	★	★	★	★							D34-D35	—
	★		★		★	★	★	★	★	★							D39	—
	★		★		★	★	★	★	★	★							D36	—
	★		★		★	★	★	★	★	★							D48	—
	★		★		★	★	★	★	★	★							D47	—
	★	★	★	★	★	★	★	★	★	★							D49	—
	★	★	★	★	★	★	★	★	★	★							D43	—
	★		★		★	★	★	★	★	★							D42	—
	★		★		★	★	★	★	★	★							D45	—
	★		★		★	★	★	★	★	★							D41	—
	★	★	★	★	★	★	★	★	★	★							D46	—
	★	★	★	★	★	★	★	★	★	★							D44	—
	★	★	★	★	★	★	★	★	★	★							D46	—

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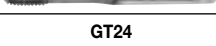



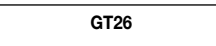




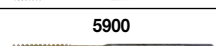
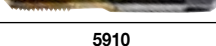


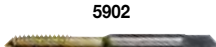
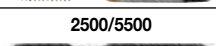
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Selection Guide

series	hole		thread		coolant		size range min-max	grade/ coating	material				chamfer		helix angle	dimension
	through	blind	cutting	forming	flood	through			carbide	HSS-E-PM	HSS-E	HSS	type	form		
																
Form Taps																
 GT22	X	X		X	X		M3-M16	WP31MG, WN38MG	X				semi-bottom	C	—	DIN 2174
 GT23	X	X		X		X	M5-M16	WP31MG, WN38MG	X				semi-bottom	C	—	DIN 2174
 GT24	X	X		X	X		#6-3/4"	WU32MG	X				semi-bottom	C	—	DIN/ANSI
 GT24	X	X		X	X		M3-M16	WU32MG	X				semi-bottom	C	—	DIN/ANSI
 GT25	X	X		X		X	1/4-3/4"	WU32MG	X				semi-bottom	C	—	DIN/ANSI
 GT25	X	X		X		X	M6-M16	WU32MG	X				semi-bottom	C	—	DIN/ANSI
 GT26		X		X	X		#0-3/4"	WU32MG	X				bottom	E	—	DIN/ANSI
 GT26		X		X	X		M3-M16	WU32MG	X				bottom	E	—	DIN/ANSI
 GT27		X		X		X	1/4-3/4"	WU32MG	X				bottom	E	—	DIN/ANSI
 GT27		X		X		X	M6-M16	WU32MG	X				bottom	E	—	DIN/ANSI
 5900	X			X	X		#6-1/2"	TiCN, TiN, Uncoated			X		plug	D	—	ANSI 302A
 5910	X			X	X		M6-M10	TiCN, TiN, Uncoated			X		plug	D	—	ANSI 302A
 5912		X		X	X		M4-M12	TiCN, TiN, Uncoated			X		bottoming	E	—	ANSI 302A
 5902		X		X	X		#6-1/2"	TiCN, TiN, Uncoated			X		bottoming	E	—	ANSI 302A
 2500/5500	X			X	X		#4-3/4"	TiN, Uncoated			X		plug	D	—	ANSI 302A
 2502/5502		X		X	X		#0-5/8"	TiCN, TiN, Uncoated			X		bottoming	E	—	ANSI 302A
 2510/5510	X			X	X		M3-M12	TiN, Uncoated			X		plug	D	—	ANSI 302A
 2512/5512		X		X	X		M3-M12	TiCN, TiN, Uncoated			X		bottoming	E	—	ANSI 302A

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	Steel <35 HRC	Steel >36-48 HRC	PH and Ferritic Stainless Steel <35 HRC	PH and Ferritic Stainless Steel >35 HRC	Stainless Steel	Gray Cast Iron	Ductile Cast Iron	Wrought Aluminum	Cast Aluminum	Copper, Copper Alloys	Iron Based	Cobalt Based	Nickel Based	Titanium Alloys	Hardened Steels 49-55 HRC	Hardened Steels 56-68 HRC		
Form Taps (continued)																		
	***							***	**								-	D126
	***							***	**								-	D126
	***				**												D119	D126
	***				**												D120	D126
	***				**												D121	-
	***				**												D122	-
	***				**												D123	D126
	***				**												D124	D126
	***				**												-	-
	***				**												-	-
	*				*			*	*	*							D58	-
	*				*			*	*	*							D60	-
	*				*			*	*	*							D60	-
	*				*			*	*	*							D59	-
	*				*			*	*	*							D55	-
	*				*			*	*	*							D56	-
	*				*			*	*	*							D57	-
	*				*			*	*	*							D57	-

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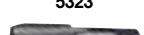
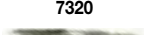
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Selection Guide

series	hole		thread		coolant		size range min-max	grade/ coating	material				chamfer		helix angle	dimension
	through	blind	cutting	forming	flood	through			carbide	HSS-E-PM	HSS-E	HSS	type	form		
																
Pipe Taps																
VTSFT80 	X	X	X		X		1/16-1"	WU40EG, WP49EG, WU41EG			X		standard	-	-	ANSI
VTSTR 	X	X	X		X		1/8-3/4"	WU40EG			X		standard	-	-	ANSI
2320/5320 	X	X	X		X		1/16-2"	TiN, Oxide, Uncoated			X		standard	-	-	ANSI
5319 	X	X	X		X		#1/8-2"	Oxide, Uncoated			X		standard	-	-	ANSI
5321 	X	X	X		X		1/8-1/2"	Uncoated			X		standard	-	-	ANSI
5820 	X	X	X		X		1/4-1"	Uncoated			X		standard	-	-	ANSI
5323 	X	X	X		X		1/8-1"	Uncoated			X		standard	-	-	ANSI
7320 	X	X	X		X		1/8-2"	Uncoated			X		standard	-	-	ANSI

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	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 and Ferritic Stainless Steel <35 HRC	PH and Ferritic Stainless Steel >35 HRC	Stainless Steel	Gray Cast Iron	Ductile Cast Iron	Wrought Aluminum	Cast Aluminum	Copper, Copper Alloys	Iron Based	Cobalt Based	Nickel Based	Titanium Alloys	Hardened Steels 49-55 HRC	Hardened Steels 56-68 HRC		
Pipe Taps (continued)																		
	★ ★	★	★		★ ★	★	★ ★	★	★ ★	★ ★	★						D86	—
	★ ★					★											D87	—
	★					★	★	★	★	★							D50	—
	★					★	★	★	★	★							D51	—
	★					★	★	★	★	★							—	—
	★							★	★	★							D53	—
	★				★	★	★	★	★	★							D52	—
	★	★	★	★	★	★	★	★	★	★							D54	—

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General-Purpose Taps

HSS

General-Purpose Taps are made of high-speed steel, which provides high toughness by utilizing strong coatings and surface treatments, enhancing the wear resistance and ability to perform in all workpiece materials.



Spiral point GUN™ taps shoot chips ahead of the cutting action to reduce overloading and clogging in flutes, protecting the workpiece.


Multicoating/surface treatment options to suit customer-specific needs


HSS
Extremely tough material which enables to be used in demanding conditions


Versatile spiral-flute design for pulling chips out of the hole


The general-purpose taps are designed as per ANSI standards, offering a complete portfolio of straight-fluted, spiral point gun, spiral-fluted, taper pipe, true-ledge form taps hand and hand tap sets.

GRADES

TiCN		
	P	●
	M	○
	K	○
	N	○
	S	
	H	

TiN		
	P	●
	M	○
	K	○
	N	○
	S	
	H	

Oxide		
	P	●
	M	●
	K	●
	N	●
	S	
	H	

Uncoated		
	P	●
	M	○
	K	○
	N	○
	S	
	H	

GENERAL-PURPOSE, VERSATILE, ALL-APPLICATION PRODUCT



PRODUCT

GP Taps are the go-to product for affordability and versatility

INDUSTRY



MATERIALS



APPLICATIONS



THROUGH HOLE



BLIND HOLE



THREAD



FLOOD COOLANT: TAPPING



ANSI UNC



ANSI UNF



MANUFACTURER'S SPECS: M



HSS

STYLE

Spiral-Point and Left-Hand Spiral-Flute

Spiral Flute

Forming Taps

Straight-Flute and Spiral-Flute Pipe Taps

TYPE

Production Gun Taps

Production Taps

TRU-LEDE™ Fe Taps

NPT, ANPT, NPTF, NPS, NPSF

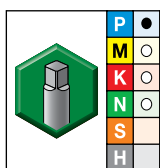
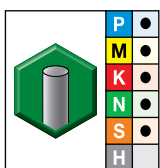
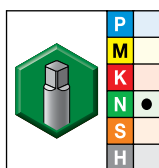
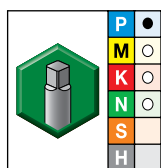
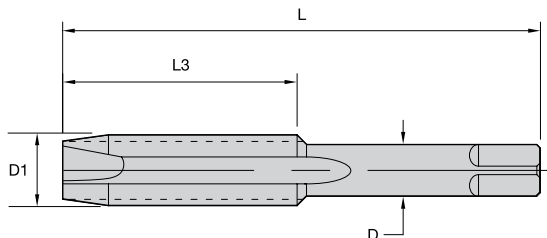
In sizes Machine Screw and Fractional, Metric ANSI.

Shank Style

Ground h9 with square end.



Series 5301/2301 • Spiral Point, Plug Chamfer



● first choice
○ alternate choice

TICN		uncoated		oxide		TIN		D1 size	L	L3	D	number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #	order #	catalog #	order #	catalog #						
2746991	19011	2750249	13202	2750325	13111	2747016	19001	0 - 80	1.63	.31	.141	2	H2
-	-	2750246	13204	-	-	-	-	1 - 64	1.69	.38	.141	2	H2
-	-	2750241	13206	2750324	13115	-	-	1 - 72	1.69	.38	.141	2	H2
2746990	19012	2867063	13208	2750321	13117	2747001	19006	2 - 56	1.75	.44	.141	2	H2
-	-	2867066	13207	-	-	-	-	2 - 56	1.75	.44	.141	2	H1
-	-	2750238	13211	-	-	-	-	2 - 64	1.75	.44	.141	2	H2
-	-	2750236	13213	2750319	13119	2746999	19007	3 - 48	1.81	.50	.141	2	H2
-	-	2750231	13215	-	-	-	-	3 - 56	1.81	.50	.141	2	H2
-	-	2750230	13217	2750313	13126	-	-	4 - 36	1.88	.56	.141	2	H2
2746988	19013	2750228	13219	2750316	13123	2746982	19016	4 - 40	1.88	.56	.141	2	H2
-	-	2750225	13223	-	-	-	-	4 - 48	1.88	.56	.141	2	H2
2746986	19014	2750220	13225	2750312	13128	2746972	19021	5 - 40	1.94	.63	.141	2	H2
3171117	19464	2750218	13229	-	-	-	-	5 - 44	1.94	.63	.141	2	H2
-	-	2750210	13232	2750306	13132	2746946	19036	6 - 32	2.00	.69	.141	2	H3
-	-	2750212	13231	2750309	13131	2746954	19031	6 - 32	2.00	.69	.141	2	H2
-	-	2750209	13235	-	-	-	-	6 - 32	2.00	.69	.141	2	H7
2746944	19037	2750206	13237	-	-	2746942	19038	6 - 40	2.00	.69	.141	2	H2
-	-	2750202	13241	2750302	13136	2746941	19039	8 - 32	2.13	.75	.168	2	H2
-	-	2750199	13242	2750300	13137	2746928	19046	8 - 32	2.13	.75	.168	2	H3
-	-	2750204	13240	-	-	-	-	8 - 32	2.13	.75	.168	2	H1
-	-	2750195	13244	-	-	-	-	8 - 32	2.13	.75	.168	2	H7
-	-	2750193	13246	3047408	13139	-	-	8 - 36	2.13	.75	.168	2	H2
2746984	19015	2409831	13251	2750293	13142	2746913	19056	10 - 24	2.38	.88	.194	2	H3
-	-	2750190	13250	2750294	13141	-	-	10 - 24	2.38	.88	.194	2	H2
-	-	2750192	13249	-	-	-	-	10 - 24	2.38	.88	.194	2	H1
-	-	2750177	13256	2750291	13145	2746899	19069	10 - 32	2.38	.88	.194	2	H2
-	-	2750175	13257	2750290	13146	2746897	19071	10 - 32	2.38	.88	.194	2	H3
-	-	2750179	13255	-	-	-	-	10 - 32	2.38	.88	.194	2	H1
-	-	2750165	13260	-	-	-	-	10 - 32	2.38	.88	.194	2	H7
2746980	19017	2750160	13262	2750287	13148	2746889	19076	12 - 24	2.38	.94	.220	2	H3
3171130	19482	2750159	13264	2750286	13149	-	-	12 - 28	2.38	.94	.220	2	H3
-	-	2750154	13269	2750284	13151	2863790	19079	1/4 - 20	2.50	1.00	.255	2	H2
3171133	19485	2750152	13270	2750282	13152	2746879	19086	1/4 - 20	2.50	1.00	.255	2	H3
-	-	2750148	13272	2750280	13154	2746877	19088	1/4 - 20	2.50	1.00	.255	3	H3
-	-	2750156	13268	-	-	-	-	1/4 - 20	2.50	1.00	.255	2	H1
-	-	2750143	13273	-	-	2746869	19096	1/4 - 20	2.50	1.00	.255	2	H5
-	-	2750141	13274	-	-	-	-	1/4 - 20	2.50	1.00	.255	3	H5
-	-	2750128	13280	2750277	13158	2746865	19101	1/4 - 28	2.50	1.00	.255	2	H3
-	-	2750135	13277	-	-	-	-	1/4 - 28	2.50	1.00	.255	2	H1
-	-	2750132	13278	-	-	-	-	1/4 - 28	2.50	1.00	.255	2	H2
2746978	19018	2750129	13279	-	-	-	-	1/4 - 28	2.50	1.00	.255	3	H2
-	-	2750119	13282	-	-	-	-	1/4 - 28	2.50	1.00	.255	2	H4
3171144	19498	2750111	13291	2750276	13164	1916977	19106	5/16 - 18	2.72	1.13	.318	2	H3
2746976	19019	2750109	13293	1830468	13166	3171095	19384	5/16 - 18	2.72	1.13	.318	3	H3
-	-	2750115	13289	-	-	-	-	5/16 - 18	2.72	1.13	.318	2	H1
-	-	2750112	13290	-	-	-	-	5/16 - 18	2.72	1.13	.318	2	H2
-	-	2750105	13294	-	-	-	-	5/16 - 18	2.72	1.13	.318	2	H5
-	-	2750103	13295	-	-	-	-	5/16 - 18	2.72	1.13	.318	3	H5

INDEXABLE MILLING

SOLID END MILLING

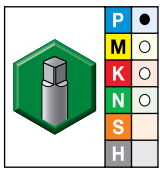
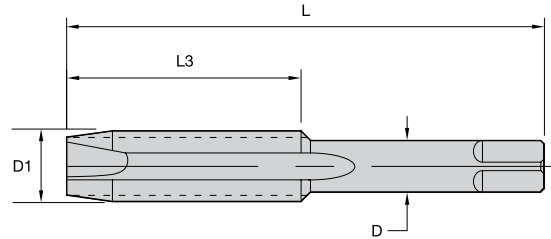
HOLEMAKING

TAPPING

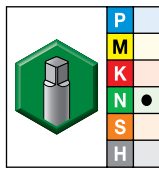
TURNING

Series 5301/2301 • Spiral Point, Plug Chamfer

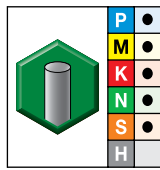
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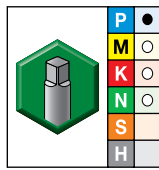
TICN



uncoated



oxide



TIN

● first choice
○ alternate choice

order #	catalog #	order #	catalog #	order #	catalog #	order #	catalog #	D1 size	L	L3	D	number of flutes	pitch diameter limit
-	-	2750088	13300	2750271	13170	2746857	19108	5/16 - 24	2.72	1.13	.318	2	H3
-	-	2750094	13298	-	-	-	-	5/16 - 24	2.72	1.13	.318	2	H2
2746974	19020	2750084	13303	-	-	-	-	5/16 - 24	2.72	1.13	.318	3	H4
2746970	19022	2750078	13307	2750268	13176	2746855	19111	3/8 - 16	2.94	1.25	.381	3	H3
-	-	2750082	13305	-	-	-	-	3/8 - 16	2.94	1.25	.381	3	H1
-	-	2750080	13306	-	-	-	-	3/8 - 16	2.94	1.25	.381	3	H2
3171152	19509	2750075	13309	-	-	-	-	3/8 - 16	2.94	1.25	.381	3	H5
2746968	19023	2750067	13313	2750266	13180	2746853	19112	3/8 - 24	2.94	1.25	.381	3	H3
-	-	2750066	13315	-	-	-	-	3/8 - 24	2.94	1.25	.381	3	H4
2746966	19024	2750060	13319	2750264	13183	1893987	19113	7/16 - 14	3.16	1.44	.323	3	H3
-	-	2750058	13320	-	-	-	-	7/16 - 14	3.16	1.44	.323	3	H5
2746964	19025	2750055	13324	2750262	13185	2746849	19114	7/16 - 20	3.16	1.44	.323	3	H3
-	-	2750054	13325	-	-	-	-	7/16 - 20	3.16	1.44	.323	3	H5
2746962	19026	2750052	13328	2750261	13189	2746847	19116	1/2 - 13	3.38	1.66	.367	3	H3
-	-	2750053	13327	-	-	-	-	1/2 - 13	3.38	1.66	.367	3	H2
-	-	2750047	13330	-	-	-	-	1/2 - 13	3.38	1.66	.367	3	H5
2746960	19027	2750040	13334	2750259	13193	2746845	19117	1/2 - 20	3.38	1.66	.367	3	H3
2746958	19028	2750036	13339	2750257	13195	2746843	19118	5/8 - 11	3.81	1.81	.480	3	H3
-	-	2750032	13340	-	-	-	-	5/8 - 11	3.81	1.81	.480	3	H5
-	-	2750028	13342	2750255	13199	-	-	5/8 - 18	3.81	1.81	.480	3	H3
2746956	19029	2750024	13343	2750256	13197	2746841	19119	3/4 - 10	4.25	2.00	.590	3	H3
-	-	2750023	13344	-	-	-	-	3/4 - 10	4.25	2.00	.590	3	H5

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

INDEXABLE MILLING

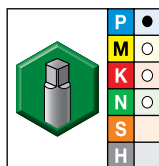
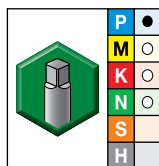
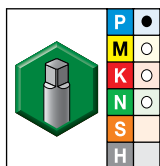
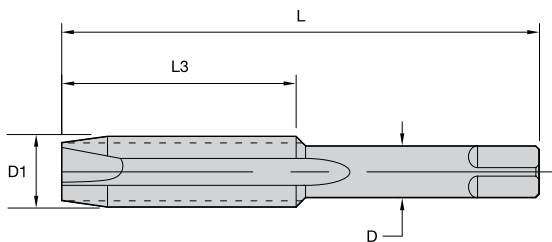
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

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



● first choice
○ alternate choice

TICN		uncoated		TIN		D1 size	L	L3	D	number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #	order #	catalog #						
-	-	2750021	13365	-	-	M1,6 X 0,35	1.63	.31	.141	2	D3
-	-	2750018	13367	-	-	M2 X 0,4	1.75	.44	.141	2	D3
-	-	2750017	13369	-	-	M2,5 X 0,45	1.81	.50	.141	2	D3
2747014	19002	2750015	13371	2746278	19920	M3 X 0,5	1.94	.63	.141	2	D3
-	-	2750013	13373	-	-	M3,5 X 0,6	2.00	.69	.141	2	D4
-	-	2750012	13375	2746276	19921	M4 X 0,7	2.13	.75	.168	2	D4
-	-	2750010	13377	-	-	M4,5 X 0,75	2.38	.88	.194	2	D4
2747010	19004	2750009	13379	2746274	19922	M5 X 0,8	2.38	.88	.194	2	D4
-	-	2750005	13381	2746272	19923	M6 X 1	2.50	1.00	.255	2	D5
-	-	2750002	13382	-	-	M6,3 X 1	2.50	1.00	.255	2	D5
-	-	2750000	13383	-	-	M7 X 1	2.72	1.13	.318	2	D5
2746997	19008	2749995	13385	2746270	19924	M8 X 1,25	2.72	1.13	.318	2	D5
2746995	19009	2749991	13389	2746268	19925	M10 X 1,5	2.94	1.25	.381	3	D6
2746993	19010	2749985	13393	2746266	19926	M12 X 1,75	3.38	1.66	.367	3	D6
-	-	2749982	13397	-	-	M14 X 2	3.59	1.66	.429	3	D7
-	-	2749979	13401	-	-	M16 X 2	3.81	1.81	.480	3	D7
-	-	2749977	13405	-	-	M18 X 2,5	4.03	1.81	.542	3	D7
-	-	2749975	13409	-	-	M20 X 2,5	4.47	2.00	.652	3	D7

NOTE: 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 tables on page D128 for the recommended pitch diameter limit for 6H class of fit.

INDEXABLE MILLING

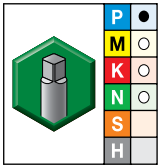
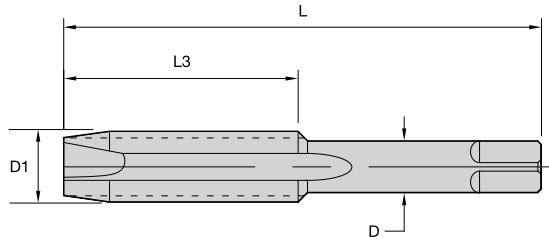
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

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



- first choice
- alternate choice

oxide/nitride		D1 size	L	L3	D	number of flutes	pitch diameter limit
order #	catalog #						
2864368	16802	6 - 32	2.00	.69	.141	3	H3
2747975	16805	8 - 32	2.13	.75	.168	3	H3
2864362	16807	10 - 24	2.38	.88	.194	3	H3
2864359	16809	10 - 32	2.38	.88	.194	3	H3
2864356	16810	1/4 - 20	2.50	1.00	.255	3	H3
2747973	16812	1/4 - 28	2.50	1.00	.255	3	H3
2747971	16814	5/16 - 18	2.72	1.13	.318	3	H3
2747967	16818	3/8 - 16	2.94	1.25	.381	3	H3
2747965	16820	3/8 - 24	2.94	1.25	.381	3	H3
2747959	16826	1/2 - 13	3.38	1.66	.367	3	H3

NOTE: GUN™ taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.
Refer to tables on pages D127-D128 for the recommended pitch diameter limit for 2B or 3B class of fit.

INDEXABLE MILLING

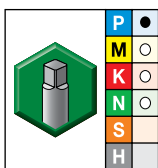
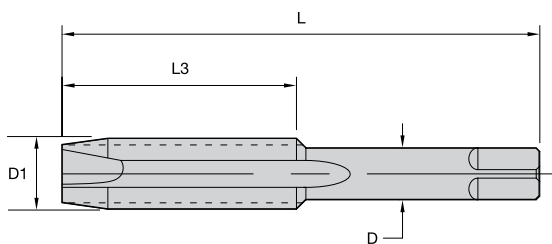
SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING

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

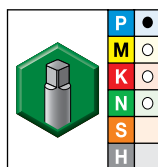
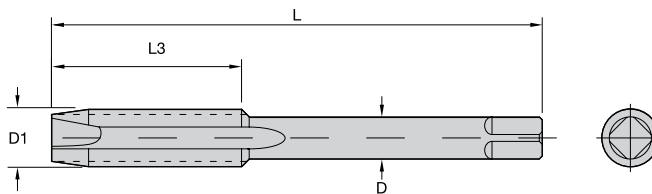


● first choice
○ alternate choice

uncoated		D1 size	L	L3	D	number of flutes	pitch diameter limit
order #	catalog #						
2750139	13275	1/4 - 20	2.50	1.00	.255	2	H11
2750101	13296	5/16 - 18	2.72	1.13	.318	2	H11
2750074	13310	3/8 - 16	2.94	1.25	.381	3	H11
2750046	13331	1/2 - 13	3.38	1.66	.367	3	H11
2750029	13341	5/8 - 11	3.81	1.81	.480	3	H11

NOTE: Refer to tables on pages D127-D128 for the recommended pitch diameter limit for 2B or 3B class of fit.

Series 5301 • Fractional Sizes • Spiral Point, Plug Chamfer • 6" Extension

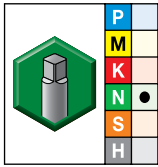
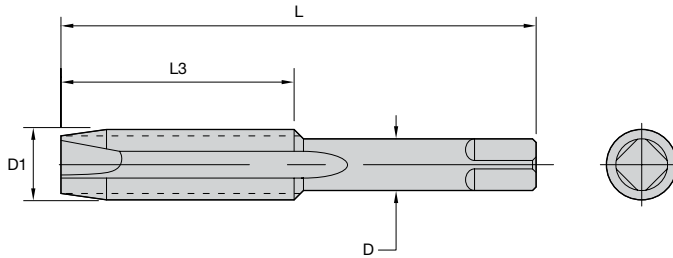


● first choice
○ alternate choice

uncoated		D1 size	L	L3	D	number of flutes	pitch diameter limit
order #	catalog #						
2747033	18932	8 - 32	6.00	.75	.168	2	H3
2747031	18934	10 - 24	6.00	.88	.194	2	H3
2747029	18935	10 - 32	6.00	.88	.194	2	H3
2747028	18936	1/4 - 20	6.00	1.00	.255	2	H3
2747026	18937	1/4 - 28	6.00	1.00	.255	2	H3
2747024	18938	5/16 - 18	6.00	1.13	.318	2	H3
2747020	18940	3/8 - 16	6.00	1.25	.381	3	H3
2747018	18941	3/8 - 24	6.00	1.25	.381	3	H3

NOTE: Also available in Hand Tap Series 5305 and 5303.
GUN™ taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.
Refer to tables on pages D127-D128 for the recommended pitch diameter limit for 2B or 3B class of fit.

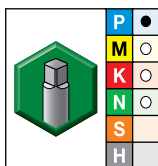
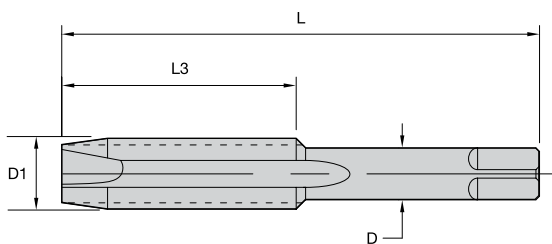
Series 7301 • Plug Chamfer



- first choice
- alternate choice

uncoated		D1 size	L	L3	D	class of fit
order #	catalog #					
2750393	12027	4 - 40	1.88	.56	.141	2B
2750387	12032	6 - 32	2.00	.69	.141	2B
2750384	12034	8 - 32	2.15	.75	.168	2B
2750381	12036	10 - 24	2.38	.88	.194	2B
2750379	12037	10 - 32	2.38	.88	.194	2B
2750377	12038	12 - 24	2.38	.94	.220	2B
2750375	12040	1/4 - 20	2.50	1.00	.255	2B
2750374	12041	1/4 - 28	2.50	1.00	.255	2B
2750373	12042	5/16 - 18	2.72	1.13	.318	2B
2750371	12043	5/16 - 24	2.72	1.13	.318	2B
2750370	12044	3/8 - 16	2.94	1.25	.381	2B
2750369	12045	3/8 - 24	2.94	1.25	.381	2B
2750367	12046	7/16 - 14	3.16	1.44	.323	2B
2750364	12047	7/16 - 20	3.16	1.44	.323	2B
2750363	12048	1/2 - 13	3.38	1.66	.367	2B
2750360	12049	1/2 - 20	3.38	1.66	.367	2B
2750359	12050	5/8 - 11	3.81	1.81	.480	2B
2750357	12051	5/8 - 18	3.81	1.81	.480	2B
2750356	12052	3/4 - 10	4.25	1.81	.590	2B

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



- first choice
- alternate choice

uncoated		D1 size	L	L3	D	number of flutes	pitch diameter limit
order #	catalog #						
2749944	13602	0 - 80	1.63	.31	.141	2	H2
2749943	13606	2 - 56	1.75	.44	.141	2	H2
2749939	13614	4 - 40	1.88	.56	.141	2	H2
2749936	13617	5 - 40	1.94	.63	.141	2	H2
2749935	13619	6 - 32	2.00	.69	.141	2	H2
2749932	13620	6 - 32	2.00	.69	.141	2	H3
2749931	13623	6 - 40	2.00	.69	.141	2	H2
2749926	13625	8 - 32	2.13	.75	.168	2	H2
2749924	13626	8 - 32	2.13	.75	.168	2	H3
2866734	13629	10 - 24	2.38	.88	.194	2	H2
2749920	13630	10 - 24	2.38	.88	.194	2	H3
2749919	13633	10 - 32	2.38	.88	.194	2	H2
2866726	13634	10 - 32	2.38	.88	.194	2	H3
2749916	13636	12 - 24	2.38	.94	.220	2	H3
2749915	13638	1/4 - 20	2.50	1.00	.255	2	H3
2749914	13639	1/4 - 28	2.50	1.00	.255	2	H3
2749912	13641	5/16 - 18	2.72	1.13	.318	2	H3
2749909	13642	5/16 - 24	2.72	1.13	.318	2	H3

NOTE: Refer to tables on pages D127-D128 for the recommended pitch diameter limit for 2B or 3B class of fit.

INDEXABLE MILLING

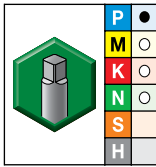
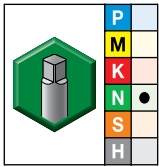
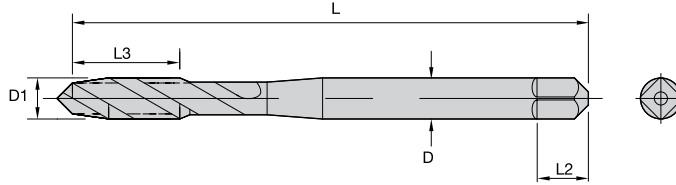
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Series 2364/5364 • Metric ANSI • Plug Chamfer

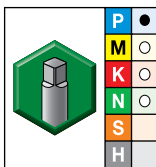
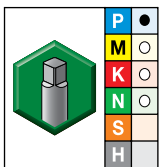
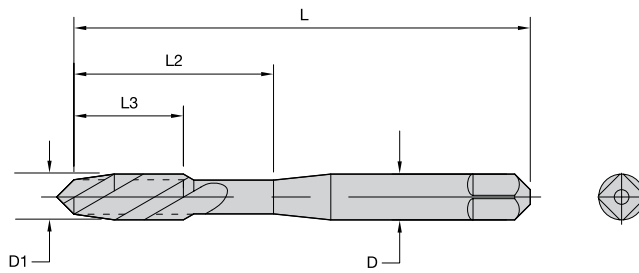


- first choice
- alternate choice

uncoated		TiN		D1 size	L	L2	L3	D	number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #							
2748302	16053	2746264	19927	M3 X 0,5	1.94	—	.31	.141	2	D3
2748297	16057	2746260	19929	M4 X 0,7	2.13	.75	.38	.168	3	D4
2748295	16061	—	—	M5 X 0,8	2.38	.88	.50	.194	3	D4
2748291	16063	2746252	19933	M6 X 1	2.50	1.00	.63	.255	3	D5
2748285	16069	2746248	19935	M8 X 1,25	2.72	1.12	.69	.318	3	D5
2748281	16071	2746244	19937	M10 X 1,5	2.94	1.25	.75	.381	3	D6
2748273	16073	2746240	19939	M12 X 1,75	3.38	—	.94	.367	3	D6

NOTE: 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 tables on pages D128 for the recommended pitch diameter limit for 6H class of fit.

Series 2364/5364 • Metric ANSI • Bottoming Chamfer

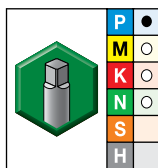
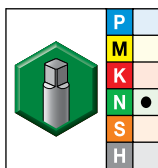
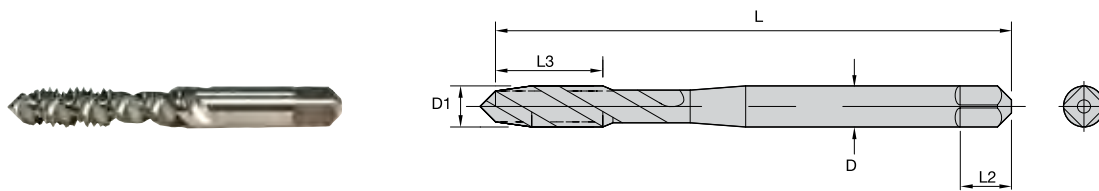


- first choice
- alternate choice

uncoated		TiN		D1 size	L	L2	L3	D	number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #							
2748300	16054	2746262	19928	M3 X 0,5	1.94	—	.31	.141	2	D3
2748296	16058	2746258	19930	M4 X 0,7	2.13	.75	.38	.168	3	D4
2748293	16062	2746254	19932	M5 X 0,8	2.38	.88	.50	.194	3	D4
2748288	16064	2746250	19934	M6 X 1	2.50	.75	.38	.255	3	D5
2748284	16070	2746246	19936	M8 X 1,25	2.72	1.12	.69	.318	3	D5
2748275	16072	2746242	19938	M10 X 1,5	2.94	1.25	.75	.381	3	D6
2748271	16074	2746238	19940	M12 X 1,75	3.38	—	.94	.367	3	D6

NOTE: 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.

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



● first choice
○ alternate choice

uncoated		TiN		D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #							
2748377	16003	2746484	19619	4 - 40	1.88	.56	—	.141	2	H2
2748372	16005	—	—	5 - 40	1.94	.63	—	.141	2	H2
2748369	16007	2746480	19622	6 - 32	2.00	.38	.69	.141	2	H3
2748366	16009	2746474	19626	8 - 32	2.13	.38	.75	.168	3	H3
2748363	16011	2746470	19628	10 - 24	2.38	.50	.88	.194	3	H3
2748360	16013	2746476	19624	10 - 32	2.38	.50	.88	.194	3	H3
2748355	16015	—	—	12 - 24	2.38	.50	.94	.220	3	H3
2748352	16017	2746464	19632	1/4 - 20	2.50	.63	1.00	.255	3	H3
2748348	16021	2746460	19634	1/4 - 28	2.50	.63	1.00	.255	3	H3
2748342	16023	2746458	19636	5/16 - 18	2.72	.69	1.12	.318	3	H3
2748336	16027	2746454	19638	5/16 - 24	2.72	.69	1.12	.318	3	H3
2748335	16029	2746450	19641	3/8 - 16	2.94	.75	1.25	.381	3	H3
2748332	16033	2746447	19643	3/8 - 24	2.94	.75	1.25	.381	3	H3
2748328	16035	2746437	19646	7/16 - 14	3.16	.88	—	.323	3	H3
2748318	16039	2746433	19648	1/2 - 13	3.38	.94	—	.367	3	H3
2748311	16047	—	—	5/8 - 11	3.81	1.09	—	.480	4	H3
2748307	16051	—	—	3/4 - 10	4.25	1.22	—	.590	4	H3

INDEXABLE MILLING

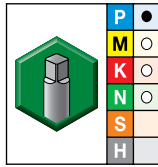
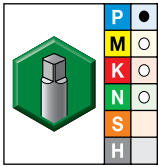
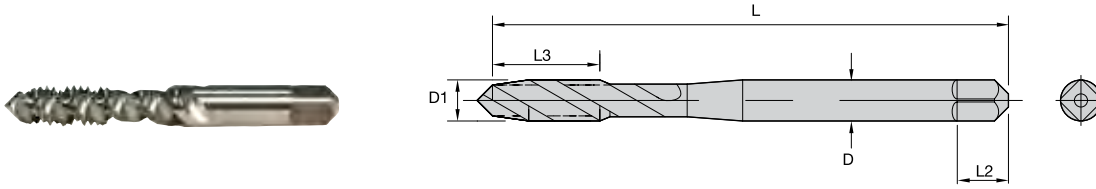
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

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



● first choice
○ alternate choice

uncoated		TiN		D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #							
2748375	16004	2746482	19621	4 - 40	1.88	.56	—	.141	2	H2
2748370	16006	—	—	5 - 40	1.94	.56	—	.141	2	H2
2748367	16008	2746478	19623	6 - 32	2.00	.38	.69	.141	2	H3
3083563	16010	2746472	19627	8 - 32	2.13	.38	.75	.168	3	H3
2748361	16012	2746468	19629	10 - 24	2.38	.50	.88	.194	3	H3
2748356	16014	2746466	19631	10 - 32	2.38	.50	.88	.194	3	H3
2748353	16016	—	—	12 - 24	2.38	.50	.94	.220	3	H3
2748351	16018	2746462	19633	1/4 - 20	2.50	.63	1.00	.255	3	H3
1775500	16022	2746427	19651	1/4 - 28	2.50	.63	1.00	.255	3	H3
2748339	16024	2746456	19637	5/16 - 18	2.72	.69	1.12	.318	3	H3
3012779	16028	2746452	19639	5/16 - 24	2.72	.69	1.12	.318	3	H3
3083460	16030	2746448	19642	3/8 - 16	2.94	.75	1.25	.381	3	H3
2748329	16034	2746439	19644	3/8 - 24	2.94	.75	1.25	.381	3	H3
2748325	16036	2746435	19647	7/16 - 14	3.16	.88	—	.323	3	H3
2748321	16038	—	—	7/16 - 20	3.16	.88	—	.323	3	H3
2748317	16040	2746431	19649	1/2 - 13	3.38	.94	—	.367	3	H3
2748309	16048	—	—	5/8 - 11	3.81	1.09	—	.480	4	H3
3083458	16052	—	—	3/4 - 10	4.25	1.22	—	.590	4	H3

NOTE: Refer to tables on pages D127–D128 for the recommended pitch diameter limit for 2B or 3B class of fit.

INDEXABLE MILLING

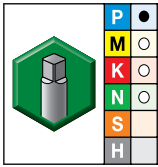
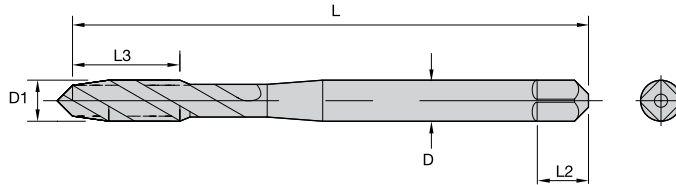
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Series 5344 • Machine Screw and Fractional • Bottoming Chamfer • Heavy Duty



● first choice
○ alternate choice

oxide		D1 size	L	L2	L3	D	number of flutes	pitch diameter limit
2748054	16502	6 - 32	2.00	—	.38	.141	3	H3
2748050	16504	8 - 32	2.13	—	.38	.168	3	H3
2748046	16506	10 - 24	2.38	—	.50	.194	3	H3
2748042	16508	10 - 32	2.38	—	.50	.194	3	H3
2748038	16510	1/4 - 20	2.50	—	.63	.255	3	H3
2748030	16514	5/16 - 18	2.72	—	.69	.318	3	H3
2748026	16516	5/16 - 24	2.72	—	.69	.318	3	H3
2748022	16518	3/8 - 16	2.94	—	.75	.381	3	H3
2748018	16520	3/8 - 24	2.94	1.25	.75	.381	3	H3
2748014	16522	7/16 - 14	3.16	—	.88	.323	3	H3
2748006	16526	1/2 - 13	3.38	—	.94	.367	3	H3
2748002	16528	1/2 - 20	3.38	—	1.66	.367	3	H3
2747995	16538	3/4 - 10	4.25	—	1.22	.590	4	H3

NOTE: Refer to tables on pages D127-D128 for the recommended pitch diameter limit for 2B or 3B class of fit.

INDEXABLE MILLING

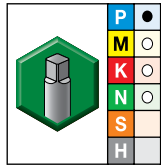
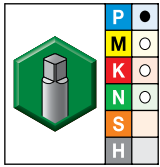
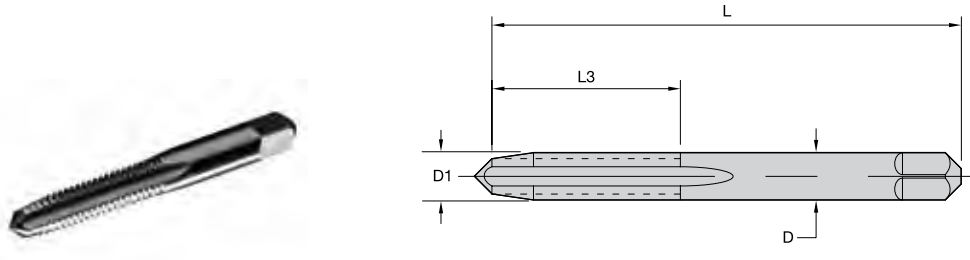
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Series 5303 • Fractional Sizes • Taper Chamfer • Hand Taps



● first choice
○ alternate choice

uncoated		oxide		D1 size	L	L3	D	number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #						
2749838	14010	-	-	1/4 - 20	2.50	1.00	.255	4	H1
2749832	14015	-	-	1/4 - 20	2.50	1.00	.255	4	H2
3139335	14022	2709949	19167	1/4 - 20	2.50	1.00	.255	4	H3
2749775	14055	2709942	19208	1/4 - 28	2.50	1.00	.255	4	H3
2749737	14092	2709937	19237	5/16 - 18	2.72	1.13	.318	4	H3
2749689	14122	-	-	5/16 - 24	2.72	1.13	.318	4	H3
2749651	14157	2709923	19278	3/8 - 16	2.94	1.25	.381	4	H3
2749611	14190	-	-	3/8 - 24	2.94	1.25	.381	4	H3
2749586	14221	-	-	7/16 - 14	3.16	1.44	.323	4	H3
2749568	14246	-	-	7/16 - 20	3.16	1.44	.323	4	H3
2749543	14281	2709916	19354	1/2 - 13	3.38	1.66	.367	4	H3
2749514	14308	-	-	1/2 - 20	3.38	1.66	.367	4	H3
3139336	14338	-	-	9/16 - 12	3.59	1.66	.429	4	H3
2749476	14356	-	-	9/16 - 18	3.59	1.66	.429	4	H3
2749460	14379	2709902	19407	5/8 - 11	3.81	1.81	.480	4	H3
2749432	14402	-	-	5/8 - 18	3.81	1.81	.480	4	H3
2749394	14448	-	-	3/4 - 10	4.25	2.00	.590	4	H3
2749374	14471	-	-	3/4 - 16	4.25	2.00	.590	4	H3
2749356	14499	-	-	7/8 - 9	4.69	2.22	.697	4	H4
2749340	14516	-	-	7/8 - 14	4.69	2.22	.697	4	H4
2749327	14544	-	-	1 - 8	5.13	2.50	.800	4	H4
2749308	14557	-	-	1 - 12	5.13	2.50	.800	4	H4
2749294	14568	-	-	1 - 14	5.13	2.50	.800	4	H4
2749281	14594	-	-	1 1/8 - 7	5.44	2.56	.896	4	H4
2749274	14603	-	-	1 1/8 - 12	5.44	2.56	.896	4	H4
2749265	14612	-	-	1 1/4 - 7	5.75	2.56	1.021	4	H4
3171056	14620	-	-	1 1/4 - 12	5.75	2.56	1.021	6	H4
3012774	14632	-	-	1 3/8 - 6	6.06	3.00	1.108	4	H4
3171057	14640	-	-	1 3/8 - 12	6.06	3.00	1.108	6	H4
2749241	14645	-	-	1 1/2 - 6	6.38	3.00	1.233	4	H4
3012776	14653	-	-	1 1/2 - 12	6.38	3.00	1.233	6	H4

NOTE: Hand taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.
Refer to tables on pages D127-D128 for the recommended pitch diameter limit for 2B or 3B class of fit.

INDEXABLE MILLING

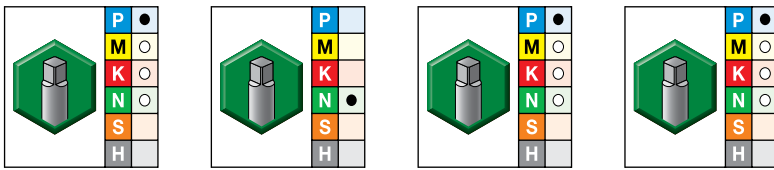
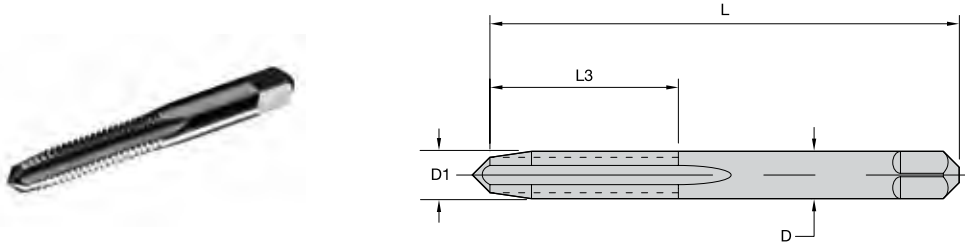
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Series 5303/2303 • Fractional Sizes • Plug Chamfer • Hand Taps



● first choice
○ alternate choice

TICN		uncoated		oxide		TiN		D1 size	L	L3	D	number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #	order #	catalog #	order #	catalog #						
2749839	14009	2957247	14023	2863727	19170	2463627	19247	1/4 - 20	2.50	1.00	.255	4	H3
-	-	2749837	14011	-	-	-	-	1/4 - 20	2.50	1.00	.255	4	H1
-	-	2749830	14016	-	-	-	-	1/4 - 20	2.50	1.00	.255	4	H2
-	-	3180806	14020	-	-	-	-	1/4 - 20	2.50	1.00	.255	3	H2
-	-	3102009	14030	-	-	2748577	15453	1/4 - 20	2.50	1.00	.255	2	H3
-	-	2749802	14032	-	-	3171060	15454	1/4 - 20	2.50	1.00	.255	3	H3
-	-	2749780	14052	-	-	-	-	1/4 - 28	2.50	1.00	.255	4	H2
-	-	2749777	14053	-	-	-	-	1/4 - 28	2.50	1.00	.255	4	H2
2746827	19128	2749772	14056	2746703	19210	2463629	19253	1/4 - 28	2.50	1.00	.255	4	H3
-	-	2749759	14063	-	-	-	-	1/4 - 28	2.50	1.00	.255	2	H3
-	-	2749757	14065	-	-	2748574	15456	1/4 - 28	2.50	1.00	.255	3	H3
-	-	2749751	14067	-	-	-	-	1/4 - 28	2.50	1.00	.255	4	H4
2746826	19129	2749734	14093	2746665	19240	2746637	19258	5/16 - 18	2.72	1.13	.318	4	H3
-	-	3102021	14100	-	-	-	-	5/16 - 18	2.72	1.13	.318	2	H3
-	-	-	-	-	-	2748569	15459	5/16 - 18	2.72	1.13	.318	2	H3
-	-	-	-	-	-	2710689	15460	5/16 - 18	2.72	1.13	.318	3	H3
-	-	2749714	14102	-	-	-	-	5/16 - 18	2.72	1.13	.318	3	H3
-	-	2749694	14113	-	-	-	-	5/16 - 24	2.72	1.13	.318	4	H1
2746824	19131	2749686	14123	-	-	-	-	5/16 - 24	2.72	1.13	.318	4	H3
-	-	1295391	14130	-	-	2748566	15462	5/16 - 24	2.72	1.13	.318	3	H3
2746822	19132	2749649	14158	2746615	19280	2746625	19268	3/8 - 16	2.94	1.25	.381	4	H3
-	-	2749635	14165	-	-	2748563	15464	3/8 - 16	2.94	1.25	.381	3	H3
-	-	2749629	14169	-	-	-	-	3/8 - 16	2.94	1.25	.381	4	H5
-	-	2749655	14152	-	-	-	-	3/8 - 16	2.94	1.25	.381	4	H2
-	-	2749595	14198	-	-	2748560	15466	3/8 - 24	2.94	1.25	.381	3	H3
-	-	2749591	14201	-	-	-	-	3/8 - 24	2.94	1.25	.381	4	H4
2746820	19134	2749609	14191	-	-	2746621	19273	3/8 - 24	2.94	1.25	.381	4	H3
2746818	19135	2749584	14222	-	-	2746617	19277	7/16 - 14	3.16	1.44	.323	4	H3
-	-	2749573	14229	-	-	2748558	15467	7/16 - 14	3.16	1.44	.323	3	H3
2746816	19136	1951473	14247	-	-	-	-	7/16 - 20	3.16	1.44	.323	4	H3
-	-	2749530	14289	-	-	2748552	15469	1/2 - 13	3.38	1.66	.367	3	H3
-	-	2957246	14293	-	-	-	-	1/2 - 13	3.38	1.66	.367	4	H5
2746814	19137	2415661	14282	2746576	19360	2746605	19291	1/2 - 13	3.38	1.66	.367	4	H3
-	-	2749493	14316	-	-	2748550	15470	1/2 - 20	3.38	1.66	.367	3	H3
2746812	19138	2749513	14309	2746568	19375	2746595	19297	1/2 - 20	3.38	1.66	.367	4	H3
-	-	2866187	14339	-	-	-	-	9/16 - 12	3.59	1.66	.429	4	H3
-	-	2749475	14357	-	-	-	-	9/16 - 18	3.59	1.66	.429	4	H3
2746810	19139	2749458	14380	2746564	19410	2863589	19307	5/8 - 11	3.81	1.81	.480	4	H3
2746808	19140	2749431	14403	-	-	2746592	19317	5/8 - 18	3.81	1.81	.480	4	H3
-	-	-	-	2746560	19445	-	-	3/4 - 10	4.25	2.00	.590	4	H3
-	-	-	-	-	-	2746588	19327	3/4 - 10	4.25	2.00	.590	4	H3
2746806	19141	-	-	-	-	-	-	3/4 - 10	4.25	2.00	.590	4	H3
-	-	2749392	14449	-	-	-	-	3/4 - 10	4.25	2.00	.590	4	H3
-	-	1825322	14472	-	-	-	-	3/4 - 16	4.25	2.00	.590	4	H3

INDEXABLE MILLING

SOLID END MILLING

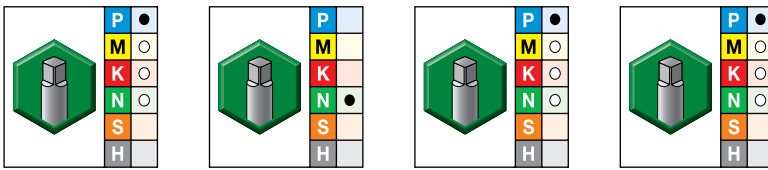
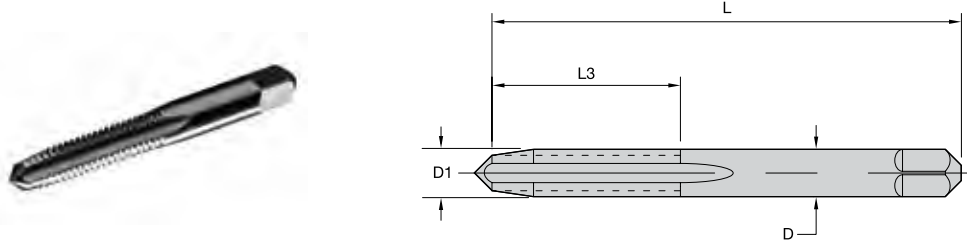
HOLEMAKING

TAPPING

TURNING

Series 5303/2303 • Fractional Sizes • Plug Chamfer • Hand Taps

(continued)



● first choice
○ alternate choice

TiCN		uncoated		oxide		TiN		D1 size	L	L3	D	number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #	order #	catalog #	order #	catalog #						
-	-	-	-	2746556	19455	2746584	19337	3/4 - 16	4.25	2.00	.590	4	H3
-	-	-	-	-	-	-	-	3/4 - 16	4.25	2.00	.590	4	H3
2746804	19142	-	-	2709889	19465	-	-	3/4 - 16	4.25	2.00	.590	4	H3
-	-	-	-	-	-	-	-	7/8 - 9	4.69	2.22	.697	4	H4
-	-	2749354	14500	-	-	2863567	19347	7/8 - 9	4.69	2.22	.697	4	H4
-	-	-	-	-	-	-	-	7/8 - 9	4.69	2.22	.697	4	H4
-	-	2749338	14517	-	-	-	-	7/8 - 14	4.69	2.22	.697	4	H4
-	-	-	-	2709874	19475	-	-	1 - 8	5.13	2.50	.800	4	H4
-	-	-	-	-	-	2746572	19367	1 - 8	5.13	2.50	.800	4	H4
-	-	2749326	14545	-	-	-	-	1 - 8	5.13	2.50	.800	4	H4
-	-	2749305	14558	-	-	-	-	1 - 12	5.13	2.50	.800	4	H4
-	-	2749292	14569	-	-	-	-	1 - 14	5.13	2.50	.800	4	H4
-	-	2749280	14595	-	-	-	-	1 1/8 - 7	5.44	2.56	.896	4	H4
-	-	2749271	14604	-	-	-	-	1 1/8 - 12	5.44	2.56	.896	4	H4
-	-	2749263	14613	-	-	-	-	1 1/4 - 7	5.75	2.56	1.021	4	H4
-	-	2749258	14621	-	-	-	-	1 1/4 - 12	5.75	2.56	1.021	6	H4
-	-	2749252	14633	-	-	-	-	1 3/8 - 6	6.06	3.00	1.108	4	H4
-	-	2749247	14641	-	-	-	-	1 3/8 - 12	6.06	3.00	1.108	6	H4
-	-	3012775	14646	-	-	-	-	1 1/2 - 6	6.38	3.00	1.233	4	H4
-	-	2749234	14654	-	-	-	-	1 1/2 - 12	6.38	3.00	1.233	6	H4

NOTE: Hand taps for 3B class of fit are suitable for UNJ aerospace internal threading applications. Refer to table on pages D127-D128 for the recommended pitch diameter limit for 2B or 3B class of fit.

INDEXABLE MILLING

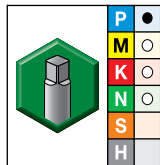
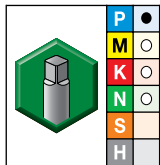
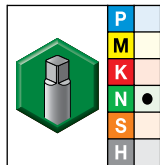
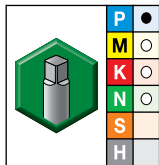
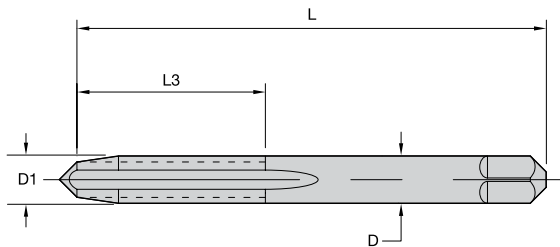
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Series 5303/2303 • Fractional Sizes • Bottoming Chamfer • Hand Taps

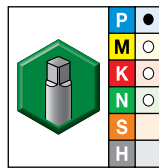
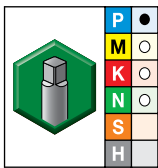
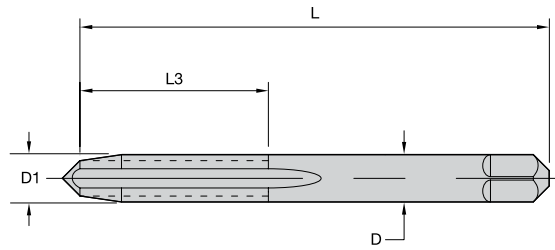


● first choice
○ alternate choice

TICN		uncoated		oxide		TiN		D1 size	L	L3	D	number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #	order #	catalog #	order #	catalog #						
-	-	2749836	14012	-	-	-	-	1/4 - 20	2.50	1.00	.255	4	H1
-	-	2749826	14017	-	-	-	-	1/4 - 20	2.50	1.00	.255	4	H2
2746741	19184	2749818	14024	2746748	19180	2463628	19251	1/4 - 20	2.50	1.00	.255	4	H3
-	-	2749805	14031	-	-	-	-	1/4 - 20	2.50	1.00	.255	2	H3
-	-	2749800	14033	-	-	-	-	1/4 - 20	2.50	1.00	.255	3	H3
-	-	2749793	14037	-	-	-	-	1/4 - 20	2.50	1.00	.255	4	H5
2746739	19185	2749766	14057	2746691	19220	2463630	19256	1/4 - 28	2.50	1.00	.255	4	H3
-	-	2749758	14064	-	-	-	-	1/4 - 28	2.50	1.00	.255	2	H3
-	-	2749755	14066	-	-	2748576	15455	1/4 - 28	2.50	1.00	.255	3	H3
-	-	1854370	14068	-	-	-	-	1/4 - 28	2.50	1.00	.255	4	H4
-	-	2749742	14083	-	-	-	-	5/16 - 18	2.72	1.13	.318	4	H1
-	-	2749739	14088	-	-	-	-	5/16 - 18	2.72	1.13	.318	4	H2
2746737	19186	2749732	14094	2746657	19245	2746633	19261	5/16 - 18	2.72	1.13	.318	4	H3
-	-	2749716	14101	-	-	2748573	15457	5/16 - 18	2.72	1.13	.318	2	H3
-	-	2749712	14103	-	-	2748571	15458	5/16 - 18	2.72	1.13	.318	3	H3
-	-	2749706	14105	-	-	-	-	5/16 - 18	2.72	1.13	.318	4	H5
2746735	19187	2038474	14124	2746629	19265	2746627	19266	5/16 - 24	2.72	1.13	.318	4	H3
-	-	2749669	14131	-	-	2748568	15461	5/16 - 24	2.72	1.13	.318	3	H3
-	-	2749656	14148	-	-	-	-	3/8 - 16	2.94	1.25	.381	4	H1
-	-	2749652	14153	-	-	-	-	3/8 - 16	2.94	1.25	.381	4	H2
2746733	19188	2749647	14159	2746609	19285	2746623	19271	3/8 - 16	2.94	1.25	.381	4	H3
-	-	2749633	14166	-	-	2748565	15463	3/8 - 16	2.94	1.25	.381	3	H3
-	-	2749625	14170	-	-	-	-	3/8 - 16	2.94	1.25	.381	4	H5
2746731	19189	1951472	14192	2746593	19310	2746619	19275	3/8 - 24	2.94	1.25	.381	4	H3
-	-	2749593	14199	-	-	2748561	15465	3/8 - 24	2.94	1.25	.381	3	H3
2746729	19191	2749582	14223	-	-	2746613	19281	7/16 - 14	3.16	1.44	.323	4	H3
-	-	2749570	14233	-	-	-	-	7/16 - 14	3.16	1.44	.323	4	H5
2746727	19192	2038865	14248	-	-	2746607	19287	7/16 - 20	3.16	1.44	.323	4	H3
-	-	2749548	14257	-	-	-	-	7/16 - 20	3.16	1.44	.323	4	H5
2746725	19193	2749540	14283	2746580	19355	2746601	19293	1/2 - 13	3.38	1.66	.367	4	H3
-	-	2749526	14290	-	-	2748556	15468	1/2 - 13	3.38	1.66	.367	3	H3
-	-	2749520	14294	-	-	-	-	1/2 - 13	3.38	1.66	.367	4	H5
2746723	19194	1951476	14310	2746566	19380	3113801	19303	1/2 - 20	3.38	1.66	.367	4	H3
-	-	2866184	14340	-	-	-	-	9/16 - 12	3.59	1.66	.429	4	H3
-	-	2749474	14358	-	-	-	-	9/16 - 18	3.59	1.66	.429	4	H3
2746721	19197	2749456	14381	2746562	19415	2863585	19313	5/8 - 11	3.81	1.81	.480	4	H3
-	-	2749441	14389	-	-	-	-	5/8 - 11	3.81	1.81	.480	4	H5
2746719	19198	2749428	14404	-	-	2746590	19323	5/8 - 18	3.81	1.81	.480	4	H3
-	-	2749403	14425	-	-	-	-	11/16 - 11	4.03	1.06	.542	4	H3
2746717	19199	3180808	14450	2746558	19450	2746586	19333	3/4 - 10	4.25	2.00	.590	4	H3
-	-	2749370	14473	2746553	19460	2863572	19343	3/4 - 16	4.25	2.00	.590	4	H3
-	-	2749358	14483	-	-	-	-	3/4 - 16	4.25	2.00	.590	4	H5
-	-	2749352	14501	2709881	19470	2746582	19353	7/8 - 9	4.69	2.22	.697	4	H4
-	-	2749336	14518	-	-	-	-	7/8 - 14	4.69	2.22	.697	4	H4
-	-	2749324	14546	2709867	19480	2746570	19373	1 - 8	5.13	2.50	.800	4	H4
-	-	3006761	14559	-	-	-	-	1 - 12	5.13	2.50	.800	4	H4
-	-	3180807	14570	-	-	-	-	1 - 14	5.13	2.50	.800	4	H4
-	-	2749278	14596	-	-	-	-	1 1/8 - 7	5.44	2.56	.896	4	H4
-	-	2749269	14605	-	-	-	-	1 1/8 - 12	5.44	2.56	.896	4	H4
-	-	2749261	14614	-	-	-	-	1 1/4 - 7	5.75	2.56	1.021	4	H4
-	-	2749256	14622	-	-	-	-	1 1/4 - 12	5.75	2.56	1.021	6	H4
-	-	2749251	14634	-	-	-	-	1 3/8 - 6	6.06	3.00	1.108	4	H4
-	-	2749246	14642	-	-	-	-	1 3/8 - 12	6.06	3.00	1.108	6	H4
-	-	2749240	14647	-	-	-	-	1 1/2 - 6	6.38	3.00	1.233	4	H4
-	-	2749233	14655	-	-	-	-	1 1/2 - 12	6.38	3.00	1.233	6	H4

NOTE: Hand taps for 3B class of fit are suitable for UNJ aerospace internal threading applications. Refer to tables on pages D127-D128 for the recommended pitch diameter limit for 2B or 3B class of fit.

Series 5305 • Machine Screw Sizes • Taper Chamfer • Hand Taps

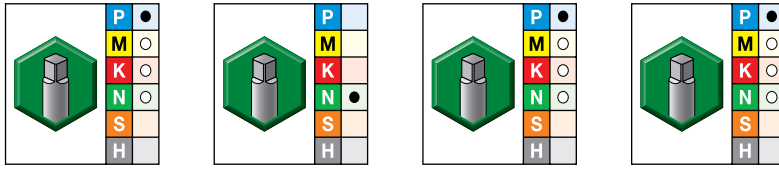
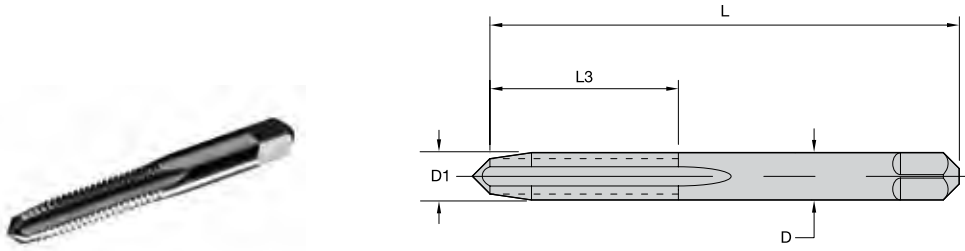


● first choice
○ alternate choice

uncoated		oxide		D1 size	L	L3	D	number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #						
2748991	15102	-	-	0 - 80	1.63	.31	.141	2	H1
2748975	15114	-	-	1 - 64	1.69	.38	.141	2	H1
2748964	15120	-	-	1 - 72	1.69	.38	.141	2	H1
2748951	15134	-	-	2 - 56	1.75	.44	.141	3	H2
2748935	15144	-	-	2 - 64	1.75	.44	.141	3	H2
2748925	15156	-	-	3 - 48	1.81	.50	.141	3	H2
2748913	15166	-	-	3 - 56	1.81	.50	.141	3	H2
2748887	15184	2709836	19563	4 - 40	1.88	.56	.141	3	H2
2748869	15196	-	-	4 - 48	1.88	.56	.141	3	H2
2865323	15209	-	-	5 - 40	1.94	.63	.141	3	H2
2748858	15220	-	-	5 - 44	1.94	.63	.141	3	H2
2865295	15225	-	-	6 - 32	2.00	.69	.141	3	H1
2748845	15231	-	-	6 - 32	2.00	.69	.141	3	H2
2865268	15237	2709816	19573	6 - 32	2.00	.69	.141	3	H3
2748827	15257	-	-	6 - 40	2.00	.69	.141	3	H2
2748806	15275	-	-	8 - 32	2.13	.75	.168	4	H2
2748787	15283	2709810	19583	8 - 32	2.13	.75	.168	4	H3
2748764	15301	-	-	8 - 36	2.13	.75	.168	4	H2
2748747	15320	-	-	10 - 24	2.38	.88	.194	4	H2
2748738	15327	-	-	10 - 24	2.38	.88	.194	4	H3
2748708	15344	-	-	10 - 32	2.38	.88	.194	4	H1
2748694	15352	-	-	10 - 32	2.38	.88	.194	4	H2
2748679	15360	2709796	19613	10 - 32	2.38	.88	.194	4	H3
2748645	15383	-	-	12 - 24	2.38	.94	.220	4	H3
2748631	15390	-	-	12 - 28	2.38	.94	.220	4	H3

NOTE: Hand taps for 3B class of fit are suitable for UNJ aerospace internal threading applications. Refer to tables on pages D127-D128 for the recommended pitch diameter limit for 2B or 3B class of fit.

Series 5305/2305 • Machine Screw Sizes • Plug Chamfer • Hand Taps



● first choice
○ alternate choice

TiCN		uncoated		oxide		TiN		D1 size	L	L3	D	number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #	order #	catalog #	order #	catalog #						
-	-	2748988	15103	-	-	-	-	0 - 80	1.63	.31	.141	2	H1
2746839	19121	2748979	15107	-	-	-	-	0 - 80	1.63	.31	.141	2	H2
-	-	2748972	15115	-	-	-	-	1 - 64	1.69	.38	.141	2	H1
-	-	2748963	15121	-	-	-	-	1 - 72	1.69	.38	.141	2	H1
2746837	19122	2748950	15135	-	-	-	-	2 - 56	1.75	.44	.141	3	H2
-	-	2748943	15138	-	-	-	-	2 - 56	1.75	.44	.141	2	H2
-	-	2748933	15145	-	-	-	-	2 - 64	1.75	.44	.141	3	H2
-	-	2748924	15157	-	-	-	-	3 - 48	1.81	.50	.141	3	H2
-	-	2748916	15160	-	-	2748614	15433	3 - 48	1.81	.50	.141	2	H2
-	-	2748911	15167	-	-	3 - 56	1.81	.50	.141	.50	.141	3	H2
2746835	19123	2748885	15185	2709830	19565	2041049	19211	4 - 40	1.88	.56	.141	3	H2
-	-	2748878	15189	-	-	-	-	4 - 40	1.88	.56	.141	2	H2
-	-	2748867	15197	-	-	-	-	4 - 48	1.88	.56	.141	3	H2
2746833	19124	2865319	15210	-	-	2746697	19216	5 - 40	1.94	.63	.141	3	H2
-	-	2865310	15214	-	-	2748606	15437	5 - 40	1.94	.63	.141	2	H2
-	-	2748855	15221	-	-	-	-	5 - 44	1.94	.63	.141	3	H2
2748850	15224	2748843	15238	2746500	19575	-	-	6 - 32	2.00	.69	.141	3	H3
-	-	2865279	15232	-	-	2041051	19221	6 - 32	2.00	.69	.141	3	H2
-	-	2748836	15245	-	-	-	-	6 - 32	2.00	.69	.141	2	H3
-	-	2748825	15258	-	-	-	-	6 - 40	2.00	.69	.141	3	H2
-	-	2748816	15262	-	-	-	-	6 - 40	2.00	.69	.141	2	H2
2748810	15270	2748785	15284	2746492	19585	-	-	8 - 32	2.13	.75	.168	4	H3
-	-	2748804	15276	-	-	2463623	19226	8 - 32	2.13	.75	.168	4	H2
-	-	2748774	15291	-	-	-	-	8 - 32	2.13	.75	.168	2	H3
-	-	2748768	15293	-	-	2748598	15442	8 - 32	2.13	.75	.168	3	H3
-	-	2748761	15302	-	-	-	-	8 - 36	2.13	.75	.168	4	H2
-	-	2748746	15321	-	-	-	-	10 - 24	2.38	.88	.194	4	H2
2746831	19126	2748736	15328	2746490	19600	2603956	19231	10 - 24	2.38	.88	.194	4	H3
-	-	2748730	15335	-	-	-	-	10 - 24	2.38	.88	.194	2	H3
-	-	2748726	15337	-	-	2748595	15444	10 - 24	2.38	.88	.194	3	H3
2748697	15348	2748678	15361	2746486	19615	2622811	19236	10 - 32	2.38	.88	.194	4	H3
-	-	2748692	15353	-	-	-	-	10 - 32	2.38	.88	.194	4	H2
-	-	2748666	15368	-	-	-	-	10 - 32	2.38	.88	.194	2	H3
-	-	2748662	15370	-	-	-	-	10 - 32	2.38	.88	.194	3	H3
2746830	19127	2748643	15384	-	-	-	-	12 - 24	2.38	.94	.220	4	H3
-	-	2748628	15391	-	-	-	-	12 - 28	2.38	.94	.220	4	H3

NOTE: Hand taps for 3B class of fit are suitable for UNJ aerospace internal threading applications. Refer to tables on pages D127-D128 for the recommended pitch diameter limit for 2B or 3B class of fit.

INDEXABLE MILLING

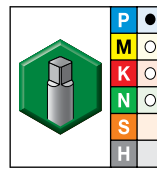
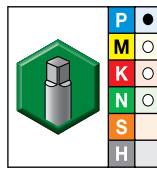
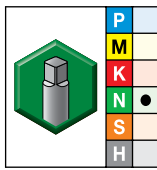
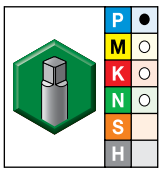
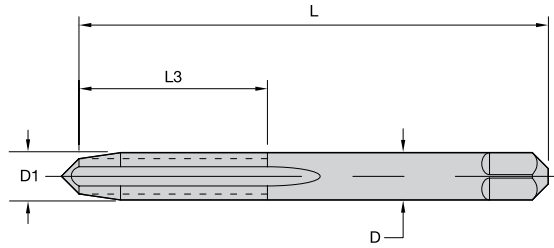
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Series 5305/2305 • Machine Screw Sizes • Bottoming Chamfer • Hand Taps



● first choice
○ alternate choice

TiCN		uncoated		oxide		TiN		D1 size	L	L3	D	number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #	order #	catalog #	order #	catalog #						
-	-	2748985	15104	-	-	-	-	0 - 80	1.63	.31	.141	2	H1
2863721	19174	2748977	15108	-	-	-	-	0 - 80	1.63	.31	.141	2	H2
-	-	2748970	15116	-	-	-	-	1 - 64	1.69	.38	.141	2	H1
-	-	2748962	15122	-	-	-	-	1 - 72	1.69	.38	.141	2	H1
3171079	19175	2748947	15136	-	-	-	-	2 - 56	1.75	.44	.141	3	H2
-	-	2748942	15139	-	-	-	-	2 - 56	1.75	.44	.141	2	H2
-	-	2748930	15146	-	-	-	-	2 - 64	1.75	.44	.141	3	H2
-	-	2748920	15158	-	-	-	-	3 - 48	1.81	.50	.141	3	H2
-	-	2748914	15161	-	-	2748616	15432	3 - 48	1.81	.50	.141	2	H2
-	-	2748906	15168	-	-	-	-	3 - 56	1.81	.50	.141	3	H2
2746756	19176	2748882	15186	2709823	19570	-	-	4 - 40	1.88	.56	.141	3	H2
-	-	2748876	15190	-	-	2748612	15434	4 - 40	1.88	.56	.141	2	H2
-	-	2748864	15198	-	-	-	-	4 - 48	1.88	.56	.141	3	H2
2746754	19177	2865316	15211	-	-	-	-	5 - 40	1.94	.63	.141	3	H2
-	-	3177073	15215	-	-	2748607	15436	5 - 40	1.94	.63	.141	2	H2
-	-	2748852	15222	-	-	-	-	5 - 44	1.94	.63	.141	3	H2
-	-	2865289	15227	-	-	-	-	6 - 32	2.00	.69	.141	3	H1
-	-	2865277	15233	-	-	2041052	19223	6 - 32	2.00	.69	.141	3	H2
-	-	2891496	15236	-	-	-	-	6 - 32	2.00	.69	.141	2	H2
2746752	19178	2748840	15239	2746494	19580	-	-	6 - 32	2.00	.69	.141	3	H3
-	-	2748835	15246	-	-	2748604	15438	6 - 32	2.00	.69	.141	2	H3
-	-	2748820	15259	-	-	-	-	6 - 40	2.00	.69	.141	3	H2
-	-	2748811	15269	-	-	-	-	8 - 32	2.13	.75	.168	4	H1
-	-	2748803	15277	-	-	1773455	19228	8 - 32	2.13	.75	.168	4	H2
-	-	2748795	15280	-	-	-	-	8 - 32	2.13	.75	.168	2	H2
2709451	19860	2748781	15285	2863495	19590	-	-	8 - 32	2.13	.75	.168	4	H3
-	-	2748773	15292	-	-	-	-	8 - 32	2.13	.75	.168	2	H3
-	-	2969917	15294	-	-	-	-	8 - 32	2.13	.75	.168	3	H3
-	-	2748758	15303	-	-	-	-	8 - 36	2.13	.75	.168	4	H2
-	-	2748744	15322	-	-	-	-	10 - 24	2.38	.88	.194	4	H2
2746747	19181	2748733	15329	2746488	19605	2603957	19233	10 - 24	2.38	.88	.194	4	H3
-	-	2748728	15336	-	-	-	-	10 - 24	2.38	.88	.194	2	H3
-	-	2748722	15338	-	-	2748597	15443	10 - 24	2.38	.88	.194	3	H3
-	-	2748689	15354	-	-	-	-	10 - 32	2.38	.88	.194	4	H2
-	-	2748682	15357	-	-	-	-	10 - 32	2.38	.88	.194	2	H2
2746745	19182	2748675	15362	2863477	19620	2622812	19238	10 - 32	2.38	.88	.194	4	H3
-	-	2748663	15369	-	-	2748593	15445	10 - 32	2.38	.88	.194	2	H3
-	-	2748661	15371	-	-	-	-	10 - 32	2.38	.88	.194	3	H3
2746743	19183	2748641	15385	-	-	2746661	19243	12 - 24	2.38	.94	.220	4	H3
-	-	2748624	15392	-	-	-	-	12 - 28	2.38	.94	.220	4	H3

NOTE: Hand taps for 3B class of fit are suitable for UNJ aerospace internal threading applications. Refer to tables on pages D127-D128 for the recommended pitch diameter limit for 2B or 3B class of fit.

INDEXABLE MILLING

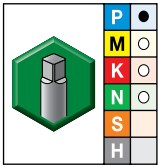
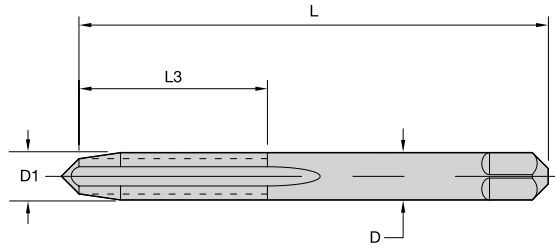
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Series 5353 • Metric ANSI • Taper Chamfer • Hand Taps



● first choice
○ alternate choice

uncoated		D1 size	L	L3	D	number of flutes	pitch diameter limit
2749221	14725	M2 X 0,4	1.75	.44	.141	3	D3
2749207	14741	M3 X 0,5	1.94	.63	.141	3	D3
2749197	14757	M4 X 0,7	2.13	.75	.168	4	D4
2749189	14773	M5 X 0,8	2.38	.88	.194	4	D4
2749161	14797	M8 X 1,25	2.72	1.13	.318	4	D5
2749152	14813	M10 X 1,5	2.94	1.25	.381	4	D6
2749144	14829	M12 X 1,75	3.38	1.66	.367	4	D6
2749134	14845	M14 X 2	3.59	1.66	.429	4	D7
2749123	14861	M16 X 2	3.81	1.81	.480	4	D7
2749117	14877	M18 X 2,5	4.03	1.06	.542	4	D7
2749106	14893	M20 X 2,5	4.47	2.00	.652	4	D7
2749096	14909	M24 X 3	4.91	2.22	.760	4	D8
2749086	14925	M30 X 3,5	5.44	2.56	1.021	4	D9
2749077	14941	M36 X 4	6.06	3.00	1.233	4	D9

NOTE: 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 tables on pages D128 for the recommended pitch diameter limit for 6H class of fit.

INDEXABLE MILLING

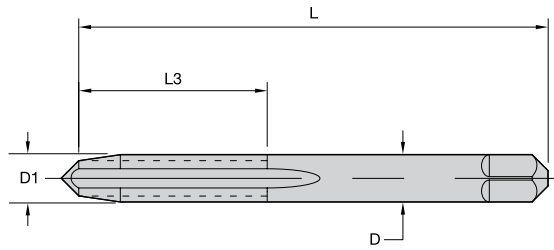
SOLID END MILLING

HOLEMAKING

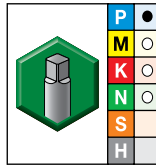
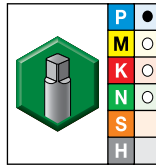
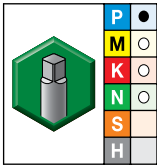
TAPPING

TURNING

Series 5353 • Metric ANSI • Bottoming Chamfer • Hand Taps



- first choice
- alternate choice



- first choice
- alternate choice

TICN		uncoated		TiN		D1 size	L	L3	D	number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #	order #	catalog #						
2896313	19201	2749204	14743	-	-	M3 X 0,5	1.94	.63	.141	3	D3
2746713	19203	-	-	2978979	15474	M4 X 0,7	2.13	.75	.168	4	D4
2746709	19205	2749182	14775	2746294	19907	M5 X 0,8	2.38	.88	.194	4	D4
2746707	19206	-	-	-	-	M6 X 1	2.50	1.00	.255	4	D5
2746701	19212	-	-	-	-	M8 X 1,25	2.72	1.13	.318	4	D5
2746699	19214	-	-	2746282	19916	M10 X 1,5	2.94	1.25	.381	4	D6
3171080	19215	-	-	-	-	M12 X 1,75	3.38	1.66	.367	4	D6
-	-	2749127	14847	-	-	M14 X 2	3.59	1.66	.429	4	D7
-	-	2749122	14863	-	-	M16 X 2	3.81	1.81	.480	4	D7
-	-	2749102	14895	-	-	M20 X 2,5	4.47	2.00	.652	4	D7
-	-	2749093	14911	-	-	M24 X 3	4.91	2.22	.760	4	D8
-	-	2749081	14927	-	-	M30 X 3,5	5.44	2.56	1.021	4	D9
-	-	2749073	14943	-	-	M36 X 4	6.06	3.00	1.233	4	D9

NOTE: 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 tables on pages D128 for the recommended pitch diameter limit for 6H class of fit.

INDEXABLE MILLING

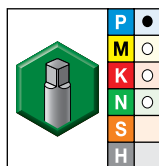
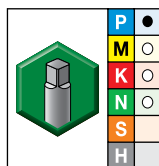
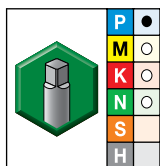
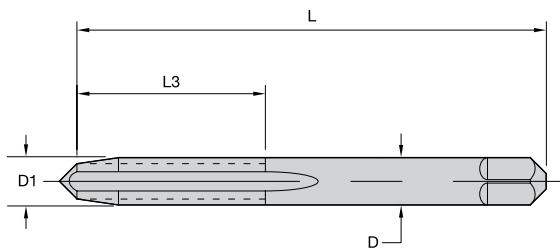
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Series 5353 • Metric ANSI • Plug Chamfer • Hand Taps



● first choice
○ alternate choice

TICN		uncoated		TIN		D1 size	L	L3	D	number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #	order #	catalog #						
-	-	2749224	14718	-	-	M1,6 X 0,35	1.63	.31	.141	2	D3
-	-	2749219	14726	-	-	M2 X 0,4	1.75	.44	.141	3	D3
-	-	2749210	14734	-	-	M2,5 X 0,45	1.81	.50	.141	3	D3
3171081	19217	2749205	14742	-	-	M3 X 0,5	1.94	.63	.141	3	D3
-	-	2749199	14750	-	-	M3,5 X 0,6	2.00	.69	.141	3	D4
2746693	19219	2749194	14758	2748549	15473	M4 X 0,7	2.13	.75	.168	4	D4
-	-	2749191	14766	-	-	M4,5 X 0,75	2.38	.88	.194	4	D4
2746687	19222	2749186	14774	2863245	19906	M5 X 0,8	2.38	.88	.194	4	D4
2746683	19224	2749177	14782	-	-	M6 X 1	2.50	1.00	.255	4	D5
-	-	2749167	14790	-	-	M7 X 1	2.72	1.13	.318	4	D5
2746681	19225	2749160	14798	2746288	19912	M8 X 1,25	2.72	1.13	.318	4	D5
2746677	19227	2749151	14814	2746284	19915	M10 X 1,5	2.94	1.25	.381	4	D6
3005011	19229	2749141	14830	2746209	19955	M12 X 1,75	3.38	1.66	.367	4	D6
-	-	2749284	14586	-	-	M14 X 1,25	3.59	1.66	.429	4	H4
-	-	2749131	14846	-	-	M14 X 2	3.59	1.66	.429	4	D7
-	-	3012777	14862	-	-	M16 X 2	3.81	1.81	.480	4	D7
-	-	2749282	14590	-	-	M18 X 1,5	4.03	1.81	.542	4	H4
-	-	2749113	14878	-	-	M18 X 2,5	4.03	1.06	.542	4	D7
-	-	2749104	14894	-	-	M20 X 2,5	4.47	2.00	.652	4	D7
-	-	2749094	14910	-	-	M24 X 3	4.91	2.22	.760	4	D8
-	-	2749084	14926	-	-	M30 X 3,5	5.44	2.56	1.021	4	D9
-	-	2749076	14942	-	-	M36 X 4	6.06	3.00	1.233	4	D9

NOTE: 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 tables on pages D128 for the recommended pitch diameter limit for 6H class of fit.

INDEXABLE MILLING

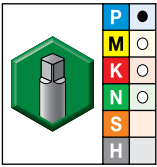
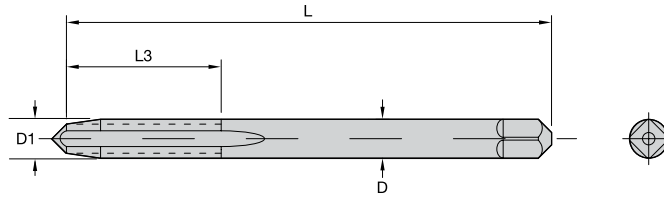
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Series 5305(EXT)/5303(EXT) • Machine Screw and Fractional • Plug Chamfer • Hand Taps 6" Extension



● first choice
○ alternate choice

uncoated		D1 TPI	L	L3	D	number of flutes	pitch diameter limit
order #	catalog #						
2747078	18827	6 - 32	6.00	.69	.141	3	H3
2747039	18891	8 - 32	6.00	.75	.168	4	H3
2747074	18833	10 - 24	6.00	.88	.194	4	H3
2747070	18836	10 - 32	6.00	.88	.194	4	H3
2747067	18839	1/4 - 20	6.00	1.00	.255	4	H3
2747063	18842	1/4 - 28	6.00	1.00	.255	4	H3
2747059	18845	5/16 - 18	6.00	.67	.318	4	H3
2747051	18851	3/8 - 16	6.00	1.25	.381	4	H3

NOTE: See pages D127-D128 for the recommended pitch diameter limit for 2B or 3B class of fit.

INDEXABLE MILLING

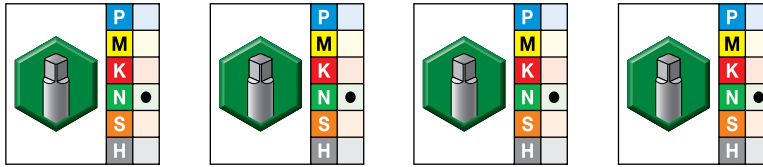
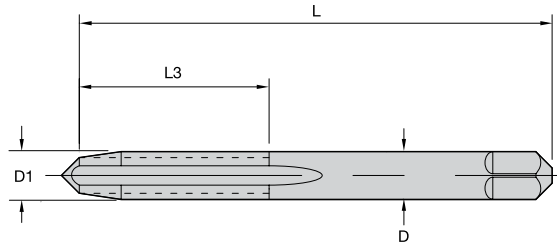
SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING

Series 7303 • Fractional • Taper, Plug, Bottoming Chamfer, and Tap 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
order #	catalog #	order #	catalog #	order #	catalog #	order #	catalog #					
2751033	11584	-	-	2751031	11586	2751030	11587	3/16 - 24	2	.88	.194	2B
2751027	11596	2751025	11597	2751023	11598	2751020	11599	1/4 - 20	3	1.00	.255	2B
2751019	11600	2751015	11601	2751013	11602	2751011	11603	1/4 - 28	3	1.00	.255	2B
2751010	11604	2751008	11605	2751007	11606	2751004	11607	5/16 - 18	3	1.13	.318	2B
2751002	11608	2751001	11609	2750999	11610	2750998	11611	5/16 - 24	3	1.13	.318	2B
2750996	11612	2750995	11613	2750993	11614	2750991	11615	3/8 - 16	3	1.25	.381	2B
2750990	11616	2750988	11617	2750986	11618	2750985	11619	3/8 - 24	3	1.25	.381	2B
2750984	11620	2750983	11621	2750980	11622	2750975	11623	7/16 - 14	3	1.44	.323	2B
2750972	11624	2750969	11625	2750967	11626	2750965	11627	7/16 - 20	3	1.44	.323	2B
2750962	11628	2750959	11629	2750957	11630	2750953	11631	1/2 - 13	3	1.66	.367	2B
2750951	11632	2750948	11633	2750946	11634	2750945	11635	1/2 - 20	3	1.66	.367	2B
2750943	11636	2750941	11637	2750940	11638	2750939	11639	9/16 - 12	4	1.66	.429	2B
2750937	11640	2750935	11641	2750933	11642	2750932	11643	9/16 - 18	4	1.66	.429	2B
2750928	11644	2750926	11645	2750923	11646	2750920	11647	5/8 - 11	4	1.81	.480	2B
2750918	11648	2750917	11649	2750916	11650	-	-	5/8 - 18	3	1.25	.381	2B
-	-	-	-	-	-	2750915	11651	5/8 - 18	4	1.81	.480	2B
2750912	11652	2750910	11653	2750907	11654	2750906	11655	3/4 - 10	4	2.00	.590	2B
2750904	11656	2750902	11657	2750901	11658	2750900	11659	3/4 - 16	4	2.00	.590	2B
2750898	11660	2750896	11661	2750895	11662	2750893	11663	7/8 - 9	5	2.22	.697	2B
2750892	11664	2750888	11665	2750886	11666	2750885	11667	7/8 - 14	5	2.22	.697	2B
2750883	11668	2750882	11669	2750880	11670	2750879	11671	1 - 8	5	2.50	.800	2B
2750878	11672	-	-	2750875	11674	2750873	11675	1 - 12	5	2.50	.800	2B
2750871	11676	2750868	11677	2750867	11678	-	-	1 - 14	5	2.50	.800	2B
2750862	11680	2750857	11681	2750856	11682	2750854	11683	1 1/8 - 7	5	2.56	.896	2B
-	-	2750852	11685	2750848	11686	-	-	1 1/8 - 8	5	2.56	.896	2B
2750843	11688	2750841	11689	2750838	11690	-	-	1 1/8 - 12	5	2.56	.896	2B
2750835	11692	2750834	11693	2750832	11694	2750831	11695	1 1/4 - 7	6	2.56	1.021	2B
2750827	11696	2750824	11697	2750822	11698	-	-	1 1/4 - 8	6	2.56	1.021	2B
2750812	11700	2750809	11701	2750807	11702	-	-	1 1/4 - 12	6	2.56	1.021	2B
2750780	11716	2750778	11717	2750777	11718	2750776	11719	1 1/2 - 6	6	3.00	1.233	2B
-	-	2750770	11721	2750667	11722	-	-	1 1/2 - 8	6	3.00	1.233	2B
2750621	11724	-	-	2750617	11726	-	-	1 1/2 - 12	6	3.00	1.233	2B

INDEXABLE MILLING

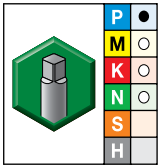
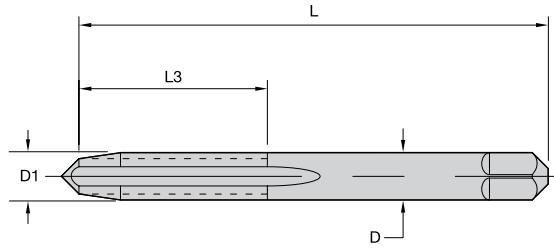
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

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



● first choice
○ alternate choice

uncoated		D1 size	L	L3	D	number of flutes	pitch diameter limit
2749202	14744	M3 X 0,5	1.94	.63	.141	3	D3
2749192	14760	M4 X 0,7	2.13	.75	.168	4	D4
2749181	14777	M5 X 0,8	2.38	.88	.194	4	D4
2749171	14784	M6 X 1	2.50	1.00	.255	4	D5
2749153	14800	M8 X 1,25	2.72	1.13	.318	4	D5
2749145	14816	M10 X 1,5	2.94	1.25	.381	4	D6
2749136	14832	M12 X 1,75	3.38	1.66	.367	4	D6
2749125	14848	M14 X 2	3.59	1.66	.429	4	D7
2749119	14864	M16 X 2	3.81	1.81	.480	4	D7
2749099	14896	M20 X 2,5	4.47	2.00	.652	4	D7

NOTE: 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 tables on pages D128 for the recommended pitch diameter limit for 6H class of fit.

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

INDEXABLE MILLING

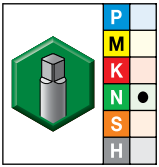
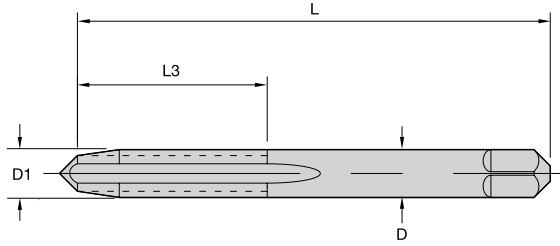
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HOLEMAKING

TAPPING

TURNING

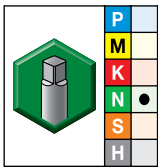
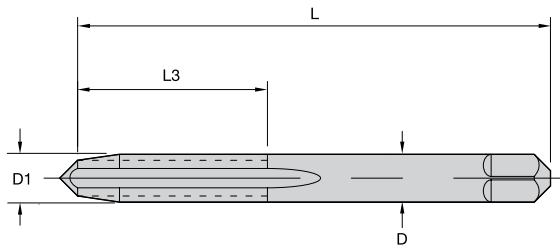
Series 7305 • Machine Screw • Taper, Plug, Bottoming Chamfer, and Tap Sets



- first choice
- alternate choice

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
order #	catalog #	order #	catalog #	order #	catalog #	order #	catalog #					
2751095	11516	2751092	11517	2751090	11518	2751086	11519	4 - 40	2	.56	.141	2B
2751081	11524	2751080	11525	2751079	11526	2751077	11527	5 - 40	2	.63	.141	2B
2751075	11528	2751073	11529	2751071	11530	2751070	11531	6 - 32	2	.69	.141	2B
-	-	2751068	11537	-	-	-	-	6 - 40	2	.69	.141	2B
2751066	11540	2751064	11541	2751060	11542	2751058	11543	8 - 32	2	.75	.168	2B
-	-	2751056	11545	-	-	-	-	8 - 36	2	.75	.168	2B
2751055	11548	2751053	11549	2751051	11550	2751048	11551	10 - 24	2	.88	.194	2B
2751047	11552	2751045	11553	2751043	11554	2885052	11555	10 - 32	2	.88	.194	2B
2751041	11556	2751040	11557	2751037	11558	2751036	11559	12 - 24	2	.94	.220	2B

Series 7353 • Metric ANSI • Plug Chamfer • Hand Taps

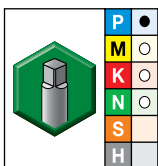
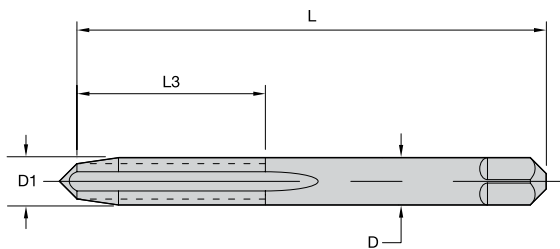


- first choice
- alternate choice

uncoated		D1 size	L	L3	D	number of flutes
order #	catalog #					
2750421	11900	M6 X 1	2.50	1.00	.255	6H
2750420	11901	M8 X 1,25	2.72	1.13	.318	6H
2750418	11902	M10 X 1,5	2.94	1.25	.381	6H
2750415	11903	M12 X 1,75	3.38	1.66	.367	6H
2750412	11904	M14 X 1,25	3.59	1.66	.429	6H
2750410	11905	M14 X 2	3.59	1.66	.429	6H
2750409	11906	M16 X 2	3.81	1.81	.480	6H
2750407	11907	M18 X 1,5	4.03	1.59	.542	6H
2750406	11908	M18 X 2,5	4.03	1.59	.542	6H
2750402	11909	M20 X 2,5	4.47	2.00	.652	6H
2750400	11910	M22 X 2,5	4.69	2.22	.697	6H
2750397	11911	M24 X 3	4.91	2.22	.760	6H

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

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

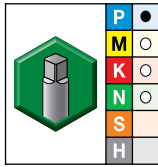
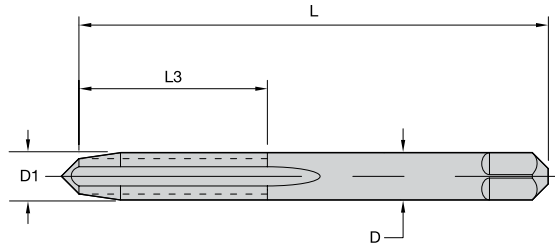


● first choice
○ alternate choice

uncoated		D1 size	L	L3	D	number of flutes	pitch diameter limit
order #	catalog #						
2749824	14018	1/4 - 20	2.50	1.00	.255	4	H2
2749815	14025	1/4 - 20	2.50	1.00	.255	4	H3
2749764	14058	1/4 - 28	2.50	1.00	.255	4	H3
2749729	14095	5/16 - 18	2.72	1.13	.318	4	H3
2749680	14125	5/16 - 24	2.72	1.13	.318	4	H3
2749644	14160	3/8 - 16	2.94	1.25	.381	4	H3
2749605	14193	3/8 - 24	2.94	1.25	.381	4	H3
2749581	14224	7/16 - 14	3.16	1.44	.323	4	H3
2749560	14249	7/16 - 20	3.16	1.44	.323	4	H3
2749538	14284	1/2 - 13	3.38	1.66	.367	4	H3
2749503	14311	1/2 - 20	3.38	1.66	.367	4	H3
2749488	14341	9/16 - 12	3.59	1.66	.429	4	H3
2749472	14359	9/16 - 18	3.59	1.66	.429	4	H3
2749454	14382	5/8 - 11	3.81	1.81	.480	4	H3
2749426	14405	5/8 - 18	3.81	1.81	.480	4	H3
2749388	14451	3/4 - 10	4.25	2.00	.590	4	H3
2749368	14474	3/4 - 16	4.25	2.00	.590	4	H3
2749350	14502	7/8 - 9	4.69	2.22	.697	4	H4
2749335	14519	7/8 - 14	4.69	2.22	.697	4	H4
2749320	14547	1 - 8	5.13	2.50	.800	4	H4
3303777	14560	1 - 12	5.13	2.50	.800	4	H4
2749288	14571	1 - 14	5.13	2.50	.800	4	H4
2749275	14597	1 1/8 - 7	5.44	2.56	.896	4	H4
2749267	14606	1 1/8 - 12	5.44	2.56	.896	4	H4
2749260	14615	1 1/4 - 7	5.75	2.56	1.021	4	H4
2749254	14623	1 1/4 - 12	5.75	2.56	1.021	6	H4
2749249	14635	1 3/8 - 6	6.06	3.00	1.108	4	H4
2749243	14643	1 3/8 - 12	6.06	3.00	1.108	6	H4
2749237	14648	1 1/2 - 6	6.38	3.00	1.233	4	H4
2749231	14656	1 1/2 - 12	6.38	3.00	1.233	6	H4

NOTE: Hand taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.
Tap sets include one of each: taper, plug, and bottoming chamfer.
Refer to tables on pages D127-D128 for the recommended pitch diameter limit for 2B or 3B class of fit.

Series 5305 • Machine Screw Sizes • Taper, Plug, and Bottoming Chamfer • Tap Sets



● first choice
○ alternate choice

uncoated		D1 size	L	L3	D	number of flutes	pitch diameter limit
order #	catalog #						
2748981	15105	0 - 80	1.63	.31	.141	2	H1
2748968	15117	1 - 64	1.69	.38	.141	2	H1
2748961	15123	1 - 72	1.69	.38	.141	2	H1
2748945	15137	2 - 56	1.75	.44	.141	3	H2
2748928	15147	2 - 64	1.75	.44	.141	3	H2
2748918	15159	3 - 48	1.81	.50	.141	3	H2
2748902	15169	3 - 56	1.81	.50	.141	3	H2
2748880	15187	4 - 40	1.88	.56	.141	3	H2
2748863	15199	4 - 48	1.88	.56	.141	3	H2
2865313	15212	5 - 40	1.94	.63	.141	3	H2
2748851	15223	5 - 44	1.94	.63	.141	3	H2
2865286	15228	6 - 32	2.00	.69	.141	3	H1
2865274	15234	6 - 32	2.00	.69	.141	3	H2
2748838	15240	6 - 32	2.00	.69	.141	3	H3
2748818	15260	6 - 40	2.00	.69	.141	3	H2
2748801	15278	8 - 32	2.13	.75	.168	4	H2
2865185	15286	8 - 32	2.13	.75	.168	4	H3
2748756	15304	8 - 36	2.13	.75	.168	4	H2
2748743	15323	10 - 24	2.38	.88	.194	4	H2
2748731	15330	10 - 24	2.38	.88	.194	4	H3
2748685	15355	10 - 32	2.38	.88	.194	4	H2
2748670	15363	10 - 32	2.38	.88	.194	4	H3
2748637	15386	12 - 24	2.38	.94	.220	4	H3
2748623	15393	12 - 28	2.38	.94	.220	4	H3

NOTE: Hand taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.
Tap sets include one of each: taper, plug, and bottoming chamfer.
Refer to tables on pages D127–D128 for the recommended pitch diameter limit for 2B or 3B class of fit.

INDEXABLE MILLING

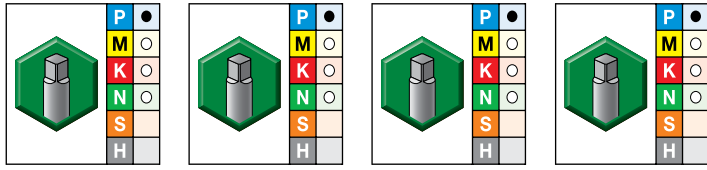
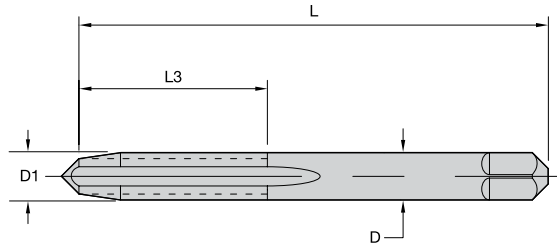
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Series 5305L/5303L • Fractional Sizes • Taper, Plug, and Bottoming Chamfer • LH Threads & LH Tap Sets



● first choice
○ alternate choice

taper chamfer 7-10 pitch		plug chamfer 3-5 pitch		full bottom 1-2 pitch		taper and plug bottoming set		D1 TPI	L	L3	D	number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #	order #	catalog #	order #	catalog #						
2749814	14026	2749813	14027	2749811	14028	2749810	14029	1/4 - 20	2.50	1.00	.255	4	H3
-	-	3171054	14060	-	-	-	-	1/4 - 28	2.50	1.00	.255	4	H3
2749727	14096	2749724	14097	2749721	14098	2749719	14099	5/16 - 18	2.72	1.13	.318	4	H3
2749679	14126	2749677	14127	2749675	14128	2749674	14129	5/16 - 24	2.72	1.13	.318	4	H3
2749642	14161	2749639	14162	2749637	14163	2749636	14164	3/8 - 16	2.94	1.25	.381	4	H3
2749603	14194	2749601	14195	2749599	14196	2749597	14197	3/8 - 24	2.94	1.25	.381	4	H3
2749580	14225	-	-	-	-	-	-	7/16 - 14	3.16	1.44	.323	4	H3
3171055	14250	2749557	14251	2749554	14252	-	-	7/16 - 20	3.16	1.44	.323	4	H3
2866246	14285	2749535	14286	2749533	14287	2749531	14288	1/2 - 13	3.38	1.66	.367	4	H3
2749502	14312	2749499	14313	2749497	14314	2749495	14315	1/2 - 20	3.38	1.66	.367	4	H3
2749470	14360	-	-	-	-	-	-	9/16 - 18	3.59	1.66	.429	4	H3
2749451	14383	2749449	14384	2749447	14385	-	-	5/8 - 11	3.81	1.81	.480	4	H3
2749424	14406	2749421	14407	2749420	14408	-	-	5/8 - 18	3.81	1.81	.480	4	H3
2749386	14452	2749384	14453	2749382	14454	-	-	3/4 - 10	4.25	2.00	.590	4	H3
2749367	14475	2749365	14476	2749363	14477	-	-	3/4 - 16	4.25	2.00	.590	4	H3

NOTE: Refer to table on page D127-D128 for the recommended pitch diameter limit for 2B or 3B class of fit.

INDEXABLE MILLING

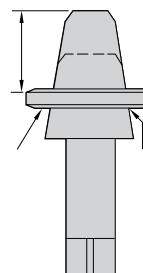
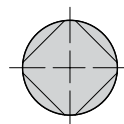
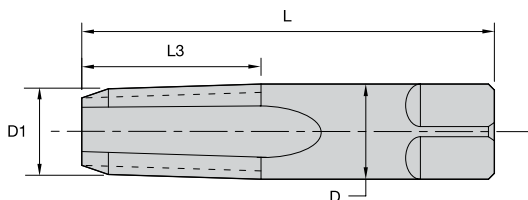
SOLID END MILLING

HOLEMAKING

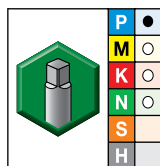
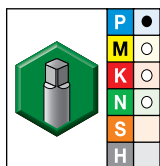
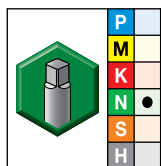
TAPPING

TURNING

Series 2320/5320 • Standard Chamfer • Standard Projection • NPT/ANPT, NPTF



**Standard Projection
Shortest Projection
L1 Ring Gage
Basic Size

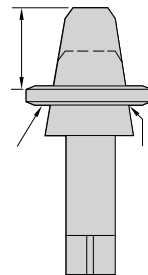
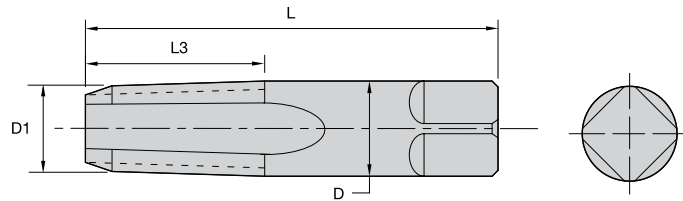


- first choice
- alternate choice

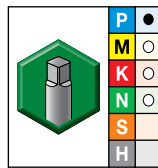
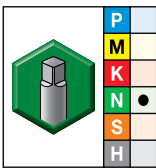
uncoated		oxide		TiN		D1 size	L	L3	D	number of flutes	thread series
order #	catalog #	order #	catalog #	order #	catalog #						
3139338	16201	2746417	19690	2746411	19698	1/16 - 27	2.13	.69	.313	4	NPT/ANPT
2748216	16203	-	-	-	-	1/16 - 27	2.13	.69	.313	4	NPTF
2873746	16204	-	-	2603958	19707	1/8 - 27	2.13	.75	.313	4	NPT/ANPT
2748210	16205	2746413	19695	2746397	19712	1/8 - 27	2.13	.75	.438	4	NPT/ANPT
2748206	16209	-	-	2746407	19701	1/8 - 27	2.13	.75	.313	4	NPTF
2748203	16210	-	-	2746405	19702	1/8 - 27	2.13	.75	.438	4	NPTF
2748199	16212	2746399	19710	2622810	19728	1/4 - 18	2.44	1.06	.563	4	NPT/ANPT
2748193	16215	-	-	2746393	19721	1/4 - 18	2.44	1.06	.563	4	NPTF
2748189	16217	2746386	19730	2746380	19738	3/8 - 18	2.56	1.06	.700	4	NPT/ANPT
2748185	16220	-	-	-	-	3/8 - 18	2.56	1.06	.700	4	NPTF
-	-	-	-	2746382	19736	3/8 - 18	2.56	1.25	.700	4	NPTF
2748177	16225	-	-	2746373	19746	1/2 - 14	3.13	1.66	.687	4	NPTF
2748181	16222	2746378	19740	2603959	19748	1/2 - 14	3.13	1.66	.687	4	NPT/ANPT
2748169	16230	-	-	2746361	19766	3/4 - 14	3.25	1.38	.906	5	NPTF
2748173	16227	2746366	19760	2746359	19768	3/4 - 14	3.25	1.38	.906	5	NPT/ANPT
2748159	16235	-	-	2746357	19776	1 - 11 1/2	3.75	1.75	1.125	5	NPTF
2748165	16232	-	-	2746355	19778	1 - 11 1/2	3.75	1.75	1.125	5	NPT/ANPT
2748153	16239	-	-	-	-	1 1/4 - 11 1/2	4.00	1.75	1.313	5	NPTF
2748155	16237	-	-	-	-	1 1/4 - 11 1/2	4.00	1.75	1.313	5	NPT/ANPT
2748147	16242	-	-	-	-	1 1/2 - 11 1/2	4.25	3.00	1.500	7	NPTF
2748151	16240	-	-	-	-	1 1/2 - 11 1/2	4.25	3.00	1.500	7	NPT/ANPT
2748143	16245	-	-	-	-	2 - 11 1/2	4.25	1.75	1.875	7	NPTF
2748145	16243	-	-	-	-	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 NPTF Thin Ring Gage.
NOTE: ANPT Taps marked NPT may be used for NPT and ANPT applications.
For gage measurement projection, see technical page D133.

Series 5319 • Standard Pipe Chamfer • Standard Projection • NPT/ANPT, NPTF Interrupted



**Standard Projection
Shortest Projection
L1 Ring Gage
Basic Size



- first choice
- alternate choice

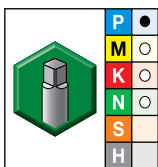
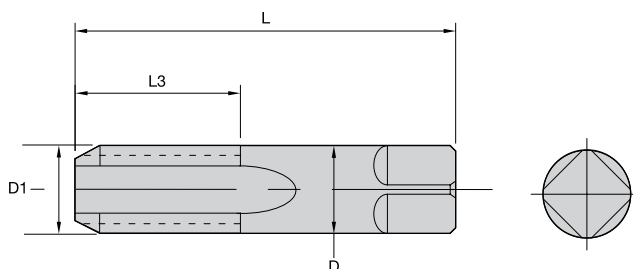
uncoated		oxide		D1 size	L	L3	D	number of flutes	thread series
order #	catalog #	order #	catalog #						
2748270	16101	-	-	1/8 - 27	2.13	.75	.313	5	NPT/ANPT
1854963	16102	2746429	19650	1/8 - 27	2.13	.75	.438	5	NPT/ANPT
2748264	16103	-	-	1/8 - 27	2.13	.75	.313	5	NPTF
2748262	16104	-	-	1/8 - 27	2.13	.75	.438	5	NPTF
2748259	16105	2746425	19655	1/4 - 18	2.44	1.06	.563	5	NPT/ANPT
2748257	16106	-	-	1/4 - 18	2.44	1.06	.563	5	NPTF
2748255	16107	2746423	19656	3/8 - 18	2.56	1.06	.700	5	NPT/ANPT
3175997	16108	-	-	3/8 - 18	2.56	1.06	.700	5	NPTF
2748250	16109	2746421	19665	1/2 - 14	3.13	1.66	.688	5	NPT/ANPT
2748247	16110	-	-	1/2 - 14	3.13	1.66	.688	5	NPTF
2748244	16111	2746419	19675	3/4 - 14	3.25	1.38	.906	5	NPT/ANPT
2748238	16112	-	-	3/4 - 14	3.25	1.38	.906	5	NPTF
2748237	16113	-	-	1 - 11 1/2	3.75	1.75	1.125	5	NPT/ANPT
2748234	16114	-	-	1 - 11 1/2	3.75	1.75	1.125	5	NPTF
2864744	16115	-	-	1 1/4 - 11 1/2	4.00	1.75	1.313	5	NPT/ANPT
2748230	16117	-	-	1 1/2 - 11 1/2	4.25	3.00	1.500	7	NPT/ANPT
2748225	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 NPTF Thin Ring Gage.

NOTE: NPT taps may be used for ANPT applications.

For gage measurement projection, see technical page D133.

Series 5323 • Modified Bottoming Chamfer • NPS, NPSF



● first choice
○ alternate choice

uncoated

order #	catalog #	D1 size	L	L3	D	number of flutes	thread series
2748090	16351	1/8 - 27	2.13	.75	.313	4	NPS
2748088	16352	1/8 - 27	2.13	.75	.438	4	NPS
2748086	16353	1/8 - 27	2.13	.75	.313	4	NPSF
2748084	16354	1/8 - 27	2.13	.75	.438	4	NPSF
2748082	16355	1/4 - 18	2.44	1.06	.563	4	NPS
2748080	16356	1/4 - 18	2.44	1.06	.563	4	NPSF
2748078	16357	3/8 - 18	2.56	1.06	.700	4	NPS
2748076	16358	3/8 - 18	2.56	1.06	.700	4	NPSF
2748074	16359	1/2 - 14	3.13	1.66	.688	4	NPS
2748072	16360	1/2 - 14	3.13	1.66	.688	4	NPSF
2748070	16361	3/4 - 14	3.25	1.38	.906	5	NPS
2748068	16362	3/4 - 14	3.25	1.38	.906	5	NPSF
2748066	16363	1 - 11 1/2	3.75	1.75	1.125	5	NPS

INDEXABLE MILLING

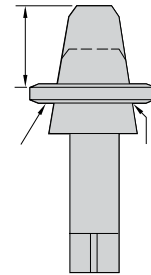
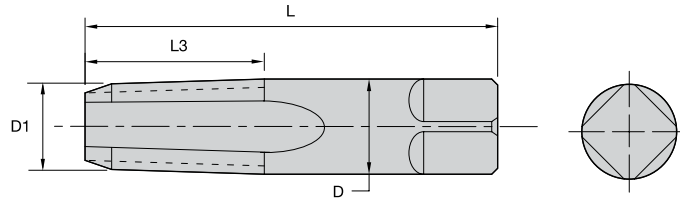
SOLID END MILLING

HOLEMAKING

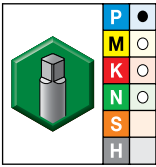
TAPPING

TURNING

Series 5820 • Standard Pipe Chamfer • Standard Projection • NPT/ANPT, NPTF High Hook



**Standard Projection
Shortest Projection
L1 Ring Gage
Basic Size



- first choice
- alternate choice

uncoated		D1 size	L	L3	D	number of flutes	thread series
order #	catalog #						
2748196	16213	1/4 - 18	2.44	1.06	.563	4	NPT/ANPT
2748187	16218	3/8 - 18	2.56	1.06	.700	4	NPT/ANPT
2748179	16223	1/2 - 14	3.13	1.66	.688	4	NPT/ANPT
2748171	16228	3/4 - 14	3.25	1.38	.906	5	NPT/ANPT
2748163	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 NPTF Thin Ring Gage.
NOTE: NPT taps may be used for ANPT applications.
For gage measurement projection, see technical page D133.

INDEXABLE MILLING

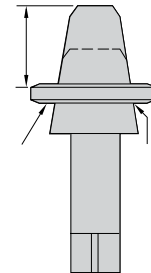
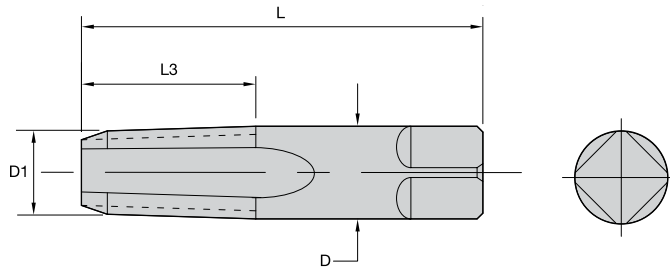
SOLID END MILLING

HOLE/MAKING

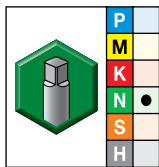
TAPPING

TURNING

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



**Standard Projection
Shortest Projection
L1 Ring Gage
Basic Size



- first choice
- alternate choice

uncoated

order #	catalog #	D1 size	L	L3	D	thread series
2750443	11800	1/8 - 27	2.13	.75	.313	NPT
2750441	11801	1/8 - 27	2.13	.75	.438	NPT
2750437	11802	1/4 - 18	2.44	1.06	.563	NPT
2750435	11803	3/8 - 18	2.56	1.06	.700	NPT
2750431	11804	1/2 - 14	3.13	1.38	.688	NPT
2750430	11805	3/4 - 14	3.25	1.38	.906	NPT
2750428	11806	1 - 11 1/2	3.75	1.75	1.125	NPT
2750426	11807	1 1/4 - 11 1/2	4.00	1.75	1.313	NPT
2750425	11808	1 1/2 - 11 1/2	4.25	1.75	1.500	NPT
2750423	11809	2 - 11 1/2	4.50	1.75	1.875	NPT

INDEXABLE MILLING

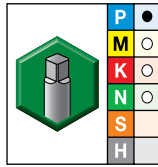
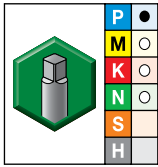
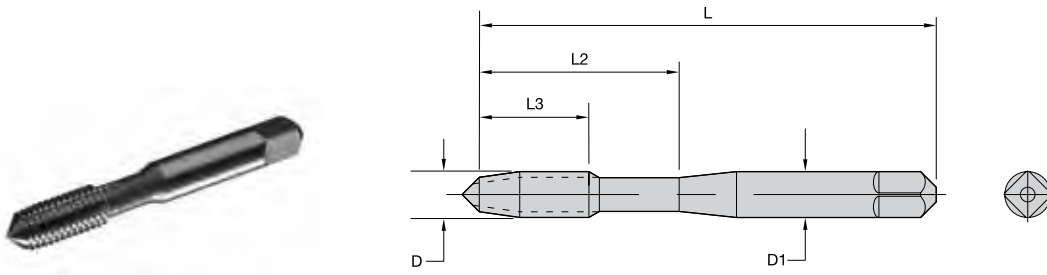
SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING

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



● first choice
○ alternate choice

uncoated		TiN		D1 size	L	L3	L2	D	number of lube grooves	pitch diameter limit
order #	catalog #	order #	catalog #							
2864322	17000	2746344	19821	4 - 40	1.88	.31	.56	.141	—	H3
2864313	17004	—	—	5 - 40	1.94	.31	.63	.141	4	H3
2864310	17008	2746342	19822	6 - 32	2.00	.38	.69	.141	4	H3
2864307	17009	—	—	6 - 32	2.00	.38	.69	.141	4	H5
2864298	17013	2746338	19824	8 - 32	2.13	.38	.75	.168	4	H3
1295731	17018	2746333	19827	10 - 24	2.38	.50	.88	.194	4	H4
1295732	17020	2746331	19828	10 - 32	2.38	.50	.88	.194	4	H4
2747916	17027	2746327	19841	1/4 - 20	2.50	.63	1.00	.255	4	H4
2747910	17030	2746325	19842	1/4 - 28	2.50	.63	1.00	.255	4	H4
—	—	2746324	19846	5/16 - 18	2.72	.69	1.13	.318	4	H5
2747904	17033	—	—	5/16 - 18	2.72	.69	1.13	.318	4	H5
2747898	17036	—	—	5/16 - 24	2.72	.69	1.13	.318	4	H5
2747892	17039	2746322	19847	3/8 - 16	2.94	.75	1.25	.381	4	H5
2747886	17042	—	—	3/8 - 24	2.94	.75	—	.323	4	H8
2747882	17049	—	—	1/2 - 13	3.38	.94	—	.367	4	H5
2747878	17051	—	—	1/2 - 20	3.38	.94	—	.367	4	H5
2747876	17053	—	—	5/8 - 11	3.81	1.09	—	.480	6	H7
2747872	17057	—	—	3/4 - 10	4.25	1.22	—	.590	6	H7

NOTE: Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps.
Refer to tables on pages D127–D128 for the recommended pitch diameter limit for 2B or 3B class of fit.

INDEXABLE MILLING

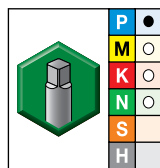
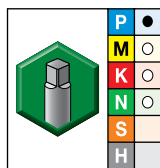
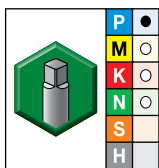
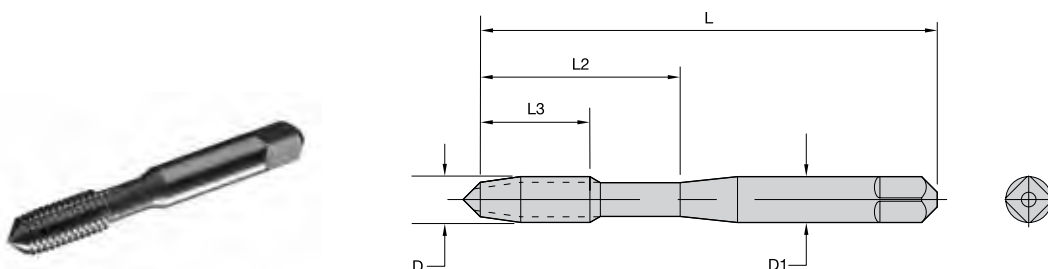
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

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



● first choice
○ alternate choice

TiCN		uncoated		TiN		D1 size	L	L3	L2	D	number of lube grooves	pitch diameter limit
order #	catalog #	order #	catalog #	order #	catalog #							
-	-	2747635	17200	-	-	0 - 80	1.63	.31	-	.141	0	H2
-	-	2747623	17206	-	-	2 - 56	1.75	.44	-	.141	0	H2
-	-	2747621	17207	-	-	2 - 56	1.75	.44	-	.141	0	H3
-	-	2747609	17214	2746320	19849	4 - 40	1.88	.31	.56	.141	0	H3
-	-	2747607	17215	-	-	4 - 40	1.88	.31	.56	.141	0	H5
-	-	2747601	17218	-	-	5 - 40	1.94	.31	.63	.141	4	H3
2746535	19522	2747598	17222	2746315	19852	6 - 32	2.00	.38	.69	.141	4	H3
-	-	2747595	17223	-	-	6 - 32	2.00	.38	.69	.141	4	H5
2746531	19527	2747588	17227	2746311	19857	8 - 32	2.13	.38	.75	.168	4	H3
-	-	2747584	17228	-	-	8 - 32	2.13	.38	.75	.168	4	H5
-	-	2747576	17232	2746307	19862	10 - 24	2.38	.50	.88	.194	4	H4
2746526	19535	2747569	17235	2746305	19866	10 - 32	2.38	.50	.88	.194	4	H4
-	-	2747568	17236	-	-	10 - 32	2.38	.50	.88	.194	4	H6
-	-	2747566	17238	-	-	12 - 24	2.38	.50	.94	.220	4	H4
2746524	19542	2747561	17242	2746304	19869	1/4 - 20	2.50	.63	1.00	.255	4	H4
-	-	2747559	17243	-	-	1/4 - 20	2.50	.63	1.00	.255	4	H6
-	-	2747554	17245	2746302	19871	1/4 - 28	2.50	.63	1.00	.255	4	H4
-	-	-	-	2746300	19872	5/16 - 18	2.72	.69	1.13	.318	4	H5
-	-	2747547	17249	-	-	5/16 - 18	2.72	.69	1.13	.318	4	H7
-	-	2747549	17248	-	-	5/16 - 18	2.72	.69	1.13	.318	4	H5
2746516	19554	2747537	17254	2746298	19873	3/8 - 16	2.94	.75	1.25	.381	4	H5
-	-	2747534	17257	-	-	3/8 - 24	2.94	.75	1.25	.381	4	H5
-	-	2747528	17265	-	-	1/2 - 13	3.38	.94	-	.367	4	H8
-	-	2747530	17264	-	-	1/2 - 13	3.38	.94	-	.367	4	H5
-	-	2747524	17266	-	-	1/2 - 20	3.38	.94	-	.367	4	H5
-	-	2747499	17280	-	-	5/8 - 11	3.81	1.09	-	.480	6	H7

NOTE: Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps.
Refer to tables on pages D127-D128 for the recommended pitch diameter limit for 2B or 3B class of fit.

INDEXABLE MILLING

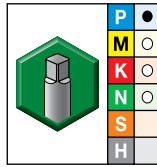
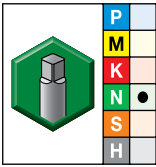
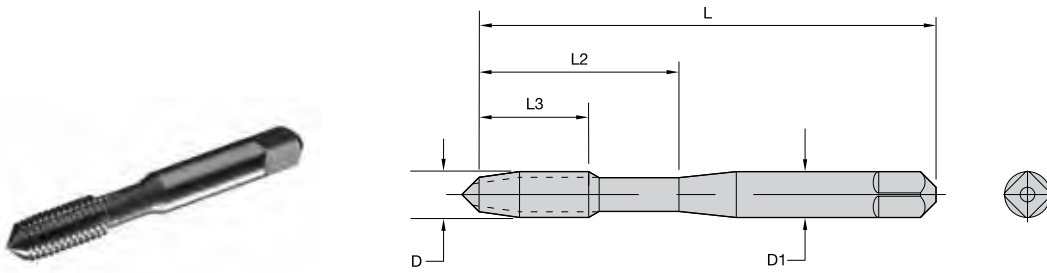
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Series 2510/5510 • Metric ANSI • Plug Entry Taper • Form Taps

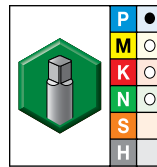
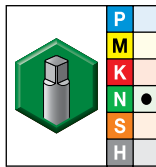
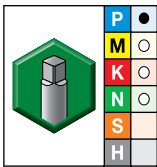
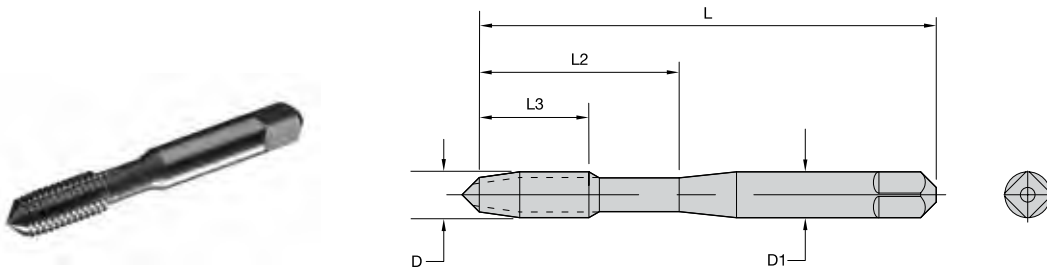


● first choice
○ alternate choice

uncoated		TiN		D1 size	L	L3	L2	D	number of lube grooves	pitch diameter limit
order #	catalog #	order #	catalog #							
2747866	17082	2746236	19941	M3 X 0,5	1.94	.31	.63	.141	4	D5
2747864	17084	2746234	19942	M4 X 0,7	2.13	.38	.75	.168	4	D6
2747862	17086	2746232	19943	M5 X 0,8	2.38	.50	.88	.194	4	D7
2747860	17087	2746231	19944	M6 X 1	2.50	.63	1.00	.255	4	D8
2747858	17090	2746229	19945	M8 X 1,25	2.72	.69	1.13	.318	4	D9
-	-	2746227	19946	M10 X 1,5	2.94	.75	1.25	.381	4	D10
-	-	2746225	19947	M12 X 1,75	3.38	.94	-	.367	4	D11

NOTE: 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 tables on page D128 for the recommended pitch diameter limit for 6H class of fit.

Series 2512/5512 • Metric ANSI • Bottom Entry Taper • Form Taps



● first choice
○ alternate choice

TiCN		uncoated		TiN		D1 size	L	L3	L2	D	number of lube grooves	pitch diameter limit
order #	catalog #	order #	catalog #	order #	catalog #							
2746510	19567	2747522	17267	2746223	19948	M3 X 0,5	1.94	.31	.63	.141	4	D5
-	-	2747518	17269	2746221	19949	M4 X 0,7	2.13	.38	.75	.168	4	D6
-	-	2747515	17271	2746219	19950	M5 X 0,8	2.38	.50	.88	.194	4	D7
2746504	19572	2747513	17272	2746217	19951	M6 X 1	2.50	.63	1.00	.255	4	D8
2746502	19574	2747509	17275	2746215	19952	M8 X 1,25	2.72	.69	1.13	.318	4	D9
-	-	2747505	17276	2746213	19953	M10 X 1,5	2.94	.75	1.25	.381	4	D10
-	-	-	-	2746211	19954	M12 X 1,75	3.38	.94	-	.367	4	D11

NOTE: 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 tables on page D128 for the recommended pitch diameter limit for 6H class of fit.

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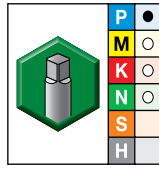
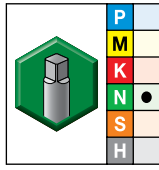
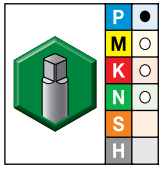
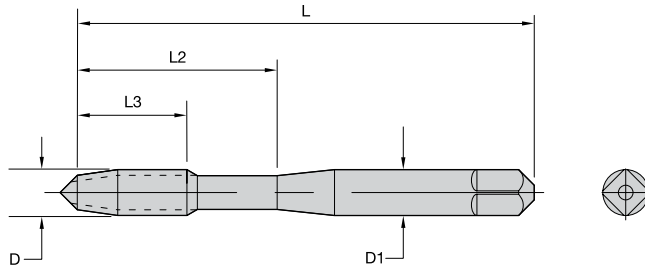
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Series 5900 • Machine Screw and Fractional • Plug Entry Taper • Form Taps

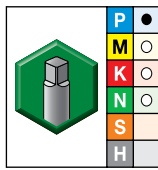
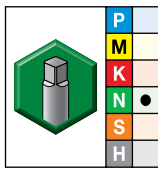
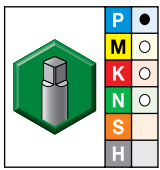
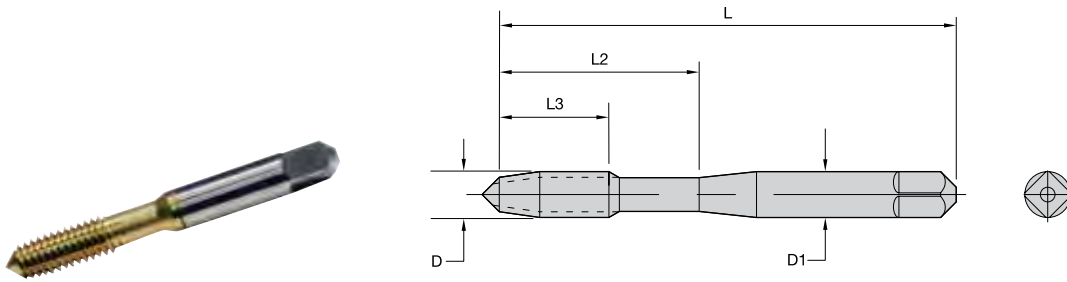


● first choice
○ alternate choice

TiCN		uncoated		TiN		D1 size	L	L3	L2	D	number of lube grooves	pitch diameter limit
order #	catalog #	order #	catalog #	order #	catalog #							
-	-	2747479	18202	-	-	6 - 32	2.00	.38	.69	.141	4	H5
-	-	2747477	18203	2747338	18303	6 - 32	2.00	.38	.69	.141	4	H3
-	-	2747461	18210	-	-	8 - 32	2.13	.38	.75	.168	4	H5
-	-	2747459	18211	2747322	18311	8 - 32	2.13	.38	.75	.168	4	H3
-	-	2747447	18217	2747311	18317	10 - 24	2.38	.50	.88	.194	4	H4
-	-	2747441	18220	-	-	10 - 32	2.38	.50	.88	.194	4	H6
2747180	18721	2747439	18221	3171069	18321	10 - 32	2.38	.50	.88	.194	4	H4
-	-	2747437	18224	-	-	12 - 24	2.38	.50	.94	.220	4	H4
-	-	2747427	18228	2747296	18328	1/4 - 20	2.50	.63	1.00	.255	4	H6
-	-	2747425	18229	2747293	18329	1/4 - 20	2.50	.63	1.00	.255	4	H4
-	-	2747419	18232	2747288	18332	1/4 - 28	2.50	.63	1.00	.255	4	H6
2747165	18733	2747417	18233	-	-	1/4 - 28	2.50	.63	1.00	.255	4	H4
2747156	18737	2747409	18237	2747277	18337	5/16 - 18	2.72	.69	1.13	.318	4	H5
-	-	2747401	18241	-	-	5/16 - 24	2.72	.69	1.13	.318	4	H5
2747141	18745	2747391	18245	2747265	18345	3/8 - 16	2.94	.75	1.25	.381	4	H5
-	-	2747378	18252	-	-	1/2 - 13	3.38	.94	-	.367	4	H5

NOTE: Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps. Refer to tables on pages D127-D128 for the recommended pitch diameter limit for 2B or 3B class of fit.

Series 5902 • Machine Screw and Fractional • Bottom Entry Taper • Form Taps



● first choice
○ alternate choice

TiCN		uncoated		TiN		D1 size	L	L3	L2	D	number of lube grooves	pitch diameter limit
order #	catalog #	order #	catalog #	order #	catalog #							
—	—	2747485	18200	2747344	18300	6 - 32	2.00	.38	.69	.141	4	H3
2747220	18701	2747483	18201	—	—	6 - 32	2.00	.38	.69	.141	4	H5
—	—	2747467	18208	2747328	18308	8 - 32	2.13	.38	.75	.168	4	H5
2747204	18709	2747463	18209	2747326	18309	8 - 32	2.13	.38	.75	.168	4	H3
2747194	18714	2747453	18214	—	—	10 - 24	2.38	.50	.88	.194	4	H6
2747192	18715	2747451	18215	3171068	18315	10 - 24	2.38	.50	.88	.194	4	H4
2747186	18718	2747445	18218	2747310	18318	10 - 32	2.38	.50	.88	.194	4	H6
2747184	18719	2747443	18219	2747308	18319	10 - 32	2.38	.50	.88	.194	4	H4
—	—	3324580	18223	—	—	12 - 24	2.38	.50	.94	.220	4	H4
2747179	18726	2747433	18226	2747300	18326	1/4 - 20	2.50	.63	1.00	.255	4	H4
2747177	18727	2747431	18227	2747298	18327	1/4 - 20	2.50	.63	1.00	.255	4	H6
2747169	18731	2747421	18231	2747289	18331	1/4 - 28	2.50	.63	1.00	.255	4	H4
2747162	18734	2747415	18234	—	—	5/16 - 18	2.72	.69	1.13	.318	4	H5
—	—	2747413	18235	—	—	5/16 - 18	2.72	.69	1.13	.318	4	H7
2747145	18743	2747397	18243	—	—	3/8 - 16	2.94	.75	1.25	.381	4	H7
—	—	2747383	18249	2747257	18349	1/2 - 13	3.38	.94	—	.367	4	H7
2747131	18750	2747381	18250	—	—	1/2 - 13	3.38	.94	—	.367	4	H5
—	—	—	—	2747271	18342	3/8 - 16	2.94	.75	1.25	.381	4	H5

NOTE: Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps. Refer to tables on pages D127-D128 for the recommended pitch diameter limit for 2B or 3B class of fit.

INDEXABLE MILLING

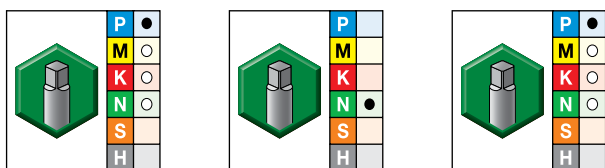
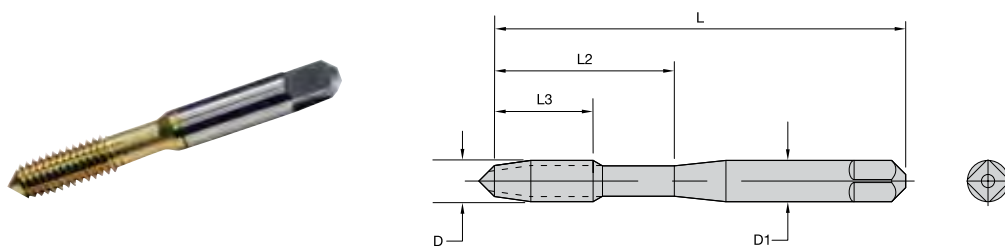
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Series 5910 • Metric ANSI • Plug Entry Taper • Form Taps



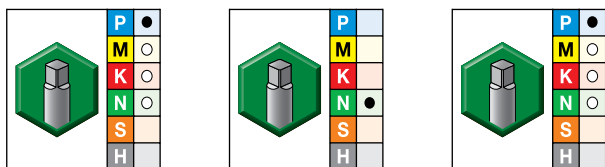
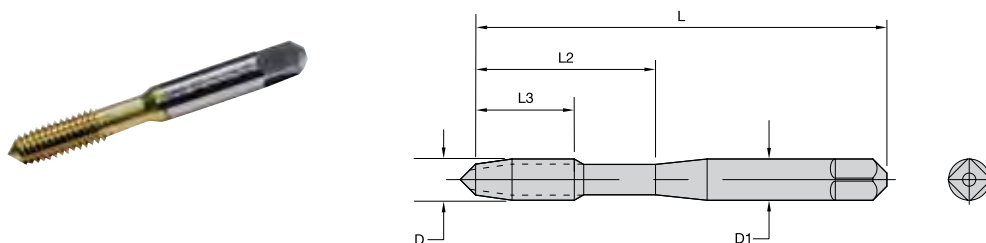
● first choice
○ alternate choice

TiCN		uncoated		TiN		D1 size	L	L3	L2	D	number of lube grooves	pitch diameter limit
order #	catalog #	order #	catalog #	order #	catalog #							
2747101	18760	2747360	18260	2747236	18360	M6 X 1	64	16	25	6,5	4	D8
2747096	18762	2747355	18262	2747232	18362	M8 X 1,25	69	17	29	8,1	4	D9
2747092	18764	2747351	18264	2747228	18364	M10 X 1,5	75	19	32	9,7	4	D10

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

NOTE: 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 D128 for the recommended pitch diameter limit for 6H class of fit.

Series 5912 • Metric ANSI • Bottom Entry Taper • Form Taps



● first choice
○ alternate choice

TiCN		uncoated		TiN		D1 size	L	L3	L2	D	number of lube grooves	pitch diameter limit
order #	catalog #	order #	catalog #	order #	catalog #							
2747120	18755	—	—	2747246	18355	M4 X 0,7	54	10	19	4,3	4	D6
2747117	18757	2747367	18257	2747241	18357	M5 X 0,8	60	13	22	4,9	4	D7
2747113	18759	2747364	18259	2747238	18359	M6 X 1	64	16	25	6,5	4	D8
—	—	2747357	18261	—	—	M8 X 1,25	69	17	28	8,1	4	D9
2747099	18761	—	—	—	—	M8 X 1,25	69	17	29	8,1	4	D9
2747090	18765	2747347	18265	—	—	M12 X 1,75	86	24	—	9,3	4	D11

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

NOTE: 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.
See pages D128 for the recommended pitch diameter limit for 6H class of fit.

Tapping Guide

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

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	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	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	Combines the benefits of nitride and oxide surface treatments. For steels, stainless steels, and nickel alloys.	See precautions for nitride and oxide surface treatments.

Tapping Speeds

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/min = Surface Meters per Minute

$\pi = 3.1416$

mm/min = millimeters per minute

P = Pitch (1/number of threads per inch)

Inch Sizes

$$\begin{array}{lcl} \text{SFM} & = & \frac{\text{RPM} \times \text{tool diameter}}{3.82} \quad \text{or} \quad 0.26 \times \text{RPM} \times \text{tool diameter} \\ \text{RPM} & = & \frac{3.82 \times \text{SFM}}{\text{tool diameter}} \\ \text{IPM} & = & \frac{\text{RPM}}{\text{TPI}^*} \quad \text{or} \quad *P \times \text{RPM} \end{array}$$

Metric Sizes

$$\begin{array}{lcl} \text{S m/min} & = & \frac{\pi \times \text{tool diameter} \times \text{RPM}}{1000} \\ \text{RPM} & = & \frac{\text{mm/min} \times 1000}{\pi \times \text{tool diameter}} \\ \text{mm/min} & = & \text{mm } \pi \times \text{RPM} \end{array}$$

General-Purpose Table of Speeds

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	1659	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	vc = meters per minute (m/min)																	
	1,5	3	4,5	6	7,5	10	12	15	18	21	24	27	30	33	36	39	42	45
	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	647	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	2491	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

VariTap has optimized geometries capable of working in a wide variety of ductile materials – including carbon and alloy steels, stainless steels, ductile iron, and cast aluminum.

Advanced spiral-flute design
Smooth ejection of chip to reduce or eliminate bird-nesting

Multiple tap dimension options
ANSI, DIN, JIS, & DIN/ANSI

High-vanadium HSS-E
Improved wear characteristics, longer tool life

The VariTap platform is designed with a positive rake face and a flute optimized for tapping multiple materials

GRADES

WP42EG	TiCN	WU41EG	TiN	WP49EG	Oxide	WU40EG	Bright
	P ●		P ●		P ○		P ○
	M ●		M ○		M ○		M ○
	K ●		K ○		K ○		K ○
	N ●		N ○		N ○		N ○
	S		S		S		S
	H		H		H		H

VERSATILE MULTI-MATERIAL TAPS



PRODUCT

VariTap™ taps deliver performance for value in multi-material tapping applications.

INDUSTRY



MATERIALS



APPLICATIONS



BLIND HOLE



THROUGH HOLE



HSS-E



FORM E



FORM C



FORM B



ANSI UNC



ANSI UNF



ANSI M



ANSI MF



FLOOD COOLANT: TAPPING



CLASS OF FIT: 2B



CLASS OF FIT: 3B



CLASS OF FIT: 6H

SPIRAL POINT WITH ANSI DIMENSIONS

SIZE RANGE	CHAMFER STYLE	GRADE
2-56 to 1-12"	Plug (Form B)	WP49EG } All H Limits WP42EG } WU41EG } 3B Only
1-1/8-8" to 2-4-1/2"	Plug (Form B)	WP49EG
M3 x 0.50 to M12 x 1.75	Plug (Form B)	WP49EG } 6H D Limits WP42EG } WU41EG } WP49EG } D11 WP42EG }
M14 x 1.5 to M20 x 2.5	Plug (Form B)	WP49EG WP42EG
M22 x 1.5 to M30 x 3.5	Plug (Form B)	WP49EG

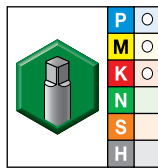
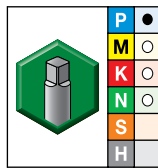
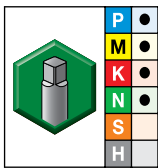
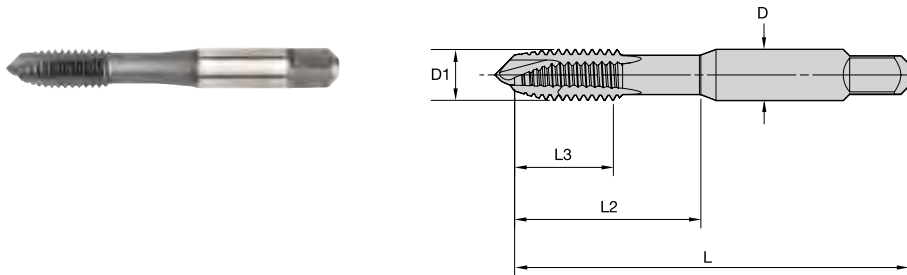
SPIRAL FLUTE WITH ANSI DIMENSIONS

SIZE RANGE	CHAMFER STYLE	GRADE
2-56 to 1-12"	Semi-Bottom (Form C)	WP49EG } All H Limits WP42EG }
1-1/8-8" to 2-4-1/2"	Semi-Bottom (Form C)	WP49EG
4-40 to 3/4-16	Bottom (Form E)	WP49EG
M3 x 0.50 to M12 x 1.75	Semi-Bottom (Form C)	WP49EG } 6H D Limits WP42EG } WU41EG } WP49EG } D11 WP42EG }
M14 x 1.5 to M20 x 2.5	Semi-Bottom (Form C)	WP49EG WP42EG
M22 x 1.5 to M30 x 3.5	Semi-Bottom (Form C)	WP49EG
M3 x 0.50 to M18 x 1.5	Bottom (Form E)	WP49EG

Shank Style

ANSI, DIN, JIS, & DIN/ANSI precision ground to h9 tolerance

VT-SPO • Form B Plug Chamfer • Machine Screw and Fractional • ANSI

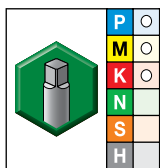
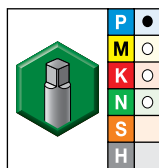
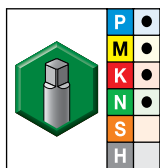
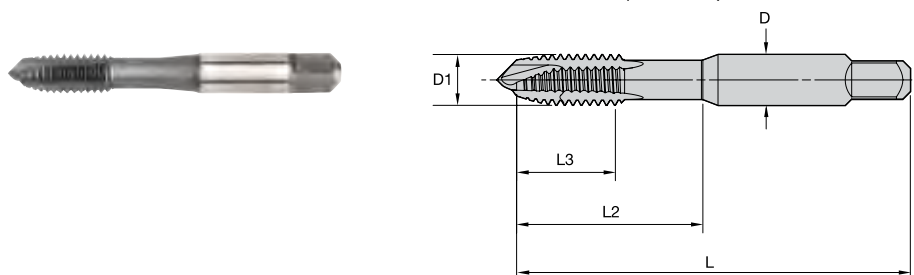


● first choice
○ alternate choice

grade WP42EG TiCN		grade WU41EG TiN		grade WP49EG Oxide		D1 TPI	L	L3	L2	D	number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #	order #	catalog #							
5365807	VTSP05045	5365808	VTSP05045	5365806	VTSP05045	1/4 - 20	2.50	.63	1.00	.255	3	H3
5365821	VTSP05046	-	-	5365820	VTSP05046	1/4 - 20	2.50	.63	1.00	.255	3	H5
5365825	VTSP05047	-	-	5365823	VTSP05047	1/4 - 20	2.50	.63	1.00	.255	3	H7
5365827	VTSP05048	-	-	5365826	VTSP05048	1/4 - 20	2.50	.63	1.00	.255	3	H11
5365840	VTSP05049	5365841	VTSP05049	5365829	VTSP05049	1/4 - 28	2.50	.63	1.00	.255	3	H3
5365844	VTSP05050	-	-	-	-	1/4 - 28	2.50	.63	1.00	.255	3	H4
5365849	VTSP05051	-	-	5365848	VTSP05051	1/4 - 28	2.50	.63	1.01	.255	3	H5
5365922	VTSP05052	-	-	-	-	1/4 - 28	2.50	.63	1.01	.255	3	H6
5365925	VTSP05053	-	-	5365924	VTSP05053	1/4 - 28	2.50	.63	1.01	.255	3	H7
-	-	-	-	5365928	VTSP05054	1/4 - 28	2.50	.63	1.01	.255	3	H11
5365932	VTSP05055	5365933	VTSP05055	5365931	VTSP05055	5/16 - 18	2.72	.69	1.14	.318	3	H3
5365936	VTSP05056	-	-	5365935	VTSP05056	5/16 - 18	2.72	.69	1.14	.318	3	H5
5365939	VTSP05057	-	-	5365938	VTSP05057	5/16 - 18	2.72	.69	1.14	.318	3	H7
5365942	VTSP05058	-	-	5365941	VTSP05058	5/16 - 18	2.72	.69	1.14	.318	3	H11
5365946	VTSP05059	5365947	VTSP05059	5365945	VTSP05059	5/16 - 24	2.72	.69	1.14	.318	3	H3
5365960	VTSP05060	-	-	5365949	VTSP05060	5/16 - 24	2.72	.69	1.14	.318	3	H4
5365963	VTSP05061	-	-	5365962	VTSP05061	5/16 - 24	2.72	.69	1.14	.318	3	H5
-	-	-	-	5365965	VTSP05062	5/16 - 24	2.72	.69	1.14	.318	3	H6
5365972	VTSP05064	-	-	5365971	VTSP05064	5/16 - 24	2.72	.69	1.14	.318	3	H11
5365975	VTSP05065	5365976	VTSP05065	5365974	VTSP05065	3/8 - 16	2.94	.75	1.27	.381	3	H3
5366898	VTSP05066	-	-	5366897	VTSP05066	3/8 - 16	2.94	.75	1.27	.381	3	H5
5366941	VTSP05067	-	-	5366940	VTSP05067	3/8 - 16	2.94	.75	1.27	.381	3	H7
5366944	VTSP05068	-	-	5366943	VTSP05068	3/8 - 16	2.94	.75	1.27	.381	3	H11
5366947	VTSP05069	5366948	VTSP05069	5366946	VTSP05069	3/8 - 24	2.94	.75	1.27	.381	3	H3
-	-	-	-	5366950	VTSP05070	3/8 - 24	2.94	.75	1.27	.381	3	H4
5366954	VTSP05071	-	-	5366953	VTSP05071	3/8 - 24	2.94	.75	1.27	.381	3	H5
-	-	-	-	5366956	VTSP05072	3/8 - 24	2.94	.75	1.27	.381	3	H6
5366960	VTSP05073	-	-	5366959	VTSP05073	3/8 - 24	2.94	.75	1.27	.381	3	H7
5366966	VTSP05075	5366967	VTSP05075	5366965	VTSP05075	7/16 - 14	3.16	.88	1.49	.323	3	H3
5366970	VTSP05076	-	-	5366969	VTSP05076	7/16 - 14	3.16	.88	1.49	.323	3	H5
5366976	VTSP05078	-	-	-	-	7/16 - 14	3.16	.88	1.49	.323	3	H11
5366979	VTSP05079	5366980	VTSP05079	5366978	VTSP05079	7/16 - 20	3.16	.88	1.49	.323	3	H3
5366983	VTSP05080	-	-	5366982	VTSP05080	7/16 - 20	3.16	.88	1.49	.323	3	H5
-	-	-	-	5366036	VTSP05081	7/16 - 20	3.16	.88	1.49	.323	3	H6
5366075	VTSP05084	5366076	VTSP05084	5366074	VTSP05084	1/2 - 13	3.38	.94	1.74	.367	3	H3
5366079	VTSP05085	-	-	5366078	VTSP05085	1/2 - 13	3.38	.94	1.74	.367	3	H5
5366083	VTSP05086	-	-	5366081	VTSP05086	1/2 - 13	3.38	.94	1.74	.367	3	H7
5366086	VTSP05087	-	-	5366085	VTSP05087	1/2 - 13	3.38	.94	1.74	.367	3	H11
5366089	VTSP05088	5366110	VTSP05088	5366088	VTSP05088	1/2 - 20	3.38	.94	1.74	.367	3	H3
5366113	VTSP05089	-	-	5366112	VTSP05089	1/2 - 20	3.38	.94	1.74	.367	3	H5
-	-	-	-	5366115	VTSP05090	1/2 - 20	3.38	.94	1.74	.367	3	H6
5366117	VTSP05091	-	-	5366116	VTSP05091	1/2 - 20	3.38	.94	1.74	.367	3	H7
-	-	-	-	5366119	VTSP05092	1/2 - 20	3.38	.94	1.74	.367	3	H11
5366133	VTSP05093	5366134	VTSP05093	5366132	VTSP05093	9/16 - 12	3.59	1.00	1.74	.429	3	H3
5366137	VTSP05094	5366138	VTSP05094	5366136	VTSP05094	9/16 - 18	3.59	1.00	1.74	.429	3	H3
5366141	VTSP05095	5366142	VTSP05095	5366140	VTSP05095	5/8 - 11	3.81	1.09	1.89	.480	3	H3
5366145	VTSP05096	-	-	5366144	VTSP05096	5/8 - 11	3.81	1.09	1.89	.480	3	H5
-	-	-	-	5367003	VTSP05097	5/8 - 11	3.81	1.09	1.89	.480	3	H7
5367005	VTSP05098	-	-	5367004	VTSP05098	5/8 - 18	3.81	1.09	1.89	.480	3	H3
5367008	VTSP05099	-	-	5367007	VTSP05099	5/8 - 18	3.81	1.09	1.89	.480	3	H5
5367032	VTSP05101	-	-	5367031	VTSP05101	5/8 - 18	3.81	1.09	1.89	.480	3	H7
5367035	VTSP05102	5367036	VTSP05102	5367034	VTSP05102	3/4 - 10	4.25	1.22	2.08	.590	3	H3

VT-SPO • Form B Plug Chamfer • Machine Screw and Fractional • ANSI

(continued)



● first choice
○ alternate choice

grade WP42EG TiCN		grade WU41EG TiN		grade WP49EG Oxide		D1	TPI	L	L3	L2	D	number of flutes	pitch diameter limit
5367039	VTSP05103	-	-	5367038	VTSP05103	3/4 - 10	4.25	1.22	2.08	.590	3	H5	
5367062	VTSP05104	5367063	VTSP05104	5367061	VTSP05104	3/4 - 16	4.25	1.22	2.08	.590	3	H3	
5367066	VTSP05105	-	-	5367065	VTSP05105	3/4 - 16	4.25	1.22	2.08	.590	3	H5	
5367069	VTSP05106	5367070	VTSP05106	5367068	VTSP05106	7/8 - 9	4.69	1.34	2.30	.697	3	H4	
5367073	VTSP05107	-	-	5367072	VTSP05107	7/8 - 9	4.69	1.34	2.30	.697	3	H5	
5367076	VTSP05108	-	-	5367075	VTSP05108	7/8 - 14	4.69	1.34	2.30	.697	3	H4	
5366406	VTSP05109	5366407	VTSP05109	5366404	VTSP05109	1 - 8	5.13	1.50	2.58	.800	3	H5	
5366440	VTSP05110	-	-	5366409	VTSP05110	1 - 12	5.13	1.50	2.58	.800	3	H4	
-	-	-	-	5366442	VTSP05111	1 1/8 - 7	5.44	1.71	2.56	.896	4	H6	
-	-	-	-	5366443	VTSP05112	1 1/8 - 8	5.44	1.71	2.56	.896	4	H6	
-	-	-	-	5366444	VTSP05113	1 1/8 - 12	5.44	1.71	2.56	.896	4	H5	
-	-	-	-	5366445	VTSP05114	1 1/4 - 7	5.75	1.71	2.56	1.021	4	H6	
-	-	-	-	5366446	VTSP05115	1 1/4 - 8	5.75	1.71	2.56	1.020	4	H6	
-	-	-	-	5366447	VTSP05116	1 1/4 - 12	5.75	1.71	2.56	1.021	4	H5	
-	-	-	-	5366448	VTSP05117	1 3/8 - 6	6.07	2.00	3.00	1.108	4	H6	
-	-	-	-	5366449	VTSP05118	1 3/8 - 8	6.07	2.00	3.00	1.108	4	H6	
-	-	-	-	5366450	VTSP05119	1 3/8 - 12	6.07	2.00	3.00	1.108	4	H5	
-	-	-	-	5366451	VTSP05120	1 1/2 - 6	6.38	2.00	3.00	1.233	4	H6	
-	-	-	-	5366452	VTSP05121	1 1/2 - 8	6.38	2.00	3.00	1.233	4	H6	
-	-	-	-	5366453	VTSP05122	1 1/2 - 12	6.38	2.00	3.00	1.233	4	H5	
5357242	VTSP05001	-	-	5357241	VTSP05001	2 - 56	1.75	.39	.50	.141	2	H2	
-	-	-	-	5357244	VTSP05002	2 - 56	1.75	.39	.50	.141	2	H3	
-	-	-	-	5357245	VTSP05003	2 - 56	1.75	.39	.50	.141	2	H4	
-	-	-	-	5366454	VTSP05123	2 - 4 1/2	7.63	2.67	3.56	1.643	4	H7	
5357247	VTSP05004	-	-	5357246	VTSP05004	3 - 48	1.82	.45	.57	.141	2	H2	
5357260	VTSP05005	5357261	VTSP05005	5357249	VTSP05005	4 - 40	1.88	.51	.69	.141	2	H2	
5357264	VTSP05006	-	-	5357263	VTSP05006	4 - 40	1.88	.51	.69	.141	2	H3	
-	-	-	-	5357266	VTSP05007	4 - 40	1.88	.51	.69	.141	2	H4	
5357272	VTSP05008	-	-	5357271	VTSP05008	4 - 40	1.88	.51	.69	.141	2	H5	
-	-	-	-	5357274	VTSP05009	4 - 40	1.88	.51	.69	.141	2	H6	
5357276	VTSP05010	-	-	5357275	VTSP05010	4 - 48	1.88	.51	.69	.141	2	H2	
5357280	VTSP05012	-	-	5357279	VTSP05012	5 - 40	1.94	.58	.75	.141	2	H2	
5631491	VTSP05365	-	-	5631490	VTSP05365	5 - 40	1.94	.58	.75	.141	3	H2	
5357283	VTSP05013	-	-	5357282	VTSP05013	6 - 32	1.99	.38	.71	.141	2	H2	
5357286	VTSP05014	5357287	VTSP05014	5357285	VTSP05014	6 - 32	1.99	.38	.71	.141	2	H3	
-	-	-	-	5357289	VTSP05015	6 - 32	1.99	.38	.71	.141	2	H4	
5357293	VTSP05016	-	-	5357292	VTSP05016	6 - 32	1.99	.38	.71	.141	2	H5	
5357296	VTSP05017	-	-	-	-	6 - 32	1.99	.38	.71	.141	2	H6	
5357299	VTSP05018	-	-	5357298	VTSP05018	6 - 32	1.99	.38	.71	.141	2	H7	
5365704	VTSP05019	-	-	-	-	6 - 32	1.99	.38	.71	.141	2	H11	
-	-	-	-	5365706	VTSP05020	6 - 40	1.99	.38	.71	.141	2	H2	
-	-	-	-	5365709	VTSP05021	6 - 40	1.99	.38	.71	.141	2	H3	
-	-	-	-	5631506	VTSP05364	6 - 32	1.99	.38	.71	.141	3	H6	
5631494	VTSP05366	-	-	5631493	VTSP05366	6 - 32	1.99	.38	.71	.141	3	H2	
5631497	VTSP05367	-	-	-	-	6 - 32	1.99	.38	.71	.141	3	H3	
-	-	-	-	5631500	VTSP05368	6 - 32	1.99	.38	.71	.141	3	H4	
-	-	-	-	5631503	VTSP05369	6 - 32	1.99	.38	.71	.141	3	H5	
-	-	-	-	5631509	VTSP05370	6 - 32	1.99	.38	.71	.141	3	H7	
-	-	-	-	5631512	VTSP05371	6 - 32	1.99	.38	.71	.141	3	H11	
5365771	VTSP05029	-	-	5365769	VTSP05029	8 - 36	2.11	.38	.76	.168	2	H2	
5365741	VTSP05022	-	-	5365740	VTSP05022	8 - 32	2.12	.38	.76	.168	2	H2	
5365744	VTSP05023	5365745	VTSP05023	5365743	VTSP05023	8 - 32	2.12	.38	.76	.168	2	H3	

INDEXABLE MILLING

SOLID END MILLING

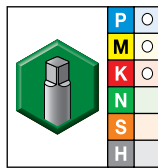
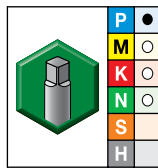
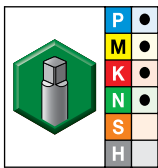
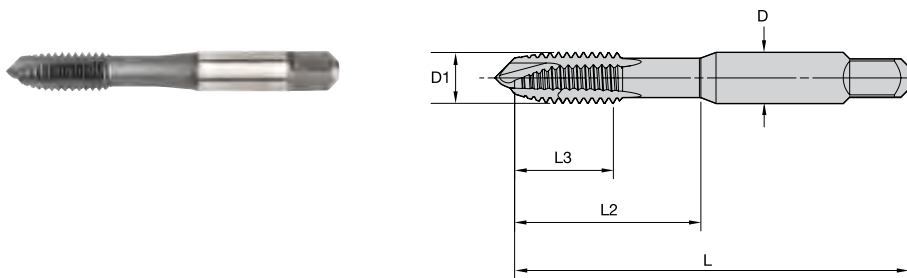
HOLEMILLING

TAPPING

TURNING

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(continued)

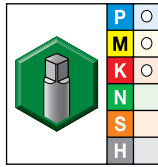
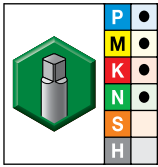
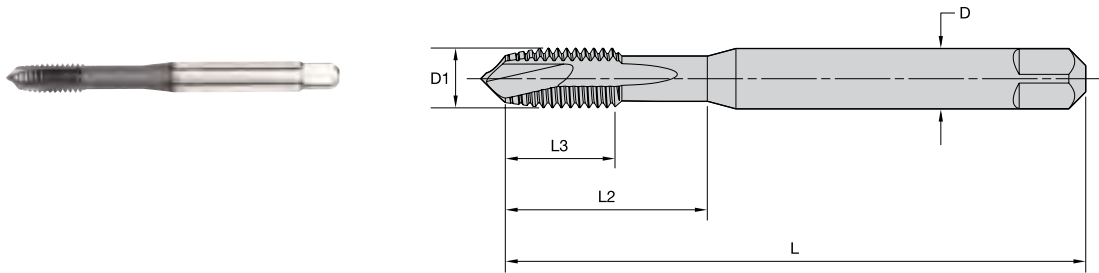


● first choice
○ alternate choice

grade WP42EG TiCN		grade WU41EG TiN		grade WP49EG Oxide		D1 TPI	L	L3	L2	D	number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #	order #	catalog #							
5365751	VTSP05025	-	-	5365747	VTSP05024	8 - 32	2.12	.38	.76	.168	2	H4
-	-	-	-	5365750	VTSP05025	8 - 32	2.12	.38	.76	.168	2	H5
5365758	VTSP05027	-	-	5365753	VTSP05026	8 - 32	2.12	.38	.76	.168	2	H6
-	-	-	-	5365757	VTSP05027	8 - 32	2.12	.38	.76	.168	2	H7
5631523	VTSP05375	-	-	5365762	VTSP05028	8 - 32	2.12	.38	.76	.168	2	H11
-	-	-	-	5631522	VTSP05375	8 - 32	2.12	.38	.76	.168	3	H3
-	-	-	-	5631526	VTSP05376	8 - 32	2.12	.38	.76	.168	3	H4
-	-	-	-	5631529	VTSP05377	8 - 32	2.12	.38	.76	.168	3	H5
-	-	-	-	5631532	VTSP05378	8 - 32	2.12	.38	.76	.168	3	H6
-	-	-	-	5631538	VTSP05379	8 - 32	2.12	.38	.76	.168	3	H7
5365785	VTSP05040	-	-	5631544	VTSP05380	8 - 32	2.12	.38	.76	.168	3	H11
5365791	VTSP05041	-	-	5365783	VTSP05040	10 - 32	2.36	.50	.91	.194	2	H6
5365797	VTSP05042	-	-	5365789	VTSP05041	10 - 32	2.36	.50	.91	.194	2	H7
5365779	VTSP05039	-	-	5365795	VTSP05042	10 - 32	2.36	.50	.91	.194	2	H11
5365759	VTSP05036	-	-	5365777	VTSP05039	10 - 32	2.36	.50	.91	.194	2	H5
5365764	VTSP05037	5365766	VTSP05037	5365756	VTSP05036	10 - 32	2.36	.50	.91	.194	2	H2
5365772	VTSP05038	-	-	5365763	VTSP05037	10 - 32	2.36	.50	.91	.194	2	H3
5631600	VTSP05389	5631602	VTSP05389	5365770	VTSP05038	10 - 32	2.36	.50	.91	.194	2	H4
-	-	-	-	5631598	VTSP05389	10 - 32	2.36	.50	.91	.194	3	H3
5631614	VTSP05391	-	-	5631606	VTSP05390	10 - 32	2.36	.50	.91	.194	3	H4
-	-	-	-	-	-	10 - 32	2.36	.50	.91	.194	3	H5
5365796	VTSP05035	-	-	5365782	VTSP05031	10 - 24	2.37	.50	.91	.194	2	H4
5365776	VTSP05030	5365778	VTSP05030	-	-	10 - 24	2.37	.50	.91	.194	2	H11
5631558	VTSP05382	5631560	VTSP05382	5365774	VTSP05030	10 - 24	2.37	.50	.91	.194	2	H3
-	-	-	-	5631556	VTSP05382	10 - 24	2.37	.50	.91	.194	3	H3
-	-	-	-	5631563	VTSP05383	10 - 24	2.37	.50	.91	.194	3	H4
-	-	-	-	5631572	VTSP05385	10 - 24	2.37	.50	.91	.194	3	H6
5365786	VTSP05032	-	-	5631575	VTSP05387	10 - 24	2.37	.50	.91	.194	3	H11
-	-	-	-	5365784	VTSP05032	10 - 24	2.37	.50	.91	.194	2	H5
-	-	-	-	5365790	VTSP05033	10 - 24	2.37	.50	.91	.194	2	H6
5365801	VTSP05043	-	-	5365792	VTSP05034	10 - 24	2.37	.50	.91	.194	2	H7
5365804	VTSP05044	-	-	5365800	VTSP05043	12 - 24	2.37	.50	.96	.220	2	H3
5631635	VTSP05395	-	-	5365803	VTSP05044	12 - 28	2.37	.50	.96	.220	2	H3
5631638	VTSP05396	-	-	5631634	VTSP05395	12 - 24	2.37	.50	.96	.220	3	H3
-	-	-	-	-	-	12 - 28	2.37	.50	.96	.220	3	H3

NOTE: VariTap for 3B class of fit is suitable for UNJ aerospace internal threading applications.

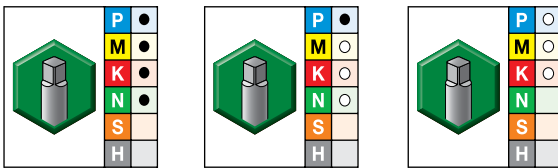
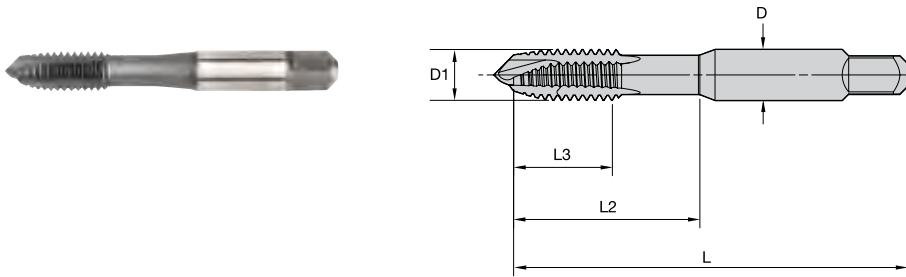
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● first choice
○ alternate choice

grade WP42EG TiCN		grade WP49EG Oxide		D1 TPI	L	L3	L2	D	number of flutes	dimension standard	class of fit
5366572	VTSP09004	5366571	VTSP09004	4 - 40	2.20	.31	.71	.141	2	DIN-ANSI	2B
-	-	5366573	VTSP09005	6 - 32	2.20	.35	.79	.141	2	DIN-ANSI	2B
5366576	VTSP09006	5366575	VTSP09006	8 - 32	2.48	.43	.83	.168	2	DIN-ANSI	2B
5366578	VTSP09007	5366577	VTSP09007	10 - 24	2.76	.47	.98	.194	2	DIN-ANSI	2B
5366580	VTSP09008	5366579	VTSP09008	10 - 32	2.75	.47	.98	.194	2	DIN-ANSI	2B
5366582	VTSP09009	5366581	VTSP09009	1/4 - 20	3.15	.59	1.18	.255	3	DIN-ANSI	2B
5366584	VTSP09010	-	-	1/4 - 28	3.14	.58	1.17	.255	3	DIN-ANSI	2B
5366586	VTSP09011	5366585	VTSP09011	5/16 - 18	3.54	.59	1.38	.318	3	DIN-ANSI	2B
5366588	VTSP09012	5366587	VTSP09012	5/16 - 24	3.54	.59	1.38	.318	3	DIN-ANSI	2B
5366590	VTSP09013	5366589	VTSP09013	3/8 - 16	3.94	.75	1.54	.381	3	DIN-ANSI	2B
-	-	5366591	VTSP09014	3/8 - 24	3.94	.75	1.54	.381	3	DIN-ANSI	2B
5366594	VTSP09015	5366593	VTSP09015	7/16 - 14	3.94	.71	1.61	.323	3	DIN-ANSI	2B
5366596	VTSP09016	5366595	VTSP09016	7/16 - 20	3.94	.71	1.61	.323	3	DIN-ANSI	2B
5366598	VTSP09017	5366597	VTSP09017	1/2 - 13	4.33	.91	1.85	.367	3	DIN-ANSI	2B
5366602	VTSP09019	5366601	VTSP09019	5/8 - 11	4.33	.94	2.01	.480	3	DIN-ANSI	2B
-	-	5366603	VTSP09020	5/8 - 18	4.33	.94	2.01	.480	3	DIN-ANSI	2B
5366606	VTSP09021	5366605	VTSP09021	3/4 - 10	4.92	1.18	2.52	.590	3	DIN-ANSI	2B
-	-	5366607	VTSP09022	3/4 - 16	4.92	1.18	2.52	.590	3	DIN-ANSI	2B

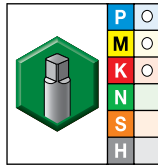
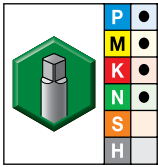
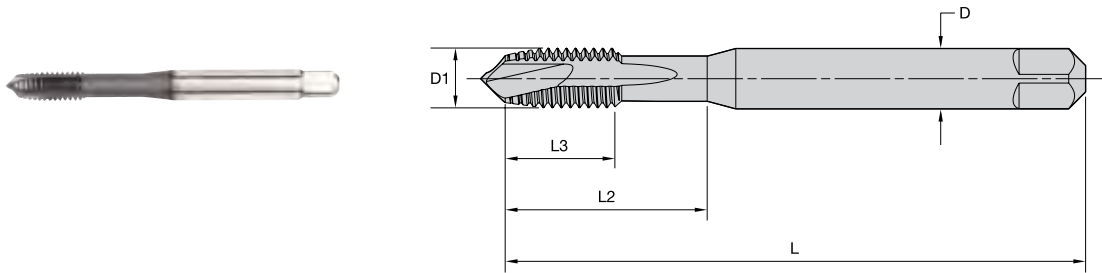
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● first choice
○ alternate choice

grade WP42EG TiCN		grade WU41EG TiN		grade WP49EG Oxide		L		L3		L2		D		number of flutes	pitch diameter limit	
order #	catalog #	order #	catalog #	order #	catalog #	D1 size	mm	in	mm	in	mm	in	mm			in
5362670	VTSP05505	5362671	VTSP05505	5362589	VTSP05505	M3 X 0,5	49,30	1.94	14,80	.58	19,10	.75	3,581	.141	2	D3
-	-	-	-	5362673	VTSP05506	M3 X 0,5	49,30	1.94	14,80	.58	19,10	.75	3,581	.141	2	D11
5631641	VTSP05613	-	-	5631640	VTSP05613	M3 X 0,5	49,30	1.94	14,80	.58	19,10	.75	3,581	.141	3	D3
5631645	VTSP05614	-	-	5631644	VTSP05614	M3 X 0,5	49,30	1.94	14,80	.58	19,10	.75	3,581	.141	3	D11
5362677	VTSP05507	-	-	5362676	VTSP05507	M3,5 X 0,6	50,50	1.99	9,70	.38	18,00	.71	3,581	.141	2	D4
-	-	-	-	5631646	VTSP05615	M3,5 X 0,6	50,50	1.99	9,70	.38	18,00	.71	3,581	.141	3	D4
-	-	-	-	5362695	VTSP05510	M4 X 0,7	53,80	2.12	9,70	.38	19,40	.76	4,267	.168	2	D11
5362692	VTSP05509	5362693	VTSP05509	5362691	VTSP05509	M4 X 0,7	53,80	2.12	9,70	.38	19,40	.76	4,267	.168	2	D4
5631652	VTSP05617	5631653	VTSP05617	5631651	VTSP05617	M4 X 0,7	53,80	2.12	9,70	.38	19,40	.76	4,267	.168	3	D4
-	-	-	-	5631655	VTSP05618	M4 X 0,7	53,80	2.12	9,70	.38	19,40	.76	4,267	.168	3	D11
5362702	VTSP05512	-	-	5362701	VTSP05512	M5 X 0,8	60,30	2.37	12,70	.50	23,20	.91	4,928	.194	2	D11
5362698	VTSP05511	5362699	VTSP05511	5362697	VTSP05511	M5 X 0,8	60,30	2.37	12,70	.50	23,20	.91	4,928	.194	2	D4
5631659	VTSP05619	5631670	VTSP05619	5631658	VTSP05619	M5 X 0,8	60,30	2.37	12,70	.50	23,20	.91	4,928	.194	3	D4
5362704	VTSP05513	5362705	VTSP05513	5362703	VTSP05513	M6 X 1	63,50	2.50	16,00	.63	25,40	1.00	6,477	.255	3	D5
5362708	VTSP05514	-	-	5362707	VTSP05514	M6 X 1	63,50	2.50	16,00	.63	25,40	1.00	6,477	.255	3	D11
5362710	VTSP05515	-	-	5362709	VTSP05515	M7 X 1	69,20	2.72	17,50	.69	29,30	1.15	8,077	.318	3	D5
5362715	VTSP05517	-	-	5362714	VTSP05517	M8 X 1	68,70	2.71	17,50	.69	28,50	1.12	8,077	.318	3	D5
5362722	VTSP05519	5362723	VTSP05519	5362720	VTSP05519	M8 X 1,25	68,90	2.71	17,50	.69	28,60	1.13	8,077	.318	3	D5
5362728	VTSP05520	-	-	5362727	VTSP05520	M8 X 1,25	68,90	2.71	17,50	.69	28,60	1.13	8,077	.318	3	D11
5362730	VTSP05521	-	-	5362729	VTSP05521	M10 X 1	74,00	2.91	19,10	.75	31,60	1.24	9,677	.381	3	D5
5362733	VTSP05522	-	-	5362732	VTSP05522	M10 X 1	74,00	2.91	19,10	.75	31,60	1.24	9,677	.381	3	D11
-	-	-	-	5367307	VTSP05524	M10 X 1,25	74,10	2.92	18,90	.74	31,80	1.25	9,677	.381	3	D11
5367305	VTSP05523	-	-	5367304	VTSP05523	M10 X 1,25	74,10	2.92	18,90	.74	31,80	1.25	9,677	.381	3	D5
5367340	VTSP05525	5367341	VTSP05525	5367309	VTSP05525	M10 X 1,5	74,30	2.92	19,10	.75	31,90	1.26	9,677	.381	3	D6
5367344	VTSP05526	-	-	5367343	VTSP05526	M10 X 1,5	74,30	2.92	19,10	.75	31,90	1.26	9,677	.381	3	D11
5367346	VTSP05527	-	-	5367345	VTSP05527	M12 X 1,25	85,80	3.38	23,90	.94	44,20	1.74	9,322	.367	3	D6
-	-	-	-	5367353	VTSP05530	M12 X 1,5	85,90	3.38	23,90	.94	44,20	1.74	9,322	.367	3	D11
5367351	VTSP05529	-	-	5367350	VTSP05529	M12 X 1,5	85,90	3.38	23,90	.94	44,20	1.74	9,322	.367	3	D6
5367360	VTSP05532	-	-	-	-	M12 X 1,75	85,90	3.38	23,90	.94	44,20	1.74	9,322	.367	3	D11
5367356	VTSP05531	5367357	VTSP05531	5367355	VTSP05531	M12 X 1,75	85,90	3.38	23,90	.94	44,20	1.74	9,322	.367	3	D6
5367362	VTSP05533	-	-	5367361	VTSP05533	M14 X 1,5	91,20	3.59	25,40	1.00	44,20	1.74	10,897	.429	3	D6
5367365	VTSP05534	-	-	5367364	VTSP05534	M14 X 2	91,20	3.59	25,40	1.00	44,20	1.74	10,897	.429	3	D7
5366476	VTSP05535	-	-	5366475	VTSP05535	M16 X 1,5	96,80	3.81	27,70	1.09	48,00	1.89	12,192	.480	3	D6
5366480	VTSP05536	5366481	VTSP05536	5366479	VTSP05536	M16 X 2	96,80	3.81	27,70	1.09	48,00	1.89	12,192	.480	3	D7
5366485	VTSP05537	-	-	5366483	VTSP05537	M18 X 1,5	102,40	4.03	27,70	1.09	48,00	1.89	13,767	.542	3	D6
5366488	VTSP05538	-	-	5366487	VTSP05538	M18 X 2,5	102,40	4.03	31,00	1.22	48,00	1.89	13,767	.542	3	D7
5366491	VTSP05539	-	-	5366490	VTSP05539	M20 X 1,5	113,50	4.47	31,00	1.22	52,80	2.08	16,561	.652	3	D6
5366493	VTSP05540	-	-	5366492	VTSP05540	M20 X 2,5	113,50	4.47	31,00	1.22	52,80	2.08	16,561	.652	3	D7
-	-	-	-	5366494	VTSP05541	M22 X 1,5	119,10	4.69	31,00	1.22	58,40	2.30	17,704	.697	3	D6
-	-	-	-	5366495	VTSP05542	M22 X 2,5	119,10	4.69	31,00	1.22	58,40	2.30	17,704	.697	3	D7
-	-	-	-	5366496	VTSP05543	M24 X 2	124,70	4.91	31,00	1.22	58,40	2.30	19,314	.760	3	D7
-	-	-	-	5366497	VTSP05544	M24 X 3	124,70	4.91	31,00	1.22	58,40	2.30	19,314	.760	3	D8
-	-	-	-	5366498	VTSP05545	M27 X 1,5	130,30	5.13	31,00	1.22	63,50	2.50	22,758	.896	4	D7
-	-	-	-	5366499	VTSP05546	M27 X 3	130,30	5.13	31,00	1.22	63,50	2.50	22,758	.896	4	D8
-	-	-	-	5366510	VTSP05547	M30 X 1,5	138,20	5.44	31,00	1.22	65,00	2.56	25,933	1.021	4	D6
-	-	-	-	5366511	VTSP05548	M30 X 3,5	138,20	5.44	31,00	1.22	65,00	2.56	25,933	1.021	4	D9

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● first choice
○ alternate choice

grade WP42EG TiCN		grade WP49EG Oxide		D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
order #	catalog #	order #	catalog #								
5368174	VTSP09507	5368173	VTSP09507	M4 X 0,7	2.48	.43	.83	.168	2	DIN-ANSI	6H
5368176	VTSP09508	5368175	VTSP09508	M5 X 0,8	2.75	.47	.97	.194	2	DIN-ANSI	6H
5368178	VTSP09509	5368177	VTSP09509	M6 X 1	3.15	.47	1.18	.255	3	DIN-ANSI	6H
5368180	VTSP09510	5368179	VTSP09510	M8 X 1,25	3.54	.59	1.37	.318	3	DIN-ANSI	6H
5368184	VTSP09512	5368183	VTSP09512	M10 X 1,5	3.94	.71	1.53	.381	3	DIN-ANSI	6H
-	-	5368187	VTSP09514	M12 X 1,5	4.33	.83	1.73	.367	3	DIN-ANSI	6H
5368190	VTSP09515	5368189	VTSP09515	M12 X 1,75	4.33	.83	1.73	.367	3	DIN-ANSI	6H
5368197	VTSP09518	5368196	VTSP09518	M16 X 1,5	4.33	.94	2.01	.480	3	DIN-ANSI	6H
5368199	VTSP09519	5368198	VTSP09519	M16 X 2	4.33	.94	2.01	.480	3	DIN-ANSI	6H
-	-	5368200	VTSP09520	M18 X 1,5	4.92	1.18	2.28	.542	3	DIN-ANSI	6H
-	-	5368202	VTSP09521	M18 X 2,5	4.92	1.18	2.28	.542	3	DIN-ANSI	6H
5368207	VTSP09523	-	-	M20 X 2,5	5.51	1.18	2.52	.652	3	DIN-ANSI	6H

INDEXABLE MILLING

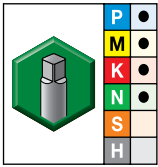
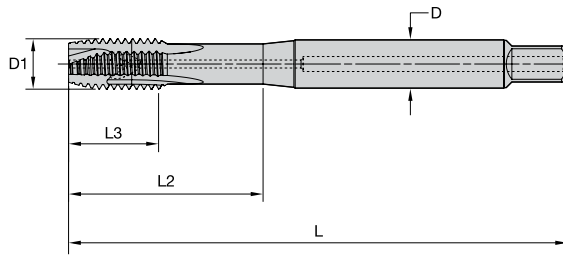
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

VT-SPO • Form B Plug Chamfer • Through Coolant • Fractional • DIN Length ANSI Shank



● first choice
○ alternate choice

grade WP42EG
TiCN

order #	catalog #	D1 TPI	L	L3	L2	D	number of flutes	dimension standard	class of fit
5368496	VTSP09709	3/8 - 16	3.94	.75	1.54	.381	3	DIN-ANSI	2B
5368501	VTSP09713	1/2 - 13	4.33	.91	1.85	.367	3	DIN-ANSI	2B
5368503	VTSP09715	9/16 - 18	4.33	.98	2.09	.429	3	DIN-ANSI	2B
5368508	VTSP09719	3/4 - 16	4.92	1.18	2.52	.590	3	DIN-ANSI	2B

INDEXABLE MILLING

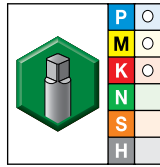
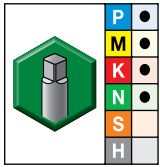
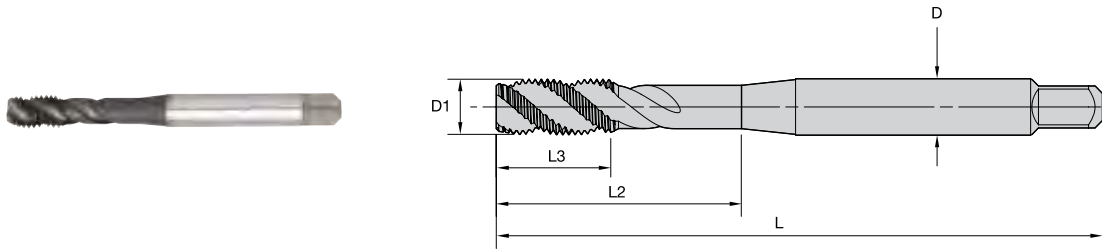
SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING

VT-SFT • Form C Semi-Bottoming Chamfer • Machine Screw and Fractional • DIN Length ANSI Shank



● first choice
○ alternate choice

grade WP42EG TiCN		grade WP49EG Oxide		D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
order #	catalog #	order #	catalog #								
5436673	VTSFT9008	-	-	4 - 40	2.20	.31	.71	.141	2	DIN-ANSI	2B
5436675	VTSFT9009	5436674	VTSFT9009	6 - 32	2.20	.35	.79	.141	2	DIN-ANSI	2B
5436677	VTSFT9010	-	-	8 - 32	2.48	.43	.83	.168	3	DIN-ANSI	2B
5436679	VTSFT9011	-	-	10 - 24	2.76	.47	.99	.194	3	DIN-ANSI	2B
5436701	VTSFT9012	-	-	10 - 32	2.75	.47	.98	.194	3	DIN-ANSI	2B
5436703	VTSFT9013	5436702	VTSFT9013	1/4 - 20	3.15	.59	1.18	.255	3	DIN-ANSI	2B
5436705	VTSFT9014	5436704	VTSFT9014	1/4 - 28	3.14	.58	1.17	.255	3	DIN-ANSI	2B
5436707	VTSFT9015	5436706	VTSFT9015	5/16 - 18	3.54	.59	1.38	.318	3	DIN-ANSI	2B
5436709	VTSFT9016	-	-	5/16 - 24	3.53	.58	1.37	.318	3	DIN-ANSI	2B
5436721	VTSFT9017	5436720	VTSFT9017	3/8 - 16	3.94	.75	1.54	.381	3	DIN-ANSI	2B
5436723	VTSFT9018	-	-	3/8 - 24	3.92	.73	1.52	.381	3	DIN-ANSI	2B
-	-	5436724	VTSFT9019	7/16 - 14	3.94	.71	1.61	.323	3	DIN-ANSI	2B
5436727	VTSFT9020	-	-	7/16 - 20	3.94	.71	1.61	.323	3	DIN-ANSI	2B
5436729	VTSFT9021	5436728	VTSFT9021	1/2 - 13	4.33	.91	1.85	.367	3	DIN-ANSI	2B
5436733	VTSFT9023	5436732	VTSFT9023	5/8 - 11	4.33	.94	2.01	.480	3	DIN-ANSI	2B
5436735	VTSFT9024	-	-	5/8 - 18	4.33	.94	2.01	.480	3	DIN-ANSI	2B
5436737	VTSFT9025	-	-	3/4 - 10	4.92	1.18	2.52	.590	4	DIN-ANSI	2B
-	-	5436736	VTSFT9025	3/4 - 10	4.92	1.18	2.52	.590	3	DIN-ANSI	2B

NOTE: Suggested for use in rigid and synchronous holders.

INDEXABLE MILLING

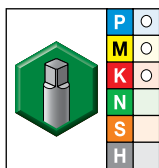
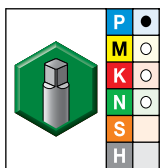
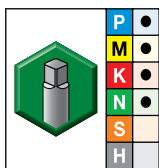
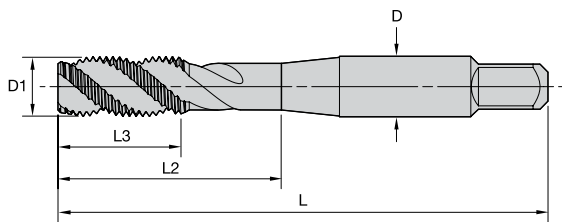
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

VT-SFT • Form C Semi-Bottoming Chamfer • Metric • ANSI

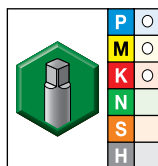
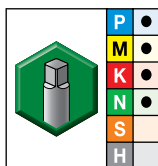
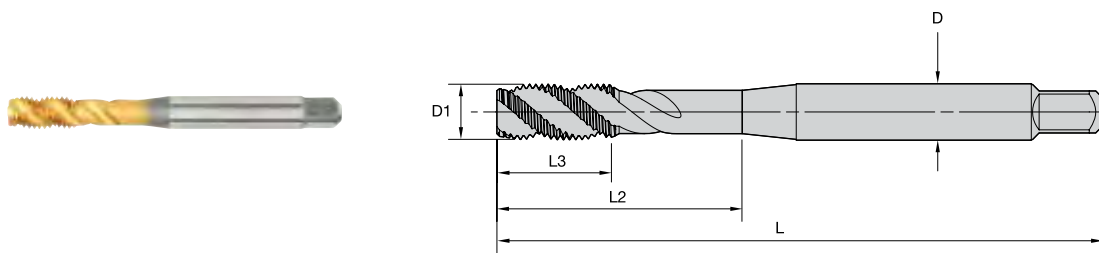


● first choice
○ alternate choice

grade WP42EG TiCN		grade WU41EG TiN		grade WP49EG Oxide		L		L3		L2		D		number of flutes	pitch diameter limit	
order #	catalog #	order #	catalog #	order #	catalog #	D1 size	mm	in	mm	in	mm	in	mm			in
5357039	VTSFT5507	-	-	5357031	VTSFT5505	M3 X 0,5	49,20	1.94	14,80	.58	19,10	.75	3,581	.141	2	D3
-	-	5357056	VTSFT5509	5357038	VTSFT5507	M3,5 X 0,6	50,50	1.99	9,70	.38	18,00	.71	3,581	.141	2	D4
-	-	-	-	5357054	VTSFT5509	M4 X 0,7	53,80	2.12	9,70	.38	19,40	.76	4,267	.168	3	D4
-	-	-	-	5357060	VTSFT5511	M5 X 0,8	60,30	2.37	12,70	.50	23,20	.91	4,928	.194	3	D4
5357066	VTSFT5512	-	-	-	-	M5 X 0,8	60,30	2.37	12,70	.50	23,20	.91	4,928	.194	3	D11
-	-	5357069	VTSFT5513	5357067	VTSFT5513	M6 X 1	63,50	2.50	16,00	.63	25,50	1.01	6,477	.255	3	D5
5357083	VTSFT5514	-	-	-	-	M6 X 1	63,50	2.50	16,00	.63	25,50	1.01	6,477	.255	3	D11
-	-	-	-	5357084	VTSFT5515	M7 X 1	69,20	2.73	17,50	.69	29,30	1.15	8,077	.318	3	D5
5357101	VTSFT5517	5357102	VTSFT5517	5357100	VTSFT5517	M8 X 1	68,70	2.71	17,50	.69	28,50	1.12	8,077	.318	3	D5
-	-	-	-	5357106	VTSFT5519	M8 X 1,25	68,70	2.71	17,50	.69	28,50	1.12	8,077	.318	3	D5
5357123	VTSFT5520	-	-	5357121	VTSFT5520	M8 X 1,25	68,70	2.71	17,50	.69	28,50	1.12	8,077	.318	3	D11
5365567	VTSFT5521	-	-	5365566	VTSFT5521	M10 X 1	74,00	2.91	18,70	.74	31,60	1.24	9,677	.381	3	D5
5365590	VTSFT5522	-	-	-	-	M10 X 1	73,90	2.91	18,70	.74	31,60	1.24	9,677	.381	3	D11
5365592	VTSFT5523	-	-	5365591	VTSFT5523	M10 X 1,25	74,10	2.92	18,90	.74	31,80	1.25	9,677	.381	3	D5
5365598	VTSFT5525	-	-	5365597	VTSFT5525	M10 X 1,5	74,30	2.92	19,00	.75	31,90	1.26	9,677	.381	3	D6
5365612	VTSFT5526	-	-	-	-	M10 X 1,5	74,20	2.92	19,00	.75	31,90	1.25	9,677	.381	3	D11
5365614	VTSFT5527	-	-	5365613	VTSFT5527	M12 X 1,25	85,90	3.38	23,90	.94	44,20	1.74	9,322	.367	3	D5
5365621	VTSFT5529	-	-	-	-	M12 X 1,5	85,90	3.38	23,90	.94	44,20	1.74	9,322	.367	3	D6
5365624	VTSFT5530	-	-	-	-	M12 X 1,5	85,90	3.38	23,90	.94	44,20	1.74	9,322	.367	3	D11
-	-	-	-	5365625	VTSFT5531	M12 X 1,75	85,90	3.38	23,90	.94	44,20	1.74	9,322	.367	3	D6
-	-	-	-	5365629	VTSFT5532	M12 X 1,75	85,90	3.38	23,90	.94	44,20	1.74	9,322	.367	3	D11
-	-	-	-	5365635	VTSFT5535	M14 X 2	91,20	3.59	25,40	1.00	44,20	1.74	10,897	.429	3	D7
-	-	-	-	5365637	VTSFT5536	M16 X 1,5	96,80	3.81	27,70	1.09	48,00	1.89	12,192	.480	3	D6
-	-	-	-	5365640	VTSFT5537	M16 X 2	96,80	3.81	27,70	1.09	48,00	1.89	12,192	.480	3	D7
5365650	VTSFT5540	-	-	-	-	M20 X 1,5	113,50	4.47	31,00	1.22	52,80	2.08	16,561	.652	4	D6
-	-	-	-	5365651	VTSFT5541	M20 X 2,5	113,50	4.47	31,00	1.22	52,80	2.08	16,561	.652	4	D7
-	-	-	-	5365656	VTSFT5545	M24 X 3	124,70	4.91	34,00	1.34	58,40	2.30	19,304	.760	4	D8
-	-	-	-	5365660	VTSFT5549	M30 X 3,5	138,20	5.44	43,50	1.71	65,00	2.56	25,933	1.021	4	D9

NOTE: Refer to tables on page D128 for the recommended pitch diameter limit for 6H class of fit.
VariTap for 6H class of fit is suitable for MJ aerospace internal threading applications.

VT-SFT • Form C Semi-Bottoming Chamfer • Metric • DIN Length ANSI Shank



● first choice
○ alternate choice

grade WP42EG TiCN		grade WP49EG Oxide		D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
order #	catalog #	order #	catalog #								
5436528	VTSFT9507	5436527	VTSFT9507	M6 X 1	3.15	.47	1.18	.255	3	DIN-ANSI	6H
5436540	VTSFT9508	-	-	M8 X 1,25	3.54	.58	1.37	.318	3	DIN-ANSI	6H
5436544	VTSFT9510	-	-	M10 X 1,5	3.94	.71	1.53	.381	3	DIN-ANSI	6H
5436546	VTSFT9511	-	-	M12 X 1,25	4.33	.83	1.73	.367	3	DIN-ANSI	6H
5436550	VTSFT9513	-	-	M12 X 1,75	4.33	.83	1.73	.367	3	DIN-ANSI	6H

NOTE: Suggested for use in rigid and synchronous holders.

INDEXABLE MILLING

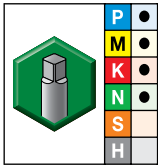
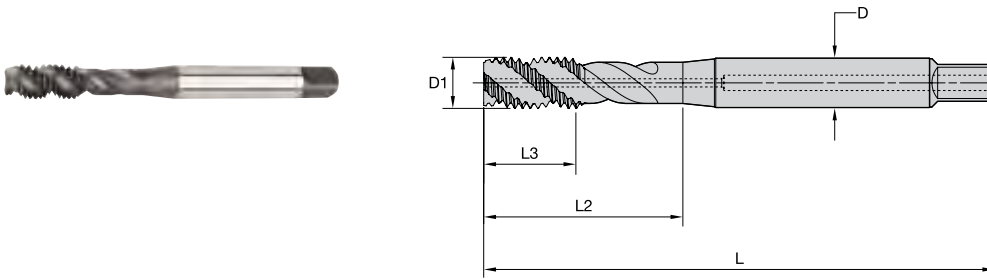
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

VT-SFT • Form C Semi-Bottoming Chamfer • Through Coolant • Fractional • DIN Length ANSI Shank



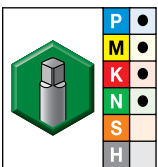
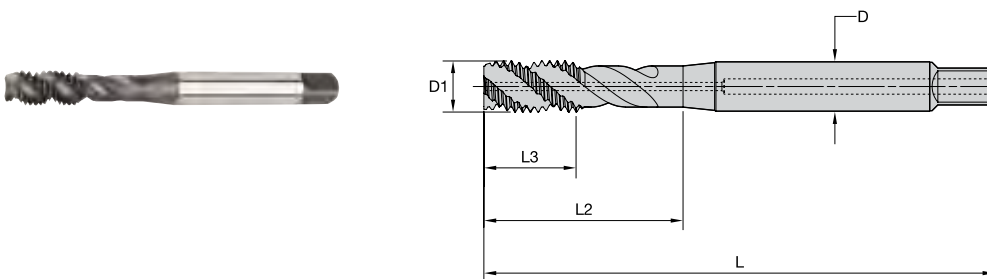
● first choice
○ alternate choice

grade WP42EG
TiCN

order #	catalog #	D1 TPI	L	L3	L2	D	number of flutes	dimension standard	class of fit
5436357	VTSFT9762	1/4 - 20	3.15	.59	1.18	.255	3	DIN-ANSI	2B
5436359	VTSFT9764	5/16 - 18	3.54	.59	1.38	.318	3	DIN-ANSI	2B
5436461	VTSFT9766	3/8 - 16	3.94	.75	1.54	.381	3	DIN-ANSI	2B
5436462	VTSFT9767	3/8 - 24	3.94	.75	1.54	.381	3	DIN-ANSI	2B
5436463	VTSFT9768	7/16 - 14	3.94	.71	1.61	.323	3	DIN-ANSI	2B
5436465	VTSFT9770	1/2 - 13	3.94	.91	1.85	.367	3	DIN-ANSI	2B
5436468	VTSFT9773	5/8 - 11	4.33	.94	2.01	.480	3	DIN-ANSI	2B
5436473	VTSFT9778	7/8 - 14	5.51	1.34	2.80	.697	4	DIN-ANSI	2B

NOTE: Suggested for use in rigid and synchronous holders.

VT-SFT • Form C Semi-Bottoming Chamfer • Through Coolant • Metric • DIN Length ANSI Shank



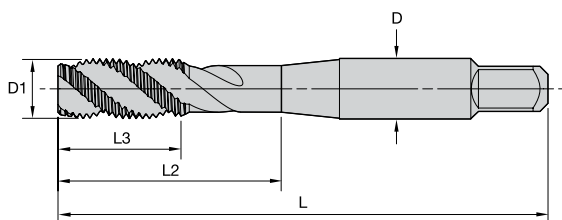
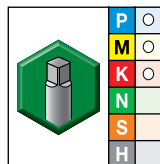
● first choice
○ alternate choice

grade WP42EG
TiCN

order #	catalog #	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
5436475	VTSFT9925	M6 X 1	3.15	.47	1.18	.255	3	DIN-ANSI	6H
5436476	VTSFT9926	M8 X 1,25	3.54	.59	1.38	.318	3	DIN-ANSI	6H
5436478	VTSFT9928	M10 X 1,5	3.94	.71	1.53	.381	3	DIN-ANSI	6H
5436481	VTSFT9931	M12 X 1,75	4.33	.83	1.73	.367	3	DIN-ANSI	6H

NOTE: Suggested for use in rigid and synchronous holders.

VT-SFT • Form E Bottoming Chamfer • Machine Screw and Fractional • ANSI



● first choice
○ alternate choice

grade WP49EG Oxide								
order #	catalog #	D1 TPI	L	L3	L2	D	number of flutes	pitch diameter limit
5356668	VTSFT5001	2 - 56	1.76	.40	.50	.141	2	H2
5356731	VTSFT5002	3 - 48	1.82	.46	.57	.141	2	H2
5356734	VTSFT5003	4 - 40	1.88	.52	.70	.141	2	H2
5356738	VTSFT5004	4 - 40	1.88	.52	.70	.141	2	H3
5356748	VTSFT5008	4 - 48	1.88	.53	.70	.141	2	H2
5356751	VTSFT5009	5 - 40	1.95	.59	.76	.141	2	H2
5356755	VTSFT5010	6 - 32	2.00	.39	.72	.141	2	H2
5356758	VTSFT5011	6 - 32	2.00	.39	.72	.141	2	H3
5356763	VTSFT5013	6 - 32	2.00	.39	.72	.141	2	H5
5356775	VTSFT5017	6 - 40	2.00	.39	.72	.141	2	H3
5357303	VTSFT5018	8 - 32	2.13	.38	.77	.168	3	H2
5357306	VTSFT5019	8 - 32	2.13	.38	.77	.168	3	H3
5357370	VTSFT5020	8 - 32	2.13	.38	.77	.168	3	H4
5357371	VTSFT5021	8 - 32	2.13	.38	.77	.168	3	H5
5357375	VTSFT5023	8 - 32	2.13	.38	.77	.168	3	H7
5357381	VTSFT5025	8 - 36	2.13	.38	.77	.168	3	H3
5357382	VTSFT5026	10 - 24	2.38	.50	.92	.194	3	H2
5357383	VTSFT5027	10 - 24	2.38	.50	.92	.194	3	H3
5357388	VTSFT5029	10 - 24	2.38	.50	.92	.194	3	H5
5357391	VTSFT5030	10 - 24	2.38	.50	.92	.194	3	H7
5357395	VTSFT5032	10 - 32	2.38	.50	.92	.194	3	H2
5357398	VTSFT5033	10 - 32	2.38	.50	.92	.194	3	H3
5357402	VTSFT5034	10 - 32	2.38	.50	.92	.194	3	H4
5357403	VTSFT5035	10 - 32	2.37	.50	.91	.194	3	H5
5357406	VTSFT5036	10 - 32	2.38	.50	.92	.194	3	H6
5357407	VTSFT5037	10 - 32	2.38	.50	.92	.194	3	H7
5364105	VTSFT5039	12 - 24	2.43	.50	.96	.220	3	H3
5364108	VTSFT5040	12 - 28	2.43	.50	.96	.220	3	H3
5364451	VTSFT5041	1/4 - 20	2.50	.63	1.00	.255	3	H3
5364455	VTSFT5042	1/4 - 20	2.50	.63	1.00	.255	3	H5
5364458	VTSFT5043	1/4 - 20	2.50	.63	1.00	.255	3	H7
5364484	VTSFT5045	1/4 - 28	2.49	.62	1.00	.255	3	H3
5364488	VTSFT5046	1/4 - 28	2.49	.62	1.00	.255	3	H4
5364491	VTSFT5047	1/4 - 28	2.49	.62	1.00	.255	3	H5
5364495	VTSFT5049	1/4 - 28	2.49	.62	1.00	.255	3	H7
5364502	VTSFT5051	5/16 - 18	2.72	.69	1.13	.318	3	H3
5364506	VTSFT5052	5/16 - 18	2.72	.69	1.13	.318	3	H5
5364509	VTSFT5053	5/16 - 18	2.72	.69	1.13	.318	3	H7
5364512	VTSFT5054	5/16 - 18	2.72	.69	1.13	.318	3	H11
5364515	VTSFT5055	5/16 - 24	2.71	.68	1.13	.318	3	H3
5364519	VTSFT5056	5/16 - 24	2.71	.68	1.13	.318	3	H4
5364532	VTSFT5057	5/16 - 24	2.71	.68	1.13	.318	3	H5
5364538	VTSFT5059	5/16 - 24	2.71	.68	1.12	.318	3	H7
5364544	VTSFT5061	3/8 - 16	2.94	.75	1.27	.381	3	H3
5364549	VTSFT5062	3/8 - 16	2.94	.75	1.27	.381	3	H5
5364553	VTSFT5063	3/8 - 16	2.94	.75	1.27	.381	3	H7
5364556	VTSFT5064	3/8 - 16	2.93	.75	1.27	.381	3	H11
5364559	VTSFT5065	3/8 - 24	2.92	.74	1.25	.381	3	H3
5364566	VTSFT5067	3/8 - 24	2.92	.74	1.25	.381	3	H5
5364577	VTSFT5071	7/16 - 14	3.16	.88	1.42	.323	3	H3
5364601	VTSFT5072	7/16 - 14	3.16	.88	1.42	.323	3	H5
5364610	VTSFT5075	7/16 - 20	3.16	.88	1.42	.323	3	H3
5364614	VTSFT5076	7/16 - 20	3.16	.88	1.42	.323	3	H5
5364624	VTSFT5080	1/2 - 13	3.38	.94	1.65	.367	3	H3
5364628	VTSFT5081	1/2 - 13	3.38	.94	1.65	.367	3	H5
5364631	VTSFT5082	1/2 - 13	3.38	.94	1.65	.367	3	H7
5364634	VTSFT5083	1/2 - 13	3.38	.94	1.65	.367	3	H11
5364637	VTSFT5084	1/2 - 20	3.38	.94	1.65	.367	3	H3
5364641	VTSFT5085	1/2 - 20	3.38	.94	1.65	.367	3	H5
5364644	VTSFT5086	1/2 - 20	3.38	.94	1.65	.367	3	H6
5364645	VTSFT5087	1/2 - 20	3.38	.94	1.74	.367	3	H7
5364671	VTSFT5089	9/16 - 12	3.59	1.00	1.74	.429	3	H3
5364677	VTSFT5091	9/16 - 18	3.59	1.00	1.74	.429	3	H3
5364681	VTSFT5092	9/16 - 18	3.59	1.00	1.74	.429	3	H5

INDEXABLE MILLING

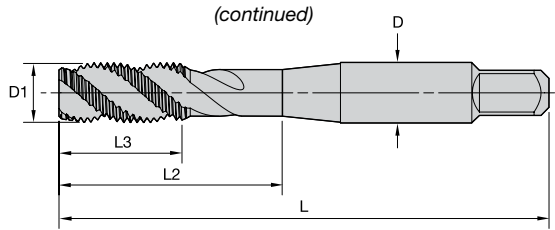
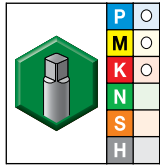
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

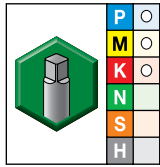
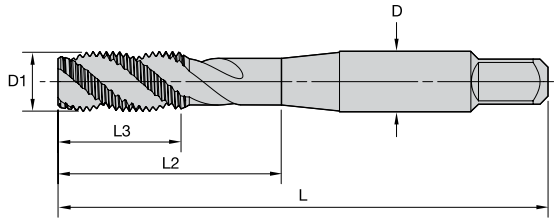
VT-SFT • Form E Bottoming Chamfer • Machine Screw and Fractional • ANSI



- first choice
- alternate choice

grade WP49EG Oxide		D1	TPI	L	L3	L2	D	number of flutes	pitch diameter limit
5364683	VTSFT5093	5/8	11	3.81	2.00	1.89	.480	3	H3
5364687	VTSFT5094	5/8	11	3.81	1.09	1.89	.480	3	H5
5364690	VTSFT5095	5/8	11	3.81	1.09	1.89	.480	3	H7
5364691	VTSFT5096	5/8	18	3.81	1.09	1.89	.480	3	H3
5364695	VTSFT5097	5/8	18	3.81	1.09	1.89	.480	3	H5
5364698	VTSFT5099	5/8	18	3.81	1.09	1.89	.480	3	H7
5364699	VTSFT5100	3/4	10	4.25	1.22	2.08	.590	4	H3
5364703	VTSFT5101	3/4	10	4.25	1.22	2.08	.590	4	H5
5364706	VTSFT5102	3/4	16	4.25	1.22	2.08	.590	4	H3
5364710	VTSFT5103	3/4	16	4.25	1.22	2.08	.590	4	H5
5364713	VTSFT5104	3/4	16	4.25	1.22	2.08	.590	4	H7
5364714	VTSFT5105	7/8	9	4.69	1.34	2.30	.697	4	H4
5364721	VTSFT5107	7/8	14	4.69	1.34	2.30	.697	4	H4
5364726	VTSFT5108	1	8	5.13	1.50	2.58	.800	4	H5
5364729	VTSFT5109	1	12	5.13	1.50	2.58	.800	4	H4
5364742	VTSFT5110	1 1/8	7	5.44	1.71	2.56	.896	4	H6
5364744	VTSFT5111	1 1/8	8	5.44	1.71	2.56	.896	4	H6
5364743	VTSFT5112	1 1/8	12	5.44	1.71	2.56	.896	4	H5
5364746	VTSFT5113	1 1/4	7	5.75	1.71	2.56	1.021	4	H6
5364747	VTSFT5114	1 1/4	12	5.75	1.71	2.56	1.021	4	H5
5364748	VTSFT5115	1 1/4	8	5.75	1.71	2.56	1.021	4	H6
5364751	VTSFT5118	1 3/8	8	6.06	2.00	3.00	1.108	5	H6
5364752	VTSFT5119	1 1/2	6	6.38	2.00	3.00	1.233	5	H6
5364754	VTSFT5120	1 1/2	8	6.38	2.00	3.00	1.233	5	H6
5364753	VTSFT5121	1 1/2	12	6.38	2.00	3.00	1.233	5	H5
5364755	VTSFT5122	1 3/4	5	7.00	2.40	3.19	1.429	5	H7
5390146	VTSFT5131	4	40	1.88	.51	.69	.141	2	H3
5390148	VTSFT5133	5	40	1.94	.58	.75	.141	2	H2
5390220	VTSFT5135	6	32	1.99	.38	.71	.141	2	H3
5390223	VTSFT5138	6	40	1.99	.37	.71	.141	2	H3
5390224	VTSFT5139	8	32	2.12	.38	.76	.168	3	H2
5390225	VTSFT5140	8	32	2.12	.38	.76	.168	3	H3
5390226	VTSFT5141	8	32	2.12	.38	.76	.168	3	H5
5390227	VTSFT5142	10	24	2.37	.50	.91	.194	3	H3
5390228	VTSFT5143	10	24	2.37	.50	.91	.194	3	H5
5390229	VTSFT5144	10	32	2.36	.49	.91	.194	3	H3
5390230	VTSFT5145	10	32	2.36	.49	.91	.194	3	H5
5390231	VTSFT5146	1/4	20	2.50	.63	1.00	.255	3	H3
5390232	VTSFT5147	1/4	20	2.50	.63	1.00	.255	3	H5
5390233	VTSFT5148	1/4	28	2.49	.62	1.00	.255	3	H3
5390234	VTSFT5149	1/4	28	2.49	.62	1.00	.255	3	H5
5390235	VTSFT5150	5/16	18	2.72	.69	1.13	.318	3	H3
5390236	VTSFT5151	5/16	18	2.72	.69	1.13	.318	3	H5
5390237	VTSFT5152	5/16	24	2.71	.68	1.13	.318	3	H3
5390238	VTSFT5153	5/16	24	2.71	.68	1.12	.318	3	H5
5390239	VTSFT5154	3/8	16	2.94	.75	1.27	.381	3	H5
5390240	VTSFT5155	3/8	16	2.94	.75	1.27	.381	3	H3
5390241	VTSFT5156	3/8	24	2.92	.74	1.25	.381	3	H3
5390243	VTSFT5158	3/8	24	2.92	.74	1.25	.381	3	H5
5390244	VTSFT5159	7/16	14	3.16	.88	1.49	.323	3	H3
5390245	VTSFT5160	7/16	14	3.16	.88	1.49	.323	3	H5
5390246	VTSFT5161	7/16	20	3.16	.88	1.49	.323	3	H3
5390247	VTSFT5162	7/16	20	3.16	.88	1.49	.323	3	H5
5390248	VTSFT5163	1/2	13	3.38	.94	1.74	.367	3	H3
5390249	VTSFT5164	1/2	13	3.38	.94	1.74	.367	3	H5
5390260	VTSFT5165	1/2	20	3.38	.94	1.74	.367	3	H3
5390262	VTSFT5167	9/16	18	3.59	1.00	1.74	.429	3	H3
5390263	VTSFT5168	5/8	11	3.81	1.09	1.89	.480	3	H3
5390264	VTSFT5169	5/8	11	3.81	1.09	1.89	.480	3	H5
5390265	VTSFT5170	5/8	18	3.81	1.09	1.89	.480	3	H3
5390266	VTSFT5171	5/8	18	3.81	1.09	1.89	.480	3	H5
5390267	VTSFT5172	3/4	10	4.25	1.22	2.08	.590	4	H3
5390268	VTSFT5173	3/4	16	4.25	1.22	2.08	.590	4	H3

VT-SFT • Form E Bottoming Chamfer • Metric • ANSI



- first choice
- alternate choice

grade WP49EG
Oxide

order #	catalog #	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
5400155	VTSFT5550	M3 X 0,5	1.94	.58	.75	.141	2	D3
5400157	VTSFT5552	M4 X 0,7	2.13	.38	.76	.168	3	D4
5400158	VTSFT5553	M5 X 0,8	2.38	.50	.91	.194	3	D4
5400159	VTSFT5554	M6 X 1	2.50	.63	1.00	.255	3	D5
5400231	VTSFT5556	M8 X 1,25	2.72	.69	1.12	.318	3	D5
5400233	VTSFT5558	M10 X 1,5	2.94	.75	1.26	.381	3	D6
5400235	VTSFT5560	M12 X 1,75	3.38	.94	1.74	.367	3	D6
5400239	VTSFT5564	M14 X 1,5	3.59	1.00	1.74	.429	3	D6
5400241	VTSFT5566	M16 X 1,5	3.81	1.09	1.89	.480	3	D6
5400240	VTSFT5565	M16 X 2	3.81	1.09	1.89	.480	3	D7

NOTE: Refer to tables on page D128 for the recommended pitch diameter limit for 6H class of fit.
VariTap for 6H class of fit is suitable for MJ aerospace internal threading applications.

INDEXABLE MILLING

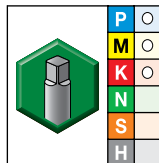
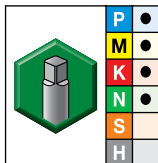
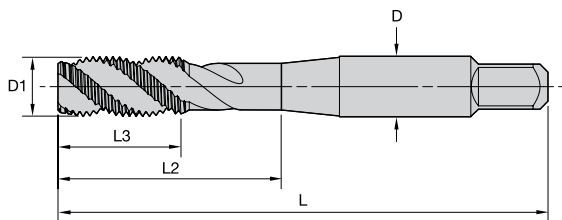
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

VT-SFT TC • Form C Semi-Bottoming Chamfer • Machine Screw and Fractional • ANSI • Tension/Compression Holders

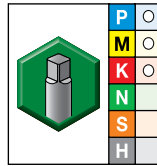
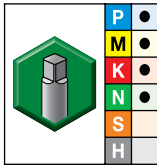
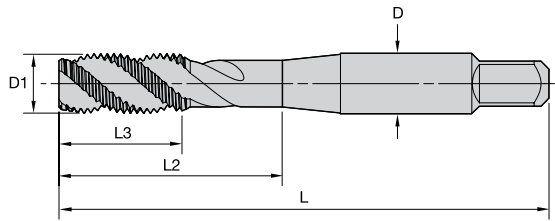


● first choice
○ alternate choice

grade WP42EG TiCN		grade WP49EG Oxide		D1 TPI	L	L3	L2	D	number of flutes	pitch diameter limit
6140248	VTSFT-TC5001	6140249	VTSFT-TC5001	2 - 56	1.76	.39	.50	.141	2	H2
6140250	VTSFT-TC5002	6140271	VTSFT-TC5002	3 - 48	1.82	.46	.57	.141	2	H2
6140272	VTSFT-TC5003	6140273	VTSFT-TC5003	4 - 40	1.88	.52	.70	.141	2	H2
6140274	VTSFT-TC5004	6140275	VTSFT-TC5004	4 - 40	1.88	.52	.70	.141	2	H3
-	-	6140279	VTSFT-TC5006	4 - 40	1.88	.52	.70	.141	2	H5
-	-	6140280	VTSFT-TC5007	4 - 40	1.88	.52	.70	.141	2	H6
-	-	6140282	VTSFT-TC5008	4 - 48	1.88	.53	.70	.141	2	H2
6140283	VTSFT-TC5009	6140284	VTSFT-TC5009	5 - 40	1.95	.59	.76	.141	2	H2
6140285	VTSFT-TC5010	6140286	VTSFT-TC5010	6 - 32	2.00	.39	.72	.141	2	H2
5886705	VTSFT-TC5011	5886704	VTSFT-TC5011	6 - 32	2.00	.38	.72	.141	3	H3
-	-	6140287	VTSFT-TC5012	6 - 32	2.00	.39	.72	.141	2	H4
6140288	VTSFT-TC5013	-	-	6 - 32	2.00	.38	.71	.141	2	H5
-	-	5886706	VTSFT-TC5013	6 - 32	2.00	.38	.71	.141	3	H5
-	-	6140292	VTSFT-TC5015	6 - 32	2.00	.39	.72	.141	2	H11
6140293	VTSFT-TC5016	6140294	VTSFT-TC5016	6 - 40	2.00	.39	.72	.141	2	H2
-	-	6140295	VTSFT-TC5017	6 - 40	2.00	.39	.72	.141	2	H3
6140296	VTSFT-TC5018	6140297	VTSFT-TC5018	8 - 32	2.13	.38	.77	.168	3	H2
5886708	VTSFT-TC5019	5886707	VTSFT-TC5019	8 - 32	2.13	.38	.77	.168	3	H3
-	-	6140298	VTSFT-TC5020	8 - 32	2.13	.38	.77	.168	3	H4
6140299	VTSFT-TC5021	5886709	VTSFT-TC5021	8 - 32	2.13	.38	.77	.168	3	H5
-	-	6140302	VTSFT-TC5023	8 - 32	2.13	.38	.77	.168	3	H7
-	-	6140305	VTSFT-TC5025	8 - 36	2.13	.38	.77	.168	3	H3
-	-	6140306	VTSFT-TC5026	10 - 24	2.38	.50	.92	.194	3	H2
5887031	VTSFT-TC5027	5886710	VTSFT-TC5027	10 - 24	2.38	.50	.92	.194	3	H3
-	-	6140307	VTSFT-TC5028	10 - 24	2.38	.50	.92	.194	3	H4
-	-	5887032	VTSFT-TC5029	10 - 24	2.38	.50	.92	.194	3	H5
-	-	6140309	VTSFT-TC5030	10 - 24	2.38	.50	.92	.194	3	H7
6140310	VTSFT-TC5031	-	-	10 - 24	2.38	.50	.92	.194	3	H11
6140312	VTSFT-TC5032	6140313	VTSFT-TC5032	10 - 32	2.38	.50	.92	.194	3	H2
5887034	VTSFT-TC5033	5887033	VTSFT-TC5033	10 - 32	2.38	.50	.92	.194	3	H3
-	-	6140314	VTSFT-TC5034	10 - 32	2.38	.50	.92	.194	3	H4
6140315	VTSFT-TC5035	-	-	10 - 32	2.38	.50	.91	.194	3	H5
-	-	5887035	VTSFT-TC5035	10 - 32	2.37	.50	.91	.194	3	H5
-	-	6140316	VTSFT-TC5036	10 - 32	2.38	.50	.92	.194	3	H6
-	-	6140318	VTSFT-TC5037	10 - 32	2.38	.50	.92	.194	3	H7
5887037	VTSFT-TC5039	5887036	VTSFT-TC5039	12 - 24	2.43	.50	.96	.220	3	H3
6140321	VTSFT-TC5040	6140322	VTSFT-TC5040	12 - 28	2.43	.50	.96	.220	3	H3
5887039	VTSFT-TC5041	5887038	VTSFT-TC5041	1/4 - 20	2.50	.63	1.00	.255	3	H3
6140183	VTSFT-TC5042	5887040	VTSFT-TC5042	1/4 - 20	2.50	.63	1.00	.255	3	H5
6140184	VTSFT-TC5043	6140185	VTSFT-TC5043	1/4 - 20	2.50	.63	1.00	.255	3	H7
6140186	VTSFT-TC5044	6140187	VTSFT-TC5044	1/4 - 20	2.50	.63	1.00	.255	3	H11
5887042	VTSFT-TC5045	5887041	VTSFT-TC5045	1/4 - 28	2.49	.62	1.00	.255	3	H3
6140188	VTSFT-TC5046	6140190	VTSFT-TC5046	1/4 - 28	2.50	.63	1.00	.255	3	H4
6140191	VTSFT-TC5047	-	-	1/4 - 28	2.50	.63	1.00	.255	3	H5
-	-	5887043	VTSFT-TC5047	1/4 - 28	2.49	.62	1.00	.255	3	H5
-	-	6140192	VTSFT-TC5048	1/4 - 28	2.50	.63	1.00	.255	3	H6
6140193	VTSFT-TC5049	6140195	VTSFT-TC5049	1/4 - 28	2.50	.63	1.00	.255	3	H7
5887045	VTSFT-TC5051	5887044	VTSFT-TC5051	5/16 - 18	2.72	.69	1.13	.318	3	H3
6140198	VTSFT-TC5052	5887046	VTSFT-TC5052	5/16 - 18	2.72	.69	1.13	.318	3	H5
6140200	VTSFT-TC5053	6140201	VTSFT-TC5053	5/16 - 18	2.72	.69	1.13	.318	3	H7
6140202	VTSFT-TC5054	6140203	VTSFT-TC5054	5/16 - 18	2.72	.69	1.13	.318	3	H11
5887048	VTSFT-TC5055	5887047	VTSFT-TC5055	5/16 - 24	2.71	.68	1.13	.318	3	H3
-	-	5887049	VTSFT-TC5057	5/16 - 24	2.71	.68	1.12	.318	3	H5
-	-	6140216	VTSFT-TC5058	5/16 - 24	2.72	.69	1.12	.318	3	H6
-	-	6140219	VTSFT-TC5059	5/16 - 24	2.72	.69	1.12	.318	3	H7
5887051	VTSFT-TC5061	5887050	VTSFT-TC5061	3/8 - 16	2.94	.75	1.27	.381	3	H3

VT-SFT TC • Form C Semi-Bottoming Chamfer • Machine Screw and Fractional • ANSI • Tension/Compression Holders

(continued)



● first choice
○ alternate choice

grade WP42EG TiCN		grade WP49EG Oxide		D1 TPI	L	L3	L2	D	number of flutes	pitch diameter limit
6140222	VTSFT-TC5062	5887052	VTSFT-TC5062	3/8 - 16	2.94	.75	1.27	.381	3	H5
-	-	6140224	VTSFT-TC5063	3/8 - 16	2.94	.75	1.27	.381	3	H7
-	-	6140226	VTSFT-TC5064	3/8 - 16	2.93	.75	1.27	.381	3	H11
5887054	VTSFT-TC5065	5887053	VTSFT-TC5065	3/8 - 24	2.92	.74	1.25	.381	3	H3
6140227	VTSFT-TC5066	6140228	VTSFT-TC5066	3/8 - 24	2.94	.75	1.27	.381	3	H4
6140229	VTSFT-TC5067	-	-	3/8 - 24	2.94	.75	1.27	.381	3	H5
-	-	5887055	VTSFT-TC5067	3/8 - 24	2.92	.74	1.25	.381	3	H5
-	-	6140230	VTSFT-TC5068	3/8 - 24	2.94	.75	1.27	.381	3	H6
6140233	VTSFT-TC5070	-	-	3/8 - 24	2.94	.75	1.27	.381	3	H11
5887057	VTSFT-TC5071	5887056	VTSFT-TC5071	7/16 - 14	3.16	.88	1.49	.323	3	H3
6140235	VTSFT-TC5072	5887058	VTSFT-TC5072	7/16 - 14	3.16	.88	1.49	.323	3	H5
-	-	6140237	VTSFT-TC5073	7/16 - 14	3.16	.88	1.49	.323	3	H7
5887061	VTSFT-TC5075	5887059	VTSFT-TC5075	7/16 - 20	3.16	.88	1.49	.323	3	H3
6140240	VTSFT-TC5076	5887062	VTSFT-TC5076	7/16 - 20	3.16	.88	1.49	.323	3	H5
-	-	6140243	VTSFT-TC5078	7/16 - 20	3.16	.88	1.49	.323	3	H7
-	-	6140245	VTSFT-TC5079	7/16 - 20	3.16	.88	1.49	.323	3	H11
5887064	VTSFT-TC5080	5887063	VTSFT-TC5080	1/2 - 13	3.38	.94	1.74	.367	3	H3
6140422	VTSFT-TC5081	5887065	VTSFT-TC5081	1/2 - 13	3.38	.94	1.74	.367	3	H5
-	-	6140424	VTSFT-TC5082	1/2 - 13	3.38	.94	1.74	.367	3	H7
6140425	VTSFT-TC5083	6140426	VTSFT-TC5083	1/2 - 13	3.38	.94	1.74	.367	3	H11
5887068	VTSFT-TC5084	5887067	VTSFT-TC5084	1/2 - 20	3.38	.94	1.74	.367	3	H3
6140427	VTSFT-TC5085	5887069	VTSFT-TC5085	1/2 - 20	3.38	.94	1.74	.367	3	H5
-	-	6140430	VTSFT-TC5087	1/2 - 20	3.38	.94	1.74	.367	3	H7
-	-	6140432	VTSFT-TC5088	1/2 - 20	3.38	.94	1.74	.367	3	H11
6140434	VTSFT-TC5089	6140436	VTSFT-TC5089	9/16 - 12	3.59	1.00	1.74	.429	3	H3
6140440	VTSFT-TC5091	6140452	VTSFT-TC5091	9/16 - 18	3.59	1.00	1.74	.429	3	H3
-	-	6140454	VTSFT-TC5092	9/16 - 18	3.59	1.00	1.74	.429	3	H5
5887071	VTSFT-TC5093	5887070	VTSFT-TC5093	5/8 - 11	3.81	1.09	1.89	.480	3	H3
6140456	VTSFT-TC5094	5887072	VTSFT-TC5094	5/8 - 11	3.81	1.09	1.89	.480	3	H5
-	-	6140458	VTSFT-TC5095	5/8 - 11	3.81	1.09	1.89	.480	3	H7
5887074	VTSFT-TC5096	5887073	VTSFT-TC5096	5/8 - 18	3.81	1.09	1.89	.480	3	H3
-	-	5887075	VTSFT-TC5097	5/8 - 18	3.81	1.09	1.89	.480	3	H5
-	-	6140460	VTSFT-TC5098	5/8 - 18	3.81	1.09	1.89	.480	3	H6
5887077	VTSFT-TC5100	5887076	VTSFT-TC5100	3/4 - 10	4.25	1.22	2.08	.590	4	H3
6140465	VTSFT-TC5101	5887078	VTSFT-TC5101	3/4 - 10	4.25	1.22	2.08	.590	4	H5
5887080	VTSFT-TC5102	5887079	VTSFT-TC5102	3/4 - 16	4.25	1.22	2.08	.590	4	H3
6140467	VTSFT-TC5103	5887081	VTSFT-TC5103	3/4 - 16	4.25	1.22	2.08	.590	4	H5
-	-	6140469	VTSFT-TC5104	3/4 - 16	4.25	1.22	2.08	.590	4	H7
-	-	5887082	VTSFT-TC5105	7/8 - 9	4.69	1.34	2.30	.697	4	H4
6140471	VTSFT-TC5106	6140473	VTSFT-TC5106	7/8 - 9	4.69	1.34	2.30	.697	4	H5
6140475	VTSFT-TC5107	6140477	VTSFT-TC5107	7/8 - 14	4.69	1.34	2.30	.697	4	H4
-	-	5887083	VTSFT-TC5108	1 - 8	5.13	1.50	2.58	.800	4	H5
6140479	VTSFT-TC5109	6140481	VTSFT-TC5109	1 - 12	5.13	1.50	2.58	.800	4	H4
-	-	6140483	VTSFT-TC5110	1 1/8 - 7	5.44	1.71	2.56	.896	4	H6
-	-	6140484	VTSFT-TC5111	1 1/8 - 8	5.44	1.71	2.56	.896	4	H6
-	-	6140486	VTSFT-TC5112	1 1/8 - 12	5.44	1.71	2.56	.896	4	H5
-	-	6140488	VTSFT-TC5113	1 1/4 - 7	5.75	1.71	2.56	1.021	4	H6
-	-	6140490	VTSFT-TC5114	1 1/4 - 12	5.75	1.71	2.56	1.021	4	H5
-	-	6140492	VTSFT-TC5115	1 1/4 - 8	5.75	1.71	2.56	1.021	4	H6
-	-	6140494	VTSFT-TC5116	1 3/8 - 6	6.06	2.00	3.00	1.108	5	H6
-	-	6140496	VTSFT-TC5117	1 3/8 - 12	6.06	2.00	3.00	1.108	5	H5
-	-	6140498	VTSFT-TC5118	1 3/8 - 8	6.06	2.00	3.00	1.108	5	H6
-	-	6140500	VTSFT-TC5119	1 1/2 - 6	6.38	2.00	3.00	1.233	5	H6
-	-	6140502	VTSFT-TC5120	1 1/2 - 8	6.38	2.00	3.00	1.233	5	H6
-	-	6140504	VTSFT-TC5121	1 1/2 - 12	6.38	2.00	3.00	1.258	5	H5
-	-	6140506	VTSFT-TC5122	1 3/4 - 5	7.00	2.40	3.19	1.430	5	H7

INDEXABLE MILLING

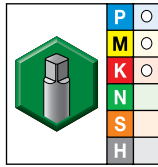
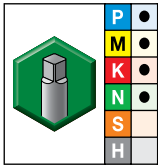
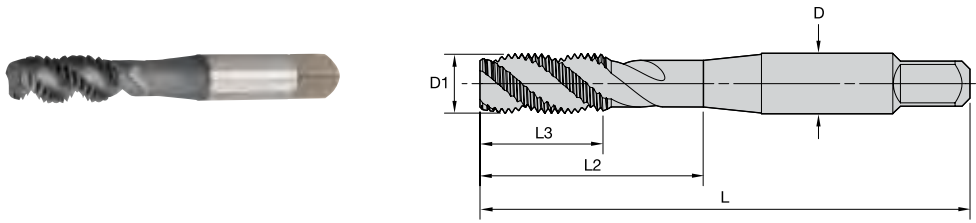
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

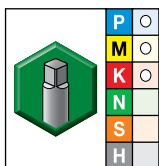
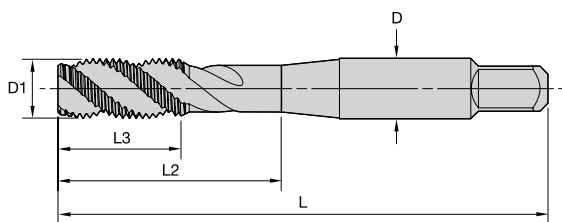
VT-SFT TC • Form C Semi-Bottoming Chamfer • Metric • ANSI • Tension/Compression Holders



● first choice
○ alternate choice

grade WP42EG TiCN		grade WP49EG Oxide		L		L3		L2		D		number of flutes	pitch diameter limit	
order #	catalog #	order #	catalog #	D1 TPI	mm	in	mm	in	mm	in	mm			in
5887085	VTSFT-TC5505	5887084	VTSFT-TC5505	M3 X 0,5	49,40	1.94	14,80	.58	19,30	.76	3,581	.141	3	D3
6141630	VTSFT-TC5507	6141781	VTSFT-TC5507	M3,5 X 0,6	50,50	1.99	9,70	.38	18,00	.71	3,582	.141	2	D4
5887087	VTSFT-TC5509	5887086	VTSFT-TC5509	M4 X 0,7	53,80	2.12	9,70	.38	19,40	.76	4,267	.168	3	D4
5887089	VTSFT-TC5511	5887088	VTSFT-TC5511	M5 X 0,8	60,30	2.37	12,70	.50	23,20	.91	4,928	.194	3	D4
5887091	VTSFT-TC5513	5887090	VTSFT-TC5513	M6 X 1	63,50	2.50	16,00	.63	25,50	1.01	6,477	.255	3	D5
-	-	6141790	VTSFT-TC5514	M6 X 1	63,50	2.50	16,00	.63	25,50	1.00	6,477	.255	3	D11
-	-	6141792	VTSFT-TC5515	M7 X 1	69,20	2.73	17,50	.69	29,30	1.15	8,077	.318	3	D5
6141796	VTSFT-TC5517	6141797	VTSFT-TC5517	M8 X 1	68,70	2.71	17,50	.69	28,50	1.12	8,077	.318	3	D5
-	-	6141799	VTSFT-TC5518	M8 X 1	68,70	2.71	17,50	.69	28,50	1.12	8,077	.318	3	D11
5887093	VTSFT-TC5519	5887092	VTSFT-TC5519	M8 X 1,25	68,70	2.71	17,50	.69	28,50	1.12	8,077	.318	3	D5
-	-	6141801	VTSFT-TC5520	M8 X 1,25	68,70	2.71	17,50	.69	28,50	1.12	8,077	.318	3	D11
-	-	6141803	VTSFT-TC5522	M10 X 1	73,90	2.91	18,70	.74	31,60	1.24	9,678	.381	3	D11
-	-	6141805	VTSFT-TC5523	M10 X 1,25	74,10	2.92	18,90	.74	31,80	1.25	9,678	.381	3	D5
6141808	VTSFT-TC5525	6141809	VTSFT-TC5525	M10 X 1,5	74,30	2.92	19,00	.75	31,90	1.26	9,678	.381	3	D6
-	-	6141811	VTSFT-TC5526	M10 X 1,5	74,20	2.92	19,00	.75	31,60	1.24	9,678	.381	3	D11
-	-	6140508	VTSFT-TC5527	M12 X 1,25	85,90	3.38	23,90	.94	44,20	1.74	9,322	.367	3	D5
-	-	6140512	VTSFT-TC5529	M12 X 1,5	85,90	3.38	23,90	.94	44,20	1.74	9,322	.367	3	D6
5887097	VTSFT-TC5531	5887096	VTSFT-TC5531	M12 X 1,75	85,90	3.38	23,90	.94	44,20	1.74	9,322	.367	3	D6
6140515	VTSFT-TC5532	6140516	VTSFT-TC5532	M12 X 1,75	85,90	3.38	23,90	.94	44,20	1.74	9,322	.367	3	D11
-	-	6140518	VTSFT-TC5533	M14 X 1,5	91,20	3.59	25,40	1.00	44,20	1.74	10,897	.429	3	D6
-	-	6140520	VTSFT-TC5535	M14 X 2	91,20	3.59	25,40	1.00	44,20	1.74	10,897	.429	3	D7
6140521	VTSFT-TC5536	6140522	VTSFT-TC5536	M16 X 1,5	96,80	3.81	27,70	1.09	48,00	1.89	12,192	.480	3	D6
5887099	VTSFT-TC5537	5887098	VTSFT-TC5537	M16 X 2	96,80	3.81	27,70	1.09	48,00	1.89	12,192	.480	3	D7
6140523	VTSFT-TC5538	6140524	VTSFT-TC5538	M18 X 1,5	102,40	4.03	27,70	1.09	48,00	1.89	13,767	.542	4	D6
6140525	VTSFT-TC5539	6140526	VTSFT-TC5539	M18 X 2,5	102,40	4.03	31,00	1.22	48,00	1.89	13,767	.542	4	D7
6140527	VTSFT-TC5540	6140528	VTSFT-TC5540	M20 X 1,5	113,50	4.47	31,00	1.22	52,80	2.08	16,561	.652	4	D6
6140529	VTSFT-TC5541	6140530	VTSFT-TC5541	M20 X 2,5	113,50	4.47	34,00	1.34	58,40	2.30	16,561	.652	4	D7
-	-	6140531	VTSFT-TC5542	M22 X 1,5	119,10	4.69	34,00	1.34	58,40	2.30	17,704	.697	4	D6
-	-	6140532	VTSFT-TC5543	M22 X 2,5	119,10	4.69	34,00	1.34	58,40	2.30	17,704	.697	4	D7
-	-	6140533	VTSFT-TC5544	M24 X 1,5	124,70	4.91	34,00	1.34	58,40	2.30	19,304	.760	4	D6
-	-	6140534	VTSFT-TC5545	M24 X 3	124,70	4.91	34,00	1.34	58,40	2.30	19,304	.760	4	D8
-	-	6140535	VTSFT-TC5546	M27 X 1,5	130,30	5.13	38,10	1.50	63,50	2.50	22,758	.896	4	D7
-	-	6140536	VTSFT-TC5547	M27 X 3	130,30	5.13	38,10	1.50	63,50	2.50	22,758	.896	4	D8
-	-	6140537	VTSFT-TC5548	M30 X 1,5	138,20	5.44	43,50	1.71	65,00	2.56	25,933	1.021	4	D6
-	-	6140538	VTSFT-TC5549	M30 X 3,5	138,20	5.44	43,50	1.71	65,00	2.56	25,933	1.021	4	D9

VT-SFT TC • Form E Bottoming Chamfer • Machine Screw and Fractional • ANSI • Tension/Compression Holders



● first choice
○ alternate choice

grade WP49EG Oxide							number of flutes	pitch diameter limit
order #	catalog #	D1 TPI	L	L3	L2	D		
6140539	VTSFT-TC5130	4 - 40	1.88	.51	.69	.141	2	H2
6140540	VTSFT-TC5131	4 - 40	1.88	.51	.69	.141	2	H3
6140541	VTSFT-TC5132	4 - 40	1.88	.51	.69	.141	2	H5
6140543	VTSFT-TC5134	6 - 32	1.99	.38	.71	.141	2	H2
6140544	VTSFT-TC5135	6 - 32	1.99	.38	.71	.141	2	H3
6140545	VTSFT-TC5136	6 - 32	1.99	.38	.71	.141	2	H5
6140546	VTSFT-TC5137	6 - 40	2.00	.38	.71	.141	2	H2
6140547	VTSFT-TC5138	6 - 40	2.00	.38	.71	.141	2	H3
6140548	VTSFT-TC5139	8 - 32	2.12	.38	.76	.168	3	H2
6140549	VTSFT-TC5140	8 - 32	2.12	.38	.76	.168	3	H3
6140550	VTSFT-TC5141	8 - 32	2.12	.38	.76	.168	3	H5
6140561	VTSFT-TC5142	10 - 24	2.37	.50	.91	.194	3	H3
6140562	VTSFT-TC5143	10 - 24	2.37	.50	.91	.194	3	H5
6140563	VTSFT-TC5144	10 - 32	2.38	.50	.91	.194	3	H3
6140564	VTSFT-TC5145	10 - 32	2.38	.50	.91	.194	3	H5
6140565	VTSFT-TC5146	1/4 - 20	2.50	.63	1.00	.255	3	H3
6140566	VTSFT-TC5147	1/4 - 20	2.50	.63	1.00	.255	3	H5
6140567	VTSFT-TC5148	1/4 - 28	2.50	.63	1.00	.255	3	H3
6140568	VTSFT-TC5149	1/4 - 28	2.50	.63	1.00	.255	3	H5
6140569	VTSFT-TC5150	5/16 - 18	2.72	.69	1.13	.318	3	H3
6140570	VTSFT-TC5151	5/16 - 18	2.72	.69	1.13	.318	3	H5
6140571	VTSFT-TC5152	5/16 - 24	2.72	.69	1.13	.318	3	H3
6140572	VTSFT-TC5153	5/16 - 24	2.72	.69	1.12	.318	3	H5
6140573	VTSFT-TC5154	3/8 - 16	2.94	.75	1.27	.381	3	H5
6140574	VTSFT-TC5155	3/8 - 16	2.94	.75	1.27	.381	3	H3
6140579	VTSFT-TC5156	3/8 - 24	2.94	.75	1.27	.381	3	H3
6140580	VTSFT-TC5157	3/8 - 24	2.94	.75	1.27	.381	3	H4
6140581	VTSFT-TC5158	3/8 - 24	2.94	.75	1.27	.381	3	H5
6140582	VTSFT-TC5159	7/16 - 14	3.16	.88	1.49	.323	3	H3
6140583	VTSFT-TC5160	7/16 - 14	3.16	.88	1.49	.323	3	H5
6140584	VTSFT-TC5161	7/16 - 20	3.16	.88	1.49	.323	3	H3
6140585	VTSFT-TC5162	7/16 - 20	3.16	.88	1.49	.323	3	H5
6140586	VTSFT-TC5163	1/2 - 13	3.38	.94	1.74	.367	3	H3
6140587	VTSFT-TC5164	1/2 - 13	3.38	.94	1.74	.367	3	H5
6140588	VTSFT-TC5165	1/2 - 20	3.38	.94	1.74	.367	3	H3
6140589	VTSFT-TC5166	9/16 - 12	3.59	1.00	1.74	.429	3	H3
6140590	VTSFT-TC5167	9/16 - 18	3.59	1.00	1.74	.429	3	H3
6140591	VTSFT-TC5168	5/8 - 11	3.81	1.09	1.89	.480	3	H3
6140592	VTSFT-TC5169	5/8 - 11	3.81	1.09	1.89	.480	3	H5
6140593	VTSFT-TC5170	5/8 - 18	3.81	1.09	1.89	.480	3	H3
6140595	VTSFT-TC5171	5/8 - 18	3.81	1.09	1.89	.480	3	H5
6140597	VTSFT-TC5172	3/4 - 10	4.25	1.22	2.08	.590	4	H3
6140599	VTSFT-TC5173	3/4 - 16	4.25	1.22	2.08	.590	4	H3

INDEXABLE MILLING

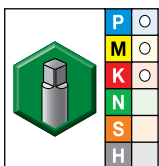
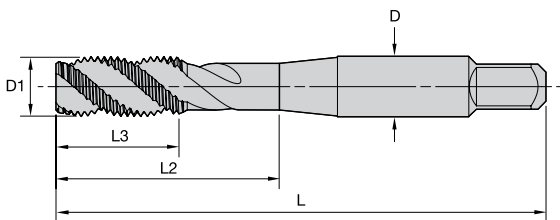
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

VT-SFT TC • Form E Bottoming Chamfer • Metric • ANSI • Tension/Compression Holders



● first choice
○ alternate choice

grade WP49EG Oxide		L		L3		L2		D		number of flutes	pitch diameter limit	
order #	catalog #	D1 TPI	mm	in	mm	in	mm	in	mm	in		
6140343	VTSFT-TC5550	M3 X 0,5	49,30	1,94	14,80	—	19,10	.75	3,582	0,141	2	D3
6140344	VTSFT-TC5551	M3,5 X 0,6	50,80	2,00	9,70	.38	—	.71	3,582	0,141	2	D4
6140345	VTSFT-TC5552	M4 X 0,7	54,10	2,13	9,70	.38	19,40	.76	4,267	0,168	3	D4
6140346	VTSFT-TC5553	M5 X 0,8	60,50	2,38	12,70	.50	23,20	.91	4,928	0,194	3	D4
6140347	VTSFT-TC5554	M6 X 1	63,50	2,50	16,00	.63	25,50	1,00	6,477	0,255	3	D5
6140348	VTSFT-TC5555	M7 X 1	69,10	2,72	17,50	.69	—	1,15	8,077	0,318	3	D5
6140349	VTSFT-TC5556	M8 X 1,25	69,10	2,72	17,50	.69	28,50	1,12	8,077	0,318	3	D5
6140350	VTSFT-TC5557	M8 X 1	69,10	2,72	17,50	.69	28,50	1,12	8,077	0,318	3	D5
6140391	VTSFT-TC5558	M10 X 1,5	74,70	2,94	19,10	.75	31,90	1,26	9,678	0,381	3	D6
6140392	VTSFT-TC5559	M10 X 1,25	74,70	2,94	19,10	.75	31,90	1,26	9,677	0,381	3	D5
6140393	VTSFT-TC5560	M12 X 1,75	85,90	3,38	23,90	.94	—	1,74	9,322	0,367	3	D6
6140394	VTSFT-TC5561	M12 X 1,5	85,90	3,38	23,90	.94	44,20	1,74	9,322	0,367	3	D5
6140395	VTSFT-TC5562	M12 X 1,25	85,90	3,38	23,90	.94	44,20	1,74	9,322	0,367	3	D5
6140396	VTSFT-TC5563	M14 X 2	91,20	3,59	25,40	1,00	44,20	1,74	10,897	0,429	3	D7
6140397	VTSFT-TC5564	M14 X 1,5	91,20	3,59	25,40	1,00	44,20	1,74	10,897	0,429	3	D6
6140398	VTSFT-TC5565	M16 X 2	96,80	3,81	27,70	1,09	48,00	1,89	12,192	0,480	3	D7
6140399	VTSFT-TC5566	M16 X 1,5	96,80	3,81	27,70	1,09	48,00	1,89	12,192	0,480	3	D6

INDEXABLE MILLING

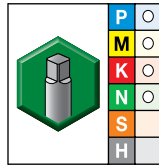
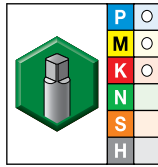
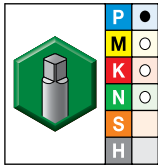
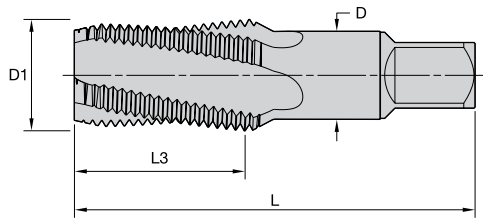
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

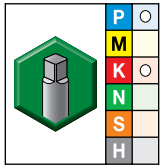
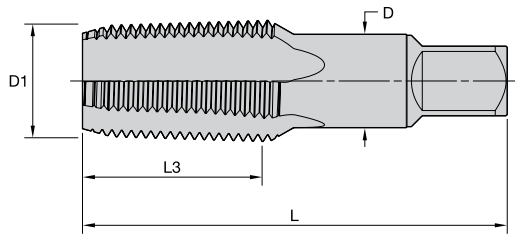
VT-SFT • Standard Chamfer • Pipe Taps



● first choice
○ alternate choice

grade WU41EG TiN		grade WP49EG Oxide		grade WU40EG Bright		D1 TPI	L	L3	D	number of flutes	thread type
5629600	VTSFT8001	5629359	VTSFT8001	-	-	1/16 - 27	2.13	.69	.313	4	NPT
5629603	VTSFT8002	5629602	VTSFT8002	5629604	VTSFT8002	1/8 - 27	2.13	.75	.313	4	NPT
5629621	VTSFT8502	5629620	VTSFT8502	-	-	1/8 - 27	2.13	.75	.313	4	NPTF
5629606	VTSFT8003	5629605	VTSFT8003	-	-	1/8 - 27	2.13	.75	.438	4	NPT
5629624	VTSFT8503	5629623	VTSFT8503	-	-	1/8 - 27	2.13	.75	.438	4	NPTF
5629609	VTSFT8004	5629608	VTSFT8004	5629610	VTSFT8004	1/4 - 18	2.44	1.03	.563	4	NPT
5629627	VTSFT8504	5629626	VTSFT8504	5629628	VTSFT8504	1/4 - 18	2.44	1.03	.563	4	NPTF
5629612	VTSFT8005	5629611	VTSFT8005	-	-	3/8 - 18	2.56	1.03	.700	4	NPT
5629640	VTSFT8505	-	-	-	-	3/8 - 18	2.56	1.03	.700	4	NPTF
5629615	VTSFT8006	5629614	VTSFT8006	-	-	1/2 - 14	3.13	1.38	.688	4	NPT
5629643	VTSFT8506	5629642	VTSFT8506	-	-	1/2 - 14	3.13	1.38	.688	4	NPTF
5629836	VTSFT8007	5629835	VTSFT8007	-	-	3/4 - 14	3.25	1.38	.906	4	NPT
5629871	VTSFT8507	5629861	VTSFT8507	-	-	3/4 - 14	3.25	1.38	.906	4	NPTF
5629839	VTSFT8008	-	-	-	-	1 - 11 1/2	3.75	1.75	1.125	4	NPT
5629890	VTSFT8508	5629889	VTSFT8508	-	-	1 - 11 1/2	3.75	1.75	1.125	4	NPTF

VT-STR • NPT • Standard Chamfer • Pipe Taps



grade WU40EG
Bright

● first choice
○ alternate choice

order #	catalog #	D1 TPI	L	L3	D	number of flutes	thread type
5629646	VTSTR8001	1/8 - 27	2.13	.75	.313	4	NPT
5629647	VTSTR8002	1/4 - 18	2.44	1.03	.563	4	NPT
5629648	VTSTR8003	3/8 - 18	2.56	1.03	.700	4	NPT
5629649	VTSTR8004	1/2 - 14	3.13	1.38	.688	4	NPT
5629904	VTSTR8005	3/4 - 14	3.25	1.38	.906	5	NPT

INDEXABLE MILLING

SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING

Application Data • VariTap • HSS-E • Inch

Material Group		Through Holes					Blind Holes				
		Tap Style	Grade	Range – SFM			Tap Style	Grade	Range – SFM		
				min	Starting Value	max			min	Starting Value	max
P	1	VT-SPO	WP42EG, WU41EG	70	90	110	VT-SFT	WP42EG, WU41EG	40	60	90
		VT-SPO	WP49EG, WU40EG	30	45	60	VT-SFT	WP49EG, WU40EG	20	30	40
	2,3,4,5	VT-SPO	WP42EG, WU41EG	50	70	90	VT-SFT	WP42EG, WU41EG	40	50	70
		VT-SPO	WP49EG, WU40EG	30	35	40	VT-SFT	WP49EG, WU40EG	10	20	30
		VT-SPO	WP42EG, WU41EG	30	40	50	VT-SFT	WP42EG, WU41EG	20	30	40
		VT-SPO	WP49EG, WU40EG	20	20	30	VT-SFT	WP49EG, WU40EG	10	10	10
6,7,8,10	VT-STR NPT	WU41EG	20	20	30	VT-STR NPT	WU41EG	20	20	30	
	VT-STR NPT	WU40EG	10	10	10	VT-STR NPT	WU40EG	10	10	10	
	14.1, 14.3	VT-SPO	WP42EG, WU41EG	30	40	50	VT-SFT	WP42EG, WU41EG	20	30	40
		VT-SPO	WP49EG, WU40EG	20	20	30	VT-SFT	WP49EG, WU40EG	10	10	10
	14.2	VT-SFT NPT	WU41EG	20	20	30	VT-SFT NPT	WU41EG	20	20	30
		VT-SFT NPT	WU40EG	10	10	10	VT-SFT NPT	WU40EG	10	10	10
M	15,16	VT-SPO	WP42EG, WU41EG	20	30	40	VT-SFT	WP42EG, WU41EG	10	20	30
		VT-SPO	WP49EG, WU40EG	10	15	20	VT-SFT	WP49EG, WU40EG	7	10	10
	17,18,19	VT-STR NPT	WU41EG	30	45	60	VT-STR NPT	WU41EG	30	45	60
		VT-STR NPT	WU40EG	20	25	30	VT-STR NPT	WU40EG	20	25	30
N	21,22	VT-SPO	WP42EG, WU41EG	70	90	110	VT-SFT	WP42EG, WU41EG	40	60	90
		VT-SPO	WP49EG, WU40EG	30	45	60	VT-SFT	WP49EG, WU40EG	20	30	40
	23,24	VT-SPO	WP42EG, WU41EG	110	150	190	VT-SFT	WP42EG, WU41EG	80	110	160
		VT-SPO	WU40EG	60	75	90	VT-SFT	WU40EG	40	50	72
	26,27,28	VT-SPO	WP42EG, WU41EG	100	130	160	VT-SFT	WP42EG, WU41EG	60	90	130
		VT-SPO	WU40EG	50	65	80	VT-SFT	WU40EG	40	50	70
		VT-SPO	WP42EG, WU41EG	23	30	40	VT-SFT	WP42EG, WU41EG	10	20	30
		VT-SPO	WU40EG	10	15	20	VT-SFT	WU40EG	10	10	10

* Grades: WP42EG = TiCN
 WU41EG = TiN
 WP49EG = oxide
 WU40EG = bright

Application Data • VariTap • HSS-E • Metric

Material Group		Through Holes					Blind Holes				
		Tap Style	Grade	Range – m/min			Tap Style	Grade	Range – m/min		
				min	Starting Value	max			min	Starting Value	max
P	P1	VT-SPO	WP42EG, WU41EG	21	27	34	VT-SFT	WP42EG, WU41EG	13	18	26
		VT-SPO	WP49EG	10	14	17	VT-SFT	WP49EG	6	9	13
	P2	VT-SPO	WP42EG, WU41EG	16	21	27	VT-SFT	WP42EG, WU41EG	11	15	22
		VT-SPO	WP49EG	8	11	13	VT-SFT	WP49EG	4	6	9
	P3	VT-SPO	WP42EG, WU41EG	9	12	15	VT-SFT	WP42EG, WU41EG	6	9	13
		VT-SPO	WP49EG	5	6	8	VT-SFT	WP49EG	2	3	4
		VT-STR NPT	WU41EG	5	6	8	VT-STR NPT	WU41EG	5	6	8
M	M1	VT-SPO	WP42EG, WU41EG	9	12	15	VT-SFT	WP42EG, WU41EG	6	9	13
		VT-SPO	WP49EG	5	6	8	VT-SFT	WP49EG	2	3	4
		VT-SFT NPT	WU41EG	5	6	8	VT-SFT NPT	WU41EG	5	6	8
		VT-SFT NPT	WP49EG	2	3	4	VT-SFT NPT	WP49EG	2	3	4
	M3	VT-SPO	WP42EG, WU41EG	7	9	11	VT-SFT	WP42EG, WU41EG	4	6	9
		VT-SPO	WP49EG	3	5	6	VT-SFT	WP49EG	2	3	4
K	K1	VT-STR NPT	WU41EG	10	14	17	VT-STR NPT	WU41EG	10	14	17
	K2	VT-SPO	WP42EG, WU41EG	21	27	34	VT-SFT	WP42EG, WU41EG	13	18	26
		VT-SPO	WP49EG	10	14	17	VT-SFT	WP49EG	6	9	13
N	N1	VT-SPO	WP42EG, WU41EG	34	46	57	VT-SFT	WP42EG, WU41EG	23	34	48
	N2	VT-SPO	WP42EG, WU41EG	30	40	50	VT-SFT	WP42EG, WU41EG	19	27	39
	N4	VT-SPO	WP42EG, WU41EG	7	9	11	VT-SFT	WP42EG, WU41EG	4	6	9

* Grades: WP42EG = TiCN
 WU41EG = TiN
 WP49EG = oxide

1872

Wiley & Russell
started to
produce taps

1912

Greenfield Tap & Die
(GTD) is formed

1915

GTD GUN[®] tap patented

1982

Launched first PVD TiN
coated taps (VTD)

1991

Greenfield acquires VTD
and Lyndonville plant

1993

EM series tap launched

2005

Launched new
generation HP carbide
tap line (GX series)

2009

GTD brand becomes
part of WIDIA[™] Products
Group

2011

WIDIA-GTD launches
the new GT series of HP
HSS-E-PM taps

2013

New VariTap[™] series
launched

2015

Launched new
generation HPP HSS-E-
PM taps for Ni, Ti, & Al
(GT series)

2016

VariTap line expands
(MTSFT-TC)



PRIMED FOR PRODUCTIVITY

THE MOST POWERFUL TAPS IN THE BUSINESS PROUDLY BEAR OUR NAME.

WIDIA-GTD[™] delivers a complete range of solid carbide, high performance, multipurpose, and general purpose tapping solutions for short-run to high-volume production needs. And with over 145 years of hands-on experience, consistent quality, and relentless innovation, you can count on WIDIA-GTD to deliver a fast, competitive tap solution for each customer, every time.

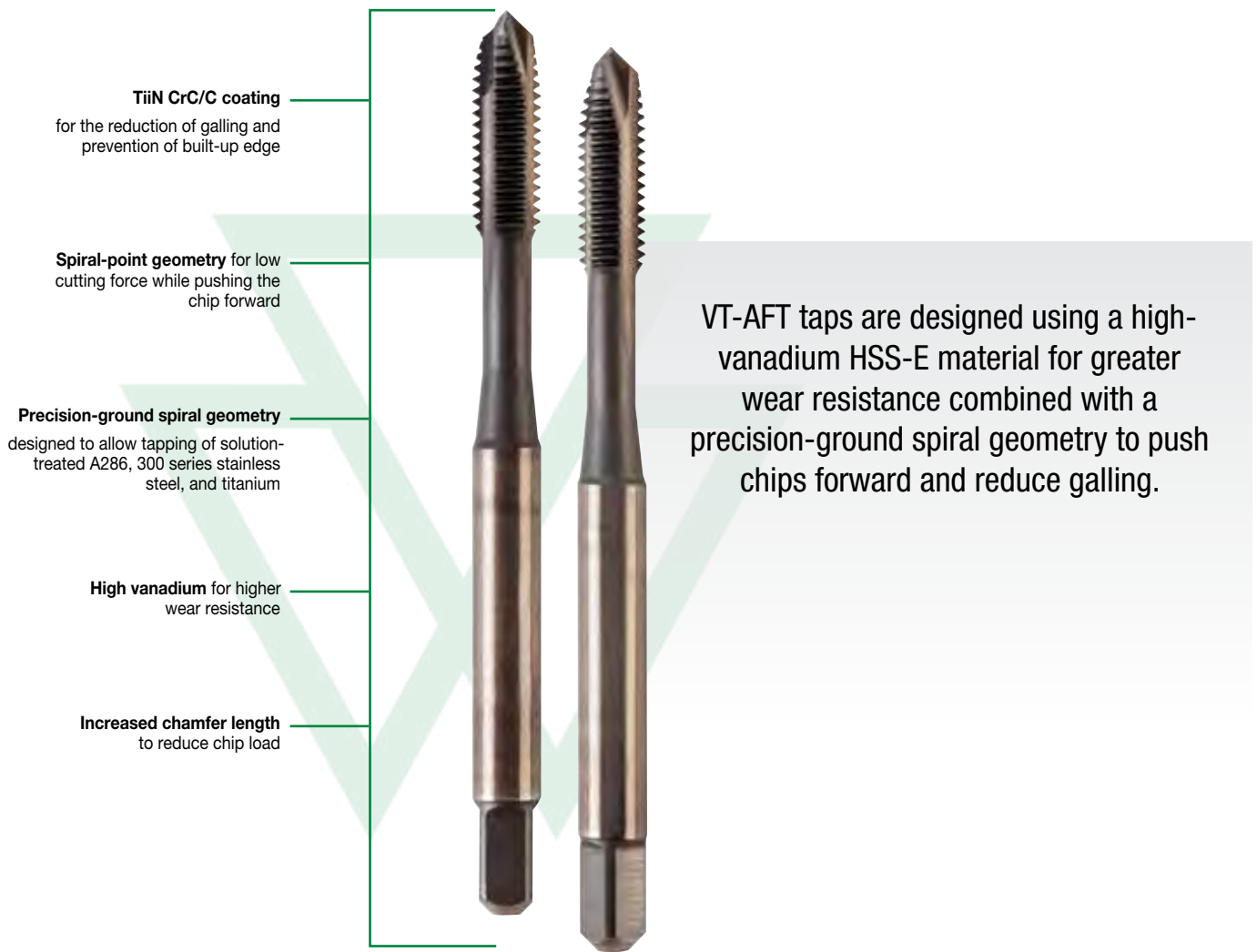
Speed, power, and precision: there's never been a better time to put WIDIA-GTD taps to the test.

WIDIA[™] GTD[™] 


VT-AFT

Aerospace Fastener Taps

The VT-AFT tap will face solution-treated high-temp alloys like A286, 300 series stainless steel, and titanium aerospace fastener applications.



GRADES

WN44EG TiN+CrC/C		
	P	○
	M	●
	K	
	N	
	S	●
	H	

HIGH-PERFORMANCE TAPS FOR AEROSPACE FASTENERS



PRODUCT

Form B
VTAFT

INDUSTRY



MATERIALS



DIAMETER RANGE

Thread Size
4-40 to 1/2-20

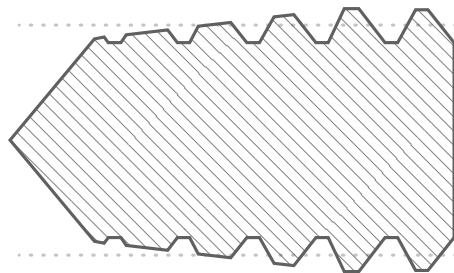
APPLICATIONS



TAPPING:
THROUGH
HOLE

TAP PITCH DIAMETER LIMIT

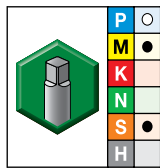
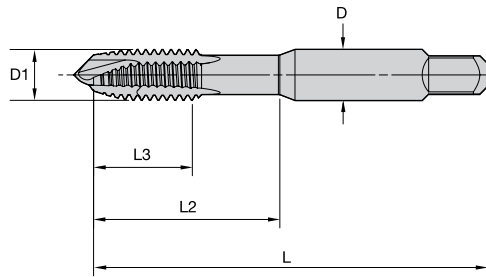
**H3
-
H9**



+0.0015	+0.0020	+0.0025	+0.0030	+0.0035	+0.0040	+0.0045
H3	H4	H5	H6	H7	H8	H9
+0.0015	+0.0020	+0.0025	+0.0030	+0.0035	+0.0040	+0.0045



VT-AFT • Inch

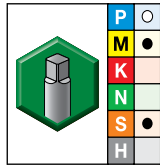
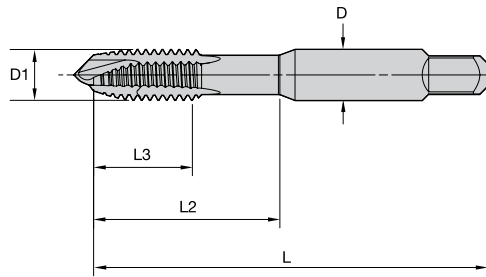


● first choice
○ alternate choice

grade WN44EG TiN+CrC/C		D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
6474960	VTAF5040	4 - 40	1.88	.51	.69	0.141	3	H3
6474971	VTAF5041	4 - 40	1.88	.51	.69	0.141	3	H4
6474972	VTAF5042	4 - 40	1.88	.51	.69	0.141	3	H5
6474973	VTAF5043	4 - 40	1.88	.51	.69	0.141	3	H6
6474974	VTAF5044	4 - 40	1.88	.51	.69	0.141	3	H7
6474975	VTAF5050	4 - 48	1.88	.51	.69	0.141	3	H3
6474976	VTAF5051	4 - 48	1.88	.51	.69	0.141	3	H4
6474977	VTAF5052	4 - 48	1.88	.51	.69	0.141	3	H5
6474978	VTAF5053	4 - 48	1.88	.51	.69	0.141	3	H6
6474979	VTAF5054	4 - 48	1.88	.51	.69	0.141	3	H7
6474986	VTAF5072	6 - 40	2.02	.38	.71	0.141	3	H5
6474987	VTAF5073	6 - 40	2.02	.38	.71	0.141	3	H6
6474988	VTAF5074	6 - 40	2.02	.38	.71	0.141	3	H7
6474983	VTAF5063	6 - 32	2.03	.38	.71	0.141	3	H6
6474984	VTAF5064	6 - 32	2.03	.38	.71	0.141	3	H7
6474985	VTAF5065	6 - 32	2.03	.38	.71	0.141	3	H8
6474980	VTAF5060	6 - 32	2.03	.38	.71	0.141	3	H3
6474981	VTAF5061	6 - 32	2.03	.38	.71	0.141	3	H4
6474982	VTAF5062	6 - 32	2.03	.38	.71	0.141	3	H5
6274214	VTAF5081	8 - 32	2.12	.38	.76	0.168	3	H4
6274215	VTAF5082	8 - 32	2.12	.38	.76	0.168	3	H5
6274216	VTAF5083	8 - 32	2.12	.38	.76	0.168	3	H6
6474989	VTAF5080	8 - 32	2.16	.38	.76	0.168	3	H3
6474990	VTAF5084	8 - 32	2.16	.38	.76	0.168	3	H7
6474991	VTAF5085	8 - 32	2.16	.38	.76	0.168	3	H8
6474992	VTAF5092	8 - 36	2.16	.38	.76	0.168	3	H5
6474993	VTAF5093	8 - 36	2.16	.38	.76	0.168	3	H6
6474994	VTAF5094	8 - 36	2.16	.38	.76	0.168	3	H7
6087704	VTAF5110	10 - 32	2.36	.50	.91	0.194	3	H4
6087705	VTAF5111	10 - 32	2.36	.50	.91	0.194	3	H5
6496038	VTAF5109	10 - 32	2.41	.50	.91	0.194	3	H3
6496039	VTAF5112	10 - 32	2.41	.50	.91	0.194	3	H6
6496040	VTAF5113	10 - 32	2.41	.50	.91	0.194	3	H7
6496081	VTAF5114	10 - 32	2.41	.50	.91	0.194	3	H8
6496033	VTAF5100	10 - 24	2.42	.50	.91	0.194	3	H3
6496034	VTAF5101	10 - 24	2.42	.50	.91	0.194	3	H4
6496036	VTAF5103	10 - 24	2.42	.50	.91	0.194	3	H6
6496037	VTAF5104	10 - 24	2.42	.50	.91	0.194	3	H7
6496035	VTAF5102	10 - 24	2.42	.50	.91	0.194	3	H5
6496089	VTAF5140	1/4 - 28	2.49	.62	1.00	0.255	3	H3
6496090	VTAF5141	1/4 - 28	2.49	.62	1.00	0.255	3	H4
6496091	VTAF5142	1/4 - 28	2.49	.62	1.00	0.255	3	H5
6496092	VTAF5143	1/4 - 28	2.49	.62	1.00	0.255	3	H6
6496093	VTAF5144	1/4 - 28	2.49	.62	1.00	0.255	3	H7
6496095	VTAF5145	1/4 - 28	2.49	.62	1.00	0.255	3	H8
6496096	VTAF5146	1/4 - 28	2.49	.62	1.00	0.255	3	H9
6496083	VTAF5131	1/4 - 20	2.50	.63	1.00	0.255	3	H4
6496084	VTAF5132	1/4 - 20	2.50	.63	1.00	0.255	3	H5

VT-AFT • Inch

(continued)



● first choice
○ alternate choice

grade WN44EG TiN+CrC/C		D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
6496086	VTAF5133	1/4 - 20	2.50	.63	1.00	0.255	3	H6
6496087	VTAF5134	1/4 - 20	2.50	.63	1.00	0.255	3	H7
6496088	VTAF5135	1/4 - 20	2.50	.63	1.00	0.255	3	H8
6496082	VTAF5130	1/4 - 20	2.50	.63	1.00	0.255	3	H3
6496097	VTAF5160	5/16 - 24	2.71	.69	1.12	0.318	3	H3
6496098	VTAF5161	5/16 - 24	2.71	.69	1.12	0.318	3	H4
6496099	VTAF5162	5/16 - 24	2.71	.69	1.12	0.318	3	H5
6496100	VTAF5163	5/16 - 24	2.71	.69	1.12	0.318	3	H6
6496111	VTAF5164	5/16 - 24	2.71	.69	1.12	0.318	3	H7
6496112	VTAF5165	5/16 - 24	2.71	.69	1.12	0.318	3	H8
6496113	VTAF5166	5/16 - 24	2.71	.69	1.12	0.318	3	H9
6496114	VTAF5180	3/8 - 24	2.92	.75	1.25	0.381	3	H3
6496115	VTAF5181	3/8 - 24	2.92	.75	1.25	0.381	3	H4
6496116	VTAF5183	3/8 - 24	2.92	.75	1.25	0.381	3	H6
6496117	VTAF5185	3/8 - 24	2.92	.75	1.25	0.381	3	H8
6496118	VTAF5186	3/8 - 24	2.92	.75	1.25	0.381	3	H9
6445486	VTAF5182	3/8 - 24	2.94	.75	1.27	0.381	3	H5
6445487	VTAF5184	3/8 - 24	2.94	.75	1.27	0.381	3	H7
6496119	VTAF5222	1/2 - 20	3.38	.94	1.74	0.367	3	H5
6496120	VTAF5223	1/2 - 20	3.38	.94	1.74	0.367	3	H6
6439284	VTAF5224	1/2 - 20	3.38	.94	1.74	0.367	3	H7
6439283	VTAF5225	1/2 - 20	3.38	.94	1.74	0.367	3	H8
6496121	VTAF5226	1/2 - 20	3.38	.94	1.74	0.367	3	H9

Application Data • VT-AFT • Inch



Aerospace Fastener Taps VT-AFT

Cutting Speed – Vc
SFM

Range

Material Group		min	Starting Value	max
P	1	30	40	50
	2	25	30	40
	3	20	30	35
M	1	30	40	50
	2	13	16	23
S	1	20	26	40
	4	13	16	20

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Victory™ Tap

HSS-E-PM • VICTORY TAPS

Victory HSS-E-PM Taps feature material-specific geometries and grades capable of working in a wider application range than solid carbide taps.


Optimized flute designs
Better chip evacuation

Application-specific coatings
Extremely high wear resistance, longer tool life

HSS-E-PM powder metallurgy substrate
Improved wear characteristics, longer tool life

Optimum choice for customers seeking consistency and optimal performance in a wide variety of applications and materials.

GRADES

	WP31MG	WS32MG	WN35MG	WU32MG	WS34MG	WH36MG	WS39MG	WN48MG	WN44EG
 P	●			●		●			○
M				○	●				●
K				●					
N				●	○			●	●
S	○	●	●	●	●	○	●		
H		●							

RELIABLE AND CONSISTENT



PRODUCT

Victory™ HSS-E-PM Taps deliver reliability and consistent performance on a wide range of applications

INDUSTRY



MATERIALS



APPLICATIONS



BLIND HOLE



THROUGH HOLE



HSS-E-PM



DIN 371



DIN 374



DIN 376



ANSI



FLOOD COOLANT: TAPPING



THROUGH COOLANT: RADIAL: TAPPING



THROUGH COOLANT: AXIAL: TAPPING

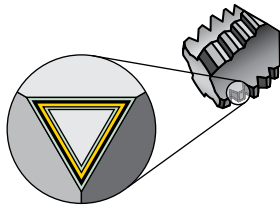
SERIES	SIZE RANGE	DIMENSIONS
GT00, GT14, GT16	M and MF: M3 to M12	DIN
GT02, GT04, GT10, GT12, GT80	M and MF: M3 to M20	DIN
GT06	M and MF: M6 to M16	DIN
	M and MF: M3 to M42	ANSI & DIN
GT2X	UNC and UNF: #2 to 3/4"	ANSI
	UNC and UNF: #6 to 1/2"	DIN/ANSI
	M and MF: M3 to M42	ANSI & DIN
GT3X	UNC and UNF: #2 to 1"	ANSI
	UNC and UNF: #6 to 1/2"	DIN/ANSI
	M and MF: M4 to M22	DIN
GT4X	UNC and UNF: #10 to 3/4"	ANSI
	UNC and UNF: #6 to 1/2"	DIN/ANSI
GT5X	M: M24 to M42	DIN
	M and MF: M2.5 to M12	ANSI
GT6X	UNC and UNF: #2 to 1"	ANSI
	M and MF: M2.5 to M12	ANSI
GT9X	UNC and UNF: #2 to 3/4"	ANSI
GT70	M and MF: M3 to M16	DIN/ANSI
	M and MF: M3 to M12	DIN/ANSI
GT7X & GT8X	UNC and UNF: #2 to 1/2"	DIN/ANSI



Shank Style

ANSI, DIN, JIS & DIN/ANSI precision ground

Grades and Grade Descriptions



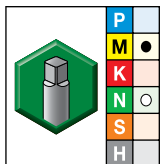
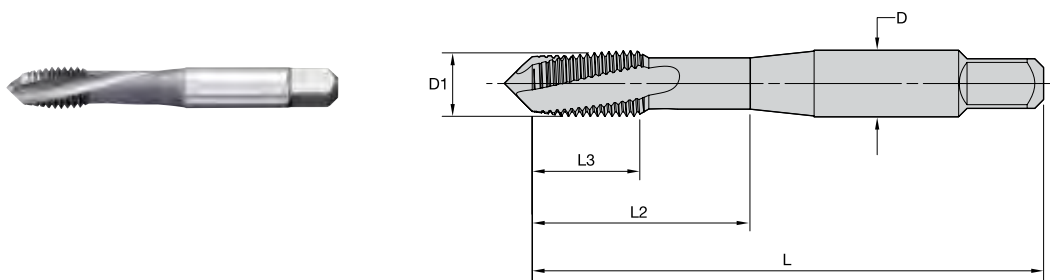
Coatings are designed for optimized tapping performance in specific materials.

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

wear resistance ← → toughness

Grade	Coating	Grade Description	Performance Matrix													
			05	10	15	20	25	30	35	40	45					
WU32MG		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, cast aluminum with silicon and super alloys.	P													
			M													
			K													
			S													
WS34MG		Coated HSS-E-PM, PVD heat and wear-resistant high-vanadium, high-cobalt powder metal HSS-E-PM substrate. Coating consists of low-friction CrC/C over wear-resistant TiN base layer. Used for tapping titanium, titanium alloys, stainless steel, and non-ferrous materials.	M													
			N													
			S													
			H													
WS39MG		Surface-treated HSS-E-PM powder metal HSS-E substrate with oxide/nitride surface treatment that provides wear resistance in nickel alloys.	P													
			M													
			K													
			S													
WN44EG		High-vanadium HSS-E substrate with a coating consists of low-friction CrC/C over wear-resistant TiN base layer. Use for tapping stainless steel and non-ferrous materials.	P													
			M													
			K													
			N													

GT20 • Machine Screw and Fractional • Form B Plug Chamfer • Steel and Stainless Steel

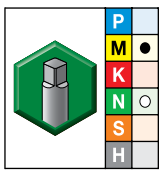
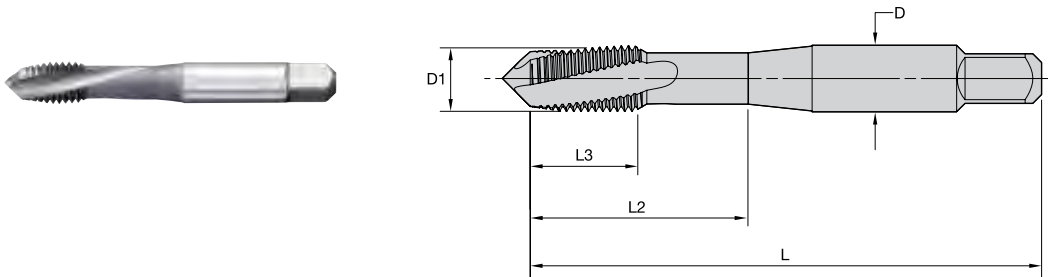


grade WS34MG
TiN+CrC/C

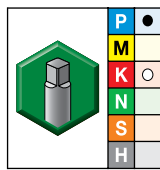
- first choice
- alternate choice

order #	catalog #	D1 TPI	L	L3	L2	D	number of flutes
3955273	GT205001	2 - 56	1.75	.44	.49	.141	2
3955274	GT205002	2 - 56	1.75	.44	.49	.141	2
3955275	GT205003	4 - 40	1.88	.56	.68	.141	2
3955276	GT205004	4 - 40	1.88	.56	.68	.141	2
3955278	GT205006	6 - 32	2.00	.36	.71	.141	2
3955280	GT205008	8 - 32	2.13	.31	.76	.168	2
3955281	GT205009	8 - 32	2.13	.31	.76	.168	2
3955294	GT205022	8 - 36	2.13	.31	.76	.168	2
3955282	GT205010	10 - 24	2.38	.47	.91	.194	3
3955295	GT205023	10 - 32	2.38	.47	.91	.194	3
3955296	GT205024	10 - 32	2.38	.47	.91	.194	3
3955284	GT205012	1/4 - 20	2.50	.44	1.00	.255	3
3955285	GT205013	1/4 - 20	2.50	.44	1.00	.255	3
3955298	GT205026	1/4 - 28	2.50	.44	1.00	.255	3
3955287	GT205015	5/16 - 18	2.72	.49	1.13	.318	3
3955286	GT205014	5/16 - 18	2.72	.49	1.13	.318	3
3955299	GT205027	5/16 - 24	2.72	.49	1.13	.318	3
3955288	GT205016	3/8 - 16	2.94	.60	1.27	.381	3
3955289	GT205017	3/8 - 16	2.94	.60	1.27	.381	3
3955291	GT205019	1/2 - 13	3.38	.77	1.74	.367	3
3955292	GT205020	5/8 - 11	3.81	.91	1.89	.480	4
3955293	GT205021	3/4 - 10	4.25	1.00	2.08	.590	4

GT20 • Metric ANSI • Form D Plug Chamfer • Steel and Stainless Steel



WS34MG



WU32MG

● first choice
○ alternate choice

WS34MG		WU32MG		D1	TPI	L	L3	L2	D	number of flutes	class of fit
order #	catalog #	order #	catalog #								
3955010	GT205061	3955018	GT205069	M3 X 0,5	1.94	.63	.75	.141		2	6HX
3955011	GT205062	-	-	M4 X 0,7	2.13	.32	.76	.168		2	6HX
-	-	3955019	GT205070	M4 X 0,7	2.12	.32	.76	.168		2	6HX
3955012	GT205063	3955020	GT205071	M5 X 0,8	2.38	.47	.91	.194		2	6HX
3955013	GT205064	3955021	GT205072	M6 X 1	2.50	.46	1.01	.255		3	6HX
3955014	GT205065	-	-	M8 X 1	2.72	.48	1.12	.318		3	6HX
3955015	GT205066	-	-	M8 X 1,25	2.72	.48	1.12	.318		3	6HX
-	-	3955044	GT205074	M8 X 1,25	2.71	.48	1.13	.318		3	6HX
3955016	GT205067	-	-	M10 X 1,5	2.94	.53	1.26	.381		3	6HX
-	-	3955045	GT205075	M10 X 1,5	2.92	.53	1.26	.381		3	6HX
3955017	GT205068	-	-	M12 X 1,75	3.38	.77	1.74	.367		3	6HX

INDEXABLE MILLING

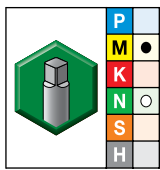
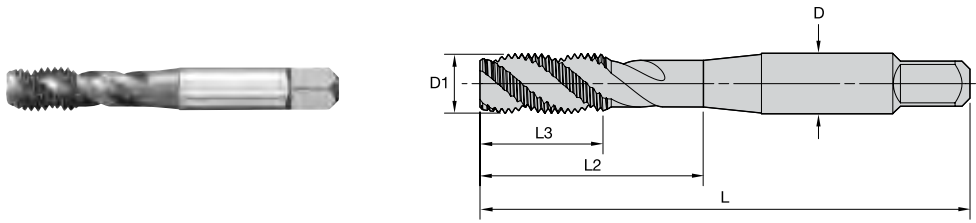
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

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



- first choice
- alternate choice

WS34MG

order #	catalog #	D1 size	L	L3	L2	D	number of flutes
3955131	GT305001	2 - 56	1.75	.44	.49	.141	2
3955132	GT305002	4 - 40	1.88	.56	.68	.141	2
3955133	GT305003	4 - 40	1.88	.56	.68	.141	2
3955134	GT305004	6 - 32	1.99	.36	.71	.141	3
3955135	GT305005	6 - 32	1.99	.36	.71	.141	3
3955136	GT305006	8 - 32	2.12	.31	.76	.168	3
3955137	GT305007	10 - 24	2.37	.47	.91	.194	3
3955152	GT305022	10 - 32	2.37	.47	.91	.194	3
3955153	GT305023	10 - 32	2.37	.47	.91	.194	3
3955138	GT305008	1/4 - 20	2.50	.44	1.01	.255	3
3955139	GT305009	1/4 - 20	2.50	.44	1.01	.255	3
3955154	GT305024	1/4 - 28	2.50	.44	1.00	.255	3
3955155	GT305025	1/4 - 28	2.50	.44	1.00	.255	3
3955140	GT305010	5/16 - 18	2.72	.49	1.13	.318	3
3955141	GT305011	5/16 - 18	2.72	.49	1.13	.318	3
3955156	GT305026	5/16 - 24	2.72	.49	1.13	.318	3
3955157	GT305027	5/16 - 24	2.72	.49	1.13	.318	3
3955142	GT305012	3/8 - 16	2.94	.60	1.27	.381	3
3955143	GT305013	3/8 - 16	2.94	.60	1.27	.381	3
3955158	GT305028	3/8 - 24	2.93	.59	1.26	.381	3
3955144	GT305014	7/16 - 14	3.16	.71	1.49	.323	5
3955159	GT305029	7/16 - 20	3.16	.71	1.49	.323	4
3955146	GT305016	1/2 - 13	3.38	.77	1.74	.367	4
3955145	GT305015	1/2 - 13	3.38	.77	1.74	.367	4
3955160	GT305030	1/2 - 20	3.38	.77	1.74	.367	4
3955147	GT305017	5/8 - 11	3.81	.91	1.89	.480	4
3955148	GT305018	5/8 - 11	3.81	.91	1.89	.480	4
3955149	GT305019	3/4 - 10	4.25	1.00	2.08	.590	4
3955150	GT305020	3/4 - 10	4.25	1.00	2.08	.590	4

INDEXABLE MILLING

SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING

INDEXABLE MILLING

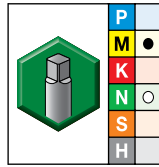
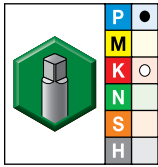
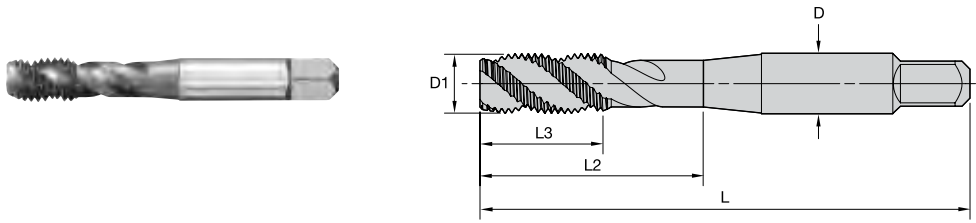
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HOLEMAKING

TAPPING

TURNING

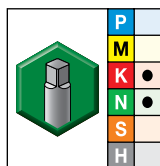
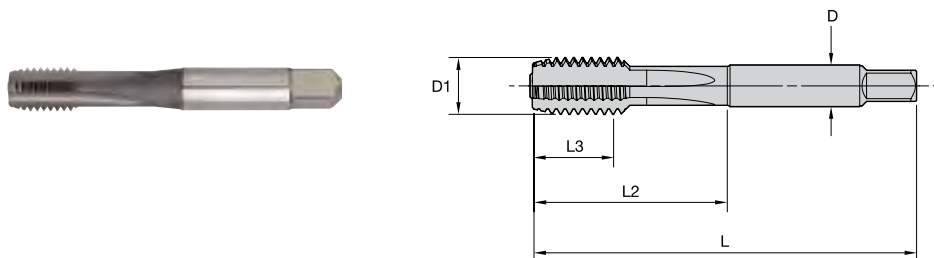
GT30 • Metric ANSI • Form C Semi-Bottoming Chamfer • Steel and Stainless Steel



● first choice
○ alternate choice

WS34MG		WU32MG		D1 size	L	L3	L2	D	number of flutes	class of fit
order #	catalog #	order #	catalog #							
3955060	GT305061	-	-	M3 X 0,5	1.94	.63	.75	.141	2	6HX
3955061	GT305062	-	-	M4 X 0,7	2.12	.32	.76	.168	3	6HX
3955062	GT305063	-	-	M5 X 0,8	2.37	.47	.91	.194	3	6HX
3955063	GT305064	3955072	GT305073	M6 X 1	2.50	.46	1.01	.255	3	6HX
3955064	GT305065	3955093	GT305074	M8 X 1,25	2.71	.48	1.12	.318	3	6HX
3955065	GT305066	-	-	M10 X 1,5	2.92	.53	1.26	.381	3	6HX
3955066	GT305067	-	-	M12 X 1,75	3.38	.77	1.74	.367	5	6HX
3955067	GT305068	-	-	M14 X 2	3.59	.83	1.74	.429	5	6HX
3955068	GT305069	-	-	M16 X 2	3.81	.91	1.89	.480	5	6HX

GT40 • Machine Screw and Fractional • Form C Semi-Bottoming Chamfer • ANSI • Blind Hole Applications • Cast Iron and Cast Aluminum



● first choice
○ alternate choice

WU32MG

order #	catalog #	D1 size	L	L3	L2	D	number of flutes	class of fit
4035535	GT405012	10 - 24	2.37	.47	.91	.194	4	3BX
4035536	GT405013	10 - 32	2.36	.47	.91	.194	4	3BX
4035537	GT405014	1/4 - 20	2.50	.44	1.01	.255	4	2BX
4035541	GT405018	5/16 - 18	2.72	.49	1.13	.318	4	2BX
4035563	GT405020	5/16 - 24	2.71	.48	1.13	.318	4	3BX
4035564	GT405021	3/8 - 16	2.94	.60	1.27	.381	4	2BX
4035566	GT405023	3/8 - 24	2.92	.58	1.25	.381	4	3BX
4035567	GT405024	7/16 - 14	3.16	.71	1.49	.323	4	3BX
4035569	GT405026	1/2 - 13	3.38	.77	1.74	.367	4	3BX
4035571	GT405028	5/8 - 11	3.81	.91	1.89	.480	4	3BX
4035572	GT405029	3/4 - 10	4.25	1.00	2.08	.590	4	3BX

INDEXABLE MILLING

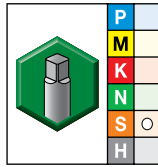
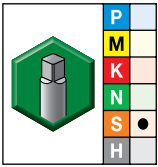
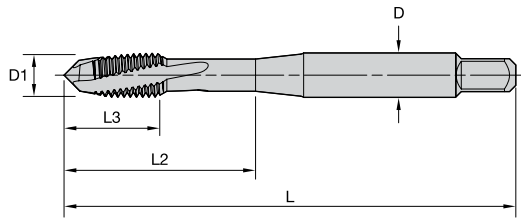
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

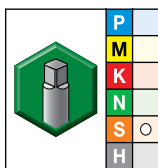
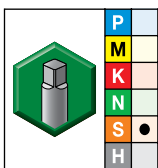
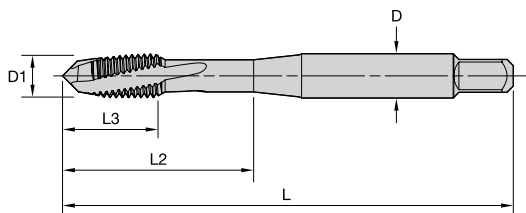
GT60 • Form B Plug Chamfer • Metric ANSI • Titanium and Titanium Alloys



- first choice
- alternate choice

grade WS34MG TiN+CrC/C		grade WS30MG Nitride		D1 TPI	L	L3	L2	D	number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #							
-	-	5563021	GT605503	M2,5 X 0,45	1.81	.49	.56	.141	3	D3
-	-	5563023	GT605505	M3 X 0,5	1.94	.63	.75	.141	3	D3
-	-	5563025	GT605507	M4 X 0,7	2.12	.32	.76	.168	3	D4
-	-	5563027	GT605509	M5 X 0,8	2.37	.47	.91	.194	3	D4
-	-	5563029	GT605511	M6 X 1	2.50	.16	1.00	.255	3	D5
5563042	GT605514	-	-	M7 X 1	2.73	.52	1.15	.318	3	D5
5563044	GT605516	-	-	M8 X 1,25	2.71	.48	1.12	.318	3	D5

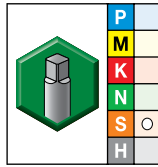
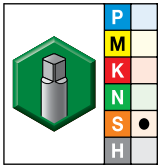
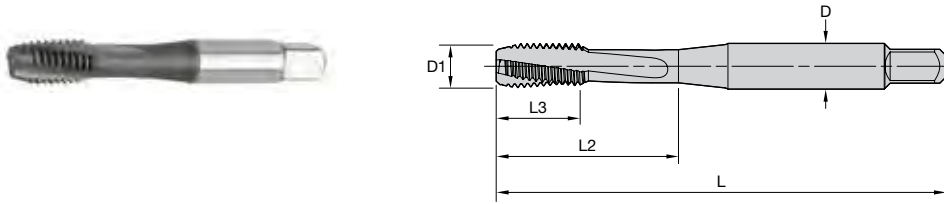
GT60 • Machine Screw and Fractional • Form B Plug Chamfer • Titanium and Titanium Alloys



● first choice
○ alternate choice

grade WS34MG TiN+CrC/C		grade WS30MG Nitride		D1 TPI	L	L3	L2	D	number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #							
5562739	GT605006	-	-	2 - 56	1.75	.44	.50	.141	2	H2
5562941	GT605008	-	-	4 - 40	1.88	.56	.69	.141	3	H2
5562943	GT605010	-	-	6 - 32	1.99	.36	.71	.141	3	H2
5562945	GT605012	5562944	GT605011	6 - 32	1.99	.36	.71	.141	3	H3
5562947	GT605014	-	-	6 - 40	1.99	.36	.71	.141	3	H2
5562949	GT605016	-	-	8 - 32	2.12	.31	.76	.168	3	H2
5562951	GT605018	-	-	8 - 32	2.12	.31	.76	.168	3	H3
5562953	GT605020	-	-	8 - 36	2.12	.31	.76	.168	3	H2
5562955	GT605022	-	-	10 - 24	2.37	.47	.91	.194	3	H3
5562957	GT605024	-	-	10 - 32	2.37	.47	.91	.194	3	H2
5562959	GT605026	-	-	10 - 32	2.37	.47	.91	.194	3	H3
5562961	GT605028	-	-	1/4 - 20	2.50	.44	1.00	.255	3	H3
5562963	GT605030	-	-	1/4 - 20	2.50	.44	1.00	.255	3	H5
5562965	GT605032	-	-	1/4 - 28	2.50	.44	1.00	.255	3	H3
5562969	GT605036	-	-	5/16 - 18	2.72	.49	1.13	.318	3	H3
5562983	GT605040	-	-	5/16 - 24	2.72	.49	1.13	.318	3	H3
5562987	GT605044	-	-	3/8 - 16	2.93	.59	1.26	.381	3	H3
5562991	GT605048	-	-	3/8 - 24	2.93	.59	1.26	.381	3	H3
5562995	GT605052	-	-	7/16 - 14	3.16	.71	1.49	.323	3	H3
5562997	GT605054	-	-	7/16 - 20	3.16	.71	1.49	.323	3	H3
5562999	GT605056	-	-	1/2 - 13	3.38	.77	1.74	.367	3	H3
5563011	GT605058	-	-	1/2 - 20	3.38	.77	1.74	.367	3	H3
5563012	GT605059	-	-	9/16 - 18	3.59	.83	1.74	.429	4	H3
5563014	GT605061	-	-	5/8 - 11	3.81	.91	1.89	.480	4	H3
5563015	GT605062	-	-	5/8 - 18	3.81	.91	1.89	.480	4	H3
5563017	GT605064	-	-	3/4 - 10	4.25	1.00	2.08	.590	4	H5
5563018	GT605065	-	-	3/4 - 16	4.25	1.00	2.08	.590	4	H3
5563020	GT605067	-	-	1 - 8	5.13	1.25	2.58	.800	5	H5

GT62 • Form C Semi-Bottoming Chamfer • Metric ANSI • Titanium and Titanium Alloys



- first choice
- alternate choice

grade WS34MG TiN+CrC/C		grade WS30MG Nitride		D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #							
5565220	GT625504	-	-	M2,5 X 0,45	1.81	.50	.56	.141	3	D3
5565222	GT625506	-	-	M3 X 0,5	1.94	.63	.75	.141	3	D3
5565224	GT625508	-	-	M4 X 0,7	2.12	.32	.76	.168	3	D4
5565226	GT625510	-	-	M5 X 0,8	2.37	.46	.91	.194	3	D4
5565228	GT625512	5565227	GT625511	M6 X 1	2.50	.46	1.00	.255	3	D5
5565230	GT625514	-	-	M7 X 1	2.72	.52	1.15	.318	3	D5
5565232	GT625516	5565231	GT625515	M8 X 1,25	2.70	.48	1.12	.318	3	D5
5565234	GT625518	-	-	M10 X 1,25	2.93	.53	1.26	.381	3	D5
5565236	GT625520	-	-	M10 X 1,5	2.93	.53	1.26	.381	3	D6
5565238	GT625522	-	-	M12 X 1,75	3.38	.77	1.74	.367	3	D6

INDEXABLE MILLING

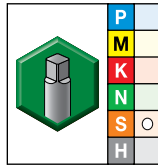
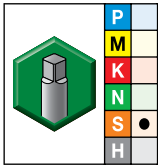
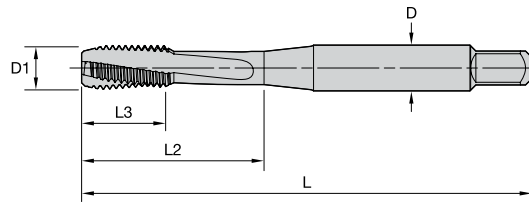
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

GT62 • Machine Screw and Fractional • Form C Semi-Bottoming Chamfer • Titanium and Titanium Alloys



- first choice
- alternate choice

grade WS34MG TiN+CrC/C		grade WS30MG Nitride		D1 TPI	L	L3	L2	D	number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #							
5565064	GT625006	-	-	2 - 56	1.75	.44	.50	.141	3	H2
5565067	GT625008	-	-	4 - 40	1.88	.56	.69	.142	3	H2
5565069	GT625010	-	-	6 - 32	1.99	.36	.71	.141	3	H2
5565133	GT625014	-	-	6 - 40	1.99	.36	.71	.141	3	H2
5565138	GT625018	-	-	8 - 32	2.12	.31	.77	.168	3	H3
5565140	GT625020	-	-	8 - 36	2.12	.31	.77	.168	3	H2
5565142	GT625022	-	-	10 - 24	2.37	.47	.92	.194	3	H3
5565146	GT625026	-	-	10 - 32	2.37	.47	.91	.194	3	H3
5565148	GT625028	5565147	GT625027	1/4 - 20	2.50	.44	1.01	.255	3	H3
5565152	GT625032	5565151	GT625031	1/4 - 28	2.50	.44	1.01	.255	3	H3
5565158	GT625038	-	-	5/16 - 18	2.72	.49	1.13	.318	3	H3
5565163	GT625042	-	-	5/16 - 24	2.72	.49	1.13	.318	3	H3
5565167	GT625046	-	-	3/8 - 16	2.93	.59	1.26	.381	3	H3
5565191	GT625050	-	-	3/8 - 24	2.93	.59	1.26	.381	3	H3
5565195	GT625054	-	-	7/16 - 14	3.16	.71	1.49	.323	3	H3
5565199	GT625058	-	-	7/16 - 20	3.16	.71	1.49	.323	3	H3
5565203	GT625062	-	-	1/2 - 13	3.38	.77	1.74	.367	3	H3
5565207	GT625066	-	-	1/2 - 20	3.38	.77	1.74	.367	3	H3
5565210	GT625069	-	-	9/16 - 18	3.59	.83	1.74	.429	4	H3
5565212	GT625071	-	-	5/8 - 11	3.81	.91	1.89	.480	4	H3
5565213	GT625072	-	-	5/8 - 18	3.81	.91	1.89	.480	4	H3
5565215	GT625074	-	-	3/4 - 10	4.25	1.00	2.08	.590	4	H5
5565216	GT625075	-	-	3/4 - 16	4.25	1.00	2.08	.590	4	H3
5565218	GT625077	-	-	1 - 8	5.12	1.25	2.58	.800	4	H5

INDEXABLE MILLING

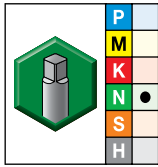
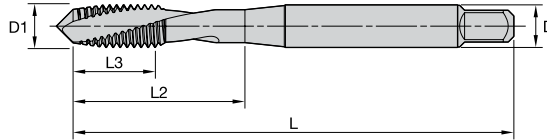
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

GT72 • Form B Plug Chamfer • Metric • DIN Length ANSI Shank • Wrought and Cast Aluminum



- first choice
- alternate choice

grade WN44EG
TiN+CrC/C

order #	catalog #	D1 TPI	L	L3	L2	D	number of flutes	pitch diameter limit
5690933	GT725037	M3 X 0,5	2.20	.31	.71	.141	2	D3
5690934	GT725038	M3,5 X 0,6	2.20	.35	.79	.141	2	D4
5690935	GT725039	M4 X 0,7	2.48	.43	.83	.168	2	D4
5690936	GT725040	M5 X 0,8	2.76	.47	.98	.194	2	D4
5690937	GT725041	M6 X 1	3.15	.47	1.18	.255	2	D5
5690938	GT725042	M7 X 1	3.54	.59	1.38	.318	2	D5
5690940	GT725044	M8 X 1,25	3.54	.59	1.38	.318	2	D5
5690941	GT725045	M10 X 1,25	3.94	.71	1.54	.381	2	D5
5690942	GT725046	M10 X 1,5	3.94	.71	1.54	.381	2	D6
5690943	GT725047	M12 X 1,25	4.33	.83	1.73	.367	3	D6
5690944	GT725048	M12 X 1,5	4.33	.83	1.73	.367	3	D6
5690945	GT725049	M12 X 1,75	4.33	.83	1.73	.367	3	D6

INDEXABLE MILLING

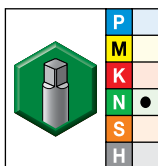
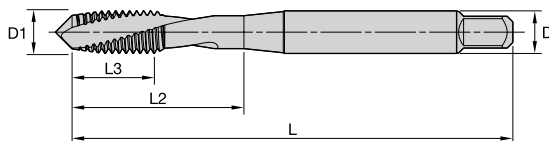
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

GT72 • Machine Screw and Fractional • Form B Plug Chamfer • DIN Length ANSI Shank • Wrought and Cast Aluminum



● first choice
○ alternate choice

grade WN44EG TiN+CrC/C							number of flutes	pitch diameter limit
order #	catalog #	D1 TPI	L	L3	L2	D		
5690893	GT725010	2 - 56	1.77	.31	.71	.141	2	H2
5690894	GT725011	4 - 40	2.20	.31	.71	.141	2	H2
5690896	GT725012	5 - 40	2.20	.31	.71	.141	2	H2
5690897	GT725013	6 - 32	2.20	.35	.79	.141	2	H3
5690898	GT725014	8 - 32	2.48	.43	.83	.168	2	H3
5690899	GT725015	10 - 24	2.76	.47	.98	.194	2	H3
5690910	GT725016	10 - 32	2.76	.47	.98	.194	2	H3
5690911	GT725017	1/4 - 20	3.15	.59	1.18	.255	2	H3
5690913	GT725019	1/4 - 28	3.15	.59	1.18	.255	2	H3
5690915	GT725021	5/16 - 18	3.54	.59	1.38	.318	2	H3
5690918	GT725023	5/16 - 24	3.54	.59	1.38	.318	2	H3
5690920	GT725025	3/8 - 16	3.94	.75	1.54	.381	2	H3
5690924	GT725029	7/16 - 14	3.94	.71	1.61	.323	3	H3
5690926	GT725031	7/16 - 20	3.94	.71	1.61	.323	3	H3
5690928	GT725033	1/2 - 13	4.33	.91	1.85	.367	3	H4
5690930	GT725035	1/2 - 20	4.33	.91	1.85	.367	3	H3

INDEXABLE MILLING

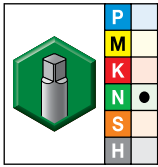
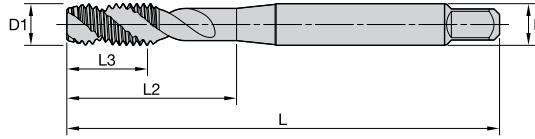
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

GT82 • Form C Semi-Bottom Chamfer • Metric • DIN Length ANSI Shank • Wrought and Cast Aluminum

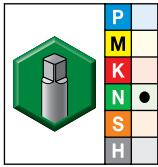
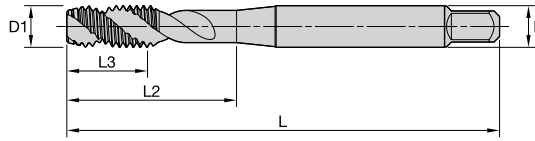


- first choice
- alternate choice

grade WN44EG
TiN+CrC/C

order #	catalog #	D1 TPI	L	L3	L2	D	number of flutes	pitch diameter limit
5690801	GT825037	M3 X 0,5	2.20	.31	.71	.141	2	D3
5690803	GT825039	M4 X 0,7	2.48	.43	.83	.168	2	D4
5690804	GT825040	M5 X 0,8	2.76	.47	.98	.194	2	D4
5690805	GT825041	M6 X 1	3.15	.47	1.18	.255	2	D5
5690808	GT825044	M8 X 1,25	3.54	.59	1.38	.318	2	D5
5690810	GT825046	M10 X 1,5	3.94	.71	1.54	.381	2	D6
5690811	GT825047	M12 X 1,25	4.33	.83	1.73	.367	3	D6
5690813	GT825049	M12 X 1,75	4.33	.83	1.73	.367	3	D6

**GT82 • Machine Screw and Fractional • Form C Semi-Bottom Chamfer •
DIN Length ANSI Shank • Wrought and Cast Aluminum**



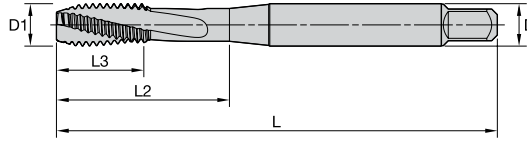
● first choice
○ alternate choice

grade WN44EG
TiN+CrC/C

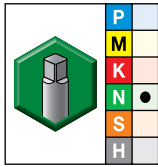
order #	catalog #	D1 TPI	L	L3	L2	D	number of flutes	pitch diameter limit
5690761	GT825010	2 - 56	1.77	.31	.71	.141	2	H2
5690762	GT825011	4 - 40	2.20	.31	.71	.141	2	H2
5690765	GT825012	5 - 40	2.20	.31	.71	.141	2	H2
5690766	GT825013	6 - 32	2.20	.35	.79	.141	2	H3
5690767	GT825014	8 - 32	2.48	.43	.83	.168	2	H3
5690768	GT825015	10 - 24	2.76	.47	.98	.194	2	H3
5690769	GT825016	10 - 32	2.76	.47	.98	.194	2	H3
5690780	GT825017	1/4 - 20	3.15	.59	1.18	.255	2	H3
5690781	GT825018	1/4 - 20	3.15	.59	1.18	.255	2	H5
5690782	GT825019	1/4 - 28	3.15	.59	1.18	.255	2	H3
5690784	GT825021	5/16 - 18	3.54	.59	1.38	.318	2	H3
5690785	GT825022	5/16 - 18	3.54	.59	1.38	.318	2	H5
5690786	GT825023	5/16 - 24	3.54	.59	1.38	.318	2	H3
5690788	GT825025	3/8 - 16	3.94	.75	1.54	.381	2	H3
5690789	GT825026	3/8 - 16	3.94	.75	1.54	.381	2	H5
5690792	GT825029	7/16 - 14	3.94	.71	1.61	.323	3	H3
5690795	GT825031	7/16 - 20	3.94	.71	1.61	.323	3	H3
5690797	GT825033	1/2 - 13	4.33	.91	1.85	.367	3	H4
5690798	GT825034	1/2 - 13	4.33	.91	1.85	.367	3	H5
5690799	GT825035	1/2 - 20	4.33	.91	1.85	.367	3	H3

INDEXABLE MILLING

GT86 • Form C Semi-Bottom Chamfer • Metric • DIN Length ANSI Shank • Wrought and Cast Aluminum



SOLID END MILLING



- first choice
- alternate choice

HOLEMAKING

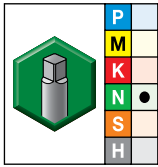
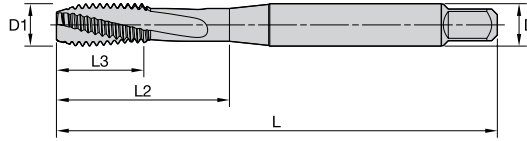
grade WN44EG
TiN+CrC/C

order #	catalog #	D1 TPI	L	L3	L2	D	number of flutes	pitch diameter limit
5690865	GT865037	M3 X 0,5	2.20	.31	.71	.141	3	D3
5690867	GT865039	M4 X 0,7	2.48	.43	.83	.168	3	D4
5690868	GT865040	M5 X 0,8	2.76	.47	.98	.194	3	D4
5690869	GT865041	M6 X 1	3.15	.47	1.18	.255	3	D5
5690882	GT865044	M8 X 1,25	3.54	.59	1.38	.318	3	D5
5690884	GT865046	M10 X 1,5	3.94	.71	1.54	.381	3	D6
5690886	GT865048	M12 X 1,5	4.33	.83	1.73	.367	3	D6
5690887	GT865049	M12 X 1,75	4.33	.83	1.73	.367	3	D6

TAPPING

TURNING

GT86 • Machine Screw and Fractional • Form C Semi-Bottom Chamfer • DIN Length ANSI Shank • Wrought and Cast Aluminum



- first choice
- alternate choice

grade WN44EG
TiN+CrC/C

order #	catalog #	D1 TPI	L	L3	L2	D	number of flutes	pitch diameter limit
5690817	GT865010	2 - 56	1.77	.31	.71	.141	3	H2
5690818	GT865011	4 - 40	2.20	.31	.71	.141	3	H2
5690819	GT865012	5 - 40	2.20	.31	.71	.141	3	H2
5690840	GT865013	6 - 32	2.20	.35	.79	.141	3	H3
5690841	GT865014	8 - 32	2.48	.43	.83	.168	3	H3
5690842	GT865015	10 - 24	2.76	.47	.98	.194	3	H3
5690843	GT865016	10 - 32	2.76	.47	.98	.194	3	H3
5690844	GT865017	1/4 - 20	3.15	.59	1.18	.255	3	H3
5690846	GT865019	1/4 - 28	3.15	.59	1.18	.255	3	H3
5690847	GT865020	1/4 - 28	3.15	.59	1.18	.255	3	H4
5690849	GT865021	5/16 - 18	3.54	.59	1.38	.318	3	H3
5690853	GT865025	3/8 - 16	3.94	.75	1.54	.381	3	H3
5690854	GT865026	3/8 - 16	3.94	.75	1.54	.381	3	H5
5690861	GT865033	1/2 - 13	4.33	.91	1.85	.367	3	H4

INDEXABLE MILLING

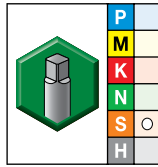
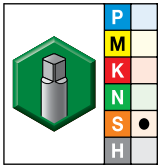
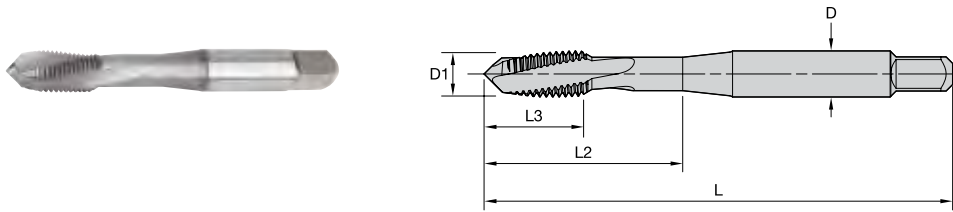
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

GT90 • Form D Plug Chamfer • Metric ANSI • Nickel- and Cobalt-Based Alloys



- first choice
- alternate choice

grade WU32MG TiCN		grade WS39MG Nitride/Oxide		D1 TPI	L	L3	L2	D	number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #							
5705660	GT905146	5705073	GT905133	M2,5 X 0,45	1.81	.50	.56	.141	2	D3
5705071	GT905147	5705662	GT905134	M3 X 0,5	1.94	.63	.75	.141	3	D3
-	-	5705072	GT905135	M3,5 X 0,6	1.99	.36	.72	.141	3	D4
-	-	5705663	GT905136	M4 X 0,7	2.12	.32	.77	.168	3	D4
5705070	GT905149	-	-	M4 X 0,7	2.12	.36	.77	.168	3	D4
-	-	5705069	GT905137	M5 X 0,8	2.38	.47	.92	.194	3	D4
5705067	GT905151	5705664	GT905138	M6 X 1	2.51	.46	1.01	.255	3	D5
-	-	5705665	GT905139	M7 X 1	2.73	.52	1.16	.318	3	D5
-	-	5705666	GT905140	M8 X 1	2.72	.48	1.14	.318	3	D5
5705066	GT905154	5705668	GT905141	M8 X 1,25	2.72	.48	1.14	.318	3	D5
-	-	5705653	GT905142	M10 X 1,25	2.94	.53	1.27	.381	3	D5
-	-	5705656	GT905143	M10 X 1,5	2.94	.53	1.27	.381	3	D6
-	-	5705657	GT905144	M12 X 1,25	3.38	.77	1.74	.367	3	D5
-	-	5705659	GT905145	M12 X 1,75	3.38	.77	1.74	.367	3	D6

INDEXABLE MILLING

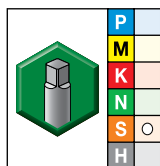
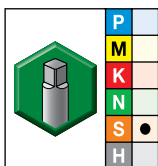
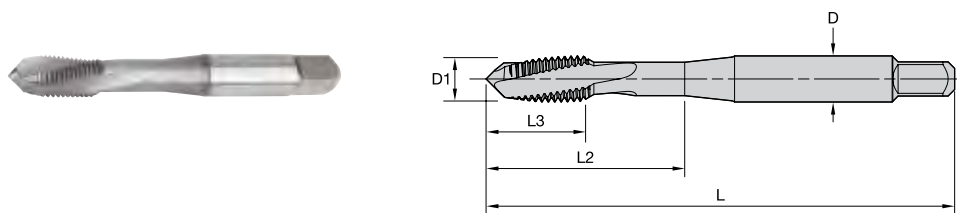
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

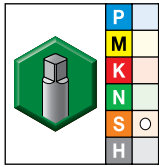
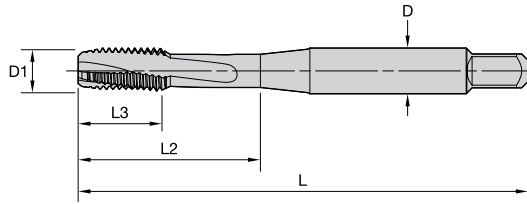
GT90 • Machine Screw and Fractional • Form D Plug Chamfer • Nickel- and Cobalt-Based Alloys



● first choice
○ alternate choice

grade WU32MG TiCN		grade WS39MG Nitride/Oxide		D1 TPI	L	L3	L2	D	number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #							
-	-	5705546	GT905001	2 - 56	1.75	.44	.50	.141	2	H2
-	-	5705549	GT905003	4 - 40	1.88	.56	.69	.141	2	H3
-	-	5705553	GT905005	4 - 48	1.88	.56	.69	.141	2	H2
-	-	5705555	GT905006	5 - 40	1.94	.63	.75	.141	3	H2
5705025	GT905074	5705559	GT905008	6 - 32	2.00	.36	.72	.141	3	H3
-	-	5705564	GT905012	6 - 40	2.00	.36	.72	.141	3	H2
5705024	GT905080	5705568	GT905014	8 - 32	2.13	.31	.77	.168	3	H3
5705572	GT905082	-	-	8 - 32	2.13	.31	.77	.168	3	H5
5705501	GT905085	5705059	GT905019	10 - 24	2.38	.47	.92	.194	3	H3
-	-	5705540	GT905025	10 - 32	2.38	.47	.92	.194	3	H5
-	-	5705542	GT905026	10 - 32	2.38	.47	.92	.194	3	H6
5705058	GT905089	5705507	GT905023	10 - 32	2.38	.47	.92	.194	3	H3
5705062	GT905094	5705584	GT905028	1/4 - 20	2.51	.44	1.02	.255	3	H3
-	-	5705060	GT905031	1/4 - 28	2.51	.44	1.02	.255	3	H3
-	-	5705629	GT905036	5/16 - 18	2.73	.49	1.15	.318	3	H3
-	-	5705634	GT905039	5/16 - 24	2.73	.49	1.15	.318	3	H3
5705615	GT905110	5705057	GT905044	3/8 - 16	2.95	.60	1.28	.381	3	H3
-	-	5705620	GT905047	3/8 - 24	2.95	.60	1.28	.381	3	H3
-	-	5705646	GT905052	7/16 - 14	3.16	.71	1.49	.323	3	H3
-	-	5705649	GT905054	7/16 - 20	3.16	.71	1.49	.323	3	H3
-	-	5705575	GT905056	1/2 - 13	3.38	.77	1.74	.367	3	H3
-	-	5705580	GT905059	1/2 - 20	3.38	.77	1.74	.367	3	H3
-	-	5705026	GT905062	5/8 - 11	3.81	.91	1.89	.480	3	H3
-	-	5705644	GT905063	5/8 - 18	3.81	.91	1.89	.480	3	H3
-	-	5705599	GT905064	3/4 - 10	4.25	1.00	2.08	.590	3	H3
-	-	5705613	GT905066	3/4 - 16	4.25	1.00	2.08	.590	3	H3

GT92 • 3-4 Pitches Chamfer • Metric ANSI • Nickel- and Cobalt-Based Alloys



- first choice
- alternate choice

grade WS39MG Nitride/Oxide		D1 TPI	L	L3	L2	D	number of flutes	pitch diameter limit
5708329	GT925137	M2,5 X 0,45	1.81	.50	.56	.141	3	D3
5708335	GT925138	M3 X 0,5	1.94	.63	.75	.141	3	D3
5708333	GT925139	M3,5 X 0,6	1.99	.36	.71	.141	3	D4
5708337	GT925140	M4 X 0,7	2.12	.32	.76	.168	3	D4
5708339	GT925141	M5 X 0,8	2.37	.47	.91	.194	3	D4
5708341	GT925142	M6 X 1	2.50	.46	1.00	.255	3	D5
5708343	GT925143	M7 X 1	2.72	.52	1.15	.318	3	D5
5708347	GT925144	M8 X 1	2.70	.48	1.12	.318	3	D5
5708349	GT925145	M8 X 1,25	2.70	.48	1.12	.318	3	D5
5708319	GT925146	M10 X 1,25	2.92	.53	1.26	.381	3	D5
5708323	GT925147	M10 X 1,5	2.92	.53	1.26	.381	3	D6
5708325	GT925148	M12 X 1,25	3.38	.77	1.74	.367	3	D5
5708327	GT925149	M12 X 1,75	3.38	.77	1.74	.367	3	D6

INDEXABLE MILLING

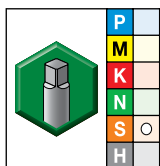
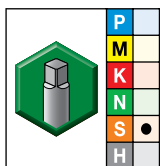
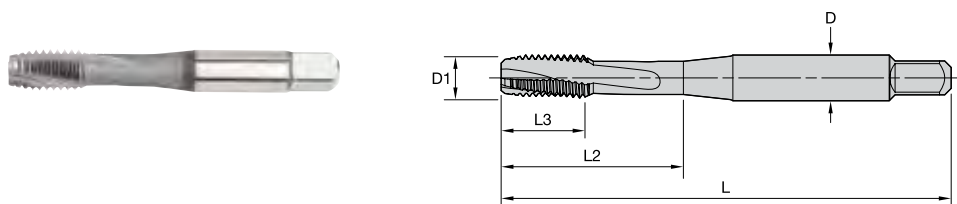
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

GT92 • Machine Screw and Fractional • 3-4 Pitches Chamfer • Nickel- and Cobalt-Based Alloys



● first choice
○ alternate choice

grade WU32MG TiCN		grade WS39MG Nitride/Oxide		D1 TPI	L	L3	L2	D	number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #							
-	-	5708144	GT925001	2 - 56	1.75	.44	.50	.141	3	H2
-	-	5708148	GT925003	4 - 40	1.88	.56	.69	.141	3	H2
-	-	5705219	GT925004	4 - 40	1.88	.56	.69	.141	3	H3
-	-	5708161	GT925006	4 - 48	1.88	.56	.69	.141	3	H2
-	-	5708163	GT925007	5 - 40	1.95	.63	.76	.141	3	H2
-	-	5708166	GT925009	6 - 32	1.99	.36	.71	.141	3	H3
-	-	5708172	GT925013	6 - 40	2.03	.36	.71	.141	3	H2
-	-	5708175	GT925015	8 - 32	2.12	.31	.76	.168	3	H3
-	-	5708178	GT925018	8 - 32	2.16	.31	.76	.168	3	H6
5705277	GT925088	5708014	GT925020	10 - 24	2.37	.47	.91	.194	3	H3
5705276	GT925091	5708018	GT925023	10 - 32	2.37	.47	.91	.194	3	H3
5705275	GT925096	5708201	GT925028	1/4 - 20	2.50	.44	1.00	.255	3	H3
5705274	GT925099	5708209	GT925031	1/4 - 28	2.50	.44	1.00	.255	3	H3
5705273	GT925104	5708261	GT925036	5/16 - 18	2.72	.49	1.13	.318	3	H3
-	-	5708269	GT925039	5/16 - 24	2.72	.49	1.13	.318	3	H3
-	-	5708273	GT925040	5/16 - 24	2.72	.49	1.13	.318	3	H4
5705272	GT925112	5708227	GT925044	3/8 - 16	2.94	.60	1.27	.381	3	H3
-	-	5708229	GT925045	3/8 - 16	2.94	.60	1.27	.381	3	H5
5708253	GT925117	5705218	GT925047	3/8 - 24	2.40	.60	1.27	.381	3	H3
-	-	-	-	3/8 - 24	2.94	.60	1.27	.381	3	H5
-	-	5708305	GT925052	7/16 - 14	3.16	.71	1.49	.323	3	H3
-	-	5708315	GT925055	7/16 - 20	3.16	.71	1.49	.323	3	H5
-	-	5708311	GT925054	7/16 - 20	3.16	.71	1.49	.323	3	H3
5705282	GT925124	5708190	GT925056	1/2 - 13	3.38	.77	1.74	.367	3	H3
-	-	5708194	GT925059	1/2 - 20	3.38	.77	1.74	.367	3	H3
-	-	5708283	GT925062	5/8 - 11	3.81	.91	1.89	.480	3	H3
-	-	5708301	GT925064	5/8 - 18	3.81	1.31	1.89	.480	3	H3
-	-	5708217	GT925065	3/4 - 10	4.25	1.59	2.08	.590	3	H3
-	-	5708223	GT925067	3/4 - 16	4.25	1.00	2.08	.590	3	H3

INDEXABLE MILLING

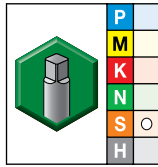
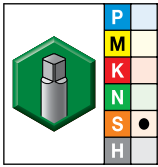
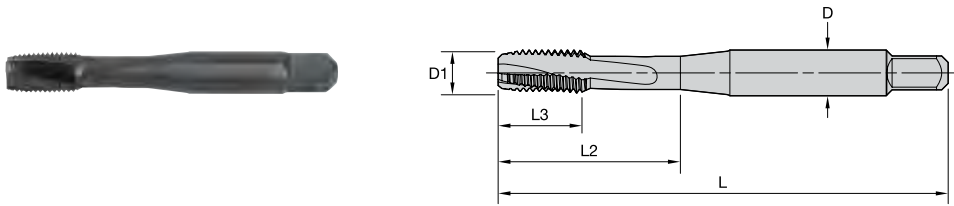
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

GT94 • Machine Screw and Fractional • Form E Bottoming Chamfer • Nickel- and Cobalt-Based Alloys



● first choice
○ alternate choice

grade WU32MG TiCN		grade WS39MG Nitride/Oxide		D1 TPI	L	L3	L2	D	number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #							
5705981	GT945038	-	-	4 - 40	1.88	.56	.69	.141	3	H3
-	-	5705982	GT945003	5 - 40	1.95	.63	.76	.141	3	H2
-	-	5705984	GT945005	6 - 32	1.99	.36	.71	.141	3	H3
5705989	GT945044	-	-	8 - 32	2.12	.31	.76	.168	3	H3
-	-	5705932	GT945010	10 - 24	2.42	.47	.91	.194	3	H3
-	-	5705935	GT945012	10 - 32	2.37	.47	.91	.194	3	H3
-	-	5705995	GT945014	1/4 - 20	2.50	.44	1.00	.255	3	H3
-	-	5703871	GT945016	1/4 - 28	2.50	.44	1.00	.255	3	H3
5706020	GT945055	-	-	5/16 - 18	2.72	.49	1.13	.318	3	H3
-	-	5706023	GT945021	5/16 - 24	2.72	.49	1.13	.318	3	H3
5706013	GT945060	5706012	GT945024	3/8 - 16	2.94	.60	1.27	.381	3	H3
-	-	5706014	GT945025	3/8 - 16	2.94	.60	1.27	.381	3	H5
-	-	5706016	GT945026	3/8 - 24	2.94	.60	1.27	.381	3	H3
-	-	5706034	GT945028	7/16 - 14	3.16	.71	1.49	.323	3	H3
-	-	5706036	GT945030	7/16 - 20	3.16	.71	1.49	.323	3	H3
-	-	5705993	GT945032	1/2 - 13	3.38	.77	1.74	.367	3	H5
-	-	5705994	GT945033	1/2 - 20	3.38	.77	1.74	.367	3	H3
-	-	5706032	GT945036	5/8 - 18	3.81	.91	1.89	.480	3	H3

INDEXABLE MILLING

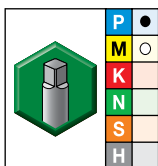
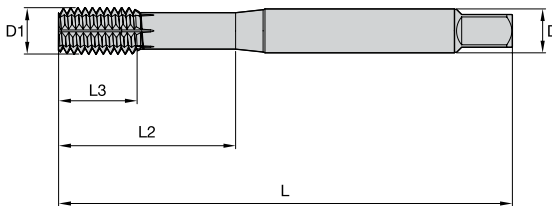
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

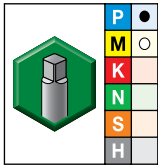
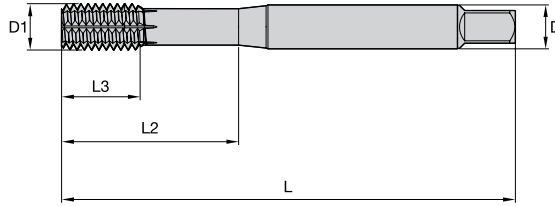
GT24 • DIN Length ANSI Shank • Form C Semi-Bottoming Entry Taper • Machine Screw and Fractional • Roll Form Taps • Steel and Stainless Steel



● first choice
○ alternate choice

grade WU32MG TiCN							number of lube grooves	pitch diameter limit
order #	catalog #	D1 TPI	L	L3	L2	D		
5944876	GT245001	6 - 32	2.22	.41	.81	.141	2	H3
5944878	GT245003	8 - 32	2.48	.39	.83	.168	4	H3
5944880	GT245005	10 - 24	2.78	.39	1.01	.194	4	H4
5944972	GT245007	10 - 32	2.77	.39	1.00	.194	4	H4
5944974	GT245009	1/4 - 20	3.18	.51	1.22	.255	4	H4
5944975	GT245010	1/4 - 20	3.18	.51	1.21	.255	4	H6
5944976	GT245011	1/4 - 28	3.16	.51	1.20	.255	4	H4
5944978	GT245013	5/16 - 18	3.58	.55	1.42	.318	4	H5
5944980	GT245015	5/16 - 24	3.56	.55	1.40	.318	4	H5
5944982	GT245017	3/8 - 16	3.98	.63	1.54	.381	6	H5
5944984	GT245019	3/8 - 24	3.95	.63	1.54	.381	6	H5
5944990	GT245025	1/2 - 13	4.33	.79	1.85	.367	6	H5
5945002	GT245027	1/2 - 20	4.33	.79	1.85	.367	6	H5

GT24 • Metric • DIN Length ANSI Shank • Form C Semi-Bottoming Entry Taper • Roll Form Taps • Steel and Stainless Steel



● first choice
○ alternate choice

grade WU32MG
TiCN

order #	catalog #	D1 TPI	L	L3	L2	D	number of lube grooves	pitch diameter limit
5945012	GT245037	M3 X 0,5	2.20	.39	.79	.141	2	D5
5945014	GT245039	M4 X 0,7	2.48	.39	.83	.168	4	D6
5945015	GT245040	M5 X 0,8	2.76	.39	.98	.194	4	D7
5945016	GT245041	M6 X 1	3.15	.51	1.18	.255	4	D8
5945019	GT245044	M8 X 1,25	3.54	.55	1.38	.318	6	D9
5945020	GT245045	M10 X 1,25	3.94	.63	1.53	.381	6	D9
5945021	GT245046	M10 X 1,5	3.94	.63	1.54	.381	6	D10
5945023	GT245048	M12 X 1,5	4.33	.71	1.73	.367	6	D9
5945024	GT245049	M12 X 1,75	4.33	.71	1.73	.367	6	D11

INDEXABLE MILLING

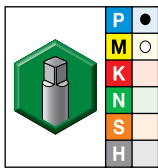
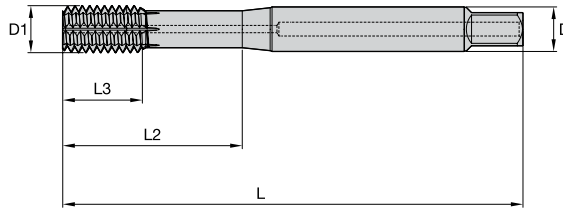
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

GT25 • DIN Length ANSI Shank • Form C Semi-Bottoming Entry Taper • Through Coolant • Fractional • Roll Form Taps • Steel and Stainless Steel



● first choice
○ alternate choice

grade WU32MG
TiCN

order #	catalog #	D1 TPI	L	L3	L2	D	number of lube grooves	pitch diameter limit
5945029	GT255001	1/4 - 20	3.15	.51	1.18	.255	4	H4
5945033	GT255005	5/16 - 18	3.54	.55	1.38	.318	6	H5
5945037	GT255009	3/8 - 16	3.94	.63	1.54	.381	6	H5
5945038	GT255010	3/8 - 16	3.94	.63	1.54	.381	6	H7
5945039	GT255011	3/8 - 24	3.94	.63	1.54	.381	6	H5
5945045	GT255017	1/2 - 13	4.33	.79	1.85	.367	6	H5
5945047	GT255019	1/2 - 20	4.33	.79	1.85	.367	6	H5
5945049	GT255021	5/8 - 11	4.33	.79	2.01	.480	6	H7

INDEXABLE MILLING

SOLID END MILLING

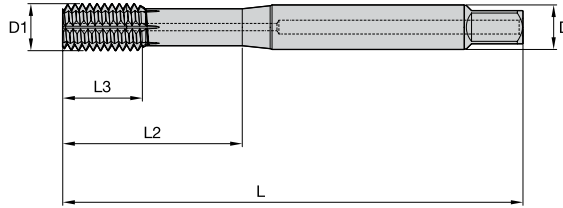
HOLE/MAKING

TAPPING

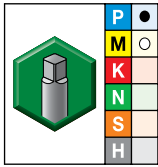
TURNING

INDEXABLE MILLING

GT25 • Metric • DIN Length ANSI Shank • Form C Semi-Bottoming Entry Taper • Through Coolant • Roll Form Taps • Steel and Stainless Steel



SOLID END MILLING



● first choice
○ alternate choice

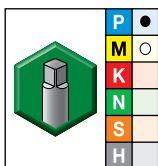
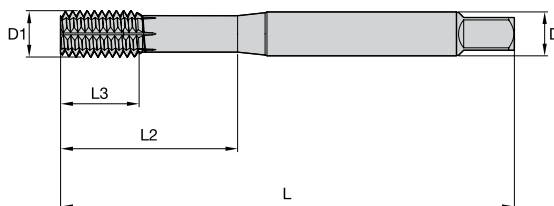
HOLEMAKING

grade WU32MG TiCN							number of lube grooves	pitch diameter limit
order #	catalog #	D1 TPI	L	L3	L2	D		
5945057	GT255029	M6 X 1	3.15	.51	1.18	.255	4	D8
5945060	GT255032	M8 X 1,25	3.54	.55	1.38	.318	6	D9
5945072	GT255034	M10 X 1,5	3.94	.63	1.54	.381	6	D10
5945078	GT255040	M16 X 1,5	4.33	.79	2.01	.480	6	D11
5945079	GT255041	M16 X 2	4.33	.79	2.01	.480	6	D12

TAPPING

TURNING

GT26 • DIN Length ANSI Shank • Form E Bottoming Entry Taper • Machine Screw and Fractional • Roll Form Taps • Steel and Stainless Steel



● first choice
○ alternate choice

grade WU32MG TiCN							number of lube grooves	pitch diameter limit
order #	catalog #	D1 TPI	L	L3	L2	D		
5945091	GT265002	2 - 56	1.75	.44	.50	.141	0	H3
5945094	GT265005	4 - 40	2.20	.39	.71	.141	0	H3
5945095	GT265006	4 - 40	2.20	.39	.71	.141	0	H5
5945098	GT265009	5 - 40	2.20	.39	.79	.141	2	H5
5945099	GT265010	6 - 32	2.21	.39	.79	.141	2	H3
5945100	GT265011	6 - 32	2.21	.39	.79	.141	2	H5
5945101	GT265012	8 - 32	2.48	.39	.83	.168	4	H3
5945103	GT265014	10 - 24	2.76	.39	.98	.194	4	H4
5945105	GT265016	10 - 32	2.76	.39	.98	.194	4	H4
5945106	GT265017	10 - 32	2.76	.39	.98	.194	4	H6
5945107	GT265018	1/4 - 20	3.15	.51	1.18	.255	4	H4
5945108	GT265019	1/4 - 20	3.15	.51	1.18	.255	4	H6
5945109	GT265020	1/4 - 28	3.15	.51	1.18	.255	4	H4
5945111	GT265022	5/16 - 18	3.54	.55	1.38	.318	6	H5
5945113	GT265024	5/16 - 24	3.54	.55	1.38	.318	6	H5
5945114	GT265025	5/16 - 24	3.54	.55	1.38	.318	6	H7
5945115	GT265026	3/8 - 16	3.94	.63	1.54	.381	6	H5
5945117	GT265028	3/8 - 24	3.94	.63	1.54	.381	6	H5
5945123	GT265034	1/2 - 13	4.33	.79	1.85	.367	6	H5
5945129	GT265040	5/8 - 18	4.33	.79	2.01	.480	6	H7
5945133	GT265044	3/4 - 16	4.92	.98	2.52	.590	6	H7

INDEXABLE MILLING

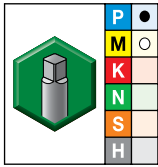
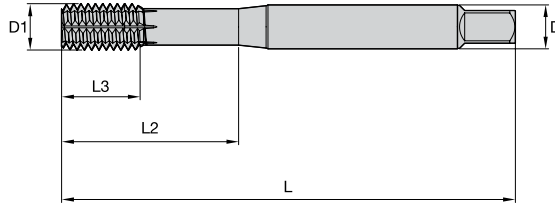
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING



GT26 • Metric • DIN Length ANSI Shank • Form E Bottoming Entry Taper • Roll Form Taps • Steel and Stainless Steel





● first choice
○ alternate choice

grade WU32MG TiCN							number of lube grooves	pitch diameter limit
order #	catalog #	D1 TPI	L	L3	L2	D		
5945135	GT265046	M3 X 0,5	2.20	.39	.79	.141	2	D5
5945137	GT265048	M4 X 0,7	2.48	.39	.83	.168	4	D6
5945138	GT265049	M5 X 0,8	2.76	.39	.98	.194	4	D7
5945139	GT265050	M6 X 1	3.15	.51	1.18	.255	4	D8
5945142	GT265053	M8 X 1,25	3.54	.55	1.38	.318	6	D9
5945143	GT265054	M10 X 1,25	3.94	.63	1.53	.381	6	D9
5945144	GT265055	M10 X 1,5	3.94	.63	1.54	.381	6	D10
5945145	GT265056	M12 X 1,25	4.33	.71	1.73	.367	6	D9



Application Data • High-Performance Carbide Taps • Metric

Material Group	 Through Holes						 Blind Holes				
	Tap Style	Grade	Range – m/min			Tap Style	Grade	Range – m/min			
			min	Starting Value	max			min	Starting Value	max	
P	P0	GX32, GX38	WP35MG	60	100	130	GX33, GX39	WP35MG	50	70	90
	P1	GX32, GX38	WP35MG	60	90	120	GX33, GX39	WP35MG	40	60	80
	P2	GX32, GX38	WP35MG	50	85	110	GX33, GX39	WP35MG	40	60	80
	P3	GX32, GX38	WP35MG	50	80	100	GX33, GX39	WP35MG	40	60	80
K	K1	GX34, GX50	WK12PG	70	105	140	GX35, GX50	WK12PG	50	70	90
	K2	GX34, GX50	WK12PG	60	100	130	GX35, GX50	WK12PG	50	70	90
	K3	GX34, GX50	WK12PG	60	90	120	GX35, GX50	WK12PG	40	60	80
N	N2	GX46, GX48	WN14PG	80	120	160	GX47, GX49	WN14PG	60	80	100
	N3	GX46, GX48	WN14PG	60	100	130	GX47, GX49	WN14PG	50	70	90
	N4	GX46, GX48	WN14PG	60	90	120	GX47, GX49	WN14PG	40	60	80
	H3	GX10	WH16PG	1,2	1,5	2,0	GX10	WH16PG	0,8	1,1	1,4
H4	GX10	WH16PG	0,6	0,8	1,0	GX10	WH16PG	0,4	0,5	0,7	

Application Data • High-Performance Carbide Taps • Inch



Material Group	 Through Holes						 Blind Holes				
	Tap Style	Grade	Range – SFM			Tap Style	Grade	Range – SFM			
			min	Starting Value	max			min	Starting Value	max	
P	P0	GX32, GX38	WP35MG	200	330	430	GX33, GX39	WP35MG	160	230	300
	P1	GX32, GX38	WP35MG	200	300	390	GX33, GX39	WP35MG	130	200	260
	P2	GX32, GX38	WP35MG	160	280	360	GX33, GX39	WP35MG	130	200	260
	P3	GX32, GX38	WP35MG	160	260	330	GX33, GX39	WP35MG	130	200	260
K	K1	GX34, GX50	WK12PG	230	340	460	GX35, GX50	WK12PG	160	230	300
	K2	GX34, GX50	WK12PG	200	330	430	GX35, GX50	WK12PG	160	230	300
	K3	GX34, GX50	WK12PG	200	300	390	GX35, GX50	WK12PG	130	200	260
N	N2	GX46, GX48	WN14PG	260	390	520	GX47, GX49	WN14PG	200	260	330
	N3	GX46, GX48	WN14PG	200	330	430	GX47, GX49	WN14PG	160	230	300
	N4	GX46, GX48	WN14PG	200	300	390	GX47, GX49	WN14PG	130	200	260
	H3	GX10	WH16PG	3.8	4.9	6.4	GX10	WH16PG	2.6	3.4	4.5
H4	GX10	WH16PG	1.9	2.5	3.2	GX10	WH16PG	1.3	1.7	2.2	

Application Data • HSS-E-PM Taps • Metric

Material Group	 Through Holes					 Blind Holes					
	Tap Style	Grade	Range – m/min			Tap Style	Grade	Range – m/min			
			min	Starting Value	max			min	Starting Value	max	
P	P1	GT20	WU32MG	20	30	45	GT30, GT32, GT50	WU32MG	14	21	32
		GT24	WU32MG	20	30	45	GT24, GT26	WU32MG	14	21	32
	P2	GT20	WU32MG	17	25	38	GT30, GT32, GT50	WU32MG	12	18	26
		GT24	WU32MG	17	25	38	GT24, GT26	WU32MG	12	18	26
	P3	GT20	WU32MG	12	15	20	GT30, GT32, GT50	WU32MG	8	11	14
	P4	GT00	WP31MG	5	6	8	GT02, GT04	WP31MG	3	4	5
P5	GT20	WU32MG	12	15	20	GT30, GT32, GT50	WU32MG	8	11	14	
P6	GT00	WP31MG	6	8	10	GT02, GT04	WP31MG	4	6	7	
M	M1	GT20	WS34MG	12	15	20	GT30, GT32, GT50	WS34MG	8	11	14
		GT24	WU32MG	5	8	12	GT24, GT26	WU32MG	4	6	8
	M2	GT20	WS34MG	9	12	16	GT30, GT32, GT50	WS34MG	6	8	11
M3	GT00	WP31MG	4	5	7	GT02, GT04	WP31MG	3	4	5	
K	K1	GT40	WU32MG	27	35	46	GT40, GT42	WU32MG	19	25	32
	K2	GT40	WU32MG	23	30	39	GT40, GT42	WU32MG	16	21	27
N	N1	GT72	WN44EG	33	50	65	GT82, GT86	WN44EG	23	35	46
		GT22	WN48EG	37	55	72	GT22	WN48EG	26	39	50
	N2	GT40	WU32MG	30	45	59	GT40, GT42	WU32MG	21	32	41
		GT72	WN44EG	30	45	59	GT82, GT86	WN44EG	21	32	41
N4	GT40	WU32MG	7	10	15	GT40, GT42	WU32MG	5	7	11	
S	S1	GT20	WU32MG	8	12	18	GT30, GT32	WU32MG	6	8	13
	S2	GT90	WU32MG	3,3	5,0	7,5	GT92, GT94	WU32MG	2,3	3,5	5,3
	S3	GT90	WS39MG	1,7	2,5	3,8	GT92, GT94	WS39MG	1,2	1,8	2,6
	S4	GT60	WS34MG	2,7	4,0	6,0	GT62	WS34MG	1,9	2,8	4,2
H	H1	GT06	WN35MG	1,3	2,0	3,0	GT06	WN35MG	0,9	1,4	2,1
	H2	GT06	WN35MG	1,0	1,5	2,3	GT06	WN35MG	0,7	1,1	1,6

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 GP6520™.

Application Data • HSS-E-PM Taps • Inch

Material Group	 Through Holes					 Blind Holes					
	Tap Style	Grade	Range – SFM			Tap Style	Grade	Range – SFM			
			min	Starting Value	max			min	Starting Value	max	
P	P1	GT20	WU32MG	70	100	150	GT30, GT32, GT50	WU32MG	50	70	100
		GT24	WU32MG	70	100	150	GT24, GT26	WU32MG	50	70	100
	P2	GT20	WU32MG	50	80	120	GT30, GT32, GT50	WU32MG	40	60	90
		GT24	WU32MG	50	80	120	GT24, GT26	WU32MG	40	60	90
	P3	GT20	WU32MG	40	50	60	GT30, GT32, GT50	WU32MG	30	30	40
	P4	GT00	WP31MG	15	20	26	GT02, GT04	WP31MG	11	14	18
P5	GT20	WU32MG	40	50	60	GT30, GT32, GT50	WU32MG	30	30	40	
P6	GT00	WP31MG	20	30	30	GT02, GT04	WP31MG	10	20	20	
M	M1	GT20	WS34MG	40	50	60	GT30, GT32, GT50	WS34MG	30	30	40
		GT24	WU32MG	20	30	40	GT24, GT26	WU32MG	10	20	30
	M2	GT20	WS34MG	30	40	50	GT30, GT32, GT50	WS34MG	20	30	40
M3	GT00	WP31MG	10	20	20	GT02, GT04	WP31MG	10	10	10	
K	K1	GT40	WU32MG	90	110	150	GT40, GT42	WU32MG	60	80	100
	K2	GT40	WU32MG	80	100	130	GT40, GT42	WU32MG	50	70	90
N	N1	GT72	WN44EG	110	160	210	GT82, GT86	WN44EG	80	110	150
		GT22	WN48EG	120	180	230	GT22	WN48EG	80	130	160
	N2	GT40	WU32MG	100	150	190	GT40, GT42	WU32MG	70	100	130
		GT72	WN44EG	100	150	190	GT82, GT86	WN44EG	70	100	130
N4	GT40	WU32MG	22	30	49	GT40, GT42	WU32MG	15	23	34	
S	S1	GT20	WU32MG	30	40	60	GT30, GT32	WU32MG	18	28	41
	S2	GT90	WU32MG	11	16	25	GT92, GT94	WU32MG	8	11	17
	S3	GT90	WS39MG	5	10	12	GT92, GT94	WS39MG	4	6	9
	S4	GT60	WS34MG	9	13	20	GT62	WS34MG	6	9	14
H	H1	GT06	WN35MG	4,4	6,6	9,8	GT06	WN35MG	3,1	4,6	6,9
	H2	GT06	WN35MG	3,3	4,9	7,4	GT06	WN35MG	2,3	3,4	5,2

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 GP6520™.

Tap Recommendations for Classes 2B and 3B

Unified Inch Screw Threads

thread size/pitch	recommended tap limits ¹		internal thread pitch diameter limits		
	class 2B	class 3B	min all classes (Basic)	max class 2B	max class 3B
0 - 80	H2	H2	0.0519	0.0542	0.0536
1 - 64	H2	H2	0.0629	0.0655	0.0648
1 - 72	H2	H2	0.0640	0.0665	0.0659
2 - 56	H2	H2	0.0744	0.0772	0.0765
2 - 64	H2	H2	0.0759	0.0786	0.0779
3 - 48	H3	H2	0.0855	0.0885	0.0877
3 - 56	H2	H2	0.0874	0.0902	0.0895
4 - 40	H3	H2	0.0958	0.0991	0.0982
4 - 48	H3	H2	0.0985	0.1016	0.1008
5 - 40	H3	H2	0.1088	0.1121	0.1113
5 - 44	H3	H2	0.1102	0.1134	0.1126
6 - 32	H3	H2	0.1177	0.1214	0.1204
6 - 40	H3	H2	0.1218	0.1252	0.1243
8 - 32	H3	H3	0.1437	0.1475	0.1465
8 - 36	H3	H3	0.1460	0.1496	0.1487
10 - 24	H3	H3	0.1629	0.1672	0.1661
10 - 32	H3	H3	0.1697	0.1736	0.1726
12 - 24	H3	H3	0.1889	0.1933	0.1922
12 - 28	H3	H3	0.1928	0.1970	0.1959
1/4 - 20	H5	H3	0.2175	0.2224	0.2211
1/4 - 28	H4	H3	0.2268	0.2311	0.2300
5/16 - 18	H5	H3	0.2764	0.2817	0.2803
5/16 - 24	H4	H3	0.2854	0.2902	0.2890
3/8 - 16	H5	H3	0.3344	0.3401	0.3387
3/8 - 24	H4	H3	0.3479	0.3528	0.3516
7/16 - 14	H5	H3	0.3911	0.3972	0.3957
7/16 - 20	H5	H3	0.4050	0.4104	0.4091
1/2 - 13	H5	H4	0.4500	0.4565	0.4548
1/2 - 20	H5	H3	0.4675	0.4731	0.4717
9/16 - 12	H5	H4	0.5084	0.5152	0.5135
9/16 - 18	H5	H3	0.5264	0.5323	0.5308
5/8 - 11	H5	H4	0.5660	0.5732	0.5714
5/8 - 18	H5	H3	0.5889	0.5949	0.5934
3/4 - 10	H5	H4	0.6850	0.6927	0.6907

¹Tap H limit selected for 3B will also produce thread to 2B.

NOTE: The above recommended taps normally produce the class of thread indicated in average materials when used with reasonable care. However, if the specified tap does not provide a satisfactory gage fit, choose an alternate tap limit.

INDEXABLE MILLING

SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING

Tap Recommendations for Classes 2B and 3B

Unified Inch Screw Threads

thread size/pitch	recommended tap limits		internal thread pitch diameter limits		
	class 2B	class 3B	min all classes (Basic)	max class 2B	max class 3B
3/4 - 16	H5	H4	0.7094	0.7159	0.7143
7/8 - 9	H6	H4	0.8028	0.8110	0.8089
7/8 - 14	H6	H4	0.8286	0.8356	0.8339
1" - 8	H6	H5	0.9188	0.9276	0.9254
1" - 12	H6	H4	0.9459	0.9535	0.9516
1-1/8 - 7	H8	H6	1.0322	1.0416	1.0393
1-1/8 - 8	H8	H6	1.0438	1.0528	1.0505
1-1/8 - 12	H6	H5	1.0709	1.0787	1.0768
1-1/4 - 7	H8	H6	1.1572	1.1668	1.1644
1-1/4 - 8	H8	H6	1.1688	1.1780	1.1757
1-1/4 - 12	H6	H5	1.1959	1.2039	1.2019
1-3/8 - 6	H8	H6	1.2667	1.2771	1.2745
1-3/8 - 8	H8	H6	1.2938	1.3031	1.3008
1-3/8 - 12	H6	H5	1.3209	1.3291	1.3270
1-1/2 - 6	H8	H6	1.3917	1.4022	1.3996
1-1/2 - 8	H8	H6	1.4188	1.4283	1.4259
1-1/2 - 12	H6	H5	1.4459	1.4542	1.4522
1-3/4 - 5	H8	H7	1.6201	1.6317	1.6288
2 - 4 1/2	H8	H7	1.8557	1.8681	1.8650

*Tap H limit selected for 3B will also produce thread to 2B.

Tap Recommendations for Class 6H Metric Screw Threads

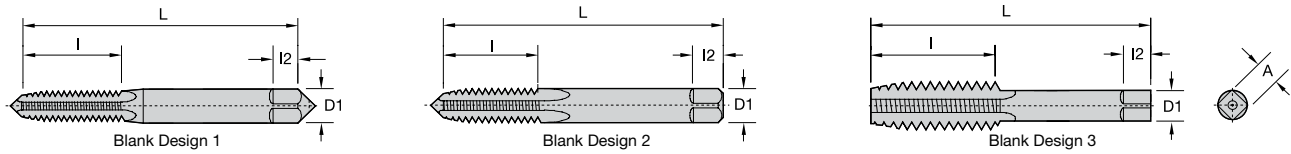
thread size		recommended tap limit number	internal thread product limits — class 6H			
nominal diameter (mm)	pitch (mm)		pitch diameter (mm)		pitch diameter (in)	
			min	max	min	max
1,6	0,35	D3	1,373	1,458	.05406	.05740
2	0,4	D3	1,740	1,830	.06850	.07205
2,5	0,45	D3	2,208	2,303	.08693	.09067
3	0,5	D3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

Decimal Equivalents

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

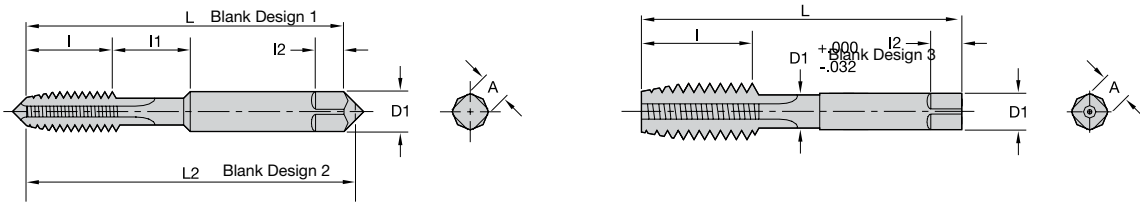
Standard Tap Dimensions • Ground Thread • Reference USCTI Table 302



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 (0.787), 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
1.385-1.448	—	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

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Optional Neck and Shortened Thread Length Dimensions • Reference USCTI Table 302A



General Dimensions

Tap Dimensions – Inches

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	neck length l1	square length l2	shank diameter D1	square size 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, M8 (.2756), (.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

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NOTE: 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. The Kennametal 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
size of square — a	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

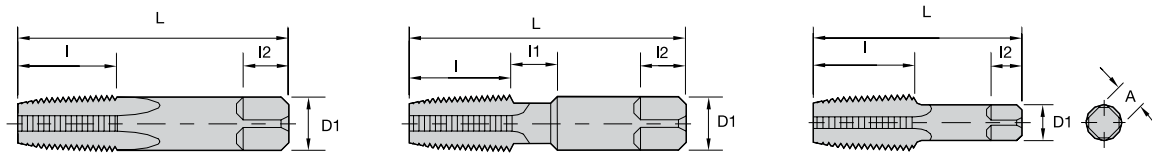
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Special Taps

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.

NOTE: 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.

Standard Pipe Tap Dimensions • Straight and Taper • Ground Thread • Reference USCTI Table 311



General Dimensions

nominal size (in)	dimensions (in)					
	overall length L	thread length l	square length l2	shank diameter D1	square size A	optional neck length 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	—

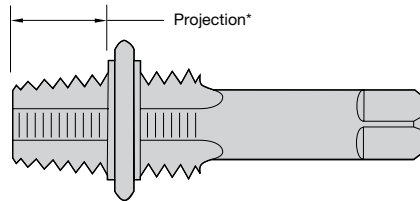
Tolerances

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
length of square — l2	1-1/2–4	plus/minus	.125
	1/16–3/4 inc.	plus/minus	.031
diameter of shank — d1	1–4 inc.	plus/minus	.063
	1/16–1/8	minus	.0015
size of square — a	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

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Taper Pipe Tap Thread Limits • Ground Thread • Reference USCTI Table 338

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



taper per foot limits

nominal size (in)	threads per inch	projection* (in)	projection tolerance + / -	min	max	length L1	tap drill size** NPT, ANPT, NPTF
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 from small end of tap projects through L1 taper thread ring gage.

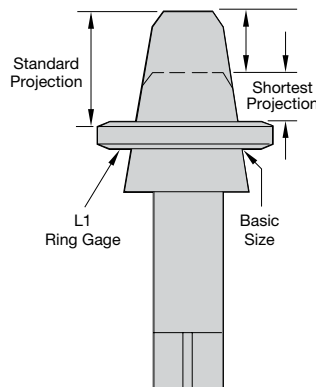
**Recommended size given permits direct tapping without reaming the hole, but only gives a full thread for approximately the L1 length. Reprinted with permission from United States Cutting Tool Institute (USCTI). Published by Kennametal Inc. © 2014. All rights reserved.

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 (NPTF). 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 Kennametal Technical Bulletins.