

PROVEN SOLUTIONS | ALWAYS AVAILABLE

ALL-STAR

2020

METRIC



WIDIA 

 **ALL-STAR**

WIDIA

The All-Star Programme reinforces the core qualities of the WIDIA™ diamond — providing proven solutions that are easy to find and always available.

With All-Star, customers can benefit from product reliability and quick delivery to increase machine utilisation.



 ALL-STAR



PROVEN SOLUTIONS

Products included in the All-Star programme were chosen based on their proven performance and popularity. These industry-leading solutions combine versatility and productivity to deliver savings.

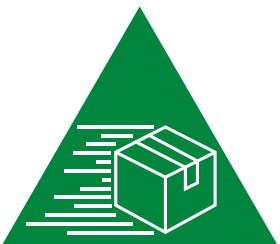


EASY TO FIND

It is easy to recommend All-Star on-the-go or in the shop while using tools like the NOVO™ tool advisor or the Machining Central app. To view All-Star products on widia.com, use the All-Star filter.



Available to download in the app store!



ALWAYS AVAILABLE

All-Star products are held to the highest availability standards. This means products that are flagged as All-Star feature same-day shipping for all orders received before 4pm CET.

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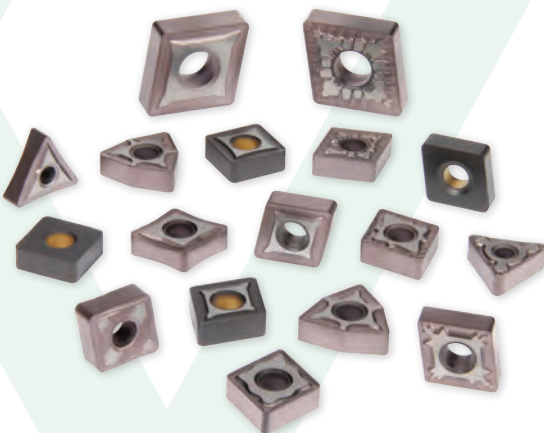
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TURNING

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WIDIA 

INDEXABLE MILLING

SHOULDER MILLING

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VSM890-12™

VSM490-10™

VSM490-15™

VSM11™

VSM17™

M680



90° HIGH-SPEED CUTTING

Pages A52–A57

VHSC

FACE MILLING

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M1200 Mini
M1200
M640



HIGH-FEED MILLING

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VXF™
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COPY MILLING

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M200™
M100™

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0°/90° SHOULDER MILLS

VSM890™ -12

Pages A6–A9

8-Edged, Double-Sided 90° Victory™
Shoulder-Face Mill



VSM490™ -10 & VSM490™ -15

Pages A10–A24

4-Edged, Double-Sided 90° Victory Shoulder-Face Mill





VSM11™ & VSM17™

Pages A26–A41

2-Edged, 90° Victory™ Shoulder Mill (VSM)

M680

Pages A42–A50

2-Edged, 90° General Purpose Shoulder Mill Solution



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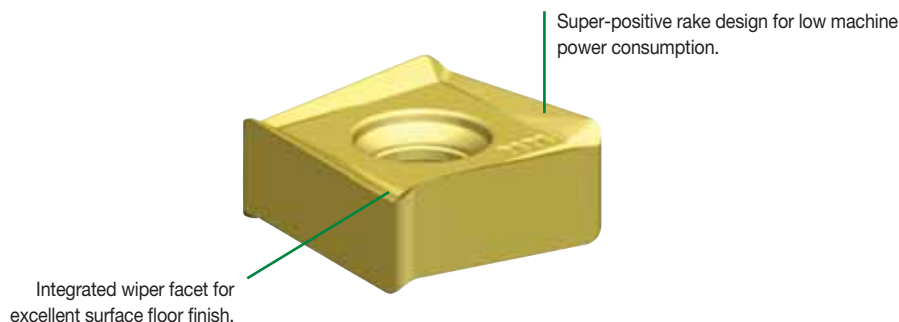


WIDIA™ Machining Central Mobile App
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8-Edged, Double-Sided True 90° Victory™ Shoulder-Face Mill (VSM)

- Superior Metal Removal Rates (MRR) delivered through high-performance grades and chipbreakers.
- Coarse, medium, and fine pitch cutter density to perfectly translate machining capability into higher productivity.
- New pocket seat design for improved insert seating and great stability at roughing applications.
- Comprehensive standard offering for cutter bodies and inserts to address light machining to heavy roughing jobs.
- Available in the new WU10PM™ and WS40PM™ grades.

- Weldon® End Mills
- Shell Mills



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

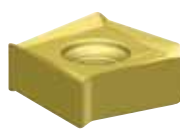
★ -ALP



N

First choice for Non-Ferrous materials.

★ -ML



P M S

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

★ -MM



P M K S H

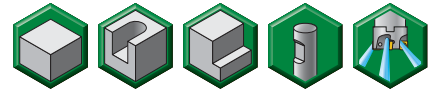
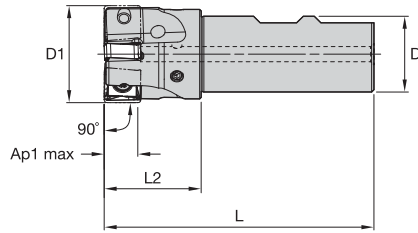
First choice for general purpose in all workpiece materials. Engineered for high-feed rates.

Finishing Capabilities/Lower Cutting Forces

Geometry Strengthening/Stronger Cutting Edge Protection

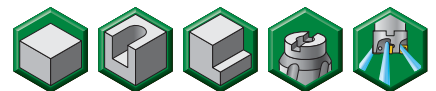
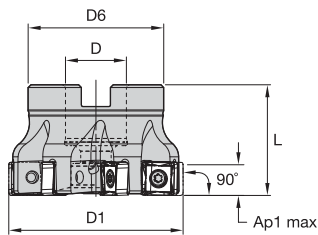
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Weldon® End Mills • Metric



order number	catalogue number	D1	D	L	L2	Ap1 max	Z	max RPM	coolant supply	kg
6596066	VSM890D032Z03B25SN12	32	25	89	32	9,8	3	33200	Yes	0,31

Shell Mills • Metric



order number	catalogue number	D1	D	D6	L	Ap1 max	Z	max RPM	coolant supply	kg
6596067	VSM890D040Z04S22SN12	40	22	39	40	9,8	4	28000	Yes	0,20
6596069	VSM890D050Z05S22SN12	50	22	49	40	9,8	5	24100	Yes	0,32
6596070	VSM890D063Z05S22SN12	63	22	49	40	9,8	5	20800	Yes	0,48
6596111	VSM890D063Z07S22SN12	63	22	49	40	9,8	7	20800	Yes	0,45
6596113	VSM890D080Z07S27SN12	80	27	60	50	9,8	7	18000	Yes	1,03
6596114	VSM890D080Z09S27SN12	80	27	60	50	9,8	9	18000	Yes	1,01
6596116	VSM890D100Z08S32SN12	100	32	78	50	9,8	8	15800	Yes	1,56
6596119	VSM890D125Z10S40SN12	125	40	89	63	9,8	10	13900	Yes	2,98

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

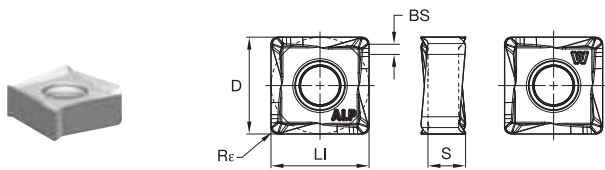
TURNING



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INDEXABLE MILLING

Inserts • SNHX-ALP • For Aluminium and Other Non-Ferrous Alloys



- first choice
- alternate choice

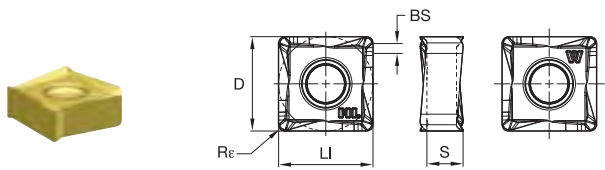
P	■	■	■
M	■	■	■
K	■	■	■
N	■	■	●
S	■	■	■
H	■	■	■

ISO catalogue number	cutting edges	LI	S	D	BS	Re	WP25PM
SNHX120408PNERALP	8	12,00	4,61	12,00	1,34	0,80	6596397

SOLID END MILLING

HOLEMAKING

Inserts • SNHX-ML • Precision Finishing and Light Machining



- first choice
- alternate choice

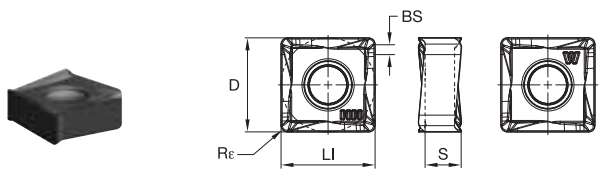
P	■	■	●	○
M	■	■	●	●
K	■	■	○	■
N	■	■	■	■
S	■	■	●	●
H	■	■	■	■

ISO catalogue number	cutting edges	LI	S	D	BS	Re	WP25PM	WS40PM
SNHX120408PNERML	8	12,00	4,61	12,00	1,34	0,80	6596398	6596399

TAPPING

TURNING

Inserts • SNHX-MM • Universal Geometry for Medium Machining



- first choice
- alternate choice

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

ISO catalogue number	cutting edges	LI	S	D	BS	Re	WK15CM	WP25PM	WP40PM	WS40PM	WU10PM
SNHX120408PNSRMM	8	12,00	4,61	12,00	1,34	0,80	6667462	6596431	6596432	6596433	6596400

Insert Selection Guide

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

Recommended Starting Speeds [m/min]*

Material Group		★ WK15CM			★ WN25PM			★ WP25PM			★ WP40PM			★ WS40PM			★ WU10PM		
		P	1	-	-	-	-	-	-	330	285	270	295	260	245	-	-	-	-
	2	-	-	-	-	-	-	275	240	200	250	215	180	-	-	-	-	-	-
	3	-	-	-	-	-	-	255	215	175	230	195	160	-	-	-	-	-	-
	4	-	-	-	-	-	-	225	185	150	205	170	135	-	-	-	-	-	-
	5	-	-	-	-	-	-	185	170	150	170	155	135	170	145	120	-	-	-
	6	-	-	-	-	-	-	165	125	100	150	115	90	150	110	80	-	-	-
M	1	-	-	-	-	-	-	205	180	165	195	170	155	210	170	140	-	-	-
	2	-	-	-	-	-	-	185	160	130	175	150	125	180	145	120	-	-	-
	3	-	-	-	-	-	-	140	120	95	130	115	90	145	110	85	-	-	-
K	1	420	385	340	-	-	-	230	205	185	-	-	-	-	-	-	295	265	240
	2	335	295	275	-	-	-	180	160	150	-	-	-	-	-	-	230	205	190
	3	280	250	230	-	-	-	150	135	120	-	-	-	-	-	-	195	175	160
N	1	-	-	-	1075	945	875	-	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	945	875	760	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	945	875	760	-	-	-	-	-	-	-	-	-	-	-	-
S	1	-	-	-	-	-	-	40	35	25	-	-	-	40	35	25	-	-	-
	2	-	-	-	-	-	-	40	35	25	-	-	-	40	35	25	-	-	-
	3	-	-	-	-	-	-	50	40	25	-	-	-	50	40	25	-	-	-
	4	-	-	-	-	-	-	70	50	35	-	-	-	60	50	30	-	-	-
H	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	160	130	90

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

Recommended Starting Feeds [mm]

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	Light Machining					General Purpose					Heavy Machining					
	5%			10%		20%			30%		40-100%					
.E..ALP	0,12	0,28	0,43	0,08	0,20	0,31	0,06	0,15	0,23	0,06	0,13	0,20	0,05	0,12	0,18	.E..ALP
.E..ML	0,17	0,32	0,60	0,13	0,23	0,44	0,09	0,18	0,33	0,08	0,15	0,28	0,08	0,14	0,26	.E..ML
.S..MM	0,23	0,36	0,82	0,17	0,26	0,59	0,13	0,20	0,44	0,11	0,17	0,38	0,10	0,16	0,35	.S..MM

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

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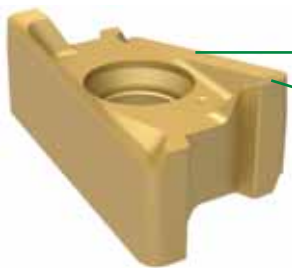
INDEXABLE MILLING
 SOLID END MILLING
 HOLEMAKING
 TAPPING
 TURNING

VSM490™ -10

4-Edged, Double-Sided 90° Victory™ Shoulder Mill (VSM)

- True 90° roughing tool with embedded finishing capabilities all in one tool.
- Best-in-class wall finish in axial stepping-down jobs.
- Lower cutting forces and real soft cutting action.
- Perfect fit for taper 40 spindles and driven units.

- Screw-On End Mills
- Weldon® End Mills
- Cylindrical End Mills
- Shell Mills
- M4000 Cartridge Milling System



Super-positive rake design for low machine power consumption.

Integrated wiper facet for great surface floor finish.



For non-ferrous materials.

★ -ALP



N

For non-ferrous materials.

★ -ML



P M K S H

First choice for stainless steel, light machining, and finishing jobs.

★ -MM



P M K S H

First choice for general purpose in all material groups.

★ -MH



P K

First choice for HPC roughing cast iron. Strongest edge protection with additional margins.

Finishing Capabilities/Lower Cutting Forces

Geometry Strengthening

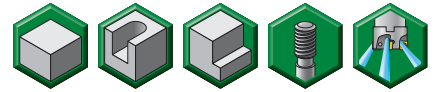
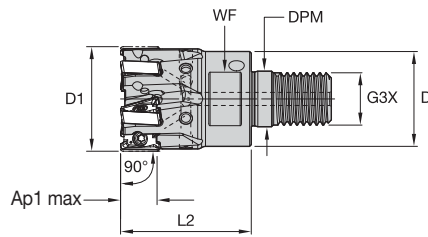
Applications

1. Face milling with modular M4000 cartridge milling system.
2. Full slotting with 100% radial engagement.
3. Shoulder milling with step-down capabilities and great wall finish.
4. Shoulder milling with low axial and high radial engagement.
5. Shoulder milling with low radial and high axial engagement.
6. HPC face milling. Excellent choice to clean up castings.
7. Trochoidal slot milling.
8. Z-axis plunge milling.
9. Contour milling.



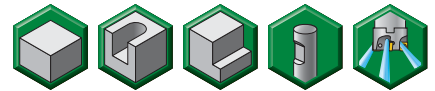
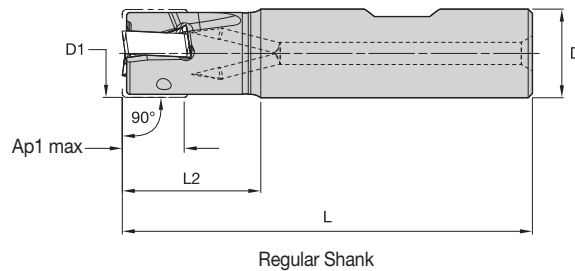
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Screw-On End Mills • Metric

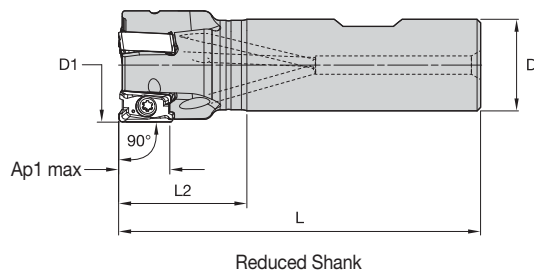


order number	catalogue number	D1	D	DPM	G3X	L2	WF	Ap1 max	Z	max RPM	coolant supply	kg
6425553	VSM490D016Z02M08XN10	16	13	8,5	M8	25	10	10,0	2	48000	Yes	0,03
6425554	VSM490D020Z03M10XN10	20	18	10,5	M10	28	15	10,0	3	40200	Yes	0,05
6425555	VSM490D025Z04M12XN10	25	21	12,5	M12	32	17	10,0	4	34300	Yes	0,09
6425556	VSM490D032Z05M16XN10	32	29	17,0	M16	40	24	10,0	5	29200	Yes	0,20
6425557	VSM490D032Z06M16XN10	32	29	17,0	M16	40	24	10,0	6	29200	Yes	0,20

Weldon® End Mills • Metric



Regular Shank



Reduced Shank

order number	catalogue number	D1	D	L	L2	Ap1 max	Z	max RPM	coolant supply	kg
6425558	VSM490D016Z02B16XN10	16	16	74	25	10,0	2	48000	Yes	0,09
6425559	VSM490D020Z02B20XN10	20	20	79	28	10,0	2	40200	Yes	0,16
6425560	VSM490D020Z03B20XN10	20	20	79	28	10,0	3	40200	Yes	0,16
6425571	VSM490D025Z03B20XN10	25	20	79	28	10,0	3	34300	Yes	0,18
6425572	VSM490D025Z03B25XN10	25	25	89	32	10,0	3	34300	Yes	0,29
6425573	VSM490D025Z04B25XN10	25	25	89	32	10,0	4	34300	Yes	0,29
6425574	VSM490D032Z04B25XN10	32	25	89	32	10,0	4	29200	Yes	0,29
6425575	VSM490D032Z05B25XN10	32	25	89	32	10,0	5	29200	Yes	0,33

NOTE: Weldon type not recommended for finishing operations.



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INDEXABLE MILLING

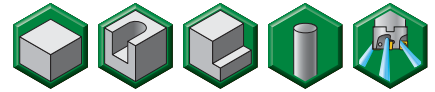
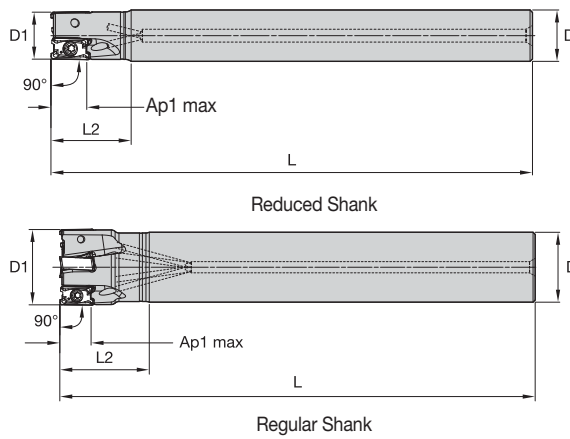
SOLID END MILLING

HOLEMAKING

TAPPING

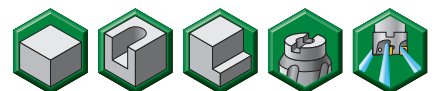
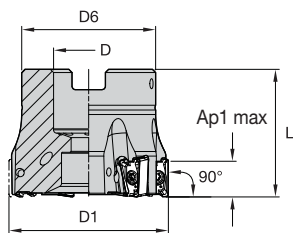
TURNING

Cylindrical End Mills • Metric



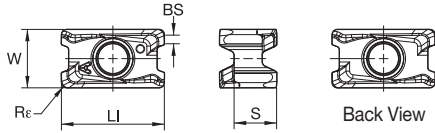
order number	catalogue number	D1	D	L	L2	Ap1 max	Z	max RPM	coolant supply	kg
6425502	VSM490D016Z02A16XN10L090	16	16	90	25	10,0	2	48000	Yes	0,12
6425503	VSM490D016Z02A16XN10L150	16	16	150	25	10,0	2	48000	Yes	0,21
6425504	VSM490D018Z02A16XN10L150	18	16	150	25	10,0	2	43500	Yes	0,21
6425506	VSM490D020Z02A20XN10L150	20	20	150	28	10,0	2	40200	Yes	0,33
6425505	VSM490D020Z03A20XN10L090	20	20	90	28	10,0	3	40200	Yes	0,19
6425507	VSM490D020Z03A20XN10L150	20	20	150	28	10,0	3	40200	Yes	0,33
6425508	VSM490D022Z03A20XN10L150	22	20	150	28	10,0	3	37500	Yes	0,34
6425509	VSM490D025Z03A20XN10L100	25	20	100	28	10,0	3	34300	Yes	0,23
6425511	VSM490D025Z03A25XN10L170	25	25	170	43	10,0	3	34300	Yes	0,60
6425510	VSM490D025Z04A25XN10L100	25	25	100	43	10,0	4	34300	Yes	0,33
6425512	VSM490D025Z04A25XN10L170	25	25	170	43	10,0	4	34300	Yes	0,59
6425513	VSM490D028Z04A25XN10L170	28	25	170	32	10,0	4	31800	Yes	0,61
6425514	VSM490D032Z04A25XN10L110	32	25	110	32	10,0	4	29200	Yes	0,41
6425516	VSM490D032Z04A25XN10L200	32	25	200	32	10,0	4	29200	Yes	0,75
6425515	VSM490D032Z05A25XN10L110	32	25	110	32	10,0	5	29200	Yes	0,41
6425517	VSM490D032Z05A25XN10L200	32	25	200	32	10,0	5	29200	Yes	0,75

Shell Mills • Metric



order number	catalogue number	D1	D	D6	L	Ap1 max	Z	max RPM	coolant supply	kg
6425434	VSM490D040Z04S16XN10	40	16	37	40	10,0	4	25400	Yes	0,23
6425435	VSM490D040Z06S16XN10	40	16	37	40	10,0	6	25400	Yes	0,23
6425436	VSM490D040Z07S16XN10	40	16	37	40	10,0	7	25400	Yes	0,23
6425437	VSM490D050Z05S22XN10	50	22	42	40	10,0	5	22300	Yes	0,31
6425438	VSM490D050Z07S22XN10	50	22	42	40	10,0	7	22300	Yes	0,35
6425439	VSM490D050Z09S22XN10	50	22	42	40	10,0	9	22300	Yes	0,32
6425440	VSM490D063Z05S22XN10	63	22	49	40	10,0	5	19500	Yes	0,56
6425481	VSM490D063Z07S22XN10	63	22	49	40	10,0	7	19500	Yes	0,56
6425482	VSM490D063Z09S22XN10	63	22	49	40	10,0	9	19500	Yes	0,56
6425483	VSM490D080Z06S27XN10	80	27	60	50	10,0	6	17100	Yes	1,10
6425484	VSM490D080Z08S27XN10	80	27	60	50	10,0	8	17100	Yes	1,11
6425485	VSM490D080Z10S27XN10	80	27	60	50	10,0	10	17100	Yes	1,12
6425486	VSM490D100Z08S32XN10	100	32	80	50	10,0	8	15200	Yes	1,73
6425487	VSM490D100Z12S32XN10	100	32	80	50	10,0	12	15200	Yes	1,74
6425488	VSM490D125Z10S40XN10	125	40	90	63	10,0	10	13500	Yes	3,18
6425489	VSM490D125Z14S40XN10	125	40	90	63	10,0	14	13500	Yes	3,20

Inserts • XNGU-ALP • For Aluminium and Other Non-Ferrous Alloys

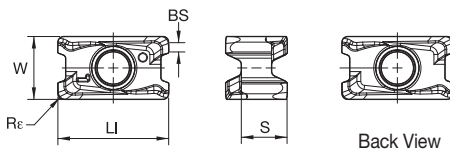


- first choice
- alternate choice

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

ISO catalogue number	cutting edges	LI	S	W	BS	Re	hm	WP25PM	6425382	6425411
XNGU100404ERALP	4	11,66	4,83	6,60	1,37	0,40	0,02			
XNGU100408ERALP	4	11,66	4,83	6,60	1,00	0,80	0,02			

Inserts • XNGU-ML • Precision Finishing and Light Machining



- first choice
- alternate choice

P	■	■	○	○
M	■	■	○	○
K	■	■	○	○
N	■	■	○	○
S	■	■	○	○
H	■	■	○	○

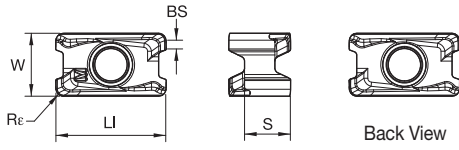
ISO catalogue number	cutting edges	LI	S	W	BS	Re	hm	WP25PM	WS40PM	WU10PM
XNGU100404ERML	4	11,66	4,83	6,60	1,37	0,40	0,02	6425414	6425415	1
XNGU100408ERML	4	11,66	4,83	6,60	1,00	0,80	0,02	6425369	6425370	6425421



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INDEXABLE MILLING

Inserts • XNGU-MM • Universal Geometry for Medium Machining



- first choice
- alternate choice

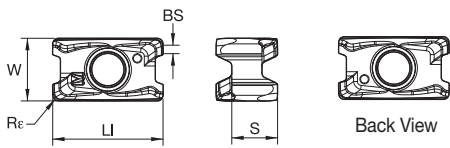
P	●	○	○
M	●	○	○
K	○	○	○
N	○	○	○
S	○	○	○
H	○	○	○

ISO catalogue number	cutting edges	LI	S	W	BS	Re	hm		WP25PM	WS40PM	WU10PM
XNGU100404SRMM	4	11,66	4,83	6,60	1,37	0,40	0,08		6425416	6425417	
XNGU100408SRMM	4	11,66	4,83	6,60	1,00	0,80	0,08		6425422	6425423	6425424

SOLID END MILLING

HOLEMAKING

Inserts • XNGU-MH • Heavy Roughing



- first choice
- alternate choice

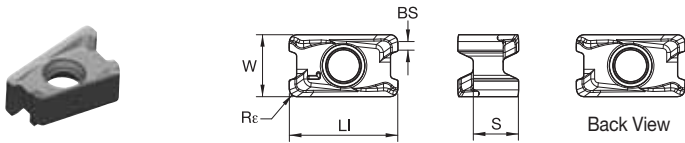
P	○	○	○
M	○	○	○
K	○	○	○
N	○	○	○
S	○	○	○
H	○	○	○

ISO catalogue number	cutting edges	LI	S	W	BS	Re	hm		WK15CM	WP25PM	WP35CM	WP40PM
XNGU100408SRMH	4	11,66	4,83	6,60	0,90	0,80	0,08		6425359	6425356	6425360	6425357

TAPPING

TURNING

Inserts • XNPU-ML • Light Machining

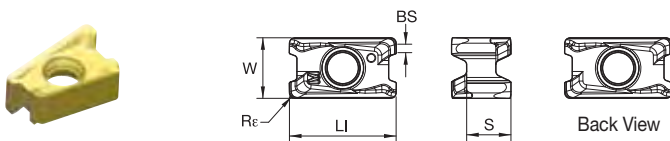


- first choice
- alternate choice

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

ISO catalogue number	cutting edges	LI	S	W	BS	Re	hm	6425366	6425367	6425368
XNPU100408ERML	4	11,60	4,83	6,60	0,90	0,80	0,02	WK15PM	WP25PM	WS40PM

Inserts • XNPU-MM • Universal Geometry for Medium Machining



- first choice
- alternate choice

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

ISO catalogue number	cutting edges	LI	S	W	BS	Re	hm	6425364	6425365	6425267	6425268
XNPU100408SRMM	4	11,60	4,83	6,60	0,90	0,80	0,08	WK15CM	WK15PM	WP25PM	WP35CM
XNPU100412SRMM	4	11,61	4,83	6,60	0,50	1,20	0,08	WP25PM	WP35CM	WP40PM	WS40PM
XNPU100416SRMM	4	11,61	4,83	6,60	0,10	1,60	0,08	WP25PM	WP35CM	WP40PM	WS40PM



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Insert Selection Guide

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

Recommended Starting Speeds [m/min]*

Material Group		★ WK15CM			★ WK15PM			★ WN25PM			★ WP25PM			★ WP35CM			★ WP40PM			★ WS40PM			★ WU10PM		
		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
P	1	-	-	-	-	-	-	-	-	-	330	285	270	455	395	370	295	260	245	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	275	240	200	280	255	230	250	215	180	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	255	215	175	255	230	205	230	195	160	-	-	-	-	-	-
	4	-	-	-	-	-	-	-	-	-	225	185	150	190	175	160	205	170	135	-	-	-	-	-	-
	5	-	-	-	-	-	-	-	-	-	185	170	150	260	230	210	170	155	135	170	145	120	-	-	-
	6	-	-	-	-	-	-	-	-	-	165	125	100	160	135	110	150	115	90	150	110	80	-	-	-
M	1	-	-	-	-	-	-	-	-	-	205	180	165	205	185	155	195	170	155	210	170	140	-	-	-
	2	-	-	-	-	-	-	-	-	-	185	160	130	185	160	140	175	150	125	180	145	120	-	-	-
	3	-	-	-	-	-	-	-	-	-	140	120	95	145	130	115	130	115	90	145	110	85	-	-	-
K	1	420	385	340	270	245	215	-	-	-	230	205	185	295	265	240	-	-	-	-	-	-	295	265	240
	2	335	295	275	210	190	175	-	-	-	180	160	150	235	210	190	-	-	-	-	-	-	230	205	190
	3	280	250	230	175	160	145	-	-	-	150	135	120	195	175	160	-	-	-	-	-	-	195	175	160
N	1	-	-	-	-	-	-	1075	945	875	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	945	875	760	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	945	875	760	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S	1	-	-	-	-	-	-	-	-	-	40	35	25	-	-	-	-	-	-	40	35	25	-	-	-
	2	-	-	-	-	-	-	-	-	-	40	35	25	-	-	-	-	-	-	40	35	25	-	-	-
	3	-	-	-	-	-	-	-	-	-	50	40	25	-	-	-	-	-	-	50	40	25	-	-	-
	4	-	-	-	-	-	-	-	-	-	70	50	35	-	-	-	-	-	-	60	50	30	-	-	-
H	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	160	130	90

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

Recommended Starting Feeds [mm]

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry			
	Light Machining			General Purpose			Heavy Machining			Light Machining			General Purpose				Heavy Machining		
	5%	10%	20%	5%	10%	20%	5%	10%	20%	40-100%	5%	10%	20%	40-100%	5%	10%	20%		
.E..ALP	0.12	0.23	0.32	0.08	0.17	0.23	0.06	0.13	0.18	0.06	0.11	0.15	0.05	0.10	0.14				.E..ALP
.E..ML	0.18	0.28	0.37	0.13	0.20	0.27	0.10	0.15	0.20	0.09	0.13	0.17	0.08	0.12	0.16				.E..ML
.S..MM	0.23	0.35	0.46	0.17	0.25	0.33	0.13	0.19	0.25	0.11	0.17	0.22	0.10	0.15	0.20				.S..MM
.S..MH	0.23	0.43	0.58	0.17	0.31	0.42	0.13	0.23	0.31	0.11	0.20	0.27	0.10	0.18	0.25				.S..MH

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

★ = ALL-STAR PORTFOLIO PRODUCT. ALL-STAR PRODUCTS ARE PROVEN SOLUTIONS THAT ARE ALWAYS AVAILABLE.

WIDIA™ Victory™ WS40PM

Breakthrough in the latest substrate and coating technology to boost productivity in **stainless steels and high-temp alloys**



Advanced Milling Grade for Titanium

Multilayer PVD AlTiN-TiN Coating

- Improved chemical and abrasive wear resistance.
- Consistent tool life performance.
- Primarily for wet machining. Also great results in dry machining.

New Medium-Grained Substrate

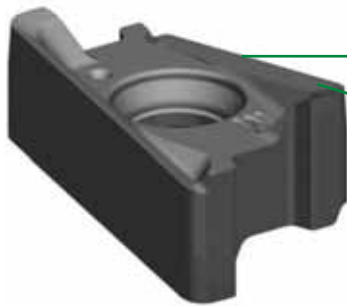
- Minimises tendency for thermal cracking.
- Excellent fatigue resistance and edge strength.
- Rich in cobalt content for improved toughness.

VSM490™ -15

4-Edged, Double-Sided 90° Victory™ Shoulder Mill (VSM)

- True 90° roughing tool with embedded finishing capabilities all in one tool.
- Best-in-class wall finish in axial stepping-down jobs.
- Lower cutting forces and real soft cutting action.
- Perfect fit for taper 50 spindles.
- Coarse, medium, and fine pitch shell mills available.

- Screw-On End Mills
- Weldon® End Mills
- Cylindrical End Mills
- Shell Mills
- M4000 Cartridge Milling System



Super-positive rake design for low machine power consumption.

Integrated wiper facet for great surface floor finish.



Four insert geometries for all material groups in shoulder milling applications.

★ -ALP



N

For non-ferrous materials.

★ -ML



P M S

First choice for stainless steel.
Lower cutting forces.

★ -MM



P M K S

First choice, especially
when machining steels.

★ -MH



P K

First choice for cast iron,
and also recommended
for heavy applications.

Finishing Capabilities/Lower Cutting Forces

Geometry Strengthening

Wall Quality

Competitor Tool

Traditional tools are designed to achieve a 0° wall, but exhibit poor performance when machining walls in multiple passes.



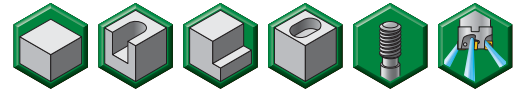
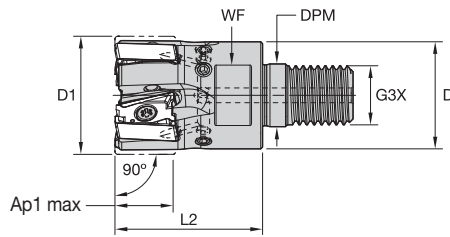
VSM490-15

VSM490-15 eliminates the mismatch and minimises the marks left behind in step-down milling operations. By increasing wall quality and avoiding a second tool, productivity increases significantly.



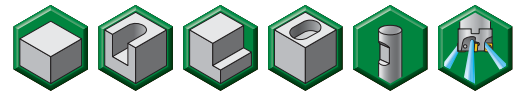
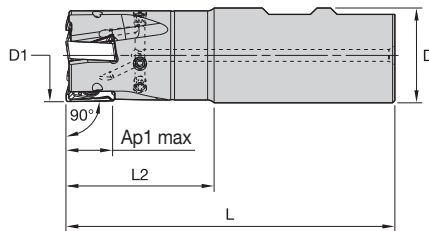
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Screw-On End Mills • Metric



order number	catalogue number	D1	D	DPM	G3X	L2	WF	Ap1 max	Z	max RPM	coolant supply	kg
5873211	VSM490D025Z02M12XN15	25	21	12,5	M12	32	17	15,0	2	26700	Yes	0,18
5873212	VSM490D032Z03M16XN15	32	29	17,0	M16	40	24	15,0	3	22000	Yes	0,18
5873213	VSM490D032Z04M16XN15	32	29	17,0	M16	40	24	15,0	4	22000	Yes	0,18
5873214	VSM490D035Z04M16XN15	35	29	17,0	M16	40	24	15,0	4	20600	Yes	0,19

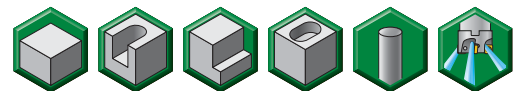
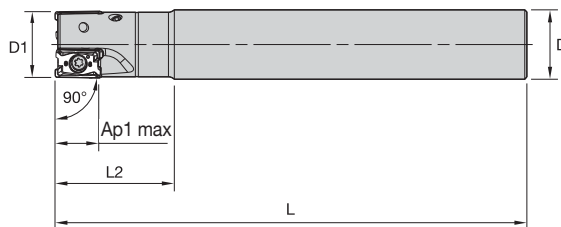
Weldon® End Mills • Metric



order number	catalogue number	D1	D	L	L2	Ap1 max	Z	max RPM	coolant supply	kg
5710285	VSM490D025Z02B25XN15	25	25	89	32	15,0	2	26700	Yes	0,28
5710286	VSM490D032Z03B32XN15	32	32	111	50	15,0	3	22000	Yes	0,58
5873215	VSM490D040Z03B32XN15	40	32	111	50	15,0	3	18800	Yes	0,65

NOTE: Weldon type not recommended for finishing operations.

Cylindrical End Mills • Metric



order number	catalogue number	D1	D	L	L2	Ap1 max	Z	max RPM	coolant supply	kg
5873216	VSM490D025Z02A25XN15L100	25	25	100	43	15,0	2	26700	Yes	0,32
5710287	VSM490D025Z02A25XN15L170	25	25	170	43	15,0	2	26700	Yes	0,59
5873217	VSM490D032Z03A32XN15L110	32	32	110	49	15,0	3	22000	Yes	0,59
5710288	VSM490D032Z03A32XN15L200	32	32	200	50	15,0	3	22000	Yes	1,14
5873218	VSM490D032Z04A32XN15L110	32	32	110	49	15,0	4	22000	Yes	0,58
5873219	VSM490D032Z04A32XN15L200	32	32	200	50	15,0	4	22000	Yes	1,14

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

INDEXABLE MILLING

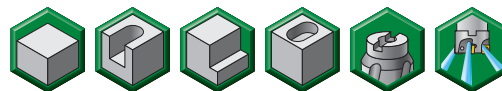
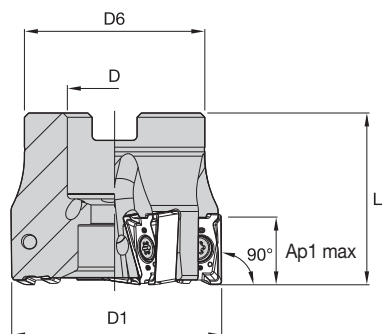
SOLID END MILLING

HOLEMAKING

TAPPING

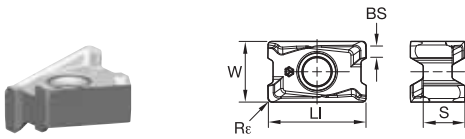
TURNING

Shell Mills • Metric



order number	catalogue number	D1	D	D6	L	Ap1 max	Z	max RPM	coolant supply	kg
5710289	VSM490D040Z04S16XN15	40	16	37	40	15,0	4	18800	Yes	0,20
5710520	VSM490D040Z05S16XN15	40	16	37	40	15,0	5	18800	Yes	0,19
5873221	VSM490D050Z04S22XN15	50	22	42	40	15,0	4	16300	Yes	0,28
5710521	VSM490D050Z05S22XN15	50	22	42	40	15,0	5	16300	Yes	0,28
5710522	VSM490D050Z06S22XN15	50	22	42	40	15,0	6	16300	Yes	0,28
5873222	VSM490D063Z05S22XN15	63	22	50	40	15,0	5	14200	Yes	0,50
5710523	VSM490D063Z06S22XN15	63	22	50	40	15,0	6	14200	Yes	0,49
5710524	VSM490D063Z07S22XN15	63	22	50	40	15,0	7	14200	Yes	0,48
5873223	VSM490D080Z05S27XN15	80	27	60	50	15,0	5	12300	Yes	1,03
5710525	VSM490D080Z07S27XN15	80	27	60	50	15,0	7	12300	Yes	1,03
5873224	VSM490D080Z09S27XN15	80	27	60	50	15,0	9	12300	Yes	1,04
5710526	VSM490D100Z08S32XN15	100	32	80	50	15,0	8	10900	Yes	1,61
5873225	VSM490D100Z11S32XN15	100	32	80	50	15,0	11	10900	Yes	1,64
5873226	VSM490D125Z09S40XN15	125	40	90	63	15,0	9	9600	Yes	2,96
5873227	VSM490D125Z12S40XN15	125	40	90	63	15,0	12	9600	Yes	3,11
5873228	VSM490D160Z12S40XN15	160	40	110	63	15,0	12	8400	Yes	4,80

Inserts • XNGU-ALP • For Aluminium and Other Non-Ferrous Alloys

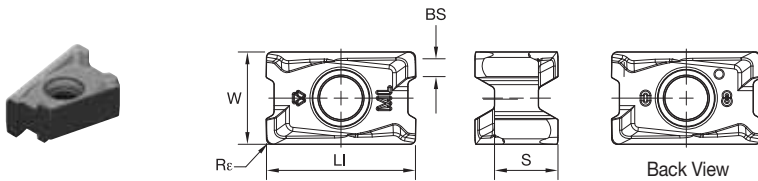


- first choice
- alternate choice

P	■	■
M	■	■
K	■	■
N	■	●
S	■	■
H	■	■

ISO catalogue number	cutting edges	LI	S	W	BS	Re	hm	6082644	6082645	WN25PM
XNGU15T604ERALP	4	16,20	6,88	10,00	2,20	0,40	0,03			
XNGU15T608ERALP	4	16,20	6,88	10,00	1,80	0,80	0,03			

Inserts • XNGU-ML • Precision Finishing and Light Machining



- first choice
- alternate choice

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

ISO catalogue number	cutting edges	LI	S	W	BS	Re	hm	WP25PM	WP40PM	WS40PM	WU35PM
XNGU15T604ERML	4	16,20	6,88	10,00	2,20	0,40	0,08	5890821	5890822	6180323	5890823
XNGU15T608ERML	4	16,20	6,88	10,00	1,80	0,80	0,08	5873481	5873482	6180324	5873483



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INDEXABLE MILLING

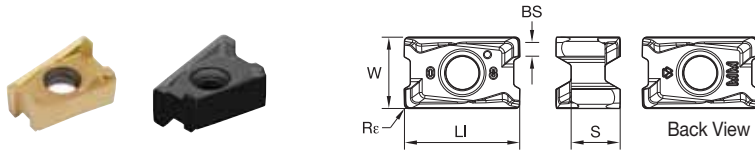
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Inserts • XNGU-MM • Universal Geometry for Medium Machining



- first choice
- alternate choice

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

ISO catalogue number	cutting edges	LI	S	W	BS	Rε	hm	WK15CM	WK15PM	WP25PM	WP40PM	WU35PM
XNGU15T604SRMM	4	16,20	6,88	10,00	2,20	0,40	0,10	●	●	○	○	○
XNGU15T608SRMM	4	16,20	6,88	10,00	1,90	0,80	0,10	●	●	○	○	○
XNGU15T612SRMM	4	16,20	6,88	10,00	1,50	1,20	0,08	○	○	○	○	○

Inserts • XNGU-MH • Heavy Roughing

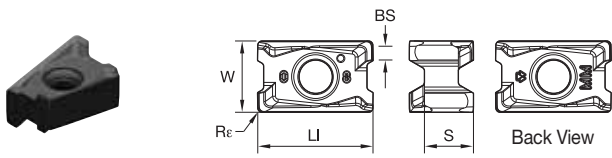


- first choice
- alternate choice

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

ISO catalogue number	cutting edges	LI	S	W	BS	Rε	hm	WK15CM	WK15PM	WP25PM	WP35CM	WP40PM	WU35PM
XNGU15T608SRMH	4	16,20	6,88	10,00	1,80	0,80	0,10	○	○	○	○	○	○
XNGU15T616SRMH	4	16,20	6,88	10,00	1,00	1,60	0,10	○	○	○	○	○	○

Inserts • XNPU-ML • Light Machining

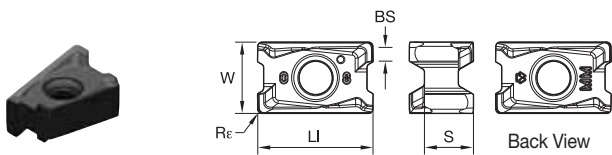


- first choice
- alternate choice

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

ISO catalogue number	cutting edges	LI	S	W	BS	Rε	hm						
XNPU15T608ERML	4	16,10	6,88	10,00	1,90	0,80	0,08	5883097	WP25PM	5883098	WP40PM	5883099	WU35PM

Inserts • XNPU-MM • Universal Geometry for Medium Machining



- first choice
- alternate choice

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

ISO catalogue number	cutting edges	LI	S	W	BS	Rε	hm																		
XNPU15T608SRMM	4	16,10	6,88	10,00	1,90	0,80	0,10	5873420	WK15CM	5873419	WK15PM	5890763	5890762	5873415	WP25PM	5890761	5873418	WP35CM	5890729	5873416	WP40PM	5890730	5873417	WU35PM	
XNPU15T612SRMM	4	16,10	6,88	10,00	1,50	1,20	0,10	6030375	5883522	5883521	5883447	6030372	5883448	5883450	5883448	5883448	5883448	5883448	5883448	5883448	5883448	5883448	5883448	5883448	
XNPU15T616SRMM	4	16,10	6,88	10,00	1,10	1,60	0,10	6030375	5883522	5883521	5883447	6030372	5883448	5883450	5883448	5883448	5883448	5883448	5883448	5883448	5883448	5883448	5883448	5883448	5883448
XNPU15T620SRMM	4	16,10	6,88	10,00	0,70	2,00	0,10	6030375	5883522	5883521	5883447	6030372	5883448	5883450	5883448	5883448	5883448	5883448	5883448	5883448	5883448	5883448	5883448	5883448	5883448



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INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Insert Selection Guide

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

Recommended Starting Speeds [m/min]*

Material Group		WK15CM			WK15PM			WN25PM			WP25PM			WP35CM			WP40PM			WS40PM			WU35PM		
		P	1	-	-	-	-	-	-	-	-	-	330	285	270	455	395	370	295	260	245	-	-	-	260
	2	-	-	-	-	-	-	-	-	-	275	240	200	280	255	230	250	215	180	-	-	-	220	190	160
	3	-	-	-	-	-	-	-	-	-	255	215	175	255	230	205	230	195	160	-	-	-	200	170	140
	4	-	-	-	-	-	-	-	-	-	225	185	150	190	175	160	205	170	135	-	-	-	180	150	120
	5	-	-	-	-	-	-	-	-	-	185	170	150	260	230	210	170	155	135	170	145	120	150	135	120
	6	-	-	-	-	-	-	-	-	-	165	125	100	160	135	110	150	115	90	150	110	80	130	100	80
M	1	-	-	-	-	-	-	-	-	-	205	180	165	205	185	155	195	170	155	210	170	140	170	150	135
	2	-	-	-	-	-	-	-	-	-	185	160	130	185	160	140	175	150	125	180	145	120	155	130	110
	3	-	-	-	-	-	-	-	-	-	140	120	95	145	130	115	130	115	90	145	110	85	115	100	80
K	1	420	385	340	270	245	215	-	-	-	230	205	185	295	265	240	-	-	-	-	-	-	-	-	-
	2	335	295	275	210	190	175	-	-	-	180	160	150	235	210	190	-	-	-	-	-	-	-	-	-
	3	280	250	230	175	160	145	-	-	-	150	135	120	195	175	160	-	-	-	-	-	-	-	-	-
N	1	-	-	-	-	-	-	1075	945	875	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	945	875	760	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	945	875	760	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S	1	-	-	-	-	-	-	-	-	-	40	35	25	-	-	-	-	-	-	40	35	25	35	30	25
	2	-	-	-	-	-	-	-	-	-	40	35	25	-	-	-	-	-	-	40	35	25	35	30	25
	3	-	-	-	-	-	-	-	-	-	50	40	25	-	-	-	-	-	-	50	40	25	45	35	25
	4	-	-	-	-	-	-	-	-	-	70	50	35	-	-	-	-	-	-	60	50	30	60	45	30
H	1	-	-	-	-	-	-	-	-	-	120	90	70	-	-	-	-	-	-	-	-	-	-	-	-

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

Recommended Starting Feeds [mm]

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry	
	Light Machining			General Purpose			Heavy Machining			Light Machining			General Purpose				Heavy Machining
	5%			10%			20%			30%			40-100%				
.E..ALP	0,11	0,23	0,35	0,08	0,17	0,25	0,06	0,13	0,19	0,05	0,11	0,16	0,05	0,10	0,15	.E..ALP	
.E..ML	0,17	0,31	0,46	0,13	0,23	0,33	0,09	0,17	0,25	0,08	0,15	0,22	0,08	0,14	0,20	.E..ML	
.S..MM	0,22	0,40	0,64	0,16	0,29	0,46	0,12	0,22	0,34	0,10	0,19	0,30	0,10	0,18	0,28	.S..MM	
.S..MH	0,23	0,45	0,74	0,17	0,33	0,54	0,13	0,24	0,40	0,11	0,21	0,35	0,10	0,20	0,32	.S..MH	

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

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Aerospace Solutions

VXF™, X-Feed™ for titanium and the aerospace fastener tap, were created to fill the growing need for high-performance tooling in the aerospace industry

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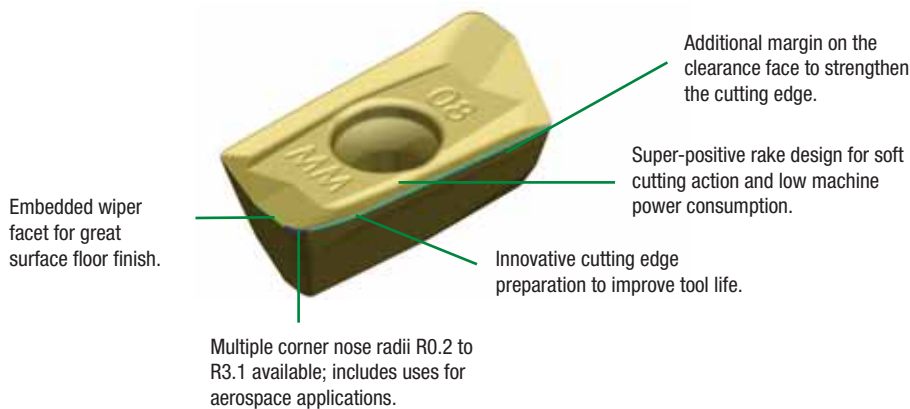
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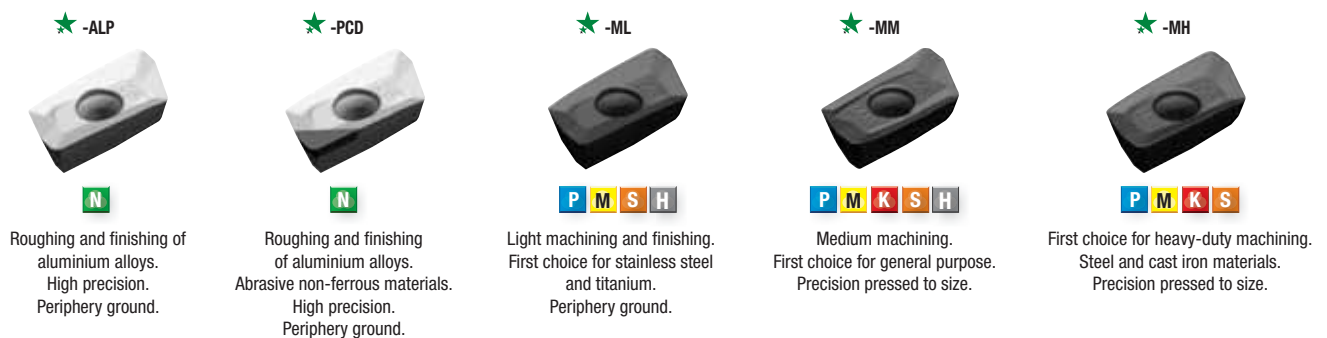
2-Edged, 90° Victory™ Shoulder Mill (VSM)

- True 90° shoulder milling platform.
- Aggressive ramping capability up to 10° with end mills with a diameter of 16mm.
- Optimised chip gash for improved cutter stability and chip flow.
- Well-guided internal coolant supply to the cutting edge.
- Best-in-class milling grade WS40PM boosts productivity when machining stainless steel and high-temp alloys.

- Screw-On End Mills
- Weldon® End Mills
- Cylindrical End Mills
- Shell Mills
- M4000 Cartridge Milling System



Geometries for all material groups in shoulder milling applications.

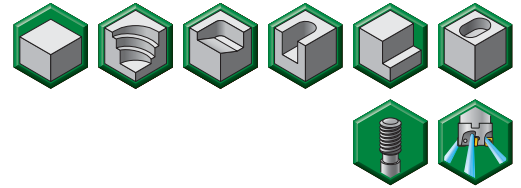
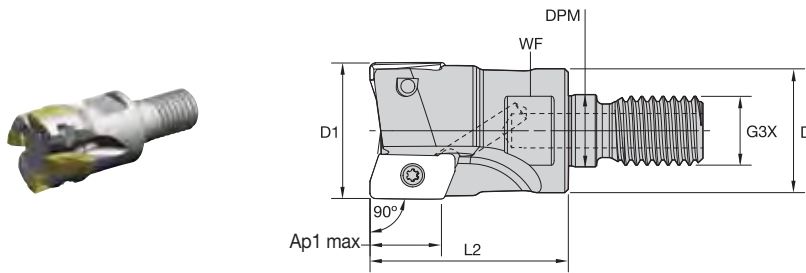


Finishing Capabilities/Lower Cutting Forces

Geometry Strengthening

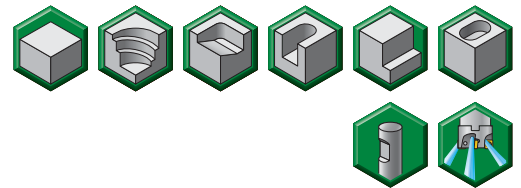
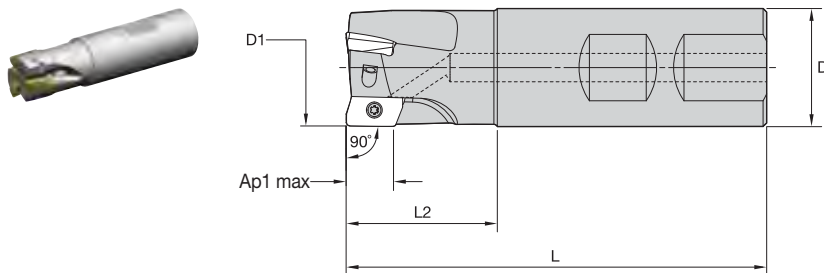
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Screw-On End Mills • Metric



order number	catalogue number	D1	D	DPM	G3X	L2	WF	Ap1 max	Z	max ramp angle	max RPM	coolant supply	kg
5417011	VSM11D016Z02M08XD11	16	13	8,5	M8	25	10	11,5	2	10.0°	41400	Yes	0,02
5417013	VSM11D020Z03M10XD11	20	18	10,5	M10	28	15	11,6	3	7.8°	35100	Yes	0,05
5417015	VSM11D025Z04M12XD11	25	21	12,5	M12	32	17	11,5	4	5.3°	30200	Yes	0,08
5417017	VSM11D032Z04M16XD11	32	29	17,0	M16	40	24	11,4	4	3.6°	25800	Yes	0,18
5417019	VSM11D040Z06M16XD11	40	29	17,0	M16	40	24	11,4	6	2.6°	22600	Yes	0,24

Weldon® End Mills • Metric



order number	catalogue number	D1	D	L	L2	Ap1 max	Z	max ramp angle	max RPM	coolant supply	kg
5416454	VSM11D012Z01B16XD11	12	16	70	21	11,7	1	3.7°	53100	Yes	0,08
5416455	VSM11D016Z02B16XD11	16	16	70	21	11,5	2	10.0°	41400	Yes	0,09
5416457	VSM11D020Z02B20XD11	20	20	81	30	11,6	2	7.8°	35100	Yes	0,15
5416458	VSM11D020Z03B20XD11	20	20	81	30	11,6	3	7.8°	35100	Yes	0,16
5416459	VSM11D025Z03B25XD11	25	25	88	31	11,5	3	5.3°	30200	Yes	0,27
5416480	VSM11D025Z04B25XD11	25	25	88	31	11,5	4	5.3°	30200	Yes	0,28
5416481	VSM11D030Z04B25XD11	30	25	88	31	11,5	4	3.2°	26900	Yes	0,30
5416482	VSM11D032Z04B32XD11	32	32	100	39	11,4	4	3.6°	25800	Yes	0,51
5416483	VSM11D032Z05B32XD11	32	32	100	39	11,4	5	3.6°	25800	Yes	0,52

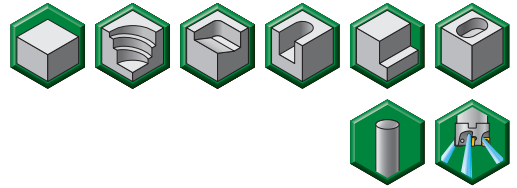
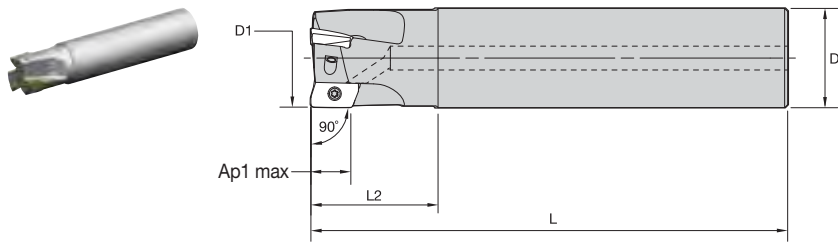
NOTE: Weldon type not recommended for finishing operations.



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INDEXABLE MILLING

Cylindrical End Mills (Regular and Long Version) • Metric

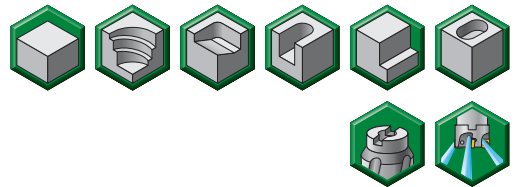
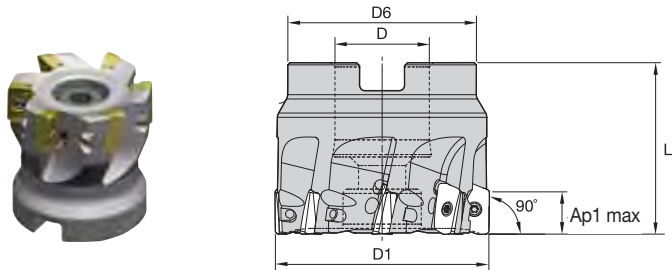


SOLID END MILLING

order number	catalogue number	D1	D	L	L2	Ap1 max	Z	max ramp angle	max RPM	coolant supply	kg
5416632	VSM11D012Z01A16XD11L100	12	16	100	25	11,7	1	3.7°	53100	Yes	0,13
5416633	VSM11D016Z02A16XD11L100	16	16	100	31	11,5	2	10.0°	41400	Yes	0,12
5416700	VSM11D016Z02A16XD11L170	16	16	170	25	11,5	2	10.0°	41400	Yes	0,23
5416701	VSM11D018Z02A16XD11L170	18	16	170	25	11,6	2	9.7°	37900	Yes	0,23
5416634	VSM11D020Z02A20XD11L110	20	20	110	31	11,6	2	7.8°	35100	Yes	0,22
5416702	VSM11D020Z02A20XD11L170	20	20	170	41	11,6	2	7.8°	35100	Yes	0,35
5416635	VSM11D020Z03A20XD11L110	20	20	110	31	11,6	3	7.8°	35100	Yes	0,23
5416703	VSM11D020Z03A20XD11L170	20	20	170	41	11,6	3	7.8°	35100	Yes	0,36
5416704	VSM11D022Z03A20XD11L170	22	20	170	30	11,5	3	6.6°	32900	Yes	0,37
5416636	VSM11D025Z03A25XD11L120	25	25	120	33	11,5	3	5.3°	30200	Yes	0,39
5416705	VSM11D025Z03A25XD11L210	25	25	210	50	11,5	3	5.3°	30200	Yes	0,70
5416637	VSM11D025Z04A25XD11L120	25	25	120	33	11,5	4	5.3°	30200	Yes	0,40
5416706	VSM11D025Z04A25XD11L210	25	25	210	50	11,5	4	5.3°	30200	Yes	0,72
5416638	VSM11D032Z03A32XD11L130	32	32	130	41	11,4	3	3.6°	25800	Yes	0,70
5416707	VSM11D032Z03A32XD11L250	32	32	250	65	11,4	3	3.6°	25800	Yes	1,39
5416639	VSM11D032Z05A32XD11L130	32	32	130	41	11,4	5	3.6°	25800	Yes	0,71

HOLEMAKING

Shell Mills • Metric

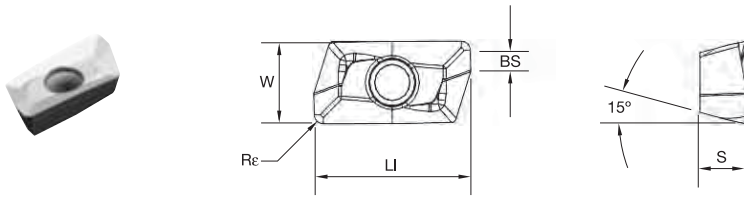


TAPPING

order number	catalogue number	D1	D	D6	L	Ap1 max	Z	max ramp angle	max RPM	coolant supply	kg
5416316	VSM11D040Z04S016XD11	40	16	37	40	11,4	4	2.6°	22600	Yes	0,22
5416317	VSM11D040Z06S016XD11	40	16	37	40	11,4	6	2.6°	22600	Yes	0,22
5416318	VSM11D050Z05S022XD11	50	22	44	40	11,3	5	1.9°	19900	Yes	0,33
5416319	VSM11D050Z08S022XD11	50	22	44	40	11,3	8	1.9°	19900	Yes	0,33
5416340	VSM11D063Z06S022XD11	63	22	44	40	11,3	6	1.5°	17500	Yes	0,50
5416341	VSM11D063Z09S022XD11	63	22	44	40	11,3	9	1.5°	17500	Yes	0,52
5416342	VSM11D080Z08S027XD11	80	27	60	50	11,3	8	1.1°	15300	Yes	1,14
5416345	VSM11D100Z09S032XD11	100	32	80	50	11,3	9	.9°	13600	Yes	1,79
5416347	VSM11D125Z011S040XD11	125	40	80	63	11,3	11	.7°	12100	Yes	3,01

TURNING

Inserts • XDCT-ALP

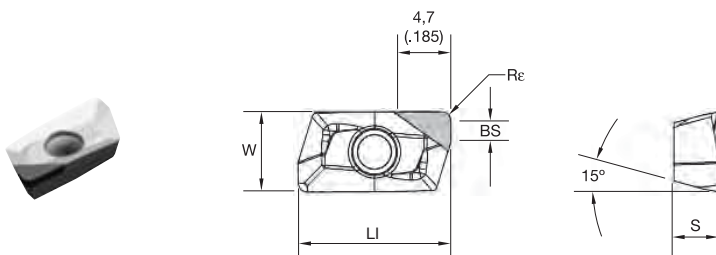


- first choice
- alternate choice

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

ISO catalogue number	cutting edges	LI	BS	S	W	Re	hm	WN10HM	WN25PM
XDCT110404PDFRALP	2	13,43	2,09	4,00	6,90	0,40	0,02	5933940	5417054
XDCT110408PDFRALP	2	13,44	1,69	4,00	6,90	0,80	0,02	5936171	5417053

Inserts • XDCW-PCD



- first choice
- alternate choice

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

ISO catalogue number	cutting edges	LI	BS	S	W	Re	hm	WDN10U
XDCW110404PDFRPCD	1	13,41	2,22	4,00	6,90	0,40	0,02	5415420
XDCW110408PDFRPCD	1	13,42	1,80	4,00	6,90	0,80	0,02	5415421



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INDEXABLE MILLING

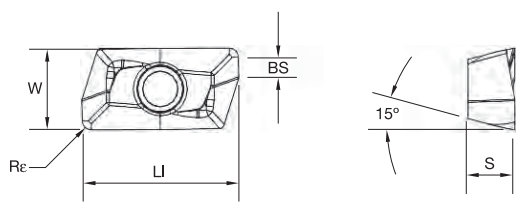
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Inserts • XDCT-ML



- first choice
- alternate choice

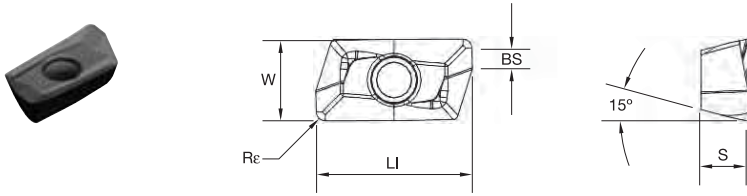
P	■	■	○	○	○	○	○	○	○
M	■	■	○	○	○	○	○	○	○
K	■	○	○	○	○	○	○	○	○
N	■	○	○	○	○	○	○	○	○
S	■	○	○	○	○	○	○	○	○
H	■	○	○	○	○	○	○	○	○

ISO catalogue number	cutting edges	LI	BS	S	W	Re	hm	WK15CM	WP25PM	WP35CM	WP40PM	WS30PM	WS40PM	WU35PM
XDCT110432PDERML	2	12,86	—	4,00	6,89	3,20	—	■	■	■	■	■	■	■
XDCT110404PDERML	2	13,43	2,09	4,00	6,90	0,40	0,04	■	5536671	5536670	5642230	■	6180174	6408007
XDCT110408PDERML	2	13,44	1,69	4,00	6,90	0,80	0,04	5415549	5415548	5415547	5545065	5517826	6180173	5415546
XDCT110412PDERML	2	13,44	1,29	4,00	6,90	1,20	—	■	■	■	■	■	6408002	■
XDCT110416PDERML	2	13,44	0,88	4,00	6,89	1,60	0,04	■	5964861	■	5964810	■	6408004	■
XDCT110424PDERML	2	13,44	0,16	4,00	6,88	2,40	—	■	■	■	■	■	6408006	■

Inserts • XDPT-MM

- first choice
- alternate choice

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



ISO catalogue number	cutting edges	LI	BS	S	W	Re	hm	WK15CM	WP25PM	WP35CM	WP40PM	WS30PM	WS40PM	WU35PM
XDPT110431PDSRMM	2	12,94	—	4,01	6,94	3,10	0,06	●	○	○	○	○	○	○
XDPT110424PDSRMM	2	13,37	—	4,01	6,94	2,40	0,06	○	○	○	○	○	○	○
XDPT110412PDSRMM	2	13,44	1,29	4,00	6,90	1,20	0,06	●	○	○	○	○	○	○
XDPT110404PDSRMM	2	13,49	2,06	4,13	6,94	0,39	0,06	○	○	○	○	○	○	○
XDPT110408PDSRMM	2	13,50	1,66	4,13	6,94	0,78	0,06	○	○	○	○	○	○	○
XDPT110416PDSRMM	2	13,51	0,85	4,13	6,95	1,60	0,06	○	○	○	○	○	○	○
XDPT110420PDSRMM	2	13,51	0,45	4,13	6,95	2,00	0,06	○	○	○	○	○	○	○



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INDEXABLE MILLING

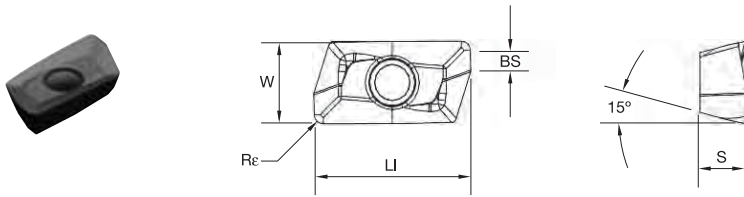
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Inserts • XDPT-MH



- first choice
- alternate choice

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

ISO catalogue number	cutting edges	LI	BS	S	W	Re	hm					
XDPT110408PDSRMH	2	13,44	1,68	4,00	6,90	0,79	0,13	5415255	5415257	5545064	6408098	5415256
XDPT110412PDSRMH	2	13,44	1,29	4,00	6,90	1,20	0,13	5415360	5415362	5642235	6408099	-
XDPT110416PDSRMH	2	13,44	0,90	4,00	6,90	1,59	0,13	5415364	5415366	5642236	6408100	-

Insert Selection Guide

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1-P2	XDCT-ML	WP40PM	XDPT-MM	WP40PM	XDPT-MH	WP40PM
P3-P4	XDCT-ML	WP40PM	XDPT-MM	WP40PM	XDPT-MH	WP40PM
P5-P6	XDPT-MM	WP25PM	XDPT-MM	WP35CM	XDPT-MH	WP40PM
M1-M2	XDCT-ML	WS40PM	XDPT-MM	WS40PM	XDPT-MH	WS40PM
M3	XDCT-ML	WS40PM	XDPT-MM	WS40PM	XDPT-MH	WS40PM
K1-K2	XDCT-ML	WK15CM	XDPT-MM	WK15CM	XDPT-MH	WK15CM
K3	XDCT-ML	WP35CM	XDPT-MM	WP35CM	XDPT-MH	WP35CM
N1-N2	XDCT-ALP	WN10HM	XDCT-ALP	WN25PM	XDCT-ALP	WN25PM
N3	XDCW-PCD	WDN10U	XDCW-PCD	WDN10U	XDCW-PCD	WDN10U
S1-S2	XDCT-ML	WP25PM	XDPT-MM	WS40PM	XDPT-MH	WS40PM
S3	XDCT-ML	WS40PM	XDPT-MM	WS40PM	XDPT-MH	WS40PM
S4	XDCT-ML	WS40PM	XDPT-MM	WS40PM	XDPT-MH	WS40PM
H1	XDCT-ML	WP25PM	XDPT-MM	WP25PM	-	-



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Recommended Starting Speeds [m/min]*

Material Group		WDN10U	WK15CM			WK15PM			WN10HM			WN25PM			WP25PM		
P	1	—	—	—	—	—	—	—	—	—	—	—	—	—	330	285	270
	2	—	—	—	—	—	—	—	—	—	—	—	—	—	275	240	200
	3	—	—	—	—	—	—	—	—	—	—	—	—	—	255	215	175
	4	—	—	—	—	—	—	—	—	—	—	—	—	—	225	185	150
	5	—	—	—	—	—	—	—	—	—	—	—	—	—	185	170	150
	6	—	—	—	—	—	—	—	—	—	—	—	—	—	165	125	100
M	1	—	—	—	—	—	—	—	—	—	—	—	—	—	205	180	165
	2	—	—	—	—	—	—	—	—	—	—	—	—	—	185	160	130
	3	—	—	—	—	—	—	—	—	—	—	—	—	—	140	120	95
K	1	—	—	—	420	385	340	270	245	215	—	—	—	—	230	205	185
	2	—	—	—	335	295	275	210	190	175	—	—	—	—	180	160	150
	3	—	—	—	280	250	230	175	160	145	—	—	—	—	150	135	120
N	1	4010	3505	2990	—	—	—	—	—	—	795	695	600	1075	945	875	—
	2	1600	1495	1400	—	—	—	—	—	—	795	695	600	945	875	760	—
	3	1600	1495	1400	—	—	—	—	—	—	560	485	420	945	875	760	—
S	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	40
	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	35
	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	25
	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	25
H	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	40
	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	35

Material Group		WP35CM			WP40PM			WS30PM			WS40PM			WU35PM		
P	1	455	395	370	295	260	245	—	—	—	—	—	—	260	230	215
	2	280	255	230	250	215	180	—	—	—	—	—	—	220	190	160
	3	255	230	205	230	195	160	—	—	—	—	—	—	200	170	140
	4	190	175	160	205	170	135	—	—	—	—	—	—	180	150	120
	5	260	230	210	170	155	135	—	—	—	—	—	—	150	135	120
	6	160	135	110	150	115	90	—	—	—	150	110	80	130	100	80
M	1	205	185	155	195	170	155	225	200	185	210	170	140	170	150	135
	2	185	160	140	175	150	125	205	180	145	180	145	120	155	130	110
	3	145	130	115	130	115	90	155	135	105	145	110	85	115	100	80
K	1	295	265	240	—	—	—	—	—	—	—	—	—	—	—	—
	2	235	210	190	—	—	—	—	—	—	—	—	—	—	—	—
	3	195	175	160	—	—	—	—	—	—	—	—	—	—	—	—
N	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
S	1	—	—	—	—	—	—	45	40	30	40	35	25	35	30	25
	2	—	—	—	—	—	—	45	40	30	40	35	25	35	30	25
	3	—	—	—	—	—	—	55	45	30	50	40	25	45	35	25
	4	—	—	—	—	—	—	70	60	40	60	50	30	60	45	30
H	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

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

Recommended Starting Feeds [mm]

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40-100%			
	Light Machining	General Purpose	Heavy Machining	Light Machining	General Purpose	Heavy Machining	Light Machining	General Purpose	Heavy Machining	Light Machining	General Purpose	Heavy Machining	Light Machining	General Purpose	Heavy Machining	
.F..PCD	0,12	0,18	0,29	0,08	0,13	0,21	0,06	0,10	0,16	0,06	0,09	0,14	0,05	0,08	0,12	.F..PCD
.F..ALP	0,12	0,22	0,31	0,08	0,16	0,23	0,06	0,12	0,17	0,06	0,10	0,15	0,05	0,10	0,14	.F..ALP
.E..ML	0,17	0,27	0,36	0,13	0,20	0,26	0,10	0,15	0,19	0,08	0,13	0,17	0,08	0,12	0,16	.E..ML
.S..MM	0,23	0,32	0,47	0,17	0,23	0,34	0,13	0,17	0,25	0,11	0,15	0,22	0,10	0,14	0,20	.S..MM
.S..MH	0,23	0,37	0,56	0,17	0,27	0,40	0,13	0,20	0,30	0,11	0,17	0,26	0,10	0,16	0,24	.S..MH

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

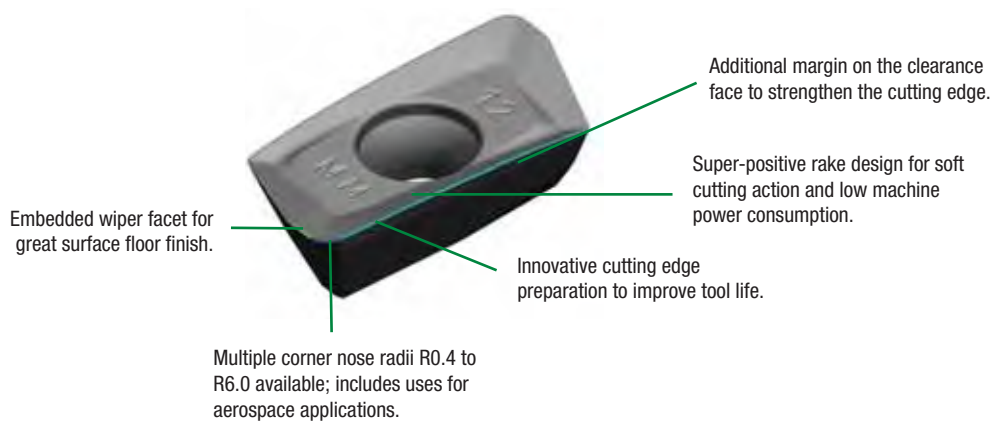
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INDEXABLE MILLING
 SOLID END MILLING
 HOLEMAKING
 TAPPING
 TURNING

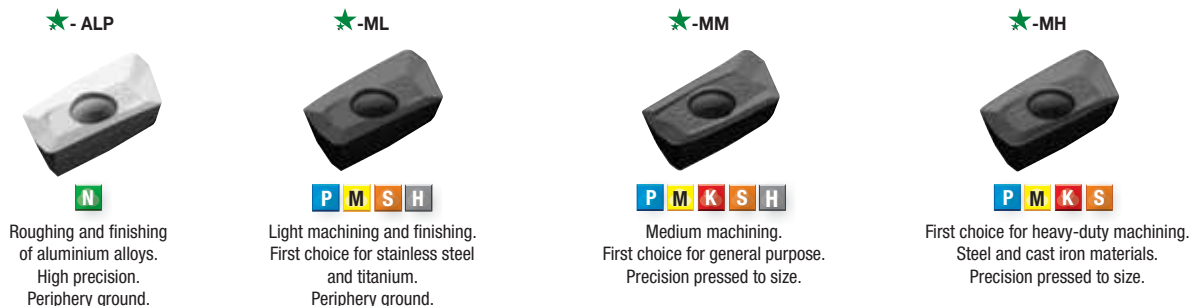
2-Edged, 90° Victory™ Shoulder Mill (VSM)

- True 90° shoulder milling platform.
- Aggressive ramping capability up to 8.8° with end mills with a diameter of 25mm.
- Optimised chip gash for improved cutter stability and chip flow.
- Well-guided internal coolant supply to the cutting edge.
- Best-in-class milling grade WS40PM boosts productivity when machining stainless steel and high-temp alloys.

- Screw-On End Mills
- Weldon® End Mills
- Cylindrical End Mills
- Shell Mills
- M4000 Cartridge Milling System



Geometries for all material groups in shoulder milling applications.

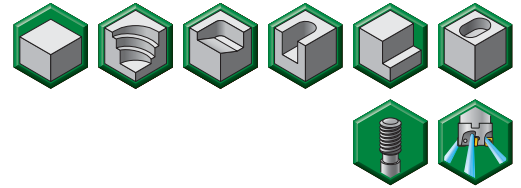
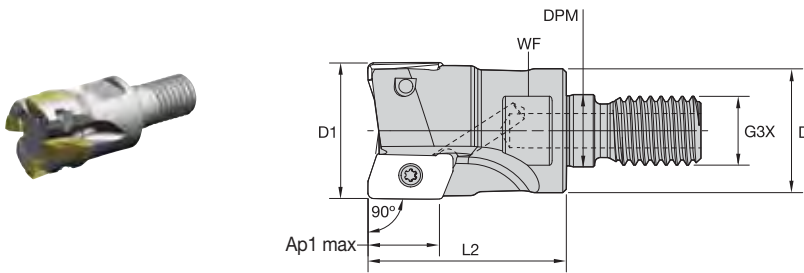


Finishing Capabilities/Lower Cutting Forces

Geometry Strengthening

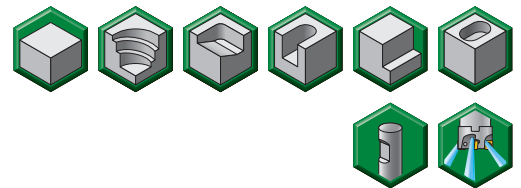
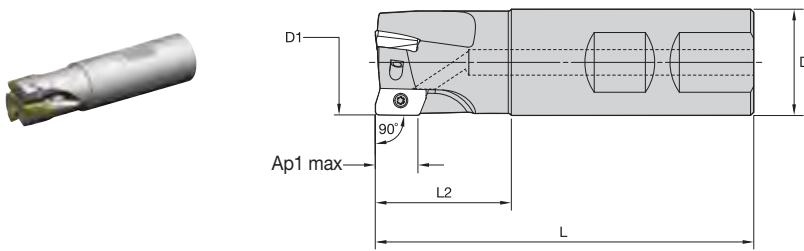
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Screw-On End Mills • Metric



order number	catalogue number	D1	D	DPM	G3X	L2	WF	Ap1 max	Z	max ramp angle	max RPM	coolant supply	kg
5988091	VSM17D025Z02M12XD17	25	21	12,5	M12	35	17	16,4	2	8,8°	41800	Yes	0,08
5988092	VSM17D032Z03M16XD17	32	29	17,0	M16	40	24	16,3	3	5,7°	34700	Yes	0,17
5988131	VSM17D40Z03M016XD17	40	29	17,0	M16	40	24	16,2	3	4,0°	29800	Yes	0,20
5988093	VSM17D040Z04M16XD17	40	29	17,0	M16	40	24	16,2	4	4,0°	29800	Yes	0,20

Weldon® End Mills • Metric



order number	catalogue number	D1	D	L	L2	Ap1 max	Z	max ramp angle	max RPM	coolant supply	kg
5988102	VSM17D025Z02B25XD17	25	25	90	33	16,4	2	8,8°	41800	Yes	0,26
5988103	VSM17D032Z03B32XD17	32	32	100	39	16,3	3	5,7°	34700	Yes	0,48
5988104	VSM17D040Z04B40XD17	40	40	110	39	16,2	4	4,0°	29800	Yes	0,87

NOTE: Weldon type not recommended for finishing operations.

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING



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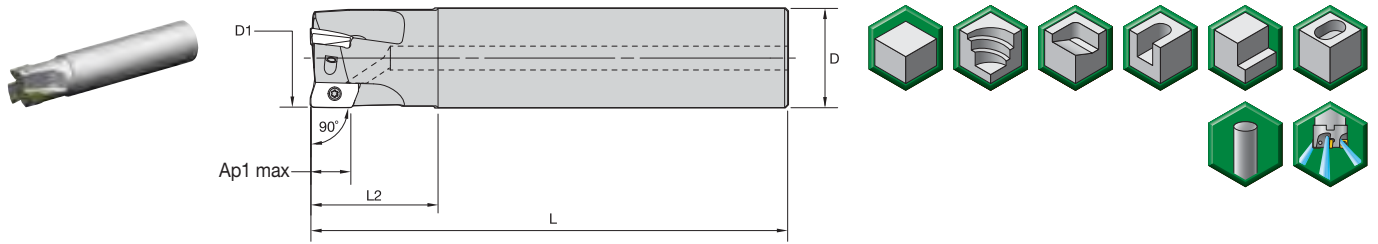
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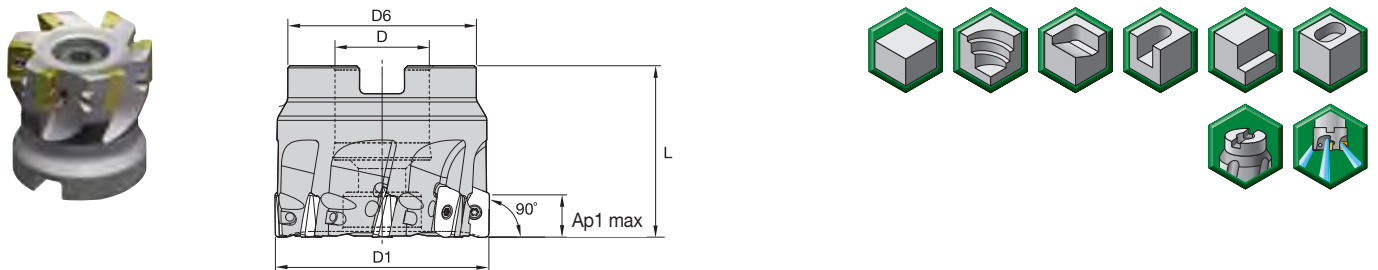
TURNING

Cylindrical End Mills (Regular and Long Version) • Metric



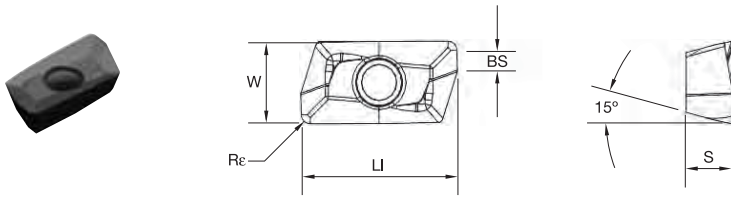
order number	catalogue number	D1	D	L	L2	Ap1 max	Z	max ramp angle	max RPM	coolant supply	kg
5988055	VSM17D025Z02A25XD17L110	25	25	110	44	16,4	2	8.8°	41800	Yes	0,32
5988056	VSM17D025Z02A25XD17L170	25	25	170	44	16,4	2	8.8°	41800	Yes	0,54
5988107	VSM17D032Z02A32XD17L120	32	32	120	50	16,3	2	5.7°	34700	Yes	0,60
5988108	VSM17D032Z02A32XD17L210	32	32	210	50	16,3	2	5.7°	34700	Yes	1,14
5988057	VSM17D032Z03A32XD17L120	32	32	120	50	16,3	3	5.7°	34700	Yes	0,60
5988058	VSM17D032Z03A32XD17L210	32	32	210	50	16,3	3	5.7°	34700	Yes	1,13
5988109	VSM17D040Z03A32XD17L130	40	32	130	50	16,2	3	4.0°	29800	Yes	0,77
5988110	VSM17D040Z03A32XD17L250	40	32	250	50	16,2	3	4.0°	29800	Yes	1,49
5988059	VSM17D040Z04A32XD17L130	40	32	130	50	16,2	4	4.0°	29800	Yes	0,77
5988060	VSM17D040Z04A32XD17L250	40	32	250	50	16,2	4	4.0°	29800	Yes	1,49

Shell Mills • Metric



order number	catalogue number	D1	D	D6	L	Ap1 max	Z	max ramp angle	max RPM	coolant supply	kg
5988094	VSM17D040Z04S16XD17	40	16	37	40	16,2	4	4.0°	29800	Yes	0,19
5988095	VSM17D050Z04S22XD17	50	22	45	40	16,1	4	3.0°	25800	Yes	0,28
5988096	VSM17D050Z05S22XD17	50	22	45	40	16,1	5	3.0°	25800	Yes	0,29
5988134	VSM17D050Z06S22XD17	50	22	45	40	16,1	6	3.0°	25800	Yes	0,28
5988097	VSM17D063Z05S22XD17	63	22	50	40	16,0	5	2.1°	22400	Yes	0,45
5988135	VSM17D063Z06S22XD17	63	22	50	40	16,0	6	2.1°	22400	Yes	0,45
5988098	VSM17D080Z06S27XD17	80	27	60	50	15,9	6	1.6°	19500	Yes	0,98
5988133	VSM17D080Z07S27XD17	80	27	60	50	15,9	7	1.6°	19500	Yes	0,96
5988099	VSM17D100Z08S32XD17	100	32	80	50	15,8	8	1.2°	17200	Yes	1,63
5988100	VSM17D125Z09S40XD17	125	40	90	63	15,7	9	.9°	15200	Yes	2,94
5988101	VSM17D160Z12S40XD17	160	40	100	63	15,8	12	.7°	13300	Yes	3,66

Inserts • XDCT-ML



- first choice
- alternate choice

P	■	○	○	○	○	○	○
M	■	○	○	○	○	○	○
K	■	○	○	○	○	○	○
N	■	○	○	○	○	○	○
S	■	○	○	○	○	○	○
H	■	○	○	○	○	○	○

ISO catalogue number	cutting edges	LI	BS	S	W	Re	hm	WP25PM	WP35CM	WP40PM	WS40PM
XDCT170460PEERML	2	17,02	—	4,80	9,56	6,00	0,04	■	■	■	■
XDCT170440PEERML	2	18,33	—	4,87	9,59	4,00	0,04	○	○	○	○
XDCT170432PEERML	2	18,85	—	4,89	9,59	3,20	0,04	○	○	○	○
XDCT170404PEERML	2	19,15	2,62	4,90	9,60	0,40	0,04	○	○	○	○
XDCT170408PEERML	2	19,15	2,22	4,90	9,60	0,80	0,04	○	○	○	○
XDCT170412PEERML	2	19,16	1,82	4,90	9,60	1,20	0,04	○	○	○	○
XDCT170416PEERML	2	19,17	1,42	4,90	9,60	1,60	0,04	○	○	○	○
XDCT170420PEERML	2	19,17	1,01	4,90	9,60	2,00	0,04	○	○	○	○
XDCT170424PEERML	2	19,17	0,63	4,90	9,60	2,40	0,04	○	○	○	○

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TAPPING

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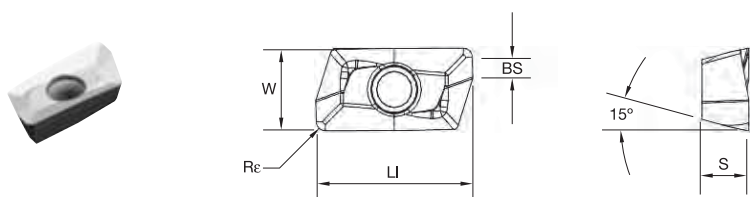
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HOLEMAKING

TAPPING

TURNING

Inserts • XDCT-ALP

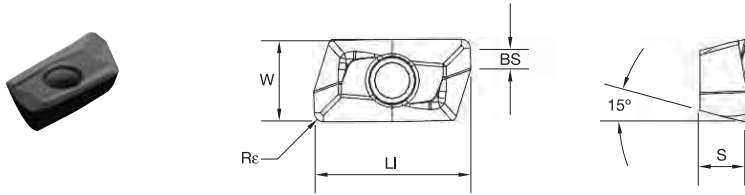


- first choice
- alternate choice

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

ISO catalogue number	cutting edges	LI	BS	S	W	Re	hm	WN10HM	WN25PM
XDCT170440PEFRALP	2	18,33	—	4,87	9,59	4,00	0,02	6007341	6001238
XDCT170432PEFRALP	2	18,85	—	4,88	9,59	3,20	0,02	6007345	6001240
XDCT170404PEFRALP	2	19,15	2,62	4,90	9,60	0,40	0,02	6007344	6007220
XDCT170408PEFRALP	2	19,15	2,22	4,90	9,60	0,80	0,02	6007342	6001537
XDCT170412PEFRALP	2	19,16	1,82	4,90	9,60	1,20	0,02	6001256	6001254
XDCT170416PEFRALP	2	19,17	1,42	4,90	9,60	1,60	0,02	6001252	6001252
XDCT170420PEFRALP	2	19,17	1,01	4,90	9,60	2,00	0,02		
XDCT170424PEFRALP	2	19,17	0,63	4,90	9,60	2,40	0,02		

Inserts • XDPT-MM



- first choice
- alternate choice

P	■	○	○	○	○	○
M	■	○	○	○	○	○
K	■	○	○	○	○	○
N	■	○	○	○	○	○
S	■	○	○	○	○	○
H	■	○	○	○	○	○

ISO catalogue number	cutting edges	LI	BS	S	W	Re	hm	WK15CM	WP25PM	WP35CM	WP40PM	WS40PM	WU35PM
XDPT170440PESRMM	2	18,33	—	4,87	9,59	4,00	0,10	—	5988970	—	5988969	6425147	—
XDPT170432PESRMM	2	18,85	—	4,89	9,59	3,20	0,10	—	5988206	5988204	5988205	—	—
XDPT170404PESRMM	2	19,15	2,52	4,90	9,60	0,40	0,10	—	—	—	5987689	—	5987690
XDPT170408PESRMM	2	19,15	2,15	4,90	9,60	0,80	0,10	5987948	5987949	5987947	5987946	6180212	5987950
XDPT170412PESRMM	2	19,16	1,77	4,90	9,60	1,20	0,10	5988138	5988151	5988140	5988139	6180213	5988152
XDPT170416PESRMM	2	19,17	1,38	4,90	9,60	1,60	0,10	5988153	5988155	5988156	5988154	6180214	—
XDPT170420PESRMM	2	19,17	0,99	4,90	9,60	2,00	0,10	—	5988158	5988160	5988159	6425145	—
XDPT170424PESRMM	2	19,17	0,62	4,90	9,60	2,40	0,10	—	5988203	—	5988202	6425146	—



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INDEXABLE MILLING

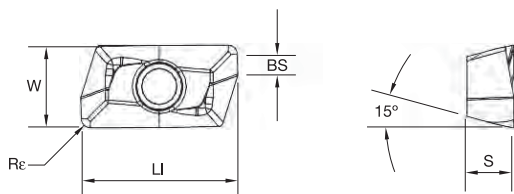
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Inserts • XDPT-MH



- first choice
- alternate choice

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

ISO catalogue number	cutting edges	LI	BS	S	W	Re	hm					
XDPT170408PESRMH	2	19,15	2,10	4,91	9,60	0,80	0,13	5991817	5989053	5989054	5989052	6425148
XDPT170412PESRMH	2	19,16	1,73	4,91	9,60	1,20	0,13	5991816	5989054	5989052	6425148	6425149



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Insert Selection Guide

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1-P2	XDCT-ML	WP40PM	XDPT-MM	WP40PM	XDPT-MH	WP40PM
P3-P4	XDCT-ML	WP40PM	XDPT-MM	WP40PM	XDPT-MH	WP40PM
P5-P6	XDPT-MM	WP25PM	XDPT-MM	WP35CM	XDPT-MH	WP40PM
M1-M2	XDCT-ML	WS40PM	XDPT-MM	WS40PM	XDPT-MM	WS40PM
M3	XDCT-ML	WS40PM	XDPT-MM	WS40PM	XDPT-MH	WS40PM
K1-K2	XDPT-MM	WK15CM	XDPT-MM	WK15CM	XDPT-MH	WK15CM
K3	XDPT-MM	WP35CM	XDPT-MM	WP35CM	XDPT-MH	WP35CM
N1-N2	XDCT-ALP	WN10HM	XDCT-ALP	WN25PM	XDCT-ALP	WN25PM
N3	XDCT-ALP	WN10HM	XDCT-ALP	WN25PM	XDCT-ALP	WN25PM
S1-S2	XDCT-ML	WP25PM	XDPT-MM	WS40PM	XDPT-MM	WS40PM
S3	XDCT-ML	WS40PM	XDPT-MM	WS40PM	XDPT-MM	WS40PM
S4	XDCT-ML	WS40PM	XDPT-MM	WS40PM	XDPT-MM	WS40PM
H1	-	-	-	-	-	-

Recommended Starting Speeds [m/min]*

Material Group		★ WK15CM	★ WK15PM	★ WN10HM	★ WN25PM	★ WP25PM	★ WP35CM	★ WP40PM	★ WS40PM	★ WU35PM
		P	1	-	-	-	-	330 285 270	455 395 370	295 260 245
	2	-	-	-	-	275 240 200	280 255 230	250 215 180	-	220 190 160
	3	-	-	-	-	255 215 175	255 230 205	230 195 160	-	200 170 140
	4	-	-	-	-	225 185 150	190 175 160	205 170 135	-	180 150 120
	5	-	-	-	-	185 170 150	260 230 210	170 155 135	170 145 120	150 135 120
	6	-	-	-	-	165 125 100	160 135 110	150 115 90	150 110 80	130 100 80
M	1	-	-	-	-	205 180 165	205 185 155	195 170 155	210 170 140	170 150 135
	2	-	-	-	-	185 160 130	185 160 140	175 150 125	180 145 120	155 130 110
	3	-	-	-	-	140 120 95	145 130 115	130 115 90	145 110 85	115 100 80
K	1	420 385 340	270 245 215	-	-	230 205 185	295 265 240	-	-	-
	2	335 295 275	210 190 175	-	-	180 160 150	235 210 190	-	-	-
	3	280 250 230	175 160 145	-	-	150 135 120	195 175 160	-	-	-
N	1	-	-	795 695 600	1075 945 875	-	-	-	-	-
	2	-	-	795 695 600	945 875 760	-	-	-	-	-
	3	-	-	560 485 420	945 875 760	-	-	-	-	-
S	1	-	-	-	-	40 35 25	-	-	40 35 25	35 30 25
	2	-	-	-	-	40 35 25	-	-	40 35 25	35 30 25
	3	-	-	-	-	50 40 25	-	-	50 40 25	45 35 25
	4	-	-	-	-	70 50 35	-	-	60 50 30	60 45 30
H	1	-	-	-	-	120 90 70	-	-	-	-

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

Recommended Starting Feeds [mm]

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)												Insert Geometry			
	5%			10%			20%			30%				40-100%		
.F..ALP	0,12	0,23	0,40	0,08	0,17	0,29	0,06	0,13	0,22	0,06	0,11	0,19	0,05	0,10	0,18	.F..ALP
.E..ML	0,16	0,35	0,46	0,12	0,25	0,33	0,09	0,19	0,25	0,08	0,16	0,22	0,07	0,15	0,20	.E..ML
.S..MM	0,16	0,40	0,64	0,12	0,29	0,46	0,09	0,22	0,34	0,08	0,19	0,30	0,07	0,18	0,28	.S..MM
.S..MH	0,23	0,46	0,74	0,17	0,33	0,54	0,13	0,25	0,40	0,11	0,22	0,35	0,10	0,20	0,32	.S..MH

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

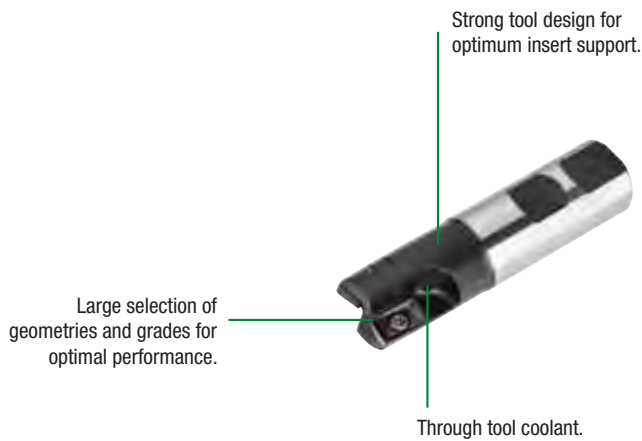
★ = ALL-STAR PORTFOLIO PRODUCT. ALL-STAR PRODUCTS ARE PROVEN SOLUTIONS THAT ARE ALWAYS AVAILABLE.

INDEXABLE MILLING
SOLID END MILLING
HOLEMAKING
TAPPING
TURNING

M680

General-Purpose shoulder milling solution for a large selection of geometries and grades.

- Wide selection of inserts to machine all material types.
- Pockets designed for optimal accuracy with 90° shoulders.
- Strong inserts providing high reliability.



Materials:



- Screw-On End Mills
- Weldon® End Mills
- Shell Mills

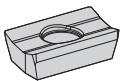
Max depth of cut: 14,0mm

Diameter: 25–160mm



Geometries for all material groups in shoulder milling applications.

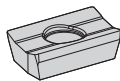
★ - ALP



N

First choice for aluminium and non-ferrous alloy machining. ALP geometry has a polished rake face for optimum chip flow and lowest adhesion.

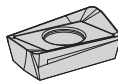
★ -AL



N

Additional choice for aluminium and non-ferrous alloy machining.

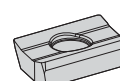
★ -ERGE



P M K S

First choice for light to medium machining in steel, stainless steel and cast iron.

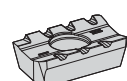
★ -XP..16



P M K S

First choice for general machining operations in steel and cast iron.

★ -MR



P M K S

First choice for heavy machining and unstable conditions (e.g. long reach).

Finishing Capabilities/Lower Cutting Forces

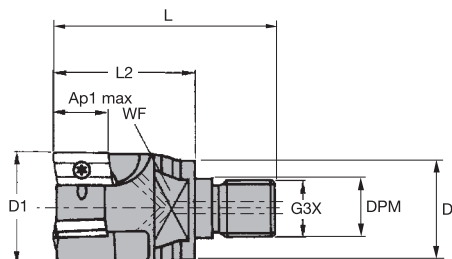
Geometry Strengthening

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Screw-On End Mills • Metric



Insert Style XP.T16



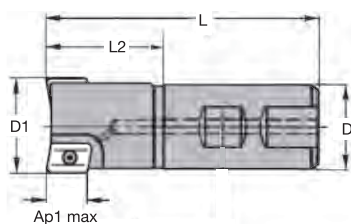
order number	catalogue number	D1	D	DPM	G3X	L	L2	WF	Ap1 max	Z	max RPM	coolant supply	kg
2003517	12396933000	32	28	17,0	M16	63	40	22	14,0	3	7800	Yes	0,30

NOTE: Standard milling cutters will accept insert nose radii up to 2mm without modification.

Weldon® End Mills • Metric



Insert Style XP.T16



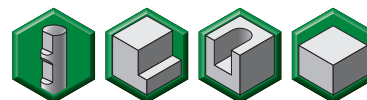
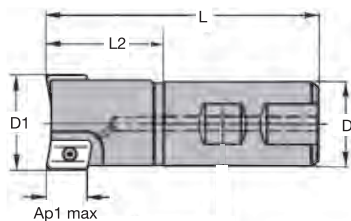
order number	catalogue number	D1	D	L	L2	Ap1 max	Z	max RPM	coolant supply	kg
2003475	12396922600	25	25	96	39	14,0	2	17600	Yes	0,30

NOTE: Standard milling cutters will accept insert nose radii up to 2mm without modification.

Weldon® End Mills • Metric



Insert Style XD.T09



order number	catalogue number	D1	D	L	L2	Ap1 max	Z	max RPM	coolant supply	kg
2002366	12396920400	16	16	75	27	9,0	2	28000	No	0,1
2002369	12396920600	20	20	82	32	9,0	2	27000	Yes	0,3

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

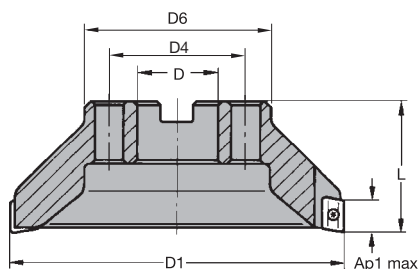
TAPPING

TURNING

Shell Mills • Metric



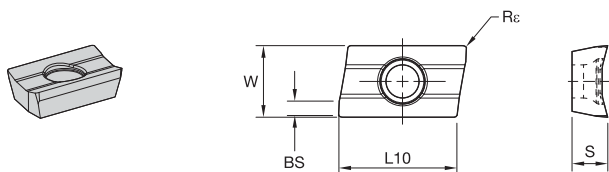
Insert Style XP.T16



order number	catalogue number	D1	D	D4	D6	L	Ap1 max	Z	max RPM	coolant supply	kg
2003535	12396903600	40	22	—	39	45	15,3	4	14000	Yes	0,23
2003553	12396903800	50	22	—	42	40	14,0	4	12500	Yes	0,30
2003554	12396904000	50	22	—	42	40	14,0	5	12500	Yes	0,30
2003561	12396904200	63	22	—	50	40	14,0	5	11000	Yes	0,50
2003578	12396904600	80	27	—	60	50	14,0	6	9500	Yes	1,00
2003594	12396905000	100	32	—	78	50	14,0	8	8500	No	1,40

NOTE: Standard milling cutters will accept insert nose radii up to 2mm without modification.

Inserts • XDHT

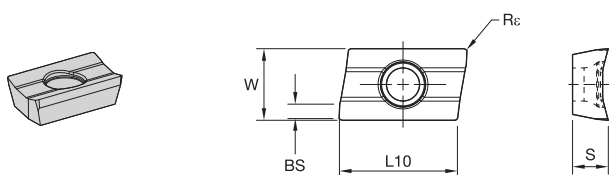


- first choice
- alternate choice

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

ISO catalogue number	cutting edges	W	L10	S	BS	Rε	hm	TN7525	TN7535	THM
XDHT090308	2	6,35	9,47	3,18	1,00	0,80	0,04	2030395	2030380	2025281

Inserts • XDHT-AL



- first choice
- alternate choice

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

ISO catalogue number	cutting edges	W	L10	S	BS	Rε	hm	THM
XDHT090308AL	2	6,71	9,46	3,08	1,00	0,80	0,02	2031793



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INDEXABLE MILLING

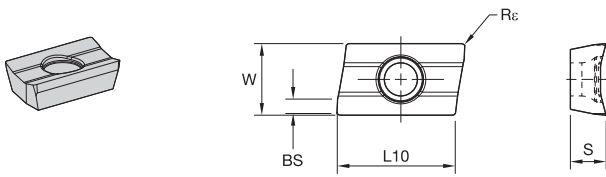
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Inserts • XPHT-AL

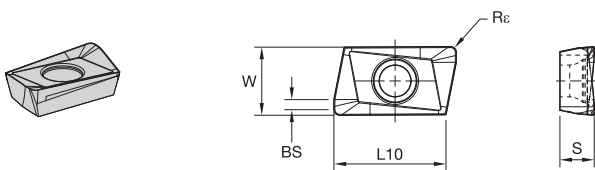


- first choice
- alternate choice

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

ISO catalogue number	cutting edges	W	L10	S	BS	R _ε	hm	TN6502	THM
XPHT160408AL	2	9,80	15,67	4,66	1,70	0,80	0,08	2963902	2031796
XPHT160412AL	2	9,80	15,67	4,66	1,40	1,20	0,08	2031798	2031798
XPHT160416AL	2	9,80	15,67	4,66	0,90	1,60	0,08	2031801	2031801
XPHT160425AL	2	9,80	15,67	4,66	1,20	2,50	0,08	2029067	2029067
XPHT160432AL	2	9,80	15,67	4,66	1,20	3,17	0,08	2031804	2031804

Inserts • XPHT-ERGE



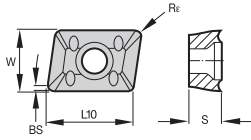
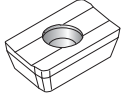
- first choice
- alternate choice

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

ISO catalogue number	cutting edges	W	L10	S	BS	R _ε	hm	TN6510	TN6540	TN7525	TN7535	WK15CM
XPHT160408ERGE	2	9,44	15,67	4,76	1,80	0,80	0,12	2964172	2964170	2405300	2405301	5427399
XPHT160412ERGE	2	9,44	15,67	4,76	1,50	1,20	0,12	2964179	2405345	2405346	2405301	5427399

INDEXABLE MILLING

Inserts • XPNT



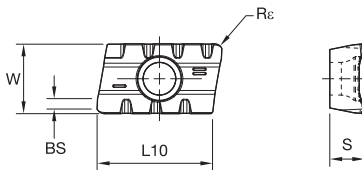
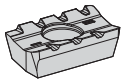
- first choice
- alternate choice

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

ISO catalogue number	cutting edges	W	L10	S	BS	R _c	hm	TN6540	TN7535	WK15CM
XPNT160412	2	9,53	15,88	4,79	1,20	1,20	0,16	2964174	2030319	5427395

HOLEMAKING

Inserts • XPHT-MR



- first choice
- alternate choice

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

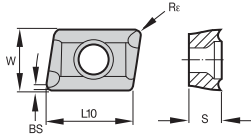
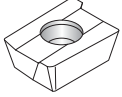
ISO catalogue number	cutting edges	W	L10	S	BS	R _c	hm	TN6540	TN7525	TN7535	WK15CM
XPHT160412MR	2	9,53	15,67	4,76	1,70	1,20	0,18	2964142	2029058	2030378	5427390

TAPPING

TURNING

Inserts • AONT-MM

- first choice
- alternate choice



P	●	●	
M	○	○	
K	○	○	●
N			
S			
H			

ISO catalogue number	cutting edges	W	L10	S	BS	Re	hm	TN7525	TN7535	WK15CM
AONT10T308MM	2	7,54	10,44	3,97	1,00	0,80	0,10	2031644	2030453	6118214

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING



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INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Recommended Starting Speeds [m/min]

Material Group		PA120	THM-U	TN6501	TN6502	TN6510	TN6520	TN6525	TN6540
P	0	330 285 270	- - -	- - -	- - -	- - -	- - -	340 265 235	300 235 200
	1	330 285 270	- - -	- - -	- - -	- - -	- - -	340 265 235	300 235 200
	2	275 240 200	- - -	- - -	- - -	- - -	- - -	265 210 180	210 160 140
	3	255 215 175	- - -	- - -	- - -	- - -	- - -	235 180 155	180 140 115
	4	225 185 150	- - -	- - -	- - -	- - -	- - -	195 140 120	150 110 90
	5	185 170 150	- - -	- - -	- - -	- - -	- - -	260 195 165	200 150 125
6	165 125 100	- - -	- - -	- - -	- - -	- - -	170 135 110	135 100 85	
M	1	205 180 165	- - -	- - -	- - -	- - -	- - -	160 100 65	110 65 50
	2	185 160 130	- - -	- - -	- - -	- - -	- - -	100 65 40	65 40 35
	3	140 120 95	- - -	- - -	- - -	- - -	- - -	105 65 45	70 40 35
K	1	230 205 185	190 170 150	- - -	- - -	400 290 215	375 265 190	230 205 185	185 170 150
	2	180 160 150	- - -	- - -	- - -	350 235 170	325 210 160	180 160 150	145 130 115
	3	150 135 120	- - -	- - -	- - -	280 215 165	250 190 135	150 135 120	130 120 105
N	1	- - -	2000 1200 1000	2000 1200 1000	1075 945 875	- - -	- - -	- - -	- - -
	2	- - -	1365 815 665	1365 815 665	1075 945 875	- - -	- - -	- - -	- - -
	3	- - -	800 500 400	800 500 400	945 875 760	- - -	- - -	- - -	- - -
S	1	- - -	- - -	- - -	- - -	- - -	- - -	- - -	40 30 25
	2	- - -	- - -	- - -	- - -	- - -	- - -	- - -	20 15 10
	3	- - -	- - -	- - -	- - -	- - -	- - -	- - -	60 35 25
	4	- - -	- - -	- - -	- - -	- - -	- - -	- - -	50 25 20
H	1	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
	2	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
	3	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -

Material Group		TN7525	TN7535	TTI25	THM	WK15CM	WP40PM	WS30PM
P	0	340 260 235	455 395 370	360 300 250	- - -	- - -	295 260 245	- - -
	1	340 260 235	455 395 370	360 300 250	- - -	- - -	295 260 245	- - -
	2	260 210 180	280 255 230	260 210 180	- - -	- - -	250 215 180	- - -
	3	235 180 155	255 230 205	260 210 180	- - -	- - -	230 195 160	- - -
	4	195 140 120	190 175 160	220 180 150	- - -	- - -	205 170 135	- - -
	5	260 195 165	260 230 210	265 195 165	- - -	- - -	170 155 135	- - -
6	170 135 110	160 135 110	120 90 75	- - -	- - -	150 115 90	- - -	
M	1	205 185 155	205 185 155	400 260 180	- - -	- - -	195 170 155	225 200 185
	2	185 160 140	185 160 140	270 170 120	- - -	- - -	175 150 125	205 180 145
	3	145 130 115	145 130 115	265 175 120	- - -	- - -	130 115 90	155 135 105
K	1	315 235 200	295 265 240	185 155 130	- - -	420 385 340	- - -	- - -
	2	270 200 165	235 210 190	150 120 105	- - -	335 295 275	- - -	- - -
	3	200 165 140	195 175 160	120 105 85	- - -	280 250 230	- - -	- - -
N	1	- - -	- - -	- - -	795 695 600	- - -	- - -	- - -
	2	- - -	- - -	- - -	795 695 600	- - -	- - -	- - -
	3	- - -	- - -	- - -	560 485 420	- - -	- - -	- - -
S	1	- - -	- - -	- - -	- - -	- - -	40 35 30	45 40 30
	2	- - -	- - -	- - -	- - -	- - -	40 35 30	45 40 30
	3	- - -	- - -	- - -	- - -	- - -	50 40 30	55 45 30
	4	- - -	- - -	- - -	- - -	- - -	65 50 35	85 60 40
H	1	- - -	- - -	- - -	- - -	- - -	- - -	- - -
	2	- - -	- - -	- - -	- - -	- - -	- - -	- - -
	3	- - -	- - -	- - -	- - -	- - -	- - -	- - -

Recommended Starting Feeds [mm]

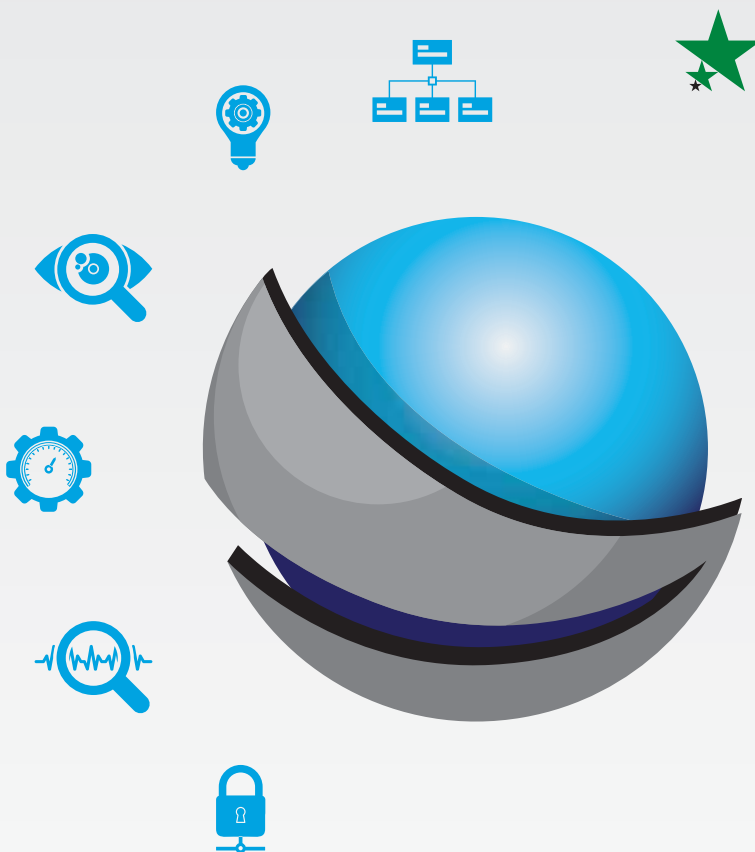
Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	Light Machining			General Purpose						Heavy Machining						
	5%			10%			20%			30%			40-100%			
XPHT-ALP	0.12	0.35	0.58	0.08	0.25	0.42	0.06	0.19	0.31	0.06	0.17	0.27	0.05	0.15	0.25	XPHT-ALP
XPHT-GE	0.19	0.47	0.70	0.14	0.34	0.50	0.11	0.26	0.38	0.09	0.22	0.33	0.08	0.20	0.30	XPHT-GE
XPHT..	0.22	0.56	0.82	0.16	0.40	0.59	0.12	0.30	0.44	0.10	0.26	0.38	0.10	0.24	0.35	XPHT..
XPNT..	0.22	0.56	0.82	0.16	0.40	0.59	0.12	0.30	0.44	0.10	0.26	0.38	0.10	0.24	0.35	XPNT..
XPHT-MR	0.23	0.59	0.92	0.17	0.43	0.66	0.13	0.32	0.50	0.11	0.28	0.43	0.10	0.25	0.40	XPHT-MR

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

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NOVO™

WIDIA™

90° HIGH-SPEED CUTTING MILLS

VHSC

Pages A54–A57

Developed to achieve high-speed cutting of
aluminium components



AEROSPACE TECHNOLOGY



VHSC milling tools are designed for true HSC pocketing and profiling of aluminium alloy components in the aerospace industry, making it a first choice for components like airframe floor brackets.



WIDIA™ offers machining strategies and innovative tooling technology specifically engineered for the aerospace industry to increase productivity and reduce costs.

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WIDIA

High-speed cutter for aluminium components

- Developed specifically to achieve true HSC cutting of aluminium components.
- Latest cutter body technology allows for heavy feeding and ramping.
- Flutes and internal coolant channels engineered to support improved chip evacuation.
- Best-in-class solution for thin-walled machining.
- Productivity booster up to 8600cm³/min MRR.
- First choice for non-ferrous materials.
- Wear-resistant micro-grain carbide grade on inserts.

- High-Speed Cutting Cylindrical End Mills
- High-Speed Cutting Monoblocks
- High-Speed Shell Mills



High-Speed Cutting Inserts XDET-ALP

★ FR-ALP



N

Sharp cutting edge
"F" preparation for
roughing and
finishing jobs.

★ ER-ALP



N

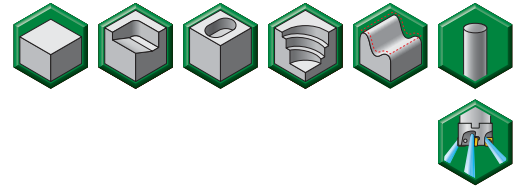
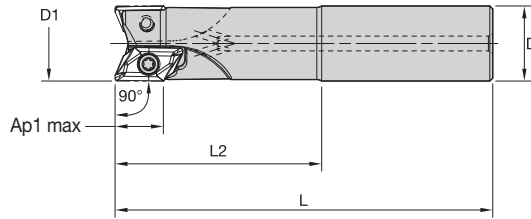
Honed cutting edge "E"
preparation for heavy
roughing jobs and
demanding castings.

Finishing Capabilities/Lower Cutting Forces

Geometry Strengthening

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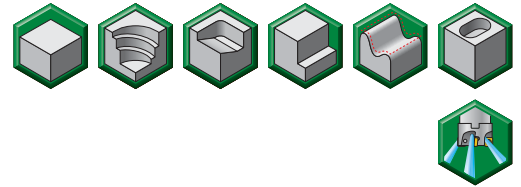
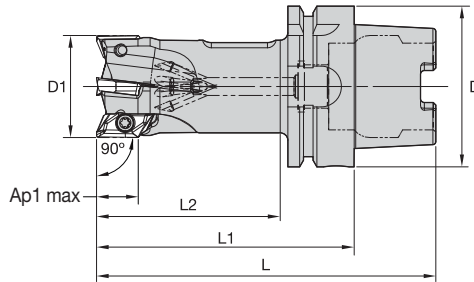
Cylindrical End Mills • Metric



order number	catalogue number	D1	D	L	L2	Ap1 max	Z	max ramp angle	max RPM	coolant supply	kg
6425258	VHSC025Z02A25XD16	25	25	131	75	16	2	14.7°	50000	Yes	0,39

NOTE: Pre-balanced to G6.3/30000 RPM.

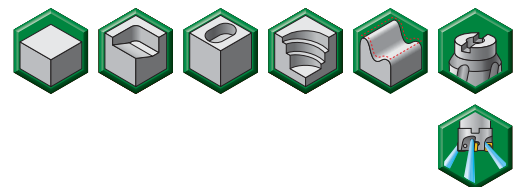
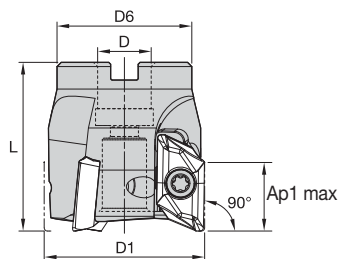
Monoblocks • Metric



order number	catalogue number	D1	D	L	L1	L2	Ap1 max	Z	max ramp angle	max RPM	coolant supply	kg
6425451	VHSC040Z04HSK63XD16	40	63	133	101	75	16	4	7.8°	35000	Yes	1,09
6425453	VHSC050Z04HSK63XD16	50	63	133	101	75	15	4	7.9°	30000	Yes	1,41

NOTE: Pre-Balanced G6.3/30000 RPM.

Shell Mills • Metric



order number	catalogue number	D1	D	D6	L	Ap1 max	Z	max ramp angle	max RPM	coolant supply	kg
6425291	VHSC040Z03S16XD16	40	16	32	45	16	3	7.6°	35000	Yes	0,20
6425292	VHSC050Z04S22XD16	50	22	45	45	16	4	7.8°	30000	Yes	0,31
6425293	VHSC063Z04S22XD16	63	22	50	45	16	4	5.9°	26000	Yes	0,55

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

INDEXABLE MILLING

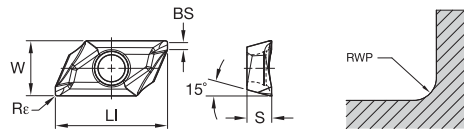
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Inserts • XDET-ALP



- first choice
- alternate choice

P	■
M	■
K	■
N	●
S	■
H	■
	■



ISO catalogue number	cutting edges	LI	S	W	BS	Rε	RWP*	hm	WN10HM
XDET16M5PDFRALP	2	22,92	5,00	11,25	1,42	0,30	0,30	0,02	6425772
XDET16M504FRALP	2	23,02	5,00	11,25	1,27	0,40	0,40	0,02	6425773
XDET16M508FRALP	2	23,02	5,00	11,25	0,87	0,80	0,80	0,02	6425774
XDET16M520FRALP	2	23,02	5,00	11,25	0,58	2,10	2,00	0,02	6425775
XDET16M530ERALP	2	23,02	5,00	11,25	0,48	3,10	3,00	0,03	6425776
XDET16M530FRALP	2	23,02	5,00	11,25	0,48	3,10	3,00	0,02	6425777



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Insert Selection Guide

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
N1-N2	.F..ALP	WN10HM	.F..ALP	WN10HM	.E..ALP	WN10HM
N3	.F..ALP	WN10HM	.F..ALP	WN10HM	.E..ALP	WN10HM

Recommended Starting Speeds [m/min]

Material Group	★ WN10HM			
N	1	2950	1800	875
	2	2950	1800	875
	3	1600	850	480

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

Recommended Starting Feeds [mm]

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry	
	Light Machining			General Purpose			Heavy Machining			Light Machining			General Purpose				Heavy Machining
	5%			10%			20%			30%			40-100%				
.F..ALP	0,12	0,45	0,81	0,08	0,33	0,58	0,06	0,25	0,43	0,06	0,21	0,38	0,05	0,20	0,35	.F..ALP	
.E..ALP	0,15	0,50	0,92	0,11	0,36	0,66	0,08	0,27	0,50	0,07	0,24	0,43	0,07	0,22	0,40	.E..ALP	

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

★ INDEXABLE MILLING

★ SOLID END MILLING

★ HOLEMAKING

★ TAPPING

★ TURNING

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FACE MILLS

M1200 MINI

Pages A60–A67

- Insert size 13
- A_{p1} max up to 4.7mm



M1200

Pages A68–A75

- Insert size 16
- A_{p1} max up to 6mm

M640

Pages A76–A81

- Insert size 11
- A_{p1} max up to 4.8mm



TURBINE BLADE MACHINING WITH M1200 MINI



M1200 MINI HF



12 True Cutting Edges



15° Lead

Insert HN.J0704

Ap1 max = 1.7mm

High Feed Face Mill

M1200 MINI 45°



12 True Cutting Edges



45° Lead

Insert HN.J0704

Ap1 max = 3.5mm

M1200 MINI 60°



12 True Cutting Edges



60° Lead

Insert HN.J0704

Ap1 max = 4.7mm

For Higher Axial DOC

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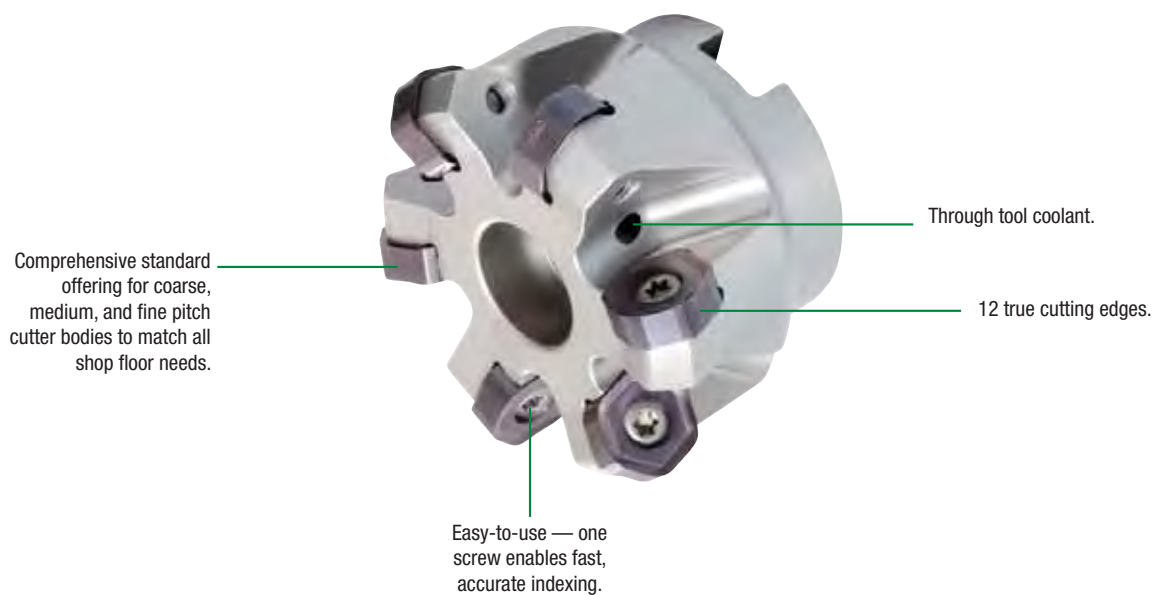
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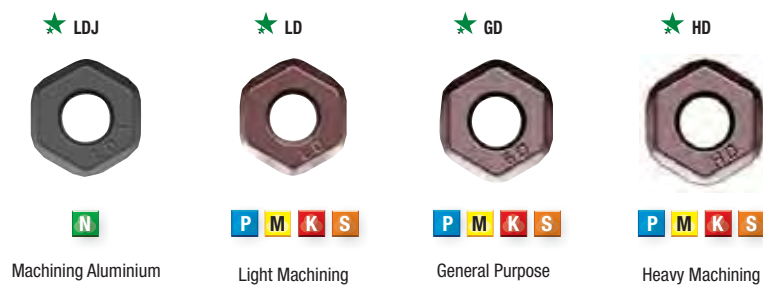
M1200 Mini

Best-in-class face milling platform to boost productivity on taper 40 spindle milling machines and driven tools.

- First choice for low depth of cut face milling.
- Low cost per edge and high productivity.
- Reduced cutting forces due to soft cutting action.
- Significantly increased Metal Removal Rates (MRR).
- Excellent tool life in light to heavy machining.
- Shorter machining cycle times.

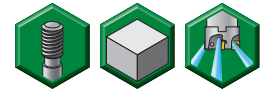
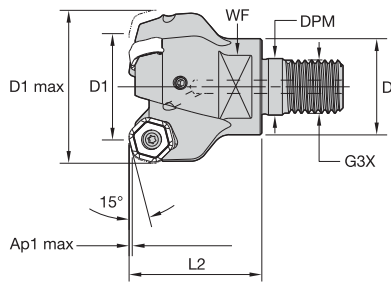


Latest soft cutting edge insert design for all material groups



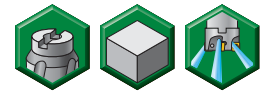
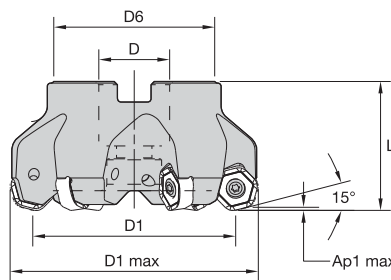
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15° • High Feed • Screw-On End Mills • Metric



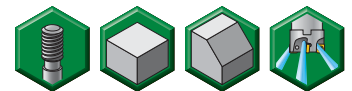
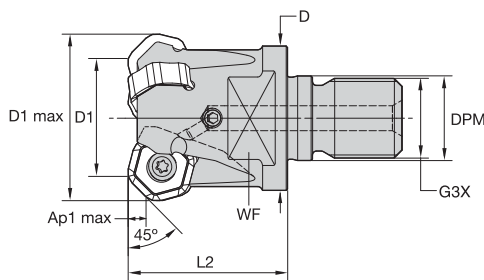
order number	catalogue number	D1	D1 max	D	DPM	G3X	L2	WF	Ap1 max	Z	max RPM	coolant supply	kg
4136875	M1200HF025Z03M16HN07	25	39	29	17,0	M16	32	22	1,7	3	20000	Yes	0,2

15° • High Feed • Shell Mills • Metric



order number	catalogue number	D1	D1 max	D	D6	L	Ap1 max	Z	max RPM	coolant supply	kg
4136884	M1200HF040Z05HN07	40	54,1	22	38	40	1,7	5	15800	Yes	0,29
4136885	M1200HF050Z05HN07	50	64,1	22	38	40	1,7	5	12700	Yes	0,40
4136886	M1200HF063Z06HN07	63	77,1	22	50	40	1,7	6	10100	Yes	0,67
4136887	M1200HF080Z08HN07	80	94,1	27	60	50	1,7	8	7900	Yes	1,26

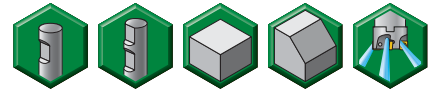
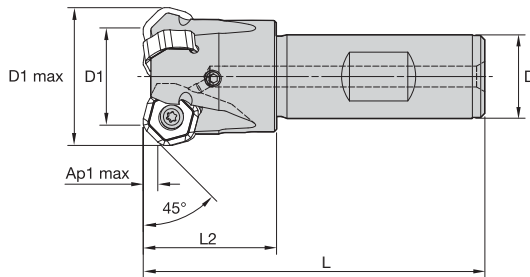
45° • Screw-On End Mills • Metric



order number	catalogue number	D1	D1 max	D	DPM	G3X	L2	WF	Ap1 max	Z	max RPM	coolant supply	kg
3957840	M1200D025Z03M16HN07	25	33,7	29	17,0	M16	32	22	3,5	3	20000	Yes	0,13
3957841	M1200D032Z03M16HN07	32	40,7	29	17,0	M16	40	22	3,5	3	17600	Yes	0,20
3957842	M1200D032Z04M16HN07	32	40,7	29	17,0	M16	40	22	3,5	4	17600	Yes	0,20

INDEXABLE MILLING

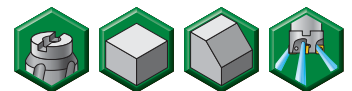
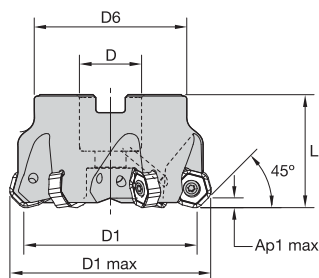
45° • Weldon® End Mills • Metric



order number	catalogue number	D1	D1 max	D	L	L2	Ap1 max	Z	max RPM	coolant supply	kg
3958012	M1200D025Z03B20HN07	25	33,7	20	82	32	3,5	3	20000	Yes	0,21
3958023	M1200D032Z03B25HN07	32	40,7	25	97	40	3,5	3	17600	Yes	0,39
3958024	M1200D032Z04B25HN07	32	40,7	25	97	40	3,5	4	17600	Yes	0,40

HOLEMAKING

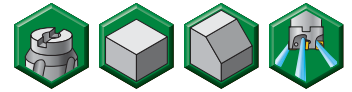
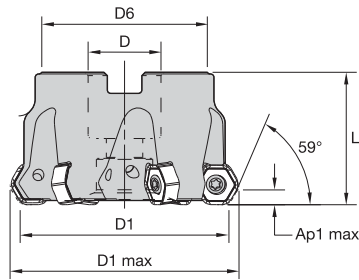
45° • Shell Mills • Metric



order number	catalogue number	D1	D1 max	D	D6	L	Ap1 max	Z	max RPM	coolant supply	kg
3957995	M1200D040Z04HN07	40	48,7	22	38	40	3,5	4	15800	Yes	0,26
3957996	M1200D040Z05HN07	40	48,7	22	38	40	3,5	5	15800	Yes	0,26
3957997	M1200D050Z04HN07	50	58,7	22	38	40	3,5	4	12700	Yes	0,35
3957998	M1200D050Z05HN07	50	58,7	22	38	40	3,5	5	12700	Yes	0,36
3957999	M1200D050Z06HN07	50	58,7	22	38	40	3,5	6	12700	Yes	0,35
3958000	M1200D063Z04HN07	63	71,7	22	50	40	3,5	4	10100	Yes	0,58
3958001	M1200D063Z06HN07	63	71,7	22	50	40	3,5	6	10100	Yes	0,65
3958002	M1200D063Z08HN07	63	71,7	22	50	40	3,5	8	10100	Yes	0,62
3958003	M1200D080Z05HN07	80	88,7	27	60	50	3,5	5	7900	Yes	1,11
3958004	M1200D080Z08HN07	80	88,7	27	60	50	3,5	8	7900	Yes	1,24
3958005	M1200D080Z10HN07	80	88,7	27	60	50	3,5	10	7900	Yes	1,17
3958006	M1200D100Z06HN07	100	108,7	32	80	50	3,5	6	6300	Yes	1,71
3958007	M1200D100Z09HN07	100	108,7	32	80	50	3,5	9	6300	Yes	1,82
3958008	M1200D100Z12HN07	100	108,7	32	80	50	3,5	12	6300	Yes	1,82
4138471	M1200D125Z12HN07	125	133,7	40	90	63	3,5	12	5050	Yes	2,96

TURNING

60° • Shell Mills • Metric



order number	catalogue number	D1	D1 max	D	D6	L	Ap1 max	Z	max RPM	coolant supply	kg
4136863	M1200HD040Z05HN07	40	46,8	22	38	40	4,7	5	15800	Yes	0,22
4136865	M1200HD050Z05HN07	50	56,8	22	38	40	4,7	5	12700	Yes	0,34
4136867	M1200HD063Z06HN07	63	69,8	22	50	40	4,7	6	10100	Yes	0,60
4136868	M1200HD080Z05HN07	80	86,8	27	60	50	4,7	5	7900	Yes	1,11
4136869	M1200HD080Z08HN07	80	86,8	27	60	50	4,7	8	7900	Yes	1,17
4136870	M1200HD100Z06HN07	100	106,7	32	80	50	4,7	6	6300	Yes	1,74
4136871	M1200HD100Z09HN07	100	106,7	32	80	50	4,7	9	6300	Yes	1,74
4136872	M1200HD125Z08HN07	125	131,7	40	90	63	4,7	8	5050	Yes	2,86
4136873	M1200HD125Z12HN07	125	131,7	40	90	63	4,7	12	5050	Yes	2,90

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

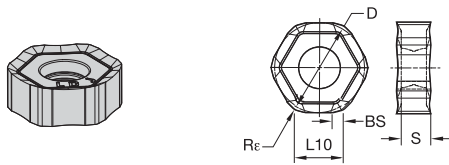
TURNING



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INDEXABLE MILLING

15°/75° • 45° • 30°/60° Inserts • HNGJ-LDJ



- first choice
- alternate choice

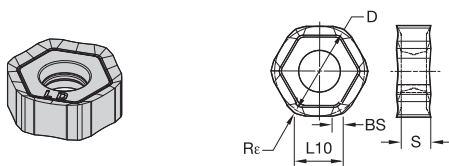
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M	●	●	●	●	●
K	●	●	●	●	●
N	●	●	●	●	●
S	●	●	●	●	●
H	●	●	●	●	●

ISO catalogue number	cutting edges	D	L10	S	BS	Re	hm	THM-U
HNGJ0704ANFNLDJ	12	13	6,80	4,48	1,60	1,20	0,08	3954332

SOLID END MILLING

HOLEMAKING

15°/75° • 45° • 30°/60° Inserts • HNGJ-LD



- first choice
- alternate choice

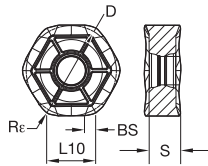
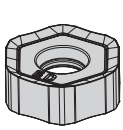
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M	●	●	●	●	●	●
K	●	●	●	●	●	●
N	●	●	●	●	●	●
S	●	●	●	●	●	●
H	●	●	●	●	●	●

ISO catalogue number	cutting edges	D	L10	S	BS	Re	hm	WP25PM	WP35CM	WP40PM	WS30PM	WS40PM
HNGJ0704ANENLD	12	13	6,80	4,48	1,60	1,20	0,08	5895291	5895292	5550905	5528975	6180295
HNGJ070432ANENLD	12	13	6,80	4,48	—	3,21	0,08	6180300				

TAPPING

TURNING

15°/75° • 45° • 30°/60° Inserts • HNPJ-GD

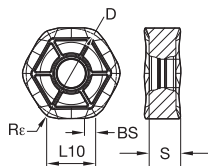
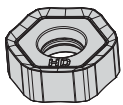


- first choice
- alternate choice

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

ISO catalogue number	cutting edges	D	L10	S	BS	Re	hm	WK15CM	WP25PM	WP35CM	WP40PM	WS30PM	WS40PM
HNPJ0704ANSNGD	12	13	6,80	4,45	1,27	1,20	0,10	5427374	5895293	5895294	5550906	5528976	6180297

15°/75° • 45° • 30°/60° Inserts • HNPJ-HD



- first choice
- alternate choice

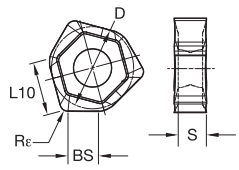
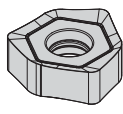
P	■	■	●	●	○	○
M	■	■	●	●	○	○
K	■	■	●	●	○	○
N	■	■	●	●	○	○
S	■	■	●	●	○	○
H	■	■	●	●	○	○

ISO catalogue number	cutting edges	D	L10	S	BS	Re	hm	WK15CM	WP35CM	WP40PM	WS40PM
HNPJ0704ANSNHD	12	13	6,80	4,41	1,25	1,20	0,14	5427375	5895296	5550907	6180299
HNPJ070432ANSNHD	12	13	6,80	4,42	—	3,20	0,14	—	—	5895297	6180311



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45° • Inserts • XNGJ-LD3 Wiper



- first choice
- alternate choice

P	●
M	○
K	●
N	○
S	●
H	○

ISO catalogue number	cutting edges	D	L10	S	BS	Re	hm	WS40PM
XNGJ0704ANENLD3W	3	13	6,78	4,47	6,78	1,30	0,08	6180296

Insert Selection Guide

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1-P2	.E..LD	WP40PM	.S..GD	WP40PM	.S..HD	WP40PM
P3-P4	.E..LD	WP25PM	.S..GD	WP35CM	.S..HD	WP35CM
P5-P6	.E..LD	WP25PM	.S..GD	WP35CM	.S..HD	WP35CM
M1-M2	.E..LD	WP25PM	.S..GD	WP25PM	.S..HD	WP25PM
M3	.E..LD	WP35CM	.S..GD	WP35CM	.S..HD	WP35CM
K1-K2	.E..LD	TN6510	.S..GD	WK15CM	.S..HD	WK15CM
K3	.E..LD	WP35CM	.S..GD	WP35CM	.S..HD	WP35CM
N1-N2	.F..LDJ	TN6501	.F..LDJ	TN6501	.F..LDJ	TN6501
N3	.F..LDJ	TN6501	.F..LDJ	TN6501	.F..LDJ	TN6501
S1-S2	.E..LD	WS30PM	.S..GD	WS30PM	.S..HD	WP25PM
S3	.E..LD	WS30PM	.S..GD	WS30PM	.S..GD	WS30PM
S4	.E..LD	WS30PM	.S..GD	WS30PM	.S..HD	WP40PM
H1	-	-	-	-	-	-



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Recommended Starting Speeds [m/min]

Material Group		TN6510			TN6520			TN6525			TN6540			TN7535			WK15CM		
P	1	-	-	-	-	-	-	410	320	280	360	280	240	545	475	445	-	-	-
	2	-	-	-	-	-	-	320	250	215	250	190	170	335	305	275	-	-	-
	3	-	-	-	-	-	-	280	215	185	215	170	140	305	275	245	-	-	-
	4	-	-	-	-	-	-	235	170	145	180	130	110	230	210	190	-	-	-
	5	-	-	-	-	-	-	310	235	200	240	180	150	310	275	250	-	-	-
	6	-	-	-	-	-	-	205	160	130	160	120	100	190	160	130	-	-	-
M	1	-	-	-	-	-	-	190	120	80	130	80	60	245	220	185	-	-	-
	2	-	-	-	-	-	-	120	80	50	80	50	40	220	190	170	-	-	-
	3	-	-	-	-	-	-	125	80	55	85	50	40	175	155	140	-	-	-
K	1	480	350	260	450	320	230	275	245	220	220	205	180	355	320	290	505	460	410
	2	420	280	205	390	250	190	215	190	180	175	155	140	280	250	230	400	355	330
	3	335	260	200	300	230	160	180	160	145	155	145	125	235	210	190	335	300	275
N	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S	1	-	-	-	-	-	-	-	-	-	50	35	30	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	25	20	10	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	70	40	30	-	-	-	-	-	-
	4	-	-	-	-	-	-	-	-	-	60	30	25	-	-	-	-	-	-
H	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Material Group		WP25PM			WP35CM			WP40PM			WS30PM			WS40PM			TN6501			THM-U		
P	1	395	340	325	545	475	445	355	310	295	-	-	-	-	-	-	-	-	-	-	-	-
	2	330	290	240	335	305	275	300	260	215	-	-	-	-	-	-	-	-	-	-	-	-
	3	305	260	210	305	275	245	275	235	190	-	-	-	-	-	-	-	-	-	-	-	-
	4	270	220	180	230	210	190	245	205	160	-	-	-	-	-	-	-	-	-	-	-	-
	5	220	205	180	310	275	250	205	185	160	-	-	-	205	175	145	-	-	-	-	-	-
	6	200	150	120	190	160	130	180	140	110	-	-	-	180	130	95	-	-	-	-	-	-
M	1	245	215	200	245	220	185	235	205	185	270	240	220	250	205	170	-	-	-	-	-	-
	2	220	190	155	220	190	170	210	180	150	245	215	175	215	175	145	-	-	-	-	-	-
	3	170	145	115	175	155	140	155	140	110	185	160	125	175	130	100	-	-	-	-	-	-
K	1	275	245	220	355	320	290	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	215	190	180	280	250	230	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	180	160	145	235	210	190	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2400	1440	1200	2400	1440	1200
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1640	980	800	1640	980	800
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	960	600	480	960	600	480
S	1	50	40	30	-	-	-	50	40	35	55	50	35	50	40	30	-	-	-	-	-	-
	2	50	40	30	-	-	-	50	40	35	55	50	35	50	40	30	-	-	-	-	-	-
	3	60	50	30	-	-	-	60	50	35	65	55	35	60	50	30	-	-	-	-	-	-
	4	85	60	40	80	60	40	80	60	40	100	70	50	70	60	35	-	-	-	-	-	-
H	1	145	110	85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining
-----------------	-----------------	-----------------

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40-100%			
.F..LDJ	0,48	0,89	1,81	0,34	0,64	1,29	0,26	0,48	0,96	0,22	0,42	0,83	0,21	0,38	0,76	.F..LDJ
.E..LD	0,48	1,38	2,85	0,34	0,99	2,00	0,26	0,74	1,48	0,22	0,64	1,28	0,21	0,59	1,17	.E..LD
.S..GD	0,92	2,35	3,89	0,66	1,67	2,70	0,49	1,23	1,98	0,43	1,07	1,72	0,39	0,98	1,57	.S..GD
.S..HD	0,92	2,35	3,89	0,66	1,67	2,70	0,49	1,23	1,98	0,43	1,07	1,72	0,39	0,98	1,57	.S..HD

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

= ALL-STAR PORTFOLIO PRODUCT. ALL-STAR PRODUCTS ARE PROVEN SOLUTIONS THAT ARE ALWAYS AVAILABLE.

INDEXABLE MILLING
SOLID END MILLING
HOLEMAKING
TAPPING
TURNING

M1200

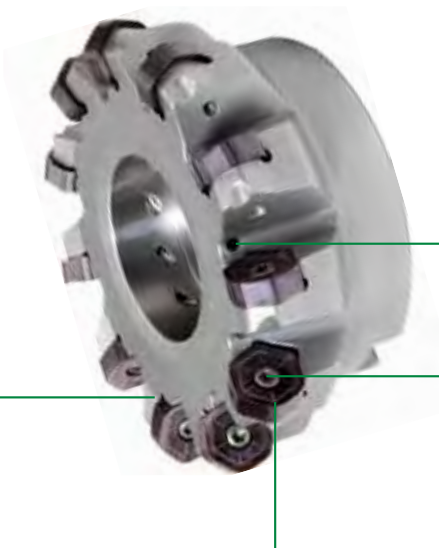
Best-in-class face milling platform to boost productivity on taper 50 spindle milling machines and driven tools.

- Low cost per edge, high productivity solution.
- High feed rates for rough face milling.
- 15°, 45° and 60° lead angles.
- One series meets every face milling need.
- Available in WIDIA™ premium milling grades.
- Better tool life in light to heavy machining.

Materials:



12 Effective cutting edges



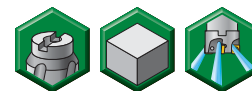
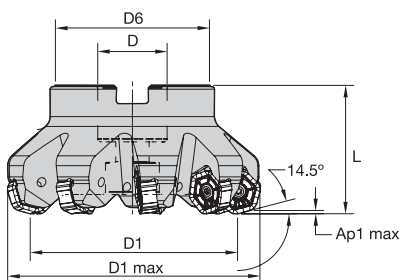
Comprehensive standard offering for coarse, medium, and fine pitch cutter bodies to match all shop floor needs.

Through tool coolant.

Easy-to-use — one screw enables fast, accurate indexing.

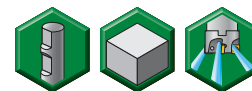
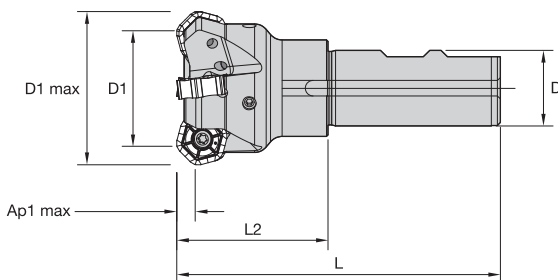
The latest technology with 12 true cutting edges and high-precision PSTS inserts.

15° • High Feed • Shell Mills • Metric



order number	catalogue number	D1	D1 max	D	D6	L	Ap1 max	Z	max RPM	coolant supply	kg
3750370	M1200HF050Z04HN09	50	67,9	22	38	40	2,2	4	11400	Yes	0,65
3750372	M1200HF063Z05HN09	63	80,9	22	50	40	2,2	5	8950	Yes	0,65
3750434	M1200HF080Z06HN09	80	97,9	27	60	50	2,2	6	7300	Yes	1,24
3750435	M1200HF100Z08HN09	100	117,9	32	80	50	2,2	8	5900	Yes	1,89

45° • Weldon® End Mills • Metric



order number	catalogue number	D1	D1 max	D	L	L2	Ap1 max	Z	max RPM	coolant supply	kg
3325311	M1200D040Z04B25HN09	40	51,0	25	107	50	4,5	4	15800	Yes	0,52



INDEXABLE MILLING



SOLID END MILLING



HOLEMAKING



TAPPING



TURNING



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INDEXABLE MILLING

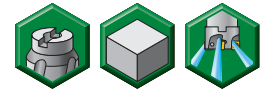
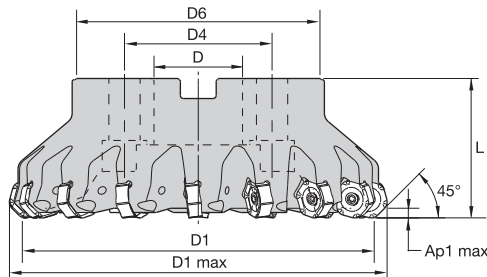
SOLID END MILLING

HOLEMAKING

TAPPING

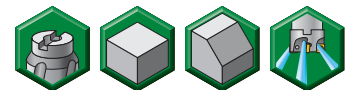
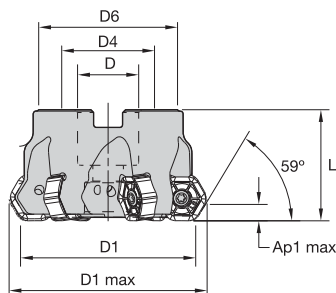
TURNING

45° • Shell Mills • Metric



order number	catalogue number	D1	D1 max	D	D4	D6	L	Ap1 max	Z	max RPM	coolant supply	kg
3957970	M1200D040Z03HN09	40	51,0	22	—	39	40	4,4	3	15800	Yes	0,26
3957971	M1200D040Z04HN09	40	51,0	22	—	39	40	4,4	4	15800	Yes	0,25
3325312	M1200D050Z04HN09	50	61,0	22	—	38	40	4,5	4	12700	Yes	0,32
3325693	M1200D050Z05HN09	50	61,0	22	—	38	40	4,5	5	12700	Yes	0,33
3650535	M1200D063Z04HN09	63	74,0	22	—	50	40	4,5	4	10100	Yes	0,59
3093594	M1200D063Z06HN09	63	74,0	22	—	50	40	4,5	6	10100	Yes	0,56
3025376	M1200D063Z07HN09	63	74,0	22	—	50	40	4,5	7	10100	Yes	0,57
3650536	M1200D080Z05HN09	80	91,0	27	—	60	50	4,5	5	7900	Yes	1,12
3081507	M1200D080Z06HN09	80	91,0	27	—	60	50	4,5	6	7900	Yes	1,07
3025377	M1200D080Z09HN09	80	91,0	27	—	60	50	4,5	9	7900	Yes	1,11
3650537	M1200D100Z06HN09	100	111,0	32	—	80	50	4,5	6	6300	Yes	1,73
3325694	M1200D100Z08HN09	100	111,0	32	—	80	50	4,5	8	6300	Yes	1,68
3025378	M1200D100Z11HN09	100	111,0	32	—	80	50	4,5	11	6300	Yes	1,73
3081508	M1200D125Z10HN09	125	135,9	40	—	90	63	4,5	10	5050	Yes	2,77
3066118	M1200D160Z12HN09	160	171,0	40	66,7	110	63	4,5	12	3900	Yes	4,56
3066119	M1200D160Z16HN09	160	171,0	40	66,7	110	63	4,5	16	3900	Yes	4,70

60° • Shell Mills • Metric

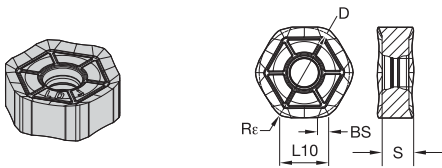


order number	catalogue number	D1	D1 max	D	D4	D6	L	Ap1 max	Z	max RPM	coolant supply	kg
4152116	M1200HD063Z06HN09	63	71,5	22	—	50	40	6,0	6	10100	Yes	0,55
4152117	M1200HD080Z05HN09	80	88,5	27	—	60	50	6,0	5	7900	Yes	1,05
4152118	M1200HD080Z08HN09	80	88,5	27	—	60	50	6,0	8	7900	Yes	1,10
4152119	M1200HD100Z06HN09	100	108,5	32	—	80	50	6,0	6	6300	Yes	1,61
4152120	M1200HD100Z08HN09	100	108,5	32	—	80	50	6,0	8	6300	Yes	1,63
4152123	M1200HD160Z09HN09	160	168,5	40	66,7	110	63	6,0	9	3900	Yes	4,62



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15°/75° • 45° • 30°/60° Inserts • HNGJ-LDJ

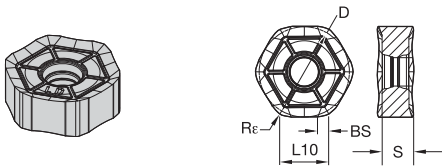


- first choice
- alternate choice

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

ISO catalogue number	cutting edges	D	L10	S	BS	Re	hm	TBM-U
HNGJ0905ANFNLDJ	12	16	8,58	5,56	1,80	1,20	0,02	3606383

15°/75° • 45° • 30°/60° Inserts • HNGJ-LD

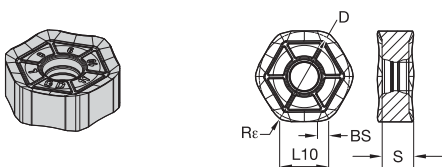


- first choice
- alternate choice

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

ISO catalogue number	cutting edges	D	L10	S	BS	Re	hm	WP25PM	WP35CM	WP40PM	WS30PM	WS40PM
HNGJ0905ANENLD	12	16	8,58	5,56	1,80	1,20	0,05	5895346	5895347	5895348	5528973	6180276

15°/75° • 45° • 30°/60° Inserts • HNPJ-GD

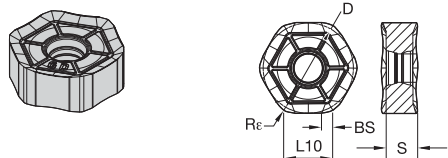


- first choice
- alternate choice

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

ISO catalogue number	cutting edges	D	L10	S	BS	Re	hm	WK15CM	WP25PM	WP35CM	WP40PM	WS40PM
HNPJ0905ANSNGD	12	16	8,58	5,56	1,80	1,20	0,10	5427372	5895374	5895375	5550908	6180278

15°/75° • 45° • 30°/60° Inserts • HNGJ-GD

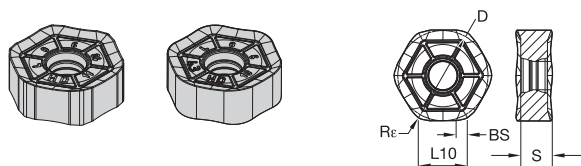


- first choice
- alternate choice

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

ISO catalogue number	cutting edges	D	L10	S	BS	Re	hm	WK15CM	WP25PM	WP35CM	WP40PM	WS30PM	WS40PM
HNGJ0905ANSNGD	12	16	8,58	5,56	1,80	1,20	0,10	5427370	5400965	5895349	5895350	5528974	6180280

15°/75° • 45° • 30°/60° Inserts • HNPJ-HD

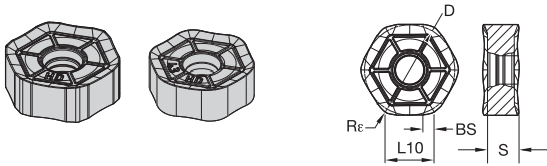


- first choice
- alternate choice

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

ISO catalogue number	cutting edges	D	L10	S	BS	Re	hm	WK15CM	WP25PM	WP35CM	WP40PM	WS40PM
HNPJ090543ANSNHD	12	16	8,50	5,44	—	4,34	0,13	5895378	5895379	5895380	6180294	
HNPJ0905ANSNHD	12	16	8,59	5,46	1,66	1,20	0,18	5427371	5895376	5895377	5550909	6180279

15°/75° • 45° • 30°/60° Inserts • HNGJ-HD

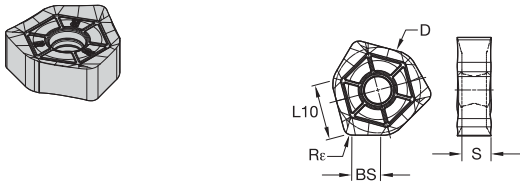


- first choice
- alternate choice

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

ISO catalogue number	cutting edges	D	L10	S	BS	Re	hm	WP25PM	WP35CM	WP40PM	WS40PM
HNGJ090543ANSNHD	12	16	8,50	5,44	—	4,35	0,20	●	●	○	○
HNGJ0905ANSNHD	12	16	8,59	5,46	1,66	1,20	0,17	●	●	○	○

45° Inserts • XNGJ-GD3 Wiper



- first choice
- alternate choice

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

ISO catalogue number	cutting edges	D	L10	S	BS	Re	hm	WK15CM
XNGJ0905ANSNGD3W	3	16	9,60	5,51	6,00	1,60	0,09	●



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Insert Selection Guide

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1-P2	.E..LD	WP40PM	.S..GD	WP40PM	.S..HD	WP40PM
P3-P4	.E..LD	WP25PM	.S..GD	WP35CM	.S..HD	WP35CM
P5-P6	.E..LD	WP25PM	.S..GD	WP35CM	.S..HD	WP35CM
M1-M2	.E..LD	WP25PM	.S..GD	WP25PM	.S..HD	WP25PM
M3	.E..LD	WP35CM	.S..GD	WP35CM	.S..HD	WP35CM
K1-K2	.E..LD	TN6520	.S..GD	WK15CM	.S..HD	WK15CM
K3	.E..LD	WP35CM	.S..GD	WP35CM	.S..HD	WP35CM
N1-N2	.F..LDJ	TN6501	.F..LDJ	TN6501	.F..LDJ	TN6501
N3	.F..LDJ	TN6501	.F..LDJ	TN6501	.F..LDJ	TN6501
S1-S2	.E..LD	WS30PM	.S..GD	WS30PM	.S..HD	WP25PM
S3	.E..LD	WS30PM	.S..GD	WS30PM	.S..HD	WP40PM
S4	.E..LD	WS30PM	.S..GD	WS30PM	.S..HD	WP40PM
H1	-	-	-	-	-	-

Recommended Starting Speeds [m/min]

Material Group		TN6520			TN6525			TN6540			TN7535			WK15CM			WP25PM		
		P	1	-	-	-	410	320	280	360	280	240	545	475	445	-	-	-	395
	2	-	-	-	320	250	215	250	190	170	335	305	275	-	-	-	330	290	240
	3	-	-	-	280	215	185	215	170	140	305	275	245	-	-	-	305	260	210
	4	-	-	-	235	170	145	180	130	110	230	210	190	-	-	-	270	220	180
	5	-	-	-	310	235	200	240	180	150	310	275	250	-	-	-	220	205	180
	6	-	-	-	205	160	130	160	120	100	190	160	130	-	-	-	200	150	120
M	1	-	-	-	190	120	80	130	80	60	245	220	185	-	-	-	245	215	200
	2	-	-	-	120	80	50	80	50	40	220	190	170	-	-	-	220	190	155
	3	-	-	-	125	80	55	85	50	40	175	155	140	-	-	-	170	145	115
K	1	450	320	230	275	245	220	220	205	180	355	320	290	505	460	410	275	245	220
	2	390	250	190	215	190	180	175	155	140	280	250	230	400	355	330	215	190	180
	3	300	230	160	180	160	145	155	145	125	235	210	190	335	300	275	180	160	145
N	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S	1	-	-	-	-	-	-	50	35	30	-	-	-	-	-	-	50	40	30
	2	-	-	-	-	-	-	25	20	10	-	-	-	-	-	-	50	40	30
	3	-	-	-	-	-	-	70	40	30	-	-	-	-	-	-	60	50	30
	4	-	-	-	-	-	-	60	30	25	-	-	-	-	-	-	85	60	40
H	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	145	110	85
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Material Group		WP35CM			WP40PM			WS30PM			WS40PM			WK25YM			TN6501			THM-U		
		P	1	545	475	445	355	310	295	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	335	305	275	300	260	215	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	305	275	245	275	235	190	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4	230	210	190	245	205	160	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	5	310	275	250	205	185	160	-	-	-	205	175	145	-	-	-	-	-	-	-	-	-
	6	190	160	130	180	140	110	-	-	-	180	130	95	-	-	-	-	-	-	-	-	-
M	1	245	220	185	235	205	185	270	240	220	250	205	170	-	-	-	-	-	-	-	-	-
	2	220	190	170	210	180	150	245	215	175	215	175	145	-	-	-	-	-	-	-	-	-
	3	175	155	140	155	140	110	185	160	125	175	130	100	-	-	-	-	-	-	-	-	-
K	1	355	320	290	-	-	-	-	-	-	-	-	-	965	880	780	-	-	-	-	-	-
	2	280	250	230	-	-	-	-	-	-	-	-	-	765	685	635	-	-	-	-	-	-
	3	235	210	190	-	-	-	-	-	-	-	-	-	645	570	525	-	-	-	-	-	-
N	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2400	1440	1200	2400	1440	1200
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1640	980	800	1640	980	800
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	960	600	480	960	600	480
S	1	-	-	-	50	40	35	55	50	35	50	40	30	-	-	-	-	-	-	-	-	-
	2	-	-	-	50	40	35	55	50	35	50	40	30	-	-	-	-	-	-	-	-	-
	3	-	-	-	60	50	35	65	55	35	60	50	30	-	-	-	-	-	-	-	-	-
	4	80	60	40	80	60	40	100	70	50	70	60	35	-	-	-	-	-	-	-	-	-
H	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining
-----------------	-----------------	-----------------

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)														Insert Geometry	
	5%			10%			20%			30%			40-100%			
.F..LDJ	0,17	0,33	0,66	0,12	0,24	0,47	0,09	0,18	0,35	0,08	0,15	0,31	0,07	0,14	0,28	.F..LDJ
.E..LD	0,17	0,49	0,99	0,12	0,35	0,71	0,09	0,27	0,53	0,08	0,23	0,46	0,07	0,21	0,42	.E..LD
.S..GD	0,26	0,84	1,35	0,19	0,60	0,97	0,14	0,45	0,72	0,12	0,39	0,63	0,11	0,36	0,57	.S..GD
.S..HD	0,33	0,84	1,35	0,24	0,60	0,97	0,18	0,45	0,72	0,16	0,39	0,63	0,14	0,36	0,57	.S..HD
.S..Ceramic	0,17	0,33	0,49	0,12	0,24	0,35	0,09	0,18	0,27	0,08	0,15	0,23	0,07	0,14	0,21	.S..Ceramic

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

★ INDEXABLE MILLING

★ SOLID END MILLING

★ HOLEMAKING

★ TAPPING

★ TURNING

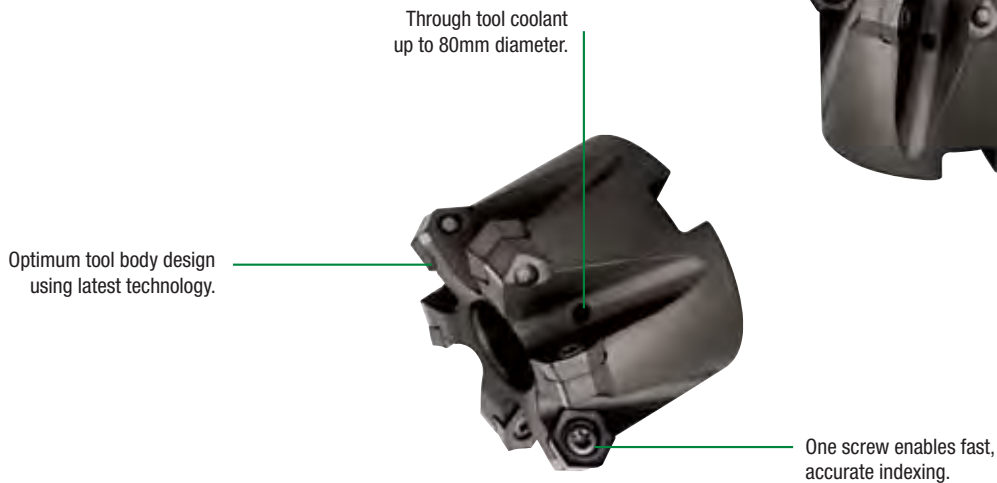
★ = ALL-STAR PORTFOLIO PRODUCT. ALL-STAR PRODUCTS ARE PROVEN SOLUTIONS THAT ARE ALWAYS AVAILABLE.

M640

The M640 platform is the first choice when high productivity, superior finish operations, and soft cutting performance are a priority. With six effective cutting edges and a streamlined body design; this easy-to-use tool is ideal, even for low-power machines.

- Highly positive rake angle means extremely low cutting forces.
- Available in geometries and grades for all applications.
- Easy-to-use for fast, accurate indexing.

Materials:



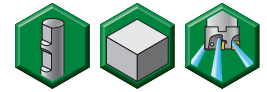
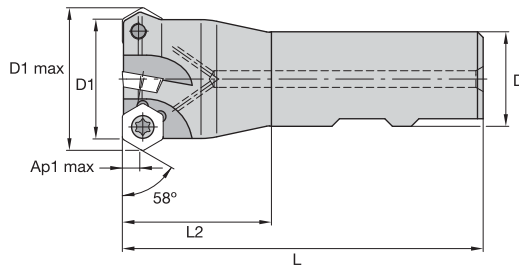
Low cutting force wiper insert: special wiper design for very soft cutting in finishing operations.

6 cutting edges, high positive rake

- Extremely low cutting forces.
- For low-power machines, driven unity, and light fixtures.
- Through tool coolant.

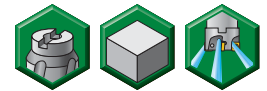
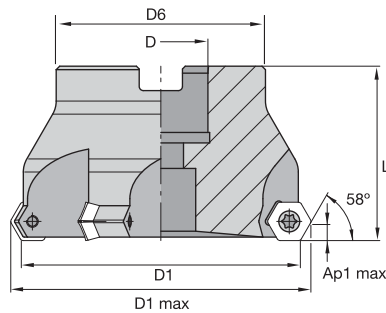
 = ALL-STAR PORTFOLIO PRODUCT. ALL-STAR PRODUCTS ARE PROVEN SOLUTIONS THAT ARE ALWAYS AVAILABLE.

Weldon® End Mills • Metric



order number	catalogue number	D1	D1 max	D	L	L2	Ap1 max	Z	max RPM	coolant supply	kg
2263165	12395405200	32	38,4	32	100	40	4,8	4	29500	Yes	0,35

Shell Mills • Metric



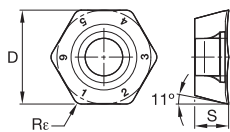
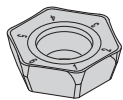
order number	catalogue number	D1	D1 max	D	D6	L	Ap1 max	Z	max RPM	coolant supply	kg
2263132	12395410200	50	56,4	22	47	40	4,8	4	19000	Yes	0,40
2263154	12395410400	63	69,4	22	50	40	4,8	5	15000	Yes	0,55
2263156	12395410600	80	86,4	27	60	50	4,8	6	11500	Yes	1,05
2263158	12395410800	100	106,4	32	78	50	4,8	7	9500	No	1,50



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INDEXABLE MILLING

Inserts • HPGT-LDAL



- first choice
- alternate choice

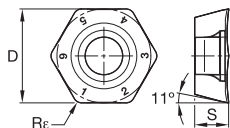
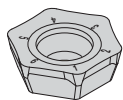
P	●	○
M	●	○
K	●	○
N	●	○
S	○	○
H	○	○

ISO catalogue number	cutting edges	D	S	Re	hm	THM
HPGT06T3DZFRLDAL	6	11	4,00	0,90	0,08	2288106

SOLID END MILLING

HOLEMAKING

Inserts • HPGT-LD



- first choice
- alternate choice

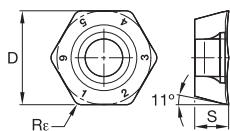
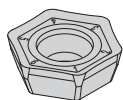
P	●	○
M	●	○
K	○	○
N	○	○
S	○	○
H	○	○

ISO catalogue number	cutting edges	D	S	Re	hm	WP25PM	WP40PM	WS40PM
HPGT06T3DZERLD	6	11	3,99	0,98	0,08	5895784	5895785	6180312

TAPPING

TURNING

Inserts • HPPT-GD

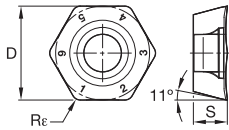
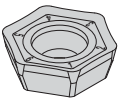


- first choice
- alternate choice

P	○	○
M	○	○
K	○	○
N	○	○
S	○	○
H	○	○

ISO catalogue number	cutting edges	D	S	Re	hm	WS40PM
HPPT06T3DZENGD	6	11	3,97	0,98	0,10	6180315

Inserts • HPGT-GD

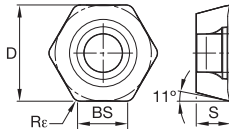
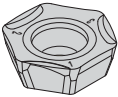


- first choice
- alternate choice

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

ISO catalogue number	cutting edges	D	S	Re	hm												
HPGT06T3DZENGD	6	11	3,97	0,98	0,10	2288066	TN7535	5427387	WK15CM	5895782	WP25PM	5895783	WP40PM	5528978	WS30PM	6180313	WS40PM

Inserts • HPGT-GD Wiper



- first choice
- alternate choice

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

ISO catalogue number	cutting edges	D	S	BS	Re	hm								
HPGT06T3DZERGD3W	3	11	4,00	2,88	0,98	0,10	5427388	WK15CM	5895786	WP25PM	5895787	WP40PM	6180316	WS40PM



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INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Insert Selection Guide

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1-P2	.E..LD	WP40PM	.E..GD	WP40PM	.E..GD	WP40PM
P3-P4	.E..LD	WP25PM	.E..GD	WP35CM	.E..GD	WP35CM
P5-P6	.E..LD	WP25PM	.E..GD	WP35CM	.E..GD	WP35CM
M1-M2	.E..LD	WP25PM	.E..GD	WP25PM	.E..GD	WP25PM
M3	.E..LD	WP40PM	.E..GD	WP35CM	.E..GD	WP35CM
K1-K2	.E..LD	TN6510	.E..GD	WK15CM	.E..GD	WK15CM
K3	.E..LD	TN6520	.E..GD	WP35CM	.E..GD	WP35CM
N1-N2	.F..LDAL	TN6501	.F..LDAL	TN6501	.F..LDAL	TN6501
N3	.F..LDAL	TN6501	.F..LDAL	TN6501	.F..LDAL	TN6501
S1-S2	.E..LD	WP25PM	.E..GD	WP25PM	.E..GD	WP25PM
S3	.E..GD	WS30PM	.E..GD	WS30PM	.E..GD	WP40PM
S4	.E..GD	WS30PM	.E..GD	WS30PM	.E..GD	WP40PM
H1	-	-	-	-	-	-

Recommended Starting Speeds [m/min]

Material Group		TN6510			TN6520			TN6525			TN6540			TN7525			TN7535			WK15CM		
		P	1	-	-	-	-	-	-	410	320	280	360	280	240	410	310	280	545	475	445	-
	2	-	-	-	-	-	-	320	250	215	250	190	170	310	250	215	335	305	275	-	-	-
	3	-	-	-	-	-	-	280	215	185	215	170	140	280	215	185	305	275	245	-	-	-
	4	-	-	-	-	-	-	235	170	145	180	130	110	235	170	145	230	210	190	-	-	-
	5	-	-	-	-	-	-	310	235	200	240	180	150	310	235	200	310	275	250	-	-	-
	6	-	-	-	-	-	-	205	160	130	160	120	100	205	160	130	190	160	130	-	-	-
M	1	-	-	-	-	-	-	190	120	80	130	80	60	245	220	185	245	220	185	-	-	-
	2	-	-	-	-	-	-	120	80	50	80	50	40	220	190	170	220	190	170	-	-	-
	3	-	-	-	-	-	-	125	80	55	85	50	40	175	155	140	175	155	140	-	-	-
K	1	480	350	260	450	320	230	275	245	220	220	205	180	380	280	240	355	320	290	505	460	410
	2	420	280	205	390	250	190	215	190	180	175	155	140	325	240	200	280	250	230	400	355	330
	3	335	260	200	300	230	160	180	160	145	155	145	125	240	200	170	235	210	190	335	300	275
N	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S	1	-	-	-	-	-	-	-	-	-	50	35	30	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	25	20	10	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	70	40	30	-	-	-	-	-	-	-	-	-
	4	-	-	-	-	-	-	-	-	-	60	30	25	-	-	-	-	-	-	-	-	-
H	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Material Group		WP25PM			WP35CM			WP40PM			WS30PM			WS40PM			TN6501			THM-U			THM		
		P	1	395	340	325	545	475	445	355	310	295	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	330	290	240	335	305	275	300	260	215	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	305	260	210	305	275	245	275	235	190	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4	270	220	180	230	210	190	245	205	160	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	5	220	205	180	310	275	250	205	185	160	-	-	-	205	175	145	-	-	-	-	-	-	-	-	-
	6	200	150	120	190	160	130	180	140	110	-	-	-	180	130	95	-	-	-	-	-	-	-	-	-
M	1	245	215	200	245	220	185	235	205	185	270	240	220	250	205	170	-	-	-	-	-	-	-	-	-
	2	220	190	155	220	190	170	210	180	150	245	215	175	215	175	145	-	-	-	-	-	-	-	-	-
	3	170	145	115	175	155	140	155	140	110	185	160	125	175	130	100	-	-	-	-	-	-	-	-	-
K	1	275	245	220	355	320	290	-	-	-	-	-	-	-	-	-	-	-	-	230	205	180	145	110	90
	2	215	190	180	280	250	230	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	150	120	85
	3	180	160	145	235	210	190	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	155	115	70
N	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2400	1440	1200	2400	1440	1200	1080	720	600
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1640	980	800	1640	980	800	820	560	460
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	960	600	480	960	600	480	540	335	240
S	1	50	40	30	-	-	-	50	40	35	55	50	35	50	40	30	-	-	-	-	-	-	-	-	-
	2	50	40	30	-	-	-	50	40	35	55	50	35	50	40	30	-	-	-	-	-	-	-	-	-
	3	60	50	30	-	-	-	60	50	35	65	55	35	60	50	30	-	-	-	-	-	-	-	-	-
	4	85	60	40	80	60	40	80	60	40	100	70	50	70	60	35	-	-	-	-	-	-	-	-	-
H	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining
-----------------	-----------------	-----------------

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40-100%			
.F..LDAL	0,13	0,34	0,47	0,10	0,25	0,34	0,07	0,18	0,25	0,06	0,16	0,22	0,06	0,15	0,20	.F..LDAL
.E..LD	0,13	0,34	0,47	0,10	0,25	0,34	0,07	0,18	0,25	0,06	0,16	0,22	0,06	0,15	0,20	.E..LD
.E..GD	0,13	0,48	0,54	0,10	0,35	0,39	0,07	0,26	0,29	0,06	0,23	0,25	0,06	0,21	0,23	.E..GD

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

★ INDEXABLE MILLING

★ SOLID END MILLING

★ HOLEMAKING

★ TAPPING

★ TURNING

★ = ALL-STAR PORTFOLIO PRODUCT. ALL-STAR PRODUCTS ARE PROVEN SOLUTIONS THAT ARE ALWAYS AVAILABLE.

HIGH-FEED MILLS

VXF™ -07/12

Pages A84–A90

4-Edged, Victory™ X-Feed™ Mill
Next level of High-Feed Milling



M370™

Pages A92–A96

Double-sided high-feed rougher
with 6 edges per insert.



COPY MILLS



M200™

Pages A98–A105

Revolutionary double-sided round insert platform with effective anti-rotation feature and 12 cutting edges per insert.

M100™

Pages A106–A119

Proven multipurpose solution for profiling and copy milling applications.



TO SEE ALL PRODUCT LINES, VISIT OUR DIGITAL RESOURCES



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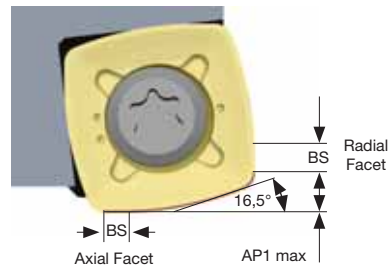


VXF mills are a high-feed productivity booster designed to establish new industry standards with market-leading milling grades.

- 16.5° lead angle redistributes cutting forces in the spindle z-axis direction.
- PSTS inserts for powerful low cost per edge high-feed milling.
- Cutters with internal coolant supply.
- Greatly reduces tool deflection and vibrations for improved tool life.
- Suitable for long tool reach.
- Unique integrated radial wiping facet to achieve a nice wall finish at pocket and helical interpolation milling.
- Durable cutting edges qualified to machine a wide range of materials.



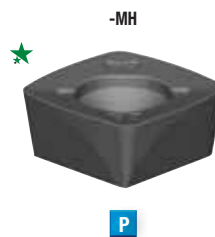
Perfect combination of round and square insert style.



Specifically engineered chipbreakers for powerful high-feed milling.



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



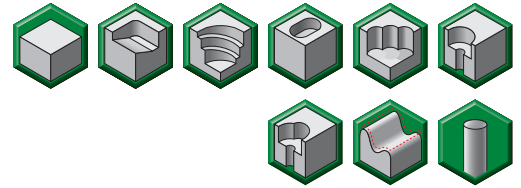
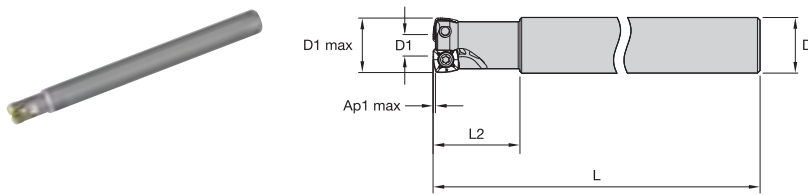
First choice for P3 and P4 materials. Stronger edge protection for heavy roughing jobs.

Lower Cutting Forces

Geometry Strengthening/Stronger Cutting Edge Protection

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Cylindrical End Mills • Metric



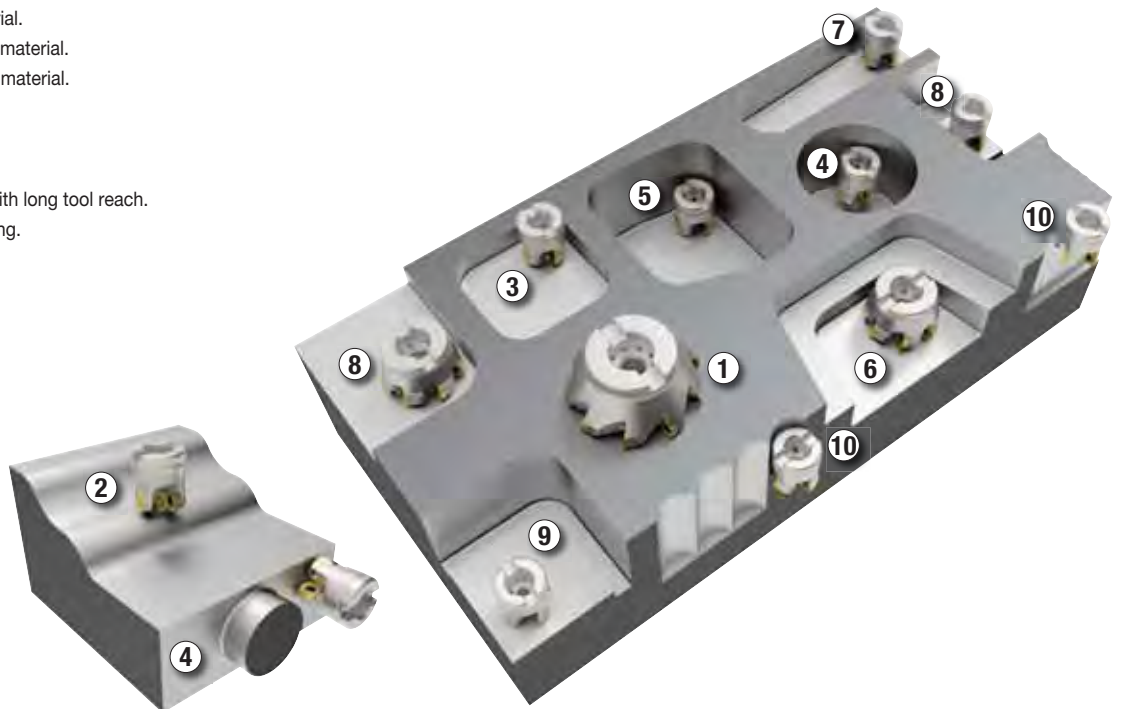
order number	catalogue number	D1 max	D1	D	L	L2	Ap1 max	Z	max ramp angle	max RPM	coolant supply	kg
6597154	VXF016Z02A16XP07L180	16	7	16	180	25	0,9	2	5.9°	65000	Yes	0,24
6597156	VXF020Z03A20XP07L190	20	11	20	190	32	0,9	3	3.4°	57000	Yes	0,41
6597157	VXF025Z04A25XP07L200	25	16	25	200	40	0,9	4	2.2°	49000	Yes	0,69



THE ALL-STAR PROGRAMME FEATURES ONLY THE MOST POPULAR PLATFORMS, GRADES, AND SIZES. FOR THE COMPLETE OFFERING, INCLUDING SPARE PARTS AND APPLICATION INFORMATION, VISIT WIDIA NOVO™ OR WIDIA.COM.

Applications

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



INDEXABLE MILLING



SOLID END MILLING



HOLEMAKING



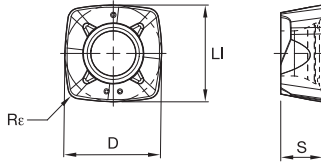
TAPPING



TURNING

INDEXABLE MILLING

Inserts • XPPT-MM • Best Fit for Pocketing and Profiling Operations



- first choice
- alternate choice

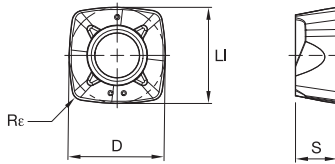
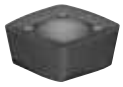
P	●	○
M	●	○
K	○	○
N	○	○
S	○	○
H	○	○

ISO catalogue number	cutting edges	LI	S	D	Re	WP25PM	WS40PM
XPPT070308ERMM	4	7,30	3,17	7,30	0,80	6595819	6595820

SOLID END MILLING

HOLEMAKING

Inserts • XPPW-MH • Dedicated Geometry for Heavy Roughing



- first choice
- alternate choice

P	●	○
M	●	○
K	○	○
N	○	○
S	○	○
H	○	○

ISO catalogue number	cutting edges	LI	S	D	Re	WP40PM	WU10PM
XPPW070310SRMH	4	7,30	3,17	7,30	1,00	6595770	6595769

TAPPING

TURNING



THE ALL-STAR PROGRAMME FEATURES ONLY THE MOST POPULAR PLATFORMS, GRADES, AND SIZES. FOR THE COMPLETE OFFERING, INCLUDING SPARE PARTS AND APPLICATION INFORMATION, VISIT WIDIA NOVO™ OR WIDIA.COM.

Insert Selection Guide

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1-P2	XPPT-MM	WP25PM	XPPT-MM	WS40PM	XPPW-MH	WP40PM
P3-P4	XPPT-MM	WP25PM	XPPT-MM	WS40PM	XPPW-MH	WP40PM
P5-P6	XPPT-MM	WP25PM	XPPT-MM	WS40PM	XPPW-MH	WP40PM
M1-M2	XPPT-MM	WS40PM	XPPT-MM	WS40PM	XPPW-MH	WP40PM
M3	XPPT-MM	WS40PM	XPPT-MM	WS40PM	XPPW-MH	WP40PM
K1-K2	XPPW-MH	WU10PM	XPPW-MH	WU10PM	XPPW-MH	WU10PM
K3	XPPW-MH	WU10PM	XPPW-MH	WU10PM	XPPW-MH	WU10PM
S1-S2	XPPT-MM	WP25PM	XPPT-MM	WS40PM	-	-
S3	XPPT-MM	WS40PM	XPPT-MM	WS40PM	-	-
S4	XPPT-MM	WS40PM	XPPT-MM	WS40PM	-	-
H1	XPPW-MH	WU10PM	XPPW-MH	WU10PM	-	-

Recommended Starting Speeds [m/min]*

Material Group	WP25PM			WP40PM			WS40PM			WU10PM			
	P	1	395	340	325	355	310	295	-	-	-	-	-
2		330	290	240	300	260	215	-	-	-	-	-	
3		305	260	210	275	235	190	-	-	-	-	-	
4		270	220	180	245	205	160	-	-	-	-	-	
5		220	205	180	205	185	160	205	175	145	-	-	-
6		200	150	120	180	140	110	180	130	95	-	-	-
M	1	245	215	200	235	205	185	250	205	170	-	-	-
	2	220	190	155	210	180	150	215	175	145	-	-	-
	3	170	145	115	155	140	110	175	130	100	-	-	-
K	1	275	245	220	-	-	-	-	-	-	355	320	290
	2	215	190	180	-	-	-	-	-	-	275	245	230
	3	180	160	145	-	-	-	-	-	-	235	210	190
S	1	50	40	30	50	40	35	50	40	30	-	-	-
	2	50	40	30	50	40	35	50	40	30	-	-	-
	3	60	50	30	60	50	35	60	50	30	-	-	-
	4	85	60	40	80	60	40	70	60	35	-	-	-
H	1	145	110	85	-	-	-	-	-	-	190	155	110

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

Recommended Starting Feeds [mm]

At 0,60 Axial Depth of Cut (AP1)

Light Machining	General Purpose	Heavy Machining
-----------------	-----------------	-----------------

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40-100%			
.E..MM	0,46	1,32	2,43	0,32	0,89	1,53	0,24	0,65	1,09	0,21	0,56	0,94	0,19	0,52	0,85	.E..MM
.S..MH	0,84	1,84	3,12	0,59	1,21	1,85	0,43	0,87	1,30	0,38	0,75	1,12	0,34	0,69	1,02	.S..MH

At 0,70 Axial Depth of Cut (AP1)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40-100%			
.E..MM	0,42	1,21	2,20	0,30	0,83	1,41	0,22	0,60	1,01	0,19	0,52	0,87	0,18	0,48	0,79	.E..MM
.S..MH	0,78	1,68	2,79	0,55	1,12	1,71	0,40	0,81	1,21	0,35	0,70	1,04	0,32	0,64	0,94	.S..MH

At 0,90 Axial Depth of Cut (AP1)

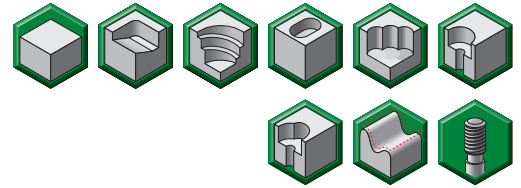
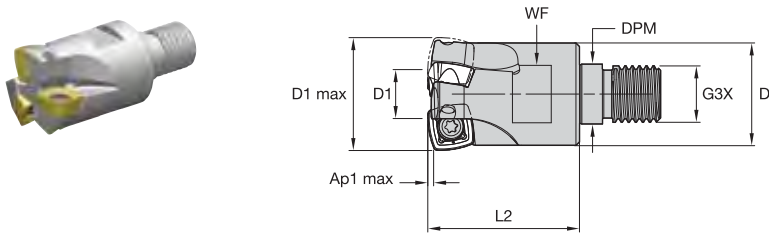
Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40-100%			
.E..MM	0,37	1,06	1,89	0,27	0,73	1,24	0,20	0,53	0,89	0,17	0,46	0,77	0,16	0,42	0,70	.E..MM
.S..MH	0,68	1,46	2,35	0,48	0,98	1,49	0,36	0,71	1,07	0,31	0,62	0,92	0,28	0,56	0,84	.S..MH

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

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INDEXABLE MILLING

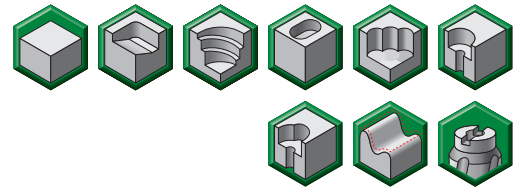
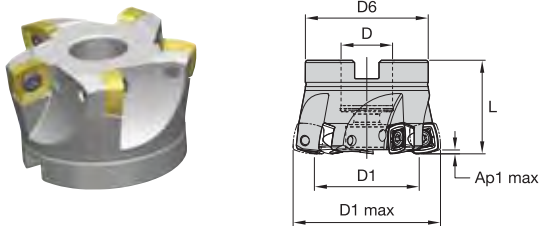
Screw-On End Mills • Metric



order number	catalogue number	D1 max	D1	D	DPM	G3X	L2	WF	Ap1 max	Z	max ramp angle	max RPM	coolant supply	kg
6596723	VXF032Z03M16XD12	32	14	29	17,0	M16	43	24	2,5	3	1,8°	31500	Yes	0,19

SOLID END MILLING

Shell Mills • Metric



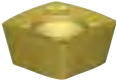
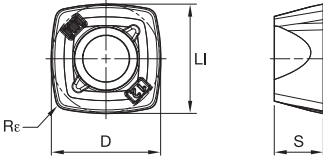
order number	catalogue number	D1 max	D1	D	D6	L	Ap1 max	Z	max ramp angle	max RPM	coolant supply	kg
6596725	VXF040Z04S22XD12	40	22	22	38	40	2,5	4	1,4°	26500	Yes	0,19
6596728	VXF050Z04S22XD12	50	32	22	48	40	2,5	4	.9°	22500	Yes	0,31
6596729	VXF052Z05S22XD12	52	34	22	48	40	2,5	5	.8°	22000	Yes	0,32
6596730	VXF063Z05S22XD12	63	45	22	53	40	2,5	5	.6°	19500	Yes	0,47
6596732	VXF066Z06S27XD12	66	48	27	53	45	2,5	6	.5°	19000	Yes	0,55
6596733	VXF080Z06S27XD12	80	62	27	55	50	2,5	6	.5°	17000	Yes	0,87

HOLEMAKING

TAPPING

TURNING

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


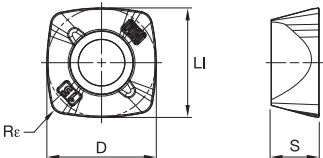



● first choice
○ alternate choice

P	●	○
M	●	○
K	●	○
N	○	○
S	○	○
H	○	○

ISO catalogue number	cutting edges	LI	S	D	Re	WP25PM	WS40PM
XDPT120512ERMM	4	12,70	5,56	12,70	1,20	6596438	6596439

Inserts • XDPT-MH • Dedicated Geometry for Heavy Roughing

● first choice
○ alternate choice

P	●	○
M	●	○
K	○	○
N	○	○
S	○	○
H	○	○

ISO catalogue number	cutting edges	LI	S	D	Re	WP40PM
XDPT120515SRMH	4	12,70	5,56	12,70	1,50	6596440



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INDEXABLE MILLING
 SOLID END MILLING
 HOLEMAKING
 TAPPING
 TURNING

Insert Selection Guide

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

Recommended Starting Speeds [m/min]*

Material Group	WP25PM			WP40PM			WS40PM			
		1	2	3	1	2	3	1	2	3
P	1	395	340	325	355	310	295	-	-	-
	2	330	290	240	300	260	215	-	-	-
	3	305	260	210	275	235	190	-	-	-
	4	270	220	180	245	205	160	-	-	-
	5	220	205	180	205	185	160	205	175	145
	6	200	150	120	180	140	110	180	130	95
M	1	245	215	200	235	205	185	250	205	170
	2	220	190	155	210	180	150	215	175	145
	3	170	145	115	155	140	110	175	130	100
S	1	50	40	30	50	40	35	50	40	30
	2	50	40	30	50	40	35	50	40	30
	3	60	50	30	60	50	35	60	50	30
	4	85	60	40	80	60	40	70	60	35

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

Recommended Starting Feeds [mm]

At 1,30 Axial Depth of Cut (AP1)

Light Machining	General Purpose	Heavy Machining
-----------------	-----------------	-----------------

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40-100%			
.E.MM	0,49	1,59	2,52	0,35	1,13	1,78	0,26	0,84	1,31	0,23	0,73	1,14	0,21	0,67	1,04	.E.MM
.S.MH	0,70	1,80	2,76	0,51	1,28	1,94	0,38	0,95	1,44	0,33	0,83	1,25	0,30	0,76	1,14	.S.MH

At 1,70 Axial Depth of Cut (AP1)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40-100%			
.E.MM	0,43	1,39	2,20	0,31	0,99	1,56	0,23	0,74	1,15	0,20	0,64	1,00	0,19	0,59	0,92	.E.MM
.S.MH	0,62	1,57	2,41	0,45	1,12	1,70	0,33	0,84	1,26	0,29	0,73	1,10	0,27	0,67	1,00	.S.MH

At 2,50 Axial Depth of Cut (AP1)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40-100%			
.E.MM	0,36	1,15	1,81	0,26	0,83	1,29	0,19	0,62	0,96	0,17	0,54	0,83	0,15	0,49	0,76	.E.MM
.S.MH	0,51	1,30	1,99	0,37	0,93	1,41	0,28	0,70	1,05	0,24	0,61	0,91	0,22	0,55	0,83	.S.MH

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

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Designed to Make Your Workplace More Productive

WIDIA™ X-Feed™

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



Victory™ X-Feed For Machining Stainless Steel and Titanium

70NS Series

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



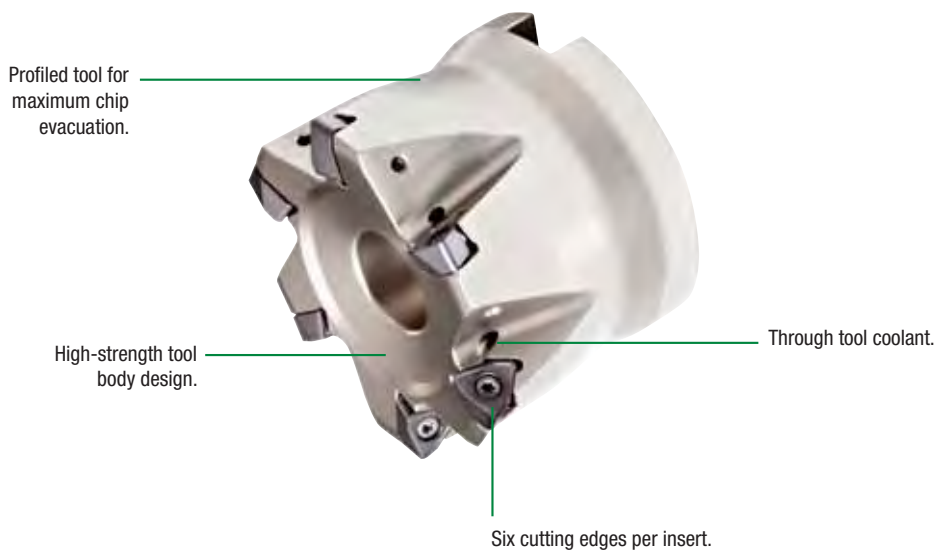
Victory X-Feed To Speed Up High-Feed Machining

VXF™ -7 and VXF™ -12 Series

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

Designed for high feed rate productivity, the M370 Series provides the latest insert technology with outstanding performance and reliability. Its double-sided concept and six cutting edges provide security and optimal metal removal with an efficient cost per edge.

- Double-sided design offers six cutting edges per insert.
- Extremely high metal removal rates.
- First choice for high-feed roughing applications.



★ 8mm iC Insert WOEJ0804

Up to 1.3mm A_p max
Diameter range 25–80mm

-MM



P M S

Provides lower cutting forces, first choice for steel, stainless steel, and high-temp alloys.

-MH



P M K S

First choice for high-strength steel and cast iron.

★ 12mm iC Insert WOEJ1207

Up to 2.0mm A_p max
Diameter range 42–125mm

-MM



P M K S

Provides lower cutting forces, first choice for steel, stainless steel, and high-temp alloys.

-MH



P M K S

First choice for high-strength steel and cast iron.

-MR

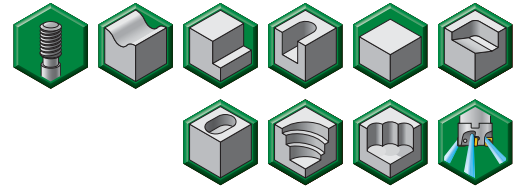
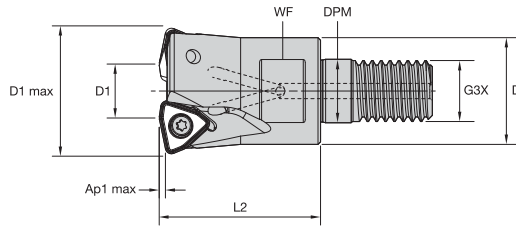


P M S

Strongest edge protection for heavy roughing jobs with ugly skin or forged steel components.

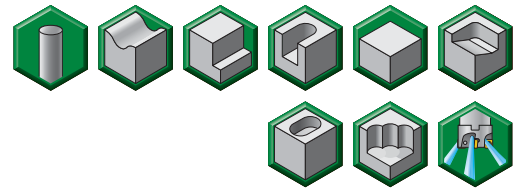
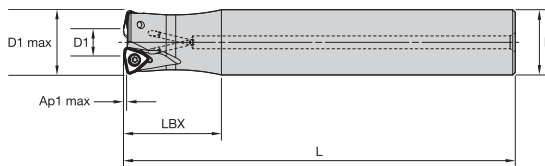
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Screw-On End Mills • Medium • Metric



order number	catalogue number	D1 max	D1	D	DPM	G3X	L2	WF	Ap1 max	Z	max ramp angle	max RPM	coolant supply	kg
4056186	M370D025Z02M12WO08	25	11	21	12,5	M12	35	17	1,3	2	2.1°	46000	Yes	0,09
4170918	M370D025Z03M12WO08	25	11	21	12,5	M12	35	17	1,3	3	2.1°	46000	Yes	0,09
4056187	M370D032Z04M16WO08	32	18	29	17,0	M16	43	24	1,3	4	1.4°	38700	Yes	0,21
4056188	M370D042Z05M16WO08	42	28	29	17,0	M16	43	24	1,3	5	1.0°	32500	Yes	0,57

Cylindrical End Mills • Medium • Metric



order number	catalogue number	D1 max	D1	D	L	LBX	Ap1 max	Z	max RPM	coolant supply	kg
4056189	M370D025Z03A25WO08L150	25	11	25	150	40	1,3	3	46000	Yes	0,50
4170919	M370D025Z03A25WO08L200	25	11	25	200	40	1,3	3	46000	Yes	0,69
4056192	M370D032Z04A32WO08L200	32	18	32	200	50	1,3	4	38700	Yes	1,14
4056191	M370D032Z04A32WO08L150	32	18	32	150	40	1,3	4	38700	Yes	0,84



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INDEXABLE MILLING

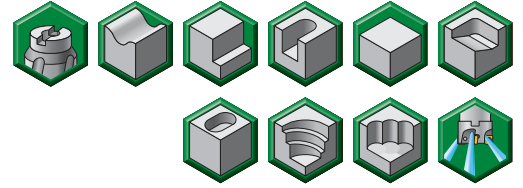
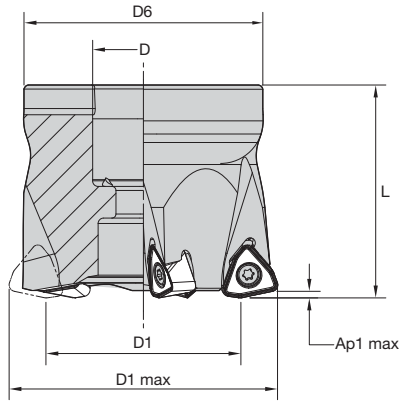
SOLID END MILLING

HOLEMAKING

TAPPING

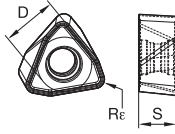
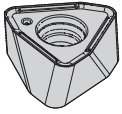
TURNING

Shell Mills • Medium • Metric



order number	catalogue number	D1 max	D1	D	D6	L	Ap1 max	Z	max RPM	coolant supply	kg
4056193	M370D040Z04WO08	40	26	16	37	40	1,3	4	33500	Yes	0,19
4170922	M370D040Z05WO08	40	26	16	37	40	1,3	5	33500	Yes	0,19
4008276	M370D050Z05WO08	50	36	22	44	40	1,3	5	29200	Yes	0,29
4171223	M370D050Z06WO08	50	36	22	44	40	1,3	6	29200	Yes	0,29
4056194	M370D052Z05WO08	52	38	22	44	50	1,3	5	28600	Yes	0,41
4171224	M370D052Z06WO08	52	38	22	44	50	1,3	6	28600	Yes	0,40
4056195	M370D063Z06WO08	63	49	22	60	50	1,3	6	25500	Yes	0,74
4008277	M370D066Z06WO08	66	52	27	60	50	1,3	6	24900	Yes	0,77
4171225	M370D080Z07WO08	80	66	27	60	50	1,3	7	24900	Yes	2,36

Inserts • Medium • WOEJ-MM

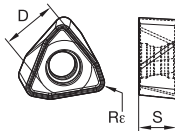
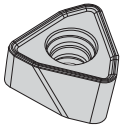


- first choice
- alternate choice

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

ISO catalogue number	cutting edges	D	S	Rε	5564597	5520248	6333665	5544753
WOEJ080412SRMM	6	7,79	4,70	1,22	WP25PM	WS30PM	WS40PM	WP40PM

Inserts • Medium • WOEJ-MH



- first choice
- alternate choice

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

ISO catalogue number	cutting edges	D	S	Rε	4068517	5427443	5564596	5544752	6333664
WOEJ080412SRMH	6	7,79	4,75	1,22	TN7535	WK15CM	WP25PM	WP40PM	WS40PM



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INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Insert Selection Guide

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1-P2	...MM	WP40PM	...MM	WP40PM	...MM	WP40PM
P3-P4	...MM	WP25PM	...MM	WP40PM	...MH	WP40PM
P5-P6	...MM	WP25PM	...MH	WP25PM	...MH	WP40PM
M1-M2	...MM	WP25PM	...MM	WS30PM	...MM	WP40PM
M3	...MM	WP25PM	...MM	WP25PM	...MM	WP40PM
K1-K2	...MH	WK15CM	...MH	WK15CM	...MH	WK15CM
K3	...MH	TN6520	...MH	TN6520	...MH	WK15CM
N1-N2	-	-	-	-	-	-
N3	-	-	-	-	-	-
S1-S2	...MM	WP25PM	...MM	WS30PM	...MM	WP40PM
S3	...MM	WS30PM	...MM	WS30PM	...MM	WP40PM
S4	...MM	WS30PM	...MM	WP40PM	...MM	WP40PM
H1	...MH	WP25PM	-	-	-	-

Recommended Starting Speeds [m/min]

Material Group		TN6520			TN6525			TN7535			WK15CM			WP25PM			WS30PM			WP40PM			WS40PM		
		P	1	-	-	-	410	320	280	545	475	445	-	-	-	395	340	325	-	-	-	355	310	295	-
	2	-	-	-	320	250	215	335	305	275	-	-	-	330	290	240	-	-	-	300	260	215	-	-	-
	3	-	-	-	280	215	185	305	275	245	-	-	-	305	260	210	-	-	-	275	235	190	-	-	-
	4	-	-	-	235	170	145	230	210	190	-	-	-	270	220	180	-	-	-	245	205	160	-	-	-
	5	-	-	-	310	235	200	310	275	250	-	-	-	220	205	180	-	-	-	205	185	160	440	325	230
	6	-	-	-	205	160	130	190	160	130	-	-	-	200	150	120	-	-	-	180	140	110	375	260	165
M	1	-	-	-	190	120	80	245	220	185	-	-	-	245	215	200	270	240	220	235	205	185	850	605	375
	2	-	-	-	120	80	50	220	190	170	-	-	-	220	190	155	245	215	175	210	180	150	755	560	345
	3	-	-	-	125	80	55	175	155	140	-	-	-	170	145	115	185	160	125	155	140	110	625	440	280
K	1	450	320	230	275	245	220	355	320	290	505	460	410	275	245	220	-	-	-	-	-	-	-	-	-
	2	390	250	190	215	190	180	280	250	230	400	355	330	215	190	180	-	-	-	-	-	-	-	-	-
	3	300	230	160	180	160	145	235	210	190	335	300	275	180	160	145	-	-	-	-	-	-	-	-	-
N	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S	1	-	-	-	-	-	-	-	-	-	-	-	-	50	40	30	55	50	35	50	40	35	200	145	90
	2	-	-	-	-	-	-	-	-	-	-	-	-	50	40	30	55	50	35	50	40	35	180	130	85
	3	-	-	-	-	-	-	-	-	-	-	-	-	60	50	30	65	55	35	60	50	35	210	150	95
	4	-	-	-	-	-	-	-	-	-	-	-	-	85	60	40	100	70	50	80	60	40	295	215	135
H	1	-	-	-	-	-	-	-	-	-	-	-	-	145	110	85	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

Recommended Starting Feeds [mm]

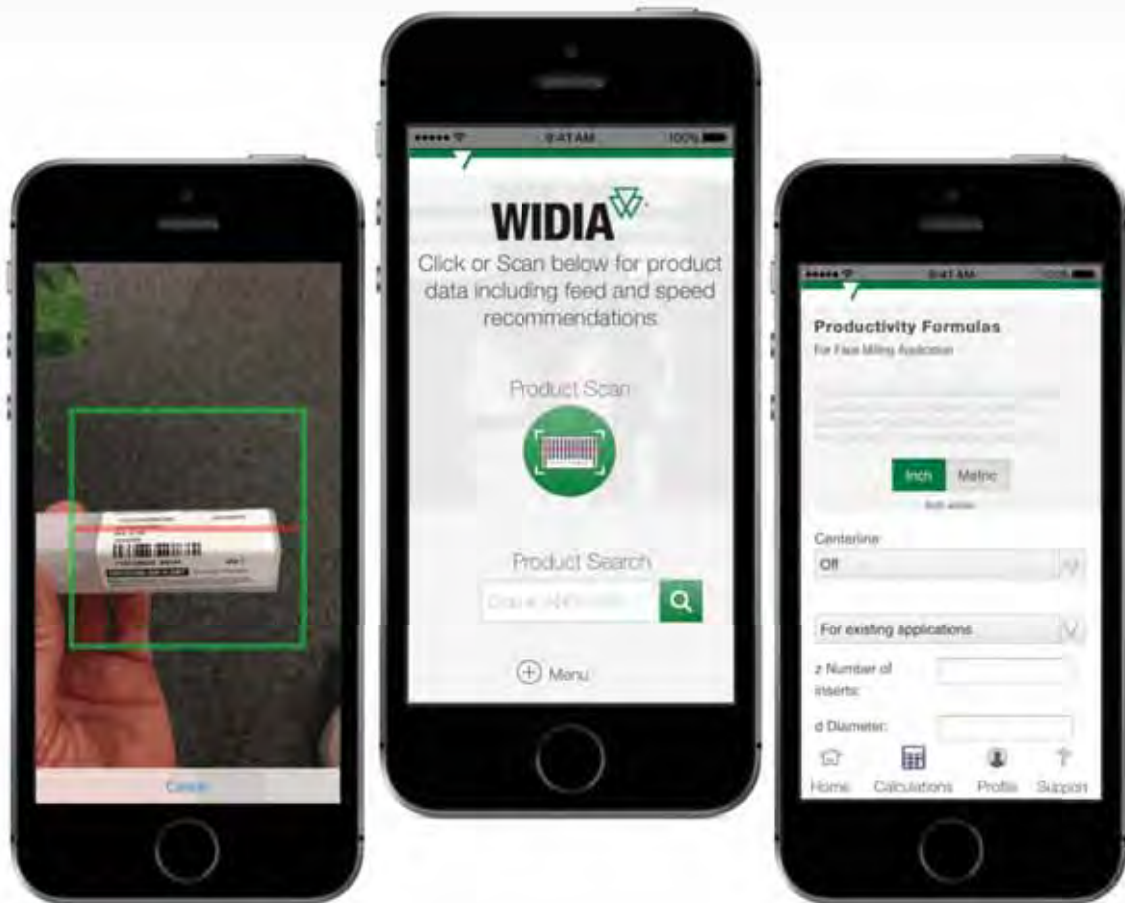
Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	Light Machining					General Purpose					Heavy Machining					
	5%			10%		20%			30%		40-100%					
..MM	0,90	1,67	4,09	0,65	1,19	2,83	0,48	0,88	2,08	0,42	0,77	1,80	0,38	0,70	1,64	..MM
..MH	0,90	2,34	5,00	0,65	1,66	3,41	0,48	1,23	2,49	0,42	1,07	2,16	0,38	0,98	1,97	..MH

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

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Machining Central App from WIDIA™

The fastest, easiest way to get feeds and speeds.



SCAN

With the new WIDIA app, product data is just a quick scan away. Now, when you're on the floor and need to quickly access the speeds and feeds of your favorite WIDIA tool, the WIDIA app gives you reliable information in just a few seconds.



SEARCH

Don't have a barcode? The new WIDIA app includes another simple search technique — just type the tool's corresponding order number or the ANSI or ISO catalogue number into the search bar. You'll get the same reliable data as if you'd scanned the tool's barcode. It's simple and quick — no interruption in production!



CALCULATE

Have a specific machining need that our recommended speeds and feeds don't quite address? Try out our three NOVO™ based calculators. Both end milling and face milling calculators are available. Simply fill in the blank fields, and our calculators will quickly provide the data you need.

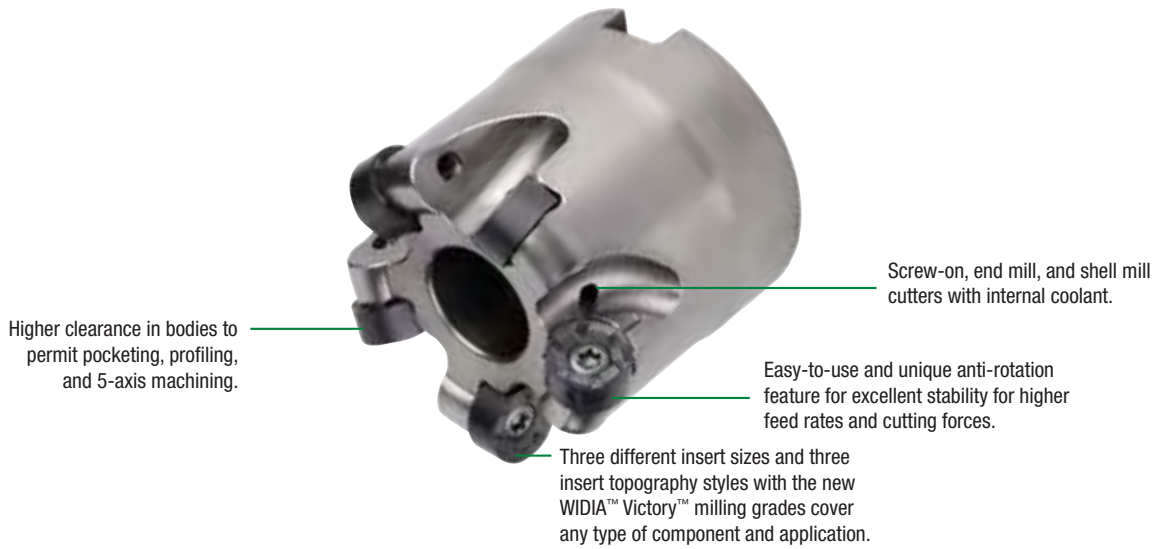
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WIDIA 

- Up to 12 cutting edges per insert.
- First choice for roughing applications.
- Effective anti-rotation feature.
- Able to apply in all type of materials and milling applications.



★ **M200 iC 10**
10mm iC insert
8 cutting edges

-ALP



N

For non-ferrous materials.

-ML



P M S

First choice for stainless steel and high-temp alloys.

-MM



P M S

First choice for general purpose, especially for steel.

-MH



P K

First choice for heavy machining and cast iron.

★ **M200 iC 12**
12mm iC insert
12 cutting edges

-ALP



N

For non-ferrous materials.

-ML



P M S

First choice for stainless steel and high-temp alloys.

-MM



P M S

First choice for general purpose, especially for steel.

-MH



P K

First choice for heavy machining and cast iron.

M200 iC 16
16mm iC insert
12 cutting edges

-ALP



N

For non-ferrous materials.

-ML



P M S

First choice for stainless steel and high-temp alloys.

-MM



P M S

First choice for general purpose, especially for steel.

-MH

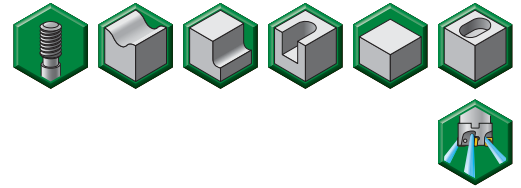
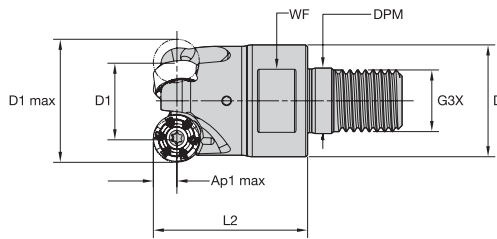


P K

First choice for heavy machining and cast iron.

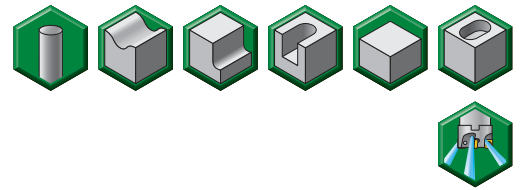
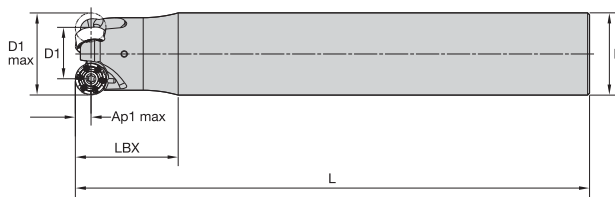
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Screw-On End Mills • Metric



order number	catalogue number	D1 max	D1	D	DPM	G3X	L2	WF	Ap1 max	Z	max ramp angle	max RPM	coolant supply	kg
4147560	M200D32Z03M16RN12	32	20	29	17,0	M16	40	24	3,0	3	.5°	39160	Yes	0,18
4147561	M200D35Z03M16RN12	35	23	29	17,0	M16	40	24	3,0	3	.4°	37440	Yes	0,19

Cylindrical End Mills • Metric



order number	catalogue number	D1 max	D1	D	L	LBX	Ap1 max	Z	max RPM	coolant supply	kg
4147566	M200D32Z03A32RN12L200	32	20	32	200	40	3,0	3	39160	Yes	1,10

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING



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INDEXABLE MILLING

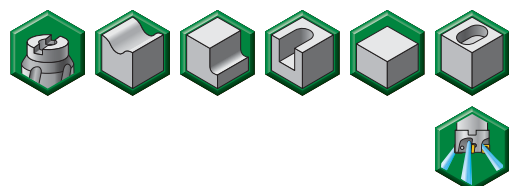
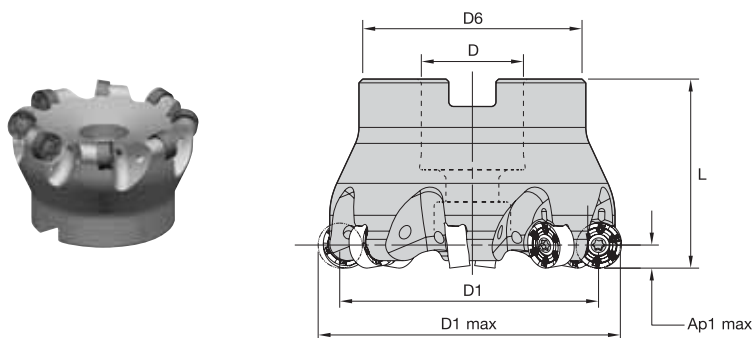
SOLID END MILLING

HOLEMAKING

TAPPING

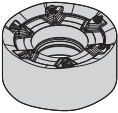
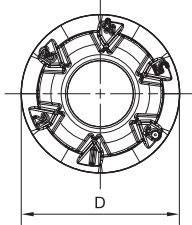
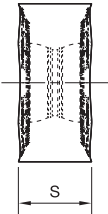
TURNING

Shell Mills • Metric



order number	catalogue number	D1 max	D1	D	D6	L	Ap1 max	Z	max ramp angle	max RPM	coolant supply	kg
4147568	M200D40Z04RN12	40	28	16	38	40	3,0	4	.4°	35020	Yes	0,22
4147569	M200D50Z04RN12	50	38	22	42	40	3,0	4	.5°	31330	Yes	0,29
4147570	M200D50Z05RN12	50	38	22	42	40	3,0	5	.3°	31330	Yes	0,29
4147571	M200D52Z05RN12	52	40	22	49	50	3,0	5	.5°	30720	Yes	0,50
4147572	M200D63Z05RN12	63	51	22	49	50	3,0	5	.5°	27910	Yes	0,63
4147573	M200D63Z07RN12	63	51	22	49	50	3,0	7	.3°	27910	Yes	0,63
4147574	M200D66Z07RN12	66	54	27	60	50	3,0	7	.3°	27260	Yes	0,82
4147575	M200D80Z06RN12	80	68	27	60	50	3,0	6	.5°	24760	Yes	1,02
4147576	M200D80Z08RN12	80	68	27	60	50	3,0	8	.2°	24760	Yes	1,02
4147577	M200D100Z07RN12	100	88	32	78	50	3,0	7	.2°	22150	Yes	1,45
4147578	M200D100Z09RN12	100	88	32	78	50	3,0	9	.2°	22150	Yes	1,41

Inserts • RNGJ-ML

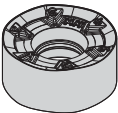
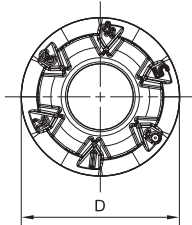
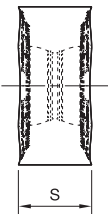




● first choice
○ alternate choice

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

ISO catalogue number	cutting edges	D	S	hm	5123863	5520350	6408153	5123864
RNGJ1204M0EML	2	12,00	4,75	0,04	WP25PM	WS30PM	WS40PM	WU35PM

Inserts • RNGJ-MM

● first choice
○ alternate choice

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

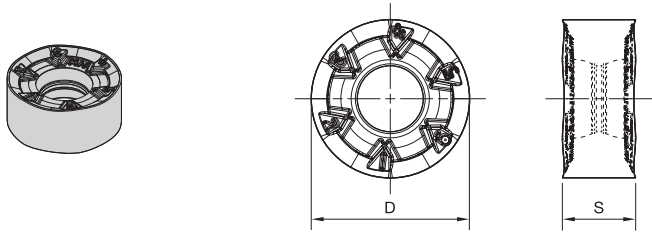
ISO catalogue number	cutting edges	D	S	hm	5123867	5123869	5520351	5123868
RNGJ1204M0SMM	2	12,00	4,75	0,09	WP25PM	WP35CM	WS30PM	WU35PM



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INDEXABLE MILLING

Inserts • RNGJ-MM



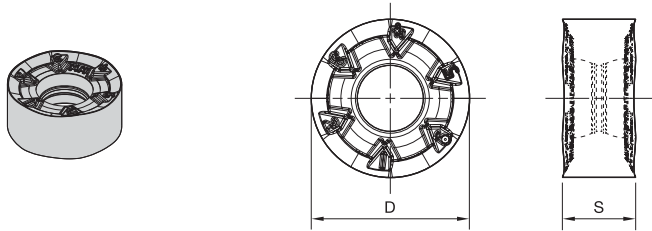
- first choice
- alternate choice

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

ISO catalogue number	cutting edges	D	S	hm										
RNGJ1204M0SMH	2	12,00	4,75	0,19	5123900	WK15PM	5123901	WP25PM	5123903	WP35CM	6408154	WS40PM	5123902	WU35PM

HOLEMAKING

Inserts • RNPJ-MM



- first choice
- alternate choice

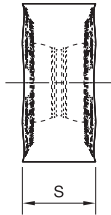
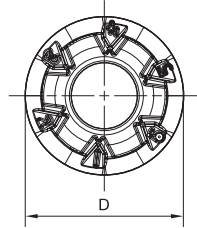
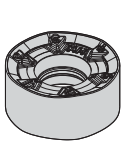
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M	●	○	○	○	○
K	●	○	○	○	○
N	●	○	○	○	○
S	●	○	○	○	○
H	○	○	○	○	○

ISO catalogue number	cutting edges	D	S	hm										
RNPJ1204M0SMM	2	12,00	4,75	0,09	5276361	WP25PM	5276360	WP35CM	5542329	WP40PM	6344113	WS40PM	5476634	WU35PM

TAPPING

TURNING

Inserts • RNPJ-MH

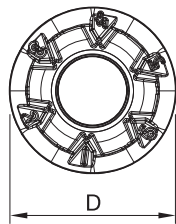


- first choice
- alternate choice

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

ISO catalogue number	cutting edges	D	S	hm										
RNPJ1204M0SMH	2	12,00	4,75	0,18	5276366	WK15CM	5276364	WP25PM	5276363	WP35CM	5542340	WP40PM	5476635	WU35PM

Inserts • RNGJ-ALP



- first choice
- alternate choice

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

ISO catalogue number	cutting edges	D	S	hm										
RNGJ1204M0FALP	2	12,00	4,75	0,02	6065661	WN25PM								



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Insert Selection Guide

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1-P2	ML	WP25PM	MM	WP40PM	MM	WP40PM
P3-P4	ML	WP25PM	MM	WP25PM	MH	WP40PM
P5-P6	ML	WP35CM	MM	WP35CM	MH	WP35CM
M1-M2	ML	WP25PM	ML	WU35PM	MM	WU35PM
M3	ML	WP25PM	MM	WU35PM	MM	WU35PM
K1-K2	MH	WK15CM	MH	WK15CM	MH	WP20CM
K3	MH	WK15PM	MH	WK15PM	MH	WP25PM
N1-N2	ALP	WN25PM	ALP	WN25PM	ALP	WN25PM
N3	ALP	WN25PM	ALP	WN25PM	ALP	WN25PM
S1-S2	ML	WS30PM	MM	WS30PM	MM	WU35PM
S3	ML	WS30PM	MM	WU35PM	MM	WU35PM
S4	ML	WS30PM	MM	WU35PM	MM	WU35PM
H1	MH	WP25PM	MH	WP20CM	-	-

Recommended Starting Speeds [m/min]

Material Group	1	2	3	WK15CM			WK15PM			WN25PM			WP20CM			WP25PM		
				P	1	2	3	-	-	-	-	-	-	-	-	-	660	580
	4	5	6	-	-	-	-	-	-	-	-	-	410	370	330	330	290	240
	1	2	3	-	-	-	-	-	-	-	-	-	370	330	305	305	260	210
	4	5	6	-	-	-	-	-	-	-	-	-	275	260	230	270	220	180
	1	2	3	-	-	-	-	-	-	-	-	-	330	300	275	220	205	180
	4	5	6	-	-	-	-	-	-	-	-	-	230	205	175	200	150	120
M	1	2	3	-	-	-	-	-	-	-	-	-	270	240	210	245	215	200
	4	5	6	-	-	-	-	-	-	-	-	-	245	210	190	220	190	155
	1	2	3	-	-	-	-	-	-	-	-	-	190	175	150	170	145	115
K	1	2	3	505	460	410	325	295	260	-	-	-	430	390	355	275	245	220
	4	5	6	400	355	330	250	230	210	-	-	-	340	305	280	215	190	180
	1	2	3	335	300	275	210	190	175	-	-	-	290	260	240	180	160	145
N	1	2	3	-	-	-	-	-	-	1290	1135	1050	-	-	-	-	-	-
	4	5	6	-	-	-	-	-	-	1135	1050	910	-	-	-	-	-	-
	1	2	3	-	-	-	-	-	-	1135	1050	910	-	-	-	-	-	-
S	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	50	40	30
	4	5	6	-	-	-	-	-	-	-	-	-	-	-	-	50	40	30
	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	60	50	30
	4	5	6	-	-	-	-	-	-	-	-	-	-	-	-	85	60	40
H	1	2	3	-	-	-	-	-	-	-	-	-	170	140	115	145	110	85
	4	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Material Group	1	2	3	WP35CM			WP40PM			WS30PM			WS40PM			WU35PM		
				P	1	2	3	545	475	445	355	310	295	445	385	360	-	-
	4	5	6	335	305	275	300	260	215	365	325	265	-	-	-	265	230	190
	1	2	3	305	275	245	275	235	190	340	290	235	-	-	-	240	205	170
	4	5	6	230	210	190	245	205	160	300	245	200	-	-	-	215	180	145
	1	2	3	310	275	250	205	185	160	245	230	200	165	120	85	180	160	145
	4	5	6	190	160	130	180	140	110	220	170	130	140	100	60	155	120	95
M	1	2	3	245	220	185	235	205	185	270	240	220	315	225	140	205	180	160
	4	5	6	220	190	170	210	180	150	245	215	175	280	205	130	185	155	130
	1	2	3	175	155	140	155	140	110	185	160	125	230	165	105	140	120	95
K	1	2	3	355	320	290	-	-	-	-	-	-	-	-	-	-	-	-
	4	5	6	280	250	230	-	-	-	-	-	-	-	-	-	-	-	-
	1	2	3	235	210	190	-	-	-	-	-	-	-	-	-	-	-	-
N	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S	1	2	3	-	-	-	50	40	35	55	50	35	75	55	35	40	35	30
	4	5	6	-	-	-	50	40	35	55	50	35	70	50	35	40	35	30
	1	2	3	-	-	-	60	50	35	65	55	35	80	55	35	55	40	30
	4	5	6	80	60	40	80	60	40	100	70	50	110	80	50	70	55	35
H	1	2	3	-	-	-	-	-	-	160	120	90	-	-	-	-	-	-
	4	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

Recommended Starting Feeds [mm]

At 6,00 Axial Depth of Cut (ap)

Light Machining	General Purpose	Heavy Machining
-----------------	-----------------	-----------------

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40-100%			
ALP	0,12	0,20	0,28	0,08	0,15	0,20	0,06	0,11	0,15	0,06	0,09	0,13	0,05	0,09	0,12	ALP
ML	0,12	0,18	0,32	0,09	0,13	0,23	0,07	0,10	0,18	0,06	0,08	0,15	0,05	0,08	0,14	ML
MM	0,28	0,51	0,84	0,21	0,37	0,61	0,15	0,28	0,45	0,13	0,24	0,39	0,12	0,22	0,36	MM
MH	0,46	0,70	1,02	0,33	0,50	0,73	0,25	0,38	0,55	0,22	0,33	0,48	0,20	0,30	0,44	MH

At 3,00 Axial Depth of Cut (ap)

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40-100%			
ALP	0,12	0,20	0,28	0,08	0,15	0,20	0,06	0,11	0,15	0,06	0,09	0,13	0,05	0,09	0,12	ALP
ML	0,14	0,20	0,37	0,10	0,15	0,27	0,08	0,11	0,20	0,07	0,10	0,18	0,06	0,09	0,16	ML
MM	0,33	0,59	0,97	0,24	0,43	0,70	0,18	0,32	0,52	0,16	0,28	0,45	0,14	0,25	0,42	MM
MH	0,54	0,81	1,18	0,39	0,58	0,85	0,29	0,43	0,63	0,25	0,38	0,55	0,23	0,35	0,51	MH

At 1,50 Axial Depth of Cut (ap)

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40-100%			
ALP	0,12	0,20	0,28	0,08	0,15	0,20	0,06	0,11	0,15	0,06	0,09	0,13	0,05	0,09	0,12	ALP
ML	0,18	0,27	0,49	0,13	0,19	0,35	0,10	0,15	0,26	0,09	0,13	0,23	0,08	0,12	0,21	ML
MM	0,43	0,77	1,28	0,31	0,56	0,92	0,23	0,42	0,68	0,20	0,36	0,60	0,19	0,33	0,55	MM
MH	0,70	1,06	1,56	0,51	0,76	1,12	0,38	0,57	0,83	0,33	0,50	0,72	0,30	0,45	0,66	MH

At 0,75 Axial Depth of Cut (ap)

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40-100%			
ALP	0,12	0,20	0,28	0,08	0,15	0,20	0,06	0,11	0,15	0,06	0,09	0,13	0,05	0,09	0,12	ALP
ML	0,25	0,37	0,67	0,18	0,27	0,48	0,14	0,20	0,36	0,12	0,17	0,32	0,11	0,16	0,29	ML
MM	0,59	1,06	1,77	0,43	0,76	1,26	0,32	0,57	0,94	0,28	0,50	0,81	0,25	0,45	0,75	MM
MH	0,96	1,46	2,16	0,69	1,04	1,53	0,52	0,78	1,14	0,45	0,68	0,99	0,41	0,62	0,90	MH

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

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INDEXABLE MILLING



SOLID END MILLING



HOLEMAKING



TAPPING

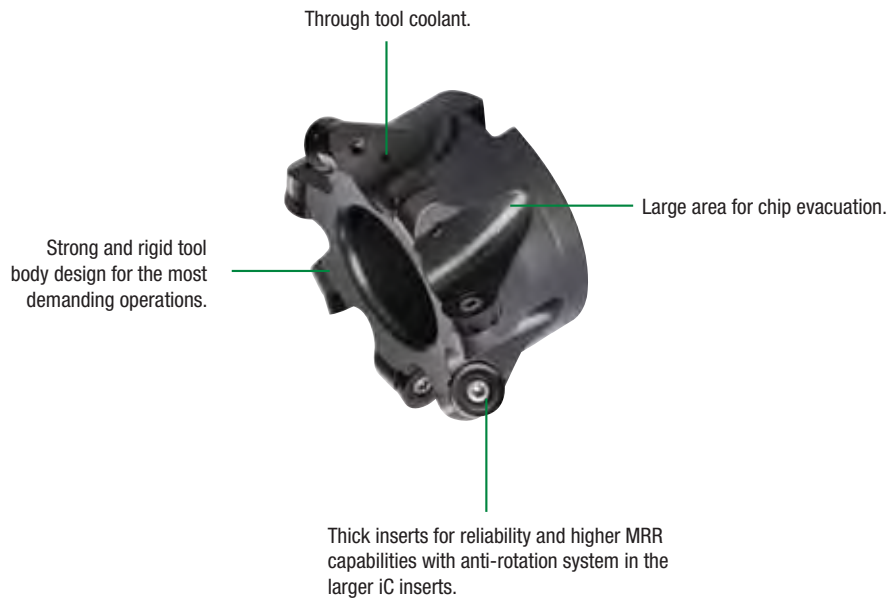


TURNING

A trusted multipurpose solution for profiling and copy applications, the M100 Series ensures a reliable platform for all of your copy milling, face milling, helical interpolation, and roughing needs.

- Thick inserts ensure reliability and consistent results.
- General purpose face and copy milling.
- Anti-rotation feature for security.
- Anti-rotation systems in larger iC inserts provide higher MRR capabilities.
- Increased chip evacuation and through tool coolant for enhanced performance.

Materials:



08mm iC



RD Insert Type

★ 10mm iC



RD Insert Type

★ 12mm iC



RD Insert Type
Anti-Rotation Feature

★ 16mm iC



RD Insert Type
Anti-Rotation Feature

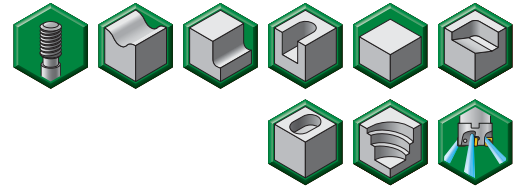
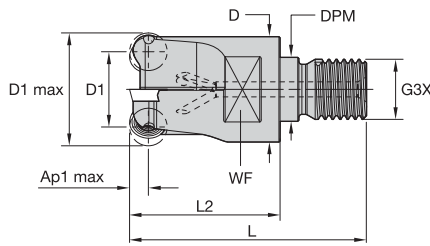
★ 16mm iC



RC Insert Type
Anti-Rotation Feature

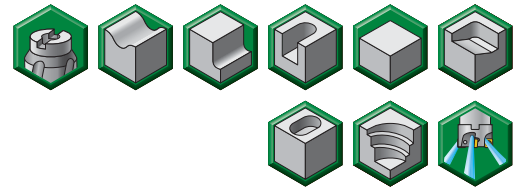
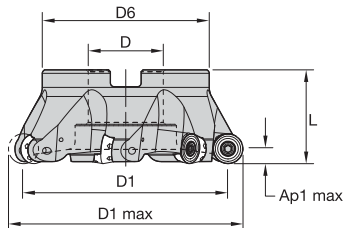
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Screw-On End Mills • Metric



order number	catalogue number	D1 max	D1	D	DPM	G3X	L	L2	WF	Ap1 max	Z	max ramp angle	max RPM	coolant supply	kg
2021374	12391050200	24	12	22	12,5	M12	52	30	19	6,0	2	10.0°	23000	Yes	0,10
2021378	12391051000	35	23	28	17,0	M16	63	40	22	6,0	3	10.8°	19000	Yes	0,20
2021379	12391051200	40	28	28	17,0	M16	63	40	22	6,0	4	8.3°	17000	Yes	0,30

Shell Mills • Metric



order number	catalogue number	D1 max	D1	D	D6	L	Ap1 max	Z	max ramp angle	max RPM	coolant supply	kg
2021342	12391020000	50	38	22	40	40	6,0	4	6.8°	15000	Yes	0,20
2021361	12391024000	52	40	22	40	40	6,0	4	6.5°	15000	Yes	0,20
2021343	12391020200	63	51	27	48	40	6,0	5	4.5°	14000	Yes	0,30
2021344	12391020400	80	68	27	60	50	6,0	6	3.5°	12000	Yes	0,90
2021345	12391020600	100	88	32	78	50	6,0	6	2.5°	11000	No	1,20

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

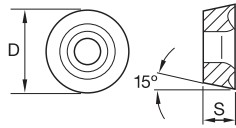
TURNING



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INDEXABLE MILLING

Inserts • RDMT-TX



- first choice
- alternate choice

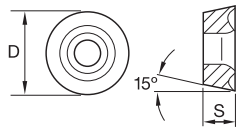
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K	●	●	●	●	●	●
N	●	●	●	●	●	●
S	●	●	●	●	●	●
H	●	●	●	●	●	●

ISO catalogue number	cutting edges	D	S	hm										
RDMT1204M0TX	1	12,00	4,76	0,15	2957430	TN6525	2957432	TN6540	2020763	TN7525	2109542	TN7535	5520247	WS30PM

SOLID END MILLING

HOLEMAKING

Inserts • RDHT-TX



- first choice
- alternate choice

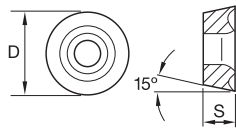
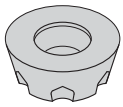
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M	●	●	●	●	●	●
K	●	●	●	●	●	●
N	●	●	●	●	●	●
S	●	●	●	●	●	●
H	●	●	●	●	●	●

ISO catalogue number	cutting edges	D	S	hm						
RDHT1204M0TX	1	12,00	4,76	0,12	2020775	TN7525				

TAPPING

TURNING

Inserts • RDMW-TX



- first choice
- alternate choice

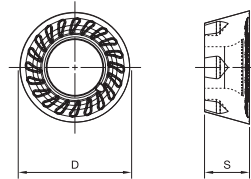
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M	●	○	○	○	○
K	●	○	○	○	○
N	●	○	○	○	○
S	●	○	○	○	○
H	●	○	○	○	○

ISO catalogue number	cutting edges	D	S	hm						
RDMW1204M0TX	1	12,00	4,76	0,15	2012594	TN2510	TN6540	TN7525	TN7535	WK15CM
					3353281					
					2109440					
					2020741					
					5427441					

Inserts • RDPT-MMX



MMX – 6 insert indexes
MMX4 – 4 insert indexes



- first choice
- alternate choice

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

ISO catalogue number	cutting edges	D	S	hm					
RDPT1204M0SMMX4	1	12,00	4,76	—		TN6540	TN7535	WS40PM	
RDPT1204M0SMMX	1	12,00	4,76	0,18	5176974				
					5176975				
					6412897				



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INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Insert Selection Guide

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1-P2	RDMT-TX	TN7525	RDMT-TX	TN6540	RDMT-TX	TN6540
P3-P4	RDMT-TX	TN7525	RDMW-TX	TN6540	RDMW-TX	TN6540
P5-P6	RDMT-TX	TN7525	RDPT-MMX	TN7535	RDPT-MMX	TN7535
M1-M2	RDHT-TX	TN7525	RDMT-TX	TN6540	RDPT-MMX	TN6540
M3	RDHT-TX	TN7525	RDMT-TX	TN6540	RDPT-MMX	TN6540
K1-K2	RDMW-TX	WK15CM	RDMW-TX	WK15CM	RDMW-TX	TN7535
K3	RDHW-MH	TN2510	RDMW-TX	WK15CM	RDMW-TX	WK15CM
N1-N2	-	-	-	-	-	-
N3	-	-	-	-	-	-
S1-S2	-	-	RDMT-TX	TN6540	-	-
S3	-	-	RDMT-TX	TN6540	-	-
S4	-	-	RDMT-TX	TN6540	RDPT-MMX	TN6540
H1	RDHW-MH	TN2510	RDHW-MH	TN2510	-	-

Recommended Starting Speeds [m/min]

Material Group		TN2510			TN6525			TN6540			TN7525		
		P	1	660	580	540	410	320	280	360	280	240	410
	2	410	370	330	320	250	215	250	190	170	310	250	215
	3	370	330	305	280	215	185	215	170	140	280	215	185
	4	275	260	230	235	170	145	180	130	110	235	170	145
	5	330	300	275	310	235	200	240	180	150	310	235	200
	6	230	205	175	205	160	130	160	120	100	205	160	130
M	1	270	240	210	190	120	80	130	80	60	245	220	185
	2	245	210	190	120	80	50	80	50	40	220	190	170
	3	190	175	150	125	80	55	85	50	40	175	155	140
K	1	420	360	300	275	245	220	220	205	180	380	280	240
	2	360	300	250	215	190	180	175	155	140	325	240	200
	3	300	250	200	180	160	145	155	145	125	240	200	170
N	1	-	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-
S	1	-	-	-	-	-	-	50	35	30	-	-	-
	2	-	-	-	-	-	-	25	20	10	-	-	-
	3	-	-	-	-	-	-	70	40	30	-	-	-
	4	-	-	-	-	-	-	60	30	25	-	-	-
H	1	145	110	70	-	-	-	-	-	-	-	-	-
	2	145	110	70	-	-	-	-	-	-	-	-	-
	3	115	80	45	-	-	-	-	-	-	-	-	-

Material Group		TN7535			WK15CM			WS30PM			WS40PM			TTI25		
		P	1	545	475	445	-	-	-	-	-	-	-	-	-	430
	2	335	305	275	-	-	-	-	-	-	-	-	-	310	250	215
	3	305	275	245	-	-	-	-	-	-	-	-	-	310	250	215
	4	230	210	190	-	-	-	-	-	-	-	-	-	265	215	180
	5	310	275	250	-	-	-	-	-	205	175	145	320	235	200	
	6	190	160	130	-	-	-	-	-	180	130	95	145	110	90	
M	1	245	220	185	-	-	-	270	240	220	250	205	170	480	310	215
	2	220	190	170	-	-	-	245	215	175	215	175	145	325	205	145
	3	175	155	140	-	-	-	185	160	125	175	130	100	320	210	145
K	1	355	320	290	505	460	410	-	-	-	-	-	-	220	185	155
	2	280	250	230	400	355	330	-	-	-	-	-	-	180	145	125
	3	235	210	190	335	300	275	-	-	-	-	-	-	145	125	100
N	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S	1	-	-	-	-	-	-	55	50	35	50	40	30	-	-	-
	2	-	-	-	-	-	-	55	50	35	50	40	30	-	-	-
	3	-	-	-	-	-	-	65	55	35	60	50	30	-	-	-
	4	-	-	-	-	-	-	100	70	50	70	60	35	-	-	-
H	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

Recommended Starting Feeds [mm]

At 6,00 Axial Depth of Cut (ap)

Light Machining	General Purpose	Heavy Machining
-----------------	-----------------	-----------------

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)														Insert Geometry	
	5%			10%			20%			30%			40-100%			
RDHT-TX	0,35	0,33	0,56	0,25	0,24	0,40	0,19	0,18	0,30	0,16	0,16	0,26	0,15	0,14	0,24	RDHT-TX
RDMT-TX	0,35	0,42	0,70	0,25	0,30	0,50	0,19	0,23	0,38	0,16	0,20	0,33	0,15	0,18	0,30	RDMT-TX
RDPT-MMX	0,35	0,57	0,93	0,25	0,41	0,67	0,19	0,31	0,50	0,16	0,27	0,43	0,15	0,25	0,40	RDPT-MMX
RDHW-MH	0,35	0,70	1,08	0,25	0,50	0,78	0,19	0,38	0,58	0,16	0,33	0,50	0,15	0,30	0,46	RDHW-MH
RDMW-TX	0,35	0,70	1,16	0,25	0,50	0,83	0,19	0,38	0,62	0,16	0,33	0,54	0,15	0,30	0,50	RDMW-TX

At 3,00 Axial Depth of Cut (ap)

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)														Insert Geometry	
	5%			10%			20%			30%			40-100%			
RDHT-TX	0,40	0,38	0,64	0,29	0,28	0,46	0,22	0,21	0,35	0,19	0,18	0,30	0,17	0,17	0,28	RDHT-TX
RDMT-TX	0,40	0,48	0,81	0,29	0,35	0,58	0,22	0,26	0,43	0,19	0,23	0,38	0,17	0,21	0,35	RDMT-TX
RDPT-MMX	0,40	0,66	1,08	0,29	0,48	0,77	0,22	0,36	0,58	0,19	0,31	0,50	0,17	0,29	0,46	RDPT-MMX
RDHW-MH	0,40	0,81	1,25	0,29	0,58	0,90	0,22	0,43	0,67	0,19	0,38	0,58	0,17	0,35	0,53	RDHW-MH
RDMW-TX	0,40	0,81	1,34	0,29	0,58	0,96	0,22	0,43	0,72	0,19	0,38	0,62	0,17	0,35	0,57	RDMW-TX

At 1,50 Axial Depth of Cut (ap)

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)														Insert Geometry	
	5%			10%			20%			30%			40-100%			
RDHT-TX	0,53	0,50	0,85	0,38	0,36	0,61	0,28	0,27	0,45	0,25	0,24	0,40	0,23	0,22	0,36	RDHT-TX
RDMT-TX	0,53	0,63	1,06	0,38	0,46	0,76	0,28	0,34	0,57	0,25	0,30	0,50	0,23	0,27	0,45	RDMT-TX
RDPT-MMX	0,53	0,87	1,42	0,38	0,63	1,01	0,28	0,47	0,76	0,25	0,41	0,66	0,23	0,37	0,60	RDPT-MMX
RDHW-MH	0,53	1,06	1,65	0,38	0,76	1,18	0,28	0,57	0,88	0,25	0,50	0,76	0,23	0,45	0,70	RDHW-MH
RDMW-TX	0,53	1,06	1,78	0,38	0,76	1,26	0,28	0,57	0,94	0,25	0,50	0,82	0,23	0,45	0,75	RDMW-TX

At 0,75 Axial Depth of Cut (ap)

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)														Insert Geometry	
	5%			10%			20%			30%			40-100%			
RDHT-TX	0,72	0,69	1,16	0,52	0,50	0,83	0,39	0,37	0,62	0,34	0,32	0,54	0,31	0,30	0,50	RDHT-TX
RDMT-TX	0,72	0,87	1,46	0,52	0,62	1,04	0,39	0,47	0,78	0,34	0,41	0,68	0,31	0,37	0,62	RDMT-TX
RDPT-MMX	0,72	1,20	1,96	0,52	0,86	1,39	0,39	0,64	1,03	0,34	0,56	0,90	0,31	0,51	0,82	RDPT-MMX
RDHW-MH	0,72	1,46	2,29	0,52	1,04	1,62	0,39	0,78	1,20	0,34	0,68	1,04	0,31	0,62	0,95	RDHW-MH
RDMW-TX	0,72	1,46	2,46	0,52	1,04	1,74	0,39	0,78	1,29	0,34	0,68	1,12	0,31	0,62	1,02	RDMW-TX

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

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INDEXABLE MILLING

SOLID END MILLING

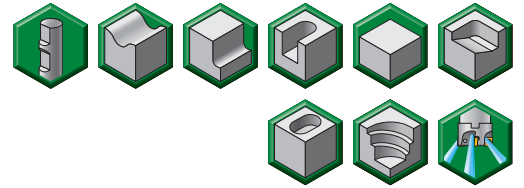
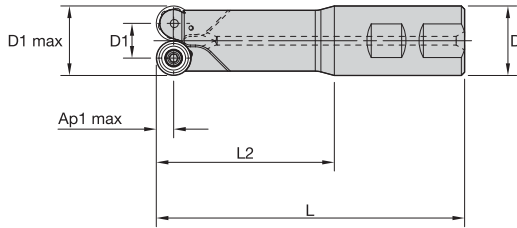
HOLEMAKING

TAPPING

TURNING

INDEXABLE MILLING

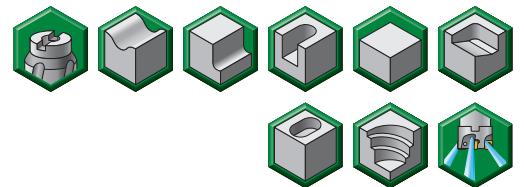
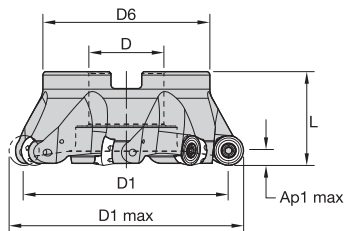
Weldon® End Mills • RD1605 • Metric



order number	catalogue number	D1 max	D1	D	L	L2	Ap1 max	Z	max ramp angle	max RPM	coolant supply	kg
2021341	12391013800	32	16	32	142	82	8,0	2	7.8°	19000	Yes	1,10

SOLID END MILLING

Shell Mills • RD1605 • Metric



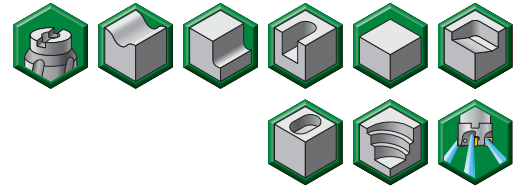
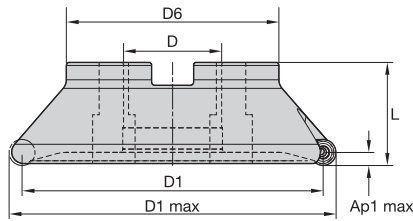
order number	catalogue number	D1 max	D1	D	D6	L	Ap1 max	Z	max ramp angle	max RPM	coolant supply	kg
2021347	12391021000	50	34	22	40	40	8,0	4	10.3°	13000	Yes	0,20
2021348	12391021200	63	47	27	48	40	8,0	4	7.0°	12000	Yes	0,30
2021349	12391021400	80	64	27	60	50	8,0	5	4.8°	10000	Yes	0,90

HOLEMAKING

TAPPING

TURNING

Shell Mills • RC1606 • Metric



order number	catalogue number	D1 max	D1	D	D6	L	Ap1 max	Z	max ramp angle	max RPM	coolant supply	kg
2021358	12391023400	50	34	22	40	40	8,0	4	6.0°	13000	Yes	0,20
2021359	12391023600	52	36	22	40	40	8,0	4	5.8°	13000	Yes	0,30
2021357	12391023200	63	47	27	48	40	8,0	5	4.0°	12000	Yes	0,20
2021352	12391022000	80	64	27	60	50	8,0	6	2.8°	10000	Yes	0,90
2021353	12391022200	100	84	32	78	50	8,0	7	2.3°	9000	No	1,20
2021354	12391022400	125	109	40	89	50	8,0	8	1.8°	8000	No	1,80
2021355	12391022600	160	144	40	90	63	8,0	9	1.3°	7000	No	2,90

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

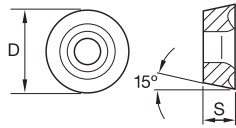
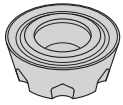
TURNING



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INDEXABLE MILLING

Inserts • RDMT-TX



- first choice
- alternate choice

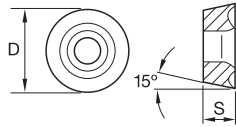
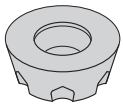
P	●	●
M	○	○
K	○	○
N	○	○
S	○	○
H	○	○

ISO catalogue number	cutting edges	D	S	hm	TN7525	TN7535
RDMT1605M0TX	1	16,00	5,56	0,18	2020767	2207645

SOLID END MILLING

HOLEMAKING

Inserts • RDMW-TX



- first choice
- alternate choice

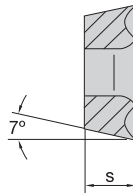
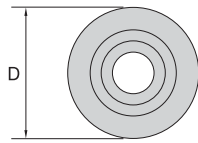
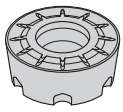
P	●	●
M	○	○
K	○	○
N	○	○
S	○	○
H	○	○

ISO catalogue number	cutting edges	D	S	hm	TN6540	TN7535
RDMW1605M0TX	1	16,00	5,56	0,15	3523083	2020749

TAPPING

TURNING

Inserts • RCMT-43

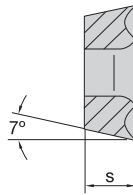
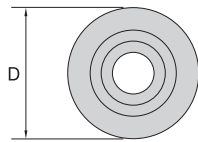
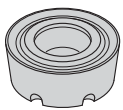


- first choice
- alternate choice

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

ISO catalogue number	cutting edges	D	S	hm				
RCMT1606M043M	1	16,00	6,35	0,20	2957537	TN6540	TN7525	TN7535
					2020771			
					2067140			

Inserts • RCMT-TX



- first choice
- alternate choice

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

ISO catalogue number	cutting edges	D	S	hm				
RCMT1606M0TX	1	16,00	6,35	0,24	2957535	TN6525	TN6540	TN7525
					2957427			TN7535
					2012418			WK15CM
					2020781			
					5427442			



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Insert Selection Guide • RD1605

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1-P2	RDMT-TX	TN6525	RDMT-TX	TN6540	RDMT-TX	TN6540
P3-P4	RDMT-TX	TN6525	RDMW-TX	TN6540	RDMW-TX	TN6540
P5-P6	RDMT-TX	TN7525	RDMT-TX	TN7535	RDMT-TX	TN7535
M1-M2	RDMT-TX	TN6525	RDMT-TX	TN6540	RDMT-TX	TN6540
M3	RDMT-TX	TN6525	RDMT-TX	TN6540	RDMT-TX	TN6540
K1-K2	RDMW-TX	TN2510	RDMW-TX	TN7535	RDMW-TX	TN7535
K3	RDMW-TX	TN2510	RDMW-TX	TN7535	RDMW-TX	TN7535
N1-N2	-	-	-	-	-	-
N3	-	-	-	-	-	-
S1-S2	-	-	RDMT-TX	TN6540	-	-
S3	-	-	RDMT-TX	TN6540	-	-
S4	-	-	RDMT-TX	TN6540	RDMT-TX	TN6540
H1	RDMW-TX	TN2510	RDMW-TX	TN2510	-	-

Recommended Starting Speeds [m/min] • RD1605

Material Group		TN2510			TN6525			TN6540			TN7525			TN7535			TTI25		
		P	1	660	580	540	410	320	280	360	280	240	410	310	280	545	475	445	430
	2	410	370	330	320	250	215	250	190	170	310	250	215	335	305	275	310	250	215
	3	370	330	305	280	215	185	215	170	140	280	215	185	305	275	245	310	250	215
	4	275	260	230	235	170	145	180	130	110	235	170	145	230	210	190	265	215	180
	5	330	300	275	310	235	200	240	180	150	310	235	200	310	275	250	320	235	200
	6	230	205	175	205	160	130	160	120	100	205	160	130	190	160	130	145	110	90
M	1	270	240	210	190	120	80	130	80	60	245	220	185	245	220	185	480	310	215
	2	245	210	190	120	80	50	80	50	40	220	190	170	220	190	170	325	205	145
	3	190	175	150	125	80	55	85	50	40	175	155	140	175	155	140	320	210	145
K	1	420	360	300	275	245	220	220	205	180	380	280	240	355	320	290	220	185	155
	2	360	300	250	215	190	180	175	155	140	325	240	200	280	250	230	180	145	125
	3	300	250	200	180	160	145	155	145	125	240	200	170	235	210	190	145	125	100
N	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S	1	-	-	-	-	-	-	50	35	30	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	25	20	10	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	70	40	30	-	-	-	-	-	-	-	-	-
	4	-	-	-	-	-	-	60	30	25	-	-	-	-	-	-	-	-	-
H	1	145	110	70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	145	110	70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	115	80	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

Recommended Starting Feeds [mm] • RD1605

At 8,00 Axial Depth of Cut (ap)

Light Machining	General Purpose	Heavy Machining
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Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40-100%			
RDHX-TX	0,11	0,35	0,70	0,08	0,25	0,50	0,06	0,19	0,38	0,05	0,16	0,33	0,05	0,15	0,30	RDHX-TX
RDMT-TX	0,23	0,42	0,84	0,17	0,30	0,60	0,13	0,23	0,45	0,11	0,20	0,39	0,10	0,18	0,36	RDMT-TX
RDMW-TX	0,23	0,52	1,05	0,17	0,38	0,76	0,13	0,28	0,56	0,11	0,25	0,49	0,10	0,23	0,45	RDMW-TX

At 4,00 Axial Depth of Cut (ap)

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40-100%			
RDHX-TX	0,13	0,40	0,81	0,10	0,29	0,58	0,07	0,22	0,43	0,06	0,19	0,38	0,06	0,17	0,35	RDHX-TX
RDMT-TX	0,27	0,48	0,97	0,19	0,35	0,70	0,14	0,26	0,52	0,13	0,23	0,45	0,12	0,21	0,42	RDMT-TX
RDMW-TX	0,27	0,60	1,22	0,19	0,44	0,87	0,14	0,33	0,65	0,13	0,28	0,57	0,12	0,26	0,52	RDMW-TX

At 2,00 Axial Depth of Cut (ap)

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40-100%			
RDHX-TX	0,17	0,53	1,06	0,13	0,38	0,76	0,09	0,28	0,57	0,08	0,25	0,50	0,08	0,23	0,45	RDHX-TX
RDMT-TX	0,35	0,63	1,28	0,25	0,46	0,92	0,19	0,34	0,68	0,17	0,30	0,59	0,15	0,27	0,54	RDMT-TX
RDMW-TX	0,35	0,79	1,61	0,25	0,57	1,15	0,19	0,43	0,85	0,17	0,37	0,74	0,15	0,34	0,68	RDMW-TX

At 1,00 Axial Depth of Cut (ap)

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40-100%			
RDHX-TX	0,24	0,72	1,46	0,17	0,52	1,04	0,13	0,39	0,78	0,11	0,34	0,68	0,10	0,31	0,62	RDHX-TX
RDMT-TX	0,48	0,87	1,76	0,35	0,62	1,26	0,26	0,47	0,93	0,23	0,41	0,81	0,21	0,37	0,74	RDMT-TX
RDMW-TX	0,48	1,09	2,22	0,35	0,78	1,58	0,26	0,58	1,17	0,23	0,51	1,02	0,21	0,46	0,93	RDMW-TX

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

 = ALL-STAR PORTFOLIO PRODUCT. ALL-STAR PRODUCTS ARE PROVEN SOLUTIONS THAT ARE ALWAYS AVAILABLE.



INDEXABLE MILLING



SOLID END MILLING



HOLEMAKING



TAPPING



TURNING

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Insert Selection Guide • RC1606

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1-P2	...TX	TN6525	...43M	TN6540	...43M	TN6540
P3-P4	...TX	TN6525	...TX	TN6540	...43M	TN6540
P5-P6	...TX	TN6525	...TX	TN7535	...TX	TN7535
M1-M2	...TX	TN6525	...TX	TN6540	...TX	TN6540
M3	...TX	TN6525	...TX	TN6540	...TX	TN6540
K1-K2	...43	TN2510	...TX	WK15CM	...TX	WK15CM
K3	...TX	TN6525	...TX	WK15CM	...TX	WK15CM
N1-N2	-	-	-	-	-	-
N3	-	-	-	-	-	-
S1-S2	-	-	-	-	-	-
S3	-	-	-	-	-	-
S4	...43M	TN6540	...TX	TN6540	...TX	TN6540
H1	-	-	...TX	TN2510	-	-

Recommended Starting Speeds [m/min] • RC1606

Material Group	TN2510			TN6525			TN6540			TN7525			TN7535			WK15CM			
	P	1	660	580	540	410	320	280	360	280	240	410	310	280	545	475	445	-	-
	2	410	370	330	320	250	215	250	190	170	310	250	215	335	305	275	-	-	-
	3	370	330	305	280	215	185	215	170	140	280	215	185	305	275	245	-	-	-
	4	275	260	230	235	170	145	180	130	110	235	170	145	230	210	190	-	-	-
	5	330	300	275	310	235	200	240	180	150	310	235	200	310	275	250	-	-	-
	6	230	205	175	205	160	130	160	120	100	205	160	130	190	160	130	-	-	-
M	1	270	240	210	190	120	80	130	80	60	245	220	185	245	220	185	-	-	-
	2	245	210	190	120	80	50	80	50	40	220	190	170	220	190	170	-	-	-
	3	190	175	150	125	80	55	85	50	40	175	155	140	175	155	140	-	-	-
K	1	420	360	300	275	245	220	220	205	180	380	280	240	355	320	290	505	460	410
	2	360	300	250	215	190	180	175	155	140	325	240	200	280	250	230	400	355	330
	3	300	250	200	180	160	145	155	145	125	240	200	170	235	210	190	335	300	275
N	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S	1	-	-	-	-	-	-	50	35	30	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	25	20	10	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	70	40	30	-	-	-	-	-	-	-	-	-
	4	-	-	-	-	-	-	60	30	25	-	-	-	-	-	-	-	-	-
H	1	145	110	70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	145	110	70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	115	80	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

Recommended Starting Feeds [mm] • RC1606

At 8,00 Axial Depth of Cut (ap)

Light Machining	General Purpose	Heavy Machining
-----------------	-----------------	-----------------

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40-100%			
...43	0,46	0,60	0,93	0,33	0,44	0,67	0,25	0,33	0,50	0,22	0,28	0,44	0,20	0,26	0,40	...43
...TX	0,46	0,70	1,12	0,33	0,50	0,81	0,25	0,38	0,60	0,22	0,33	0,52	0,20	0,30	0,48	...TX

At 4,00 Axial Depth of Cut (ap)

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40-100%			
...43	0,54	0,70	1,08	0,39	0,50	0,78	0,29	0,38	0,58	0,25	0,33	0,50	0,23	0,30	0,46	...43
...TX	0,54	0,81	1,30	0,39	0,58	0,93	0,29	0,43	0,69	0,25	0,38	0,61	0,23	0,35	0,55	...TX

At 2,00 Axial Depth of Cut (ap)

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40-100%			
...43	0,70	0,92	1,42	0,51	0,66	1,02	0,38	0,49	0,76	0,33	0,43	0,66	0,30	0,39	0,60	...43
...TX	0,70	1,06	1,72	0,51	0,76	1,23	0,38	0,57	0,91	0,33	0,50	0,79	0,30	0,45	0,73	...TX

At 1,00 Axial Depth of Cut (ap)

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40-100%			
...43	0,96	1,26	1,97	0,69	0,90	1,40	0,52	0,67	1,04	0,45	0,59	0,90	0,41	0,54	0,83	...43
...TX	0,96	1,46	2,38	0,69	1,04	1,68	0,52	0,78	1,25	0,45	0,68	1,08	0,41	0,62	0,99	...TX

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

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SOLID END MILLING

HIGH-PERFORMANCE SOLID CARBIDE END MILLS

Pages B4–B57

- VariMill I™
- VariMill II™
- VariMill III™
- Victory™ X-Feed™
- HP Finishing
- HP Roughing



GENERAL PURPOSE SOLID CARBIDE END MILLS

Pages B58–B78

- GP 2-Flute
- GP 3-Flute
- GP 4-Flute



AEROSPACE TECHNOLOGY



WIDIA drills for composite machining utilise PCD and diamond coatings made for the machining of aerospace CFRP (Carbon Fibre Reinforced Plastics). These coatings enable longer tool life at much higher machining speeds.



Integral Blade Rotor (IBR) machining end mills are designed to match a multi-level machining process for the airfoils, followed by the fillet feature, which works for roughing and finishing operations.



WIDIA-Hanita™ end mills produce consistent performance each and every run, allowing the production of more parts per tool and less downtime, while machining tough materials like INCONEL® depressor fine seals.



WIDIA offers machining strategies and innovative tooling technology specifically engineered for the aerospace industry to increase productivity and reduce costs.

TO SEE ALL PRODUCT LINES, VISIT OUR DIGITAL RESOURCES



WIDIA NOVO™ Application
Download to your desktop or tablet:
widia.com/novo



WIDIA™ Machining Central Mobile App
Download for iOS or Android:
widia.com/en/featured/WidiaMobileApp

HIGH-PERFORMANCE SOLID CARBIDE

VARIMILL I™

Pages B6–B13

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



VARIMILL II™

Pages B14–B25

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

VARIMILL III™

Pages B26–B30

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



CBN END MILLS



VICTORY™ X-FEED™

Pages B32–B35

X-Feed for high-feed milling combines roughing and semi-finishing into one operation by taking shallow depths-of-cut at extremely high feed rates to maximise Metal Removal Rates (MRR).



HP FINISHING

Pages B36–B40

Only the finest carbide substrates with market-leading geometries and state-of-the-art surface technology are used to ensure the highest quality finishing end mills are produced. These tools are fully compliant with NAS specifications. Whether you require higher metal removal rates, improved surface finishes, fewer passes, or longer tool life, WIDIA-Hanita™ high-performance finishing end mills deliver the reliability and consistency you can depend on during your critical finishing operations.

HP ROUGHING

Pages B42–B50

Special proprietary carbide substrates and state-of-the-art surface technology, combined with unique geometries, provides end users with the capability to significantly reduce machining time with heavier and deeper cuts, fewer passes, and faster surface speed. WIDIA™ geometries are uniquely formed and fine-tuned to optimise chip form, size, and evacuation generated by a given workpiece material.



TO SEE ALL PRODUCT LINES, VISIT OUR DIGITAL RESOURCES



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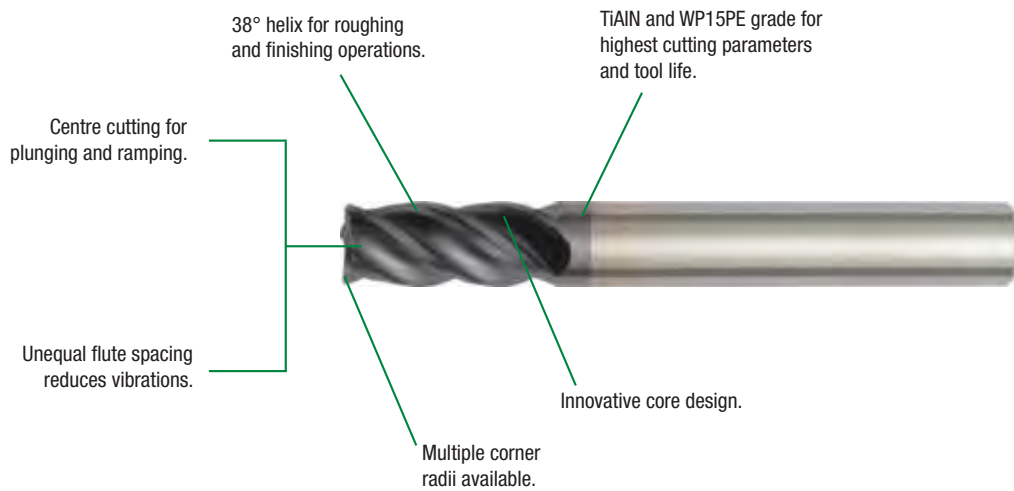
 facebook.com/WIDIAProductGrp

WIDIA 

To learn more, visit widia.com

Four unequally spaced flutes to increase your output with less tool changes and increased Metal Removal Rates (MRR).

Materials:



4777 Series

- High metal removal rates and tool life in:
 - Stainless steels, steels, and alloyed steels.
 - High-temperature alloys and titanium.
- Radii, sharp, and corner chamfer configurations.



47N0 Series

- Centre cutting ball nose series.
- Benefit from long reach design for deep cavities.



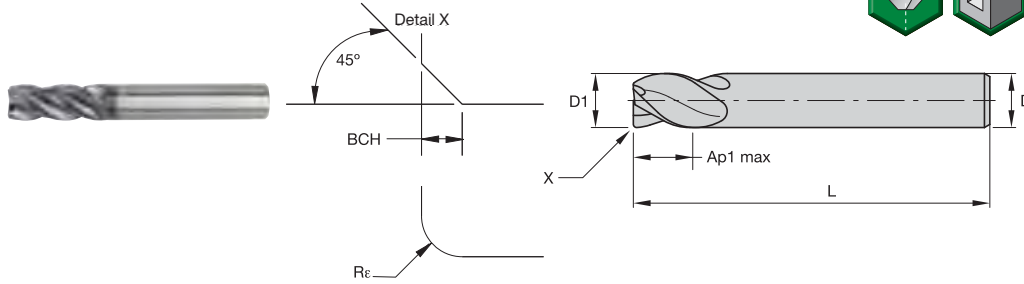
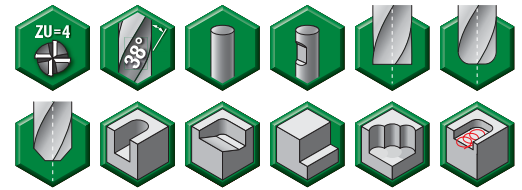
47N7 Series

- Stainless steel and steel geometry design.
- Sharp and corner chamfer configuration.
- Benefit from long reach and neck design for deep cavities.



FOR MORE INFORMATION ON THE PRODUCTS SHOWN, PLEASE SEE PAGES B7–B13.

VariMill I™ • Series 4777 • Metric



● first choice
○ alternate choice

P	●
M	●
K	●
N	○
S	○
H	○

catalogue number	D1	D	length of cut		L	R _ε	BCH	SS	WP15PE
			Ap1 max	length					
477704001T	4,0	6	12,00	55	55	0,20	—	—	5576753
477704002T	4,0	6	12,00	55	55	—	0,40	—	5576751
477705012T	5,0	6	13,00	57	57	0,20	—	—	5576757
477705022T	5,0	6	13,00	57	57	—	—	—	5576758
477706002T	6,0	6	13,00	57	57	—	0,40	—	5576759
477706002W	6,0	6	13,00	57	57	—	0,40	W	5576760
477706012T	6,0	6	13,00	57	57	0,20	—	—	5576761
477706022T	6,0	6	13,00	57	57	—	—	—	5576762
477707003T	7,0	8	16,00	63	63	—	0,40	—	5576763
477707013T	7,0	8	16,00	63	63	0,20	—	—	5576765
477707023T	7,0	8	16,00	63	63	—	—	—	5576766
477708003T	8,0	8	16,00	63	63	—	0,40	—	5576767
477708003W	8,0	8	16,00	63	63	—	0,40	W	5576768
477708013T	8,0	8	16,00	63	63	0,20	—	—	5576769
477708023T	8,0	8	16,00	63	63	—	—	—	5576770
477709014T	9,0	10	19,00	72	72	0,20	—	—	5576773
477709024T	9,0	10	19,00	72	72	—	—	—	5576774
477710004T	10,0	10	22,00	72	72	—	0,50	—	5576775
477710004W	10,0	10	22,00	72	72	—	0,50	W	5576776
477710024T	10,0	10	22,00	72	72	0,30	—	—	5576777
477710024T	10,0	10	22,00	72	72	—	—	—	5576778
477711025T	11,0	12	26,00	83	83	—	—	—	5576779
477712005T	12,0	12	26,00	83	83	—	0,50	—	5576790
477712005W	12,0	12	26,00	83	83	—	0,50	W	5576791
477712025T	12,0	12	26,00	83	83	0,30	—	—	5576792
4777120R5TP	12,0	12	26,00	83	83	3,00	—	—	6471877
477712025T	12,0	12	26,00	83	83	—	—	—	5576793
477714014W	14,0	14	26,00	83	83	—	0,50	W	5576795
477714015T	14,0	14	26,00	83	83	—	0,50	—	5576794
477716006T	16,0	16	32,00	92	92	—	0,50	—	5576796
477716006W	16,0	16	32,00	92	92	—	0,50	W	5576797
477716026T	16,0	16	32,00	92	92	0,30	—	—	5576798
477716026T	16,0	16	32,00	92	92	—	—	—	5576799
477718018T	18,0	18	32,00	92	92	—	0,50	—	5576810
477720007T	20,0	20	38,00	104	104	—	0,50	—	5576812
477720007W	20,0	20	38,00	104	104	—	0,50	W	5576813
47772002T	20,0	20	38,00	104	104	0,30	—	—	5576814
477725008T	25,0	25	45,00	121	121	—	0,50	—	5576816
477725008W	25,0	25	45,00	121	121	—	0,50	W	5576817

NOTE: SS = Shank Style
W = Weldon®



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INDEXABLE MILLING

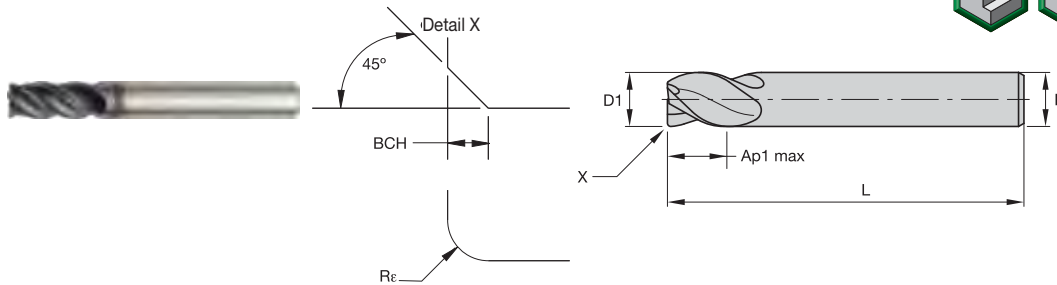
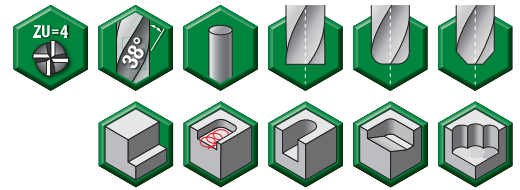
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HOLE MAKING

TAPPING

TURNING

VariMill I™ • Series 4777 • TiAlN-LT • Metric

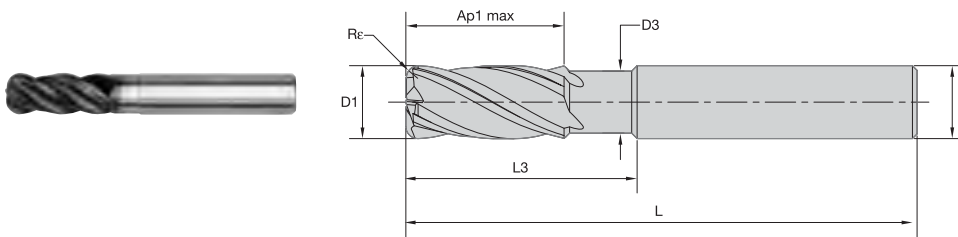
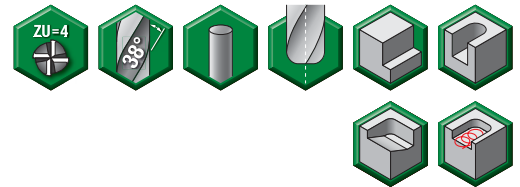


● first choice
○ alternate choice

P	●
M	●
K	●
N	○
S	○
H	○

catalogue number	D1	D	length of cut Ap1 max	length L	Rε	BCH	TiAlN-LT
4777040Z2LT	4,0	6	12,00	55	—	—	3077757
477705012LT	5,0	6	13,00	57	0,20	—	3077745
477706012LT	6,0	6	13,00	57	0,20	—	3077744
4777200Z7LT	20,0	20	38,00	104	—	—	3077747
477725008LT	25,0	25	45,00	121	—	0,50	1920454

VariMill I • Series 47N7 • Metric



● first choice
○ alternate choice

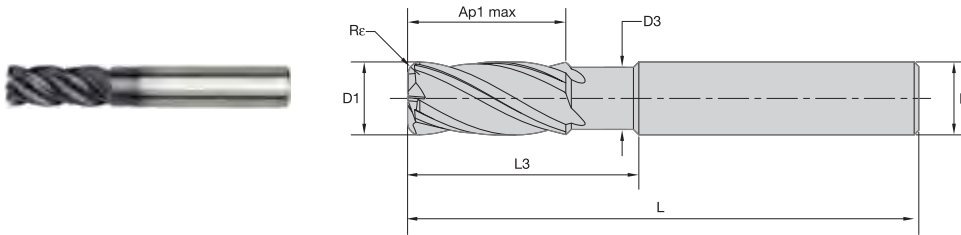
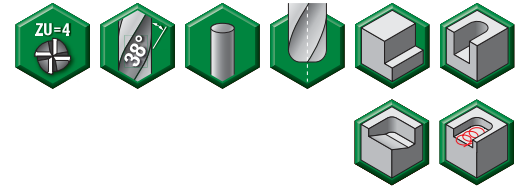
P	●
M	●
K	○
N	○
S	○
H	●

catalogue number	D1	D	D3	length of cut Ap1 max	L3	length L	Rε	WP15PE
47N720007MT	20,0	20	19,00	38,00	55,00	104	1,00	3462491



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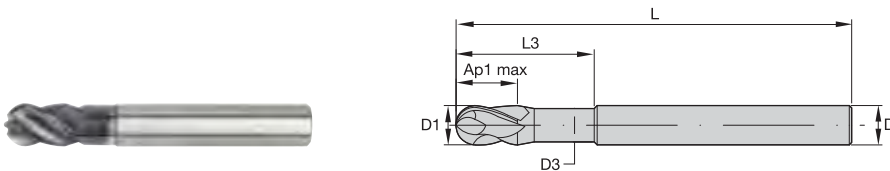
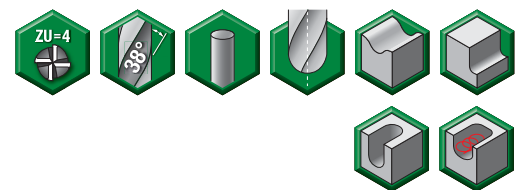


- first choice
- alternate choice

P	●
M	●
K	○
N	○
S	○
H	●

catalogue number	D1	D	D3	length of cut Ap1 max	L3	length L	Re	TiAlN-LT
47N704012LT	4,0	6	3,60	12,00	16,00	55	0,50	3462451
47N706002LT	6,0	6	5,50	13,00	21,00	57	0,50	3462457
47N706012LT	6,0	6	5,50	13,00	21,00	57	1,00	3462459
47N708003LT	8,0	8	7,50	16,00	27,00	63	0,50	3462462
47N708013LT	8,0	8	7,50	16,00	27,00	63	1,00	3462464
47N710004LT	10,0	10	9,50	22,00	32,00	72	0,50	3462468
47N710014LT	10,0	10	9,50	22,00	32,00	72	1,00	3462470
47N710024LT	10,0	10	9,50	22,00	32,00	72	1,50	3462472
47N710034LT	10,0	10	9,50	22,00	32,00	72	2,00	3462473
47N712005LT	12,0	12	11,50	26,00	38,00	83	0,50	3462475
47N712015LT	12,0	12	11,50	26,00	38,00	83	1,00	3462477
47N712035LT	12,0	12	11,50	26,00	38,00	83	2,00	3462480
47N712045LT	12,0	12	11,50	26,00	38,00	83	4,00	3462482
47N716006LT	16,0	16	15,00	32,00	44,00	92	1,00	3462484
47N716016LT	16,0	16	15,00	32,00	44,00	92	2,00	3462486
47N716026LT	16,0	16	15,00	32,00	44,00	92	4,00	3462488
47N720017LT	20,0	20	19,00	38,00	55,00	104	2,00	3462492

VariMill I • Series 47N0 • Metric



- first choice
- alternate choice

P	●
M	●
K	●
N	○
S	○
H	●

catalogue number	D1	D	D3	length of cut Ap1 max	L3	length L	WP15PE
47N005002T	5,0	6	4,70	9,00	15,00	57	5576818
47N006002T	6,0	6	5,64	10,00	15,00	57	5576819
47N008003T	8,0	8	7,52	12,00	20,00	63	5576820
47N010004T	10,0	10	9,40	14,00	25,00	72	5576821
47N012005T	12,0	12	11,28	16,00	30,00	83	5576822
47N016006T	16,0	16	15,04	22,00	38,00	92	5576823
47N020007T	20,0	20	18,80	26,00	50,00	104	5576824

INDEXABLE MILLING

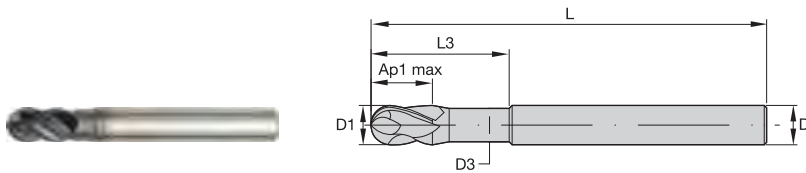
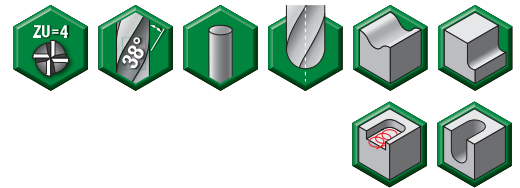
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

VariMill I™ • Series 47N0 • TIALN-LT • Metric



- first choice
- alternate choice

P	●
M	●
K	●
N	○
S	○
H	●

catalogue number	D1	D	D3	length of cut Ap1 max	L3	length L	TiAlN-LT
47N006002LT	6,0	6	5,64	10,00	15,00	57	2605590



THE ALL-STAR PROGRAMME FEATURES ONLY THE MOST POPULAR PLATFORMS, GRADES, AND SIZES. FOR THE COMPLETE OFFERING, VISIT WIDIA NOVO™ OR WIDIA.COM.

Application Data • VariMill I™ • Series 4777 • Metric

Material Group	Side Milling (A) and Slotting (B)		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			
	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	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	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	0,5 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			
S	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			
	3	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			
	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			

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 centres, please adjust parameters accordingly on >12mm diameters.

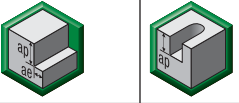


Application Data • VariMill I • Series 4777 • TiAlN-LT • Metric

Material Group	Side Milling (A) and Slotting (B)		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	6,0	8,0	10,0	12,0	16,0	20,0	25,0						
	ap	ae	ap		min	max	mm	4,0	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	0,028	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						
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						
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	60	– 80	fz	0,019	0,029	0,040	0,048	0,056	0,070	0,081	0,091						
	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 centres, please adjust parameters accordingly on >12mm diameter.

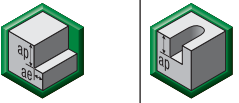


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Application Data • VariMill I™ • Series 47N7 • Metric

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	6,0	8,0	10,0	12,0	16,0	20,0		
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
	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
	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
	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
	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
	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
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
	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
	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
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
	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
	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
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
	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
	3	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
	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
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

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 centres, please adjust parameters accordingly on >12mm diameters.

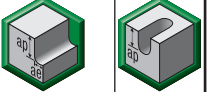

Application Data • VariMill I • Series 47N7 • TiALN-LT • Metric

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	4,0	6,0	8,0	10,0	12,0	16,0	20,0		
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
	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
	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
	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
	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
	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
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
	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
	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
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
	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
	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
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
	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
	3	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
	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
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

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 centres, please adjust parameters accordingly on >12mm diameters.

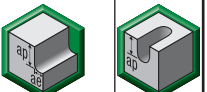

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Application Data • VariMill I™ • Series 47N0 • Metric

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	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	
P	0	1,25 x D	0,5 x D	1 x D	150	– 200	fz	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	1	1,25 x D	0,5 x D	1 x D	150	– 200	fz	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	2	1,25 x D	0,5 x D	1 x D	140	– 190	fz	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	3	1,25 x D	0,5 x D	1 x D	120	– 160	fz	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	4	1,25 x D	0,5 x D	0,75 x D	90	– 150	fz	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088
	5	1,25 x D	0,5 x D	1 x D	60	– 100	fz	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081
M	6	1,25 x D	0,5 x D	0,75 x D	50	– 75	fz	0,020	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065
	1	1,25 x D	0,5 x D	1 x D	90	– 115	fz	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	2	1,25 x D	0,5 x D	1 x D	60	– 80	fz	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081
K	3	1,25 x D	0,5 x D	1 x D	60	– 70	fz	0,020	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065
	1	1,25 x D	0,5 x D	1 x D	120	– 150	fz	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	2	1,25 x D	0,5 x D	1 x D	110	– 140	fz	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
S	3	1,25 x D	0,5 x D	1 x D	110	– 130	fz	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	0,3 x D	50	– 90	fz	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	2	1 x D	0,3 x D	0,3 x D	25	– 40	fz	0,016	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054
	3	1,25 x D	0,5 x D	1 x D	60	– 80	fz	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081
H	4	1,25 x D	0,5 x D	1 x D	50	– 60	fz	0,021	0,026	0,037	0,045	0,052	0,058	0,064	0,069	0,074
	1	1,25 x D	0,5 x D	0,75 x D	80	– 140	fz	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 centres, please adjust parameters accordingly on >12mm diameters.

Application Data • VariMill I • Series 47N0 • 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	5,0	6,0	8,0	10,0	12,0	16,0	20,0			
P	1	1,5 x D	0,5 x D	1 x D	150	– 200	fz	0,036	0,044	0,060	0,072	0,083	0,101	0,114		
	2	1,5 x D	0,5 x D	1 x D	140	– 190	fz	0,036	0,044	0,060	0,072	0,083	0,101	0,114		
	3	1,5 x D	0,5 x D	1 x D	120	– 160	fz	0,030	0,036	0,050	0,061	0,070	0,087	0,101		
	4	1,5 x D	0,5 x D	0,75 x D	90	– 150	fz	0,027	0,033	0,045	0,054	0,062	0,077	0,088		
	5	1,5 x D	0,5 x D	1 x D	60	– 100	fz	0,024	0,029	0,040	0,048	0,056	0,070	0,081		
	6	1,5 x D	0,5 x D	0,75 x D	50	– 75	fz	0,020	0,025	0,034	0,040	0,047	0,057	0,065		
M	1	1,5 x D	0,5 x D	1 x D	90	– 115	fz	0,030	0,036	0,050	0,061	0,070	0,087	0,101		
	2	1,5 x D	0,5 x D	1 x D	60	– 80	fz	0,024	0,029	0,040	0,048	0,056	0,070	0,081		
	3	1,5 x D	0,5 x D	1 x D	60	– 70	fz	0,020	0,025	0,034	0,040	0,047	0,057	0,065		
K	1	1,5 x D	0,5 x D	1 x D	120	– 150	fz	0,036	0,044	0,060	0,072	0,083	0,101	0,114		
	2	1,5 x D	0,5 x D	1 x D	110	– 130	fz	0,030	0,036	0,050	0,061	0,070	0,087	0,101		
	3	1,5 x D	0,5 x D	1 x D	100	– 130	fz	0,024	0,029	0,040	0,048	0,056	0,070	0,081		
S	1	1,5 x D	0,3 x D	0,3 x D	50	– 90	fz	0,030	0,036	0,050	0,061	0,070	0,087	0,101		
	2	1,5 x D	0,3 x D	0,3 x D	25	– 40	fz	0,016	0,019	0,026	0,032	0,037	0,046	0,054		
	3	1,5 x D	0,5 x D	1 x D	60	– 80	fz	0,024	0,029	0,040	0,048	0,056	0,070	0,081		
	4	1,5 x D	0,5 x D	1 x D	50	– 60	fz	0,021	0,026	0,037	0,045	0,052	0,064	0,074		
H	1	1,5 x D	0,5 x D	0,75 x D	80	– 140	fz	0,027	0,033	0,045	0,054	0,062	0,077	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 centres, please adjust parameters accordingly on > 12mm diameters.

 = ALL-STAR PORTFOLIO PRODUCT. ALL-STAR PRODUCTS ARE PROVEN SOLUTIONS THAT ARE ALWAYS AVAILABLE.

VariMill II™

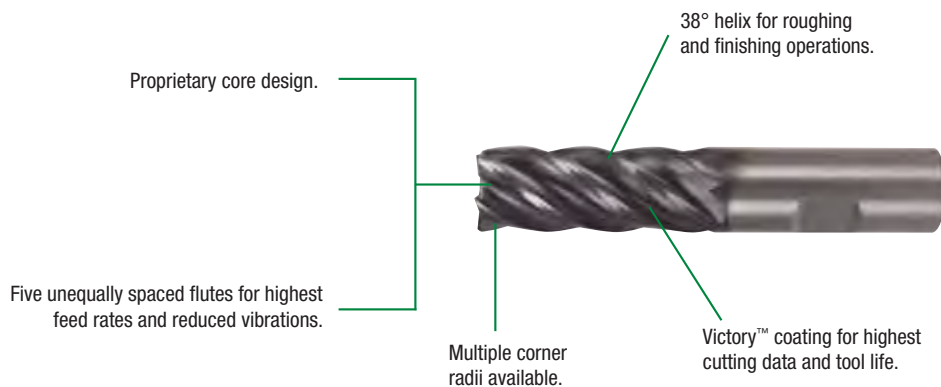
High-Performance Solid Carbide End Mills

Five unequally spaced flutes to increase your output with less tool changes and increased Metal Removal Rates (MRR).

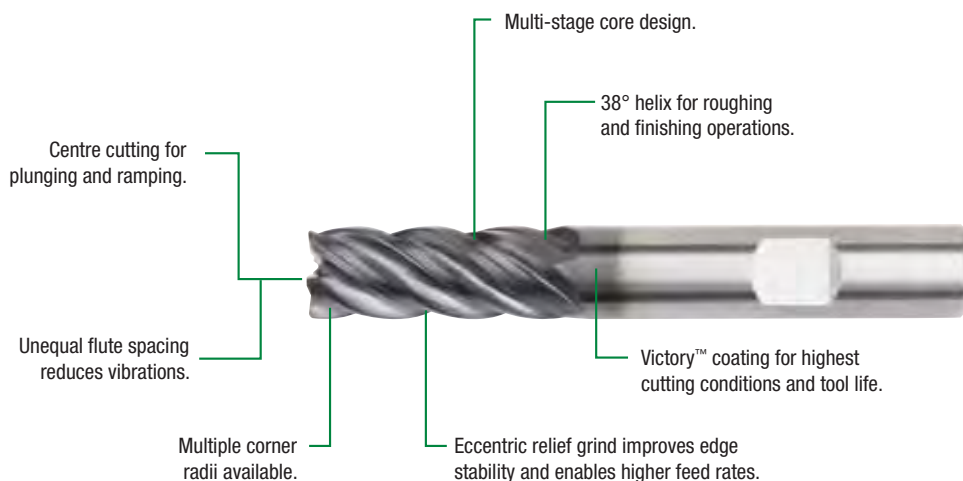
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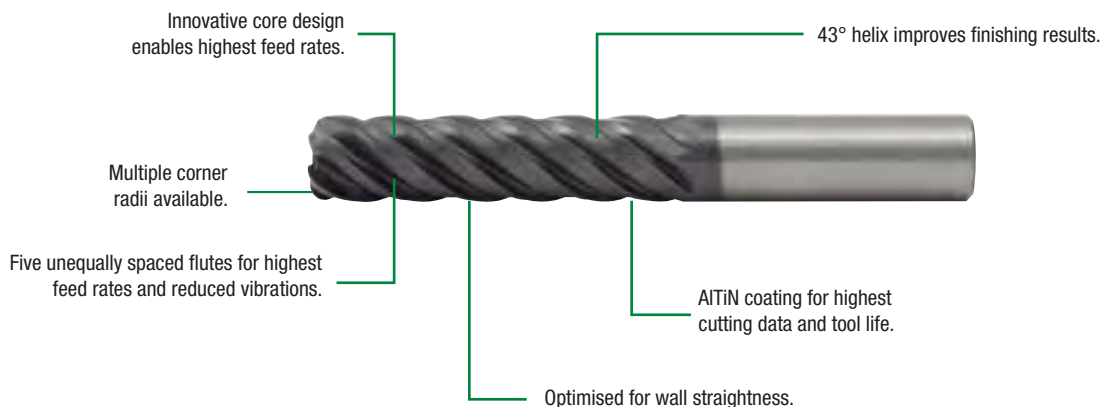
VariMill II™



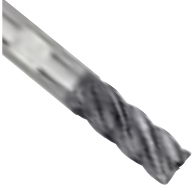
VariMill II™ ER



VariMill II™ Long

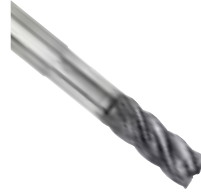


VariMill II™



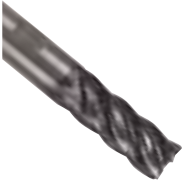
577C Series

- High metal removal rates and tool life in:
 - Stainless steels, steels, and alloyed steels.
 - Cast iron.
 - High-temperature alloys and titanium.
- Corner radii and sharp edges.
- Centre cutting.



57NC Series

- Steels, stainless steels, and high-temperature alloys.
- Radii corner and neck design for depths requiring additional passes.
- Centre cutting.



5777/57N8 Series

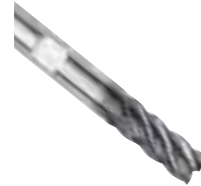
- High metal removal rates and tool life in:
 - Stainless steels, steels, and alloyed steels.
 - Cast iron.
 - High-temperature alloys and titanium.
- Corner radii and sharp edges.
- Non-centre cutting.

VariMill II™ ER



577E Series

- Eccentric relief for edge stability and strength.
- Extensive radii corner offering.



57NE Series

- Eccentric relief for edge stability and strength.
- Extensive radii corner offering.
- Neck design for depths requiring additional passes.

VariMill II™ Long



5718 Series

- Highest surface quality and tool life in:
 - Titanium.
 - Stainless steels.
- Corner radii and sharp edges.
- 4 x D length of cut.
- Non-centre cutting.



FOR MORE INFORMATION ON THE PRODUCTS SHOWN, PLEASE SEE PAGES B16–B25.

INDEXABLE MILLING

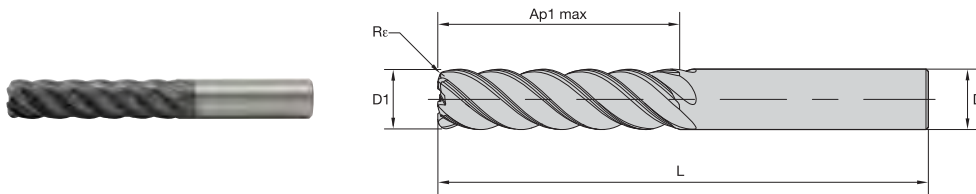
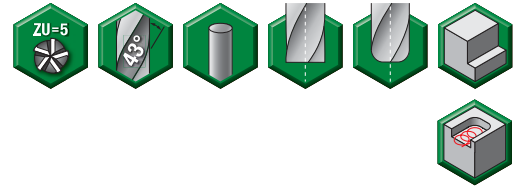
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

VariMill II™ • Series 5718 • Metric

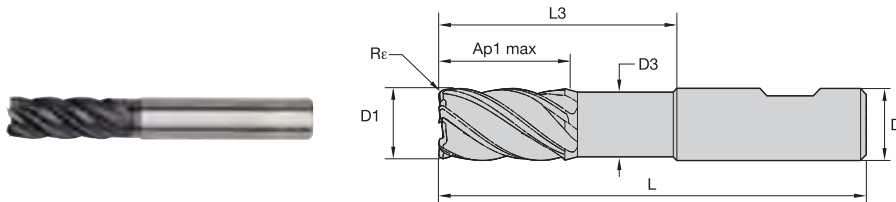
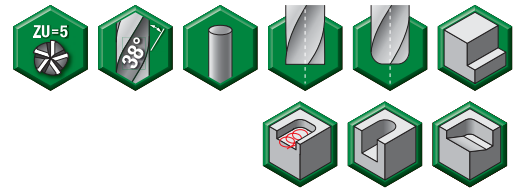


- first choice
- alternate choice

P	●
M	○
K	○
N	○
S	●
H	●

catalogue number	D1	D	length of cut Ap1 max	length L	Rε	AITiN-MT
571806002MT	6,0	6	24,00	76	—	5096566
571806012MT	6,0	6	24,00	76	0,50	5096567
571806022MT	6,0	6	24,00	76	1,00	5096568
571808013MT	8,0	8	32,00	76	0,50	5096660
571808023MT	8,0	8	32,00	76	1,00	5096661
571810004MT	10,0	10	40,00	100	—	4124297
571810014MT	10,0	10	40,00	100	0,50	5096662
571812005MT	12,0	12	48,00	125	—	4124298
571812015MT	12,0	12	48,00	125	0,50	5096666
571812025MT	12,0	12	48,00	125	1,00	5096667
571814054MT	14,0	14	56,00	120	4,00	5096755
571816006MT	16,0	16	64,00	141	—	4124300
571816016MT	16,0	16	64,00	141	0,50	5096756
571816026MT	16,0	16	64,00	141	1,00	5096757
571816036MT	16,0	16	64,00	141	2,00	5096758
571816046MT	16,0	16	64,00	141	3,00	5096759
571816056MT	16,0	16	64,00	141	4,00	5096800
571820007MT	20,0	20	80,00	150	—	4124302
571820017MT	20,0	20	80,00	150	0,50	5096805
571820027MT	20,0	20	80,00	150	1,00	5096806
571820037MT	20,0	20	80,00	150	2,00	5096807
571820047MT	20,0	20	80,00	150	3,00	5096808
571820057MT	20,0	20	80,00	150	4,00	5096809
571825008MT	25,0	25	100,00	170	—	4124323
571825018MT	25,0	25	100,00	170	0,50	5096860
571825028MT	25,0	25	100,00	170	1,00	5096861
571825038MT	25,0	25	100,00	170	2,00	5096862
571825048MT	25,0	25	100,00	170	3,00	5096863

VariMill II™ • Series 57N8 • Metric

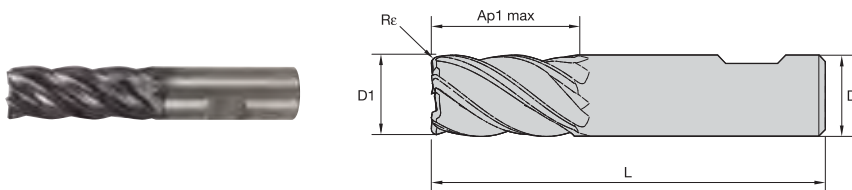
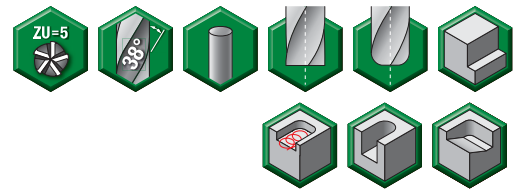


- first choice
- alternate choice

P	●
M	●
K	●
N	○
S	○
H	○
WS15PE	

catalogue number	D1	D	D3	length of cut Ap1 max	L3	length L	Re	WS15PE
57N806002MT	6,0	6	5,60	13,00	18,00	63	—	3524626
57N812035MT	12,0	12	11,28	26,00	36,00	83	1,00	3524648
57N812055MT	12,0	12	11,28	26,00	36,00	83	2,00	3524649
57N8120R5MTK	12,0	12	11,28	26,00	36,00	83	1,50	6492827
57N816036MT	16,0	16	15,05	32,00	48,00	100	1,00	3524652

VariMill II • Series 5777 • Metric



- first choice
- alternate choice

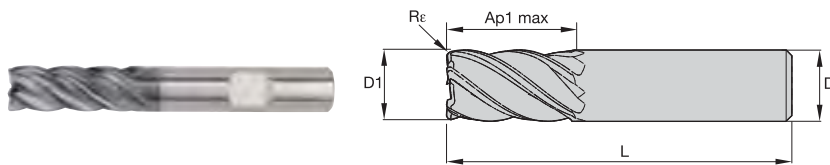
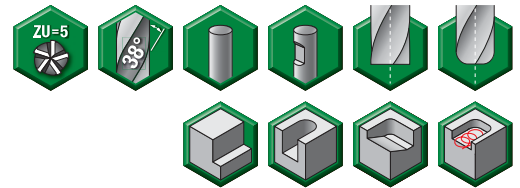
P	●
M	●
K	●
N	○
S	○
H	○
WP15PE	

catalogue number	D1	D	length of cut Ap1 max	length L	Re	WP15PE
577704002MT	4,0	6	11,00	55	0,25	3524587
577706002ET	6,0	6	13,00	57	0,50	6525049
577706002MT	6,0	6	13,00	57	0,40	3524590
577708003KT	8,0	8	19,00	63	1,50	6525182
577708003MT	8,0	8	19,00	63	0,50	3524593
577708013MT	8,0	8	19,00	63	—	3524592
577710004MT	10,0	10	22,00	72	0,50	3524596
577710014MT	10,0	10	22,00	72	—	3524595
577712005MT	12,0	12	26,00	83	0,75	3524598
577712015MT	12,0	12	26,00	83	—	3524597
577716006MT	16,0	16	32,00	92	0,75	3524601



THE ALL-STAR PROGRAMME FEATURES ONLY THE MOST POPULAR PLATFORMS, GRADES, AND SIZES. FOR THE COMPLETE OFFERING, VISIT WIDIA NOVO™ OR WIDIA.COM.

VariMill II™ • Series 577C • Metric



- first choice
- alternate choice

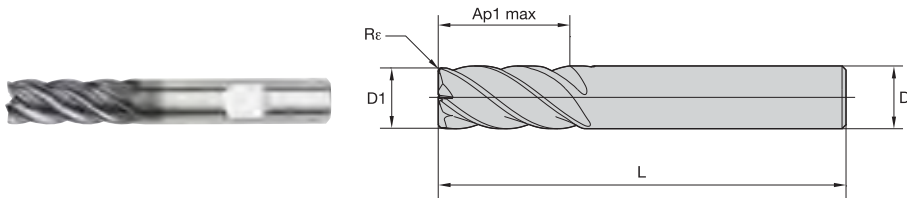
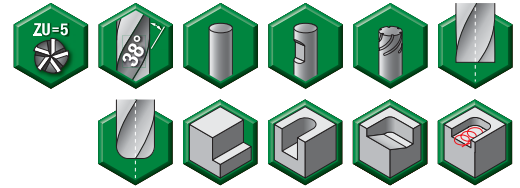
P	●
M	●
K	●
N	○
S	○
H	●

catalogue number	D1	D	length of cut Ap1 max	length L	Re	SS	WP15PE
577C04002T	4,0	6	11,00	55	0,25	—	5578866
577C04002W	4,0	6	11,00	55	0,25	W	5578867
577C04012T	4,0	6	11,00	55	—	—	5578868
577C05002T	5,0	6	13,00	57	0,25	—	5578990
577C05002W	5,0	6	13,00	57	0,25	W	5578991
577C06002T	6,0	6	13,00	57	0,40	—	5578992
577C06002W	6,0	6	13,00	57	0,40	W	5578993
577C06012T	6,0	6	13,00	57	—	—	5578994
577C08003T	8,0	8	19,00	63	0,50	—	5578997
577C08003W	8,0	8	19,00	63	0,50	W	5578998
577C08013T	8,0	8	19,00	63	—	—	5578999
577C10004T	10,0	10	22,00	72	0,50	—	5579023
577C10004W	10,0	10	22,00	72	0,50	W	5579024
577C10014T	10,0	10	22,00	72	—	—	5579025
577C12005T	12,0	12	26,00	83	0,75	—	5579026
577C12005W	12,0	12	26,00	83	0,75	W	5579027
577C12015T	12,0	12	26,00	83	—	—	5579028
577C14004T	14,0	14	26,00	83	0,75	—	5579029
577C14004W	14,0	14	26,00	83	0,75	W	5579040
577C14014T	14,0	14	26,00	83	—	—	5579041
577C16006T	16,0	16	32,00	92	0,75	—	5579042
577C16006W	16,0	16	32,00	92	0,75	W	5579043
577C16016T	16,0	16	32,00	92	—	—	5579044
577C20007T	20,0	20	38,00	104	0,75	—	5579047
577C20007W	20,0	20	38,00	104	0,75	W	5579048
577C20017T	20,0	20	38,00	104	—	—	5579049

NOTE: SS = Shank Style
W = Weldon®

INDEXABLE MILLING
 SOLID END MILLING
 HOLEMAKING
 TAPPING
 TURNING

VariMill II™ ER • Series 577E • Metric



- first choice
- alternate choice

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

catalogue number	D1	D	length of cut Ap1 max	length L	Re	SS	WS15PE
577E12015W	12,0	12	26,00	83	0,75	W	5599176
577E16006V	16,0	16	32,00	92	—	V	5599177
577E16016V	16,0	16	32,00	92	0,75	V	5599178
577E16016W	16,0	16	32,00	92	0,75	W	5599179
577E20007V	20,0	20	38,00	104	—	V	5599180
577E20017V	20,0	20	38,00	104	0,75	V	5599181
577E20017W	20,0	20	38,00	104	0,75	W	5599182

NOTE: SS = Shank Style
 W = Weldon®
 V = Safe-Lock™

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING



THE ALL-STAR PROGRAMME FEATURES ONLY THE MOST POPULAR PLATFORMS, GRADES, AND SIZES. FOR THE COMPLETE OFFERING, VISIT WIDIA NOVO™ OR WIDIA.COM.

VariMill II™ • Series 57NC • Metric

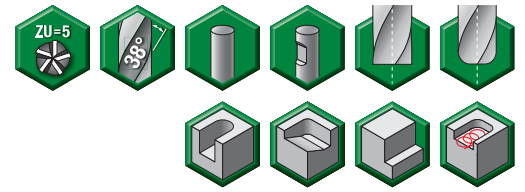
INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

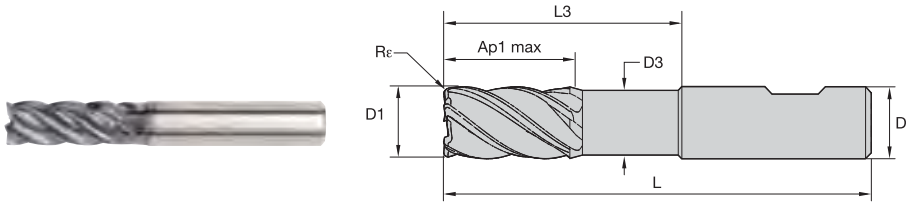
TAPPING

TURNING



- first choice
- alternate choice

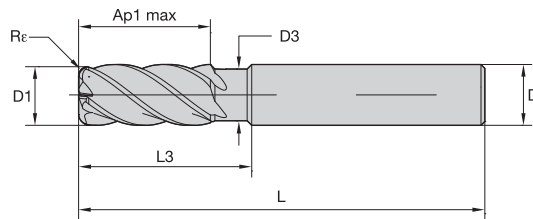
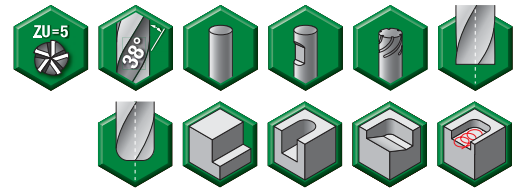
P	●	○
M	●	○
K	●	○
N	●	○
S	●	●
H	●	●



catalogue number	D1	D	D3	length of cut Ap1 max	L3	length L	Re	SS	WS15PE
57NC06002T	6,0	6	5,64	13,00	18,00	63	—	—	5598906
57NC06022T	6,0	6	5,64	13,00	18,00	63	0,50	—	5598907
57NC06032T	6,0	6	5,64	13,00	18,00	63	1,00	—	5598909
57NC06042W	6,0	6	5,64	13,00	18,00	63	1,50	W	5599071
57NC08003T	8,0	8	7,52	19,00	24,00	76	—	—	5599072
57NC08023T	8,0	8	7,52	19,00	24,00	76	0,50	—	5599073
57NC08023W	8,0	8	7,52	19,00	24,00	76	0,50	W	5599074
57NC08033T	8,0	8	7,52	19,00	24,00	76	1,00	—	5599075
57NC08033W	8,0	8	7,52	19,00	24,00	76	1,00	W	5599076
57NC08053W	8,0	8	7,52	19,00	24,00	76	2,00	W	5599077
57NC10004T	10,0	10	9,40	22,00	30,00	76	—	—	5599078
57NC10024T	10,0	10	9,40	22,00	30,00	76	0,50	—	5599079
57NC10024W	10,0	10	9,40	22,00	30,00	76	0,50	W	5599080
57NC10034T	10,0	10	9,40	22,00	30,00	76	1,00	—	5599081
57NC10034W	10,0	10	9,40	22,00	30,00	76	1,00	W	5599082
57NC10054T	10,0	10	9,40	22,00	30,00	76	2,00	—	5599083
57NC12005T	12,0	12	11,28	26,00	36,00	83	—	—	5599085
57NC12025T	12,0	12	11,28	26,00	36,00	83	0,50	—	5599086
57NC12025W	12,0	12	11,28	26,00	36,00	83	0,50	W	5599087
57NC12035T	12,0	12	11,28	26,00	36,00	83	1,00	—	5599088
57NC12055T	12,0	12	11,28	26,00	36,00	83	2,00	—	5599090
57NC12055W	12,0	12	11,28	26,00	36,00	83	2,00	W	5599091
57NC16006T	16,0	16	15,04	32,00	48,00	100	—	—	5599092
57NC16026T	16,0	16	15,04	32,00	48,00	100	0,50	—	5599093
57NC16026W	16,0	16	15,04	32,00	48,00	100	0,50	W	5598905
57NC16036T	16,0	16	15,04	32,00	48,00	100	1,00	—	5599094
57NC16036W	16,0	16	15,04	32,00	48,00	100	1,00	W	5599095
57NC16056T	16,0	16	15,04	32,00	48,00	100	2,00	—	5599096
57NC16076T	16,0	16	15,04	32,00	48,00	100	3,00	—	5599098
57NC16076W	16,0	16	15,04	32,00	48,00	100	3,00	W	5599099
57NC20007T	20,0	20	18,80	38,00	60,00	115	—	—	5599100
57NC20027T	20,0	20	18,80	38,00	60,00	115	0,50	—	5599101
57NC20027W	20,0	20	18,80	38,00	60,00	115	0,50	W	5599102
57NC20037T	20,0	20	18,80	38,00	60,00	115	1,00	—	5599103
57NC20037W	20,0	20	18,80	38,00	60,00	115	1,00	W	5599104
57NC20057T	20,0	20	18,80	38,00	60,00	115	2,00	—	5599105
57NC20077T	20,0	20	18,80	38,00	60,00	115	3,00	—	5599107
57NC20077W	20,0	20	18,80	38,00	60,00	115	3,00	W	5599108
57NC25028T	25,0	25	23,50	45,00	75,00	135	0,50	—	5599112
57NC25058T	25,0	25	23,50	45,00	75,00	135	2,00	—	5599116

NOTE: SS = Shank Style
W = Weldon®

VariMill II™ ER • Series 57NE • Metric



- first choice
- alternate choice

P	 	○
M	 	○
K	 	○
N	 	○
S	 	●
H	 	●

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

NOTE: SS = Shank Style
W = Weldon®
V = Safe-Lock™

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING



THE ALL-STAR PROGRAMME FEATURES ONLY THE MOST POPULAR PLATFORMS, GRADES, AND SIZES. FOR THE COMPLETE OFFERING, VISIT WIDIA NOVO™ OR WIDIA.COM.

Application Data • VariMill II™ • Series 5718 • Metric

Material Group																		
	Side Milling (A)		AITIN		Recommended feed per tooth (fz = mm/th) for side milling (A).													
	A		Cutting Speed – vc m/min			D1 – Diameter												
	ap	ae	min	max	mm	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*	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*	100	–	180	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*	50	–	80	fz	0,023	0,032	0,038	0,045	0,050	0,056	0,060	0,065	0,074		
	3	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		
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	0,06 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 centres, please adjust parameters accordingly on >12mm diameters.

Application Data • VariMill II • Series 57N8 • 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				
	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				
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	0,087	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	60	–	80	fz	0,029	0,040	0,048	0,056	0,070	0,081	0,091				
H	1	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				
	2	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				

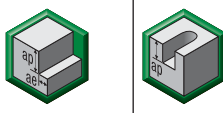

NOTE: Lower value of cutting speed is used for high-stock removal applications or for higher hardness (machinability) within group.

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 centres, please adjust parameters accordingly on diameters >12mm diameters.

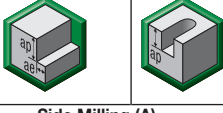

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Application Data • VariMill II™ • Series 5777 • Metric

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	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	0,028	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	60	–	80	fz	0,019	0,029	0,040	0,048	0,056	0,070	0,081	0,091			
	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 centres, please adjust parameters accordingly on > 12mm diameters.

Application Data • VariMill II • Series 577C • 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	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	0,044	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	0,044	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	0,044	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	0,036	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	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088	0,098		
M	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		
	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		
K	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		
	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		
S	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		
	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	0,3 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		
H	4	1,5 x D	0,5 x D	1 x D	50	–	60	fz	0,026	0,037	0,045	0,052	0,058	0,064	0,069	0,074	0,084		
	1	1,5 x D	0,5 x D	0,75 x D	80	–	140	fz	0,033	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 centres, please adjust parameters accordingly on > 12mm diameters.

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INDEXABLE MILLING
SOLID END MILLING
HOLEMAKING
TAPPING
TURNING

Application Data • VariMill II™ ER • Series 577E • 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	ap	min	max	mm	10,0	12,0	16,0	18,0	20,0	25,0			
P	5	1,5 x D	0,5 x D	1 x D	60	– 100	fz	0,048	0,056	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	0,057	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	0,087	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	0,070	0,076	0,081	0,091			
S	1	1,5 x D	0,5 x D	1 x D	60	– 70	fz	0,040	0,047	0,057	0,061	0,065	0,071			
	2	1,5 x D	0,3 x D	0,3 x D	50	– 90	fz	0,061	0,070	0,087	0,095	0,101	0,114			
H	1	1,5 x D	0,3 x D	0,3 x D	50	– 90	fz	0,032	0,037	0,046	0,050	0,054	0,061			
	3	1,5 x D	0,3 x D	1 x D	25	– 40	fz	0,048	0,056	0,070	0,076	0,081	0,091			
H	1	1,5 x D	0,5 x D	1 x D	50	– 60	fz	0,045	0,052	0,064	0,069	0,074	0,084			
	2	1,5 x D	0,2 x D	0,5 x D	80	– 140	fz	0,054	0,062	0,077	0,083	0,088	0,098			
H	1	1,5 x D	0,5 x D	0,75 x D	80	– 140	fz	0,054	0,062	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	0,057	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 centres, please adjust parameters accordingly on >12mm diameters.

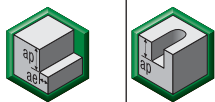

Application Data • VariMill II • Series 57NC • Metric

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	ap	min	max	mm	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0
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
K	1	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
	2	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
S	1	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
	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
H	1	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
	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
H	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
H	1	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	– 80	fz	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091
H	1	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
	2	1,5 x D	0,2 x D	0,5 x D	80	– 140	fz	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088	0,098
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 centres, please adjust parameters accordingly on >12mm diameters.

 = ALL-STAR PORTFOLIO PRODUCT. ALL-STAR PRODUCTS ARE PROVEN SOLUTIONS THAT ARE ALWAYS AVAILABLE.

Application Data • VariMill II™ ER • Series 57NE • 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	10,0	12,0	16,0	18,0	20,0	25,0		
P	5	1,5 x D	0,5 x D	1 x D	60	–	100	fz	0,048	0,056	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	0,057	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	0,087	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	0,070	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	0,057	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	0,087	0,095	0,101	0,114
S	2	1,5 x D	0,3 x D	0,3 x D	25	–	50	fz	0,032	0,037	0,046	0,050	0,054	0,061
	3	1,5 x D	0,3 x D	1 x D	40	–	90	fz	0,048	0,056	0,070	0,076	0,081	0,091
H	4	1,5 x D	0,5 x D	1 x D	50	–	60	fz	0,045	0,052	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	0,077	0,083	0,088	0,098
H	2	1,5 x D	0,2 x D	0,5 x D	70	–	120	fz	0,040	0,047	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 centres, please adjust parameters accordingly on >12mm diameters.

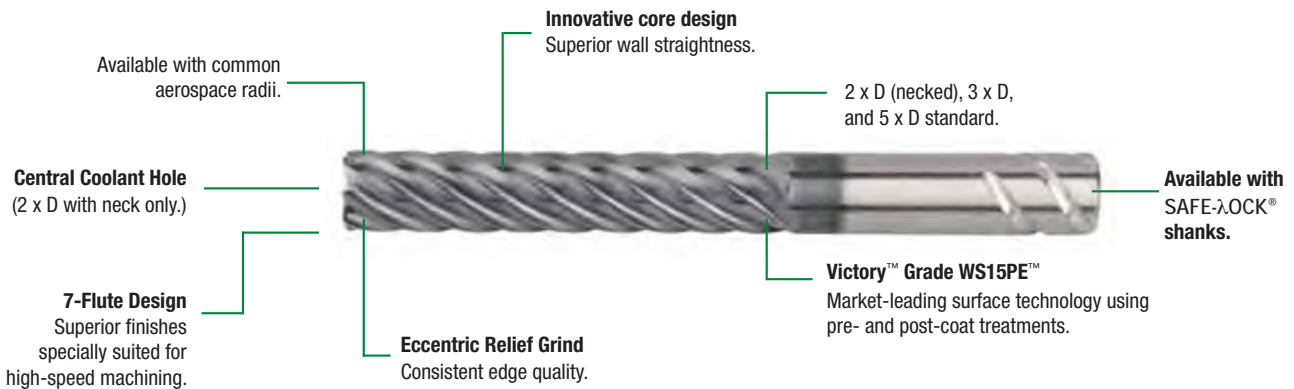
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VariMill III™ ER

High-Performance Solid Carbide End Mills

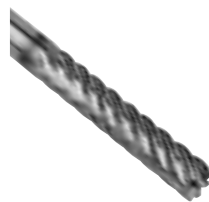
Seven unequally spaced flutes to increase productivity using high-speed machining techniques such as trochoidal and peel milling.

Materials:



77NE Series

- Titanium and stainless steel geometry design.
- Corner radii.
- 2 x D length of cut.
- Necked 5 x D reach.
- Non-centre cutting.



772E Series

- Titanium and stainless steel geometry design.
- Corner radii.
- 5 x D length of cut.
- Centre cutting.
- SAFE-λOCK®.



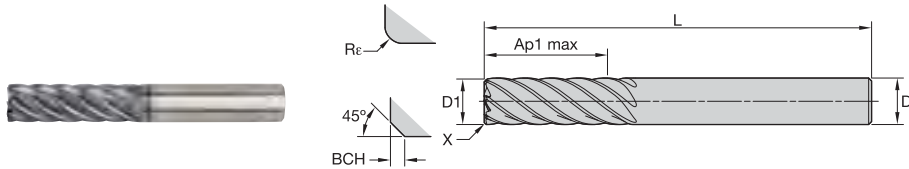
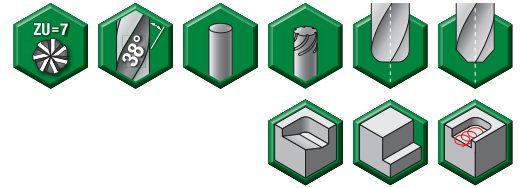
771E Series

- Titanium and stainless steel geometry design.
- Corner radii.
- 3 x D length of cut.
- Centre cutting.
- SAFE-λOCK®.



FOR MORE INFORMATION ON THE PRODUCTS SHOWN, PLEASE SEE PAGES B27–B30.

VariMill III™ ER • Series 771E 772E • Metric



- first choice
- alternate choice

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

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

NOTE: SS = Shank Style
V = Safe-Lock™

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING



THE ALL-STAR PROGRAMME FEATURES ONLY THE MOST POPULAR PLATFORMS, GRADES, AND SIZES. FOR THE COMPLETE OFFERING, VISIT WIDIA NOVO™ OR WIDIA.COM.



INDEXABLE MILLING

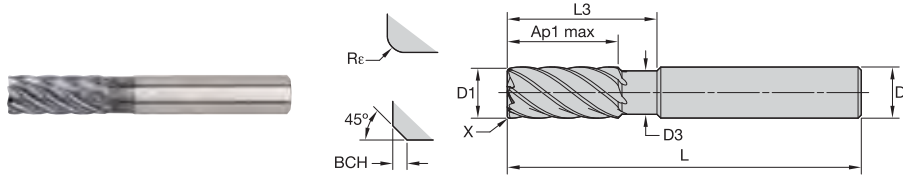
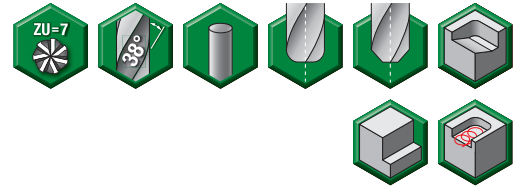
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

VariMill III™ ER • Series 77NE • Metric



● first choice
○ alternate choice

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

catalogue number	D1	D	D3	length of cut Ap1 max	L3	length L	Re	BCH	WS15PE
77NE10004T	10,0	10	9,40	22,00	30,00	76	—	0,50	5978039
77NE10024T	10,0	10	9,40	22,00	30,00	76	0,50	—	5978040
77NE12005T	12,0	12	11,28	26,00	36,00	83	—	0,50	5978096
77NE12025T	12,0	12	11,28	26,00	36,00	83	0,50	—	5978097
77NE16006T	16,0	16	15,04	32,00	48,00	100	—	0,50	5978104
77NE16026T	16,0	16	15,04	32,00	48,00	100	0,50	—	5978105
77NE20007T	20,0	20	18,80	38,00	60,00	115	—	0,50	5978112
77NE20027T	20,0	20	18,80	38,00	60,00	115	0,50	—	5978113



THE ALL-STAR PROGRAMME FEATURES ONLY THE MOST POPULAR PLATFORMS, GRADES, AND SIZES. FOR THE COMPLETE OFFERING, VISIT WIDIA NOVO™ OR WIDIA.COM.

Application Data • VariMill III™ ER • Series 771E • Metric

Material Group	ap		ae		min		max		D1 – Diameter				
	ap	ae	min	max	mm	10,0	12,0	16,0	18,0	20,0			
	3 x D	0,2 x D	90	150	mm	0,054	0,062	0,077	0,083	0,088			
P	4	3 x D	0,2 x D	90	150	fz	0,054	0,062	0,077	0,083	0,088		
	5	3 x D	0,2 x D	60	100	fz	0,048	0,056	0,070	0,076	0,081		
M	1	3 x D	0,2 x D	90	115	fz	0,061	0,070	0,087	0,095	0,101		
	2	3 x D	0,2 x D	60	80	fz	0,048	0,056	0,070	0,076	0,081		
S	3	3 x D	0,2 x D	60	70	fz	0,040	0,047	0,057	0,061	0,065		
	1	3 x D	0,2 x D	50	90	fz	0,061	0,070	0,087	0,095	0,101		
H	2	3 x D	0,2 x D	25	40	fz	0,032	0,037	0,046	0,050	0,054		
	3	3 x D	0,2 x D	60	80	fz	0,048	0,056	0,070	0,076	0,081		
H	4	3 x D	0,2 x D	50	60	fz	0,045	0,052	0,064	0,069	0,074		
	1	3 x D	0,2 x D	80	140	fz	0,054	0,062	0,077	0,083	0,088		
H	2	3 x D	0,2 x D	70	120	fz	0,040	0,047	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 centres, please adjust parameters accordingly on >12mm diameters.



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

Material Group	ap		ae		min		max		D1 – Diameter				
	ap	ae	min	max	mm	10,0	12,0	16,0	18,0	20,0			
	5 x D	0,05 x D	300	400	mm	0,086	0,099	0,121	0,130	0,137			
P	0	5 x D	0,05 x D	300	400	fz	0,086	0,099	0,121	0,130	0,137		
	1	5 x D	0,05 x D	300	400	fz	0,086	0,099	0,121	0,130	0,137		
	2	5 x D	0,05 x D	280	380	fz	0,086	0,099	0,121	0,130	0,137		
	3	5 x D	0,05 x D	240	320	fz	0,073	0,084	0,105	0,113	0,121		
	4	5 x D	0,05 x D	180	300	fz	0,065	0,075	0,092	0,099	0,106		
	5	5 x D	0,05 x D	120	200	fz	0,058	0,067	0,084	0,091	0,097		
M	6	5 x D	0,05 x D	100	150	fz	0,048	0,056	0,068	0,073	0,078		
	1	5 x D	0,05 x D	180	230	fz	0,073	0,084	0,105	0,113	0,121		
K	2	5 x D	0,05 x D	120	160	fz	0,058	0,067	0,084	0,091	0,097		
	3	5 x D	0,05 x D	120	140	fz	0,048	0,056	0,068	0,073	0,078		
S	1	5 x D	0,05 x D	240	300	fz	0,086	0,099	0,121	0,130	0,137		
	2	5 x D	0,05 x D	220	280	fz	0,073	0,084	0,105	0,113	0,121		
H	3	5 x D	0,05 x D	220	260	fz	0,058	0,067	0,084	0,091	0,097		
	1	5 x D	0,05 x D	100	180	fz	0,073	0,084	0,105	0,113	0,121		
H	2	5 x D	0,05 x D	50	80	fz	0,038	0,045	0,056	0,060	0,065		
	3	5 x D	0,05 x D	120	160	fz	0,058	0,067	0,084	0,091	0,097		
H	4	5 x D	0,05 x D	100	120	fz	0,053	0,062	0,077	0,083	0,089		
	1	5 x D	0,05 x D	160	280	fz	0,065	0,075	0,092	0,099	0,106		
H	2	5 x D	0,06 x D	140	240	fz	0,048	0,056	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 centres, please adjust parameters accordingly on >12mm diameters.

 = ALL-STAR PORTFOLIO PRODUCT. ALL-STAR PRODUCTS ARE PROVEN SOLUTIONS THAT ARE ALWAYS AVAILABLE.

Application Data • VariMill III™ ER • Series 77NE • Semi-Finishing • 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	16,0	18,0	20,0	
P	4	1,5 x D	0,3 x D	90	–	150	fz	0,054	0,062	0,077	0,083	0,088
	5	1,5 x D	0,3 x D	60	–	100	fz	0,048	0,056	0,070	0,076	0,081
M	1	1,5 x D	0,3 x D	90	–	115	fz	0,061	0,070	0,087	0,095	0,101
	2	1,5 x D	0,3 x D	60	–	80	fz	0,048	0,056	0,070	0,076	0,081
S	3	1,5 x D	0,3 x D	60	–	70	fz	0,040	0,047	0,057	0,061	0,065
	1	1,5 x D	0,3 x D	50	–	90	fz	0,061	0,070	0,087	0,095	0,101
H	2	1,5 x D	0,3 x D	25	–	40	fz	0,032	0,037	0,046	0,050	0,054
	3	1,5 x D	0,3 x D	60	–	80	fz	0,048	0,056	0,070	0,076	0,081
	4	1,5 x D	0,3 x D	50	–	60	fz	0,045	0,052	0,064	0,069	0,074
	1	1,5 x D	0,3 x D	80	–	140	fz	0,054	0,062	0,077	0,083	0,088
	2	1,5 x D	0,3 x D	70	–	120	fz	0,040	0,047	0,057	0,061	0,065

Application Data • VariMill III ER • Series 77NE • Finishing • 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	16,0	18,0	20,0	
P	4	Ap1 max	0,06 x D	180	–	300	fz	0,065	0,075	0,092	0,099	0,106
	5	Ap1 max	0,06 x D	120	–	200	fz	0,058	0,067	0,084	0,091	0,097
M	1	Ap1 max	0,06 x D	180	–	230	fz	0,073	0,084	0,105	0,113	0,121
	2	Ap1 max	0,06 x D	120	–	160	fz	0,058	0,067	0,084	0,091	0,097
S	3	Ap1 max	0,06 x D	120	–	140	fz	0,048	0,056	0,068	0,073	0,078
	1	Ap1 max	0,06 x D	100	–	180	fz	0,073	0,084	0,105	0,113	0,121
H	2	Ap1 max	0,06 x D	50	–	80	fz	0,038	0,045	0,056	0,060	0,065
	3	Ap1 max	0,06 x D	120	–	160	fz	0,058	0,067	0,084	0,091	0,097
	4	Ap1 max	0,06 x D	100	–	120	fz	0,053	0,062	0,077	0,083	0,089
	1	Ap1 max	0,06 x D	160	–	280	fz	0,065	0,075	0,092	0,099	0,106
	2	Ap1 max	0,06 x D	140	–	240	fz	0,048	0,056	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 centres, please adjust parameters accordingly on >12mm diameters.

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Engine Components



Integral Blade Rotor (IBR)



Single Blade



Bracket



Depressor Fine Seal



WIDIA™ Offers Machining Strategies and Innovative Tooling Technology that Reduces Cycle Time and Increases Cost Savings.

TO SEE ALL PRODUCT LINES, VISIT OUR DIGITAL RESOURCES



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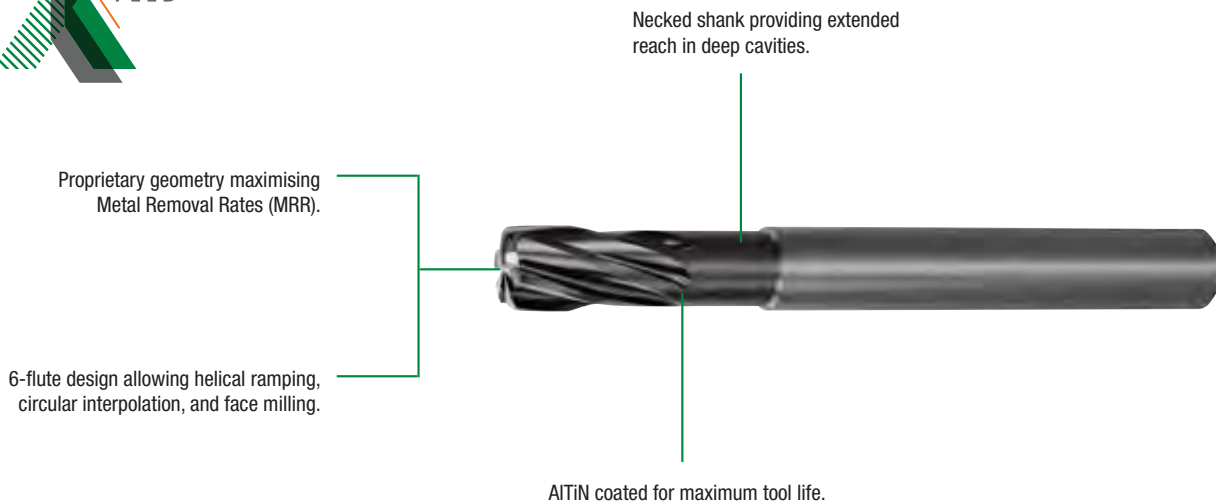
Victory™ X-Feed™

High-Performance Solid Carbide End Mills

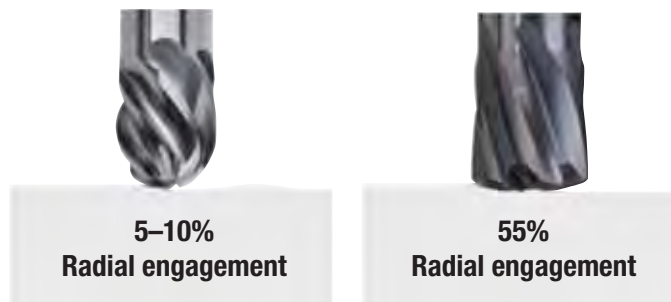
X-Feed end mills significantly reduce manufacturing time due to having more effective cutting edges than a regular solid carbide tool. The extended reach design and neck are perfectly suited for pocketing using 3D machining techniques such as ramping and helical interpolation. During face milling, the proprietary front-end geometry of X-feed end mills are in full contact with the workpiece, providing up to 55% engagement compared to the regular 5–10% provided by ball nose-type tooling.

- Covering hardened materials ranging from 37–67HRC, stainless steels, and high-temp alloys.
- One tool for roughing and finishing.
- Proprietary 6-flute design for high productivity.
- 3 x D neck.

Materials:



Larger Radial Engagement vs. Standard Ball Nose End Mills.



FOR MORE INFORMATION ON THE PRODUCTS SHOWN, PLEASE SEE PAGES B33–B35.

Series 70N7 • Hard Materials • Metric



● first choice
○ alternate choice

P				
M				
K				
N				
S				
H				

catalogue number	D1	D	D3	length of cut Ap1 max	L3	length L	Re	Rt	ALTIN-MT1
70N706002MT	6,0	6	5,50	0,20	18,00	63	0,38	0,58	3484756
70N710004MT	10,0	10	9,00	0,33	30,00	89	0,63	0,96	3484758

NOTE: YRC = distance from centre line to the crown of the R radius.
 RCN = distance from centre 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.
 Re = the shoulder radius or radius at the corner of the cutter.

Series 70NS • Stainless Steel/High-Temp • Metric



● first choice
○ alternate choice

P				
M				
K				
N				
S				
H				




catalogue number	D1	D	D3	L3	length L	Re	Rt	AITiN-MT
70NS06002	6,0	6	5,50	17,75	63	0,38	0,67	6441882
70NS08003	8,0	8	7,50	23,75	76	0,50	0,89	6441883
70NS10004	10,0	10	9,00	29,50	89	0,63	1,12	6441884
70NS12005	12,0	12	11,00	35,50	100	0,75	1,34	6441885
70NS16006	16,0	16	15,00	47,50	110	1,00	1,79	6441886
70NS20007	20,0	20	19,00	59,50	125	1,25	2,23	6441887

NOTE: YRC = distance from centre line to the crown of the R radius.
 RCN = distance from centre 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.
 Re = the shoulder radius or radius at the corner of the cutter.



THE ALL-STAR PROGRAMME FEATURES ONLY THE MOST POPULAR PLATFORMS, GRADES, AND SIZES. FOR THE COMPLETE OFFERING, VISIT WIDIA NOVO™ OR WIDIA.COM.

Application Data • Series 70N7 • Hard Materials • 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									Allowed Range of Hole Diameter			Calculated Length (mm) per Ramp Angle			
									Ramp Angle (degree)						
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	flutes	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 centres, please adjust parameters accordingly on diameters >12mm.

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INDEXABLE MILLING
 SOLID END MILLING
 HOLEMAKING
 TAPPING
 TURNING

Application Data • Series 70NS • Stainless Steel/High-Temp • Metric

Material Group														
	Profile Milling		★ AITiN-MT		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	25,0	
M	1	0.5 x D	0.55 x D	90	–	115	fz	0,300	0,400	0,500	0,540	0,720	0,900	1,125
	2	0.5 x D	0.55 x D	60	–	80	fz	0,240	0,320	0,400	0,480	0,640	0,800	1,000
S	3	0.5 x D	0.55 x D	60	–	70	fz	0,240	0,320	0,400	0,480	0,640	0,800	1,000
	1	0.5 x D	0.55 x D	50	–	90	fz	0,270	0,360	0,450	0,500	0,650	0,800	1,000
	2	0.5 x D	0.55 x D	50	–	80	fz	0,240	0,320	0,400	0,480	0,600	0,700	0,900
	3	0.5 x D	0.55 x D	25	–	40	fz	0,180	0,240	0,300	0,350	0,430	0,500	0,600
	4	0.5 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									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)				
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	flutes			1	2	3	4	5
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 centres, please adjust parameters accordingly on diameters greater than 12mm.

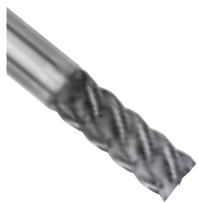
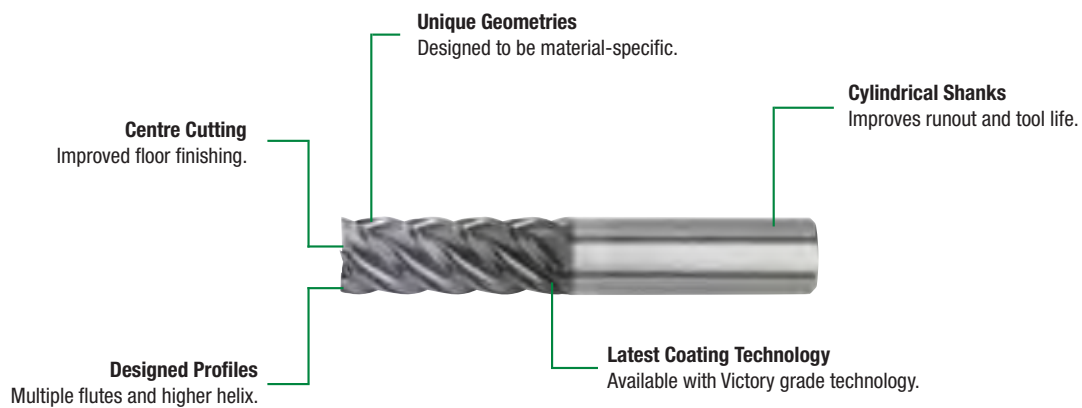
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HP Finishers

High-Performance Solid Carbide End Mills • Finishing

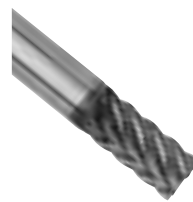
Specific geometries, with the latest coating technology, including Victory™ grades, targeted for steels, stainless steels, high-temperature alloys, and titanium.

Materials:



D503/4503 Series

- Centre cutting.
- High helix.
- Works in a variety of workpiece materials.
- 3-Flute



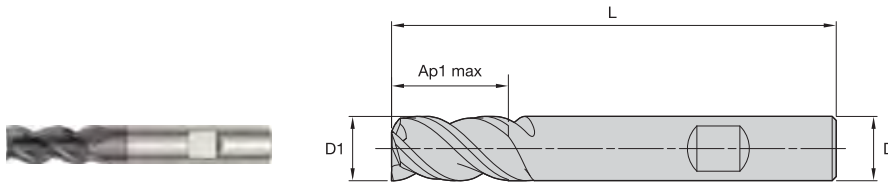
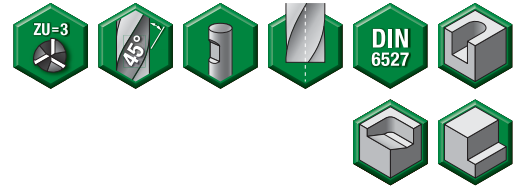
D507/D517 Series

- Centre cutting.
- 6 flute.
- High helix.
- Use for super finishing in multiple workpiece materials.



FOR MORE INFORMATION ON THE PRODUCTS SHOWN, PLEASE SEE PAGES B37–B40.

Series D513 • Metric

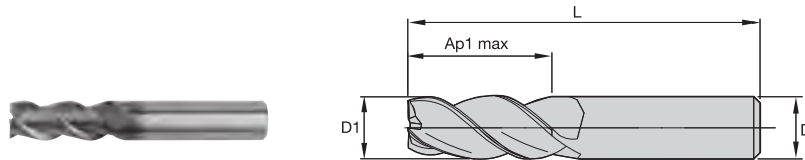
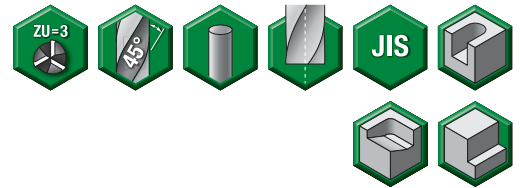


- first choice
- alternate choice

P	●
M	●
K	●
N	●
S	●
H	●

catalogue number	D1	D	length of cut Ap1 max	length L	TIALN
D51303002RW	3,0	6	7,00	57	1661680

Series 4503 JJ • Metric



- first choice
- alternate choice

P	●
M	●
K	○
N	○
S	○
H	○

catalogue number	D1	D	length of cut Ap1 max	length L	WP15PE
450301001T	1,0	4	3,00	50	5559170
450301501T	1,5	4	3,00	50	5559171
450302001T	2,0	4	3,00	50	5559172
450303002T	3,0	6	8,00	50	5559175
450304002T	4,0	6	12,00	50	5559177
450304502T	4,5	6	14,00	50	5559178
450306002T	6,0	6	16,00	50	5559180



THE ALL-STAR PROGRAMME FEATURES ONLY THE MOST POPULAR PLATFORMS, GRADES, AND SIZES. FOR THE COMPLETE OFFERING, VISIT WIDIA NOVO™ OR WIDIA.COM.

INDEXABLE MILLING

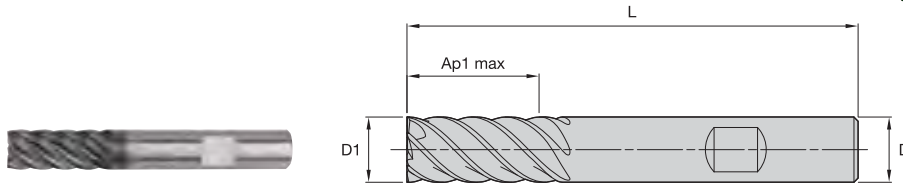
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Series D507 D517 • Metric



- first choice
- alternate choice

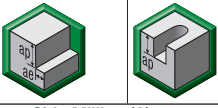
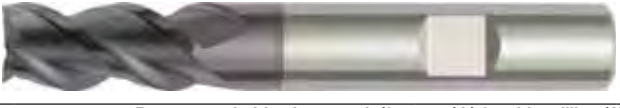
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K	<input type="checkbox"/>
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S	<input type="checkbox"/>
H	<input checked="" type="checkbox"/>

catalogue number	D1	D	length of cut		length L	WP15PE
			Ap1 max			
D50706002W	6,0	6	10,00		54	5559100
D51706002W	6,0	6	13,00		57	5559108
D50708003W	8,0	8	12,00		58	5559101
D51708003W	8,0	8	19,00		63	5559109
D50710004W	10,0	10	14,00		66	5559102
D51710004W	10,0	10	22,00		72	5559110
D50712005W	12,0	12	16,00		73	5559103
D51712005W	12,0	12	26,00		83	5559111
D50716006W	16,0	16	22,00		82	5559105
D51716006W	16,0	16	32,00		92	5559113



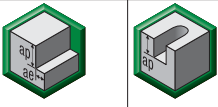

THE ALL-STAR PROGRAMME FEATURES ONLY THE MOST POPULAR PLATFORMS, GRADES, AND SIZES. FOR THE COMPLETE OFFERING, VISIT WIDIA NOVO™ OR WIDIA.COM.

Application Data • Series D513 • 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	2,0	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	0,014	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	0,014	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	0,014	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	0,011	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	0,010	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	0,009	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	50	–	75	fz	0,008	0,012	0,016	0,020	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065		
	2	1,25 x D	0,2 x D	0,25 x D	90	–	115	fz	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101		
K	1	1,25 x D	0,2 x D	0,25 x D	60	–	80	fz	0,009	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	0,008	0,012	0,016	0,020	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065		
S	1	1,25 x D	0,2 x D	0,25 x D	120	–	150	fz	0,014	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	0,011	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	0,009	0,014	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081		
H	1	1,25 x D	0,2 x D	0,25 x D	50	–	90	fz	0,011	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	0,006	0,009	0,013	0,016	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054		
H	3	1,25 x D	0,2 x D	0,25 x D	60	–	80	fz	0,009	0,014	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081		
	4	1,25 x D	0,2 x D	0,25 x D	50	–	60	fz	0,007	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	0,010	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 centres, please adjust parameters accordingly on >12mm diameters.

Application Data • Series 4503 JJ • 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	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	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	0,007	0,010	0,014	0,017	0,021	0,025	0,028	0,032	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	0,007	0,010	0,014	0,017	0,021	0,025	0,028	0,032	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	0,007	0,010	0,014	0,017	0,021	0,025	0,028	0,032	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	0,006	0,008	0,011	0,014	0,017	0,020	0,023	0,027	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	0,005	0,008	0,010	0,013	0,016	0,019	0,021	0,024	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	0,005	0,007	0,009	0,012	0,014	0,017	0,019	0,022	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	0,3 x D	50	–	75	fz	0,004	0,006	0,008	0,010	0,012	0,014	0,016	0,018	0,020	0,025	0,034	0,040	0,047	0,057	0,061	0,065
	2	1,5 x D	0,3 x D	0,5 x D	90	–	115	fz	0,006	0,008	0,011	0,014	0,017	0,020	0,023	0,027	0,030	0,036	0,050	0,061	0,070	0,087	0,095	0,101
K	1	1,5 x D	0,3 x D	0,5 x D	60	–	80	fz	0,005	0,007	0,009	0,012	0,014	0,017	0,019	0,022	0,024	0,029	0,040	0,048	0,056	0,070	0,076	0,081
	3	1,5 x D	0,3 x D	0,5 x D	60	–	70	fz	0,004	0,006	0,008	0,010	0,012	0,014	0,016	0,018	0,020	0,025	0,034	0,040	0,047	0,057	0,061	0,065
S	1	1,5 x D	0,3 x D	0,5 x D	120	–	150	fz	0,007	0,010	0,014	0,017	0,021	0,025	0,028	0,032	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	0,006	0,008	0,011	0,014	0,017	0,020	0,023	0,027	0,030	0,036	0,050	0,061	0,070	0,087	0,095	0,101
	3	1,5 x D	0,3 x D	0,5 x D	110	–	130	fz	0,005	0,007	0,009	0,012	0,014	0,017	0,019	0,022	0,024	0,029	0,040	0,048	0,056	0,070	0,076	0,081
H	1	1,5 x D	0,3 x D	0,3 x D	50	–	90	fz	0,006	0,008	0,011	0,014	0,017	0,020	0,023	0,027	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	0,003	0,005	0,006	0,008	0,009	0,011	0,013	0,014	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	0,5 x D	60	–	80	fz	0,005	0,007	0,009	0,012	0,014	0,017	0,019	0,022	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	0,5 x D	50	–	60	fz	0,003	0,005	0,007	0,009	0,011	0,014	0,016	0,018	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	0,5 x D	80	–	140	fz	0,005	0,008	0,010	0,013	0,016	0,019	0,021	0,024	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 centres, please adjust parameters accordingly on >12mm diameters.

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INDEXABLE MILLING


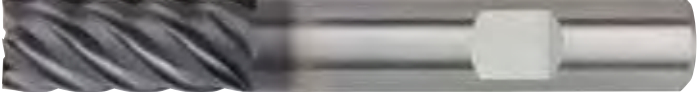
SOLID END MILLING

HOLEMAKING



TAPPING

TURNING

Application Data • Series D507 • Metric

Material Group																
	Side Milling (A)		WP15PE		Recommended feed per tooth (fz = mm/th) for side milling (A).											
	A		Cutting Speed – vc m/min		D1 – Diameter											
	ap	ae	min	max	mm	4,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0		
P	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
	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
M	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
	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
K	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
S	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
H	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
	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
H	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	60	–	80	fz	0,019	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081
H	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
	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

Application Data • Series D517 • Metric

Material Group																
	Side Milling (A)		WP15PE		Recommended feed per tooth (fz = mm/th) for side milling (A).											
	A		Cutting Speed – vc m/min		D1 – Diameter											
	ap	ae	min	max	mm	4,0	6,0	0,040	10,0	12,0	14,0	0,070	18,0	20,0		
P	0	Ap1 max	0,2 x D	150	–	200	fz	0,028	0,044	0,037	0,072	0,083	0,092	0,064	0,108	0,114
	1	Ap1 max	0,2 x D	150	–	200	fz	0,028	0,044	0,045	0,072	0,083	0,092	0,077	0,108	0,114
	2	Ap1 max	0,2 x D	140	–	190	fz	0,028	0,044	16,0	0,072	0,083	0,092	–	0,108	0,114
	3	Ap1 max	0,1 x D	120	–	160	fz	0,023	0,036	0,101	0,061	0,070	0,079	–	0,095	0,101
	4	Ap1 max	0,1 x D	90	–	150	fz	0,021	0,033	0,101	0,054	0,062	0,070	–	0,083	0,088
	5	Ap1 max	0,1 x D	60	–	100	fz	0,019	0,029	0,101	0,048	0,056	0,063	–	0,076	0,081
M	6	Ap1 max	0,1 x D	50	–	75	fz	0,016	0,025	0,087	0,040	0,047	0,052	–	0,061	0,065
	1	Ap1 max	0,1 x D	90	–	115	fz	0,023	0,036	0,077	0,061	0,070	0,079	–	0,095	0,101
K	2	Ap1 max	0,1 x D	60	–	80	fz	0,019	0,029	0,070	0,048	0,056	0,063	–	0,076	0,081
	3	Ap1 max	0,1 x D	60	–	70	fz	0,016	0,025	0,057	0,040	0,047	0,052	–	0,061	0,065
S	1	Ap1 max	0,1 x D	120	–	150	fz	0,028	0,044	0,087	0,072	0,083	0,092	–	0,108	0,114
	2	Ap1 max	0,1 x D	110	–	140	fz	0,023	0,036	0,070	0,061	0,070	0,079	–	0,095	0,101
H	3	Ap1 max	0,1 x D	110	–	130	fz	0,019	0,029	0,057	0,048	0,056	0,063	–	0,076	0,081
	1	Ap1 max	0,1 x D	50	–	90	fz	0,023	0,036	0,101	0,061	0,070	0,079	–	0,095	0,101
H	2	Ap1 max	0,1 x D	25	–	40	fz	0,013	0,019	0,087	0,032	0,037	0,042	–	0,050	0,054
	3	Ap1 max	0,15 x D	60	–	80	fz	0,019	0,029	0,070	0,048	0,056	0,063	–	0,076	0,081
H	4	Ap1 max	0,15 x D	50	–	60	fz	0,016	0,026	0,087	0,045	0,052	0,058	–	0,069	0,074
	1	Ap1 max	0,1 x D	80	–	140	fz	0,021	0,033	0,046	0,054	0,062	0,070	–	0,083	0,088

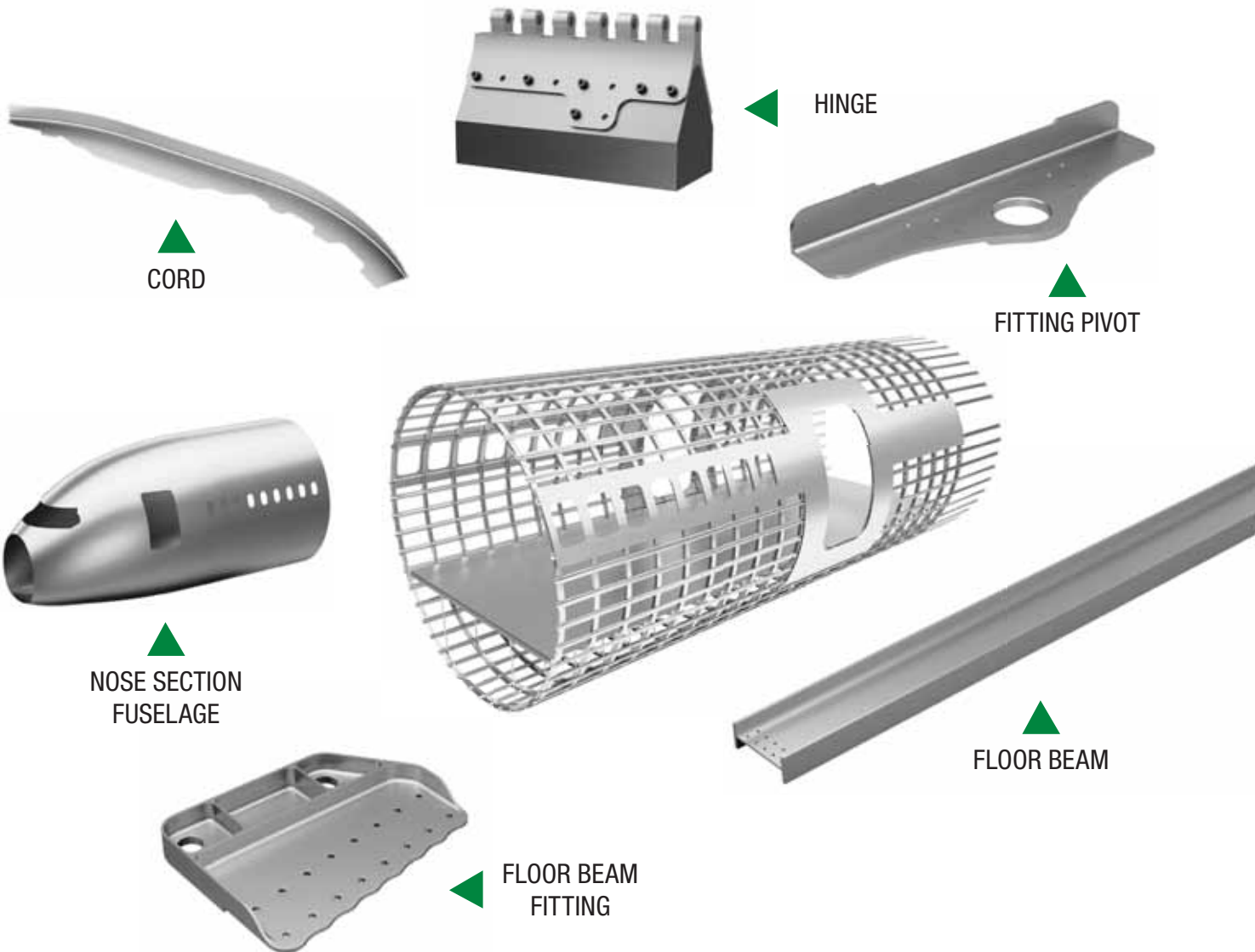
NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 For better surface finish, reduce feed per tooth.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

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Structure



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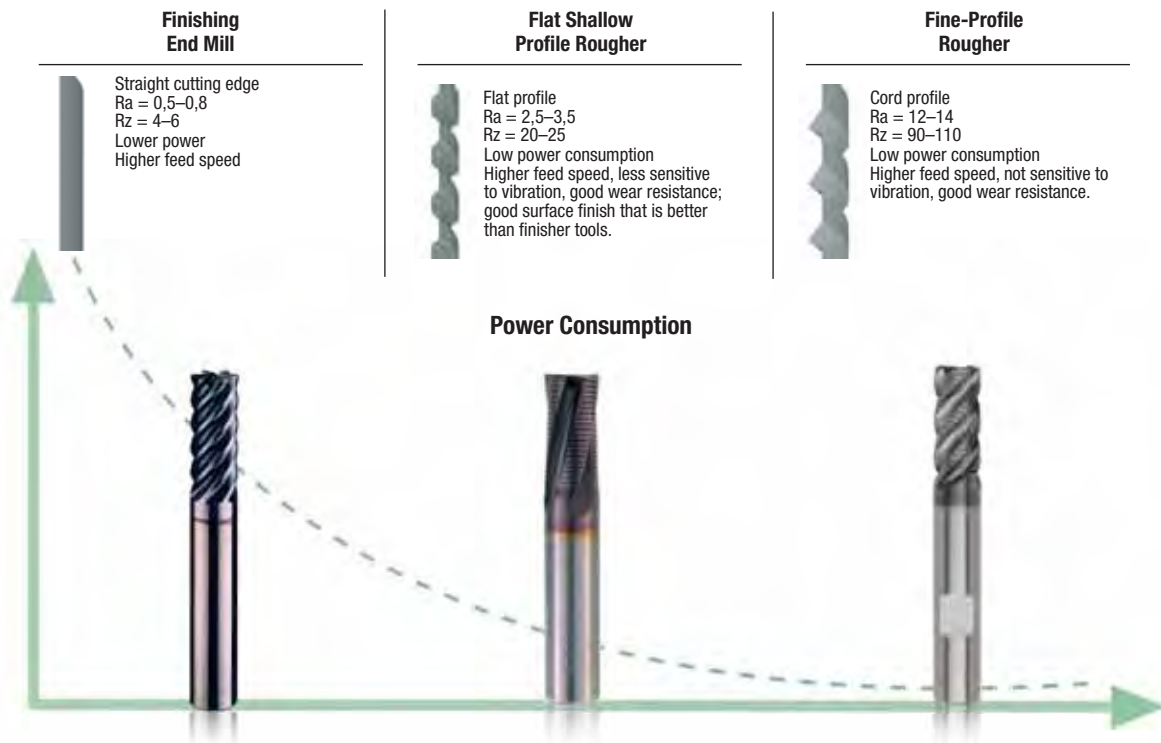
WIDIA

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HP Rougher

High-Performance Solid Carbide End Mills • Roughing

Rougher Profiles



Profile Name
Flat shallow profile

Application Area:
Wide product range to cover most applications in aerospace market segments. Mainly for hard steel and stainless steel and high-temperature alloys applications in profiling and slotting, very good chip evacuation and wear resistance. It will provide surface finish Ra 2.5-3.5 Rz 20 25.

Profile Name
Fine-profile rougher

Application Area:
Wide product range to cover most applications in general engineering, as well as aerospace market segments. Mainly for steel applications in profiling and slotting, provides less force on the part. It will provide Surface finish Ra 12-14 Rz 90-110.

Profile Name
Chipbreaker pitch

Application Area:
Wide product range to cover most applications in general engineering, as well as aerospace market segments. Mainly for steel and stainless steel applications in profiling and slotting, provides less force on the part. It will provide surface finish Ra 2.5-3.5 Rz 20 25.



DQ13

- Centre cutting.
- Chipbreaker profile.
- All ferrous workpiece materials.

4906

- Centre cutting.
- Fine profile.
- All ferrous workpiece materials.

4976/4U70 Series

- Centre cutting.
- Flat shallow profile.
- Steels, stainless steel, and high-temperature alloys.



4U50

- Shallow pitch rougher.
- 4–6 flutes with variable spacing.
- Short length of cut and 3 x D diameter neck length.
- Stainless steel and high-temp alloys.
- Centre cutting.

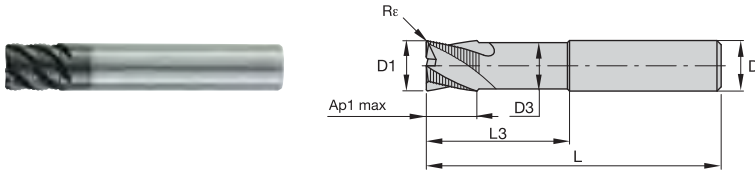
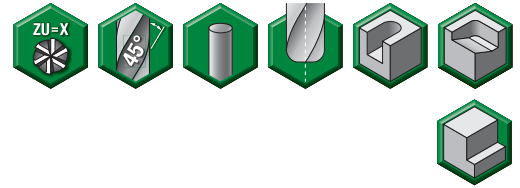
4U80

- Shallow pitch rougher.
- 4–6 flutes with variable spacing.
- Regular length of cut.
- Stainless steel and high-temp alloys.
- Centre cutting.



FOR MORE INFORMATION ON THE PRODUCTS SHOWN, PLEASE SEE PAGES B43–B50.

Series 4U50 • Metric

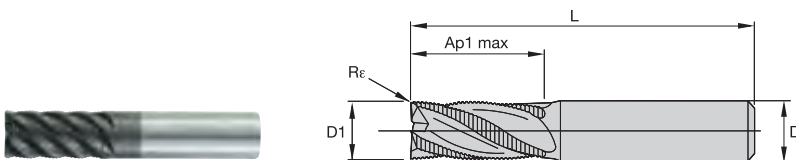
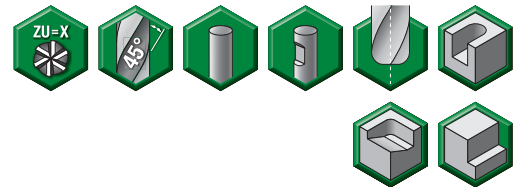


- first choice
- alternate choice

P	●
M	●
K	●
N	●
S	●
H	●

catalogue number	D1	D	D3	length of cut Ap1 max	L3	length L	Re	ZU	WS15PE
4U50M080R3TC	8,0	8	7,52	8,00	24,00	63	0,30	4	6431404
4U50M100R4TE	10,0	10	9,40	10,00	30,00	72	0,50	4	6431405
4U50M120R5TE	12,0	12	11,28	12,00	36,00	83	0,50	4	6431406
4U50M160R6TE	16,0	16	15,04	16,00	48,00	92	0,50	6	6431407
4U50M200R7TG	20,0	20	18,80	20,00	60,00	104	1,00	6	6431408

Series 4U80 • Metric



- first choice
- alternate choice

P	●
M	●
K	●
N	●
S	●
H	●

catalogue number	D1	D	length of cut Ap1 max	length L	Re	ZU	WS15PE
4U80M060R2TC	6,0	6	13,00	57	0,30	4	6431246
4U80M080R3TC	8,0	8	16,00	63	0,30	4	6431247
4U80M100R4TE	10,0	10	22,00	72	0,50	4	6431248
4U80M120R5TE	12,0	12	26,00	83	0,50	4	6431249
4U80M160R6TE	16,0	16	32,00	92	0,50	6	6431250
4U80M200R7TG	20,0	20	38,00	104	1,00	6	6431401
4U80M250R8TG	25,0	25	45,00	121	1,00	6	6431402



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High-Performance Solid Carbide End Mills • Roughing

INDEXABLE MILLING

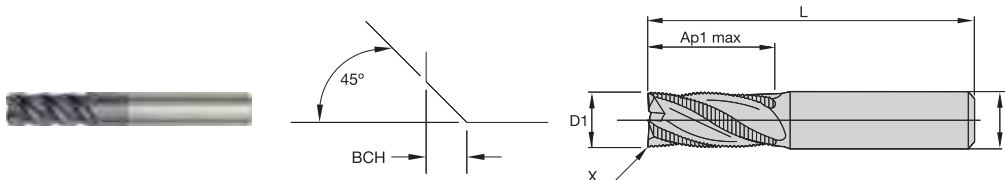
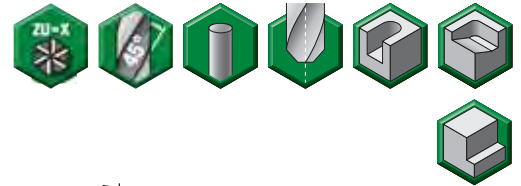
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Series 4970 • Metric

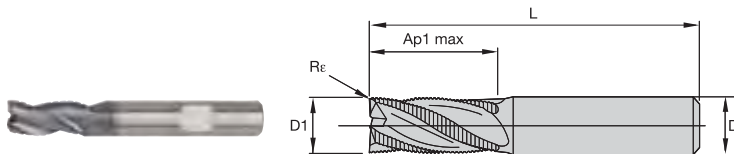
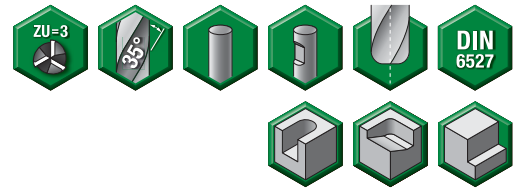


● first choice
○ alternate choice

P	●
M	○
K	●
N	○
S	○
H	○

catalogue number	D1	D	length of cut Ap1 max	L3	length L	BCH	ZU	TiAlN-LT
497008003LT	8,0	8	16,00	16,00	63	0,60	6	1657243

Series DQ13 • Metric



● first choice
○ alternate choice

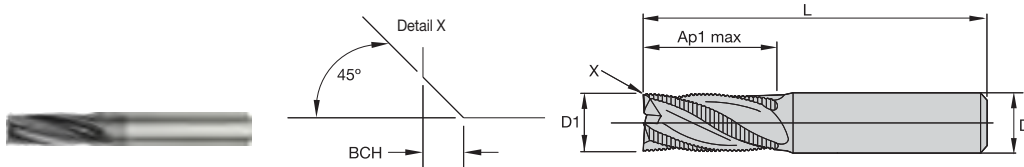
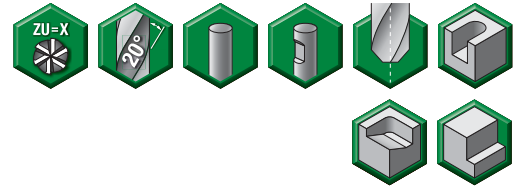
P	●
M	○
K	○
N	○
S	○
H	○

catalogue number	D1	D	length of cut Ap1 max	length L	Re	WP15PE
DQ1303002W	3,0	6	7,00	54	0,25	5560536
DQ1305002W	5,0	6	10,00	57	0,25	5560538
DQ1306002W	6,0	6	10,00	57	0,45	5560539
DQ1312005W	12,0	12	22,00	83	0,45	5560703
DQ1314014W	14,0	14	22,00	83	0,45	5560704



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Series 4906 • Metric

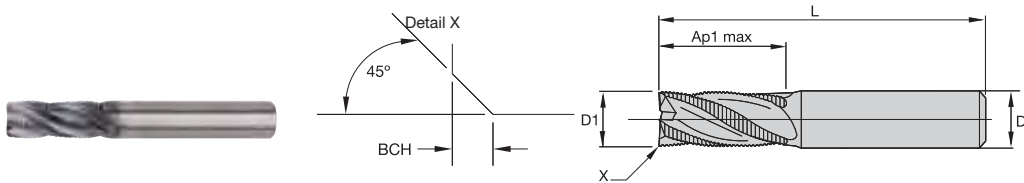
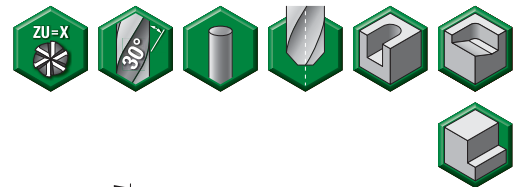


- first choice
- alternate choice

P	●
M	●
K	●
N	○
S	○
H	●

catalogue number	D1	D	length of cut Ap1 max	length L	BCH	ZU	WP15PE
490605002RW	5,0	6	13,00	57	0,30	3	1657010
490606002RW	6,0	6	13,00	57	0,30	3	1657019
490607003RW	7,0	8	16,00	63	0,30	3	1657025
490608003RW	8,0	8	16,00	63	0,30	3	1657034
490610004RT	10,0	10	22,00	72	0,50	4	1657050
490610004RW	10,0	10	22,00	72	0,50	4	1657051
490612005RT	12,0	12	26,00	83	0,50	4	1657063
490612005RW	12,0	12	26,00	83	0,50	4	1657064
490616006RT	16,0	16	32,00	92	0,50	4	1657096
490616006RW	16,0	16	32,00	92	0,50	4	1657097
490620007RW	20,0	20	38,00	104	0,50	4	1657113

Series 4976 • Metric



- first choice
- alternate choice

P	●
M	●
K	●
N	○
S	○
H	●

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

INDEXABLE MILLING

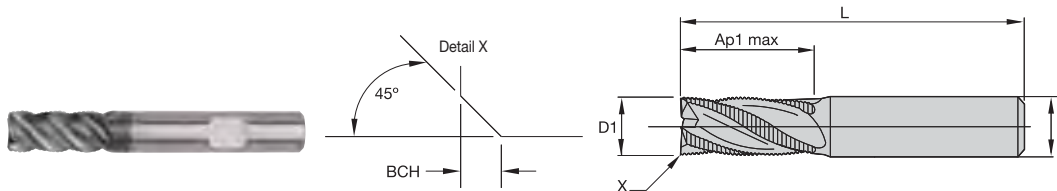
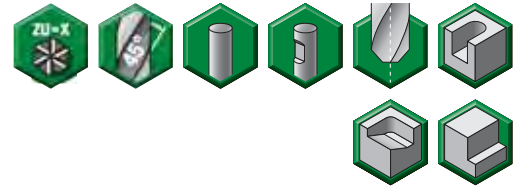
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Series 4U70 • Metric

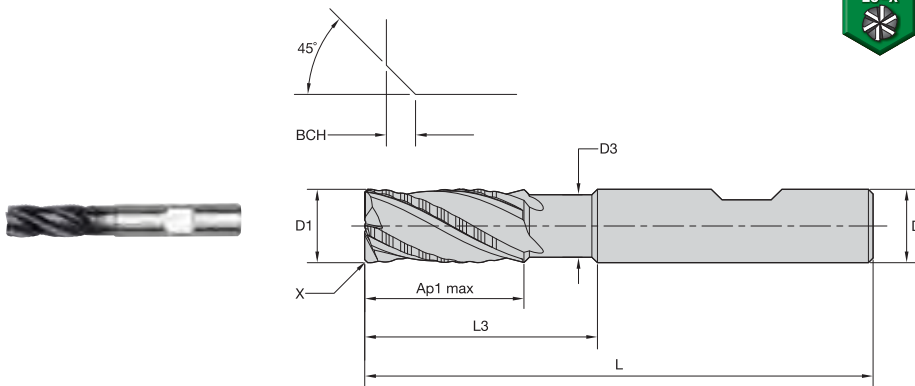
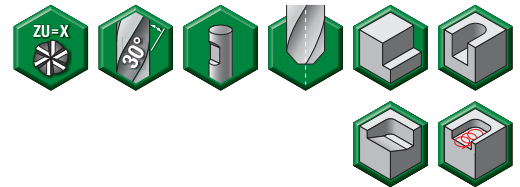


● first choice
○ alternate choice

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

catalogue number	D1	D	length of cut Ap1 max	length L	BCH	ZU	WP15PE
4U7006002W	6,0	6	13,00	57	0,30	4	5583436
4U7008003W	8,0	8	16,00	63	0,40	4	5583437
4U7012005W	12,0	12	26,00	83	0,60	4	5583439
4U7016006W	16,0	16	32,00	92	0,60	6	5583440
4U7016046T	16,0	16	32,00	92	0,60	4	5583431
4U7020047T	20,0	20	38,00	104	1,00	4	5583433

Series 49N6 • Metric



● first choice
○ alternate choice

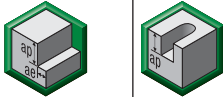

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M	<input type="checkbox"/>
K	<input type="checkbox"/>
N	<input type="checkbox"/>
S	<input type="checkbox"/>
H	<input type="checkbox"/>

catalogue number	D1	D	D3	length of cut Ap1 max	L3	length L	BCH	ZU	WP15PE
49N606002MW	6,0	6	5,50	13,00	21,00	57	0,30	3	3474585
49N608003MW	8,0	8	7,50	16,00	27,00	63	0,30	3	3474587
49N610004MW	10,0	10	9,50	22,00	32,00	72	0,50	4	3474589
49N612005MW	12,0	12	11,00	26,00	38,00	83	0,50	4	3474591
49N616006MW	16,0	16	15,00	32,00	44,00	92	0,50	4	3474594





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Application Data • Series 4U50 • 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	14,0	16,0	18,0	20,0	25,0					
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	60	–	80	fz	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091			
	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 centres, please adjust parameters accordingly on diameters greater than 12mm.

Application Data • Series 4U80 • 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	14,0	16,0	18,0	20,0	25,0					
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	60	–	80	fz	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091			
	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 centres, please adjust parameters accordingly on diameters greater than 12mm.

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High-Performance Solid Carbide End Mills • Roughing

INDEXABLE MILLING


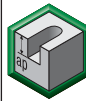

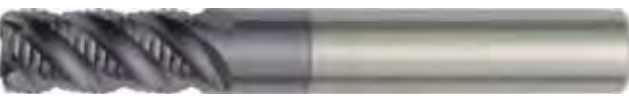
SOLID END MILLING

HOLEMAKING

TAPPING

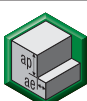



TURNING

Application Data • Series 4970 • Metric

Material Group					 												
	A		B		TiCN		TiAlN		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.								
					Cutting Speed – vc m/min		Cutting Speed – vc m/min		D1 – Diameter								
	ap	ae	ap		min	max	min	max	mm	6,0	8,0	10,0	12,0	16,0	20,0	25,0	
P	3	1 x D	0,5 x D	0,5 x D	96	– 128	120	– 160	fz	0,031	0,043	0,051	0,063	0,078	0,101	0,114	
	4	1 x D	0,3 x D	0,4 x D	72	– 120	90	– 150	fz	0,028	0,038	0,046	0,056	0,069	0,088	0,098	
	5	1 x D	0,5 x D	0,5 x D	48	– 80	60	– 100	fz	0,025	0,034	0,041	0,051	0,063	0,081	0,091	
M	6	1 x D	0,3 x D	0,4 x D	40	– 60	50	– 75	fz	0,021	0,029	0,034	0,042	0,051	0,065	0,071	
	1	1 x D	0,5 x D	0,5 x D	64	– 80	80	– 100	fz	0,031	0,043	0,051	0,063	0,078	0,101	0,114	
K	2	1 x D	0,5 x D	0,5 x D	48	– 64	60	– 80	fz	0,025	0,034	0,041	0,051	0,063	0,081	0,091	
	3	1 x D	0,5 x D	0,5 x D	48	– 64	60	– 80	fz	0,021	0,029	0,034	0,042	0,051	0,065	0,071	
S	1	1 x D	0,5 x D	0,5 x D	96	– 128	120	– 160	fz	0,037	0,051	0,061	0,075	0,091	0,114	0,124	
	2	1 x D	0,3 x D	0,3 x D	88	– 112	110	– 140	fz	0,031	0,043	0,051	0,063	0,078	0,101	0,114	
	3	1 x D	0,5 x D	0,5 x D	80	– 104	100	– 130	fz	0,025	0,034	0,041	0,051	0,063	0,081	0,091	
	1	1 x D	0,3 x D	0,3 x D	40	– 72	50	– 90	fz	0,031	0,043	0,051	0,063	0,078	0,101	0,114	
H	2	1 x D	0,3 x D	0,3 x D	16	– 32	20	– 40	fz	0,017	0,022	0,027	0,033	0,042	0,054	0,061	
	3	1 x D	0,4 x D	0,4 x D	40	– 64	50	– 80	fz	0,025	0,034	0,041	0,051	0,063	0,081	0,091	
	4	1 x D	0,4 x D	0,4 x D	36	– 52	45	– 65	fz	0,022	0,031	0,038	0,046	0,058	0,074	0,084	
	1	1 x D	0,3 x D	0,3 x D	64	– 112	80	– 140	fz	0,028	0,038	0,046	0,056	0,069	0,088	0,098	
H	2	1 x D	0,2 x D	0,2 x D	56	– 96	70	– 120	fz	0,021	0,029	0,034	0,042	0,051	0,065	0,071	
	3	1 x D	0,2 x D	0,2 x D	48	– 72	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 centres, please adjust parameters accordingly on diameters >12mm.

Application Data • Series DQ13 • 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	7,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	
P	0	1 x D	0,5 x D	0,75 x D	150	– 200	fz	0,021	0,028	0,036	0,044	0,052	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	0,052	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	0,052	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	0,043	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	0,039	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	0,035	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	0,029	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	0,043	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	0,035	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	0,029	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	0,052	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	0,043	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	0,035	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	0,017	0,023	0,030	0,036	0,043	0,050	0,061	0,070	0,079	0,087	0,095	0,101	
	2	1 x D	0,3 x D	0,3 x D	25	– 40	fz	0,009	0,013	0,016	0,019	0,023	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	60	– 80	fz	0,014	0,019	0,024	0,029	0,035	0,040	0,048	0,056	0,063	0,070	0,076	0,081	
H	4	1 x D	0,4 x D	0,75 x D	50	– 60	fz	0,011	0,016	0,021	0,026	0,031	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	0,039	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 centres, please adjust parameters accordingly on >12mm diameters.

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Application Data • Series 4906 • Metric

Material Group					★ WP15PE														
	Side Milling (A) and Slotting (B)			Cutting Speed – vc m/min			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.												
	A		B	min	max	mm	D1 – Diameter												
	ap	ae	ap				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	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
	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
K	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	1	1,5 x D	0,4 x D	0,75 x D	50	–	90	fz	0,020	0,025	0,031	0,043	0,051	0,060	0,067	0,074	0,080	0,086	0,097
	3	1,5 x D	0,3 x D	0,3 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
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 centres, please adjust parameters accordingly on >12mm diameters.

Application Data • Series 4976 • Victory™ Grades

Material Group					★ WP15PE														
	Side Milling (A) and Slotting (B)			Cutting Speed – vc m/min			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.												
	A		B	min	max	mm	D1 – Diameter												
	ap	ae	ap				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	1	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
	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
K	1	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
	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
S	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	1	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
	4	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 centres, please adjust parameters accordingly on >12mm diameters.

★ = ALL-STAR PORTFOLIO PRODUCT. ALL-STAR PRODUCTS ARE PROVEN SOLUTIONS THAT ARE ALWAYS AVAILABLE.

High-Performance Solid Carbide End Mills • Roughing

INDEXABLE MILLING

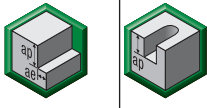

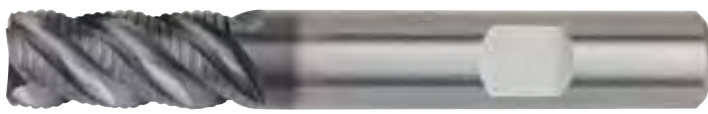
SOLID END MILLING

HOLEMAKING

TAPPING

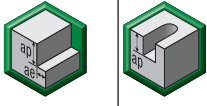

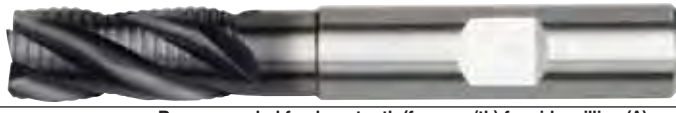
TURNING

Application Data • Series 4U70 • 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		
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	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	
	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	
K	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	
	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	
S	1	1 x D	0,3 x D	0,75 x D	50	– 90	fz	0,036	0,050	0,061	0,070	0,087	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	60	– 80	fz	0,029	0,040	0,048	0,056	0,070	0,081	0,091	
H	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 centres, please adjust parameters accordingly on >12mm diameters.

Application Data • Series 49N6 • 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	0,024	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	1	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
	2	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
	3	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	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
	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
S	1	1,5 x D	0,4 x D	0,75 x D	50	– 90	fz	0,020	0,025	0,031	0,043	0,051	0,060	0,067	0,074	0,080	0,086	0,097
	3	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
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 centres, please adjust parameters accordingly on >12mm diameters.

 = ALL-STAR PORTFOLIO PRODUCT. ALL-STAR PRODUCTS ARE PROVEN SOLUTIONS THAT ARE ALWAYS AVAILABLE.

Table of Factors to Maximise Ball Nose Cutting Speed for Hard Machining • Metric

Calculation Examples

Table of Factors for Speed Calculation of Ball Nose

Average Wall Angle	ap/D						
	0.003	0.006	0.010	0.016	0.020	0.025	0.030
0.0°	9.1	6.5	5.0	4.0	3.6	3.2	2.9
3.0°	6.2	4.9	4.0	3.3	3.0	2.8	2.6
5.0°	5.1	4.2	3.5	3.0	2.8	2.5	2.4
8.0°	4.1	3.4	3.0	2.6	2.4	2.3	2.1
10.0°	3.6	3.1	2.7	2.4	2.3	2.1	2.0
15.0°	2.8	2.5	2.2	2.0	1.9	1.8	1.7
20.0°	2.3	2.1	1.9	1.8	1.7	1.6	1.6
30.0°	1.7	1.6	1.5	1.4	1.4	1.3	1.3
40.0°	1.4	1.3	1.3	1.2	1.2	1.2	1.2
50.0°	1.2	1.2	1.1	1.1	1.1	1.1	1.1
55.0°	1.1	1.1	1.1	1.1	1.1	1.0	1.0

For calculating real cutting speed, use formula: Basic cutting speed * Factor

Choose the coefficient according to the ap/D and average wall angle.

Example 1:

For Tool = 10mm and ap = 0,2mm for average wall angle 0°, ap/D ratio equal 0,2/10 = 0,02. Factor equal 3.6.

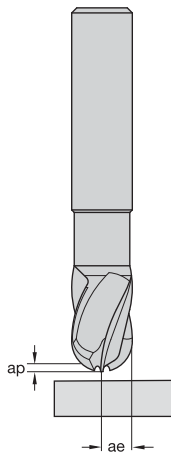
Example 2:

For Tool = 8mm and ap = 0,1mm for average wall angle 10°, ap/D ratio equal 0,1/8 = 0,0125. Factor will be between 2.7 and 2.4, choose 2.6.

Keep in mind shank diameter and length effect.

If tool length out of the chuck is more than 2 x D, please decrease feed per tooth by 15% each 1 x D.

Material Group	TiAlN or AlTiN Basic Cutting Speed Vc m/min		
	min		max
P3	160	-	180
P4	140	-	160
H1	100	-	140
H2	70	-	120
H3	60	-	90
H4	50	-	70



Application example #1 = face milling a flat surface

D = 10mm

ap = 0,2mm

Average wall angle = 0°

Finishing H2

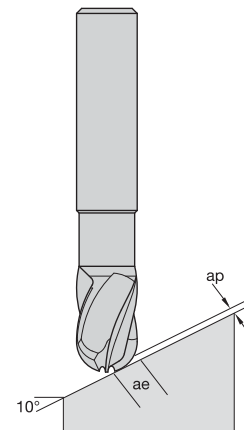
Starting vc from chart = 100

ap/D = 0.02

Factor from table = 3.6

vc to programme into machine = 100 * 3.6 = 360 m/min

RPM = 360 * 1000/3.14/10 = 11460 RPM



Application example #2 =

face milling a 10° average wall angle

D = 8mm

ap = 0,1mm

Average wall angle = 10°

Finishing H2

Starting vc from chart = 100

ap/D = 0,1/8 = 0,0125

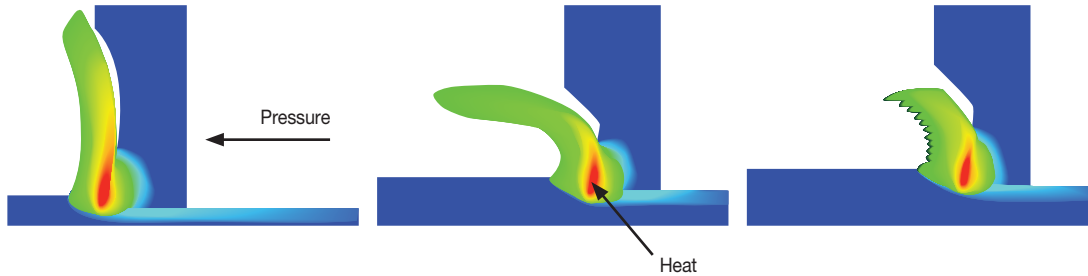
Factor from table = 2.6

vc to programme into machine = 100 * 2.6 = 260 m/min

RPM = 260 * 1000/3.14/10 = 7640 RPM

Trochoidal Milling

▼ Cutting Speed

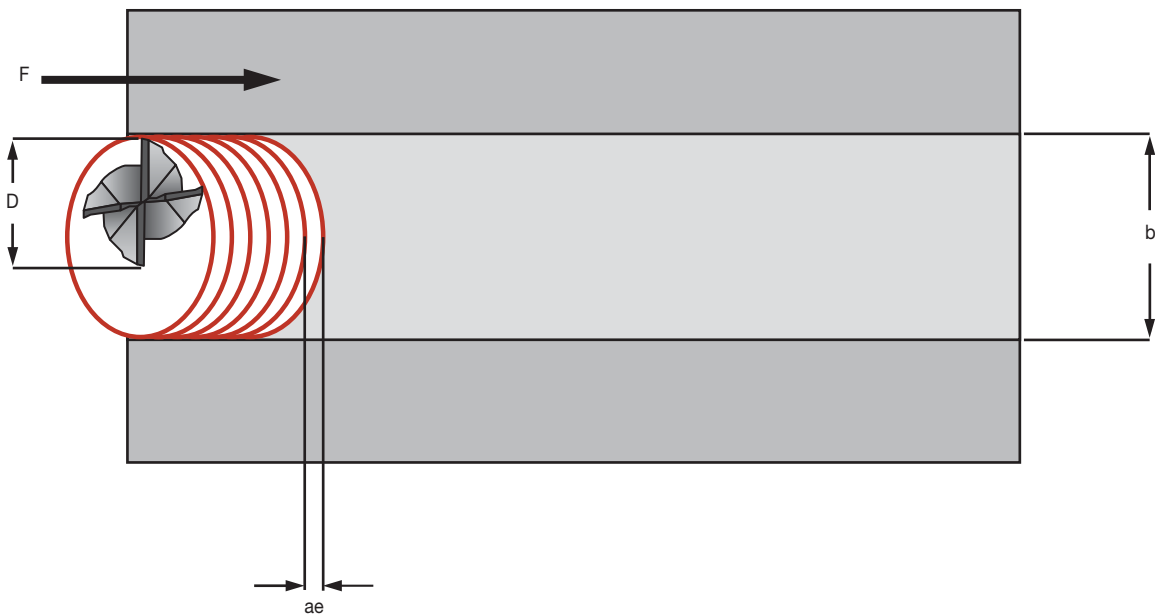


Reduced radial engagement influences the cutting speed, because the heat produced through the cutting process limits the cutting speed.

ae/D	full slot	50% ae	40% ae	30% ae	20% ae	10% ae	5% ae	4% ae
speed factors	0,9	1	1,1	1,2	1,3	1,4	2,5	3
phi [°]	180	90	78,46	66,42	53,13	36,87	25,84	23,07

▼ Static Trochoidal Milling for a Full Slot

- Use a tool in which $D < b$.
- Programme circles in the CNC programme (as a cycle).
- After one circle, repeat the same with an offset.
- Optimise by shortening the lane "in the air" to a form like a "D".



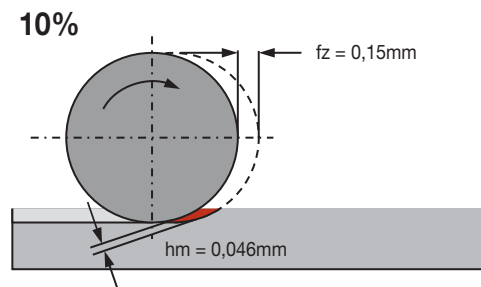
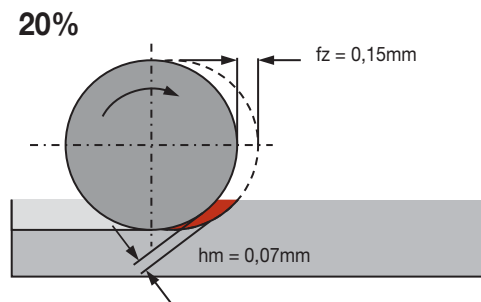
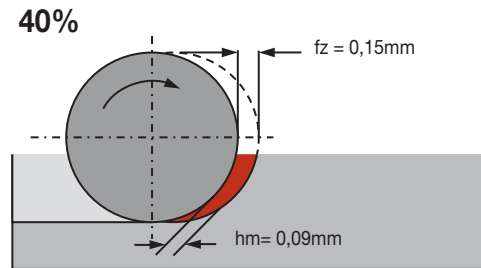
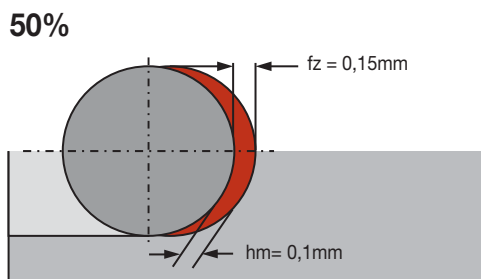
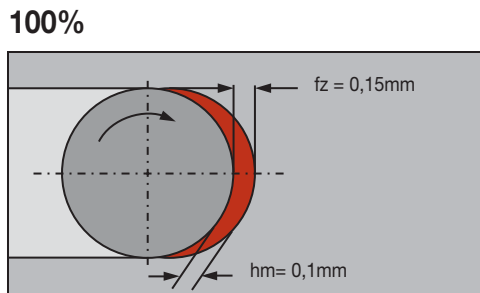
Trochoidal Milling can be performed with solid or indexable milling tools.

Trochoidal Milling

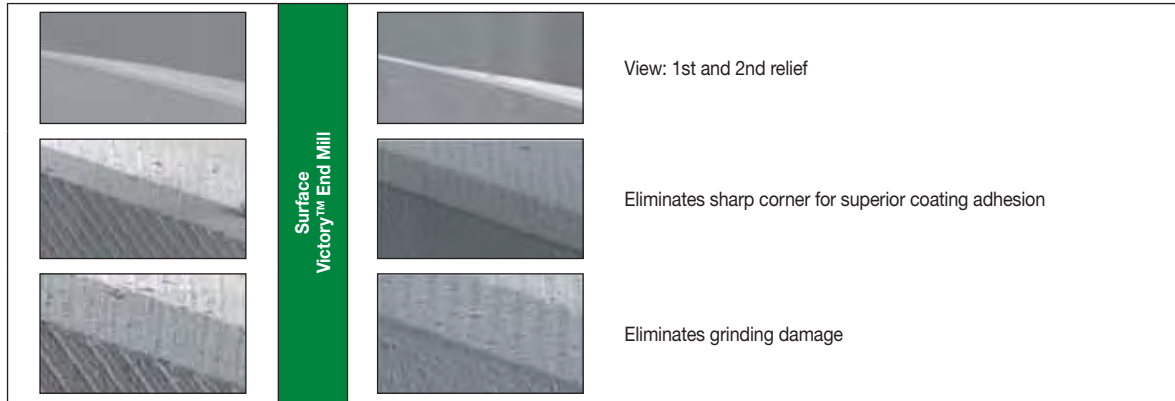
▼ ae and Chip Thickness

chip thinning effect		
ae	programmed feed (fz)	chip thickness (hm)
100%	0,15mm	0,1mm
50%	0,15mm	0,1mm
40%	0,15mm	0,09mm
20%	0,15mm	0,07mm
10%	0,15mm	0,046mm

The chip thickness needs to be compensated by feed.



Innovative Advantage of Victory™ Grades



WP15PE™	WS15PE™
<p>W = WIDIA™ P = Steels 15 = Application Range (Medium to Roughing) P = Carbide + PVD E = Solid End Mills</p>	<p>W = WIDIA™ S = High-Temp Alloys 15 = Application Range (Medium to Roughing) P = Carbide + PVD E = Solid End Mills</p>
<p>Primary Materials</p> <p>P0 through P4 Steels M1 through M3 Austenitic Stainless Steels K1 through K3 Cast Irons H1 Hardened Steels</p>	<p>Primary Materials</p> <p>S1 through S4 High-Temp Alloys P5 through P6 Ferritic and Martensitic Stainless Steels H1 Hardened Steels</p>
<p>Secondary Materials</p> <p>S1 through S4 High-Temp Alloys H2 Hardened Steels</p>	<p>Secondary Materials</p> <p>M1 through M3 Austenitic Stainless Steels H2 Hardened Steels</p>

The new Victory grades are spread across the high-performance offering, including high-performance roughers, high-performance finishers, and select VariMill™ platforms.

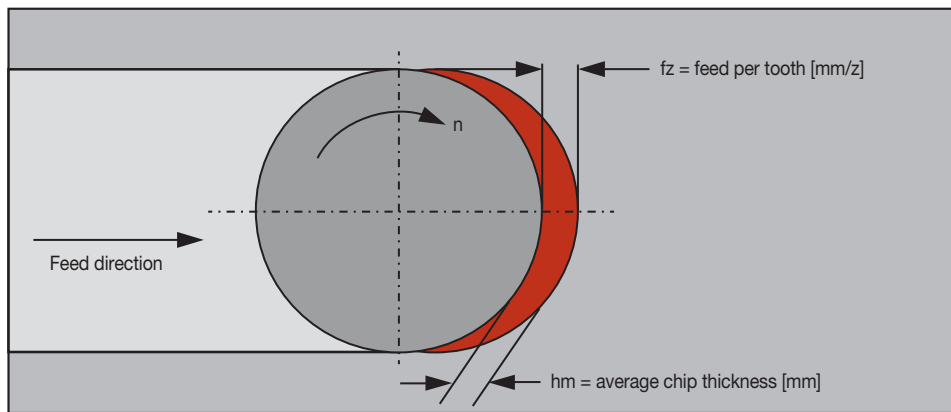


Metric	series	Victory Grade		● first choice ○ alternate choice					
		WP15PE	WS15PE	P	M	K	N	S	H
VariMill I™	4777, 47N0	✓		●	●	●		○	○
VariMill II™	577C	✓		●	●	●		○	○
VariMill II™	57NC		✓	○	○			●	○
VariMill II™ ER	577E, 57NE		✓	○	○			●	○
HP Roughers	DQ13, 4976, 4U40, 4U70	✓		●	●	●		○	○
HP Finishers	4001JJ, 4503JJ, D507, D518	✓		●	●	●		○	○

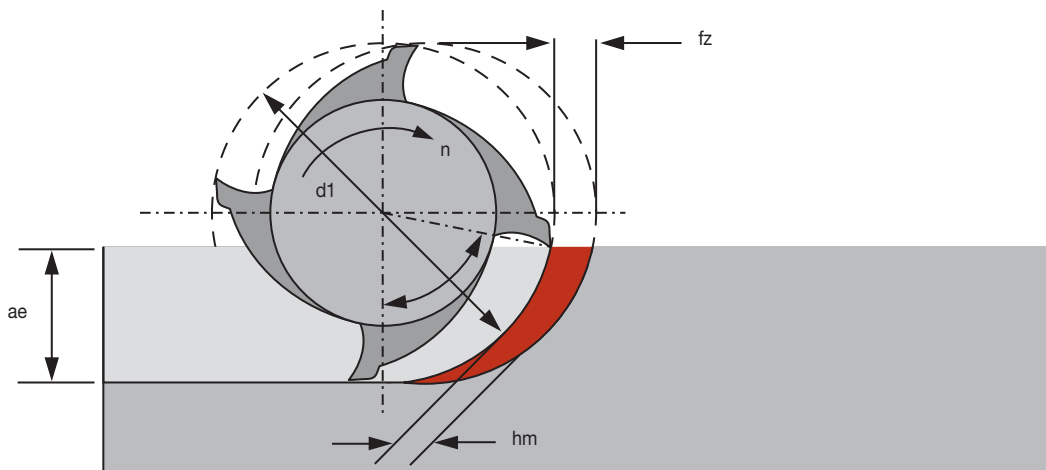
Trochoidal Milling

▼ Conventional Slotting

- Full slotting limitations:
 - Usually not more than $a_p = 1 \times D$.
 - Conventional and climb milling at the same time.
 - High heat development on the tool and on the workpiece.
 - Difficult chip evacuation.
 - High radial forces.
- This means:
 - No constant chip thickness.
 - Low MRR.
 - Surface quality from the left to right side are different.
 - Limited tool life.
 - High power and torque requirements for the machine.



▼ ae and Chip Thickness



To calculate average chip thickness:

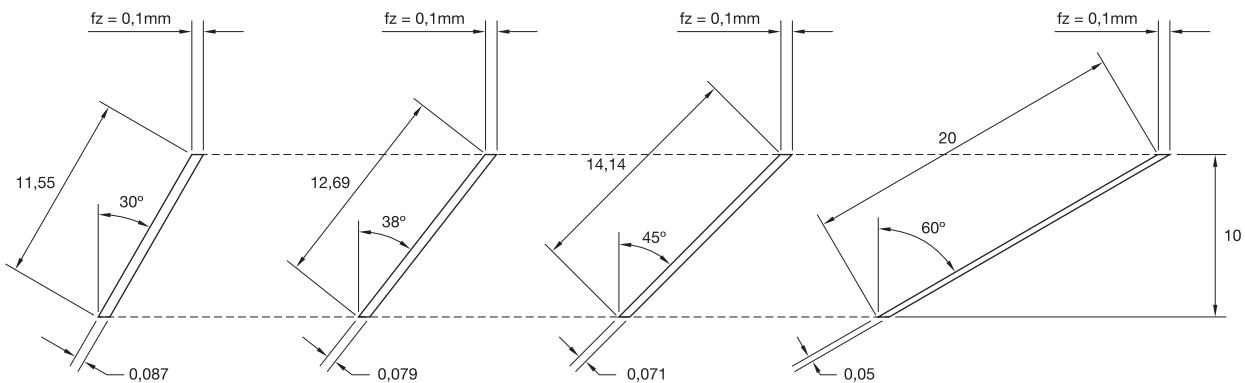
$$hm = fz \cdot \left(\sqrt{\frac{ae}{d1}} \right)$$

Simplified formula for shown application and 90° angles on the tool.
The chip thickness defines the load on the cutting edge.

Trochoidal Milling

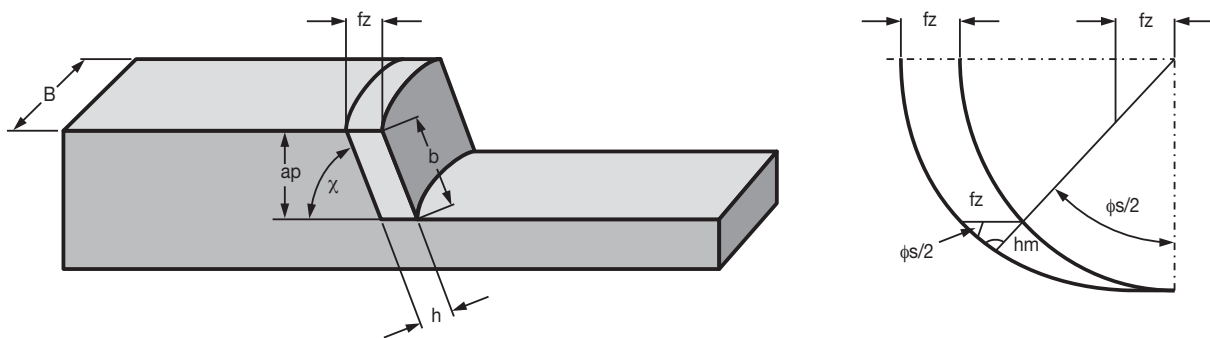
▼ Helix Angle and Chip Thickness

The chip thickness (h) depends on the helix angle of the cutting edge. If the feed fz is constant, the chip thickness gets thinner as helix angle rises. That means with more helix angle, the chip gets thinner — or you can rise feed rate to increase productivity and load to the cutting edge.



▼ Calculation of Chip Thickness

The chip thickness (h) is not constant, but defines the load of the cutting edge. By reducing the load on the cutting edge, machining at higher speeds is possible through the machining parameters. For easier calculation, use an average chip thickness h_m . When calculating machining data this way cutting data may be compromised because the workpiece is often a different shape.



- h_m [mm] = average chip thickness
- ϕ_s [°] = engagement angle
- ae [mm] = width of engagement
- D_1 [mm] = outer diameter tool
- fz [mm] = feed per tooth
- χ [°] = lead angle
- λ [°] = helix angle *

$$h_m = \frac{360^\circ}{\pi \cdot \phi_s} \cdot \frac{ae}{D} \cdot fz \cdot \sin \chi$$

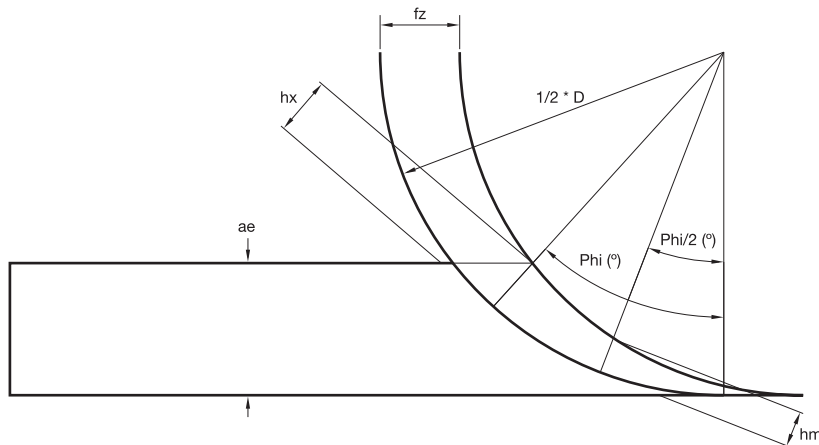
* Solid End Mills: $\chi = 90^\circ - \lambda$

NOTE: It makes no difference if the tool is solid or an indexable milling tool.

Trochoidal Milling

▼ Differences between h_m and h_x

In conventional milling, it makes sense to calculate the load to the cutting edge through h_m . With reducing the a_e to very low values, you can calculate with the maximum chip thickness h_x to make sure that the feed per tooth is set up correctly.



Conventional

$$h_m = 360^\circ / \pi \cdot \phi_s \cdot a_e / D \cdot f_z \cdot \sin x$$

h_m [mm]	=	average chip thickness
f_s [°]	=	engagement angle
a_e [mm]	=	width of engagement
$D1$ [mm]	=	outer diameter tool
f_z [mm]	=	feed per tooth
χ [°]	=	lead angle
λ [°]	=	helix angle *

Smart Machining

$$h_x = 360^\circ / \pi \cdot \phi_s \cdot 2 \cdot a_e / D \cdot f_z \cdot \sin x$$

h_x [mm]	=	maximum chip thickness
f_s [°]	=	engagement angle
a_e [mm]	=	width of engagement
$D1$ [mm]	=	outer diameter tool
f_z [mm]	=	feed per tooth
χ [°]	=	lead angle
λ [°]	=	helix angle *

* Solid End Mills: $\chi = 90^\circ - \lambda$

Trochoidal Milling can be performed with solid or indexable milling tools.

GENERAL PURPOSE SOLID CAR

2-FLUTE GP

Pages B60–B67

- D002/D012/4002/4012
- D001/D011/2838/4001/4011/4021



3-FLUTE GP

Pages B60, B68–B71

- 4003/4013/D003/D013



4-FLUTE GP

Pages B60, B72–B78

- 4004/4014/2528/4004/4014/4024
- D010/4000/4010
- 4004/4014/4024

WIDIA-Hanita™ General Purpose End Mills offer plunging, slotting, and profiling for a wide range of materials and applications. Designed to provide high metal removal rates and excellent surface conditions at a value price.

TO SEE ALL PRODUCT LINES, VISIT OUR DIGITAL RESOURCES



WIDIA NOVO™ Application
Download to your desktop or tablet:
widia.com/novo



WIDIA™ Machining Central Mobile App
Download for iOS or Android:
widia.com/en/featured/WidiaMobileApp

General Purpose End Mills

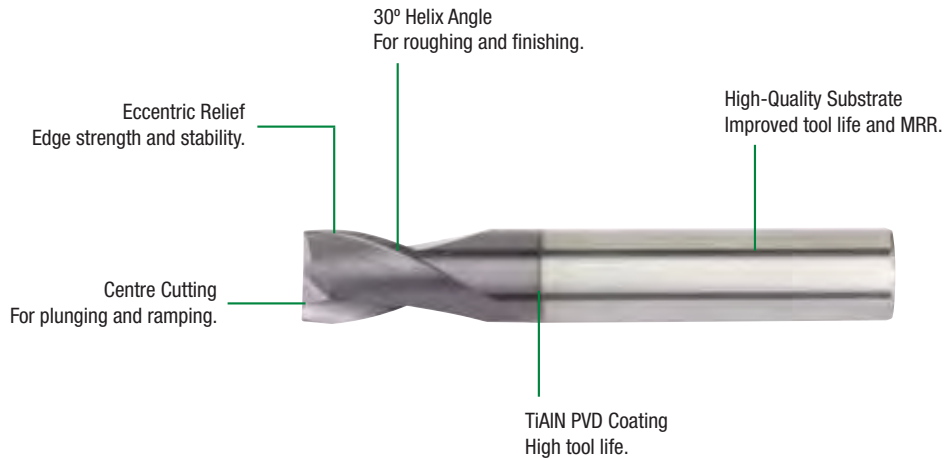
2-, 3-, and 4-Flute General Purpose Solid Carbide End Mills

A wide range of diameters, lengths, and corner styles (such as chamfered, sharp edge, and ball nose) are available from stock.

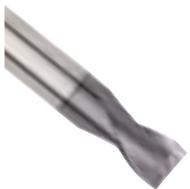
2-, 4-Flute Materials:



3-Flute Materials:



2-Flute



D002/D012/4002/4012

- Wide range of lengths-of-cut — short, regular, long, and extra long.
- Steel, stainless steel, and cast iron.
- Centre cut.

4-Flute



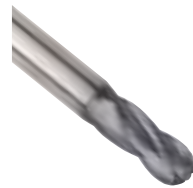
4004/4014/2528/4004/4014/4024

- Wide range of lengths-of-cut — short, regular, long, and extra long.
- Steel, stainless steel, and cast iron.



D001/D011/2838/4001/4011/4021

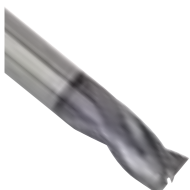
- Wide range of lengths-of-cut — short, regular, long, and extra long.
- Steel, stainless steel, and cast iron.
- Centre cut ball nose.



D010/4000/4010

- Wide range of lengths-of-cut — short, regular, long, and extra long.
- Steel, stainless steel, and cast iron.
- Centre cut ball nose.

3-Flute



4003/4013/D003/D013

- Centre cutting.
- Short length-of-cut and overall length for ramping applications.
- Steel, stainless, and cast iron.



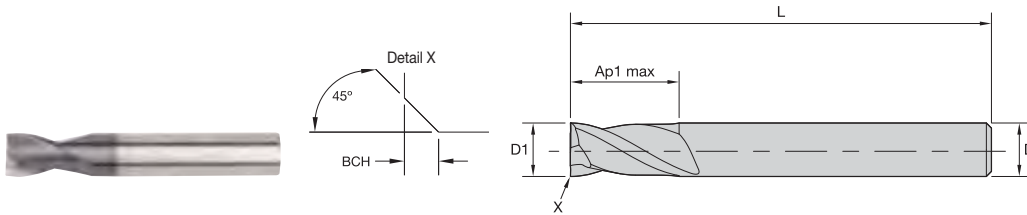
4004/4014/4024

- Regular length-of-cut with corner radius.
- Steel, stainless steel, and cast iron.
- Centre cut.



FOR MORE INFORMATION ON THE PRODUCTS SHOWN, PLEASE SEE PAGES B61–B78.

Series D002 • Metric



- first choice
- alternate choice

P	●
M	●
K	●
N	●
S	●
H	●

catalogue number	D1	D	length of cut Ap1 max	length L	BCH	TIALN
D0020300T004	3,0	6	4,00	50	—	5877503

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

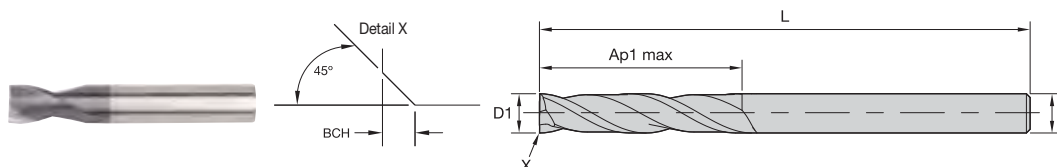
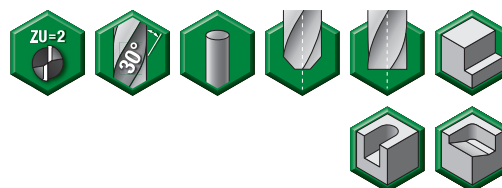
TURNING



THE ALL-STAR PROGRAMME FEATURES ONLY THE MOST POPULAR PLATFORMS, GRADES, AND SIZES. FOR THE COMPLETE OFFERING, VISIT WIDIA.NOVO™ OR WIDIA.COM.

General Purpose Solid Carbide End Mills • Roughing/Finishing

Series 4002 4012 • Metric



- first choice
- alternate choice

P	●
M	●
K	●
N	●
S	●
H	●

catalogue number	D1	D	length of cut Ap1 max	length L	BCH	TIALN
40020100T004	1,0	3	4,00	38	—	5873484
40020150T004	1,5	3	4,00	38	—	5873485
40020180T004	1,8	3	4,00	38	—	5873486
40020200T006	2,0	3	6,30	38	—	5873487
40020250T006	2,5	3	6,30	38	—	5873488
40020300T009	3,0	3	9,50	38	—	5873489
40020300T019	3,0	3	19,00	63	—	5873490
40120300T025	3,0	3	25,00	75	—	5873491
40020350T012	3,5	4	12,00	54	—	5873492
40020400T012	4,0	4	12,00	50	0,10	5873493
40020400T012S	4,0	4	12,00	50	—	6092621
40020400T019	4,0	4	19,00	63	0,10	5873494
40020400T019S	4,0	4	19,00	63	—	6092622
40120400T031S	4,0	4	31,00	75	—	6092623
40120400T031	4,0	4	31,00	75	0,10	5873495
40020450T014S	4,5	6	14,00	50	—	6092624
40020500T014S	5,0	5	14,00	50	—	6092627
40020500T014	5,0	5	14,00	50	0,10	5873498
40020500T020S	5,0	5	20,00	63	—	6092628
40020500T020	5,0	5	20,00	63	0,10	5873499
40120500T031S	5,0	5	31,00	100	—	6092631
40120500T031	5,0	5	31,00	100	0,10	5873500
40020550T014	5,5	6	14,00	50	0,10	5873501
40020550T014S	5,5	6	14,00	50	—	6092632
40020600T016S	6,0	6	16,00	50	—	6092633
40020600T016	6,0	6	16,00	50	0,10	5873502
40020600T028	6,0	6	28,00	76	0,10	5873503
40020600T028S	6,0	6	28,00	76	—	6092634
40120600T038S	6,0	6	38,00	100	—	6092636
40120600T038	6,0	6	38,00	100	0,10	5873504
40020700T020	7,0	7	20,00	63	0,10	5873505
40020700T020S	7,0	7	20,00	63	—	6092637
40020800T020	8,0	8	20,00	63	0,20	5873506
40020800T020S	8,0	8	20,00	63	—	6092638
40020800T028S	8,0	8	28,00	76	—	6092639
40020800T028	8,0	8	28,00	76	0,20	5873507
40120800T041S	8,0	8	41,00	100	—	6092640
40120800T041	8,0	8	41,00	100	0,20	5873508
40020900T020	9,0	9	20,00	63	0,20	5873509
40020900T020S	9,0	9	20,00	63	—	6092641
40021000T022	10,0	10	22,00	72	0,20	5873510
40021000T022S	10,0	10	22,00	72	—	6092643
40021000T032S	10,0	10	32,00	89	—	6092644
40021000T032	10,0	10	32,00	89	0,20	5873511
40121000T045S	10,0	10	45,00	100	—	6092645
40121000T045	10,0	10	45,00	100	0,20	5873512
40021100T025S	11,0	11	25,00	76	—	6092646
40021100T025	11,0	11	25,00	76	0,30	5873513
40021200T025	12,0	12	25,00	76	0,30	5873514
40021200T025S	12,0	12	25,00	76	—	6092647
40021200T045	12,0	12	45,00	100	0,30	5873515
40021200T045S	12,0	12	45,00	100	—	6092648
40121200T075S	12,0	12	75,00	150	—	6092650
40121200T075	12,0	12	75,00	150	0,30	5873516
40021400T032S	14,0	14	32,00	83	—	6092651
40021400T032	14,0	14	32,00	83	0,30	5873517

INDEXABLE MILLING

SOLID END MILLING

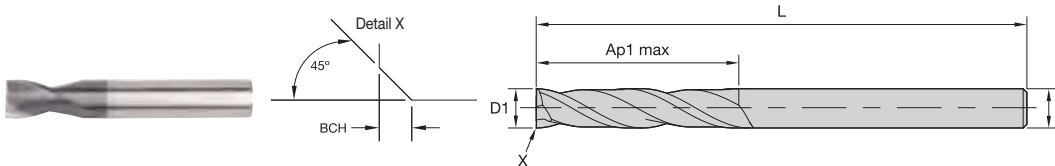
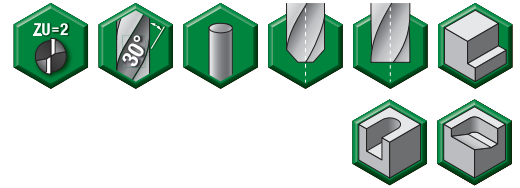
HOLEMAKING

TAPPING

TURNING

Series 4002 4012 • Metric

(continued)



- first choice
- alternate choice

P		●
M		●
K		●
N		●
S		●
H		●

catalogue number	D1	D	length of cut Ap1 max	length L	BCH	TIALN
40021400T050S	14,0	14	50,00	100	—	6092653
40021400T050	14,0	14	50,00	100	0,30	5873518
40121400T075S	14,0	14	75,00	150	—	6092654
40121400T075	14,0	14	75,00	150	0,30	5873519
40021600T032	16,0	16	32,00	89	0,30	5873520
40021600T032S	16,0	16	32,00	89	—	6092657
40021600T056S	16,0	16	56,00	110	—	6092658
40021600T056	16,0	16	56,00	110	0,30	5873531
40121600T075S	16,0	16	75,00	150	—	6092659
40121600T075	16,0	16	75,00	150	0,30	5873532
40021800T038	18,0	18	38,00	100	0,30	5873533
40021800T038S	18,0	18	38,00	100	—	6092660
40021800T060	18,0	18	60,00	125	0,30	5873534
40021800T060S	18,0	18	60,00	125	—	6092681
40022000T038S	20,0	20	38,00	104	—	6092683
40022000T038	20,0	20	38,00	104	0,30	5873536
40022000T056S	20,0	20	56,00	125	—	6092684
40122000T075S	20,0	20	75,00	150	—	6092685
40122000T075	20,0	20	75,00	150	0,30	5873538

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING



THE ALL-STAR PROGRAMME FEATURES ONLY THE MOST POPULAR PLATFORMS, GRADES, AND SIZES. FOR THE COMPLETE OFFERING, VISIT WIDIA NOVO™ OR WIDIA.COM.

INDEXABLE MILLING

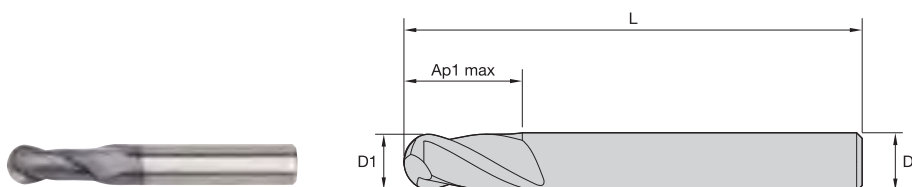
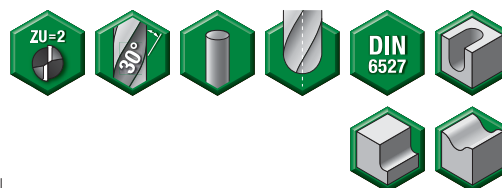
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Series D001 D011 • Metric

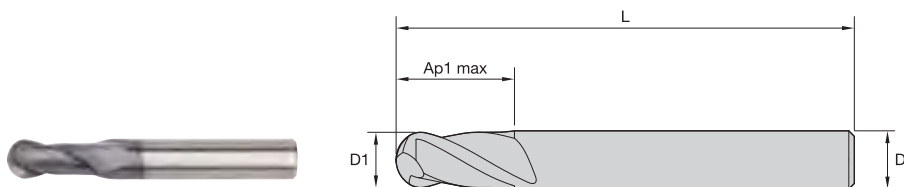
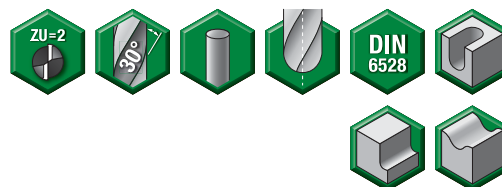


- first choice
- alternate choice

P	●
M	●
K	●
N	●
S	●
H	●

catalogue number	D1	D	length of cut Ap1 max	length L	TIALN
D0110200T006	2,0	6	6,00	57	5880362
D0010300T004	3,0	6	4,00	50	5880363
D0110700T013	7,0	8	13,00	63	5880369
D0111000T019	10,0	10	19,00	72	5880381

Series 2838 • Metric



- first choice
- alternate choice

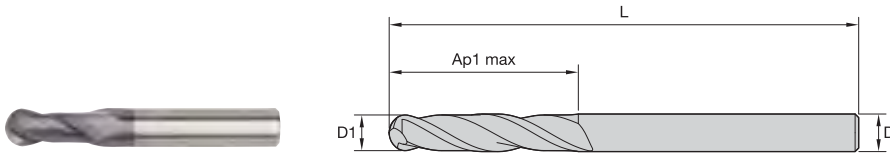
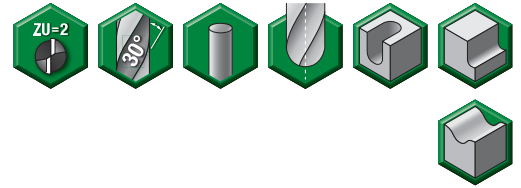
P	●
M	●
K	●
N	●
S	●
H	●

catalogue number	D1	D	length of cut Ap1 max	length L	TIALN
28381600T026	16,0	16	26,00	92	5880460



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Series 4001 4011 4021 • Metric



- first choice
- alternate choice

P	●
M	●
K	●
N	●
S	●
H	●

catalogue number	D1	D	length of cut Ap1 max	length L	TIALN
40010100T004	1,0	3	4,00	38	5880387
40010150T005	1,5	3	5,00	38	5880388
40010200T006	2,0	3	6,30	38	5880389
40010250T007	2,5	3	7,00	38	5880390
40010300T009	3,0	3	9,50	38	5880391
40010400T012	4,0	4	12,00	50	5880393
40110400T019	4,0	4	19,00	63	5880395
40210400T031	4,0	4	31,00	75	5880396
40010500T014	5,0	5	14,00	50	6209446
40210500T014	5,0	6	14,00	50	5880397
40110500T020	5,0	5	20,00	63	6209447
40010600T020	6,0	6	20,00	63	5880398
40110600T028	6,0	6	28,00	76	5880399
40210600T038	6,0	6	38,00	100	5880400
40010800T020	8,0	8	20,00	63	5880401
40011000T022	10,0	10	22,00	76	5880404
40211000T045	10,0	10	45,00	100	5880406
40011200T025	12,0	12	25,00	75	5880407
40111200T045	12,0	12	45,00	100	5880408
40211600T075	16,0	16	75,00	150	6209449
40012000T038	20,0	20	38,00	100	5880412

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

General Purpose Solid Carbide End Mills • Roughing/Finishing

INDEXABLE MILLING

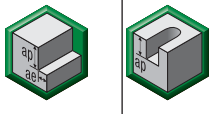

SOLID END MILLING

HOLEMAKING

TAPPING

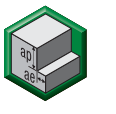

TURNING

Application Data • Series D002 4002 • 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	ae	min	max	mm	1,0	2,0	3,0	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0					
P	0	Ap1 max	0,1 x D	0,5 x D	150	–	200	fz	0,007	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114				
	1	Ap1 max	0,1 x D	0,5 x D	150	–	200	fz	0,007	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114				
	2	Ap1 max	0,1 x D	0,5 x D	140	–	190	fz	0,007	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114				
	3	Ap1 max	0,1 x D	0,5 x D	120	–	160	fz	0,006	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101				
	4	Ap1 max	0,1 x D	0,5 x D	90	–	150	fz	0,005	0,010	0,016	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088				
M	1	Ap1 max	0,1 x D	0,5 x D	90	–	115	fz	0,006	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101				
	2	Ap1 max	0,1 x D	0,5 x D	60	–	80	fz	0,005	0,009	0,014	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081				
K	1	Ap1 max	0,1 x D	0,5 x D	120	–	150	fz	0,007	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114				
	2	Ap1 max	0,1 x D	0,5 x D	110	–	140	fz	0,006	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101				

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 centres, please adjust parameters accordingly on >12mm diameters.

Application Data • Series D012 4012 • Metric

Material Group																							
	Side Milling (A)		TiAlN		Recommended feed per tooth (fz = mm/th) for side milling (A).																		
	A		Cutting Speed – vc m/min			D1 – Diameter																	
	ap	ae	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						
P	0	Ap1 max	0,1 x D	150	–	200	fz	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114				
	1	Ap1 max	0,1 x D	150	–	200	fz	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114				
	2	Ap1 max	0,1 x D	140	–	190	fz	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114				
	3	Ap1 max	0,1 x D	120	–	160	fz	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101				
	4	Ap1 max	0,1 x D	90	–	150	fz	0,010	0,016	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088				
M	1	Ap1 max	0,1 x D	90	–	115	fz	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101				
	2	Ap1 max	0,1 x D	60	–	80	fz	0,009	0,014	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081				
K	1	Ap1 max	0,1 x D	120	–	150	fz	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114				
	2	Ap1 max	0,1 x D	110	–	140	fz	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101				

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 centres, please adjust parameters accordingly on >12mm diameters.

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Application Data • Series D001 D011 2838 4001 • Metric

Material Group	Side Milling (A) and Slotting (B)		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	1,0	2,0	3,0	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0		
	0	1	2	3	4	1	2	3	4	5	6	8	10	12	14	16	18	20			
P	0	Ap1 max	0,1 x D	0,5 x D	150	–	200	fz	0,007	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	1	Ap1 max	0,1 x D	0,5 x D	150	–	200	fz	0,007	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	2	Ap1 max	0,1 x D	0,5 x D	140	–	190	fz	0,007	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	3	Ap1 max	0,1 x D	0,5 x D	120	–	160	fz	0,006	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	4	Ap1 max	0,1 x D	0,5 x D	90	–	150	fz	0,005	0,010	0,016	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088
M	1	Ap1 max	0,1 x D	0,5 x D	90	–	115	fz	0,006	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	2	Ap1 max	0,1 x D	0,5 x D	60	–	80	fz	0,005	0,009	0,014	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081
K	1	Ap1 max	0,1 x D	0,5 x D	120	–	150	fz	0,007	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	2	Ap1 max	0,1 x D	0,5 x D	110	–	140	fz	0,006	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101

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 centres, please adjust parameters accordingly on >12mm diameters.

Application Data • Series 4011 4021 • Metric

Material Group	Side Milling (A)		Recommended feed per tooth (fz = mm/th) for side milling (A).																
	A		Cutting Speed – vc m/min		D1 – Diameter														
	ap	ae	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		
	0	1	2	3	4	1	2	3	4	5	6	8	10	12	14	16	18	20	
P	0	Ap1 max	0,1 x D	150	–	200	fz	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	1	Ap1 max	0,1 x D	150	–	200	fz	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	2	Ap1 max	0,1 x D	140	–	190	fz	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	3	Ap1 max	0,1 x D	120	–	160	fz	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	4	Ap1 max	0,1 x D	90	–	150	fz	0,010	0,016	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088
M	1	Ap1 max	0,1 x D	90	–	115	fz	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	2	Ap1 max	0,1 x D	60	–	80	fz	0,009	0,014	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081
K	1	Ap1 max	0,1 x D	120	–	150	fz	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	2	Ap1 max	0,1 x D	110	–	140	fz	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101

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 centres, please adjust parameters accordingly on >12mm diameters.

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INDEXABLE MILLING

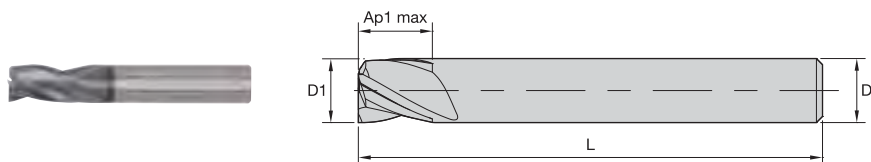
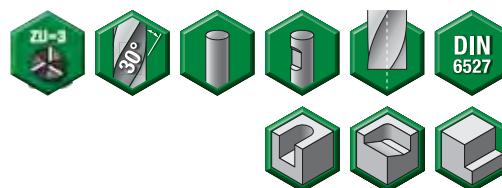
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Series D003..S D013..S • Metric

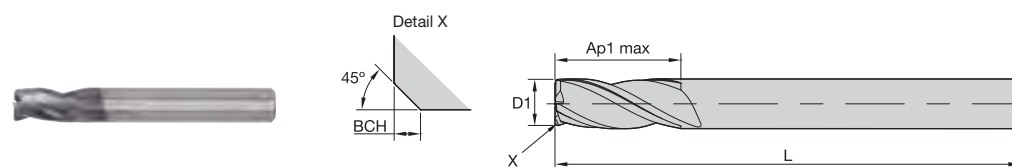
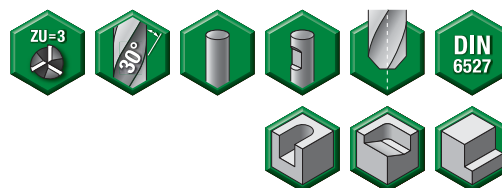


- first choice
- alternate choice

P	●
M	●
K	●
N	●
S	●
H	●

catalogue number	D1	D	length of cut Ap1 max	length L	TIALN
D0030300T004S	3,0	6	4,00	50	6144353
D0030350W004S	3,5	6	4,00	50	6144394

Series D003 D013 • Metric



- first choice
- alternate choice

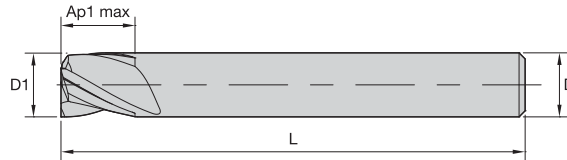
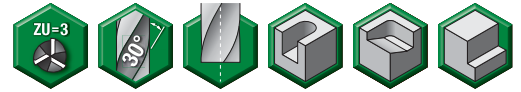
P	●
M	●
K	●
N	●
S	●
H	●

catalogue number	D1	D	length of cut Ap1 max	length L	BCH	TIALN
D0130600T010	6,0	6	10,00	57	0,10	6144377
D0131000T019	10,0	10	19,00	72	0,20	6144383



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Series 4003..S 4013..S • Metric



- first choice
- alternate choice

P	●
M	●
K	●
N	●
S	●
H	●

catalogue number	D1	D	length of cut Ap1 max	length L	TIALN
40030100T004S	1,0	3	4,00	38	6144056
40030150T004S	1,5	3	4,00	38	6144057
40030200T006S	2,0	3	6,30	38	6144058
40030250T006S	2,5	3	6,30	38	6144059
40030300T009S	3,0	3	9,50	38	6144060
40130300T019S	3,0	6	19,00	63	6145199
40030400T012S	4,0	4	12,00	50	6144551
40130400T019S	4,0	4	19,00	63	6145200
40030500T014S	5,0	6	14,00	50	6144552
40130500T020S	5,0	6	20,00	63	6145231
40030600T016S	6,0	6	16,00	50	6144553
40130600T028S	6,0	6	28,00	75	6145232
40030800T019S	8,0	8	19,00	63	6144554
40130800T028S	8,0	8	28,00	75	6145233
40031000T022S	10,0	10	22,00	76	6144555
40131000T032S	10,0	10	32,00	89	6145234
40031200T025S	12,0	12	25,00	75	6144556
40131200T045S	12,0	12	45,00	100	6145235
40031600T032S	16,0	16	32,00	89	6144557
40131600T056S	16,0	16	56,00	110	6145238
40132000T064S	20,0	20	64,00	125	6145241

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

General Purpose Solid Carbide End Mills • Roughing/Finishing

Series 4003 4013 • Metric

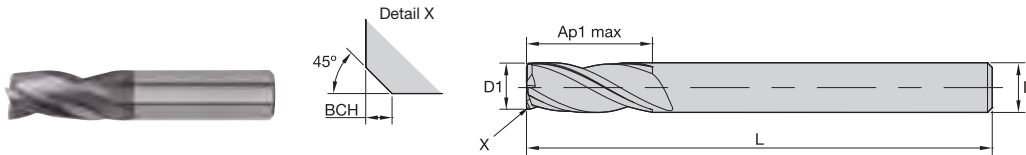
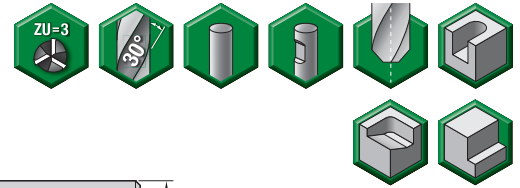
INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING



- first choice
- alternate choice

P	●
M	●
K	●
N	●
S	●
H	●

catalogue number	D1	D	length of cut Ap1 max	length L	BCH	TIALN
40030400T012	4,0	4	12,00	50	0,10	6145107
40130400T019	4,0	4	19,00	63	0,10	6145181
40130500T020	5,0	6	20,00	63	0,10	6145182
40030600T016	6,0	6	16,00	50	0,10	6145109
40130600T028	6,0	6	28,00	75	0,10	6145183
40030800T019	8,0	8	19,00	63	0,20	6145110
40130800T028	8,0	8	28,00	75	0,20	6145184
40031000T022	10,0	10	22,00	76	0,20	6145171
40131000T032	10,0	10	32,00	89	0,20	6145185
40031200T025	12,0	12	25,00	75	0,30	6145172
40131200T045	12,0	12	45,00	100	0,30	6145186
40031600T032	16,0	16	32,00	89	0,30	6145173
40131600T056	16,0	16	56,00	110	0,30	6145187



THE ALL-STAR PROGRAMME FEATURES ONLY THE MOST POPULAR PLATFORMS, GRADES, AND SIZES. FOR THE COMPLETE OFFERING, VISIT WIDIA NOVO™ OR WIDIA.COM.

Application Data • Series D003..S D013..S D003 D013 4003..S 4003 • 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		D1 – Diameter													
	ap	ae	ap	min	max	mm	1,0	2,0	3,0	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	
P	0	Ap1 max	0,1 x D	0,5 x D	150	– 200	fz	0,007	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	1	Ap1 max	0,1 x D	0,5 x D	150	– 200	fz	0,007	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	2	Ap1 max	0,1 x D	0,5 x D	140	– 190	fz	0,007	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	3	Ap1 max	0,1 x D	0,5 x D	120	– 160	fz	0,006	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
M	1	Ap1 max	0,1 x D	0,5 x D	90	– 150	fz	0,005	0,010	0,016	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088
	2	Ap1 max	0,1 x D	0,5 x D	90	– 115	fz	0,006	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
K	1	Ap1 max	0,1 x D	0,5 x D	60	– 80	fz	0,005	0,009	0,014	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081
	2	Ap1 max	0,1 x D	0,5 x D	120	– 150	fz	0,007	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
K	1	Ap1 max	0,1 x D	0,5 x D	110	– 140	fz	0,006	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101

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 centres, please adjust parameters accordingly on diameters >12mm.

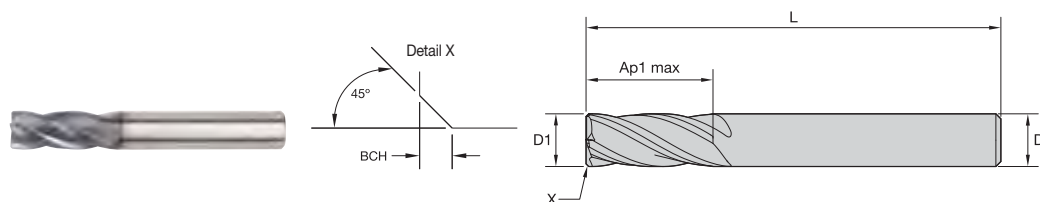
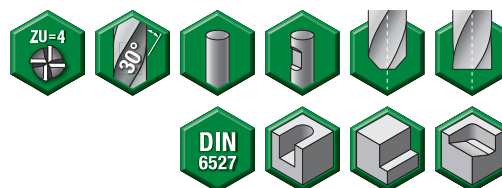
Application Data • Series 4013..S 4013 • Metric

		Side Milling (A)		TiAlN		Recommended feed per tooth (fz = mm/th) for side milling (A).													
Material Group	A		Cutting Speed – vc m/min		D1 – Diameter														
	ap	ae	min	max	mm	1,0	2,0	3,0	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	
P	0	Ap1 max	0,1 x D	150	– 200	fz	0,007	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	1	Ap1 max	0,1 x D	150	– 200	fz	0,007	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	2	Ap1 max	0,1 x D	140	– 190	fz	0,007	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	3	Ap1 max	0,1 x D	120	– 160	fz	0,006	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
M	1	Ap1 max	0,1 x D	90	– 150	fz	0,005	0,010	0,016	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088
	2	Ap1 max	0,1 x D	90	– 115	fz	0,006	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
K	1	Ap1 max	0,1 x D	60	– 80	fz	0,005	0,009	0,014	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081
	2	Ap1 max	0,1 x D	120	– 150	fz	0,007	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
K	1	Ap1 max	0,1 x D	110	– 140	fz	0,006	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101

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 centres, please adjust parameters accordingly on diameters >12mm.

= ALL-STAR PORTFOLIO PRODUCT. ALL-STAR PRODUCTS ARE PROVEN SOLUTIONS THAT ARE ALWAYS AVAILABLE.

Series D004 D014 • Metric



- first choice
- alternate choice

P	●
M	●
K	●
N	●
S	●
H	●

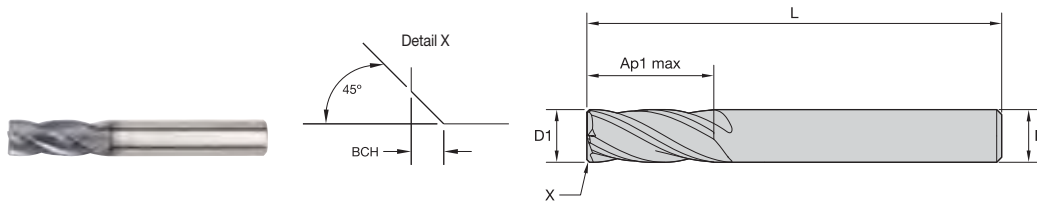
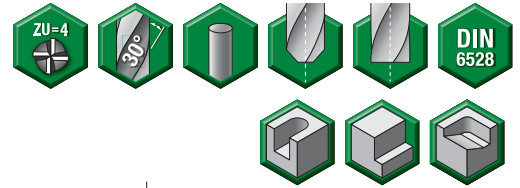
catalogue number	D1	D	length of cut Ap1 max	length L	BCH	TIALN
D0040200T004	2,0	6	4,00	50	—	5825894
D0140200T007	2,0	6	7,00	57	—	5825895
D0140250T008	2,5	6	8,00	57	—	5825896
D0040300T005	3,0	6	5,00	50	—	5825897
D0140300T008	3,0	6	8,00	57	—	5825898
D0140350T010	3,5	6	10,00	57	—	5825899
D0040400T008S	4,0	6	8,00	54	—	6085348
D0140400T011S	4,0	6	11,00	57	—	6085349
D0140400T011	4,0	6	11,00	57	0,10	5825931
D0040500T009S	5,0	6	9,00	54	—	6085361
D0140500T013	5,0	6	13,00	57	0,10	5825934
D0140550T013S	5,5	6	13,00	57	—	6085363
D0040600T010	6,0	6	10,00	54	0,10	5825936
D0140600T013S	6,0	6	13,00	57	—	6085365
D0140600T013	6,0	6	13,00	57	0,10	5825937
D0140750T019	7,5	8	19,00	63	0,10	5825941
D0040800T012	8,0	8	12,00	58	0,20	5825942
D0140800T019S	8,0	8	19,00	63	—	6085371
D0140800T019	8,0	8	19,00	63	0,20	5825943
D0041000T014	10,0	10	14,00	66	0,20	5825946
D0141000T022S	10,0	10	22,00	72	—	6085375
D0141000T022	10,0	10	22,00	72	0,20	5825947
D0041200T016S	12,0	12	16,00	73	—	6085376
D0141200T026	12,0	12	26,00	83	0,30	5825949
D0141200W026S	12,0	12	26,00	83	—	6085397
D0041600T022	16,0	16	22,00	82	0,30	5825952
D0141600T032	16,0	16	32,00	92	0,30	5825953
D0141600W032	16,0	16	32,00	92	0,30	5825963



THE ALL-STAR PROGRAMME FEATURES ONLY THE MOST POPULAR PLATFORMS, GRADES, AND SIZES. FOR THE COMPLETE OFFERING, VISIT WIDIA NOVO™ OR WIDIA.COM.

INDEXABLE MILLING
 SOLID END MILLING
 HOLEMAKING
 TAPPING
 TURNING

Series 2528 • Metric



- first choice
- alternate choice

P		●
M		●
K		●
N		●
S		●
H		●

catalogue number	D1	D	length of cut Ap1 max	length L	BCH	TIALN
25280800T019S	8,0	8	19,00	63	—	6086495
25280800T019	8,0	8	19,00	63	0,20	5825981
25281000T022	10,0	10	22,00	72	0,20	5825982

INDEXABLE MILLING

SOLID END MILLING

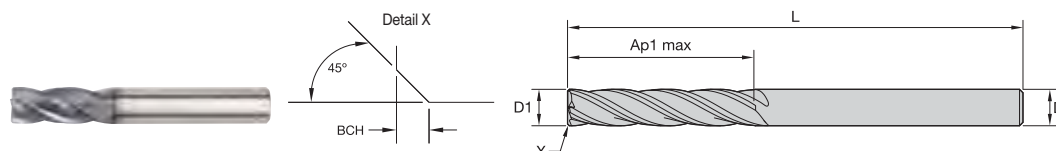
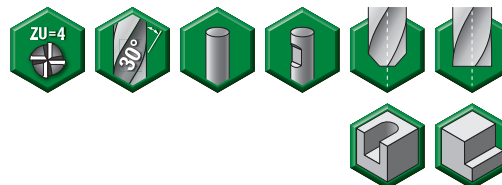
HOLEMAKING

TAPPING

TURNING

General Purpose Solid Carbide End Mills • Roughing/Finishing

Series 4004 4014 4024 • Metric



- first choice
- alternate choice

P	●
M	●
K	●
N	●
S	●
H	●

catalogue number	D1	D	length of cut Ap1 max	length L	BCH	TIALN
40040100T004	1,0	3	4,00	38	—	5826016
40040150T004	1,5	3	4,00	38	—	5826017
40040200T006	2,0	3	6,30	38	—	5826018
40040250T006	2,5	3	6,30	38	—	5826019
40040300T009	3,0	3	9,50	38	—	5826020
40140300T019	3,0	3	19,00	63	—	5826021
40240300T025	3,0	3	25,00	75	—	5826022
40040350T012	3,5	4	12,00	50	—	5826023
40040400T011	4,0	4	11,00	50	0,10	5826024
40040400T011S	4,0	4	11,00	50	—	6085576
40140400T019S	4,0	4	19,00	63	—	6085577
40140400T019	4,0	4	19,00	63	0,10	5826025
40240400T031S	4,0	4	31,00	75	—	6085578
40240400T031	4,0	4	31,00	75	0,10	5826026
40040450T014S	4,5	5	14,00	50	—	6085579
40040450T014	4,5	5	14,00	50	0,10	5826027
40040500T013S	5,0	5	13,00	50	—	6085580
40040500T013	5,0	5	13,00	50	0,10	5826028
40040500T020S	5,0	5	20,00	63	—	6085581
40040500T020	5,0	5	20,00	63	0,10	5826029
40140500T030S	5,0	5	30,00	75	—	6085582
40140500T030	5,0	5	30,00	75	0,10	5826030
40240500T031S	5,0	5	31,00	100	—	6085583
40240500T031	5,0	5	31,00	100	0,10	5826031
40040600T016S	6,0	6	16,00	50	—	6085584
40040600T016	6,0	6	16,00	50	0,10	5826032
40140600T028S	6,0	6	28,00	75	—	6085585
40140600T028	6,0	6	28,00	75	0,10	5826033
40240600T038S	6,0	6	38,00	100	—	6085586
40240600T038	6,0	6	38,00	100	0,10	5826034
40040700T020S	7,0	8	20,00	63	—	6085587
40040700T020	7,0	8	20,00	63	0,10	5826035
40040800T021S	8,0	8	20,00	63	—	6200965
40040800T020S	8,0	8	20,00	50	—	6085588
40040800T020	8,0	8	20,00	50	0,20	5826036
40140800T028S	8,0	8	28,00	75	—	6085589
40140800T028	8,0	8	28,00	75	0,20	5826037
40240800T041S	8,0	8	41,00	100	—	6085590
40240800T041	8,0	8	41,00	100	0,20	5826038
40040900T020S	9,0	9	20,00	63	—	6085591
40040900T020	9,0	9	20,00	63	0,20	5826039
40041000T022	10,0	10	22,00	72	0,20	5826040
40041000T022S	10,0	10	22,00	72	—	6085592
40141000T032S	10,0	10	32,00	89	—	6085593
40141000T032	10,0	10	32,00	89	0,20	5826041
40241000T045S	10,0	10	45,00	100	—	6085594
40241000T045	10,0	10	45,00	100	0,20	5826042
40041200T025S	12,0	12	25,00	89	—	6085595
40041200T025	12,0	12	25,00	89	0,30	5826043
40141200T045	12,0	12	45,00	100	0,30	5826044
40141200W045S	12,0	12	45,00	100	—	6085611
40141200T045S	12,0	12	45,00	100	—	6085596
40241200T075S	12,0	12	75,00	150	—	6085597
40241200T075	12,0	12	75,00	150	0,30	5826045
40041400T032S	14,0	14	32,00	83	—	6085598
40041400T032	14,0	14	32,00	83	0,30	5826046

INDEXABLE MILLING

SOLID END MILLING

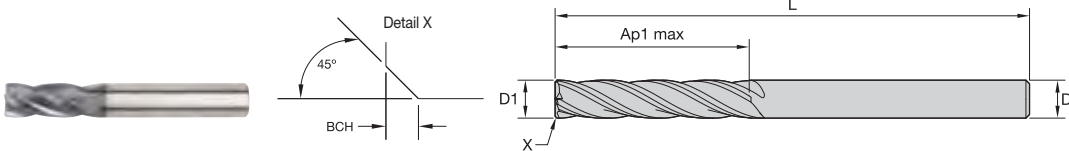
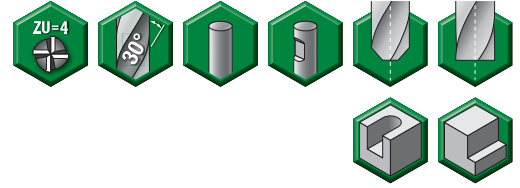
HOLEMAKING

TAPPING

TURNING

Series 4004 4014 4024 • Metric

(continued)

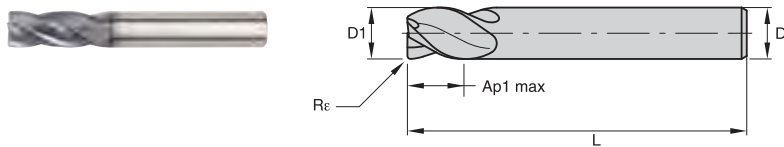
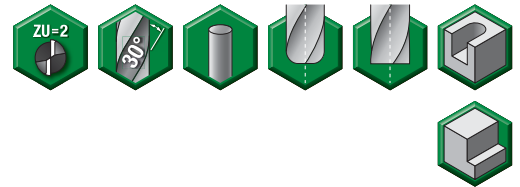


- first choice
- alternate choice

P	●
M	●
K	●
N	
S	
H	

catalogue number	D1	D	length of cut Ap1 max	length L	BCH	TIALN
40141400T050S	14,0	14	50,00	100	—	6085599
40141400T050	14,0	14	50,00	100	0,30	5826047
40241400T075S	14,0	14	75,00	150	—	6085600
40241400T075	14,0	14	75,00	150	0,30	5826049
40041600T032S	16,0	16	32,00	92	—	6085601
40041600T032	16,0	16	32,00	92	0,30	5826061
40141600T056S	16,0	16	56,00	110	—	6085602
40141600T056	16,0	16	56,00	110	0,30	5826062
40241600T075S	16,0	16	75,00	150	—	6085603
40241600T075	16,0	16	75,00	150	0,30	5826063
40041800T038S	18,0	18	38,00	100	—	6085604
40041800T038	18,0	18	38,00	100	0,30	5826064
40141800T060S	18,0	18	60,00	125	—	6085605
40141800T060	18,0	18	60,00	125	0,30	5826065
40241800T075S	18,0	18	75,00	150	—	6085606
40241800T075	18,0	18	75,00	150	0,30	5826066
40042000T038S	20,0	20	38,00	104	—	6085607
40042000T038	20,0	20	38,00	104	0,30	5826067
40142000T056	20,0	20	56,00	125	0,30	5826068
40142000T056S	20,0	20	56,00	125	—	6085608
40242000T075S	20,0	20	75,00	150	—	6085609
40242000T075	20,0	20	75,00	150	0,30	5826069
40242000W075	20,0	20	75,00	150	0,30	5826084

Series 4004 4014 4024 • Radius • Metric



- first choice
- alternate choice

P	●
M	●
K	●
N	
S	
H	

catalogue number	D1	D	length of cut Ap1 max	length L	Re	TIALN
40041000T022R100	10,0	10	22,00	72	1,00	6337741

NOTE: Refer to the NOVO™ app for the complete GP end mill offering.

INDEXABLE MILLING

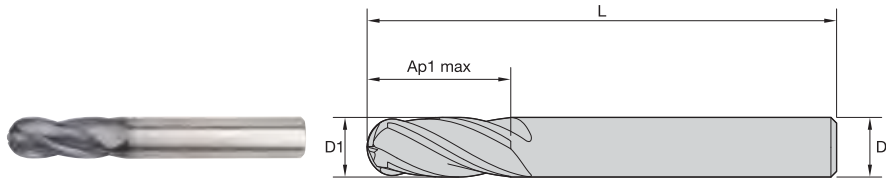
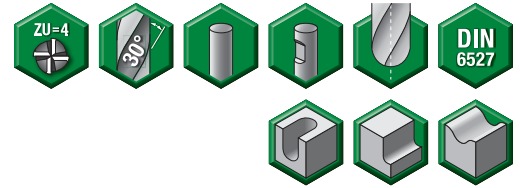
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Series D010 • Metric

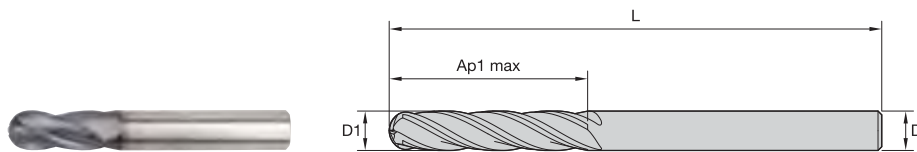
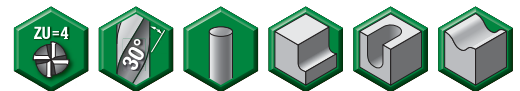


- first choice
- alternate choice

P	●
M	●
K	●
N	●
S	●
H	●

catalogue number	D1	D	length of cut Ap1 max	length L	TIALN
D0100400T011	4,0	6	11,00	57	5825528
D0100500T013	5,0	6	13,00	57	5825529
D0100800T019	8,0	8	19,00	63	5825531
D0101000T022	10,0	10	22,00	72	5825532
D0101200T026	12,0	12	26,00	83	5825533

Series 4000 4010 • Metric


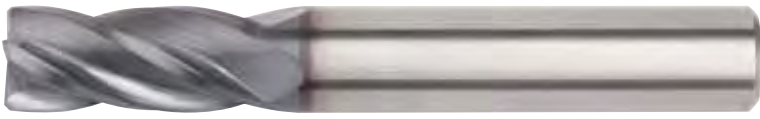


- first choice
- alternate choice

P	●
M	●
K	●
N	●
S	●
H	●




catalogue number	D1	D	length of cut Ap1 max	length L	TIALN
40000200T006	2,0	3	6,30	38	5825555
40000300T009	3,0	3	9,50	38	6231685
40000300T020	3,0	3	20,00	75	5825556
40000400T014	4,0	4	14,00	50	5825557
40100400T025	4,0	4	25,00	75	5825558
40000500T016	5,0	5	16,00	50	5825559
40100500T030	5,0	5	30,00	75	5825560
40000600T016	6,0	6	16,00	50	5825573
40100600T019	6,0	6	19,00	63	5825574
40100600T030	6,0	6	30,00	75	5825575
40000800T019	8,0	8	19,00	63	5825576
40100800T028	8,0	8	28,00	76	6232638
40100800T040	8,0	8	40,00	100	5825577
40001000T022	10,0	10	22,00	72	5825578
40101000T032	10,0	10	32,00	89	6232639
40101000T040	10,0	10	40,00	100	5825579
40001200T025	12,0	12	25,00	75	5825580
40101200T045	12,0	12	45,00	150	5825581
40001600T032	16,0	16	32,00	89	5825585
40101600T065	16,0	16	65,00	150	5825586

Application Data • Series D014 2528 4014 4024 • Metric

Material Group																					
	Side Milling (A)		TiAlN		Recommended feed per tooth (fz = mm/th) for side milling (A).																
	A		Cutting Speed – vc m/min		D1 – Diameter																
	ap	ae	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				
P	0	Ap1 max	0,1 x D	150	–	200	fz	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114		
	1	Ap1 max	0,1 x D	150	–	200	fz	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114		
	2	Ap1 max	0,1 x D	140	–	190	fz	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114		
	3	Ap1 max	0,1 x D	120	–	160	fz	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101		
M	1	Ap1 max	0,1 x D	90	–	150	fz	0,010	0,016	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088		
	2	Ap1 max	0,1 x D	90	–	115	fz	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101		
K	1	Ap1 max	0,1 x D	60	–	80	fz	0,009	0,014	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081		
	2	Ap1 max	0,1 x D	120	–	150	fz	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114		
K	1	Ap1 max	0,1 x D	110	–	140	fz	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101		
	2	Ap1 max	0,1 x D	110	–	140	fz	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101		

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 centres, please adjust parameters accordingly on >12mm diameters.

Application Data • 4004 Series • 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	1,0	2,0	3,0	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0				
P	0	Ap1 max	0,1 x D	0,5 x D	150	–	200	fz	0,007	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114		
	1	Ap1 max	0,1 x D	0,5 x D	150	–	200	fz	0,007	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114		
	2	Ap1 max	0,1 x D	0,5 x D	140	–	190	fz	0,007	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114		
	3	Ap1 max	0,1 x D	0,5 x D	120	–	160	fz	0,006	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101		
M	1	Ap1 max	0,1 x D	0,5 x D	90	–	150	fz	0,005	0,010	0,016	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088		
	2	Ap1 max	0,1 x D	0,5 x D	90	–	115	fz	0,006	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101		
K	1	Ap1 max	0,1 x D	0,5 x D	60	–	80	fz	0,005	0,009	0,014	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081		
	2	Ap1 max	0,1 x D	0,5 x D	120	–	150	fz	0,007	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114		
K	1	Ap1 max	0,1 x D	0,5 x D	110	–	140	fz	0,006	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101		
	2	Ap1 max	0,1 x D	0,5 x D	110	–	140	fz	0,006	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101		

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 centres, please adjust parameters accordingly on greater than 12mm diameters.

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General Purpose Solid Carbide End Mills • Roughing/Finishing

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Application Data • Series 4000 4010 • 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		D1 – Diameter													
	ap	ae	ap	min	max	mm	3,0	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0			
P	0	Ap1 max	0,1 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	Ap1 max	0,1 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	Ap1 max	0,1 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	Ap1 max	0,1 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	Ap1 max	0,1 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	
M	1	Ap1 max	0,1 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	Ap1 max	0,1 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	
K	1	Ap1 max	0,1 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	Ap1 max	0,1 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	

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 centres, please adjust parameters accordingly on >12mm diameters.

Application Data • Series D010 • Metric

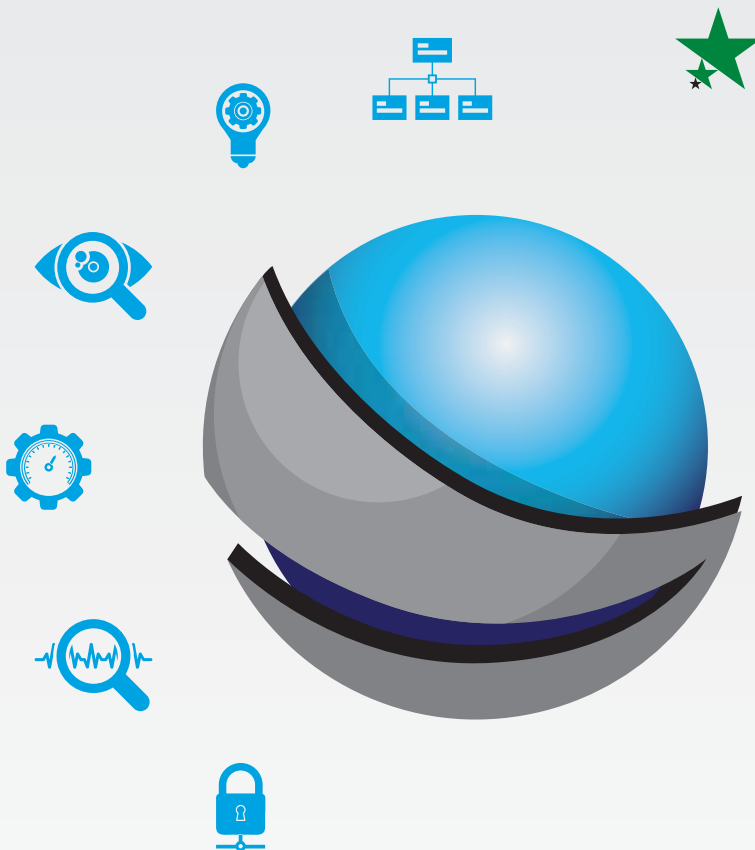
		Side Milling (A)	TiAlN	Recommended feed per tooth (fz = mm/th) for side milling (A).															
Material Group	A		Cutting Speed – vc m/min		D1 – Diameter														
	ap	ae	min	max	mm	3,0	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0			
P	0	Ap1 max	0,1 x D	150	–	200	fz	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	
	1	Ap1 max	0,1 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	Ap1 max	0,1 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	Ap1 max	0,1 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	Ap1 max	0,1 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	
M	1	Ap1 max	0,1 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	Ap1 max	0,1 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	1	Ap1 max	0,1 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	Ap1 max	0,1 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	

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 centres, please adjust parameters accordingly on >12mm diameters.

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HOLEMAKING

SOLID CARBIDE DRILLS

Pages C4–C43

VariDrill™

TOP DRILL S™

TOP DRILL S+™

TOP DRILL Deep Hole



MODULAR DRILLS

Pages C44–C56

TOP DRILL™ Modular X (TDMX) — Extra-Stable Modular Drill

TOP DRILL M1™ (TDM1) — Versatile Modular Drilling System



INDEXABLE DRILLS

Pages C58–C74

Top Cut 4™ — Next Generation Indexable Drill

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SOLID CARBIDE DRILLS

VariDrill™

Pages C6–C23

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



TOP DRILL S™ and TOP DRILL S+™

Pages C24–C37



TOP DRILL Deep Hole

Pages C38–C43





TDMX

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WIDIA provides a growing portfolio of drilling solutions to machine steels, stainless steels, cast iron, and high-temp alloys to create components for the energy industry.

TO SEE ALL PRODUCT LINES, VISIT OUR DIGITAL RESOURCES



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

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

Materials:



Lengths

Available with and without through coolant channels.



Diameter Range

1–20mm

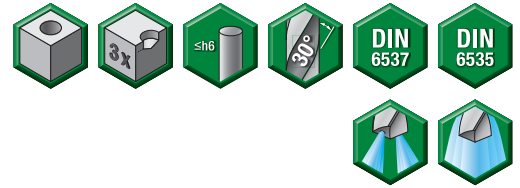
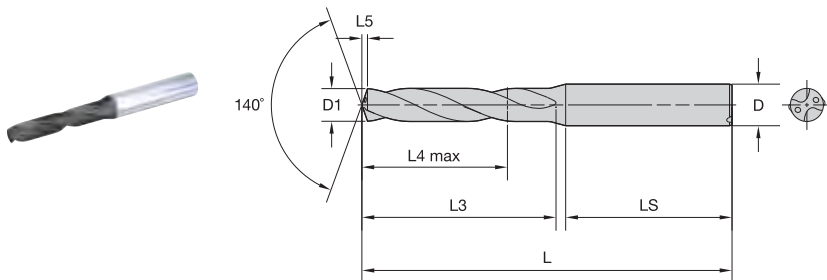


Grade:

WU25PD



VDS201A • VDS401A • 3 x D



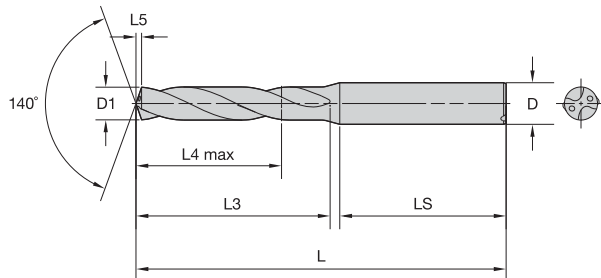
● first choice
○ alternate choice

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K	<input type="checkbox"/>	●
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S	<input type="checkbox"/>	●
H	<input type="checkbox"/>	

catalogue number	D1 diameter		L4 max	L3	L5	L	LS	D	CF	WU25PD
	mm	in								
VDS201A01000	1,000	.0394	5	7	0,1	58	28	4	e	4144195
VDS201A01100	1,100	.0433	5	7	0,2	58	28	4	e	4144200
VDS201A01200	1,200	.0472	5	7	0,2	58	28	4	e	4144523
VDS201A01300	1,300	.0512	5	7	0,2	58	28	4	e	4144524
VDS201A01400	1,400	.0551	5	7	0,2	58	28	4	e	4144527
VDS201A01500	1,500	.0591	6	9	0,2	58	28	4	e	4144528
VDS401A01500	1,500	.0591	6	9	0,2	58	28	4	i	4140270
VDS201A01600	1,600	.0630	6	9	0,2	58	28	4	e	4144529
VDS401A01600	1,600	.0630	6	9	0,2	58	28	4	i	4140271
VDS201A01700	1,700	.0669	6	9	0,3	58	28	4	e	4144530
VDS401A01700	1,700	.0669	6	9	0,3	58	28	4	i	4140272
VDS201A01800	1,800	.0709	6	9	0,3	58	28	4	e	4144531
VDS401A01800	1,800	.0709	6	9	0,3	58	28	4	i	4140423
VDS201A01900	1,900	.0748	6	9	0,3	58	28	4	e	4144532
VDS401A01900	1,900	.0748	6	9	0,3	58	28	4	i	4140424
VDS201A01984	1,984	.0781	10	13	0,3	58	28	4	e	4144533
VDS201A02000	2,000	.0787	10	13	0,3	58	28	4	e	4144534
VDS401A02000	2,000	.0787	10	13	0,3	58	28	4	i	4140426
VDS201A02100	2,100	.0827	10	13	0,3	58	28	4	e	4144535
VDS401A02100	2,100	.0827	10	13	0,3	58	28	4	i	4140427
VDS201A02200	2,200	.0866	10	13	0,3	58	28	4	e	4144536
VDS401A02200	2,200	.0866	10	13	0,3	58	28	4	i	4140428
VDS201A02300	2,300	.0906	10	13	0,4	58	28	4	e	4144537
VDS401A02300	2,300	.0906	10	13	0,4	58	28	4	i	4140429
VDS201A02400	2,400	.0945	12	17	0,4	58	28	4	e	4144539
VDS401A02400	2,400	.0945	12	17	0,4	58	28	4	i	4140431
VDS201A02500	2,500	.0984	12	17	0,4	58	28	4	e	4144542
VDS401A02500	2,500	.0984	12	17	0,4	58	28	4	i	4140434
VDS201A02600	2,600	.1024	12	17	0,4	58	28	4	e	4144544
VDS401A02600	2,600	.1024	12	17	0,4	58	28	4	i	4140436
VDS201A02700	2,700	.1063	12	17	0,4	58	28	4	e	4144546
VDS401A02700	2,700	.1063	12	17	0,4	58	28	4	i	4140438
VDS201A02800	2,800	.1102	12	17	0,5	58	28	4	e	4144549
VDS401A02800	2,800	.1102	12	17	0,5	58	28	4	i	4140441
VDS201A02900	2,900	.1142	12	17	0,5	58	28	4	e	4144552
VDS401A02900	2,900	.1142	12	17	0,5	58	28	4	i	4140444
VDS201A02947	2,947	.1160	12	17	0,5	58	28	4	e	4144553
VDS201A03000	3,000	.1181	14	20	0,5	62	36	6	e	4143907
VDS401A03000	3,000	.1181	14	20	0,5	62	36	6	i	4140299
VDS201A03048	3,048	.1200	14	20	0,5	62	36	6	e	4143908
VDS401A03048	3,048	.1200	14	20	0,5	62	36	6	i	4140300
VDS201A03100	3,100	.1220	14	20	0,5	62	36	6	e	4143909
VDS401A03100	3,100	.1220	14	20	0,5	62	36	6	i	4140301
VDS201A03200	3,200	.1260	14	20	0,5	62	36	6	e	4143911
VDS401A03200	3,200	.1260	14	20	0,5	62	36	6	i	4140303
VDS201A03300	3,300	.1299	14	20	0,5	62	36	6	e	4143913
VDS401A03300	3,300	.1299	14	20	0,5	62	36	6	i	4140305
VDS201A03400	3,400	.1339	14	20	0,6	62	36	6	e	4143914
VDS401A03400	3,400	.1339	14	20	0,6	62	36	6	i	4140306
VDS201A03500	3,500	.1378	14	20	0,6	62	36	6	e	4143916
VDS401A03500	3,500	.1378	14	20	0,6	62	36	6	i	4140308
VDS201A03600	3,600	.1417	14	20	0,6	62	36	6	e	4143918
VDS401A03600	3,600	.1417	14	20	0,6	62	36	6	i	4140310
VDS201A03700	3,700	.1457	14	20	0,6	62	36	6	e	4143920
VDS401A03700	3,700	.1457	14	20	0,6	62	36	6	i	4140312
VDS201A03734	3,734	.1470	14	20	0,6	62	36	6	e	4140313
VDS401A03734	3,734	.1470	14	20	0,6	62	36	6	i	4140313

VDS201A • VDS401A • 3 x D

(continued)



- first choice
- alternate choice

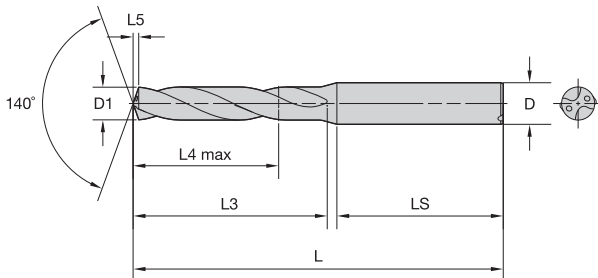
P	●
M	●
K	●
N	●
S	●
H	●

catalogue number	D1 diameter		L4 max	L3	L5	L	LS	D	CF	WU25PD
	mm	in								
VDS201A03800	3,800	.1496	17	24	0,6	66	36	6	e	4143922
VDS401A03800	3,800	.1496	17	24	0,6	66	36	6	i	4140314
VDS201A03900	3,900	.1535	17	24	0,6	66	36	6	e	4143923
VDS401A03900	3,900	.1535	17	24	0,6	66	36	6	i	4140315
VDS201A04000	4,000	.1575	17	24	0,7	66	36	6	e	4143925
VDS401A04000	4,000	.1575	17	24	0,7	66	36	6	i	4140317
VDS201A04039	4,039	.1590	17	24	0,7	66	36	6	e	4143926
VDS201A04100	4,100	.1614	17	24	0,7	66	36	6	e	4143928
VDS401A04100	4,100	.1614	17	24	0,7	66	36	6	i	4140320
VDS201A04200	4,200	.1654	17	24	0,7	66	36	6	e	4143929
VDS401A04200	4,200	.1654	17	24	0,7	66	36	6	i	4140321
VDS201A04300	4,300	.1693	17	24	0,7	66	36	6	e	4143931
VDS401A04300	4,300	.1693	17	24	0,7	66	36	6	i	4140323
VDS201A04400	4,400	.1732	17	24	0,7	66	36	6	e	4143933
VDS401A04400	4,400	.1732	17	24	0,7	66	36	6	i	4140325
VDS201A04500	4,500	.1772	17	24	0,7	66	36	6	e	4143934
VDS401A04500	4,500	.1772	17	24	0,7	66	36	6	i	4140326
VDS201A04600	4,600	.1811	17	24	0,8	66	36	6	e	4143935
VDS401A04600	4,600	.1811	17	24	0,8	66	36	6	i	4140328
VDS201A04700	4,700	.1850	17	24	0,8	66	36	6	e	4143937
VDS401A04700	4,700	.1850	17	24	0,8	66	36	6	i	4140330
VDS201A04763	4,763	.1875	20	28	0,8	66	36	6	e	4143938
VDS201A04800	4,800	.1890	20	28	0,8	66	36	6	e	4143939
VDS401A04800	4,800	.1890	20	28	0,8	66	36	6	i	4140332
VDS201A04900	4,900	.1929	20	28	0,8	66	36	6	e	4143941
VDS401A04900	4,900	.1929	20	28	0,8	66	36	6	i	4140334
VDS201A05000	5,000	.1969	20	28	0,8	66	36	6	e	4143942
VDS401A05000	5,000	.1969	20	28	0,8	66	36	6	i	4140335
VDS201A05100	5,100	.2008	20	28	0,9	66	36	6	e	4143943
VDS401A05100	5,100	.2008	20	28	0,9	66	36	6	i	4140336
VDS201A05200	5,200	.2047	20	28	0,9	66	36	6	e	4143946
VDS401A05200	5,200	.2047	20	28	0,9	66	36	6	i	4140339
VDS201A05300	5,300	.2087	20	28	0,9	66	36	6	e	4143947
VDS401A05300	5,300	.2087	20	28	0,9	66	36	6	i	4140340
VDS201A05400	5,400	.2126	20	28	0,9	66	36	6	e	4143948
VDS401A05400	5,400	.2126	20	28	0,9	66	36	6	i	4140341
VDS201A05500	5,500	.2165	20	28	0,9	66	36	6	e	4143950
VDS401A05500	5,500	.2165	20	28	0,9	66	36	6	i	4140343
VDS201A05600	5,600	.2205	20	28	0,9	66	36	6	e	4143952
VDS401A05600	5,600	.2205	20	28	0,9	66	36	6	i	4140345
VDS201A05700	5,700	.2244	20	28	1,0	66	36	6	e	4143954
VDS401A05700	5,700	.2244	20	28	1,0	66	36	6	i	4140347
VDS201A05800	5,800	.2283	20	28	1,0	66	36	6	e	4143955
VDS401A05800	5,800	.2283	20	28	1,0	66	36	6	i	4140348
VDS201A05900	5,900	.2323	20	28	1,0	66	36	6	e	4143956
VDS401A05900	5,900	.2323	20	28	1,0	66	36	6	i	4140349
VDS201A06000	6,000	.2362	20	28	1,0	66	36	6	e	4143958
VDS401A06000	6,000	.2362	20	28	1,0	66	36	6	i	4140351
VDS201A06100	6,100	.2402	24	34	1,0	79	36	8	e	4143959
VDS401A06100	6,100	.2402	24	34	1,0	79	36	8	i	4140352
VDS201A06200	6,200	.2441	24	34	1,0	79	36	8	e	4143960
VDS401A06200	6,200	.2441	24	34	1,0	79	36	8	i	4140353
VDS201A06300	6,300	.2480	24	34	1,1	79	36	8	e	4143961
VDS401A06300	6,300	.2480	24	34	1,1	79	36	8	i	4140354
VDS201A06350	6,350	.2500	24	34	1,1	79	36	8	e	4143962
VDS201A06400	6,400	.2520	24	34	1,1	79	36	8	e	4143963
VDS401A06400	6,400	.2520	24	34	1,1	79	36	8	i	4140356
VDS201A06500	6,500	.2559	24	34	1,1	79	36	8	e	4143964
VDS401A06500	6,500	.2559	24	34	1,1	79	36	8	i	4140357
VDS201A06600	6,600	.2598	24	34	1,1	79	36	8	e	4143966
VDS401A06600	6,600	.2598	24	34	1,1	79	36	8	i	4140359
VDS201A06700	6,700	.2638	24	34	1,1	79	36	8	e	4143968
VDS401A06700	6,700	.2638	24	34	1,1	79	36	8	i	4140361
VDS201A06800	6,800	.2677	24	34	1,1	79	36	8	e	4143970

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VDS201A • VDS401A • 3 x D

(continued)



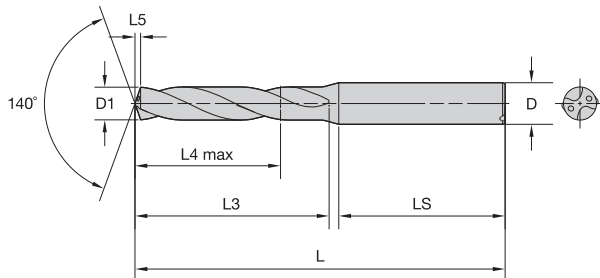
- first choice
- alternate choice

P	●
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N	●
S	●
H	●

catalogue number	D1 diameter		L4 max	L3	L5	L	LS	D	CF	WU25PD
	mm	in								
VDS401A06800	6,800	.2677	24	34	1,1	79	36	8	i	4140363
VDS201A06900	6,900	.2717	24	34	1,2	79	36	8	e	4143971
VDS401A06900	6,900	.2717	24	34	1,2	79	36	8	i	4140364
VDS201A07000	7,000	.2756	24	34	1,2	79	36	8	e	4143972
VDS401A07000	7,000	.2756	24	34	1,2	79	36	8	i	4140365
VDS201A07100	7,100	.2795	29	41	1,2	79	36	8	e	4143973
VDS401A07100	7,100	.2795	29	41	1,2	79	36	8	i	4140366
VDS201A07200	7,200	.2835	29	41	1,2	79	36	8	e	4143975
VDS401A07200	7,200	.2835	29	41	1,2	79	36	8	i	4140368
VDS201A07300	7,300	.2874	29	41	1,2	79	36	8	e	4143976
VDS401A07300	7,300	.2874	29	41	1,2	79	36	8	i	4140369
VDS201A07400	7,400	.2913	29	41	1,3	79	36	8	e	4143977
VDS401A07400	7,400	.2913	29	41	1,3	79	36	8	i	4140370
VDS201A07500	7,500	.2953	29	41	1,3	79	36	8	e	4143978
VDS401A07500	7,500	.2953	29	41	1,3	79	36	8	i	4140371
VDS201A07600	7,600	.2992	29	41	1,3	79	36	8	e	4143980
VDS401A07600	7,600	.2992	29	41	1,3	79	36	8	i	4140373
VDS201A07700	7,700	.3031	29	41	1,3	79	36	8	e	4143981
VDS401A07700	7,700	.3031	29	41	1,3	79	36	8	i	4140374
VDS201A07800	7,800	.3071	29	41	1,3	79	36	8	e	4143982
VDS401A07800	7,800	.3071	29	41	1,3	79	36	8	i	4140375
VDS201A07900	7,900	.3110	29	41	1,3	79	36	8	e	4143983
VDS401A07900	7,900	.3110	29	41	1,3	79	36	8	i	4140376
VDS201A07938	7,938	.3125	29	41	1,3	79	36	8	e	4143984
VDS401A08000	8,000	.3150	29	41	1,4	79	36	8	e	4143985
VDS401A08000	8,000	.3150	29	41	1,4	79	36	8	i	4140378
VDS201A08100	8,100	.3189	35	47	1,4	89	40	10	e	4143986
VDS401A08100	8,100	.3189	35	47	1,4	89	40	10	i	4140379
VDS201A08200	8,200	.3228	35	47	1,4	89	40	10	e	4143987
VDS401A08200	8,200	.3228	35	47	1,4	89	40	10	i	4140380
VDS201A08300	8,300	.3268	35	47	1,4	89	40	10	e	4143988
VDS401A08300	8,300	.3268	35	47	1,4	89	40	10	i	4140381
VDS201A08400	8,400	.3307	35	47	1,4	89	40	10	e	4143990
VDS401A08400	8,400	.3307	35	47	1,4	89	40	10	i	4140383
VDS201A08500	8,500	.3346	35	47	1,4	89	40	10	e	4143992
VDS401A08500	8,500	.3346	35	47	1,4	89	40	10	i	4140385
VDS201A08600	8,600	.3386	35	47	1,5	89	40	10	e	4143993
VDS401A08600	8,600	.3386	35	47	1,5	89	40	10	i	4140386
VDS201A08700	8,700	.3425	35	47	1,5	89	40	10	e	4143994
VDS401A08700	8,700	.3425	35	47	1,5	89	40	10	i	4140387
VDS201A08800	8,800	.3465	35	47	1,5	89	40	10	e	4143996
VDS401A08800	8,800	.3465	35	47	1,5	89	40	10	i	4140389
VDS201A08900	8,900	.3504	35	47	1,5	89	40	10	e	4143997
VDS401A08900	8,900	.3504	35	47	1,5	89	40	10	i	4140390
VDS201A09000	9,000	.3543	35	47	1,5	89	40	10	e	4143998
VDS401A09000	9,000	.3543	35	47	1,5	89	40	10	i	4140391
VDS201A09100	9,100	.3583	35	47	1,5	89	40	10	e	4143999
VDS401A09100	9,100	.3583	35	47	1,6	89	40	10	i	4140392
VDS201A09200	9,200	.3622	35	47	1,6	89	40	10	e	4144001
VDS401A09200	9,200	.3622	35	47	1,6	89	40	10	i	4140394
VDS201A09300	9,300	.3661	35	47	1,6	89	40	10	e	4144002
VDS401A09300	9,300	.3661	35	47	1,6	89	40	10	i	4140395
VDS201A09400	9,400	.3701	35	47	1,6	89	40	10	e	4144004
VDS401A09400	9,400	.3701	35	47	1,6	89	40	10	i	4140397
VDS201A09500	9,500	.3740	35	47	1,6	89	40	10	e	4144005
VDS401A09500	9,500	.3740	35	47	1,6	89	40	10	i	4140398
VDS201A09600	9,600	.3780	35	47	1,6	89	40	10	e	4144007
VDS401A09600	9,600	.3780	35	47	1,6	89	40	10	i	4140400
VDS201A09700	9,700	.3819	35	47	1,7	89	40	10	e	4144008
VDS401A09700	9,700	.3819	35	47	1,7	89	40	10	i	4140401
VDS201A09800	9,800	.3858	35	47	1,7	89	40	10	e	4144009
VDS401A09800	9,800	.3858	35	47	1,7	89	40	10	i	4140402
VDS201A09900	9,900	.3898	35	47	1,7	89	40	10	e	4144010
VDS401A09900	9,900	.3898	35	47	1,7	89	40	10	i	4140403

VDS201A • VDS401A • 3 x D

(continued)



- first choice
- alternate choice

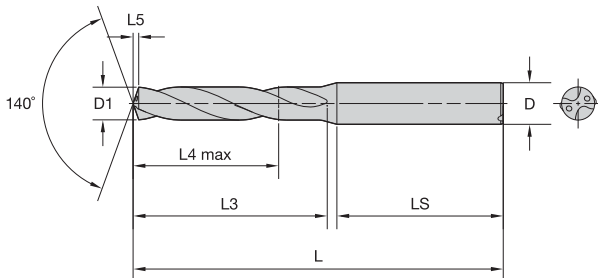
P	●
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catalogue number	D1 diameter		L4 max	L3	L5	L	LS	D	CF	WU25PD
	mm	in								
VDS201A10000	10,000	.3937	35	47	1,7	89	40	10	e	4144172
VDS401A10000	10,000	.3937	35	47	1,7	89	40	10	i	4140001
VDS201A10100	10,100	.3976	40	55	1,7	102	45	12	e	4144423
VDS401A10100	10,100	.3976	40	55	1,7	102	45	12	i	4140002
VDS201A10200	10,200	.4016	40	55	1,7	102	45	12	e	4144424
VDS401A10200	10,200	.4016	40	55	1,7	102	45	12	i	4140163
VDS201A10300	10,300	.4055	40	55	1,8	102	45	12	e	4144425
VDS401A10300	10,300	.4055	40	55	1,8	102	45	12	i	4140164
VDS201A10400	10,400	.4094	40	55	1,8	102	45	12	e	4144427
VDS401A10400	10,400	.4094	40	55	1,8	102	45	12	i	4140166
VDS201A10500	10,500	.4134	40	55	1,8	102	45	12	e	4144428
VDS401A10500	10,500	.4134	40	55	1,8	102	45	12	i	4140167
VDS201A10600	10,600	.4173	40	55	1,8	102	45	12	e	4144429
VDS401A10600	10,600	.4173	40	55	1,8	102	45	12	i	4140168
VDS201A10700	10,700	.4213	40	55	1,8	102	45	12	e	4144430
VDS401A10700	10,700	.4213	40	55	1,8	102	45	12	i	4140169
VDS201A10800	10,800	.4252	40	55	1,9	102	45	12	e	4144432
VDS401A10800	10,800	.4252	40	55	1,9	102	45	12	i	4140171
VDS201A10900	10,900	.4291	40	55	1,9	102	45	12	e	4144433
VDS401A10900	10,900	.4291	40	55	1,9	102	45	12	i	4140172
VDS201A11000	11,000	.4331	40	55	1,9	102	45	12	e	4144434
VDS401A11000	11,000	.4331	40	55	1,9	102	45	12	i	4140173
VDS201A11100	11,100	.4370	40	55	1,9	102	45	12	e	4144435
VDS401A11100	11,100	.4370	40	55	1,9	102	45	12	i	4140174
VDS201A11200	11,200	.4409	40	55	1,9	102	45	12	e	4144437
VDS401A11200	11,200	.4409	40	55	1,9	102	45	12	i	4140176
VDS201A11300	11,300	.4449	40	55	1,9	102	45	12	e	4144438
VDS401A11300	11,300	.4449	40	55	1,9	102	45	12	i	4140177
VDS201A11400	11,400	.4488	40	55	2,0	102	45	12	e	4144439
VDS401A11400	11,400	.4488	40	55	2,0	102	45	12	i	4140178
VDS201A11500	11,500	.4528	40	55	2,0	102	45	12	e	4144440
VDS401A11500	11,500	.4528	40	55	2,0	102	45	12	i	4140179
VDS201A11600	11,600	.4567	40	55	2,0	102	45	12	e	4144442
VDS401A11600	11,600	.4567	40	55	2,0	102	45	12	i	4140181
VDS201A11700	11,700	.4606	40	55	2,0	102	45	12	e	4144443
VDS401A11700	11,700	.4606	40	55	2,0	102	45	12	i	4140182
VDS201A11800	11,800	.4646	40	55	2,0	102	45	12	e	4144444
VDS401A11800	11,800	.4646	40	55	2,0	102	45	12	i	4140183
VDS201A11900	11,900	.4685	40	55	2,0	102	45	12	e	4144445
VDS401A11900	11,900	.4685	40	55	2,0	102	45	12	i	4140184
VDS201A12000	12,000	.4724	40	55	2,1	102	45	12	e	4144447
VDS401A12000	12,000	.4724	40	55	2,1	102	45	12	i	4140186
VDS201A12100	12,100	.4764	43	60	2,1	107	45	14	e	4144448
VDS401A12100	12,100	.4764	43	60	2,1	107	45	14	i	4140187
VDS201A12200	12,200	.4803	43	60	2,1	107	45	14	e	4144449
VDS401A12200	12,200	.4803	43	60	2,1	107	45	14	i	4140188
VDS201A12300	12,300	.4843	43	60	2,1	107	45	14	e	4144450
VDS401A12300	12,300	.4843	43	60	2,1	107	45	14	i	4140189
VDS201A12400	12,400	.4882	43	60	2,1	107	45	14	e	4144451
VDS401A12400	12,400	.4882	43	60	2,1	107	45	14	i	4140191
VDS201A12500	12,500	.4921	43	60	2,2	107	45	14	e	4144453
VDS401A12500	12,500	.4921	43	60	2,2	107	45	14	i	4140192
VDS201A12600	12,600	.4961	43	60	2,2	107	45	14	e	4144454
VDS401A12600	12,600	.4961	43	60	2,2	107	45	14	i	4140194
VDS201A12700	12,700	.5000	43	60	2,2	107	45	14	e	4144455
VDS401A12700	12,700	.5000	43	60	2,2	107	45	14	i	4140195
VDS201A12800	12,800	.5039	43	60	2,2	107	45	14	e	4144456
VDS401A12800	12,800	.5039	43	60	2,2	107	45	14	i	4140196
VDS201A12900	12,900	.5079	43	60	2,2	107	45	14	e	4144457
VDS401A12900	12,900	.5079	43	60	2,2	107	45	14	i	4140197
VDS201A13000	13,000	.5118	43	60	2,2	107	45	14	e	4144458
VDS401A13000	13,000	.5118	43	60	2,2	107	45	14	i	4140198
VDS201A13100	13,100	.5157	43	60	2,3	107	45	14	e	4144460
VDS401A13100	13,100	.5157	43	60	2,3	107	45	14	i	4140200
VDS201A13200	13,200	.5197	43	60	2,3	107	45	14	e	4144461
VDS401A13200	13,200	.5197	43	60	2,3	107	45	14	i	4140201
VDS201A13300	13,300	.5236	43	60	2,3	107	45	14	e	4144462
VDS401A13300	13,300	.5236	43	60	2,3	107	45	14	i	4140202

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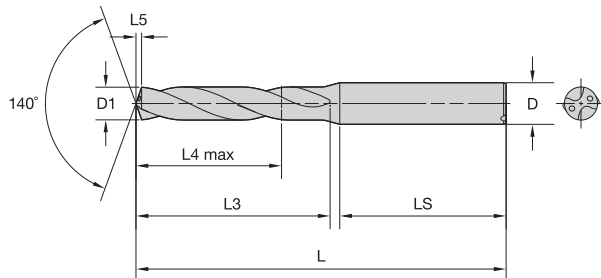
- first choice
- alternate choice

P	●
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catalogue number	D1 diameter		L4 max	L3	L5	L	LS	D	CF	WU25PD
	mm	in								
VDS401A13400	13,400	.5276	43	60	2,3	107	45	14	i	4140203
VDS201A13500	13,500	.5315	43	60	2,3	107	45	14	e	4144464
VDS401A13500	13,500	.5315	43	60	2,3	107	45	14	i	4140204
VDS201A13600	13,600	.5354	43	60	2,3	107	45	14	e	4144465
VDS401A13600	13,600	.5354	43	60	2,3	107	45	14	i	4140205
VDS201A13700	13,700	.5394	43	60	2,4	107	45	14	e	4144466
VDS401A13700	13,700	.5394	43	60	2,4	107	45	14	i	4140206
VDS201A13800	13,800	.5433	43	60	2,4	107	45	14	e	4144467
VDS401A13800	13,800	.5433	43	60	2,4	107	45	14	i	4140207
VDS201A13900	13,900	.5472	43	60	2,4	107	45	14	e	4140209
VDS401A13900	13,900	.5472	43	60	2,4	107	45	14	i	4140210
VDS201A14000	14,000	.5512	43	60	2,4	107	45	14	e	4144470
VDS401A14000	14,000	.5512	43	60	2,4	107	45	14	i	4140210
VDS201A14100	14,100	.5551	45	65	2,4	115	48	16	e	4144471
VDS401A14100	14,100	.5551	45	65	2,4	115	48	16	i	4140211
VDS201A14200	14,200	.5591	45	65	2,5	115	48	16	e	4144472
VDS401A14200	14,200	.5591	45	65	2,5	115	48	16	i	4140212
VDS201A14300	14,300	.5630	45	65	2,5	115	48	16	e	4144474
VDS401A14300	14,300	.5630	45	65	2,5	115	48	16	i	4140214
VDS201A14400	14,400	.5669	45	65	2,5	115	48	16	e	4140215
VDS401A14400	14,400	.5669	45	65	2,5	115	48	16	i	4140215
VDS201A14500	14,500	.5709	45	65	2,5	115	48	16	e	4144476
VDS401A14500	14,500	.5709	45	65	2,5	115	48	16	i	4140216
VDS201A14600	14,600	.5748	45	65	2,5	115	48	16	e	4140217
VDS401A14600	14,600	.5748	45	65	2,5	115	48	16	i	4140217
VDS201A14700	14,700	.5787	45	65	2,5	115	48	16	e	4140219
VDS401A14700	14,700	.5787	45	65	2,5	115	48	16	i	4140219
VDS201A14800	14,800	.5827	45	65	2,6	115	48	16	e	4140220
VDS401A14800	14,800	.5827	45	65	2,6	115	48	16	i	4140220
VDS201A14900	14,900	.5866	45	65	2,6	115	48	16	e	4140221
VDS401A14900	14,900	.5866	45	65	2,6	115	48	16	i	4140221
VDS201A15000	15,000	.5906	45	65	2,6	115	48	16	e	4144482
VDS401A15000	15,000	.5906	45	65	2,6	115	48	16	i	4140222
VDS201A15100	15,100	.5945	45	65	2,6	115	48	16	e	4144484
VDS401A15100	15,100	.5945	45	65	2,6	115	48	16	i	4140224
VDS201A15200	15,200	.5984	45	65	2,6	115	48	16	e	4140225
VDS401A15200	15,200	.5984	45	65	2,6	115	48	16	i	4140225
VDS201A15300	15,300	.6024	45	65	2,6	115	48	16	e	4144486
VDS401A15300	15,300	.6024	45	65	2,6	115	48	16	i	4140226
VDS201A15400	15,400	.6063	45	65	2,7	115	48	16	e	4140227
VDS401A15400	15,400	.6063	45	65	2,7	115	48	16	i	4140227
VDS201A15500	15,500	.6102	45	65	2,7	115	48	16	e	4144489
VDS401A15500	15,500	.6102	45	65	2,7	115	48	16	i	4140229
VDS201A15600	15,600	.6142	45	65	2,7	115	48	16	e	4140230
VDS401A15600	15,600	.6142	45	65	2,7	115	48	16	i	4140230
VDS201A15700	15,700	.6181	45	65	2,7	115	48	16	e	4144491
VDS401A15700	15,700	.6181	45	65	2,7	115	48	16	i	4140231
VDS201A15800	15,800	.6220	45	65	2,7	115	48	16	e	4144492
VDS401A15800	15,800	.6220	45	65	2,7	115	48	16	i	4140232
VDS201A15900	15,900	.6260	45	65	2,8	115	48	16	e	4140234
VDS401A15900	15,900	.6260	45	65	2,8	115	48	16	i	4140234
VDS201A16000	16,000	.6299	45	65	2,8	115	48	16	e	4144495
VDS401A16000	16,000	.6299	45	65	2,8	115	48	16	i	4140235
VDS201A16100	16,100	.6339	51	73	2,8	123	48	18	e	4144496
VDS401A16100	16,100	.6339	51	73	2,8	123	48	18	i	4140236
VDS201A16200	16,200	.6378	51	73	2,8	123	48	18	e	4144497
VDS401A16200	16,200	.6378	51	73	2,8	123	48	18	i	4140237
VDS201A16300	16,300	.6417	51	73	2,8	123	48	18	e	4144499
VDS401A16300	16,300	.6417	51	73	2,8	123	48	18	i	4140239
VDS201A16400	16,400	.6457	51	73	2,8	123	48	18	e	4144500
VDS401A16400	16,400	.6457	51	73	2,8	123	48	18	i	4140241
VDS201A16500	16,500	.6496	51	73	2,9	123	48	18	e	4144501
VDS401A16500	16,500	.6496	51	73	2,9	123	48	18	i	4140242
VDS201A16600	16,600	.6535	51	73	2,9	123	48	18	e	4140243
VDS401A16600	16,600	.6535	51	73	2,9	123	48	18	i	4140243
VDS201A16700	16,700	.6575	51	73	2,9	123	48	18	e	4144505
VDS401A16700	16,700	.6575	51	73	2,9	123	48	18	i	4140245
VDS201A16800	16,800	.6614	51	73	2,9	123	48	18	e	4140246
VDS401A16800	16,800	.6614	51	73	2,9	123	48	18	i	4140246
VDS201A16900	16,900	.6654	51	73	2,9	123	48	18	e	4140247
VDS401A16900	16,900	.6654	51	73	2,9	123	48	18	i	4140247
VDS201A17000	17,000	.6693	51	73	3,0	123	48	18	e	4144508
VDS401A17000	17,000	.6693	51	73	2,9	123	48	18	i	4140248
VDS201A17100	17,100	.6732	51	73	3,0	123	48	18	e	4140249
VDS401A17100	17,100	.6732	51	73	3,0	123	48	18	i	4140249
VDS201A17200	17,200	.6772	51	73	3,0	123	48	18	e	4144510
VDS401A17200	17,200	.6772	51	73	3,0	123	48	18	i	4140250

VDS201A • VDS401A • 3 x D

(continued)



- first choice
- alternate choice

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catalogue number	D1 diameter		L4 max	L3	L5	L	LS	D	CF	WU25PD
	mm	in								
VDS401A17300	17,300	.6811	51	73	3,0	123	48	18	i	4140251
VDS401A17400	17,400	.6850	51	73	3,0	123	48	18	i	4140252
VDS201A17500	17,500	.6890	51	73	3,0	123	48	18	e	4144514
VDS401A17500	17,500	.6890	51	73	3,0	123	48	18	i	4140254
VDS401A17600	17,600	.6929	51	73	3,1	123	48	18	i	4140255
VDS401A17700	17,700	.6969	51	73	3,1	123	48	18	i	4140256
VDS201A17800	17,800	.7008	51	73	3,1	123	48	18	e	4144517
VDS401A17800	17,800	.7008	51	73	3,1	123	48	18	i	4140257
VDS201A18000	18,000	.7087	51	73	3,1	123	48	18	e	4144590
VDS401A18000	18,000	.7087	51	73	3,1	123	48	18	i	4140449
VDS201A18100	18,100	.7126	55	79	3,1	131	50	20	e	4144591
VDS401A18100	18,100	.7126	55	79	3,1	131	50	20	i	4140450
VDS201A18200	18,200	.7165	55	79	3,2	131	50	20	e	4144592
VDS401A18200	18,200	.7165	55	79	3,2	131	50	20	i	4140451
VDS401A18300	18,300	.7205	55	79	3,2	131	50	20	i	4140463
VDS401A18400	18,400	.7244	55	79	3,2	131	50	20	i	4140464
VDS201A18500	18,500	.7283	55	79	3,2	131	50	20	e	4144596
VDS401A18500	18,500	.7283	55	79	3,2	131	50	20	i	4140465
VDS201A18600	18,600	.7323	55	79	3,2	131	50	20	e	4144597
VDS401A18600	18,600	.7323	55	79	3,2	131	50	20	i	4140466
VDS401A18700	18,700	.7362	55	79	3,2	131	50	20	i	4140468
VDS401A18800	18,800	.7402	55	79	3,3	131	50	20	i	4140469
VDS401A18900	18,900	.7441	55	79	3,3	131	50	20	i	4140470
VDS201A19000	19,000	.7480	55	79	3,3	131	50	20	e	4144602
VDS401A19000	19,000	.7480	55	79	3,3	131	50	20	i	4140471
VDS201A19100	19,100	.7520	55	79	3,3	131	50	20	e	4144604
VDS401A19100	19,100	.7520	55	79	3,3	131	50	20	i	4140473
VDS401A19200	19,200	.7559	55	79	3,3	131	50	20	i	4140474
VDS401A19300	19,300	.7598	55	79	3,4	131	50	20	i	4140475
VDS401A19400	19,400	.7638	55	79	3,4	131	50	20	i	4140476
VDS401A19500	19,500	.7677	55	79	3,4	131	50	20	i	4140477
VDS401A19600	19,600	.7717	55	79	3,4	131	50	20	i	4140478
VDS401A19700	19,700	.7756	55	79	3,4	131	50	20	i	4140479
VDS401A19800	19,800	.7795	55	79	3,4	131	50	20	i	4140480
VDS401A19900	19,900	.7835	55	79	3,5	131	50	20	i	4140481
VDS201A20000	20,000	.7874	55	79	3,5	131	50	20	e	4144613
VDS401A20000	20,000	.7874	55	79	3,5	131	50	20	i	4140482

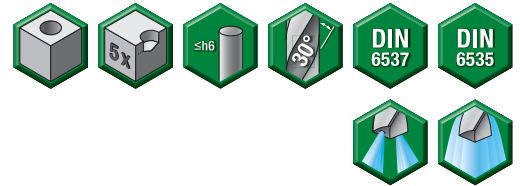
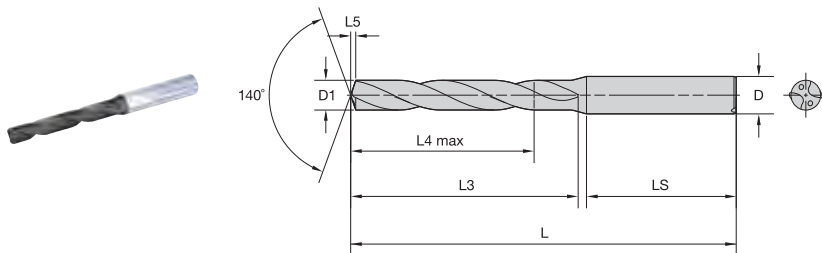
NOTE: CF = Coolant Feature:
 i = internal
 e = external
 i/e = internal and external



THE ALL-STAR PROGRAMME FEATURES ONLY THE MOST POPULAR PLATFORMS, GRADES, AND SIZES. FOR THE COMPLETE OFFERING, VISIT WIDIA NOVO™ OR WIDIA.COM.

INDEXABLE MILLING
 SOLID END MILLING
 HOLEMAKING
 TAPPING
 TURNING

VDS202A • VDS402A • 5 x D



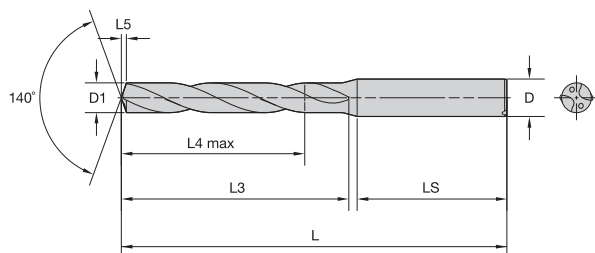
- first choice
- alternate choice

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catalogue number	D1 diameter		L4 max	L3	L5	L	LS	D	CF	WU25PD
	mm	in								
VDS202A01000	1,000	.0394	6	9	0,1	58	28	4	e	4148000
VDS202A01100	1,100	.0433	6	9	0,2	58	28	4	e	4148005
VDS202A01200	1,200	.0472	6	9	0,2	58	28	4	e	4148008
VDS202A01300	1,300	.0512	6	9	0,2	58	28	4	e	4148009
VDS202A01400	1,400	.0551	6	9	0,2	58	28	4	e	4148012
VDS202A01500	1,500	.0591	9	12	0,2	58	28	4	e	4148013
VDS402A01500	1,500	.0591	9	12	0,2	58	28	4	i	4142871
VDS202A01600	1,600	.0630	9	12	0,2	58	28	4	e	4148014
VDS402A01600	1,600	.0630	9	12	0,2	58	28	4	i	4142884
VDS202A01700	1,700	.0669	9	12	0,3	58	28	4	e	4148015
VDS402A01700	1,700	.0669	9	12	0,3	58	28	4	i	4142887
VDS202A01800	1,800	.0709	9	12	0,3	58	28	4	e	4148016
VDS402A01800	1,800	.0709	9	12	0,3	58	28	4	i	4142890
VDS202A01900	1,900	.0748	9	12	0,3	58	28	4	e	4148017
VDS402A01900	1,900	.0748	9	12	0,3	58	28	4	i	4142893
VDS202A02000	2,000	.0787	14	18	0,3	58	28	4	e	4148019
VDS402A02000	2,000	.0787	14	18	0,3	58	28	4	i	4142899
VDS202A02100	2,100	.0827	14	18	0,3	58	28	4	e	4148020
VDS402A02100	2,100	.0827	14	18	0,3	58	28	4	i	4142902
VDS202A02200	2,200	.0866	14	18	0,3	58	28	4	e	4148021
VDS402A02200	2,200	.0866	14	18	0,3	58	28	4	i	4142905
VDS202A02300	2,300	.0906	14	18	0,4	58	28	4	e	4148022
VDS402A02300	2,300	.0906	14	18	0,4	58	28	4	i	4142908
VDS202A02400	2,400	.0945	17	22	0,4	58	28	4	e	4148024
VDS402A02400	2,400	.0945	17	22	0,4	58	28	4	i	4142924
VDS202A02500	2,500	.0984	17	22	0,4	58	28	4	e	4148027
VDS402A02500	2,500	.0984	17	22	0,4	58	28	4	i	4142933
VDS202A02600	2,600	.1024	17	22	0,4	58	28	4	e	4148029
VDS402A02600	2,600	.1024	17	22	0,4	58	28	4	i	4142939
VDS202A02700	2,700	.1063	17	22	0,4	58	28	4	e	4148031
VDS402A02700	2,700	.1063	17	22	0,4	58	28	4	i	4142945
VDS202A02800	2,800	.1102	17	22	0,5	58	28	4	e	4148034
VDS402A02800	2,800	.1102	17	22	0,5	58	28	4	i	4142964
VDS202A02900	2,900	.1142	17	22	0,5	58	28	4	e	4148037
VDS402A02900	2,900	.1142	17	22	0,5	58	28	4	i	4142973
VDS202A02947	2,947	.1160	17	22	0,5	58	28	4	e	4142976
VDS402A02947	2,947	.1160	17	22	0,5	58	28	4	i	4142976
VDS202A03000	3,000	.1181	23	28	0,5	66	36	6	e	4148142
VDS402A03000	3,000	.1181	23	28	0,5	66	36	6	i	4142844
VDS202A03048	3,048	.1200	23	28	0,5	66	36	6	e	4142846
VDS402A03048	3,048	.1200	23	28	0,5	66	36	6	i	4142846
VDS202A03100	3,100	.1220	23	28	0,5	66	36	6	e	4148144
VDS402A03100	3,100	.1220	23	28	0,5	66	36	6	i	4142847
VDS202A03200	3,200	.1260	23	28	0,5	66	36	6	e	4148146
VDS402A03200	3,200	.1260	23	28	0,5	66	36	6	i	4142851
VDS202A03300	3,300	.1299	23	28	0,5	66	36	6	e	4148148
VDS402A03300	3,300	.1299	23	28	0,5	66	36	6	i	4142865
VDS202A03400	3,400	.1339	23	28	0,6	66	36	6	e	4148149
VDS402A03400	3,400	.1339	23	28	0,6	66	36	6	i	4142867
VDS202A03500	3,500	.1378	23	28	0,6	66	36	6	e	4148151
VDS402A03500	3,500	.1378	23	28	0,6	66	36	6	i	4142872
VDS202A03600	3,600	.1417	23	28	0,6	66	36	6	e	4148153
VDS402A03600	3,600	.1417	23	28	0,6	66	36	6	i	4142888
VDS202A03700	3,700	.1457	23	28	0,6	66	36	6	e	4148155
VDS402A03700	3,700	.1457	23	28	0,6	66	36	6	i	4142894
VDS202A03800	3,800	.1496	29	36	0,6	74	36	6	e	4148157
VDS402A03800	3,800	.1496	29	36	0,6	74	36	6	i	4142900
VDS202A03900	3,900	.1535	29	36	0,6	74	36	6	e	4148158
VDS402A03900	3,900	.1535	29	36	0,6	74	36	6	i	4142900

VDS202A • VDS402A • 5 x D

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- first choice
- alternate choice

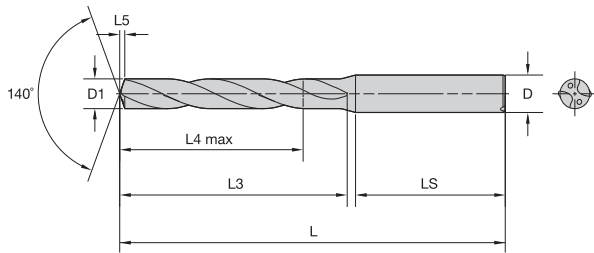
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catalogue number	D1 diameter		L4 max	L3	L5	L	LS	D	CF	WU25PD
	mm	in								
VDS402A03900	3,900	.1535	29	36	0,6	74	36	6	i	4142903
VDS202A04000	4,000	.1575	29	36	0,7	74	36	6	e	4148160
VDS402A04000	4,000	.1575	29	36	0,7	74	36	6	i	4142909
VDS202A04100	4,100	.1614	29	36	0,7	74	36	6	e	4148163
VDS402A04100	4,100	.1614	29	36	0,7	74	36	6	i	4142928
VDS202A04200	4,200	.1654	29	36	0,7	74	36	6	e	4148164
VDS402A04200	4,200	.1654	29	36	0,7	74	36	6	i	4142931
VDS202A04300	4,300	.1693	29	36	0,7	74	36	6	e	4148166
VDS402A04300	4,300	.1693	29	36	0,7	74	36	6	i	4142937
VDS202A04400	4,400	.1732	29	36	0,7	74	36	6	e	4148168
VDS402A04400	4,400	.1732	29	36	0,7	74	36	6	i	4142943
VDS202A04500	4,500	.1772	29	36	0,7	74	36	6	e	4148169
VDS402A04500	4,500	.1772	29	36	0,7	74	36	6	i	4142946
VDS202A04600	4,600	.1811	29	36	0,8	74	36	6	e	4148170
VDS402A04600	4,600	.1811	29	36	0,8	74	36	6	i	4142949
VDS402A04623	4,623	.1820	29	36	0,8	74	36	6	i	4142952
VDS202A04700	4,700	.1850	29	36	0,8	74	36	6	e	4148172
VDS402A04700	4,700	.1850	29	36	0,8	74	36	6	i	4142965
VDS202A04800	4,800	.1890	35	44	0,8	82	36	6	e	4148174
VDS402A04800	4,800	.1890	35	44	0,8	82	36	6	i	4142971
VDS202A04900	4,900	.1929	35	44	0,8	82	36	6	e	4148176
VDS402A04900	4,900	.1929	35	44	0,8	82	36	6	i	4142977
VDS202A05000	5,000	.1969	35	44	0,8	82	36	6	e	4148177
VDS402A05000	5,000	.1969	35	44	0,8	82	36	6	i	4142979
VDS202A05100	5,100	.2008	35	44	0,9	82	36	6	e	4148178
VDS402A05100	5,100	.2008	35	44	0,9	82	36	6	i	4142981
VDS202A05200	5,200	.2047	35	44	0,9	82	36	6	e	4148181
VDS402A05200	5,200	.2047	35	44	0,9	82	36	6	i	4142997
VDS202A05300	5,300	.2087	35	44	0,9	82	36	6	e	4148182
VDS402A05300	5,300	.2087	35	44	0,9	82	36	6	i	4142999
VDS202A05400	5,400	.2126	35	44	0,9	82	36	6	e	4148183
VDS402A05400	5,400	.2126	35	44	0,9	82	36	6	i	4143000
VDS202A05500	5,500	.2165	35	44	0,9	82	36	6	e	4148185
VDS402A05500	5,500	.2165	35	44	0,9	82	36	6	i	4143002
VDS402A05558	5,558	.2188	35	44	0,9	82	36	6	i	4143003
VDS202A05600	5,600	.2205	35	44	0,9	82	36	6	e	4148187
VDS402A05600	5,600	.2205	35	44	0,9	82	36	6	i	4143004
VDS202A05700	5,700	.2244	35	44	1,0	82	36	6	e	4148189
VDS402A05700	5,700	.2244	35	44	1,0	82	36	6	i	4143006
VDS202A05800	5,800	.2283	35	44	1,0	82	36	6	e	4148190
VDS402A05800	5,800	.2283	35	44	1,0	82	36	6	i	4143007
VDS202A05900	5,900	.2323	35	44	1,0	82	36	6	e	4148191
VDS402A05900	5,900	.2323	35	44	1,0	82	36	6	i	4143008
VDS202A06000	6,000	.2362	35	44	1,0	82	36	6	e	4148193
VDS402A06000	6,000	.2362	35	44	1,0	82	36	6	i	4143010
VDS202A06100	6,100	.2402	43	53	1,0	91	36	8	e	4148194
VDS402A06100	6,100	.2402	43	53	1,0	91	36	8	i	4143011
VDS202A06200	6,200	.2441	43	53	1,0	91	36	8	e	4148195
VDS402A06200	6,200	.2441	43	53	1,0	91	36	8	i	4143012
VDS202A06300	6,300	.2480	43	53	1,1	91	36	8	e	4148196
VDS402A06300	6,300	.2480	43	53	1,1	91	36	8	i	4143023
VDS202A06400	6,400	.2520	43	53	1,1	91	36	8	e	4148198
VDS402A06400	6,400	.2520	43	53	1,1	91	36	8	i	4143025
VDS202A06500	6,500	.2559	43	53	1,1	91	36	8	e	4148199
VDS402A06500	6,500	.2559	43	53	1,1	91	36	8	i	4143026
VDS202A06600	6,600	.2598	43	53	1,1	91	36	8	e	4148201
VDS402A06600	6,600	.2598	43	53	1,1	91	36	8	i	4143028
VDS202A06700	6,700	.2638	43	53	1,1	91	36	8	e	4148203
VDS402A06700	6,700	.2638	43	53	1,1	91	36	8	i	4148204
VDS202A06800	6,800	.2677	43	53	1,1	91	36	8	e	4148205
VDS402A06800	6,800	.2677	43	53	1,1	91	36	8	i	4143032
VDS202A06900	6,900	.2717	43	53	1,2	91	36	8	e	4148206
VDS402A06900	6,900	.2717	43	53	1,2	91	36	8	i	4143043
VDS202A07000	7,000	.2756	43	53	1,2	91	36	8	e	4148207

INDEXABLE MILLING
 SOLID END MILLING
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 TAPPING
 TURNING

VDS202A • VDS402A • 5 x D

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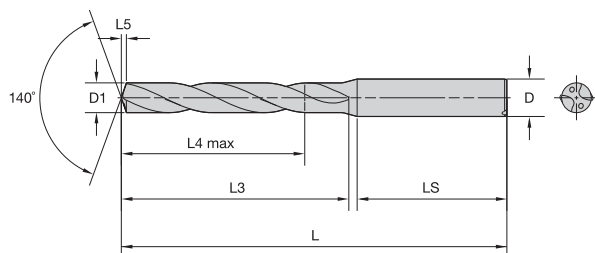
- first choice
- alternate choice

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catalogue number	D1 diameter		L4 max	L3	L5	L	LS	D	CF	WU25PD
	mm	in								
VDS402A07000	7,000	.2756	43	53	1,2	91	36	8	i	4143044
VDS202A07100	7,100	.2795	43	53	1,2	91	36	8	e	4148208
VDS402A07100	7,100	.2795	43	53	1,2	91	36	8	i	4143045
VDS202A07200	7,200	.2835	43	53	1,2	91	36	8	e	4148210
VDS402A07200	7,200	.2835	43	53	1,2	91	36	8	i	4143047
VDS202A07300	7,300	.2874	43	53	1,2	91	36	8	e	4148211
VDS402A07300	7,300	.2874	43	53	1,2	91	36	8	i	4143048
VDS202A07400	7,400	.2913	43	53	1,3	91	36	8	e	4148212
VDS402A07400	7,400	.2913	43	53	1,3	91	36	8	i	4143049
VDS202A07500	7,500	.2953	43	53	1,3	91	36	8	e	4148213
VDS402A07500	7,500	.2953	43	53	1,3	91	36	8	i	4143050
VDS202A07600	7,600	.2992	43	53	1,3	91	36	8	e	4148215
VDS402A07600	7,600	.2992	43	53	1,3	91	36	8	i	4143052
VDS202A07700	7,700	.3031	43	53	1,3	91	36	8	e	4148216
VDS402A07700	7,700	.3031	43	53	1,3	91	36	8	i	4143063
VDS202A07800	7,800	.3071	43	53	1,3	91	36	8	e	4148217
VDS402A07800	7,800	.3071	43	53	1,3	91	36	8	i	4143064
VDS202A07900	7,900	.3110	43	53	1,3	91	36	8	e	4148218
VDS402A07900	7,900	.3110	43	53	1,3	91	36	8	i	4143065
VDS202A08000	8,000	.3150	43	53	1,4	91	36	8	e	4148220
VDS402A08000	8,000	.3150	43	53	1,4	91	36	8	i	4143067
VDS202A08100	8,100	.3189	49	61	1,4	103	40	10	e	4148221
VDS402A08100	8,100	.3189	49	61	1,4	103	40	10	i	4143068
VDS202A08200	8,200	.3228	49	61	1,4	103	40	10	e	4148222
VDS402A08200	8,200	.3228	49	61	1,4	103	40	10	i	4143069
VDS202A08300	8,300	.3268	49	61	1,4	103	40	10	e	4148223
VDS402A08300	8,300	.3268	49	61	1,4	103	40	10	i	4143070
VDS202A08400	8,400	.3307	49	61	1,4	103	40	10	e	4148225
VDS402A08400	8,400	.3307	49	61	1,4	103	40	10	i	4143072
VDS202A08500	8,500	.3346	49	61	1,4	103	40	10	e	4148227
VDS402A08500	8,500	.3346	49	61	1,4	103	40	10	i	4143084
VDS202A08600	8,600	.3386	49	61	1,5	103	40	10	e	4148228
VDS402A08600	8,600	.3386	49	61	1,5	103	40	10	i	4143085
VDS202A08700	8,700	.3425	49	61	1,5	103	40	10	e	4148229
VDS402A08700	8,700	.3425	49	61	1,5	103	40	10	i	4143086
VDS202A08800	8,800	.3465	49	61	1,5	103	40	10	e	4148231
VDS402A08800	8,800	.3465	49	61	1,5	103	40	10	i	4143088
VDS202A08900	8,900	.3504	49	61	1,5	103	40	10	e	4148232
VDS402A08900	8,900	.3504	49	61	1,5	103	40	10	i	4143089
VDS202A09000	9,000	.3543	49	61	1,5	103	40	10	e	4148233
VDS402A09000	9,000	.3543	49	61	1,5	103	40	10	i	4143090
VDS202A09100	9,100	.3583	49	61	1,6	103	40	10	e	4148234
VDS402A09100	9,100	.3583	49	61	1,6	103	40	10	i	4143091
VDS202A09200	9,200	.3622	49	61	1,6	103	40	10	e	4148236
VDS402A09200	9,200	.3622	49	61	1,6	103	40	10	i	4143103
VDS202A09300	9,300	.3661	49	61	1,6	103	40	10	e	4148237
VDS402A09300	9,300	.3661	49	61	1,6	103	40	10	i	4143104
VDS202A09400	9,400	.3701	49	61	1,6	103	40	10	e	4148239
VDS402A09400	9,400	.3701	49	61	1,6	103	40	10	i	4143106
VDS202A09500	9,500	.3740	49	61	1,6	103	40	10	e	4148240
VDS402A09500	9,500	.3740	49	61	1,6	103	40	10	i	4143107
VDS202A09600	9,600	.3780	49	61	1,6	103	40	10	e	4148241
VDS402A09600	9,600	.3780	49	61	1,6	103	40	10	i	4143109
VDS202A09700	9,700	.3819	49	61	1,7	103	40	10	e	4148243
VDS402A09700	9,700	.3819	49	61	1,7	103	40	10	i	4143110
VDS202A09800	9,800	.3858	49	61	1,7	103	40	10	e	4148244
VDS402A09800	9,800	.3858	49	61	1,7	103	40	10	i	4143111
VDS202A09900	9,900	.3898	49	61	1,7	103	40	10	e	4148245
VDS402A09900	9,900	.3898	49	61	1,7	103	40	10	i	4143112
VDS202A10000	10,000	.3937	49	61	1,7	103	40	10	e	4148258
VDS402A10000	10,000	.3937	49	61	1,7	103	40	10	i	4148283
VDS202A10100	10,100	.3976	56	71	1,7	118	45	12	e	4148259
VDS402A10100	10,100	.3976	56	71	1,7	118	45	12	i	4142825
VDS202A10200	10,200	.4016	56	71	1,7	118	45	12	e	4148260
VDS402A10200	10,200	.4016	56	71	1,7	118	45	12	i	4142827

VDS202A • VDS402A • 5 x D

(continued)



- first choice
- alternate choice

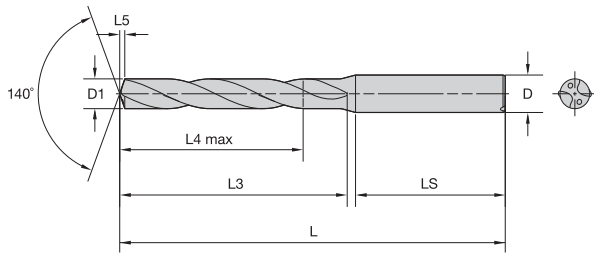
P	●
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K	●
N	●
S	●
H	●

catalogue number	D1 diameter		L4 max	L3	L5	L	LS	D	CF	WU25PD
	mm	in								
VDS202A10300	10,300	.4055	56	71	1,8	118	45	12	e	4148261
VDS402A10300	10,300	.4055	56	71	1,8	118	45	12	i	4148269
VDS402A10400	10,400	.4094	56	71	1,8	118	45	12	i	4142832
VDS202A10500	10,500	.4134	56	71	1,8	118	45	12	e	4148284
VDS402A10500	10,500	.4134	56	71	1,8	118	45	12	i	4142834
VDS202A10600	10,600	.4173	56	71	1,8	118	45	12	e	4148285
VDS402A10600	10,600	.4173	56	71	1,8	118	45	12	i	4142836
VDS202A10700	10,700	.4213	56	71	1,8	118	45	12	e	4148286
VDS402A10700	10,700	.4213	56	71	1,8	118	45	12	i	4142838
VDS202A10800	10,800	.4252	56	71	1,9	118	45	12	e	4148288
VDS402A10800	10,800	.4252	56	71	1,9	118	45	12	i	4142842
VDS202A10900	10,900	.4291	56	71	1,9	118	45	12	e	4148289
VDS402A10900	10,900	.4291	56	71	1,9	118	45	12	i	4142855
VDS202A11000	11,000	.4331	56	71	1,9	118	45	12	e	4148290
VDS402A11000	11,000	.4331	56	71	1,9	118	45	12	i	4142857
VDS202A11100	11,100	.4370	56	71	1,9	118	45	12	e	4148291
VDS402A11100	11,100	.4370	56	71	1,9	118	45	12	i	4142858
VDS202A11200	11,200	.4409	56	71	1,9	118	45	12	e	4148293
VDS402A11200	11,200	.4409	56	71	1,9	118	45	12	i	4142862
VDS202A11300	11,300	.4449	56	71	1,9	118	45	12	e	4148294
VDS402A11300	11,300	.4449	56	71	1,9	118	45	12	i	4142873
VDS202A11400	11,400	.4488	56	71	2,0	118	45	12	i	4142874
VDS402A11400	11,400	.4488	56	71	2,0	118	45	12	e	4142875
VDS202A11500	11,500	.4528	56	71	2,0	118	45	12	e	4148296
VDS402A11500	11,500	.4528	56	71	2,0	118	45	12	i	4142877
VDS202A11600	11,600	.4567	56	71	2,0	118	45	12	e	4148298
VDS402A11600	11,600	.4567	56	71	2,0	118	45	12	i	4142878
VDS202A11700	11,700	.4606	56	71	2,0	118	45	12	e	4148300
VDS402A11700	11,700	.4606	56	71	2,0	118	45	12	i	4142879
VDS202A11800	11,800	.4646	56	71	2,0	118	45	12	e	4148301
VDS402A11800	11,800	.4646	56	71	2,0	118	45	12	i	4142880
VDS202A11900	11,900	.4685	56	71	2,0	118	45	12	e	4148313
VDS402A11900	11,900	.4685	56	71	2,1	118	45	12	i	4142882
VDS202A12000	12,000	.4724	56	71	2,1	118	45	12	e	4148314
VDS402A12000	12,000	.4724	56	71	2,1	118	45	12	i	4142883
VDS202A12100	12,100	.4764	60	77	2,1	124	45	14	e	4148315
VDS402A12100	12,100	.4764	60	77	2,1	124	45	14	i	4142913
VDS202A12200	12,200	.4803	60	77	2,1	124	45	14	e	4148316
VDS402A12200	12,200	.4803	60	77	2,1	124	45	14	i	4142914
VDS402A12300	12,300	.4843	60	77	2,1	124	45	14	i	4142915
VDS402A12400	12,400	.4882	60	77	2,1	124	45	14	i	4142917
VDS202A12500	12,500	.4921	60	77	2,2	124	45	14	e	4148319
VDS402A12500	12,500	.4921	60	77	2,2	124	45	14	i	4142918
VDS202A12600	12,600	.4961	60	77	2,2	124	45	14	e	4148320
VDS402A12600	12,600	.4961	60	77	2,2	124	45	14	i	4142919
VDS202A12700	12,700	.5000	60	77	2,2	124	45	14	e	4148321
VDS402A12700	12,700	.5000	60	77	2,2	124	45	14	i	4142920
VDS202A12800	12,800	.5039	60	77	2,2	124	45	14	e	4148322
VDS402A12800	12,800	.5039	60	77	2,2	124	45	14	i	4142921
VDS202A12900	12,900	.5079	60	77	2,2	124	45	14	e	4148343
VDS402A12900	12,900	.5079	60	77	2,2	124	45	14	i	4142922
VDS202A13000	13,000	.5118	60	77	2,2	124	45	14	e	4148344
VDS402A13000	13,000	.5118	60	77	2,2	124	45	14	i	4142953
VDS202A13100	13,100	.5157	60	77	2,3	124	45	14	e	4148346
VDS402A13100	13,100	.5157	60	77	2,3	124	45	14	i	4142955
VDS202A13200	13,200	.5197	60	77	2,3	124	45	14	e	4148347
VDS402A13200	13,200	.5197	60	77	2,3	124	45	14	i	4142956
VDS402A13300	13,300	.5236	60	77	2,3	124	45	14	i	4142957
VDS402A13400	13,400	.5276	60	77	2,3	124	45	14	i	4142958
VDS202A13500	13,500	.5315	60	77	2,3	124	45	14	e	4148350
VDS402A13500	13,500	.5315	60	77	2,3	124	45	14	i	4142959
VDS402A13600	13,600	.5354	60	77	2,3	124	45	14	i	4142960
VDS402A13700	13,700	.5394	60	77	2,4	124	45	14	i	4142961
VDS202A13800	13,800	.5433	60	77	2,4	124	45	14	e	4148353
VDS402A13800	13,800	.5433	60	77	2,4	124	45	14	i	4142962

INDEXABLE MILLING
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 HOLEMAKING
 TAPPING
 TURNING

VDS202A • VDS402A • 5 x D

(continued)



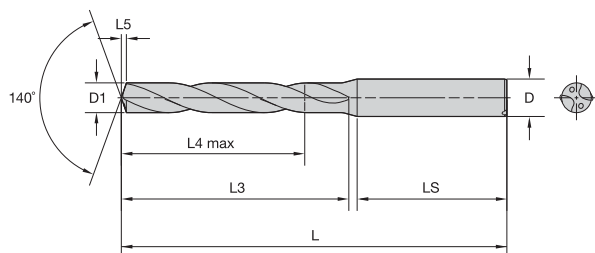
- first choice
- alternate choice

P	●
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catalogue number	D1 diameter		L4 max	L3	L5	L	LS	D	CF	WU25PD
	mm	in								
VDS402A13900	13,900	.5472	60	77	2,4	124	45	14	i	4142984
VDS202A14000	14,000	.5512	60	77	2,4	124	45	14	e	4148356
VDS402A14000	14,000	.5512	60	77	2,4	124	45	14	i	4142985
VDS202A14100	14,100	.5551	63	83	2,4	133	48	16	e	4148357
VDS402A14100	14,100	.5551	63	83	2,4	133	48	16	i	4142986
VDS202A14200	14,200	.5591	63	83	2,5	133	48	16	e	4148358
VDS402A14200	14,200	.5591	63	83	2,5	133	48	16	i	4142987
VDS202A14300	14,300	.5630	63	83	2,5	133	48	16	e	4148360
VDS402A14300	14,300	.5630	63	83	2,5	133	48	16	i	4142989
VDS202A14400	14,400	.5669	63	83	2,5	133	48	16	e	4142990
VDS402A14400	14,400	.5669	63	83	2,5	133	48	16	i	4142989
VDS202A14500	14,500	.5709	63	83	2,5	133	48	16	e	4148362
VDS402A14500	14,500	.5709	63	83	2,5	133	48	16	i	4142991
VDS202A14600	14,600	.5748	63	83	2,5	133	48	16	e	4142992
VDS402A14600	14,600	.5748	63	83	2,5	133	48	16	i	4142992
VDS202A14700	14,700	.5787	63	83	2,5	133	48	16	e	4143014
VDS402A14700	14,700	.5787	63	83	2,5	133	48	16	i	4143014
VDS202A14800	14,800	.5827	63	83	2,6	133	48	16	e	4148366
VDS402A14800	14,800	.5827	63	83	2,6	133	48	16	i	4143015
VDS202A14900	14,900	.5866	63	83	2,6	133	48	16	e	4148367
VDS402A14900	14,900	.5866	63	83	2,6	133	48	16	i	4143016
VDS202A15000	15,000	.5906	63	83	2,6	133	48	16	e	4148368
VDS402A15000	15,000	.5906	63	83	2,6	133	48	16	i	4143017
VDS202A15100	15,100	.5945	63	83	2,6	133	48	16	e	4148370
VDS402A15100	15,100	.5945	63	83	2,6	133	48	16	i	4143019
VDS202A15200	15,200	.5984	63	83	2,6	133	48	16	e	4148371
VDS402A15200	15,200	.5984	63	83	2,6	133	48	16	i	4143020
VDS202A15300	15,300	.6024	63	83	2,6	133	48	16	e	4143021
VDS402A15300	15,300	.6024	63	83	2,6	133	48	16	i	4143021
VDS202A15400	15,400	.6063	63	83	2,7	133	48	16	e	4143022
VDS402A15400	15,400	.6063	63	83	2,7	133	48	16	i	4143022
VDS202A15500	15,500	.6102	63	83	2,7	133	48	16	e	4148375
VDS402A15500	15,500	.6102	63	83	2,7	133	48	16	i	4143034
VDS202A15600	15,600	.6142	63	83	2,7	133	48	16	e	4143035
VDS402A15600	15,600	.6142	63	83	2,7	133	48	16	i	4143035
VDS202A15700	15,700	.6181	63	83	2,7	133	48	16	e	4143036
VDS402A15700	15,700	.6181	63	83	2,7	133	48	16	i	4143036
VDS202A15800	15,800	.6220	63	83	2,7	133	48	16	e	4148378
VDS402A15800	15,800	.6220	63	83	2,7	133	48	16	i	4143037
VDS202A15900	15,900	.6260	63	83	2,8	133	48	16	e	4143039
VDS402A15900	15,900	.6260	63	83	2,8	133	48	16	i	4143039
VDS202A16000	16,000	.6299	63	83	2,8	133	48	16	e	4148381
VDS402A16000	16,000	.6299	63	83	2,8	133	48	16	i	4143040
VDS202A16100	16,100	.6339	71	93	2,8	143	48	18	e	4148382
VDS402A16100	16,100	.6339	71	93	2,8	143	48	18	i	4148382
VDS202A16200	16,200	.6378	71	93	2,8	143	48	18	e	4143041
VDS402A16200	16,200	.6378	71	93	2,8	143	48	18	i	4143041
VDS202A16300	16,300	.6417	71	93	2,8	143	48	18	e	4143054
VDS402A16300	16,300	.6417	71	93	2,8	143	48	18	i	4143054
VDS202A16400	16,400	.6457	71	93	2,8	143	48	18	e	4143055
VDS402A16400	16,400	.6457	71	93	2,8	143	48	18	i	4143055
VDS202A16500	16,500	.6496	71	93	2,9	143	48	18	e	4148387
VDS402A16500	16,500	.6496	71	93	2,9	143	48	18	i	4143056
VDS202A16600	16,600	.6535	71	93	2,9	143	48	18	e	4143057
VDS402A16600	16,600	.6535	71	93	2,9	143	48	18	i	4143057
VDS202A16700	16,700	.6575	71	93	2,9	143	48	18	e	4143059
VDS402A16700	16,700	.6575	71	93	2,9	143	48	18	i	4143059
VDS202A16800	16,800	.6614	71	93	2,9	143	48	18	e	4143060
VDS402A16800	16,800	.6614	71	93	2,9	143	48	18	i	4143060
VDS202A16900	16,900	.6654	71	93	2,9	143	48	18	e	4143061
VDS402A16900	16,900	.6654	71	93	2,9	143	48	18	i	4143061
VDS202A17000	17,000	.6693	71	93	3,0	143	48	18	e	4148393
VDS402A17000	17,000	.6693	71	93	3,0	143	48	18	i	4143062
VDS202A17100	17,100	.6732	71	93	3,0	143	48	18	e	4148394
VDS402A17100	17,100	.6732	71	93	3,0	143	48	18	i	4143073
VDS202A17200	17,200	.6772	71	93	3,0	143	48	18	e	4143074
VDS402A17200	17,200	.6772	71	93	3,0	143	48	18	i	4143074
VDS202A17300	17,300	.6811	71	93	3,0	143	48	18	e	4143075
VDS402A17300	17,300	.6811	71	93	3,0	143	48	18	i	4143075
VDS202A17400	17,400	.6850	71	93	3,0	143	48	18	e	4143076
VDS402A17400	17,400	.6850	71	93	3,0	143	48	18	i	4143076
VDS202A17500	17,500	.6890	71	93	3,0	143	48	18	e	4148399
VDS402A17500	17,500	.6890	71	93	3,0	143	48	18	i	4143078
VDS202A17600	17,600	.6929	71	93	3,1	143	48	18	e	4143079
VDS402A17600	17,600	.6929	71	93	3,1	143	48	18	i	4143079
VDS202A17700	17,700	.6969	71	93	3,1	143	48	18	e	4143080
VDS402A17700	17,700	.6969	71	93	3,1	143	48	18	i	4143080
VDS202A17800	17,800	.7008	71	93	3,1	143	48	18	e	4143081
VDS402A17800	17,800	.7008	71	93	3,1	143	48	18	i	4143081
VDS202A17900	17,900	.7047	71	93	3,1	143	48	18	e	4143093
VDS402A17900	17,900	.7047	71	93	3,1	143	48	18	i	4143093
VDS202A18000	18,000	.7087	71	93	3,1	143	48	18	e	4147921
VDS402A18000	18,000	.7087	71	93	3,1	143	48	18	i	4142803
VDS202A18100	18,100	.7126	77	101	3,1	153	50	20	e	4142804
VDS402A18100	18,100	.7126	77	101	3,1	153	50	20	i	4142804
VDS202A18200	18,200	.7165	77	101	3,2	153	50	20	e	4142805
VDS402A18200	18,200	.7165	77	101	3,2	153	50	20	i	4142805
VDS202A18300	18,300	.7205	77	101	3,2	153	50	20	e	4142807
VDS402A18300	18,300	.7205	77	101	3,2	153	50	20	i	4142807

VDS202A • VDS402A • 5 x D

(continued)



- first choice
- alternate choice

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catalogue number	D1 diameter		L4 max	L3	L5	L	LS	D	CF	WU25PD
	mm	in								
VDS402A18400	18,400	.7244	77	101	3,2	153	50	20	i	4142808
VDS202A18500	18,500	.7283	77	101	3,2	153	50	20	e	4148307
VDS402A18500	18,500	.7283	77	101	3,2	153	50	20	i	4142809
VDS402A18600	18,600	.7323	77	101	3,2	153	50	20	i	4142810
VDS402A18700	18,700	.7362	77	101	3,3	153	50	20	i	4142812
VDS402A18800	18,800	.7402	77	101	3,3	153	50	20	i	4142824
VDS402A18900	18,900	.7441	77	101	3,3	153	50	20	i	4142826
VDS202A19000	19,000	.7480	77	101	3,3	153	50	20	e	4148323
VDS402A19000	19,000	.7480	77	101	3,3	153	50	20	i	4142828
VDS402A19100	19,100	.7520	77	101	3,3	153	50	20	i	4142833
VDS402A19200	19,200	.7559	77	101	3,3	153	50	20	i	4142835
VDS402A19300	19,300	.7598	77	101	3,4	153	50	20	i	4142837
VDS402A19400	19,400	.7638	77	101	3,4	153	50	20	i	4142839
VDS202A19500	19,500	.7677	77	101	3,4	153	50	20	e	4148329
VDS402A19500	19,500	.7677	77	101	3,4	153	50	20	i	4142841
VDS402A19600	19,600	.7717	77	101	3,4	153	50	20	i	4142853
VDS402A19700	19,700	.7756	77	101	3,4	153	50	20	i	4142854
VDS402A19800	19,800	.7795	77	101	3,4	153	50	20	i	4142856
VDS202A19900	19,900	.7835	77	101	3,5	153	50	20	e	4148333
VDS402A19900	19,900	.7835	77	101	3,5	153	50	20	i	4142859
VDS202A20000	20,000	.7874	77	101	3,5	153	50	20	e	4148334
VDS402A20000	20,000	.7874	77	101	3,5	153	50	20	i	4142860

NOTE: CF = Coolant Feature:
 i = internal
 e = external
 i/e = internal and external

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

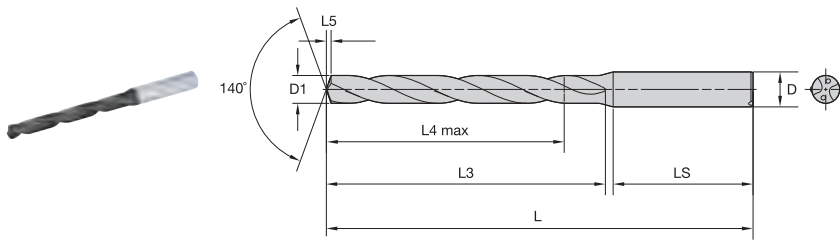
TAPPING

TURNING



THE ALL-STAR PROGRAMME FEATURES ONLY THE MOST POPULAR PLATFORMS, GRADES, AND SIZES. FOR THE COMPLETE OFFERING, VISIT WIDIA NOVO™ OR WIDIA.COM.

VDS403A • 8 x D



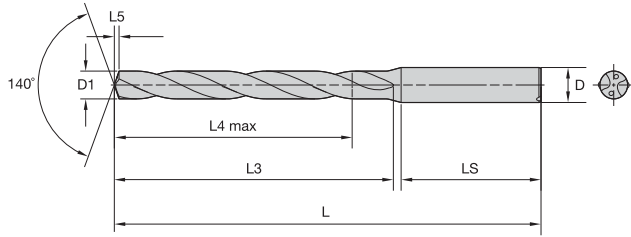
- first choice
- alternate choice

P	●
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K	●
N	●
S	●
H	

catalogue number	D1 diameter		L4 max	L3	L5	L	LS	D	CF	WU25PD
	mm	in								
VDS403A01500	1,500	.0591	15	18	0,2	58	28	4	i	4143700
VDS403A01600	1,600	.0630	15	18	0,2	58	28	4	i	4143701
VDS403A01700	1,700	.0669	15	18	0,3	58	28	4	i	4143702
VDS403A01800	1,800	.0709	15	18	0,3	58	28	4	i	4143723
VDS403A01900	1,900	.0748	15	18	0,3	58	28	4	i	4143724
VDS403A02000	2,000	.0787	22	26	0,3	66	28	4	i	4143726
VDS403A02100	2,100	.0827	22	26	0,3	66	28	4	i	4143727
VDS403A02200	2,200	.0866	22	26	0,3	66	28	4	i	4143728
VDS403A02300	2,300	.0906	22	26	0,4	66	28	4	i	4143729
VDS403A02400	2,400	.0945	25	30	0,4	66	28	4	i	4143731
VDS403A02500	2,500	.0984	25	30	0,4	66	28	4	i	4143734
VDS403A02600	2,600	.1024	25	30	0,4	66	28	4	i	4143736
VDS403A02700	2,700	.1063	25	30	0,4	66	28	4	i	4143738
VDS403A02800	2,800	.1102	25	30	0,5	66	28	4	i	4143741
VDS403A02900	2,900	.1142	25	30	0,5	66	28	4	i	4143744
VDS403A03000	3,000	.1181	33	40	0,5	78	36	6	i	4143746
VDS403A03100	3,100	.1220	33	40	0,5	78	36	6	i	4143748
VDS403A03175	3,175	.1250	33	40	0,5	78	36	6	i	4143749
VDS403A03200	3,200	.1260	33	40	0,5	78	36	6	i	4143750
VDS403A03300	3,300	.1299	33	40	0,5	78	36	6	i	4143752
VDS403A03400	3,400	.1339	33	40	0,6	78	36	6	i	4143753
VDS403A03500	3,500	.1378	33	40	0,6	78	36	6	i	4143755
VDS403A03600	3,600	.1417	33	40	0,6	78	36	6	i	4143757
VDS403A03700	3,700	.1457	33	40	0,6	78	36	6	i	4143759
VDS403A03800	3,800	.1496	41	49	0,6	87	36	6	i	4143761
VDS403A03900	3,900	.1535	41	49	0,6	87	36	6	i	4143762
VDS403A03970	3,970	.1563	41	49	0,7	87	36	6	i	4143763
VDS403A04000	4,000	.1575	41	49	0,7	87	36	6	i	4143764
VDS403A04100	4,100	.1614	41	49	0,7	87	36	6	i	4143767
VDS403A04200	4,200	.1654	41	49	0,7	87	36	6	i	4143768
VDS403A04300	4,300	.1693	41	49	0,7	87	36	6	i	4143770
VDS403A04400	4,400	.1732	41	49	0,7	87	36	6	i	4143772
VDS403A04500	4,500	.1772	41	49	0,7	87	36	6	i	4143773
VDS403A04600	4,600	.1811	41	49	0,8	87	36	6	i	4143774
VDS403A04700	4,700	.1850	41	49	0,8	87	36	6	i	4143776
VDS403A04800	4,800	.1890	48	56	0,8	94	36	6	i	4143778
VDS403A04900	4,900	.1929	48	56	0,8	94	36	6	i	4143780
VDS403A05000	5,000	.1969	48	56	0,8	94	36	6	i	4143781
VDS403A05100	5,100	.2008	48	56	0,9	94	36	6	i	4143782
VDS403A05200	5,200	.2047	48	56	0,9	94	36	6	i	4143785
VDS403A05300	5,300	.2087	48	56	0,9	94	36	6	i	4143786
VDS403A05400	5,400	.2126	48	56	0,9	94	36	6	i	4143787
VDS403A05500	5,500	.2165	48	56	0,9	94	36	6	i	4143789
VDS403A05600	5,600	.2205	48	56	0,9	94	36	6	i	4143791
VDS403A05700	5,700	.2244	48	56	1,0	94	36	6	i	4143793
VDS403A05800	5,800	.2283	48	56	1,0	94	36	6	i	4143794
VDS403A05900	5,900	.2323	48	56	1,0	94	36	6	i	4143795
VDS403A06000	6,000	.2362	48	56	1,0	94	36	6	i	4143797
VDS403A06100	6,100	.2402	57	67	1,0	105	36	8	i	4143798
VDS403A06200	6,200	.2441	57	67	1,0	105	36	8	i	4143799
VDS403A06300	6,300	.2480	57	67	1,1	105	36	8	i	4143800
VDS403A06400	6,400	.2520	57	67	1,1	105	36	8	i	4143802
VDS403A06500	6,500	.2559	57	67	1,1	105	36	8	i	4143803
VDS403A06600	6,600	.2598	57	67	1,1	105	36	8	i	4143805
VDS403A06700	6,700	.2638	57	67	1,1	105	36	8	i	4143807
VDS403A06800	6,800	.2677	57	67	1,1	105	36	8	i	4143809
VDS403A06900	6,900	.2717	57	67	1,2	105	36	8	i	4143810
VDS403A07000	7,000	.2756	57	67	1,2	105	36	8	i	4143811
VDS403A07100	7,100	.2795	61	72	1,2	110	36	8	i	4143812
VDS403A07200	7,200	.2835	61	72	1,2	110	36	8	i	4143814
VDS403A07300	7,300	.2874	61	72	1,2	110	36	8	i	4143815
VDS403A07400	7,400	.2913	61	72	1,3	110	36	8	i	4143816
VDS403A07500	7,500	.2953	61	72	1,3	110	36	8	i	4143817
VDS403A07600	7,600	.2992	61	72	1,3	110	36	8	i	4143819

VDS403A • 8 x D

(continued)



- first choice
- alternate choice

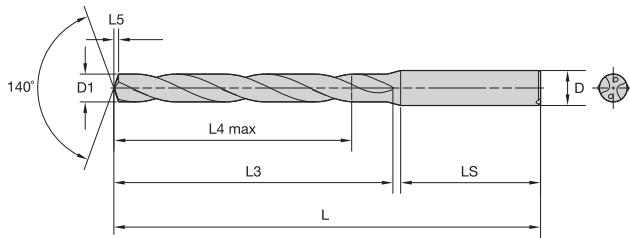
P	●
M	●
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N	●
S	●
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catalogue number	D1 diameter		L4 max	L3	L5	L	LS	D	CF	WU25PD
	mm	in								
VDS403A07700	7,700	.3031	61	72	1,3	110	36	8	i	4143820
VDS403A07800	7,800	.3071	61	72	1,3	110	36	8	i	4143821
VDS403A07900	7,900	.3110	61	72	1,3	110	36	8	i	4143822
VDS403A08000	8,000	.3150	61	72	1,4	110	36	8	i	4143824
VDS403A08100	8,100	.3189	68	80	1,4	122	40	10	i	4143825
VDS403A08200	8,200	.3228	68	80	1,4	122	40	10	i	4143826
VDS403A08300	8,300	.3268	68	80	1,4	122	40	10	i	4143827
VDS403A08400	8,400	.3307	68	80	1,4	122	40	10	i	4143829
VDS403A08500	8,500	.3346	68	80	1,4	122	40	10	i	4143831
VDS403A08600	8,600	.3386	68	80	1,5	122	40	10	i	4143832
VDS403A08700	8,700	.3425	68	80	1,5	122	40	10	i	4143833
VDS403A08800	8,800	.3465	68	80	1,5	122	40	10	i	4143835
VDS403A08900	8,900	.3504	68	80	1,5	122	40	10	i	4143836
VDS403A09000	9,000	.3543	68	80	1,5	122	40	10	i	4143837
VDS403A09100	9,100	.3583	68	80	1,6	122	40	10	i	4143838
VDS403A09200	9,200	.3622	68	80	1,6	122	40	10	i	4143840
VDS403A09300	9,300	.3661	68	80	1,6	122	40	10	i	4143841
VDS403A09400	9,400	.3701	68	80	1,6	122	40	10	i	4143843
VDS403A09500	9,500	.3740	68	80	1,6	122	40	10	i	4143844
VDS403A09600	9,600	.3780	68	80	1,6	122	40	10	i	4143846
VDS403A09700	9,700	.3819	68	80	1,7	122	40	10	i	4143847
VDS403A09800	9,800	.3858	68	80	1,7	122	40	10	i	4143848
VDS403A09900	9,900	.3898	68	80	1,7	122	40	10	i	4143849
VDS403A10000	10,000	.3937	68	80	1,7	122	40	10	i	4143421
VDS403A10100	10,100	.3976	79	94	1,7	141	45	12	i	4143422
VDS403A10200	10,200	.4016	79	94	1,7	141	45	12	i	4143473
VDS403A10300	10,300	.4055	79	94	1,8	141	45	12	i	4143474
VDS403A10400	10,400	.4094	79	94	1,8	141	45	12	i	4143476
VDS403A10500	10,500	.4134	79	94	1,8	141	45	12	i	4143477
VDS403A10600	10,600	.4173	79	94	1,8	141	45	12	i	4143478
VDS403A10700	10,700	.4213	79	94	1,8	141	45	12	i	4143479
VDS403A10800	10,800	.4252	79	94	1,9	141	45	12	i	4143481
VDS403A10900	10,900	.4291	79	94	1,9	141	45	12	i	4143482
VDS403A11000	11,000	.4331	79	94	1,9	141	45	12	i	4143483
VDS403A11100	11,100	.4370	79	94	1,9	141	45	12	i	4143484
VDS403A11200	11,200	.4409	79	94	1,9	141	45	12	i	4143486
VDS403A11300	11,300	.4449	79	94	1,9	141	45	12	i	4143487
VDS403A11400	11,400	.4488	79	94	2,0	141	45	12	i	4143488
VDS403A11500	11,500	.4528	79	94	2,0	141	45	12	i	4143489
VDS403A11600	11,600	.4567	79	94	2,0	141	45	12	i	4143491
VDS403A11700	11,700	.4606	79	94	2,0	141	45	12	i	4143492
VDS403A11800	11,800	.4646	79	94	2,0	141	45	12	i	4143493
VDS403A11900	11,900	.4685	79	94	2,0	141	45	12	i	4143494
VDS403A12000	12,000	.4724	79	94	2,1	141	45	12	i	4143496
VDS403A12100	12,100	.4764	91	108	2,1	155	45	14	i	4143497
VDS403A12200	12,200	.4803	91	108	2,1	155	45	14	i	4143498
VDS403A12300	12,300	.4843	91	108	2,1	155	45	14	i	4143499
VDS403A12400	12,400	.4882	91	108	2,1	155	45	14	i	4143501
VDS403A12500	12,500	.4921	91	108	2,2	155	45	14	i	4143502
VDS403A12600	12,600	.4961	91	108	2,2	155	45	14	i	4143503
VDS403A12700	12,700	.5000	91	108	2,2	155	45	14	i	4143504
VDS403A12800	12,800	.5039	91	108	2,2	155	45	14	i	4143505
VDS403A12900	12,900	.5079	91	108	2,2	155	45	14	i	4143506
VDS403A13000	13,000	.5118	91	108	2,2	155	45	14	i	4143507
VDS403A13100	13,100	.5157	91	108	2,3	155	45	14	i	4143509
VDS403A13200	13,200	.5197	91	108	2,3	155	45	14	i	4143510
VDS403A13300	13,300	.5236	91	108	2,3	155	45	14	i	4143511
VDS403A13400	13,400	.5276	91	108	2,3	155	45	14	i	4143512
VDS403A13500	13,500	.5315	91	108	2,3	155	45	14	i	4143513
VDS403A13600	13,600	.5354	91	108	2,3	155	45	14	i	4143514
VDS403A13700	13,700	.5394	91	108	2,4	155	45	14	i	4143515
VDS403A13800	13,800	.5433	91	108	2,4	155	45	14	i	4143516
VDS403A13900	13,900	.5472	91	108	2,4	155	45	14	i	4143518
VDS403A14000	14,000	.5512	91	108	2,4	155	45	14	i	4143519

INDEXABLE MILLING
 SOLID END MILLING
 HOLEMAKING
 TAPPING
 TURNING

VDS403A • 8 x D

(continued)



- first choice
- alternate choice

P	●
M	●
K	●
N	●
S	●
H	●

catalogue number	D1 diameter		L4 max	L3	L5	L	LS	D	CF	WU25PD
	mm	in								
VDS403A14100	14,100	.5551	101	121	2,4	171	48	16	i	4143520
VDS403A14200	14,200	.5591	101	121	2,5	171	48	16	i	4143521
VDS403A14300	14,300	.5630	101	121	2,5	171	48	16	i	4143523
VDS403A14400	14,400	.5669	101	121	2,5	171	48	16	i	4143524
VDS403A14500	14,500	.5709	101	121	2,5	171	48	16	i	4143525
VDS403A14600	14,600	.5748	101	121	2,5	171	48	16	i	4143526
VDS403A14700	14,700	.5787	101	121	2,5	171	48	16	i	4143528
VDS403A14800	14,800	.5827	101	121	2,6	171	48	16	i	4143529
VDS403A14900	14,900	.5866	101	121	2,6	171	48	16	i	4143530
VDS403A15000	15,000	.5906	101	121	2,6	171	48	16	i	4143531
VDS403A15100	15,100	.5945	101	121	2,6	171	48	16	i	4143533
VDS403A15200	15,200	.5984	101	121	2,6	171	48	16	i	4143534
VDS403A15300	15,300	.6024	101	121	2,6	171	48	16	i	4143535
VDS403A15400	15,400	.6063	101	121	2,7	171	48	16	i	4143536
VDS403A15500	15,500	.6102	101	121	2,7	171	48	16	i	4143538
VDS403A15600	15,600	.6142	101	121	2,7	171	48	16	i	4143539
VDS403A15700	15,700	.6181	101	121	2,7	171	48	16	i	4143540
VDS403A15800	15,800	.6220	101	121	2,7	171	48	16	i	4143541
VDS403A15900	15,900	.6260	101	121	2,8	171	48	16	i	4143543
VDS403A16000	16,000	.6299	101	121	2,8	171	48	16	i	4143544
VDS403A16200	16,200	.6378	113	135	2,8	185	48	18	i	4143546
VDS403A16500	16,500	.6496	113	135	2,9	185	48	18	i	4143550
VDS403A16700	16,700	.6575	113	135	2,9	185	48	18	i	4143553
VDS403A16800	16,800	.6614	113	135	2,9	185	48	18	i	4143554
VDS403A17000	17,000	.6693	113	135	3,0	185	48	18	i	4143556
VDS403A17500	17,500	.6890	113	135	3,0	185	48	18	i	4143562
VDS403A17600	17,600	.6929	113	135	3,1	185	48	18	i	4143563
VDS403A17800	17,800	.7008	113	135	3,1	185	48	18	i	4143565
VDS403A18000	18,000	.7087	113	135	3,1	185	48	18	i	4144209
VDS403A18100	18,100	.7126	124	148	3,1	200	50	20	i	4144211
VDS403A18200	18,200	.7165	124	148	3,2	200	50	20	i	4144212
VDS403A18500	18,500	.7283	124	148	3,2	200	50	20	i	4144250
VDS403A18800	18,800	.7402	124	148	3,3	200	50	20	i	4144258
VDS403A19000	19,000	.7480	124	148	3,3	200	50	20	i	4144262
VDS403A19500	19,500	.7677	124	148	3,4	200	50	20	i	4144285
VDS403A19800	19,800	.7795	124	148	3,4	200	50	20	i	4144291
VDS403A20000	20,000	.7874	124	148	3,5	200	50	20	i	4144305

NOTE: CF = Coolant Feature:
 i = internal
 e = external
 ile = internal and external



THE ALL-STAR PROGRAMME FEATURES ONLY THE MOST POPULAR PLATFORMS, GRADES, AND SIZES. FOR THE COMPLETE OFFERING, VISIT WIDIA NOVO™ OR WIDIA.COM.

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
	mm/r													
P	1	60	-	100	0,04-0,09	0,05-0,12	0,07-0,14	0,08-0,16	0,11-0,22	0,13-0,26	0,15-0,31	0,18-0,35	0,22-0,42	0,28-0,54
	2, 3, 4, 6, 7	50	-	90	0,05-0,10	0,06-0,13	0,08-0,15	0,09-0,17	0,13-0,23	0,15-0,28	0,19-0,33	0,22-0,38	0,26-0,47	0,34-0,59
	5, 9, 10, 11	50	-	100	0,05-0,10	0,06-0,13	0,07-0,15	0,08-0,17	0,12-0,23	0,14-0,28	0,17-0,33	0,19-0,38	0,23-0,47	0,29-0,59
	12, 13	30	-	60	0,03-0,05	0,04-0,06	0,05-0,08	0,06-0,10	0,08-0,14	0,10-0,18	0,13-0,22	0,14-0,24	0,18-0,32	0,23-0,41
M	14,1	30	-	50	0,02-0,05	0,03-0,06	0,04-0,07	0,05-0,09	0,08-0,11	0,09-0,12	0,10-0,14	0,12-0,16	0,14-0,18	0,16-0,20
	14,3	40	-	60	0,02-0,06	0,03-0,07	0,04-0,08	0,06-0,10	0,08-0,12	0,09-0,14	0,10-0,16	0,12-0,18	0,14-0,20	0,16-0,22
	14,2, 14,4	30	-	50	0,02-0,05	0,03-0,06	0,04-0,07	0,06-0,09	0,08-0,11	0,09-0,12	0,10-0,14	0,12-0,16	0,14-0,18	0,16-0,20
K	15, 16	70	-	150	0,06-0,13	0,07-0,14	0,09-0,18	0,10-0,19	0,13-0,25	0,16-0,30	0,18-0,35	0,20-0,39	0,25-0,48	0,30-0,59
	17, 18, 19	90	-	120	0,08-0,11	0,09-0,12	0,10-0,13	0,10-0,15	0,13-0,20	0,16-0,25	0,18-0,29	0,20-0,32	0,25-0,38	0,30-0,48
	20	80	-	120	0,04-0,10	0,06-0,12	0,06-0,14	0,07-0,15	0,10-0,20	0,11-0,24	0,14-0,28	0,15-0,32	0,19-0,38	0,24-0,48
N	21	90	-	270	0,05-0,12	0,06-0,13	0,08-0,14	0,10-0,16	0,12-0,20	0,16-0,24	0,20-0,28	0,24-0,32	0,28-0,40	0,32-0,48
	22, 23, 24	90	-	270	0,04-0,08	0,06-0,12	0,08-0,16	0,10-0,20	0,12-0,24	0,16-0,28	0,20-0,32	0,24-0,36	0,28-0,44	0,32-0,52
	25	90	-	225	0,10-0,13	0,11-0,14	0,12-0,14	0,13-0,16	0,14-0,20	0,16-0,24	0,20-0,28	0,24-0,32	0,28-0,40	0,32-0,44
	26, 27, 28	90	-	270	0,04-0,08	0,06-0,12	0,08-0,16	0,10-0,20	0,12-0,24	0,16-0,28	0,20-0,32	0,24-0,36	0,28-0,40	0,32-0,48
S	31, 32	20	-	30	0,01-0,04	0,02-0,05	0,03-0,06	0,04-0,08	0,06-0,10	0,08-0,12	0,09-0,13	0,10-0,14	0,12-0,16	0,14-0,18
	33, 34, 35	10	-	30	0,01-0,03	0,02-0,03	0,02-0,04	0,03-0,06	0,05-0,08	0,07-0,10	0,08-0,11	0,09-0,12	0,10-0,14	0,11-0,16
	36	20	-	40	0,01-0,03	0,02-0,03	0,02-0,04	0,02-0,05	0,04-0,07	0,06-0,09	0,07-0,10	0,08-0,11	0,09-0,13	0,10-0,15
	37	20	-	50	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

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

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING



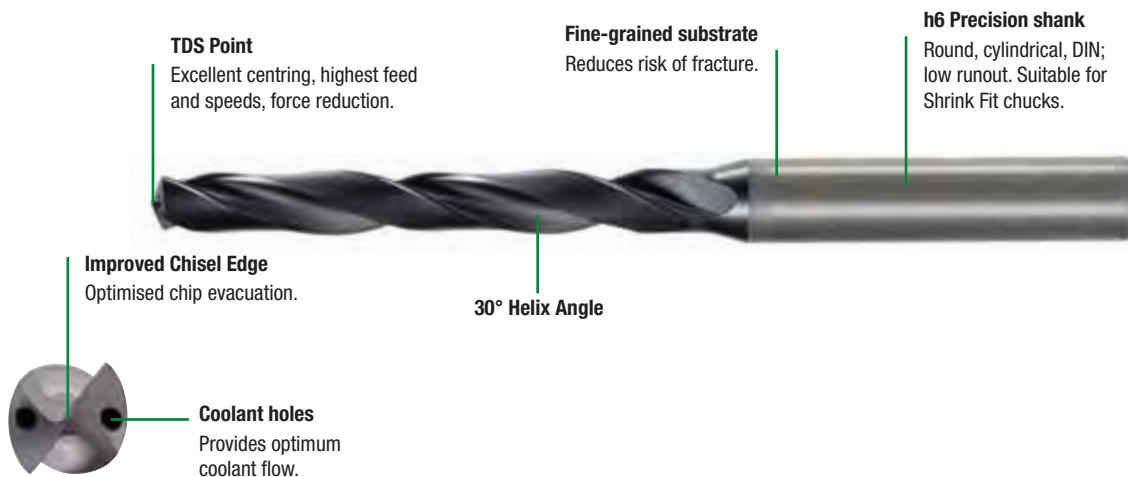
Application Data • VDS4 Series • WU25PD™ • Through Coolant • Metric

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	1	70	-	140	mm/r	0,04-0,09	0,05-0,12	0,07-0,14	0,08-0,16	0,11-0,22	0,13-0,26	0,15-0,31	0,18-0,35	0,22-0,42	0,28-0,54
	2, 3, 4, 6, 7	60	-	100	mm/r	0,05-0,10	0,06-0,13	0,08-0,15	0,09-0,17	0,13-0,23	0,15-0,28	0,19-0,33	0,22-0,38	0,26-0,47	0,34-0,59	
	5, 9, 10, 11	50	-	100	mm/r	0,05-0,10	0,06-0,13	0,07-0,15	0,08-0,17	0,12-0,23	0,14-0,28	0,17-0,33	0,19-0,38	0,23-0,47	0,29-0,59	
	12, 13	40	-	70	mm/r	0,03-0,05	0,04-0,06	0,05-0,08	0,06-0,10	0,08-0,14	0,10-0,18	0,13-0,22	0,14-0,24	0,18-0,32	0,23-0,41	
	14, 1	30	-	50	mm/r	0,02-0,05	0,03-0,06	0,04-0,07	0,05-0,09	0,08-0,11	0,09-0,12	0,10-0,14	0,12-0,16	0,14-0,18	0,16-0,20	
M	14, 3	40	-	60	mm/r	0,02-0,06	0,03-0,07	0,04-0,08	0,06-0,10	0,08-0,12	0,09-0,14	0,10-0,16	0,12-0,18	0,14-0,20	0,16-0,22	
	14, 2, 14, 4	30	-	50	mm/r	0,02-0,05	0,03-0,06	0,04-0,07	0,06-0,09	0,08-0,11	0,09-0,12	0,10-0,14	0,12-0,16	0,14-0,18	0,16-0,20	
	15, 16	80	-	160	mm/r	0,07-0,14	0,08-0,15	0,10-0,20	0,11-0,22	0,14-0,28	0,18-0,34	0,21-0,40	0,23-0,44	0,28-0,54	0,34-0,67	
K	17, 18, 19	90	-	140	mm/r	0,09-0,13	0,10-0,14	0,11-0,14	0,12-0,17	0,14-0,23	0,18-0,28	0,21-0,32	0,23-0,36	0,28-0,43	0,34-0,54	
	20	80	-	130	mm/r	0,05-0,12	0,06-0,14	0,07-0,15	0,08-0,17	0,11-0,23	0,13-0,27	0,15-0,32	0,17-0,36	0,22-0,43	0,27-0,54	
	21	90	-	315	mm/r	0,05-0,12	0,06-0,13	0,08-0,14	0,10-0,16	0,12-0,20	0,16-0,24	0,20-0,28	0,24-0,32	0,28-0,40	0,32-0,48	
N	22, 23, 24	90	-	270	mm/r	0,04-0,08	0,06-0,12	0,08-0,16	0,10-0,20	0,12-0,24	0,16-0,28	0,20-0,32	0,24-0,36	0,28-0,44	0,32-0,52	
	25	90	-	270	mm/r	0,10-0,13	0,11-0,14	0,12-0,14	0,13-0,16	0,14-0,20	0,16-0,24	0,20-0,28	0,24-0,32	0,28-0,40	0,32-0,44	
	26, 27, 28	90	-	270	mm/r	0,04-0,08	0,06-0,12	0,08-0,16	0,10-0,20	0,12-0,24	0,16-0,28	0,20-0,32	0,24-0,36	0,28-0,40	0,32-0,48	
S	31, 32	20	-	30	mm/r	0,01-0,04	0,02-0,05	0,03-0,06	0,04-0,08	0,06-0,10	0,08-0,12	0,09-0,13	0,10-0,14	0,12-0,16	0,14-0,18	
	33, 34, 35	10	-	30	mm/r	0,01-0,03	0,02-0,03	0,02-0,04	0,03-0,06	0,05-0,08	0,07-0,10	0,08-0,11	0,09-0,12	0,10-0,14	0,11-0,16	
	36	10	-	40	mm/r	0,01-0,03	0,02-0,03	0,02-0,04	0,02-0,05	0,04-0,07	0,06-0,09	0,07-0,10	0,08-0,11	0,09-0,13	0,10-0,15	
	37	10	-	40	mm/r	0,01-0,03	0,02-0,03	0,02-0,04	0,03-0,06	0,05-0,08	0,07-0,10	0,08-0,11	0,09-0,12	0,10-0,14	0,11-0,16	

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

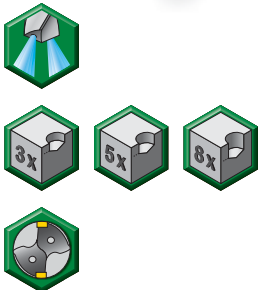
TOP DRILL S™

- Can be regrinded 3x at the standard level as the new tool.
- Available for custom solutions, as well as step drilling.
- Cylindrical shank h6 for perfect runout.



TOP DRILL S™ for Steel

Materials: **P**

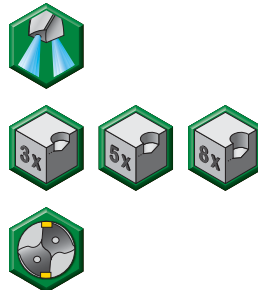


Diameter Range: 3–20mm
Grade: WP20PD

TOP DRILL S for steel is a high-performance solid carbide drill with an application-specific design. Although the point geometry is strong enough to drill stainless steel and cast iron, it is engineered to maximise performance when drilling steel. The two-margin design facilitates excellent hole quality and less friction when drilling steel at high speeds.

TOP DRILL S for Stainless Steel

Materials: **M**

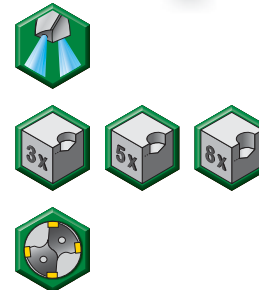


Diameter Range: 3–20mm
Grade: WM15PD

TOP DRILL S for stainless steel features a gash design made specifically for stainless steel and difficult-to-machine applications. This is reflected by a smooth chip transaction from the cutting edge to the flutes. This solid carbide drill is designed with increased wear resistance in heat-generating applications with tough materials.

TOP DRILL S for Cast Iron

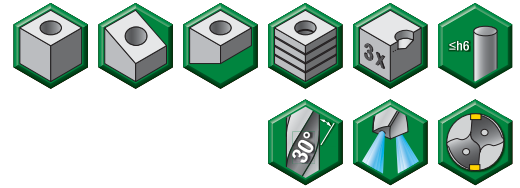
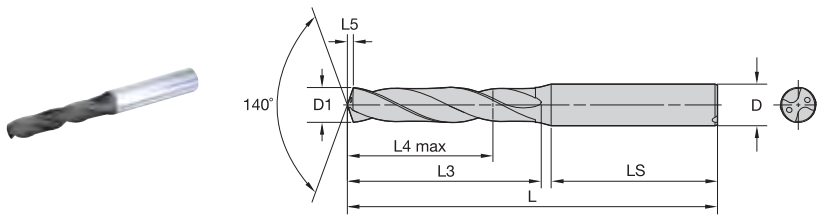
Materials: **K**



Diameter Range: 3–20mm
Grade: WK15PD

TOP DRILL S for cast iron is designed with application-specific point geometry for maximum performance in cast iron materials. The point features corner chamfers that minimise breakout on exit holes. A four-margin design improves hole straightness, increasing tool life and extending cross-hole and inclined exit capabilities when drilling tough cast iron.

TDS451A • 3 x D

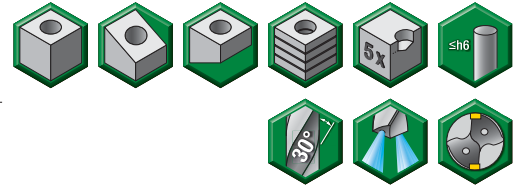
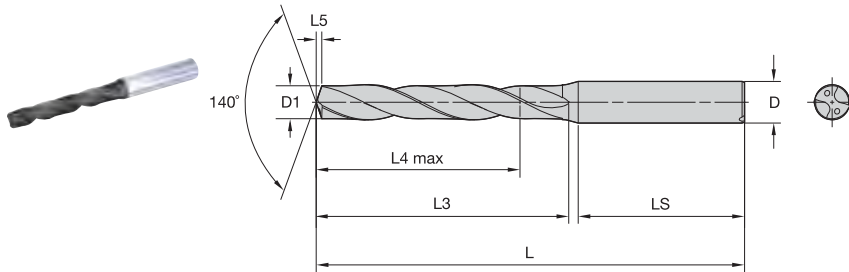


- first choice
- alternate choice

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

catalogue number	D1 diameter		L	L3	L4 max	L5	LS	D	WM15PD
	mm	in							
TDS451A06200	6,200	.2441	79	34	24	1,0	36	8	6327770
TDS451A06800	6,800	.2677	79	34	24	1,1	36	8	6327780
TDS451A08000	8,000	.3150	79	41	29	1,4	36	8	6327795
TDS451A10000	10,000	.3937	89	47	35	1,7	40	10	6327822
TDS451A10200	10,200	.4016	102	55	40	1,7	45	12	6327824
TDS451A15700	15,700	.6181	115	65	45	2,7	48	16	6327911

TDS452A • 5 x D



- first choice
- alternate choice

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K	<input type="radio"/>
N	<input type="radio"/>
S	<input type="radio"/>
H	<input type="radio"/>

catalogue number	D1 diameter		L	L3	L4 max	L5	LS	D	WM15PD
	mm	in							
TDS452A07000	7,000	.2756	91	53	43	1,2	36	8	6328038



THE ALL-STAR PROGRAMME FEATURES ONLY THE MOST POPULAR PLATFORMS, GRADES, AND SIZES. FOR THE COMPLETE OFFERING, VISIT WIDIA NOVO™ OR WIDIA.COM.



INDEXABLE MILLING



SOLID END MILLING



HOLEMAKING



TAPPING



TURNING

INDEXABLE MILLING

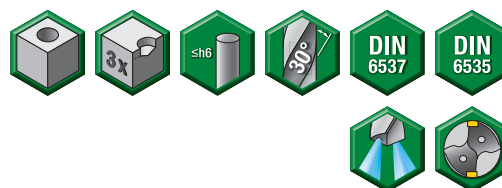
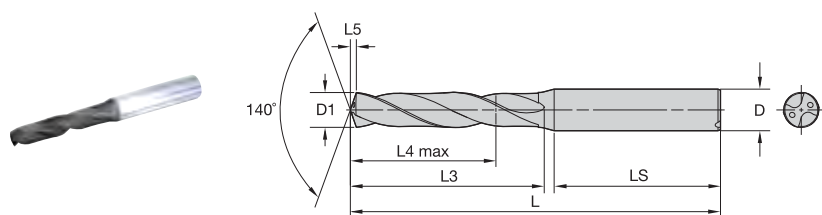
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

TDS401A • 3 x D



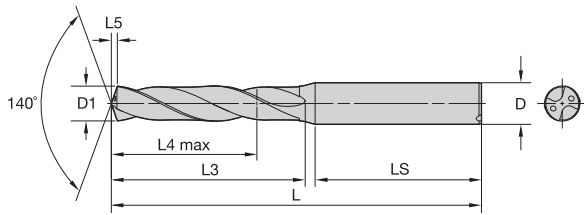
- first choice
- alternate choice

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

catalogue number	D1 diameter		L	L3	L4 max	L5	LS	D	WP20PD
	mm	in							
TDS401A03000	3,000	.1181	62	20	14	0,5	36	6	4163315
TDS401A03100	3,100	.1220	62	20	14	0,5	36	6	4163338
TDS401A03200	3,200	.1260	62	20	14	0,5	36	6	4163340
TDS401A03300	3,300	.1299	62	20	14	0,5	36	6	4163342
TDS401A03400	3,400	.1339	62	20	14	0,6	36	6	4163463
TDS401A03500	3,500	.1378	62	20	14	0,6	36	6	4163465
TDS401A03600	3,600	.1417	62	20	14	0,6	36	6	4163467
TDS401A03700	3,700	.1457	62	20	14	0,6	36	6	4163469
TDS401A03800	3,800	.1496	66	24	17	0,6	36	6	4163471
TDS401A03900	3,900	.1535	66	24	17	0,6	36	6	4163472
TDS401A04000	4,000	.1575	66	24	17	0,7	36	6	4163474
TDS401A04100	4,100	.1614	66	24	17	0,7	36	6	4163477
TDS401A04200	4,200	.1654	66	24	17	0,7	36	6	4163478
TDS401A04300	4,300	.1693	66	24	17	0,7	36	6	4163480
TDS401A04400	4,400	.1732	66	24	17	0,7	36	6	4163482
TDS401A04500	4,500	.1772	66	24	17	0,7	36	6	4163483
TDS401A04600	4,600	.1811	66	24	17	0,8	36	6	4163484
TDS401A04700	4,700	.1850	66	24	17	0,8	36	6	4163486
TDS401A04800	4,800	.1890	66	28	20	0,8	36	6	4163488
TDS401A04900	4,900	.1929	66	28	20	0,8	36	6	4163490
TDS401A05000	5,000	.1969	66	28	20	0,8	36	6	4163491
TDS401A05100	5,100	.2008	66	28	20	0,8	36	6	4163492
TDS401A05200	5,200	.2047	66	28	20	0,9	36	6	4163495
TDS401A05300	5,300	.2087	66	28	20	0,9	36	6	4163496
TDS401A05400	5,400	.2126	66	28	20	0,9	36	6	4163497
TDS401A05500	5,500	.2165	66	28	20	0,9	36	6	4163499
TDS401A05600	5,600	.2205	66	28	20	0,9	36	6	4163501
TDS401A05700	5,700	.2244	66	28	20	1,0	36	6	4163503
TDS401A05800	5,800	.2283	66	28	20	1,0	36	6	4163504
TDS401A05900	5,900	.2323	66	28	20	1,0	36	6	4163505
TDS401A06000	6,000	.2362	66	28	20	1,0	36	6	4163507
TDS401A06100	6,100	.2402	79	34	24	1,0	36	8	4163508
TDS401A06200	6,200	.2441	79	34	24	1,0	36	8	4163509
TDS401A06300	6,300	.2480	79	34	24	1,1	36	8	4163510
TDS401A06400	6,400	.2520	79	34	24	1,1	36	8	4163512
TDS401A06500	6,500	.2559	79	34	24	1,1	36	8	4163513
TDS401A06600	6,600	.2598	79	34	24	1,1	36	8	4163515
TDS401A06700	6,700	.2638	79	34	24	1,1	36	8	4163517
TDS401A06800	6,800	.2677	79	34	24	1,1	36	8	4163519
TDS401A06900	6,900	.2717	79	34	24	1,2	36	8	4163520
TDS401A07000	7,000	.2756	79	34	24	1,2	36	8	4163521
TDS401A07100	7,100	.2795	79	41	29	1,2	36	8	4163522
TDS401A07200	7,200	.2835	79	41	29	1,2	36	8	4163524
TDS401A07300	7,300	.2874	79	41	29	1,2	36	8	4163525
TDS401A07400	7,400	.2913	79	41	29	1,3	36	8	4163526
TDS401A07500	7,500	.2953	79	41	29	1,3	36	8	4163527
TDS401A07600	7,600	.2992	79	41	29	1,3	36	8	4163529
TDS401A07700	7,700	.3031	79	41	29	1,3	36	8	4163530
TDS401A07800	7,800	.3071	79	41	29	1,3	36	8	4163531
TDS401A07900	7,900	.3110	79	41	29	1,3	36	8	4163532
TDS401A08000	8,000	.3150	79	41	29	1,4	36	8	4163534
TDS401A08100	8,100	.3189	89	47	35	1,4	40	10	4163535
TDS401A08200	8,200	.3228	89	47	35	1,4	40	10	4163536
TDS401A08300	8,300	.3268	89	47	35	1,4	40	10	4163537
TDS401A08400	8,400	.3307	89	47	35	1,4	40	10	4163539
TDS401A08500	8,500	.3346	89	47	35	1,4	40	10	4163541

TDS401A • 3 x D

(continued)



● first choice
○ alternate choice

P	●
M	○
K	
N	
S	
H	

catalogue number	D1 diameter		L	L3	L4 max	L5	LS	D	WP20PD
	mm	in							
TDS401A08600	8,600	.3386	89	47	35	1,5	40	10	4163542
TDS401A08700	8,700	.3425	89	47	35	1,5	40	10	4163543
TDS401A08800	8,800	.3465	89	47	35	1,5	40	10	4163545
TDS401A08900	8,900	.3504	89	47	35	1,5	40	10	4163546
TDS401A09000	9,000	.3543	89	47	35	1,5	40	10	4163547
TDS401A09100	9,100	.3583	89	47	35	1,5	40	10	4163548
TDS401A09200	9,200	.3622	89	47	35	1,6	40	10	4163550
TDS401A09300	9,300	.3661	89	47	35	1,6	40	10	4163551
TDS401A09400	9,400	.3701	89	47	35	1,6	40	10	4163553
TDS401A09500	9,500	.3740	89	47	35	1,6	40	10	4163554
TDS401A09600	9,600	.3780	89	47	35	1,6	40	10	4163556
TDS401A09700	9,700	.3819	89	47	35	1,7	40	10	4163557
TDS401A09800	9,800	.3858	89	47	35	1,7	40	10	4163558
TDS401A09900	9,900	.3898	89	47	35	1,7	40	10	4163559
TDS401A10000	10,000	.3937	89	47	35	1,7	40	10	4162950
TDS401A10100	10,100	.3976	102	55	40	1,7	45	12	4162951
TDS401A10200	10,200	.4016	102	55	40	1,7	45	12	4162952
TDS401A10300	10,300	.4055	102	55	40	1,8	45	12	4163343
TDS401A10400	10,400	.4094	102	55	40	1,8	45	12	4163345
TDS401A10500	10,500	.4134	102	55	40	1,8	45	12	4163346
TDS401A10600	10,600	.4173	102	55	40	1,8	45	12	4163347
TDS401A10700	10,700	.4213	102	55	40	1,8	45	12	4163348
TDS401A10800	10,800	.4252	102	55	40	1,8	45	12	4163350
TDS401A10900	10,900	.4291	102	55	40	1,9	45	12	4163351
TDS401A11000	11,000	.4331	102	55	40	1,9	45	12	4163352
TDS401A11100	11,100	.4370	102	55	40	1,9	45	12	4163353
TDS401A11200	11,200	.4409	102	55	40	1,9	45	12	4163355
TDS401A11300	11,300	.4449	102	55	40	1,9	45	12	4163356
TDS401A11400	11,400	.4488	102	55	40	2,0	45	12	4163357
TDS401A11500	11,500	.4528	102	55	40	2,0	45	12	4163358
TDS401A11600	11,600	.4567	102	55	40	2,0	45	12	4163360
TDS401A11700	11,700	.4606	102	55	40	2,0	45	12	4163361
TDS401A11800	11,800	.4646	102	55	40	2,0	45	12	4163362
TDS401A12000	12,000	.4724	102	55	40	2,1	45	12	4163365
TDS401A12100	12,100	.4764	107	60	43	2,1	45	14	4163366
TDS401A12200	12,200	.4803	107	60	43	2,1	45	14	4163367
TDS401A12300	12,300	.4843	107	60	43	2,1	45	14	4163368
TDS401A12400	12,400	.4882	107	60	43	2,1	45	14	4163370
TDS401A12500	12,500	.4921	107	60	43	2,1	45	14	4163371
TDS401A12600	12,600	.4961	107	60	43	2,2	45	14	4163372
TDS401A12700	12,700	.5000	107	60	43	2,2	45	14	4163373
TDS401A12800	12,800	.5039	107	60	43	2,2	45	14	4163374
TDS401A12900	12,900	.5079	107	60	43	2,2	45	14	4163375
TDS401A13000	13,000	.5118	107	60	43	2,2	45	14	4163376
TDS401A13100	13,100	.5157	107	60	43	2,3	45	14	4163378
TDS401A13200	13,200	.5197	107	60	43	2,3	45	14	4163379
TDS401A13300	13,300	.5236	107	60	43	2,3	45	14	4163380
TDS401A13400	13,400	.5276	107	60	43	2,3	45	14	4163381
TDS401A13500	13,500	.5315	107	60	43	2,3	45	14	4163382
TDS401A13600	13,600	.5354	107	60	43	2,3	45	14	4163383
TDS401A13700	13,700	.5394	107	60	43	2,4	45	14	4163384
TDS401A13800	13,800	.5433	107	60	43	2,4	45	14	4163385
TDS401A13900	13,900	.5472	107	60	43	2,4	45	14	4163387
TDS401A14000	14,000	.5512	107	60	43	2,4	45	14	4163388
TDS401A14200	14,200	.5591	115	65	45	2,5	48	16	4163390
TDS401A14300	14,300	.5630	115	65	45	2,5	48	16	4163392
TDS401A14500	14,500	.5709	115	65	45	2,5	48	16	4163394
TDS401A14700	14,700	.5787	115	65	45	2,5	48	16	4163397
TDS401A15000	15,000	.5906	115	65	45	2,6	48	16	4163400
TDS401A16000	16,000	.6299	115	65	45	2,8	48	16	4163413
TDS401A16500	16,500	.6496	123	73	51	2,9	48	18	4163419
TDS401A17000	17,000	.6693	123	73	51	2,9	48	18	4163425
TDS401A17500	17,500	.6890	123	73	51	3,0	48	18	4163431
TDS401A18000	18,000	.7087	123	73	51	3,1	48	18	4163271
TDS401A19000	19,000	.7480	131	79	55	3,3	50	20	4163293
TDS401A20000	20,000	.7874	131	79	55	3,5	50	20	4163304

INDEXABLE MILLING

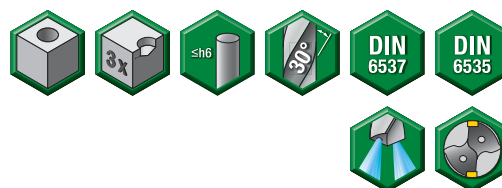
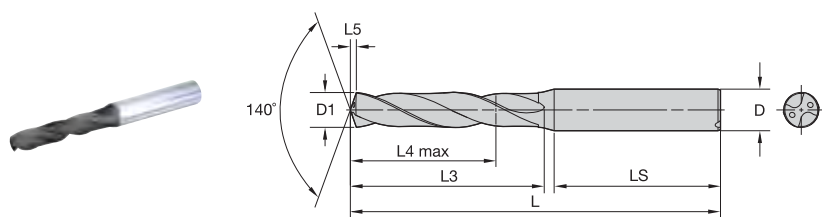
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

TDS411A • 3 x D



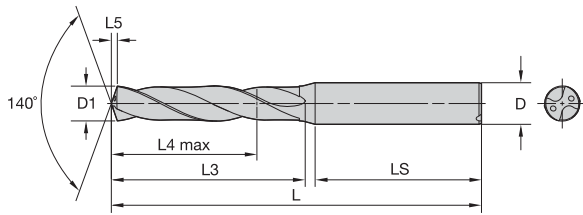
- first choice
- alternate choice

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catalogue number	D1 diameter		L	L3	L4 max	L5	LS	D	WK15PD
	mm	in							
TDS411A03000	3,000	.1181	62	20	14	0,5	36	6	4157799
TDS411A03100	3,100	.1220	62	20	14	0,5	36	6	4157801
TDS411A03200	3,200	.1260	62	20	14	0,5	36	6	4157803
TDS411A03300	3,300	.1299	62	20	14	0,5	36	6	4157805
TDS411A03400	3,400	.1339	62	20	14	0,6	36	6	4157806
TDS411A03500	3,500	.1378	62	20	14	0,6	36	6	4157808
TDS411A03600	3,600	.1417	62	20	14	0,6	36	6	4157810
TDS411A03700	3,700	.1457	62	20	14	0,6	36	6	4157812
TDS411A03800	3,800	.1496	66	24	17	0,6	36	6	4157814
TDS411A03900	3,900	.1535	66	24	17	0,6	36	6	4157815
TDS411A04000	4,000	.1575	66	24	17	0,7	36	6	4157817
TDS411A04100	4,100	.1614	66	24	17	0,7	36	6	4157820
TDS411A04200	4,200	.1654	66	24	17	0,7	36	6	4157821
TDS411A04300	4,300	.1693	66	24	17	0,7	36	6	4157823
TDS411A04400	4,400	.1732	66	24	17	0,7	36	6	4157825
TDS411A04500	4,500	.1772	66	24	17	0,7	36	6	4157826
TDS411A04600	4,600	.1811	66	24	17	0,8	36	6	4157827
TDS411A04700	4,700	.1850	66	24	17	0,8	36	6	4157829
TDS411A04800	4,800	.1890	66	28	20	0,8	36	6	4157831
TDS411A04900	4,900	.1929	66	28	20	0,8	36	6	4157833
TDS411A05000	5,000	.1969	66	28	20	0,8	36	6	4157834
TDS411A05100	5,100	.2008	66	28	20	0,8	36	6	4157835
TDS411A05200	5,200	.2047	66	28	20	0,9	36	6	4157838
TDS411A05300	5,300	.2087	66	28	20	0,9	36	6	4157839
TDS411A05400	5,400	.2126	66	28	20	0,9	36	6	4157840
TDS411A05500	5,500	.2165	66	28	20	0,9	36	6	4157842
TDS411A05600	5,600	.2205	66	28	20	0,9	36	6	4157844
TDS411A05700	5,700	.2244	66	28	20	1,0	36	6	4157846
TDS411A05800	5,800	.2283	66	28	20	1,0	36	6	4157847
TDS411A05900	5,900	.2323	66	28	20	1,0	36	6	4157848
TDS411A06000	6,000	.2362	66	28	20	1,0	36	6	4157850
TDS411A06100	6,100	.2402	79	34	24	1,0	36	8	4157851
TDS411A06200	6,200	.2441	79	34	24	1,0	36	8	4157852
TDS411A06300	6,300	.2480	79	34	24	1,1	36	8	4157853
TDS411A06400	6,400	.2520	79	34	24	1,1	36	8	4157855
TDS411A06500	6,500	.2559	79	34	24	1,1	36	8	4157856
TDS411A06600	6,600	.2598	79	34	24	1,1	36	8	4157858
TDS411A06700	6,700	.2638	79	34	24	1,1	36	8	4157860
TDS411A06800	6,800	.2677	79	34	24	1,1	36	8	4157862
TDS411A06900	6,900	.2717	79	34	24	1,2	36	8	4157863
TDS411A07000	7,000	.2756	79	34	24	1,2	36	8	4157864
TDS411A07100	7,100	.2795	79	41	29	1,2	36	8	4157865
TDS411A07200	7,200	.2835	79	41	29	1,2	36	8	4157867
TDS411A07300	7,300	.2874	79	41	29	1,2	36	8	4157868
TDS411A07400	7,400	.2913	79	41	29	1,3	36	8	4157869
TDS411A07500	7,500	.2953	79	41	29	1,3	36	8	4157870
TDS411A07600	7,600	.2992	79	41	29	1,3	36	8	4157872
TDS411A07700	7,700	.3031	79	41	29	1,3	36	8	4157873
TDS411A07800	7,800	.3071	79	41	29	1,3	36	8	4157874
TDS411A07900	7,900	.3110	79	41	29	1,3	36	8	4157875
TDS411A08000	8,000	.3150	79	41	29	1,4	36	8	4157877
TDS411A08100	8,100	.3189	89	47	35	1,4	40	10	4157878
TDS411A08200	8,200	.3228	89	47	35	1,4	40	10	4157879
TDS411A08300	8,300	.3268	89	47	35	1,4	40	10	4157880
TDS411A08400	8,400	.3307	89	47	35	1,4	40	10	4157882
TDS411A08500	8,500	.3346	89	47	35	1,4	40	10	4157884

TDS411A • 3 x D

(continued)



- first choice
- alternate choice

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catalogue number	D1 diameter		L	L3	L4 max	L5	LS	D	WK15PD
	mm	in							
TDS411A08600	8,600	.3386	89	47	35	1,5	40	10	4157885
TDS411A08700	8,700	.3425	89	47	35	1,5	40	10	4157886
TDS411A08800	8,800	.3465	89	47	35	1,5	40	10	4157888
TDS411A08900	8,900	.3504	89	47	35	1,5	40	10	4157889
TDS411A09000	9,000	.3543	89	47	35	1,5	40	10	4157890
TDS411A09100	9,100	.3583	89	47	35	1,5	40	10	4157891
TDS411A09200	9,200	.3622	89	47	35	1,6	40	10	4157893
TDS411A09300	9,300	.3661	89	47	35	1,6	40	10	4157894
TDS411A09400	9,400	.3701	89	47	35	1,6	40	10	4157896
TDS411A09500	9,500	.3740	89	47	35	1,6	40	10	4157897
TDS411A09600	9,600	.3780	89	47	35	1,6	40	10	4157899
TDS411A09700	9,700	.3819	89	47	35	1,7	40	10	4157900
TDS411A09800	9,800	.3858	89	47	35	1,7	40	10	4157901
TDS411A09900	9,900	.3898	89	47	35	1,7	40	10	4157902
TDS411A10000	10,000	.3937	89	47	35	1,7	40	10	4156562
TDS411A10100	10,100	.3976	102	55	40	1,7	45	12	4156603
TDS411A10200	10,200	.4016	102	55	40	1,7	45	12	4156604
TDS411A10300	10,300	.4055	102	55	40	1,8	45	12	4156605
TDS411A10400	10,400	.4094	102	55	40	1,8	45	12	4156607
TDS411A10500	10,500	.4134	102	55	40	1,8	45	12	4156608
TDS411A10600	10,600	.4173	102	55	40	1,8	45	12	4156609
TDS411A10700	10,700	.4213	102	55	40	1,8	45	12	4156610
TDS411A10800	10,800	.4252	102	55	40	1,8	45	12	4156612
TDS411A10900	10,900	.4291	102	55	40	1,9	45	12	4156613
TDS411A11000	11,000	.4331	102	55	40	1,9	45	12	4156614
TDS411A11100	11,100	.4370	102	55	40	1,9	45	12	4156615
TDS411A11200	11,200	.4409	102	55	40	1,9	45	12	4156617
TDS411A11300	11,300	.4449	102	55	40	1,9	45	12	4156618
TDS411A11400	11,400	.4488	102	55	40	2,0	45	12	4156619
TDS411A11500	11,500	.4528	102	55	40	2,0	45	12	4156620
TDS411A11600	11,600	.4567	102	55	40	2,0	45	12	4156622
TDS411A11700	11,700	.4606	102	55	40	2,0	45	12	4156623
TDS411A11800	11,800	.4646	102	55	40	2,0	45	12	4156624
TDS411A11900	11,900	.4685	102	55	40	2,0	45	12	4156625
TDS411A12000	12,000	.4724	102	55	40	2,1	45	12	4156627
TDS411A12100	12,100	.4764	107	60	43	2,1	45	14	4156628
TDS411A12200	12,200	.4803	107	60	43	2,1	45	14	4156629
TDS411A12300	12,300	.4843	107	60	43	2,1	45	14	4156630
TDS411A12400	12,400	.4882	107	60	43	2,1	45	14	4156632
TDS411A12500	12,500	.4921	107	60	43	2,1	45	14	4156633
TDS411A12600	12,600	.4961	107	60	43	2,2	45	14	4156634
TDS411A12700	12,700	.5000	107	60	43	2,2	45	14	4156635
TDS411A12800	12,800	.5039	107	60	43	2,2	45	14	4156636
TDS411A12900	12,900	.5079	107	60	43	2,2	45	14	4156637
TDS411A13000	13,000	.5118	107	60	43	2,2	45	14	4156638
TDS411A13100	13,100	.5157	107	60	43	2,3	45	14	4156640
TDS411A13200	13,200	.5197	107	60	43	2,3	45	14	4156641
TDS411A13300	13,300	.5236	107	60	43	2,3	45	14	4156642
TDS411A13400	13,400	.5276	107	60	43	2,3	45	14	4156643
TDS411A13500	13,500	.5315	107	60	43	2,3	45	14	4156644
TDS411A13600	13,600	.5354	107	60	43	2,3	45	14	4156645
TDS411A13700	13,700	.5394	107	60	43	2,4	45	14	4156646
TDS411A13800	13,800	.5433	107	60	43	2,4	45	14	4156647
TDS411A13900	13,900	.5472	107	60	43	2,4	45	14	4156649
TDS411A14000	14,000	.5512	107	60	43	2,4	45	14	4156650
TDS411A14200	14,200	.5591	115	65	45	2,5	48	16	4156652
TDS411A14300	14,300	.5630	115	65	45	2,5	48	16	4156654
TDS411A14500	14,500	.5709	115	65	45	2,5	48	16	4156656
TDS411A14700	14,700	.5787	115	65	45	2,5	48	16	4156659
TDS411A15000	15,000	.5906	115	65	45	2,6	48	16	4156662
TDS411A16000	16,000	.6299	115	65	45	2,8	48	16	4156675
TDS411A16500	16,500	.6496	123	73	51	2,9	48	18	4156681
TDS411A17000	17,000	.6693	123	73	51	2,9	48	18	4156687
TDS411A17500	17,500	.6890	123	73	51	3,0	48	18	4156693
TDS411A18000	18,000	.7087	123	73	51	3,1	48	18	4156699
TDS411A19000	19,000	.7480	131	79	55	3,3	50	20	4156721
TDS411A20000	20,000	.7874	131	79	55	3,5	50	20	4156732

INDEXABLE MILLING

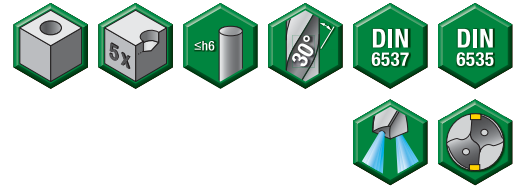
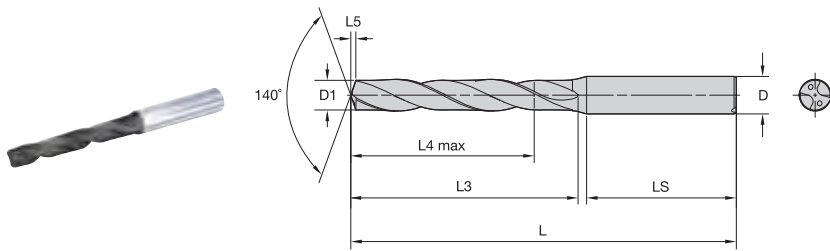
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

TDS402A • 5 x D



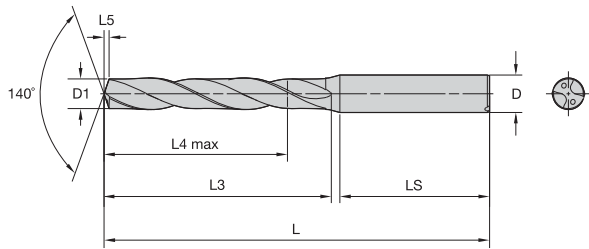
- first choice
- alternate choice

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K	<input type="checkbox"/>
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H	<input type="checkbox"/>

catalogue number	D1 diameter		L	L3	L4 max	L5	LS	D	WP20PD
	mm	in							
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TDS402A03100	3,100	.1220	66	28	23	0,5	36	6	4162969
TDS402A03200	3,200	.1260	66	28	23	0,5	36	6	4162972
TDS402A03300	3,300	.1299	66	28	23	0,5	36	6	4162984
TDS402A03400	3,400	.1339	66	28	23	0,6	36	6	4162985
TDS402A03500	3,500	.1378	66	28	23	0,6	36	6	4162987
TDS402A03600	3,600	.1417	66	28	23	0,6	36	6	4162989
TDS402A03700	3,700	.1457	66	28	23	0,6	36	6	4162991
TDS402A03800	3,800	.1496	74	36	29	0,6	36	6	4162993
TDS402A03900	3,900	.1535	74	36	29	0,6	36	6	4162994
TDS402A04000	4,000	.1575	74	36	29	0,7	36	6	4162996
TDS402A04100	4,100	.1614	74	36	29	0,7	36	6	4162999
TDS402A04200	4,200	.1654	74	36	29	0,7	36	6	4163000
TDS402A04300	4,300	.1693	74	36	29	0,7	36	6	4163002
TDS402A04400	4,400	.1732	74	36	29	0,7	36	6	4163014
TDS402A04500	4,500	.1772	74	36	29	0,7	36	6	4163015
TDS402A04600	4,600	.1811	74	36	29	0,8	36	6	4163016
TDS402A04700	4,700	.1850	74	36	29	0,8	36	6	4163018
TDS402A04800	4,800	.1890	82	44	35	0,8	36	6	4163020
TDS402A04900	4,900	.1929	82	44	35	0,8	36	6	4163022
TDS402A05000	5,000	.1969	82	44	35	0,8	36	6	4163023
TDS402A05100	5,100	.2008	82	44	35	0,8	36	6	4163024
TDS402A05200	5,200	.2047	82	44	35	0,9	36	6	4163027
TDS402A05300	5,300	.2087	82	44	35	0,9	36	6	4163028
TDS402A05400	5,400	.2126	82	44	35	0,9	36	6	4163029
TDS402A05500	5,500	.2165	82	44	35	0,9	36	6	4163031
TDS402A05600	5,600	.2205	82	44	35	0,9	36	6	4163034
TDS402A05700	5,700	.2244	82	44	35	1,0	36	6	4163036
TDS402A05800	5,800	.2283	82	44	35	1,0	36	6	4163037
TDS402A05900	5,900	.2323	82	44	35	1,0	36	6	4163038
TDS402A06000	6,000	.2362	82	44	35	1,0	36	6	4163040
TDS402A06100	6,100	.2402	91	53	43	1,0	36	8	4163041
TDS402A06200	6,200	.2441	91	53	43	1,0	36	8	4163042
TDS402A06300	6,300	.2480	91	53	43	1,1	36	8	4163043
TDS402A06400	6,400	.2520	91	53	43	1,1	36	8	4163045
TDS402A06500	6,500	.2559	91	53	43	1,1	36	8	4163046
TDS402A06600	6,600	.2598	91	53	43	1,1	36	8	4163048
TDS402A06700	6,700	.2638	91	53	43	1,1	36	8	4163050
TDS402A06800	6,800	.2677	91	53	43	1,1	36	8	4163052
TDS402A06900	6,900	.2717	91	53	43	1,2	36	8	4163053
TDS402A07000	7,000	.2756	91	53	43	1,2	36	8	4163054
TDS402A07100	7,100	.2795	91	53	43	1,2	36	8	4163055
TDS402A07200	7,200	.2835	91	53	43	1,2	36	8	4163057
TDS402A07300	7,300	.2874	91	53	43	1,2	36	8	4163058
TDS402A07400	7,400	.2913	91	53	43	1,3	36	8	4163059
TDS402A07500	7,500	.2953	91	53	43	1,3	36	8	4163060
TDS402A07600	7,600	.2992	91	53	43	1,3	36	8	4163062
TDS402A07700	7,700	.3031	91	53	43	1,3	36	8	4163063
TDS402A07800	7,800	.3071	91	53	43	1,3	36	8	4163064
TDS402A07900	7,900	.3110	91	53	43	1,3	36	8	4163065
TDS402A08000	8,000	.3150	91	53	43	1,4	36	8	4163067
TDS402A08100	8,100	.3189	103	61	49	1,4	40	10	4163068
TDS402A08200	8,200	.3228	103	61	49	1,4	40	10	4163069
TDS402A08300	8,300	.3268	103	61	49	1,4	40	10	4163070
TDS402A08400	8,400	.3307	103	61	49	1,4	40	10	4163072
TDS402A08500	8,500	.3346	103	61	49	1,4	40	10	4163074

TDS402A • 5 x D

(continued)



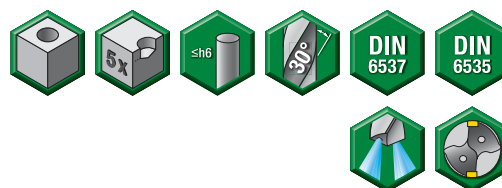
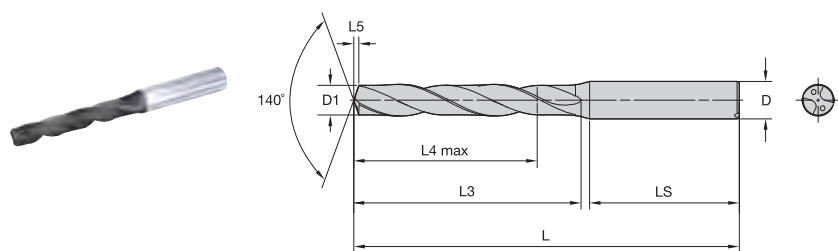
- first choice
- alternate choice

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catalogue number	D1 diameter		L	L3	L4 max	L5	LS	D	WP20PD
	mm	in							
TDS402A08600	8,600	.3386	103	61	49	1,5	40	10	4163075
TDS402A08700	8,700	.3425	103	61	49	1,5	40	10	4163077
TDS402A08800	8,800	.3465	103	61	49	1,5	40	10	4163079
TDS402A08900	8,900	.3504	103	61	49	1,5	40	10	4163080
TDS402A09000	9,000	.3543	103	61	49	1,5	40	10	4163081
TDS402A09100	9,100	.3583	103	61	49	1,5	40	10	4163082
TDS402A09200	9,200	.3622	103	61	49	1,6	40	10	4163084
TDS402A09300	9,300	.3661	103	61	49	1,6	40	10	4163085
TDS402A09400	9,400	.3701	103	61	49	1,6	40	10	4163087
TDS402A09500	9,500	.3740	103	61	49	1,6	40	10	4163088
TDS402A09600	9,600	.3780	103	61	49	1,6	40	10	4163090
TDS402A09700	9,700	.3819	103	61	49	1,7	40	10	4163091
TDS402A09800	9,800	.3858	103	61	49	1,7	40	10	4163092
TDS402A09900	9,900	.3898	103	61	49	1,7	40	10	4163093
TDS402A10000	10,000	.3937	103	61	49	1,7	40	10	4162803
TDS402A10100	10,100	.3976	118	71	56	1,7	45	12	4162804
TDS402A10200	10,200	.4016	118	71	56	1,7	45	12	4162805
TDS402A10300	10,300	.4055	118	71	56	1,8	45	12	4162806
TDS402A10400	10,400	.4094	118	71	56	1,8	45	12	4162808
TDS402A10500	10,500	.4134	118	71	56	1,8	45	12	4162809
TDS402A10600	10,600	.4173	118	71	56	1,8	45	12	4162810
TDS402A10700	10,700	.4213	118	71	56	1,8	45	12	4162811
TDS402A10800	10,800	.4252	118	71	56	1,8	45	12	4162813
TDS402A10900	10,900	.4291	118	71	56	1,9	45	12	4162814
TDS402A11000	11,000	.4331	118	71	56	1,9	45	12	4162815
TDS402A11200	11,200	.4409	118	71	56	1,9	45	12	4162818
TDS402A11300	11,300	.4449	118	71	56	1,9	45	12	4162819
TDS402A11400	11,400	.4488	118	71	56	2,0	45	12	4162820
TDS402A11500	11,500	.4528	118	71	56	2,0	45	12	4162821
TDS402A11600	11,600	.4567	118	71	56	2,0	45	12	4162823
TDS402A11700	11,700	.4606	118	71	56	2,0	45	12	4162824
TDS402A11800	11,800	.4646	118	71	56	2,0	45	12	4162825
TDS402A12000	12,000	.4724	118	71	56	2,1	45	12	4162828
TDS402A12100	12,100	.4764	124	77	60	2,1	45	14	4162829
TDS402A12200	12,200	.4803	124	77	60	2,1	45	14	4162830
TDS402A12300	12,300	.4843	124	77	60	2,1	45	14	4162831
TDS402A12400	12,400	.4882	124	77	60	2,1	45	14	4162833
TDS402A12500	12,500	.4921	124	77	60	2,1	45	14	4162834
TDS402A12600	12,600	.4961	124	77	60	2,2	45	14	4162835
TDS402A12700	12,700	.5000	124	77	60	2,2	45	14	4162836
TDS402A12800	12,800	.5039	124	77	60	2,2	45	14	4162837
TDS402A12900	12,900	.5079	124	77	60	2,2	45	14	4162838
TDS402A13000	13,000	.5118	124	77	60	2,2	45	14	4162839
TDS402A13100	13,100	.5157	124	77	60	2,3	45	14	4162841
TDS402A13200	13,200	.5197	124	77	60	2,3	45	14	4162842
TDS402A13300	13,300	.5236	124	77	60	2,3	45	14	4162843
TDS402A13400	13,400	.5276	124	77	60	2,3	45	14	4162844
TDS402A13500	13,500	.5315	124	77	60	2,3	45	14	4162845
TDS402A13600	13,600	.5354	124	77	60	2,3	45	14	4162846
TDS402A13700	13,700	.5394	124	77	60	2,4	45	14	4162847
TDS402A13800	13,800	.5433	124	77	60	2,4	45	14	4162848
TDS402A13900	13,900	.5472	124	77	60	2,4	45	14	4162850
TDS402A14000	14,000	.5512	124	77	60	2,4	45	14	4162851
TDS402A14200	14,200	.5591	133	83	63	2,5	48	16	4162853
TDS402A14300	14,300	.5630	133	83	63	2,5	48	16	4162855
TDS402A14500	14,500	.5709	133	83	63	2,5	48	16	4162857
TDS402A14700	14,700	.5787	133	83	63	2,5	48	16	4162860
TDS402A15000	15,000	.5906	133	83	63	2,6	48	16	4162863
TDS402A16000	16,000	.6299	133	83	63	2,8	48	16	4162876
TDS402A16500	16,500	.6496	143	93	71	2,9	48	18	4162882
TDS402A17000	17,000	.6693	143	93	71	2,9	48	18	4162888
TDS402A17500	17,500	.6890	143	93	71	3,0	48	18	4162894
TDS402A18000	18,000	.7087	143	93	71	3,1	48	18	4162274
TDS402A19000	19,000	.7480	153	101	77	3,3	50	20	4162396
TDS402A20000	20,000	.7874	153	101	77	3,5	50	20	4162407

INDEXABLE MILLING
 SOLID END MILLING
 HOLEMAKING
 TAPPING
 TURNING

TDS412A • 5 x D



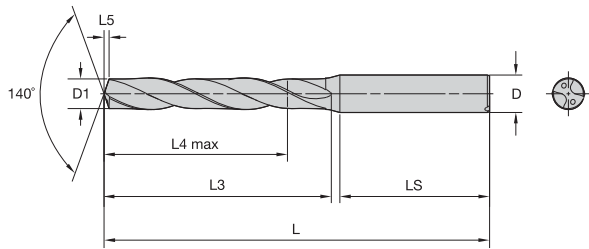
- first choice
- alternate choice

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catalogue number	D1 diameter		L	L3	L4 max	L5	LS	D	WK15PD
	mm	in							
TDS412A03000	3,000	.1181	66	28	23	0,5	36	6	4158757
TDS412A03100	3,100	.1220	66	28	23	0,5	36	6	4158759
TDS412A03200	3,200	.1260	66	28	23	0,5	36	6	4158761
TDS412A03300	3,300	.1299	66	28	23	0,5	36	6	4158793
TDS412A03400	3,400	.1339	66	28	23	0,6	36	6	4158794
TDS412A03500	3,500	.1378	66	28	23	0,6	36	6	4158796
TDS412A03600	3,600	.1417	66	28	23	0,6	36	6	4158798
TDS412A03700	3,700	.1457	66	28	23	0,6	36	6	4158800
TDS412A03800	3,800	.1496	74	36	29	0,6	36	6	4158802
TDS412A03900	3,900	.1535	74	36	29	0,6	36	6	4158803
TDS412A04000	4,000	.1575	74	36	29	0,7	36	6	4158805
TDS412A04100	4,100	.1614	74	36	29	0,7	36	6	4158808
TDS412A04200	4,200	.1654	74	36	29	0,7	36	6	4158809
TDS412A04300	4,300	.1693	74	36	29	0,7	36	6	4158811
TDS412A04400	4,400	.1732	74	36	29	0,7	36	6	4158813
TDS412A04500	4,500	.1772	74	36	29	0,7	36	6	4158814
TDS412A04600	4,600	.1811	74	36	29	0,8	36	6	4158815
TDS412A04700	4,700	.1850	74	36	29	0,8	36	6	4158817
TDS412A04800	4,800	.1890	82	44	35	0,8	36	6	4158819
TDS412A04900	4,900	.1929	82	44	35	0,8	36	6	4158821
TDS412A05000	5,000	.1969	82	44	35	0,8	36	6	4158822
TDS412A05100	5,100	.2008	82	44	35	0,8	36	6	4158823
TDS412A05200	5,200	.2047	82	44	35	0,9	36	6	4158826
TDS412A05300	5,300	.2087	82	44	35	0,9	36	6	4158827
TDS412A05400	5,400	.2126	82	44	35	0,9	36	6	4158828
TDS412A05500	5,500	.2165	82	44	35	0,9	36	6	4158830
TDS412A05600	5,600	.2205	82	44	35	0,9	36	6	4158832
TDS412A05700	5,700	.2244	82	44	35	1,0	36	6	4158834
TDS412A05800	5,800	.2283	82	44	35	1,0	36	6	4158835
TDS412A05900	5,900	.2323	82	44	35	1,0	36	6	4158836
TDS412A06000	6,000	.2362	82	44	35	1,0	36	6	4158838
TDS412A06100	6,100	.2402	91	53	43	1,0	36	8	4158839
TDS412A06200	6,200	.2441	91	53	43	1,0	36	8	4158840
TDS412A06300	6,300	.2480	91	53	43	1,1	36	8	4158841
TDS412A06400	6,400	.2520	91	53	43	1,1	36	8	4158843
TDS412A06500	6,500	.2559	91	53	43	1,1	36	8	4158844
TDS412A06600	6,600	.2598	91	53	43	1,1	36	8	4158846
TDS412A06700	6,700	.2638	91	53	43	1,1	36	8	4158848
TDS412A06800	6,800	.2677	91	53	43	1,1	36	8	4158850
TDS412A06900	6,900	.2717	91	53	43	1,2	36	8	4158851
TDS412A07000	7,000	.2756	91	53	43	1,2	36	8	4158852
TDS412A07100	7,100	.2795	91	53	43	1,2	36	8	4158853
TDS412A07200	7,200	.2835	91	53	43	1,2	36	8	4158855
TDS412A07300	7,300	.2874	91	53	43	1,2	36	8	4158856
TDS412A07400	7,400	.2913	91	53	43	1,3	36	8	4158857
TDS412A07500	7,500	.2953	91	53	43	1,3	36	8	4158858
TDS412A07600	7,600	.2992	91	53	43	1,3	36	8	4158860
TDS412A07700	7,700	.3031	91	53	43	1,3	36	8	4158861
TDS412A07800	7,800	.3071	91	53	43	1,3	36	8	4158862
TDS412A07900	7,900	.3110	91	53	43	1,3	36	8	4158863
TDS412A08000	8,000	.3150	91	53	43	1,4	36	8	4158865
TDS412A08100	8,100	.3189	103	61	49	1,4	40	10	4158866
TDS412A08200	8,200	.3228	103	61	49	1,4	40	10	4158867
TDS412A08300	8,300	.3268	103	61	49	1,4	40	10	4158868
TDS412A08400	8,400	.3307	103	61	49	1,4	40	10	4158870
TDS412A08500	8,500	.3346	103	61	49	1,4	40	10	4158872

TDS412A • 5 x D

(continued)



- first choice
- alternate choice

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catalogue number	mm	in	L	L3	L4 max	L5	LS	D	WK15PD
TDS412A08600	8,600	.3386	103	61	49	1,5	40	10	4158873
TDS412A08700	8,700	.3425	103	61	49	1,5	40	10	4158874
TDS412A08800	8,800	.3465	103	61	49	1,5	40	10	4158876
TDS412A08900	8,900	.3504	103	61	49	1,5	40	10	4158877
TDS412A09000	9,000	.3543	103	61	49	1,5	40	10	4158878
TDS412A09100	9,100	.3583	103	61	49	1,5	40	10	4158879
TDS412A09200	9,200	.3622	103	61	49	1,6	40	10	4158881
TDS412A09300	9,300	.3661	103	61	49	1,6	40	10	4158882
TDS412A09400	9,400	.3701	103	61	49	1,6	40	10	4158884
TDS412A09500	9,500	.3740	103	61	49	1,6	40	10	4158885
TDS412A09600	9,600	.3780	103	61	49	1,6	40	10	4158887
TDS412A09700	9,700	.3819	103	61	49	1,7	40	10	4158888
TDS412A09800	9,800	.3858	103	61	49	1,7	40	10	4158889
TDS412A09900	9,900	.3898	103	61	49	1,7	40	10	4158890
TDS412A10000	10,000	.3937	103	61	49	1,7	40	10	4156602
TDS412A10100	10,100	.3976	118	71	56	1,7	45	12	4156733
TDS412A10200	10,200	.4016	118	71	56	1,7	45	12	4156734
TDS412A10300	10,300	.4055	118	71	56	1,8	45	12	4156735
TDS412A10400	10,400	.4094	118	71	56	1,8	45	12	4156737
TDS412A10500	10,500	.4134	118	71	56	1,8	45	12	4156738
TDS412A10600	10,600	.4173	118	71	56	1,8	45	12	4156739
TDS412A10700	10,700	.4213	118	71	56	1,8	45	12	4156740
TDS412A10800	10,800	.4252	118	71	56	1,8	45	12	4156742
TDS412A10900	10,900	.4291	118	71	56	1,9	45	12	4156743
TDS412A11000	11,000	.4331	118	71	56	1,9	45	12	4156744
TDS412A11100	11,100	.4370	118	71	56	1,9	45	12	4156745
TDS412A11200	11,200	.4409	118	71	56	1,9	45	12	4156747
TDS412A11300	11,300	.4449	118	71	56	1,9	45	12	4156748
TDS412A11400	11,400	.4488	118	71	56	2,0	45	12	4156749
TDS412A11500	11,500	.4528	118	71	56	2,0	45	12	4156750
TDS412A11600	11,600	.4567	118	71	56	2,0	45	12	4156752
TDS412A11700	11,700	.4606	118	71	56	2,0	45	12	4156753
TDS412A11800	11,800	.4646	118	71	56	2,0	45	12	4156754
TDS412A11900	11,900	.4685	118	71	56	2,0	45	12	4156755
TDS412A12000	12,000	.4724	118	71	56	2,1	45	12	4156757
TDS412A12100	12,100	.4764	124	77	60	2,1	45	14	4156758
TDS412A12200	12,200	.4803	124	77	60	2,1	45	14	4156759
TDS412A12300	12,300	.4843	124	77	60	2,1	45	14	4156760
TDS412A12400	12,400	.4882	124	77	60	2,1	45	14	4156762
TDS412A12500	12,500	.4921	124	77	60	2,1	45	14	4156763
TDS412A12600	12,600	.4961	124	77	60	2,2	45	14	4156764
TDS412A12700	12,700	.5000	124	77	60	2,2	45	14	4156765
TDS412A12800	12,800	.5039	124	77	60	2,2	45	14	4156766
TDS412A12900	12,900	.5079	124	77	60	2,2	45	14	4156767
TDS412A13000	13,000	.5118	124	77	60	2,2	45	14	4156768
TDS412A13100	13,100	.5157	124	77	60	2,3	45	14	4156770
TDS412A13200	13,200	.5197	124	77	60	2,3	45	14	4156771
TDS412A13300	13,300	.5236	124	77	60	2,3	45	14	4156772
TDS412A13400	13,400	.5276	124	77	60	2,3	45	14	4156773
TDS412A13500	13,500	.5315	124	77	60	2,3	45	14	4156774
TDS412A13600	13,600	.5354	124	77	60	2,3	45	14	4156775
TDS412A13700	13,700	.5394	124	77	60	2,4	45	14	4156776
TDS412A13800	13,800	.5433	124	77	60	2,4	45	14	4156777
TDS412A13900	13,900	.5472	124	77	60	2,4	45	14	4156779
TDS412A14000	14,000	.5512	124	77	60	2,4	45	14	4156780
TDS412A14200	14,200	.5591	133	83	63	2,5	48	16	4156782
TDS412A14300	14,300	.5630	133	83	63	2,5	48	16	4156784
TDS412A14500	14,500	.5709	133	83	63	2,5	48	16	4156786
TDS412A14700	14,700	.5787	133	83	63	2,5	48	16	4156789
TDS412A15000	15,000	.5906	133	83	63	2,6	48	16	4156792
TDS412A16000	16,000	.6299	133	83	63	2,8	48	16	4156805
TDS412A16500	16,500	.6496	143	93	71	2,9	48	18	4156811
TDS412A17000	17,000	.6693	143	93	71	2,9	48	18	4156817
TDS412A17500	17,500	.6890	143	93	71	3,0	48	18	4156823
TDS412A18000	18,000	.7087	143	93	71	3,1	48	18	4156853
TDS412A19000	19,000	.7480	153	101	77	3,3	50	20	4156865
TDS412A20000	20,000	.7874	153	101	77	3,5	50	20	4156876

INDEXABLE MILLING

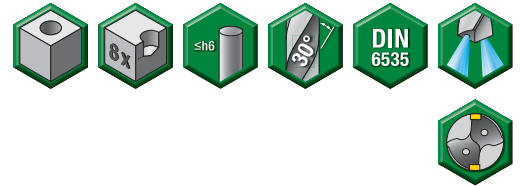
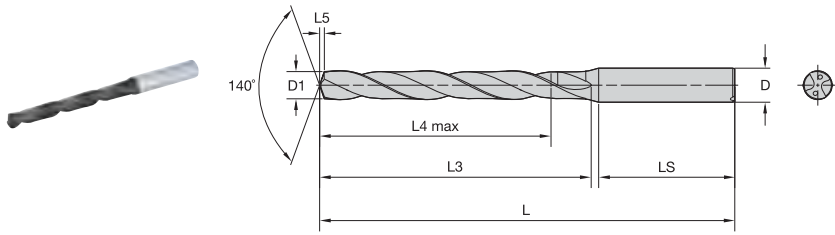
SOLID END MILLING

HOENMAKING

TAPPING

TURNING

TDS403A • 8 x D



- first choice
- alternate choice

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catalogue number	D1 diameter		L	L3	L4 max	L5	LS	D	WP20PD
	mm	in							
TDS403A04700	4,700	.1850	87	49	41	0,8	36	6	4163196
TDS403A08000	8,000	.3150	110	72	61	1,4	36	8	4163244



THE ALL-STAR PROGRAMME FEATURES ONLY THE MOST POPULAR PLATFORMS, GRADES, AND SIZES. FOR THE COMPLETE OFFERING, VISIT WIDIA NOVO™ OR WIDIA.COM.

Application Data • TDS Series • WM15PD™ • 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	0,05-0,11	0,08-0,14	0,09-0,19	0,11-0,22	0,13-0,26	0,15-0,30	0,19-0,36
	1	70	-	140	mm/r	0,05-0,13	0,08-0,19	0,11-0,24	0,14-0,30	0,16-0,35	0,18-0,39	0,20-0,46	0,23-0,51
	2	90	-	140	mm/r	0,05-0,13	0,08-0,17	0,11-0,20	0,14-0,24	0,16-0,28	0,18-0,32	0,20-0,37	0,23-0,41
	3	60	-	100	mm/r	0,08-0,13	0,12-0,19	0,14-0,24	0,17-0,30	0,20-0,35	0,22-0,39	0,26-0,46	0,29-0,51
	4	50	-	100	mm/r	0,08-0,12	0,11-0,18	0,12-0,23	0,15-0,28	0,17-0,33	0,19-0,37	0,22-0,43	0,25-0,48
	5	50	-	80	mm/r	0,03-0,11	0,04-0,11	0,05-0,11	0,05-0,14	0,08-0,18	0,11-0,21	0,14-0,24	0,16-0,26
	6	40	-	70	mm/r	0,05-0,11	0,08-0,14	0,11-0,17	0,13-0,21	0,15-0,24	0,17-0,27	0,19-0,33	0,22-0,36
M	1	50	-	90	mm/r	0,05-0,13	0,06-0,14	0,08-0,16	0,10-0,18	0,12-0,20	0,13-0,21	0,16-0,24	0,18-0,26
	2	50	-	80	mm/r	0,05-0,13	0,06-0,14	0,08-0,16	0,10-0,18	0,12-0,20	0,13-0,21	0,16-0,24	0,18-0,26
	3	50	-	70	mm/r	0,05-0,13	0,06-0,14	0,08-0,16	0,10-0,18	0,12-0,20	0,13-0,21	0,16-0,24	0,18-0,26
S	1	20	-	30	mm/r	0,03-0,06	0,04-0,08	0,06-0,10	0,08-0,12	0,09-0,13	0,10-0,14	0,12-0,16	0,14-0,18
	2	10	-	30	mm/r	0,02-0,04	0,03-0,06	0,05-0,08	0,07-0,10	0,08-0,11	0,09-0,12	0,10-0,14	0,11-0,16
	3	10	-	40	mm/r	0,02-0,04	0,02-0,05	0,04-0,07	0,06-0,09	0,07-0,10	0,08-0,11	0,09-0,13	0,10-0,15
	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

Application Data • TDS Series • WP20PD™ • Through Coolant • Metric

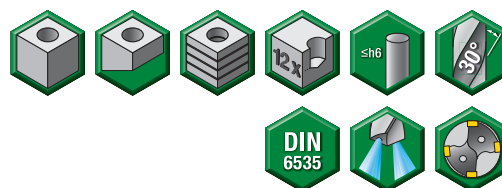
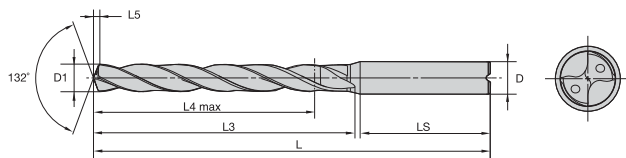
Material Group	Cutting Speed – vc Range – m/min			Recommended Feed Rate (f) by Diameter									
	min	-	max	Tool Diameter (mm)	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0	
	P	1	80	-	180	mm/r	0,08-0,16	0,11-0,19	0,13-0,26	0,16-0,32	0,16-0,36	0,21-0,40	0,24-0,47
	2, 3, 4, 6, 7	80	-	160	mm/r	0,09-0,17	0,11-0,20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

Application Data • TDS Series • WK15PD™ • 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	
	K	15, 16	80	-	190	mm/r	0,11-0,22	0,12-0,24	0,16-0,31	0,20-0,38	0,23-0,44	0,25-0,49	0,31-0,60
	17, 18, 19	90	-	170	mm/r	0,12-0,16	0,13-0,19	0,16-0,25	0,20-0,31	0,23-0,36	0,25-0,40	0,31-0,48	0,38-0,60
	20	80	-	150	mm/r	0,08-0,17	0,09-0,19	0,12-0,25	0,14-0,30	0,17-0,35	0,19-0,40	0,24-0,48	0,30-0,60

nominal size range	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

TDS504A • 12 x D



- first choice
- alternate choice

P	●
M	●
K	●
N	●
S	○
H	

catalogue number	D1 diameter		L	L3	L4 max	L5	LS	D	WU20PD
	mm	in							
TDS504A03000	3,000	.1181	93	52	44	0,6	36	6	4173459
TDS504A03500	3,500	.1378	93	53	44	0,7	36	6	4173462
TDS504A04000	4,000	.1575	107	66	56	0,8	36	6	4173464
TDS504A04500	4,500	.1772	107	67	56	0,9	36	6	4173465
TDS504A04600	4,600	.1811	107	68	57	1,0	36	6	4173466
TDS504A04800	4,800	.1890	125	82	69	1,0	36	6	4173468
TDS504A05000	5,000	.1969	125	83	70	1,1	36	6	4173469
TDS504A05100	5,100	.2008	125	83	70	1,1	36	6	4173470
TDS504A05200	5,200	.2047	125	83	70	1,1	36	6	4173471
TDS504A05300	5,300	.2087	125	84	71	1,1	36	6	4173472
TDS504A05500	5,500	.2165	125	84	71	1,2	36	6	4173474
TDS504A05600	5,600	.2205	125	85	72	1,2	36	6	4173476
TDS504A05700	5,700	.2244	125	85	72	1,2	36	6	4173477
TDS504A05800	5,800	.2283	125	85	71	1,2	36	6	4173478
TDS504A06000	6,000	.2362	125	86	72	1,3	36	6	4173479
TDS504A06200	6,200	.2441	139	97	82	1,3	36	8	4173480
TDS504A06500	6,500	.2559	139	98	83	1,4	36	8	4173482
TDS504A06600	6,600	.2598	139	99	84	1,4	36	8	4173484
TDS504A06800	6,800	.2677	139	99	83	1,4	36	8	4173486
TDS504A07000	7,000	.2756	139	100	84	1,5	36	8	4173488
TDS504A07500	7,500	.2953	153	112	95	1,6	36	8	4173490
TDS504A07700	7,700	.3031	153	113	96	1,6	36	8	4173492
TDS504A07800	7,800	.3071	153	113	95	1,7	36	8	4173493
TDS504A08000	8,000	.3150	153	114	96	1,7	36	8	4173495
TDS504A08100	8,100	.3189	185	136	116	1,7	40	10	4173496
TDS504A08500	8,500	.3346	185	137	117	1,8	40	10	4173499
TDS504A08700	8,700	.3425	185	138	118	1,9	40	10	4173500
TDS504A09000	9,000	.3543	185	139	118	1,9	40	10	4173502
TDS504A09100	9,100	.3583	185	139	118	1,9	40	10	4173503
TDS504A09500	9,500	.3740	185	140	119	2,0	40	10	4173505
TDS504A10000	10,000	.3937	185	142	120	2,1	40	10	4173508
TDS504A10200	10,200	.4016	218	164	140	2,2	45	12	4173509
TDS504A10300	10,300	.4055	218	165	141	2,2	45	12	4173510
TDS504A10500	10,500	.4134	218	165	141	2,2	45	12	4173512
TDS504A10800	10,800	.4252	218	166	141	2,3	45	12	4173514
TDS504A11000	11,000	.4331	218	167	142	2,4	45	12	4173515
TDS504A11500	11,500	.4528	218	168	143	2,5	45	12	4173517
TDS504A11800	11,800	.4646	218	169	143	2,5	45	12	4173518
TDS504A12000	12,000	.4724	218	170	144	2,6	45	12	4173519
TDS504A12100	12,100	.4764	246	192	164	2,6	45	14	4173520
TDS504A12500	12,500	.4921	246	193	165	2,7	45	14	4148906
TDS504A12700	12,700	.5000	246	194	166	2,7	45	14	4173522
TDS504A13000	13,000	.5118	246	195	166	2,8	45	14	4173523
TDS504A13100	13,100	.5157	246	195	166	2,8	45	14	4173524
TDS504A13500	13,500	.5315	246	196	167	2,9	45	14	4173525
TDS504A14000	14,000	.5512	246	198	168	3,0	45	14	4173526
TDS504A14100	14,100	.5551	277	220	188	3,0	48	16	4173527
TDS504A14500	14,500	.5709	277	221	189	3,1	48	16	4173529
TDS504A15000	15,000	.5906	277	223	190	3,2	48	16	4173531
TDS504A15500	15,500	.6102	277	224	191	3,3	48	16	4173532
TDS504A16000	16,000	.6299	277	226	192	3,4	48	16	4173534
TDS504A16500	16,500	.6496	305	249	213	3,6	48	18	4173535
TDS504A17000	17,000	.6693	305	250	214	3,7	48	18	4173536
TDS504A17500	17,500	.6890	305	252	215	3,8	48	18	4173538
TDS504A18000	18,000	.7087	305	253	216	3,9	48	18	4173539
TDS504A18500	18,500	.7283	334	277	237	4,0	50	20	4173540
TDS504A19000	19,000	.7480	334	278	238	4,1	50	20	4173541
TDS504A19500	19,500	.7677	334	280	239	4,2	50	20	4173543
TDS504A20000	20,000	.7874	334	281	240	4,3	50	20	4173544

INDEXABLE MILLING
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 HOLEMAKING
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 TURNING

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	1	90	-	180	mm/r	0,08-0,16	0,09-0,18	0,12-0,24	0,14-0,29	0,17-0,34	0,20-0,39	0,24-0,47
	2, 3, 4, 6, 7	80	-	120	mm/r	0,09-0,17	0,10-0,19	0,14-0,25	0,17-0,31	0,21-0,37	0,24-0,42	0,29-0,52	0,38-0,65
	5, 9, 10, 11	70	-	120	mm/r	0,08-0,17	0,09-0,19	0,13-0,25	0,16-0,31	0,19-0,37	0,21-0,42	0,26-0,52	0,32-0,65
	12, 13	50	-	80	mm/r	0,05-0,09	0,06-0,11	0,09-0,16	0,11-0,20	0,14-0,24	0,15-0,27	0,20-0,35	0,26-0,45
M	14, 1	30	-	50	mm/r	0,04-0,07	0,05-0,09	0,08-0,11	0,09-0,12	0,10-0,14	0,12-0,16	0,14-0,18	0,16-0,20
	14, 3	30	-	60	mm/r	0,04-0,08	0,06-0,10	0,08-0,12	0,09-0,14	0,10-0,16	0,12-0,18	0,14-0,20	0,16-0,22
	14, 2, 14, 4	30	-	50	mm/r	0,04-0,07	0,06-0,09	0,08-0,11	0,09-0,12	0,10-0,14	0,12-0,16	0,14-0,18	0,16-0,20
K	15, 16	100	-	210	mm/r	0,11-0,22	0,12-0,24	0,16-0,31	0,20-0,38	0,23-0,44	0,25-0,49	0,31-0,60	0,38-0,74
	17, 18, 19	130	-	160	mm/r	0,11-0,17	0,12-0,19	0,16-0,25	0,20-0,31	0,23-0,36	0,25-0,40	0,31-0,48	0,38-0,60
	20	100	-	170	mm/r	0,08-0,17	0,09-0,19	0,12-0,25	0,14-0,30	0,17-0,35	0,19-0,40	0,24-0,48	0,30-0,60

nominal size range	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

INDEXABLE MILLING

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TOP DRILL™ Deep-Hole Drills

The TDD deep-hole drill series in the WU20PD™ grade offers secure and consistent performance, excellent hole quality, and reduced cycle times.

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

Choose TDS Drill Series for piloting.

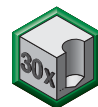
- Helix with optimised flute profile reduces risk of chip jamming and catastrophic failure.
- Four-margin lands to improve hole straightness and alignment through cross holes and inclined exits.
- Advances TiAlN multilayer PVD coating for steel and cast iron.

Materials:



Lengths

Available with and without through coolant channels.

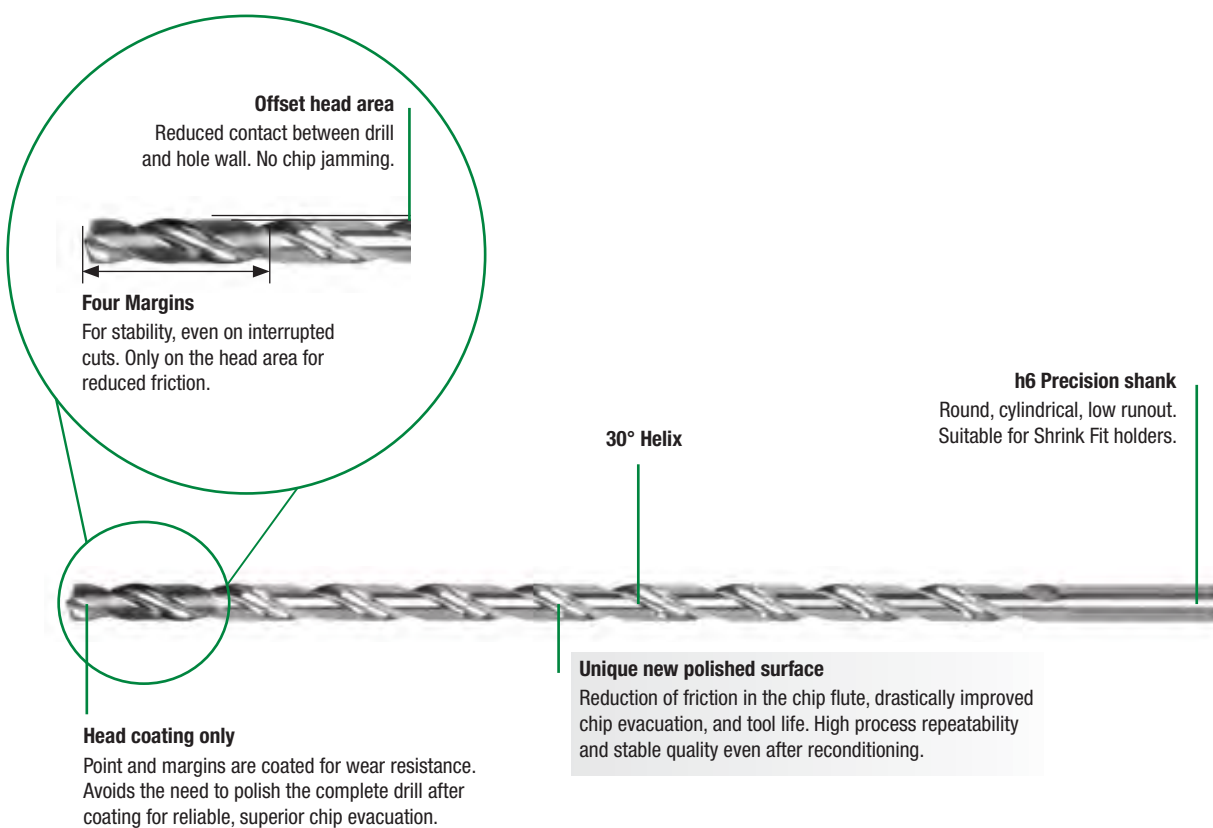


Diameter Range

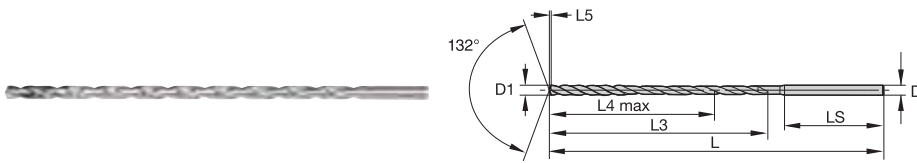
3–13mm

Grade:

WU20PD



TDD105 • 15 x D • Metric



- first choice
- alternate choice

P		
M		
K		
N		
S		
H		

catalogue number	D1 diameter		D	L3	L4 max	L5	LS	L	pilot drill	WU20PD
	mm	in								
TDD105Z03000	3,000	.1181	3	52	45	0,6	30	86	TDS501A03000	3899626
TDD105Z03500	3,500	.1378	4	68	59	0,7	32	105	TDS501A03500	3899628
TDD105Z04000	4,000	.1575	4	70	60	0,8	32	105	TDS501A04000	3899632
TDD105Z04500	4,500	.1772	5	85	74	0,9	34	124	TDS501A04500	3899685
TDD105Z05000	5,000	.1969	5	87	75	1,0	34	124	TDS501A05000	3899688
TDD105Z05500	5,500	.2165	6	102	89	1,1	36	143	TDS501A05500	3899691
TDD105Z06000	6,000	.2362	6	104	90	1,2	36	143	TDS501A06000	3899694
TDD105Z06500	6,500	.2559	7	119	104	1,4	38	162	TDS501A06500	3899697
TDD105Z06800	6,800	.2677	7	120	104	1,4	38	162	TDS501A06800	3899700
TDD105Z07000	7,000	.2756	7	121	105	1,5	38	162	TDS501A07000	3899702
TDD105Z07500	7,500	.2953	8	136	119	1,6	40	181	TDS501A07500	3900633
TDD106Z07500	7,500	.2953	8	174	157	1,6	40	221	TDS501A07500	3899764
TDD105Z08000	8,000	.3150	8	138	120	1,7	40	181	TDS501A08000	3900636
TDD105Z08500	8,500	.3346	9	153	134	1,8	42	200	TDS501A08500	3900639
TDD105Z09000	9,000	.3543	9	155	135	1,9	42	200	TDS501A09000	3900641
TDD105Z09500	9,500	.3740	10	170	149	2,0	44	219	TDS501A09500	3900643
TDD105Z10000	10,000	.3937	10	172	150	2,1	44	219	TDS501A10000	3900647
TDD105Z10500	10,500	.4134	11	187	164	2,2	46	238	TDS501A10500	3900650
TDD105Z11000	11,000	.4331	11	189	165	2,3	46	238	TDS501A11000	3900652
TDD105Z11500	11,500	.4528	12	204	179	2,4	48	257	TDS501A11500	3900654
TDD105Z12000	12,000	.4724	12	206	180	2,5	48	257	TDS501A12000	3900656
TDD105Z13000	13,000	.5118	13	223	195	2,8	50	276	TDS501A13000	3900660

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TURNING



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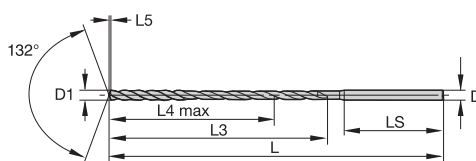
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

TDD106 • 20 x D • Metric

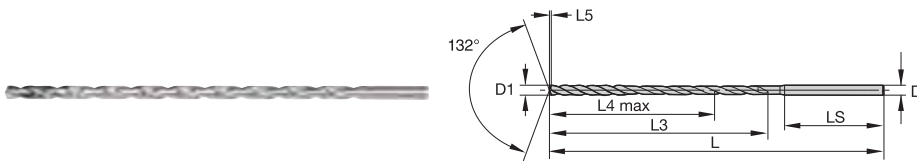


- first choice
- alternate choice

P		●
M		○
K		●
N		○
S		○
H		○

catalogue number	D1 diameter		D	L3	L4 max	L5	LS	L	pilot drill	WU20PD
	mm	in								
TDD106Z03000	3,000	.1181	3	67	60	0,6	30	101	TDS501A03000	3899782
TDD106Z03500	3,500	.1378	4	86	77	0,7	32	125	TDS501A03500	3899804
TDD106Z04000	4,000	.1575	4	90	80	0,8	32	125	TDS501A04000	3899808
TDD106Z04500	4,500	.1772	5	108	97	0,9	34	149	TDS501A04500	3899811
TDD106Z05000	5,000	.1969	5	112	100	1,0	34	149	TDS501A05000	3899814
TDD106Z05500	5,500	.2165	6	130	117	1,1	36	173	TDS501A05500	3899818
TDD106Z06000	6,000	.2362	6	134	120	1,2	36	173	TDS501A06000	3899821
TDD106Z06500	6,500	.2559	7	152	137	1,4	38	197	TDS501A06500	3899824
TDD106Z06800	6,800	.2677	7	154	138	1,4	38	197	TDS501A06800	3899827
TDD106Z07000	7,000	.2756	7	156	140	1,5	38	197	TDS501A07000	3899829
TDD106Z08000	8,000	.3150	8	178	160	1,7	40	221	TDS501A08000	3899767
TDD106Z08500	8,500	.3346	9	196	177	1,8	42	245	TDS501A08500	3899770
TDD106Z09000	9,000	.3543	9	200	180	1,9	42	245	TDS501A09000	3899772
TDD106Z09500	9,500	.3740	10	218	197	2,0	44	269	TDS501A09500	3899784
TDD106Z10000	10,000	.3937	10	222	200	2,1	44	269	TDS501A10000	3899788
TDD106Z10500	10,500	.4134	11	240	217	2,2	46	293	TDS501A10500	3899791
TDD106Z11000	11,000	.4331	11	244	220	2,3	46	293	TDS501A11000	3899793
TDD106Z11500	11,500	.4528	12	262	237	2,4	48	317	TDS501A11500	3899795
TDD106Z12000	12,000	.4724	12	266	240	2,5	48	317	TDS501A12000	3899797
TDD106Z12500	12,500	.4921	13	284	257	2,7	50	341	TDS501A12500	3899799
TDD106Z13000	13,000	.5118	13	288	260	2,8	50	341	TDS501A13000	3899801

TDD107 • 25 x D • Metric



- first choice
- alternate choice

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

catalogue number	D1 diameter		D	L3	L4 max	L5	LS	L	pilot drill	WU20PD
	mm	in								
TDD107Z03000	3,000	.1181	3	82	75	0,6	30	116	TDS501A03000	3899708
TDD107Z03500	3,500	.1378	4	103	94	0,7	32	145	TDS501A03500	3899710
TDD107Z04000	4,000	.1575	4	110	100	0,8	32	145	TDS501A04000	3899734
TDD107Z04500	4,500	.1772	5	130	119	0,9	34	174	TDS501A04500	3899737
TDD107Z05000	5,000	.1969	5	137	125	1,0	34	174	TDS501A05000	3899740
TDD107Z05500	5,500	.2165	6	157	144	1,1	36	203	TDS501A05500	3899743
TDD107Z06000	6,000	.2362	6	164	150	1,2	36	203	TDS501A06000	3899746
TDD107Z06500	6,500	.2559	7	184	169	1,4	38	232	TDS501A06500	3899749
TDD107Z07000	7,000	.2756	7	191	175	1,5	38	232	TDS501A07000	3899754
TDD107Z08000	8,000	.3150	8	218	200	1,7	40	261	TDS501A08000	3899569
TDD107Z08500	8,500	.3346	9	238	219	1,8	42	290	TDS501A08500	3899572
TDD107Z09000	9,000	.3543	9	245	225	1,9	42	290	TDS501A09000	3899604
TDD107Z09500	9,500	.3740	10	265	244	2,0	44	319	TDS501A09500	3899606
TDD107Z10000	10,000	.3937	10	272	250	2,1	44	319	TDS501A10000	3899610
TDD107Z10300	10,300	.4055	11	290	267	2,2	46	348	TDS501A10300	3899611
TDD107Z10500	10,500	.4134	11	292	269	2,2	46	348	TDS501A10500	3899613
TDD107Z11000	11,000	.4331	11	299	275	2,3	46	348	TDS501A11000	3899615
TDD107Z11500	11,500	.4528	12	319	294	2,4	48	377	TDS501A11500	3899617
TDD107Z12000	12,000	.4724	12	326	300	2,5	48	377	TDS501A12000	3899619
TDD107Z12500	12,500	.4921	13	346	319	2,7	50	406	TDS501A12500	3899621
TDD107Z13000	13,000	.5118	13	353	325	2,8	50	406	TDS501A13000	3899623

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING



THE ALL-STAR PROGRAMME FEATURES ONLY THE MOST POPULAR PLATFORMS, GRADES, AND SIZES. FOR THE COMPLETE OFFERING, VISIT WIDIA NOVO™ OR WIDIA.COM.

INDEXABLE MILLING

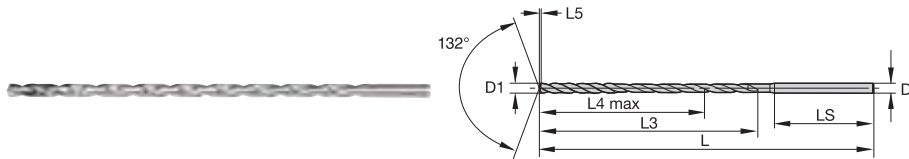
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

TDD108 • 30 x D • Metric



- first choice
- alternate choice

P		●
M		○
K		●
N		○
S		○
H		○

catalogue number	D1 diameter		D	L3	L4 max	L5	LS	L	pilot drill	WU20PD
	mm	in								
TDD108Z03000	3,000	.1181	3	97	90	0,6	30	131	TDS501A03000	3899539
TDD108Z03500	3,500	.1378	4	121	112	0,7	32	165	TDS501A03500	3899541
TDD108Z04000	4,000	.1575	4	130	120	0,8	32	165	TDS501A04000	3899575
TDD108Z04500	4,500	.1772	5	153	142	0,9	34	199	TDS501A04500	3899578
TDD108Z05000	5,000	.1969	5	162	150	1,0	34	199	TDS501A05000	3899581
TDD108Z05500	5,500	.2165	6	185	172	1,1	36	233	TDS501A05500	3899584
TDD108Z06000	6,000	.2362	6	194	180	1,2	36	233	TDS501A06000	3899587
TDD108Z06500	6,500	.2559	7	217	202	1,4	38	267	TDS501A06500	3899590
TDD108Z06800	6,800	.2677	7	222	206	1,4	38	267	TDS501A06800	3899593
TDD108Z07000	7,000	.2756	7	226	210	1,5	38	267	TDS501A07000	3899595
TDD108Z07500	7,500	.2953	8	249	232	1,6	40	301	TDS501A07500	3899601
TDD108Z08000	8,000	.3150	8	258	240	1,7	40	301	TDS501A08000	3899654
TDD108Z08500	8,500	.3346	9	281	262	1,8	42	335	TDS501A08500	3899657
TDD108Z09000	9,000	.3543	9	290	270	1,9	42	335	TDS501A09000	3899659
TDD108Z09500	9,500	.3740	10	313	292	2,0	44	369	TDS501A09500	3899661
TDD108Z10000	10,000	.3937	10	322	300	2,1	44	369	TDS501A10000	3899665
TDD108Z10500	10,500	.4134	11	345	322	2,2	46	403	TDS501A10500	3899668
TDD108Z11000	11,000	.4331	11	354	330	2,3	46	403	TDS501A11000	3899670
TDD108Z11500	11,500	.4528	12	377	352	2,4	48	437	TDS501A11500	3899672
TDD108Z12000	12,000	.4724	12	386	360	2,5	48	437	TDS501A12000	3899674
TDD108Z12500	12,500	.4921	13	409	382	2,7	50	471	TDS501A12500	3899676
TDD108Z13000	13,000	.5118	13	418	390	2,8	50	471	TDS501A13000	3899678



THE ALL-STAR PROGRAMME FEATURES ONLY THE MOST POPULAR PLATFORMS, GRADES, AND SIZES. FOR THE COMPLETE OFFERING, VISIT WIDIA NOVO™ OR WIDIA.COM.

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

Material Group		Cutting Speed – vc Range – m/min			Recommended Feed Rate (fz) 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
	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

INDEXABLE MILLING

SOLID END MILLING

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MODULAR DRILLS

TDMX

Pages C46–C49

Stability and reliability combined into one modular drill system.



TDM1

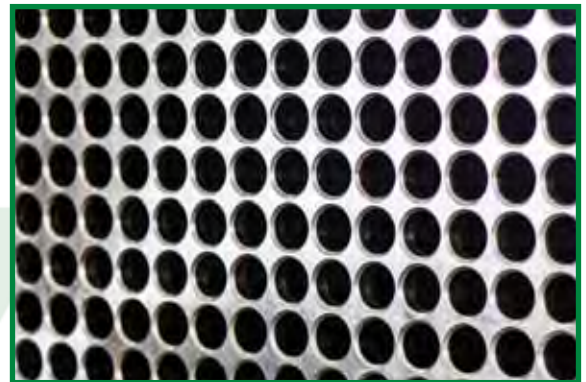
Pages C50–C56

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

TUBE SHEET DRILLING SUCCESS



TDMX



TUBE SHEET



WIDIA™
SHINING
MOMENT

**LONGER TOOL LIFE WITH LOWER SPINDLE
LOAD AND BETTER CHIP CONTROL**

Proven Solution — Tube Sheet

- P** Material: ST52
- Condition: Pre-Drilled

	COMPETITOR	WIDIA
Insert	—	TDMX2576PKM
Diameter	25,76mm (1,014")	25,76mm (1,014")
Grade	—	WP40PD
Body	—	TDMX250SL32R5M
Length	5 x D	5 x D
Vc	100m/min (320 SFM)	100m/min (320 SFM)
RPM	1239 r/min	1239 r/min
f	0,3mm/r (.011 ipm)	0,3mm/r (.011 IPR)
Vf	371mm/min (14 ipm)	371mm/min (14 ipm)
LOC	77mm (3.03")	77mm (3.03")
Tool Life	390 holes	428 holes

TO SEE ALL PRODUCT LINES, VISIT OUR DIGITAL RESOURCES



WIDIA NOVO™ Application
Download to your desktop or tablet:
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WIDIA™ Machining Central Mobile App
Download for iOS or Android:
widia.com/en/featured/WidiaMobileApp

WIDIA 

TDMX — TOP DRILL™ Modular X

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

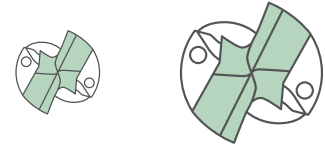
- Easy to apply, increased stability and performance.
- Highly engineered pocket seat design to ensure maximum stability, even in challenging applications like cross hole, inclined entry/exit, and interrupted cuts.
- Suitable for high feed rates.
- Brand new WP40PD grade for longer tool life in steel and cast iron applications.
- Easy insert nomenclature logic to identify the targeted material group.

L/D Ratio



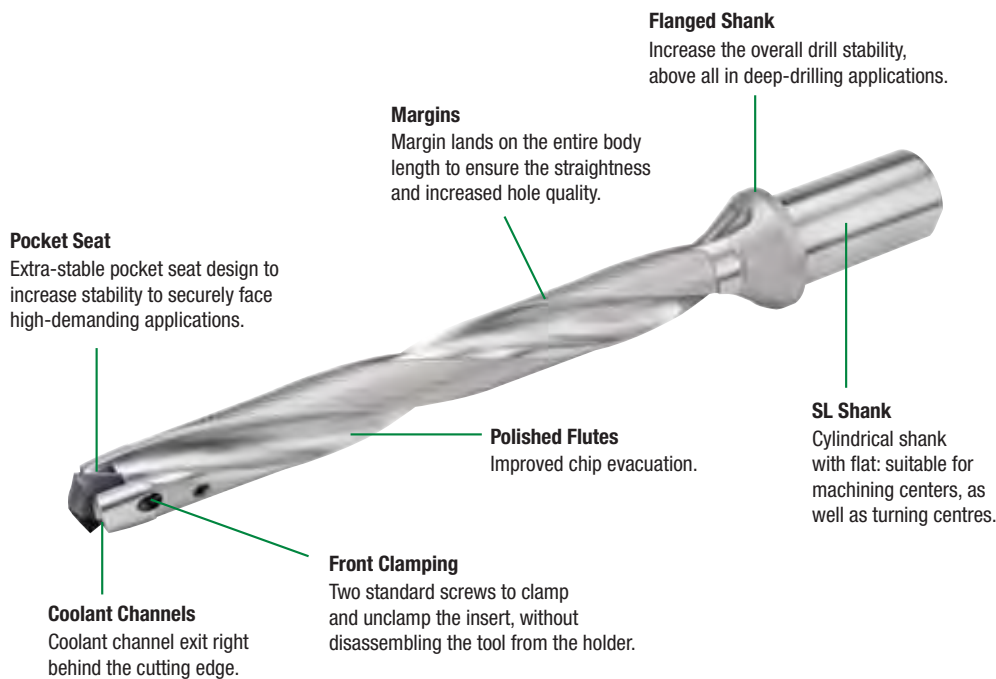
Diameter range

16–40mm



Grade:

WP40PD



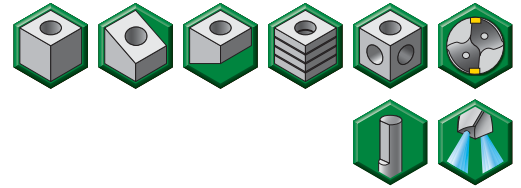
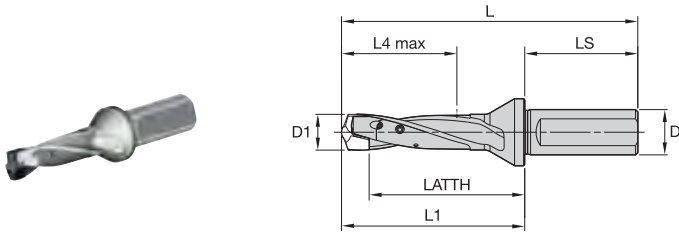
One geometry to cover two material groups in modular drilling.

PK



First choice for Steel and Cast Iron drilling.

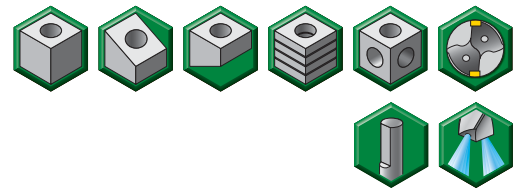
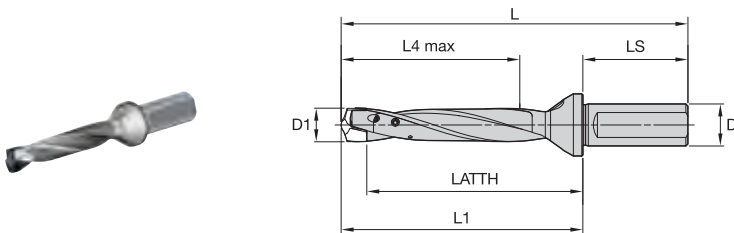
TDMX • 3 x D • Side Lock Shank • Metric



order number	catalogue number	SSC	D1	D1 max
6572091	TDMX160R3SL20M	A	16,000	16,999
6572092	TDMX170R3SL20M	B	17,000	17,999
6572093	TDMX180R3SL25M	C	18,000	18,999
6572094	TDMX190R3SL25M	D	19,000	19,999
6572096	TDMX200R3SL25M	E	20,000	20,999
6572097	TDMX210R3SL25M	F	21,000	21,999
6572098	TDMX220R3SL25M	G	22,000	22,999
6572101	TDMX250R3SL32M	J	25,000	25,999
6572102	TDMX260R3SL32M	K	26,000	26,999
6572104	TDMX270R3SL32M	L	27,000	27,999
6572107	TDMX300R3SL32M	O	30,000	30,999
6572109	TDMX320R3SL40M	Q	32,000	33,999

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

TDMX • 5 x D • Side Lock Shank • Metric



order number	catalogue number	SSC	D1	D1 max
6572125	TDMX160R5SL20M	A	16,000	16,999
6572126	TDMX170R5SL20M	B	17,000	17,999
6572128	TDMX190R5SL25M	D	19,000	19,999
6572129	TDMX200R5SL25M	E	20,000	20,999
6572145	TDMX260R5SL32M	K	26,000	26,999
6572147	TDMX280R5SL32M	M	28,000	28,999

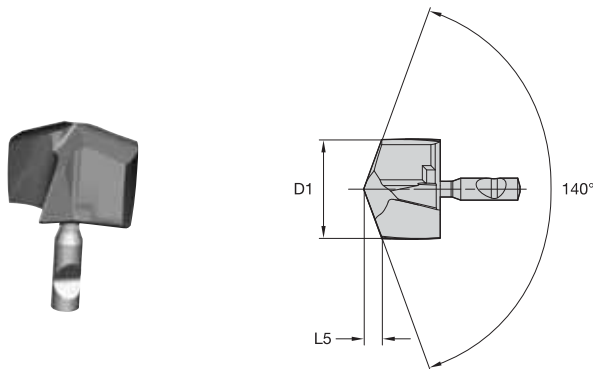
NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the inserts.

TDMX • Dimensions

SSC	mm Ø		LS	D	LATTH	SHORT ~3 x D				LONG ~5 x D			
	D1 min	D1 max				L	L1	L4 max	LATTH	L	L1	L4 max	
A	16,000	16,999	50	20	68,8	131	81	51	102,8	165	115	85	
B	17,000	17,999	50	20	73,8	136	86	54	109,8	172	122	90	
C	18,000	18,999	56	25	76,7	146	90	57	114,7	184	128	95	
D	19,000	19,999	56	25	81,7	151	95	60	121,7	191	135	100	
E	20,000	20,999	56	25	84,6	155	99	63	126,6	197	141	105	
F	21,000	21,999	56	25	89,6	160	104	66	133,6	204	148	110	
G	22,000	22,999	56	25	92,5	164	108	69	138,5	210	154	115	
J	25,000	25,999	60	32	105,4	182	122	78	157,4	234	174	130	
K	26,000	26,999	60	32	108,3	186	126	81	162,3	240	180	135	
L	27,000	27,999	60	32	113,3	191	131	84	169,3	247	187	140	
M	28,000	28,999	60	32	116,2	195	135	87	174,2	253	193	145	
O	30,000	30,999	60	32	124,1	204	144	93	186,1	266	206	155	
Q	32,000	33,999	70	40	136,0	228	158	102	204,0	296	226	170	

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

TDMX • Inserts • PK(M)



- first choice
- alternate choice

P	Blue	●
M	Yellow	○
K	Red	●
N	Green	○
S	Orange	○
H	Grey	○

catalogue number	D1	L5	SSC	WP40PD
TDMX1600PKM	16,00	3,21	A	6568446
TDMX1650PKM	16,50	3,30	A	6568449
TDMX1700PKM	17,00	3,39	B	6568461
TDMX1800PKM	18,00	3,58	C	6568473
TDMX1850PKM	18,50	3,68	C	6568475
TDMX1900PKM	19,00	3,78	D	6568478
TDMX1950PKM	19,50	3,87	D	6568483
TDMX2000PKM	20,00	3,97	E	6568813
TDMX20100PKM	20,10	3,99	E	6568814
TDMX20500PKM	20,50	4,06	E	6568819
TDMX21000PKM	21,00	4,16	F	6568845
TDMX22000PKM	22,00	4,35	G	6568848
TDMX22500PKM	22,50	4,44	G	6568851
TDMX24000PKM	24,00	4,73	I	6568856
TDMX25000PKM	25,00	4,91	J	6568859
TDMX26000PKM	26,00	5,11	K	6568866
TDMX26500PKM	26,50	5,20	K	6568869
TDMX27000PKM	27,00	5,29	L	6568871
TDMX30000PKM	30,00	5,87	O	6568892
TDMX32000PKM	32,00	6,25	Q	6568901

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

D1	Metric tolerance	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



THE ALL-STAR PROGRAMME FEATURES ONLY THE MOST POPULAR PLATFORMS, GRADES, AND SIZES. FOR THE COMPLETE OFFERING, VISIT WIDIA NOVO™ OR WIDIA.COM.

INDEXABLE MILLING



SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Application Data • PK(M) • 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	0,28–0,57	0,29–0,60
	2	105	140	180	mm/r	0,23–0,46	0,28–0,50	0,30–0,52	0,33–0,57	0,35–0,60
	3	50	75	100	mm/r	0,23–0,46	0,28–0,50	0,30–0,52	0,33–0,57	0,35–0,60
	4	50	75	100	mm/r	0,19–0,45	0,22–0,48	0,25–0,50	0,28–0,55	0,29–0,58
	5	50	65	80	mm/r	0,16–0,32	0,18–0,36	0,22–0,42	0,24–0,46	0,25–0,48
	6	50	65	80	mm/r	0,16–0,32	0,18–0,36	0,22–0,42	0,24–0,46	0,25–0,48
M	1	40	80	110	mm/r	0,11–0,26	0,13–0,28	0,13–0,32	0,14–0,35	0,15–0,37
	2	35	55	75	mm/r	0,11–0,26	0,13–0,28	0,13–0,32	0,14–0,35	0,15–0,37
	3	20	35	50	mm/r	0,11–0,26	0,13–0,28	0,13–0,32	0,14–0,35	0,15–0,37
K	1	60	95	170	mm/r	0,25–0,48	0,28–0,52	0,32–0,56	0,35–0,62	0,37–0,65
	2	60	75	90	mm/r	0,25–0,48	0,28–0,52	0,32–0,56	0,35–0,62	0,37–0,65
	3	40	65	90	mm/r	0,21–0,44	0,23–0,48	0,25–0,50	0,28–0,55	0,29–0,58

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

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

TOP DRILL M1™ Modular Drill System

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

Easy Insert Change

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

Disposable

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

The TDM1 platform offers UP(M) drill-point design in WU25PD™ grade — a wide application range geometry, specially developed for cost-efficient drilling of steel, cast iron, and stainless steel.

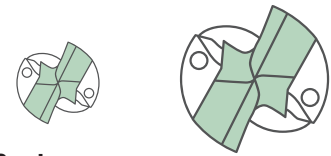
L/D Ratios

Within the standard offering.



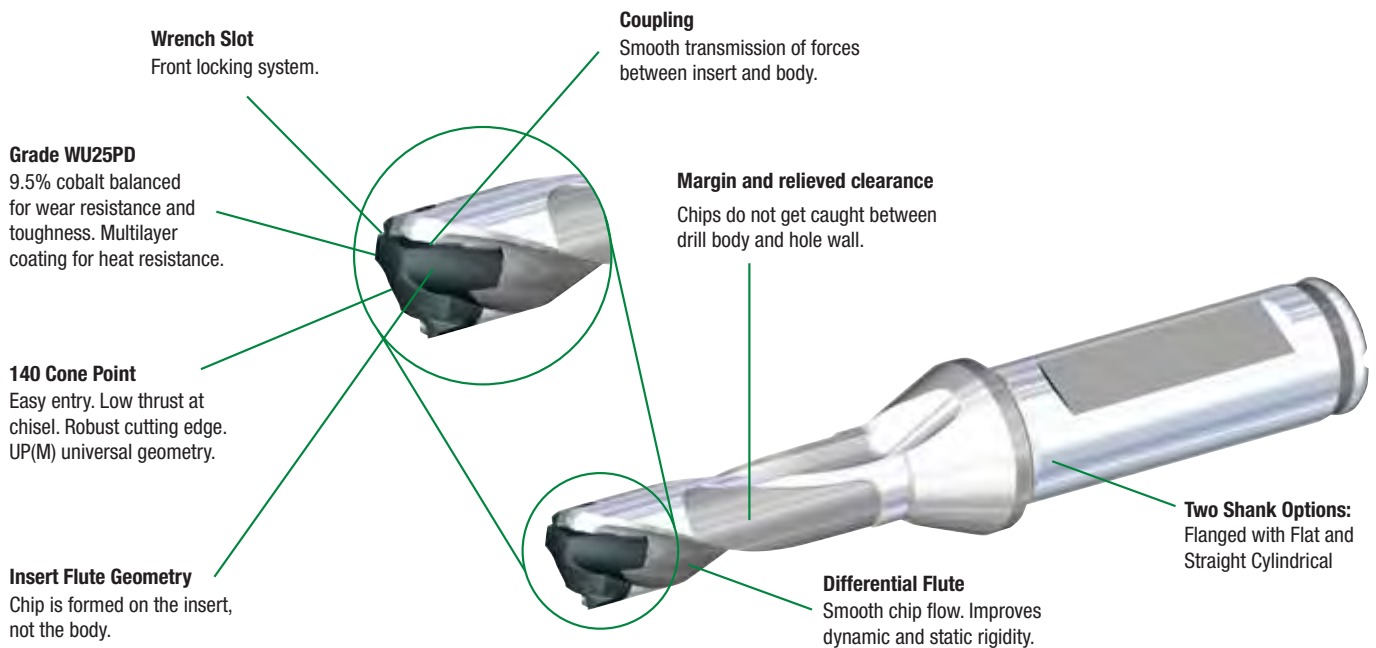
Diameter Range

8–25.99mm



Grade:

WU25PD

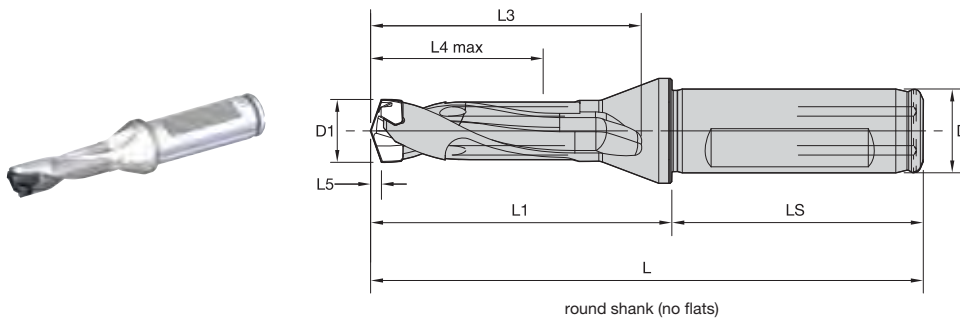


One insert style for all your work in steel, cast iron, and even stainless steels.

- Low cutting forces and excellent centring capabilities.
- Universal point style for consistent performance and excellent hole quality.



TDM1 • 3 x D • Flanged Shank • Metric



round shank (no flats)

order number	catalogue 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.



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INDEXABLE MILLING

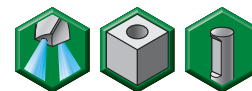
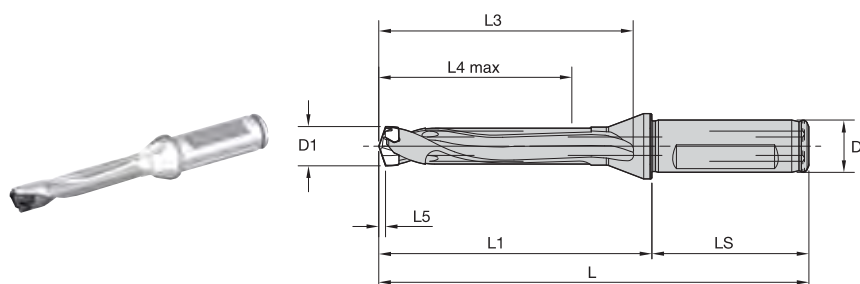
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

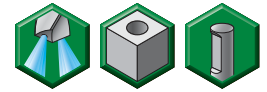
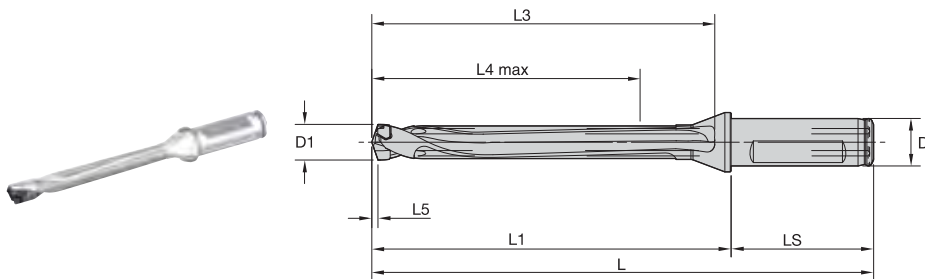
TDM1 • 5 x D • Flanged Shank • Metric



order number	catalogue 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.

TDM1 • 8 x D • Flanged Shank • Metric



order number	catalogue 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



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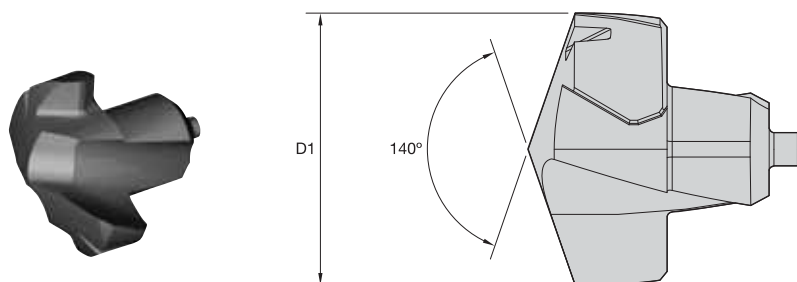
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

TDM1 • Inserts • UP(M)



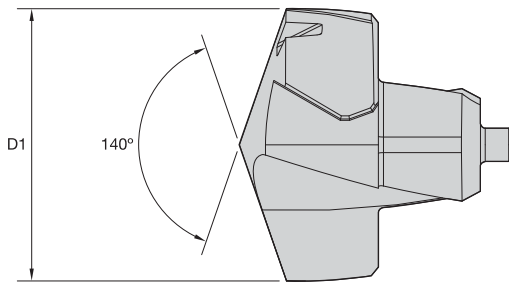
- first choice
- alternate choice

P		●
M		○
K		●
N		○
S		○
H		○

catalogue number	D1	SSC	WU25PD
TDM0800UPM	8,00	W10	3848984
TDM0850UPM	8,50	W11	3848988
TDM0900UPM	9,00	W12	3849043
TDM0950UPM	9,50	W13	3849048
TDM0960UPM	9,60	W13	3849049
TDM1000UPM	10,00	W14	3849051
TDM1010UPM	10,10	W14	3849052
TDM1020UPM	10,20	W14	3849053
TDM1030UPM	10,30	W14	3849054
TDM1040UPM	10,40	W14	3849055
TDM1050UPM	10,50	W15	3849056
TDM1060UPM	10,60	W15	3849057
TDM1080UPM	10,80	W15	3849059
TDM1100UPM	11,00	W16	3849061
TDM1120UPM	11,20	W16	3849063
TDM1130UPM	11,30	W16	3849064
TDM1140UPM	11,40	W16	3849065
TDM1150UPM	11,50	W17	3849066
TDM1170UPM	11,70	W17	3849068
TDM1180UPM	11,80	W17	3849069
TDM1200UPM	12,00	W18	3849071
TDM1210UPM	12,10	W18	3849072
TDM1220UPM	12,20	W18	3849073
TDM1230UPM	12,30	W18	3850986
TDM1250UPM	12,50	W19	3849075
TDM1260UPM	12,60	W19	3849076
TDM1270UPM	12,70	W19	3850988
TDM1280UPM	12,80	W19	3849077
TDM1300UPM	13,00	W20	3849078
TDM1310UPM	13,10	W20	3850990
TDM1320UPM	13,20	W20	3849079
TDM1330UPM	13,30	W20	3849080
TDM1350UPM	13,50	W21	3849082
TDM1380UPM	13,80	W21	3849085
TDM1400UPM	14,00	W22	3849086
TDM1410UPM	14,10	W22	3849087
TDM1420UPM	14,20	W22	3849088
TDM1430UPM	14,30	W22	3849089
TDM1440UPM	14,40	W22	3849090
TDM1450UPM	14,50	W23	3849091
TDM1460UPM	14,60	W23	3849092
TDM1480UPM	14,80	W23	3849094
TDM1500UPM	15,00	W24	3849096
TDM1510UPM	15,10	W24	3849097
TDM1520UPM	15,20	W24	3849098
TDM1530UPM	15,30	W24	3849099
TDM1540UPM	15,40	W24	3849100
TDM1550UPM	15,50	W24	3849101
TDM1560UPM	15,60	W24	3849102
TDM1570UPM	15,70	W24	3849103
TDM1580UPM	15,80	W24	3849104
TDM1600UPM	16,00	W25	3849105
TDM1650UPM	16,50	W25	3849110
TDM1660UPM	16,60	W25	3849111
TDM1670UPM	16,70	W25	3849112
TDM1700UPM	17,00	W26	3849119

TDM1 • Inserts • UP(M)

(continued)



- first choice
- alternate choice

P		●
M		○
K		●
N		○
S		○
H		○

catalogue number	D1	SSC	WU25PD
TDM1720UPM	17,20	W26	3849121
TDM1740UPM	17,40	W26	3849193
TDM1750UPM	17,50	W26	3849194
TDM1770UPM	17,70	W26	3849196
TDM1800UPM	18,00	W27	3849199
TDM1850UPM	18,50	W27	3849204
TDM1890UPM	18,90	W27	3849208
TDM1900UPM	19,00	W28	3849209
TDM1920UPM	19,20	W28	3849211
TDM1950UPM	19,50	W28	3849214
TDM1980UPM	19,80	W28	3849217
TDM2000UPM	20,00	W29	3849219
TDM2010UPM	20,10	W29	3849220
TDM2020UPM	20,20	W29	3849221
TDM2024UPM	20,24	W29	3851017
TDM2030UPM	20,30	W29	3849222
TDM2040UPM	20,40	W29	3849223
TDM2050UPM	20,50	W29	3849224
TDM2070UPM	20,70	W29	3849226
TDM2080UPM	20,80	W29	3849227
TDM2090UPM	20,90	W29	3849228
TDM2099UPM	20,99	W29	3849229
TDM2100UPM	21,00	W30	4003225
TDM2144UPM	21,44	W30	4003203
TDM2150UPM	21,50	W30	3969291
TDM2200UPM	22,00	W31	4003226
TDM2223UPM	22,23	W31	4003204
TDM2245UPM	22,45	W31	4003205
TDM2250UPM	22,50	W31	4003227
TDM2300UPM	23,00	W32	4003228
TDM2350UPM	23,50	W32	4003229
TDM2381UPM	23,81	W32	4003206
TDM2400UPM	24,00	W33	4003230
TDM2450UPM	24,50	W33	4003231
TDM2461UPM	24,61	W33	4003207
TDM2500UPM	25,00	W34	4003232
TDM2540UPM	25,40	W34	4003208
TDM2550UPM	25,50	W34	4002444
TDM2568UPM	25,68	W34	4003209
TDM2581UPM	25,81	W34	4003210
TDM2599UPM	25,99	W34	3992013

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

INDEXABLE MILLING

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Application Data • UP(M) • 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.

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

ONE SOURCE, MANY APPLICATIONS

WIDIA™ APPROVED TAP/DRILL COMBINATIONS:

VariDrill™/VariTap™



Versatile:

VariDrill™ drilling tools, in combination with VariTap™ tapping tools, are designed for productivity in an array of different materials. These tools feature strong geometries that are ideal for small-batch and varied production.

TOP DRILL S™/GT Series



TDS401
TDS402
TDS403

GT00, 20, 24
Spiral Point
GT30, 32, 50
Spiral Flute
GT23, 24, 25
Forming



TDS451
TDS452
TDS453

GT20
GT30



TDS411
TDS412
TDS413

GT40
GT41



TDS421
TDS422

GT70
GT80
GT22
GT40



TDS451
TDS452
TDS453

GT60
GT90
GT62
GT92



Optimised:

TOP DRILL S™ drills, combined with GT Series Taps: This combination is designed for, but not limited to, material-specific applications with medium to large batch production.

For more than 90 years, WIDIA has defined excellence in innovation, technology, and customer service. As an industry-leading manufacturer of cutting tools, WIDIA offers a complete portfolio of precision-engineered products. With drilling, tapping and tooling systems products, you will find everything you need from one single source.

- Extensive Portfolio
- Expertise
- Customised Solutions

INDEXABLE DRILLS

Top Cut 4™

Pages C60–C74

The next generation of indexable drilling.





Flange



Transmission



Connecting Rod



WIDIA™ manufactures tools to meet application needs in steel, cast iron, and aluminium automotive components.

TO SEE ALL PRODUCT LINES, VISIT OUR DIGITAL RESOURCES



WIDIA NOVO™ Application
Download to your desktop or tablet:
widia.com/novo



WIDIA™ Machining Central Mobile App
Download for iOS or Android:
widia.com/en/featured/WidiaMobileApp

Top Cut 4™

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

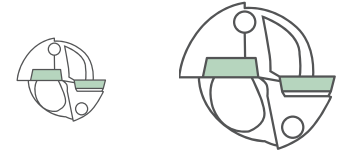
- Easy to apply, highly versatile.
- No risk of mixing up inner and outer insert due to clear visual differences.
- Easy-to-change inserts, laser marked with geometries and grades.
- Easy-to-use nomenclature guide enabling the tool body and the related insert selection to avoid order failures.
- Breadth of application capabilities include through and cross holes, inclined entry and exit opportunity, 45° corner, half cylindrical, concave, or chain drilling.
- Four grades to achieve higher tool life at accelerated speeds:
 - WU25CH grade for highest metal removal rate in general applications.
 - WU40PH grade for high toughness demands.
 - WPK10CH grade for high-speed applications.
 - WN10PH grade specific for aluminium and other non-ferrous materials.

L/D Ratios



Standard diameter range covering

12–68mm



Flanged Shank

Increase the overall drill stability, above all in deep-drilling applications.

Coolant Channels

Coolant channel exit right behind the cutting edge.

Differentiated Inserts Shape

To avoid grade mixing between central and periphery inserts.

Optimised Chip Flute

Large and optimised flutes to contain chips during machining.

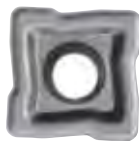
SL Shank Style

Cylindrical Shank with flat: suitable for machining centres, as well as turning centres.

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

- Four real cutting edges on each insert for entire platform.
- Eight insert sizes to cover complete diameter range.

-V34



P K

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

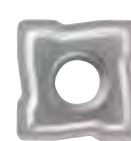
-V36



P M K

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

-V36 WN10PH



N

First choice for Non-Ferrous materials.

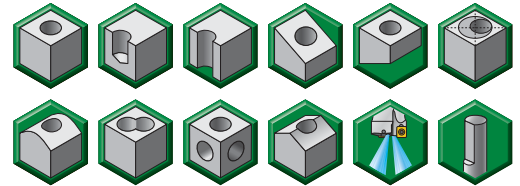
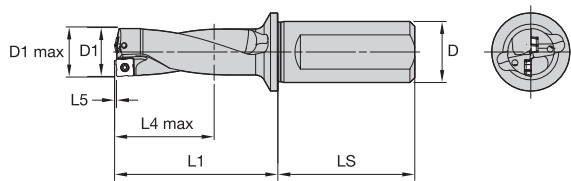
-V38



P M S

Ideal for long chipping materials.

TC4 • 2 x D • SLR Shanks • Metric



order number	catalogue number	D1	D1 max	D	L1	L4 max	L5	LS	SSC	periphery insert	centre insert
5537778	TCF120R2SLR20MA	12,00	12,50	20	43,4	24,4	0,43	50,00	A	TCF040204AP	TCF040203AC
5537861	TCF130R2SLR20MA	13,00	13,50	20	46,5	26,5	0,47	50,00	A	TCF040204AP	TCF040203AC
5577828	TCF140R2SLR25MB	14,00	14,50	25	48,5	28,5	0,49	56,00	B	TCF050204BP	TCF060203BC
5577920	TCF150R2SLR25MB	15,00	15,50	25	51,5	30,5	0,55	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
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
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
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
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
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
5578698	TCF500R2SLR40MG	50,00	51,00	40	147,8	101,8	1,79	70,00	G	TCF150512GP	TCF180508GC
5578714	TCF550R2SLR40MG	55,00	56,00	40	161,9	111,9	1,92	70,00	G	TCF150512GP	TCF180508GC

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

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.



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INDEXABLE MILLING



SOLID END MILLING



HOLEMAKING

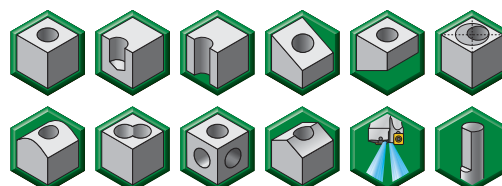
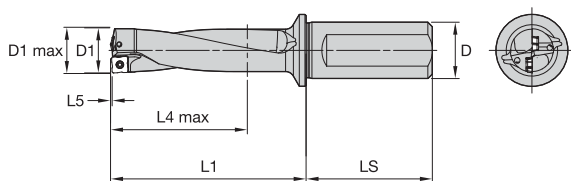


TAPPING



TURNING

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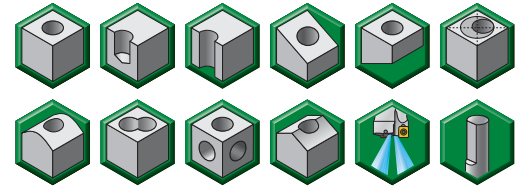
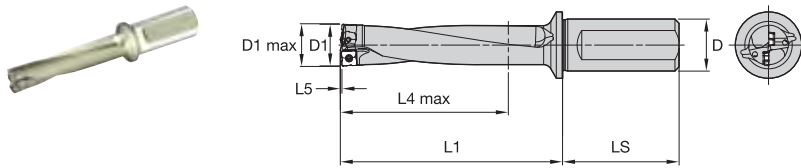
order number	catalogue number	D1	D1 max	D	L1	L4 max	L5	LS	SSC	periphery insert	centre insert
5537863	TCF120R3SLR20MA	12,00	12,50	20	55,4	36,4	0,43	50,00	A	TCF040204AP	TCF040203AC
5537867	TCF130R3SLR20MA	13,00	13,50	20	59,5	39,5	0,47	50,00	A	TCF040204AP	TCF040203AC
5577928	TCF140R3SLR25MB	14,00	14,50	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
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
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
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
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
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
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
5578720	TCF500R3SLR40MG	50,00	51,00	40	197,8	151,8	1,79	70,00	G	TCF150512GP	TCF180508GC
5578727	TCF550R3SLR40MG	55,00	56,00	40	216,9	166,9	1,92	70,00	G	TCF150512GP	TCF180508GC
5538646	TCF680R3SLR40MH	68,00	69,00	40	260,4	206,4	2,36	70,00	H	TCF180614HP	TCF210608HC

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

WARNING

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order number	catalogue number	D1	D1 max	D	L1	L4 max	L5	LS	SSC	periphery insert	centre insert
5537869	TCF120R4SLR20MA	12,00	12,50	20	67,4	48,4	0,43	50,00	A	TCF040204AP	TCF040203AC
5537872	TCF130R4SLR20MA	13,00	13,50	20	72,5	52,5	0,47	50,00	A	TCF040204AP	TCF040203AC
5577938	TCF140R4SLR25MB	14,00	14,50	25	76,5	56,5	0,49	56,00	B	TCF050204BP	TCF060203BC
5577940	TCF150R4SLR25MB	15,00	15,50	25	81,5	60,5	0,55	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
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
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	60,00	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
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
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
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
5578733	TCF500R4SLR40MG	50,00	51,00	40	247,8	201,8	1,79	70,00	G	TCF150512GP	TCF180508GC
5578739	TCF550R4SLR40MG	55,00	56,00	40	271,9	221,9	1,92	70,00	G	TCF150512GP	TCF180508GC

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INDEXABLE MILLING



SOLID END MILLING



HOLEMAKING

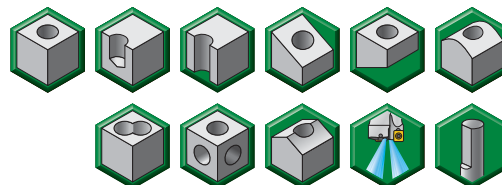
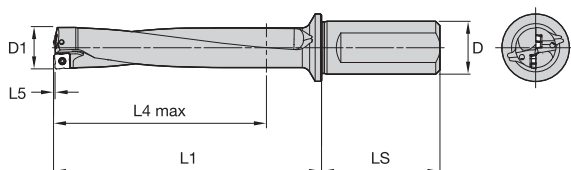


TAPPING



TURNING

TC4 • 5 x D • SLR Shanks • Metric



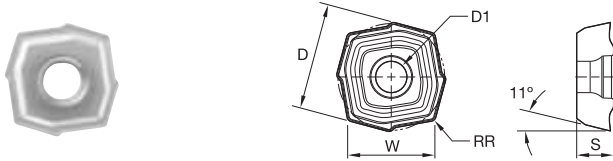
order number	catalogue number	D1	D	L1	L4 max	L5	LS	SSC	periphery insert	centre insert
5537874	TCF120R5SLR20MA	12,00	20	79,4	60,4	0,43	50,00	A	TCF040204AP	TCF040203AC
5537877	TCF130R5SLR20MA	13,00	20	85,5	65,5	0,47	50,00	A	TCF040204AP	TCF040203AC
5577948	TCF140R5SLR25MB	14,00	25	90,5	70,5	0,49	56,00	B	TCF050204BP	TCF060203BC
5577950	TCF150R5SLR25MB	15,00	25	96,5	75,5	0,55	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
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
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	60,00	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
5537843	TCF280R5SLR32MD	28,00	32	174,0	141,0	0,99	60,00	D	TCF080308DP	TCF090305DC
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
5578643	TCF400R5SLR40MF	40,00	40	243,4	201,4	1,45	70,00	F	TCF120412FP	TCF150406FC

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

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.

TC4 • Centre Inserts • Aluminium • V36



● first choice
○ alternate choice

P	■
M	■
K	■
N	■
S	■
H	■

catalogue number	D	D1	W	S	RR	SSC	WN10PH
TCF070304CCV36	7,59	2,60	6,20	2,80	0,400	C	6372042
TCF090305DCV36	9,55	2,80	7,80	3,00	0,500	D	6372045
TCF120405ECV36	12,00	3,40	9,80	3,60	0,500	E	6372047
TCF150406FCV36	14,94	4,80	12,20	4,20	0,600	F	6346757
TCF210608HCV36	21,68	7,50	17,70	6,50	0,800	H	6372049

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

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

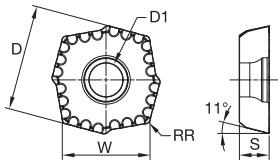
TAPPING

TURNING



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TC4 • Centre Inserts • Long Chip Materials • V38



- first choice
- alternate choice

P	●
M	●
K	●
N	●
S	●
H	●

catalogue number	D	D1	W	S	RR	SSC	WU40PH
TCF040203ACV38	4,47	2,10	3,65	2,00	0,300	A	6429458
TCF060203BCV38	6,00	2,40	4,90	2,40	0,300	B	6429459
TCF070304CCV38	7,59	2,60	6,20	2,80	0,400	C	6429460
TCF090305DCV38	9,55	2,80	7,80	3,00	0,500	D	6429461
TCF120405ECV38	12,00	3,40	9,80	3,60	0,500	E	6429462
TCF150406FCV38	14,94	4,80	12,20	4,20	0,600	F	6429463
TCF180508GCV38	17,88	6,00	14,60	5,40	0,800	G	6324383
TCF210608HCV38	21,68	7,50	17,70	6,50	0,800	H	6429464

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

INDEXABLE MILLING

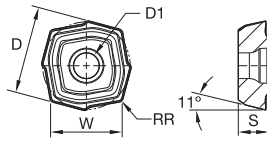
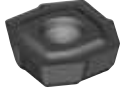
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

TC4 • Centre Inserts • V34



- first choice
- alternate choice

P	●	○
M	●	○
K	●	○
N	●	○
S	●	○
H	●	○

catalogue number	D	D1	W	S	RR	SSC	WU25CH	WU40PH
TCF040203ACV34	4,47	2,10	3,65	2,00	0,300	A	5541817	5541818
TCF060203BCV34	6,00	2,40	4,90	2,40	0,300	B	5542602	5542604
TCF070304CCV34	7,59	2,60	6,20	2,80	0,400	C	5542642	5542643
TCF090305DCV34	9,55	2,80	7,80	3,00	0,500	D	5538554	5538555
TCF120405ECV34	12,00	3,40	9,80	3,60	0,500	E	5538603	5538604
TCF150406FCV34	14,94	4,80	12,20	4,20	0,600	F	5542623	5542624
TCF180508GCV34	17,88	6,00	14,60	5,40	0,800	G	5542475	5542476
TCF210608HCV34	21,68	7,50	17,70	6,50	0,800	H	5542002	5542003

NOTE: For application-specific insert selection, please refer to the application data on page C73.
SSC = Pocket Seat Reference. To correspond with the SSC on the toolholder.

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING



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INDEXABLE MILLING

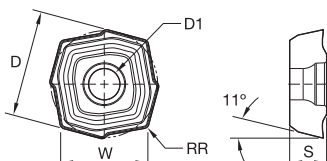
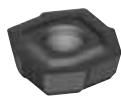
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

TC4 • Centre Inserts • V36



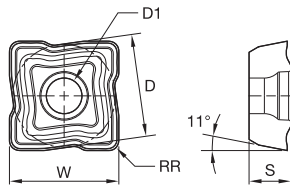
- first choice
- alternate choice

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

catalogue number	D	D1	W	S	RR	SSC	WU25CH	WU40PH
TCF040203ACV36	4,47	2,10	3,65	2,00	0,300	A	5541819	5541840
TCF060203BCV36	6,00	2,40	4,90	2,40	0,300	B	5542606	5542607
TCF070304CCV36	7,59	2,60	6,20	2,80	0,400	C	5542644	5542645
TCF090305DCV36	9,55	2,80	7,80	3,00	0,500	D	5538556	5538557
TCF120405ECV36	12,00	3,40	9,80	3,60	0,500	E	5538606	5538607
TCF150406FCV36	14,94	4,80	12,20	4,20	0,600	F	5542625	5542626
TCF180508GCV36	17,88	6,00	14,60	5,40	0,800	G	5542477	5542478
TCF210608HCV36	21,68	7,50	17,70	6,50	0,800	H	5542004	5542005

NOTE: For application-specific insert selection, please refer to the application data on page C73.
SSC = Pocket Seat Reference. To correspond with the SSC on the toolholder.

TC4 • Periphery Inserts • Aluminium • V36



- first choice
- alternate choice

P	■
M	■
K	■
N	■
S	■
H	■

catalogue number	D	D1	W	S	RR	SSC	WIN10PH
TCF070306CPV36	6,67	2,60	7,10	2,80	0,600	C	6372043
TCF080308DPV36	8,08	2,80	8,60	3,00	0,800	D	6372044
TCF100408EPV36	9,96	3,40	10,60	3,60	0,800	E	6372046
TCF120412FPV36	12,59	4,80	13,40	4,20	1,200	F	6348893

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

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING



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INDEXABLE MILLING

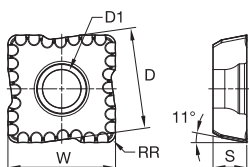
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

TC4 • Periphery Inserts • Long Chip Materials • V38



- first choice
- alternate choice

P	●	○
M	●	○
K	●	○
N	●	○
S	●	○
H	●	○

catalogue number	D	D1	W	S	RR	SSC	WU25CH	WU40PH
TCF040204APV38	4,14	2,10	4,40	2,00	0,400	A	6429425	6429425
TCF050204BPV38	5,07	2,40	5,40	2,40	0,400	B	6429426	6429427
TCF070306CPV38	6,67	2,60	7,10	2,80	0,600	C	6429466	6429428
TCF080308DPV38	8,08	2,80	8,60	3,00	0,800	D	6429429	6429430
TCF100408EPV38	9,96	3,40	10,60	3,60	0,800	E	6429451	6429452
TCF120412FPV38	12,59	4,80	13,40	4,20	1,200	F	6429453	6429454
TCF150512GPV38	15,13	6,00	16,10	5,40	1,200	G	6429455	6324381
TCF180614HPV38	18,04	7,50	19,20	6,50	1,400	H	6429456	6429457

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

INDEXABLE MILLING

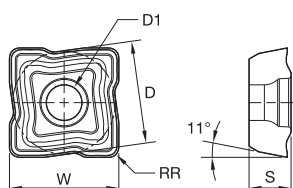
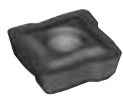
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

TC4 • Periphery Inserts • V36



● first choice
○ alternate choice

P	●	○
M	●	○
K	●	○
N	○	○
S	○	○
H	○	○

catalogue number	D	D1	W	S	RR	SSC	WU25CH	WU40PH
TCF040204APV36	4,14	2,10	4,40	2,00	0,400	A	5541844	5541845
TCF050204BPV36	5,07	2,40	5,40	2,40	0,400	B	5542621	5542622
TCF070306CPV36	6,67	2,60	7,10	2,80	0,600	C	5542649	5542650
TCF080308DPV36	8,08	2,80	8,60	3,00	0,800	D	5538601	5538602
TCF100408EPV36	9,96	3,40	10,60	3,60	0,800	E	5538611	5538612
TCF120412FPV36	12,59	4,80	13,40	4,20	1,200	F	5542640	5542641
TCF150512GPV36	15,13	6,00	16,10	5,40	1,200	G	5542603	5542605
TCF180614HPV36	18,04	7,50	19,20	6,50	1,400	H	5542009	5542020

NOTE: For application-specific insert selection, please refer to the application data on page C73.
SSC = Pocket Seat Reference. To correspond with the SSC on the toolholder.



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TC4 • Insert Selection Guide

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

NOTE: All speed conditions are for stable conditions. For unstable conditions, it is suggested to reduce starting speeds by 10%. For interrupted cuts, reduce by 20%.
 For 4 x D, it is highly recommended to start with feed and speed values reduced by 10% less than above data.
 For 5 x D, diameter range 12–23,99mm (insert sizes A to C), it is highly recommended to start with feed and speed values reduced by 20% less than above data.
 For 5 x D, diameter range 25–68mm (inserts sizes D to H), it is highly recommended to start with feed and speed values reduced by 15% less than above data.
 For 4 x D and 5 x D, it is recommended to reduce feed rate during entry and exit by 30–50%.

TC4 • Cutting Data • Metric

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

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

NOTE: All speed conditions are for stable conditions. For unstable conditions, it is suggested to reduce starting speeds by 10%. For interrupted cuts, reduce by 20%.
 For 4 x D, it is highly recommended to start with feed and speed values reduced by 10% less than above data.
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 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%.

TC4 • 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 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

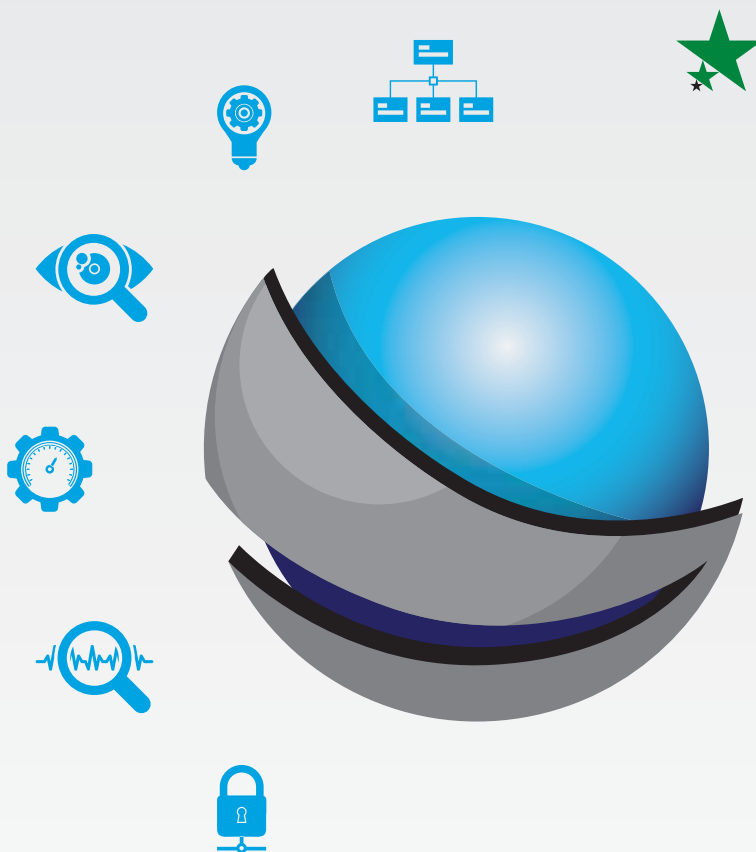
HOLEMAKING

TAPPING

TURNING



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WIDIA™

TAPPING

VARITAP™ • SPIRAL-POINT HSS-E

Pages D4–D6

The most efficient taps for through holes.

- Shoots chips ahead of the cutting action to reduce overloading and clogging in flutes, protecting the workpiece.
- Extended life in ferrous materials.

Materials:



VARITAP™ • SPIRAL-FLUTE HSS-E

Pages D7–D9

Spiral-flute taps are manufactured from high-speed steel (HSS) and are designed for blind-hole applications.

- Stronger, smoother threads.
- Displaces metal while producing no chips.
- Faster tapping speed to double production time.

Materials:





VARITAP™ • STRAIGHT-FLUTE PIPE TAP HSS-E

Page D10

Materials:



Manufactured from high-speed steel and available with coolant holes.

- For through- or blind-hole tapping.
- Can be used in general machinery or CNC tapping applications.
- Store chips in their flutes during threading, which protects the workpiece.

TO SEE ALL PRODUCT LINES, VISIT OUR DIGITAL RESOURCES

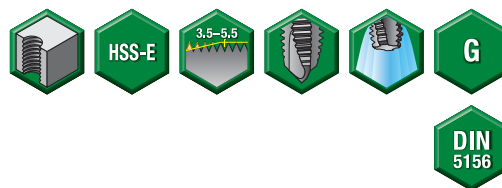
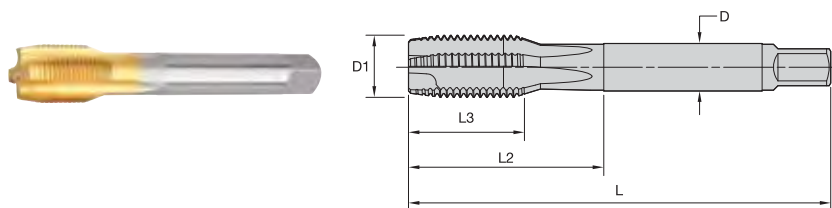


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VT-SPO • Form B Plug Chamfer • DIN EN ISO 228



● first choice
○ alternate choice

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N	<input type="radio"/>	<input type="radio"/>
S	<input type="radio"/>	<input type="radio"/>
H	<input type="radio"/>	<input type="radio"/>

catalogue number	D1 TPI	L	L2	L3	D	number of flutes	thread type	WU41EG	WP49EG
VTSP08605	1/8 - 28	90	35	15	7,0	3	G	6058785	6058784
VTSP08606	1/4 - 19	100	44	22	11,0	3	G	6058787	6058786
VTSP08607	3/8 - 19	100	47	22	12,0	4	G	6058790	6058788
VTSP08608	1/2 - 14	125	55	25	16,0	4	G	6058792	6058791
VTSP08609	5/8 - 14	125	61	25	18,0	4	G	6058794	6058793
VTSP08610	3/4 - 14	140	60	25	20,0	4	G	6058797	6058796
VTSP08611	7/8 - 14	150	68	28	22,0	4	G	6058799	6058798
VTSP08612	1 - 11	160	68	30	25,0	5	G	6058811	6058800

INDEXABLE MILLING

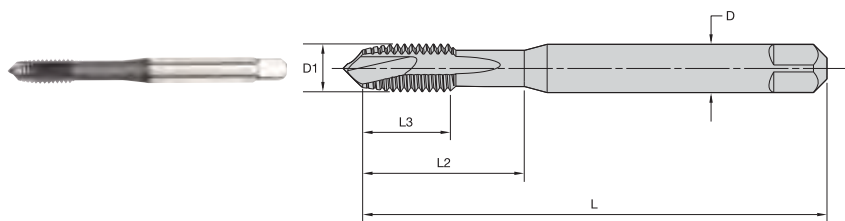
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

VT-SPO • Form B Plug Chamfer • DIN 371 and 376



- first choice
- alternate choice

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N	<input type="radio"/>	<input type="radio"/>
S	<input type="radio"/>	<input type="radio"/>
H	<input type="radio"/>	<input type="radio"/>

catalogue number	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit	WP49EG	WU41EG
VTSP06008	6 - 32	56	9	20	4,0	2	DIN 371	2B	5387708	5472636
VTSP06010	6 - 40	56	9	20	4,0	2	DIN 371	2B	5387760	5472638
VTSP06011	8 - 32	63	11	21	4,5	2	DIN 371	2B	5387761	5472639
VTSP06013	10 - 24	70	12	25	6,0	2	DIN 371	2B	5387763	5472641
VTSP06014	10 - 32	70	12	25	6,0	2	DIN 371	2B	5387764	5472644
VTSP06016	1/4 - 20	80	15	30	7,0	3	DIN 371	2B	5387766	5472646
VTSP06017	1/4 - 28	80	15	30	7,0	3	DIN 371	2B	5387767	5472647
VTSP06019	5/16 - 18	90	15	35	8,0	3	DIN 371	2B	5387769	5472649
VTSP06020	5/16 - 24	90	15	35	8,0	3	DIN 371	2B	5387770	5472650
VTSP06022	3/8 - 16	100	19	39	10,0	3	DIN 371	2B	5387772	5472652
VTSP06023	3/8 - 24	100	19	39	10,0	3	DIN 371	2B	5387773	5472653
VTSP06025	7/16 - 14	100	18	41	8,0	3	DIN 376	2B	5387776	5472655
VTSP06026	7/16 - 20	100	18	41	8,0	3	DIN 376	2B	5387777	5472656
VTSP06028	1/2 - 13	110	23	47	9,0	3	DIN 376	2B	5387779	5472658
VTSP06029	1/2 - 20	110	23	47	9,0	3	DIN 376	2B	5387780	5472659
VTSP06031	9/16 - 12	110	25	53	11,0	3	DIN 376	2B	5387782	5472661
VTSP06032	9/16 - 18	110	25	53	11,0	3	DIN 376	2B	5387783	5472662
VTSP06033	5/8 - 11	110	24	51	12,0	3	DIN 376	2B	5387784	5472663
VTSP06034	5/8 - 18	110	24	51	12,0	3	DIN 376	2B	5387785	5472664
VTSP06035	3/4 - 10	140	30	64	16,0	3	DIN 376	2B	5387786	5472665
VTSP06036	3/4 - 16	140	30	64	16,0	3	DIN 376	2B	5387787	5472666

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

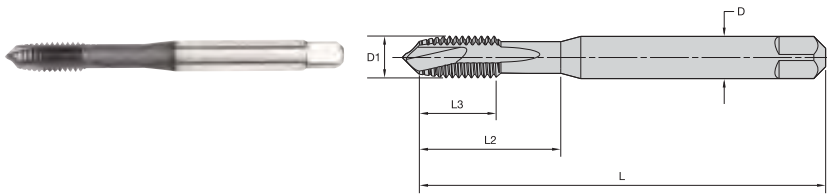
TAPPING

TURNING



THE ALL-STAR PROGRAMME FEATURES ONLY THE MOST POPULAR PLATFORMS, GRADES, AND SIZES. FOR THE COMPLETE OFFERING, VISIT WIDIA NOVO™ OR WIDIA.COM.

VT-SPO • Form B Plug Chamfer • Metric DIN 371, 374, and 376



● first choice
○ alternate choice

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catalogue number	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit	WP42EG	WU41EG	WP49EG
VTSP06510	M3 X 0,5	56	8	18	3,5	2	DIN 371	6H	-	5366666	5366668
VTSP06513	M4 X 0,7	63	11	21	4,5	2	DIN 371	6H	5366676	5366675	5366677
VTSP06515	M5 X 0,8	70	12	25	6,0	2	DIN 371	6H	5366681	5366680	5366682
VTSP06517	M6 X 1	80	12	30	6,0	3	DIN 371	6H	5366687	5366686	5366688
VTSP06521	M8 X 1,25	90	15	35	8,0	3	DIN 371	6H	5366700	5366698	5366701
VTSP06555	M10 X 1,25	100	18	39	7,0	3	DIN 374	6H	-	-	5368622
VTSP06523	M10 X 1,5	100	18	39	10,0	3	DIN 371	6H	5366706	5366705	5366707
VTSP06558	M12 X 1,25	100	21	39	9,0	3	DIN 374	6H	-	-	5368628
VTSP06559	M12 X 1,5	100	21	39	9,0	3	DIN 374	6H	-	-	5368630
VTSP06531	M12 X 1,75	110	21	44	9,0	3	DIN 376	6H	5368553	5368552	5368554
VTSP06561	M14 X 1,25	100	21	47	11,0	3	DIN 374	6H	-	-	5368634
VTSP06562	M14 X 1,5	100	21	47	11,0	3	DIN 374	6H	-	-	5368636
VTSP06533	M14 X 2	110	24	52	11,0	3	DIN 376	6H	-	5368557	5368559
VTSP06564	M16 X 1,5	100	21	46	12,0	3	DIN 374	6H	-	-	5368640
VTSP06535	M16 X 2	110	24	51	12,0	3	DIN 376	6H	-	5368562	5368565
VTSP06566	M18 X 1,5	110	21	50	14,0	3	DIN 374	6H	-	-	5368683
VTSP06537	M18 X 2,5	125	30	58	14,0	3	DIN 376	6H	-	5368568	5368570
VTSP06538	M20 X 2,5	140	30	64	16,0	3	DIN 376	6H	-	5368572	5368574

INDEXABLE MILLING

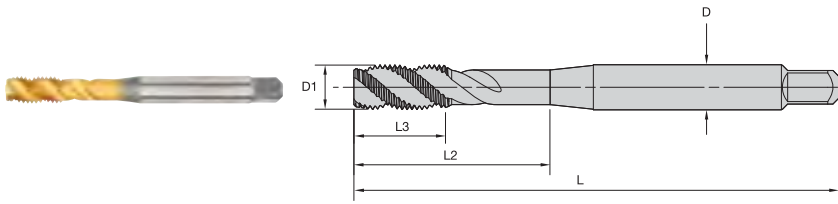
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

VT-SFT TC • Form C Semi-Bottoming Chamfer • Metric DIN 371, 374, and 376



● first choice
○ alternate choice

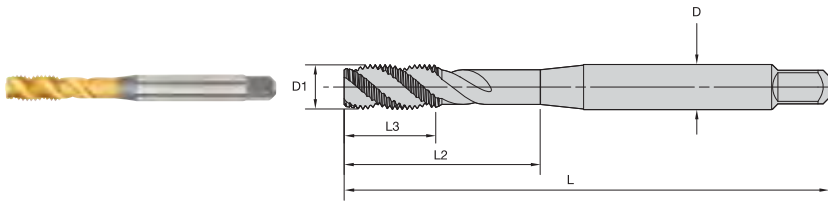
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catalogue number	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit	WU41EG	WP49EG
VTSFT-TC6508	M3 X 0,5	56	5	19	3,5	3	DIN 371	6H	6172438	6172436
VTSFT-TC6510	M4 X 0,7	63	7	21	4,5	3	DIN 371	6H	6172442	6172440
VTSFT-TC6511	M5 X 0,8	70	8	26	6,0	3	DIN 371	6H	6172446	6172444
VTSFT-TC6512	M5 X 0,8	70	8	27	3,5	3	DIN 376	6H	6172450	6172448
VTSFT-TC6514	M6 X 1	80	10	30	6,0	3	DIN 371	6H	6172468	6172466
VTSFT-TC6515	M6 X 1	80	10	34	4,5	3	DIN 376	6H	6172470	6172469
VTSFT-TC6516	M8 X 0,75	90	13	37	6,0	3	DIN 374	6H	6172482	-
VTSFT-TC6518	M8 X 1,25	90	13	37	8,0	3	DIN 371	6H	6172486	6172485
VTSFT-TC6519	M8 X 1,25	90	13	37	6,0	3	DIN 376	6H	6172488	6172487
VTSFT-TC6522	M10 X 1,25	100	15	44	7,0	3	DIN 374	6H	6172494	6172493
VTSFT-TC6550	M10 X 1,5	100	15	41	10,0	3	DIN 371	6H	6172496	6172495
VTSFT-TC6524	M10 X 1,5	100	15	44	7,0	3	DIN 376	6H	6172498	6172497
VTSFT-TC6526	M12 X 1,25	100	13	50	9,0	3	DIN 374	6H	6172502	6172501
VTSFT-TC6527	M12 X 1,5	100	13	50	9,0	3	DIN 374	6H	6172504	6172503
VTSFT-TC6528	M12 X 1,75	110	18	55	9,0	3	DIN 376	6H	6172506	6172505
VTSFT-TC6530	M14 X 1,25	100	15	41	11,0	4	DIN 374	6H	6172510	6172509
VTSFT-TC6536	M14 X 1,5	100	15	41	11,0	4	DIN 374	6H	6172512	6172511
VTSFT-TC6532	M14 X 2	110	20	50	11,0	3	DIN 376	6H	6172672	6172671
VTSFT-TC6534	M16 X 1,5	100	15	45	12,0	4	DIN 374	6H	6172674	6172673
VTSFT-TC6564	M16 X 2	110	20	55	12,0	4	DIN 376	6H	6172676	6172675
VTSFT-TC6537	M18 X 1,5	110	17	55	14,0	4	DIN 374	6H	6172678	6172677
VTSFT-TC6538	M18 X 2	125	25	61	14,0	4	DIN 374	6H	6172680	-
VTSFT-TC6539	M18 X 2,5	125	25	61	14,0	4	DIN 376	6H	6172692	6172691
VTSFT-TC6541	M20 X 1,5	125	17	56	16,0	4	DIN 374	6H	6172694	6172693
VTSFT-TC6543	M20 X 2,5	140	25	65	16,0	4	DIN 376	6H	6172698	6172697
VTSFT-TC6549	M24 X 3	160	30	77	18,0	4	DIN 376	6H	-	6172719



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VT-SFT TC • Form C Semi-Bottoming Chamfer • DIN 371, 374, and 376



● first choice
○ alternate choice

P	●	○
M	○	○
K	○	○
N	○	
S		
H		

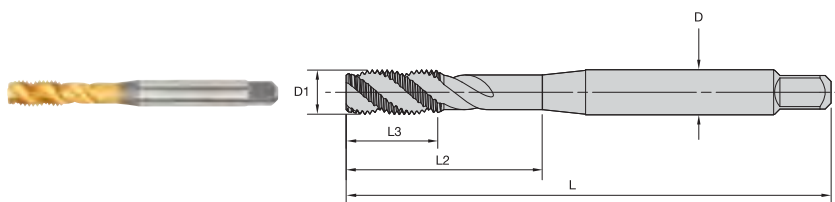
catalogue number	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit	WU41EG	WP49EG
VTSFT-TC6008	6 - 32	56	7	21	4,0	3	DIN 371	2B	6172748	6172747
VTSFT-TC6009	6 - 40	56	7	21	4,0	3	DIN 371	2B	6172750	6172749
VTSFT-TC6010	8 - 32	63	7	21	4,5	3	DIN 371	2B	6172782	6172781
VTSFT-TC6011	8 - 36	63	7	21	4,5	3	DIN 371	2B	6172784	6172783
VTSFT-TC6012	10 - 24	70	8	25	6,0	3	DIN 371	2B	6172786	6172785
VTSFT-TC6013	10 - 32	70	8	25	6,0	3	DIN 371	2B	6172788	6172787
VTSFT-TC6016	1/4 - 20	80	10	29	7,0	3	DIN 371	2B	6172794	6172793
VTSFT-TC6018	1/4 - 28	80	10	29	7,0	3	DIN 371	2B	6172798	6172797
VTSFT-TC6052	5/16 - 18	90	13	37	8,0	3	DIN 371	2B	6172802	6172801
VTSFT-TC6054	5/16 - 24	90	13	37	6,0	3	DIN 374	2B	6172806	6172805
VTSFT-TC6056	3/8 - 16	100	15	42	10,0	3	DIN 371	2B	6172808	6172807
VTSFT-TC6058	3/8 - 24	90	15	40	7,0	3	DIN 374	2B	6172812	6172811
VTSFT-TC6060	7/16 - 14	100	15	47	8,0	3	DIN 376	2B	6172814	6172813
VTSFT-TC6027	7/16 - 20	100	15	47	8,0	3	DIN 374	2B	6172816	6172815
VTSFT-TC6062	1/2 - 13	110	18	50	9,0	3	DIN 376	2B	6172818	6172817
VTSFT-TC6029	1/2 - 20	100	13	44	9,0	3	DIN 374	2B	6172820	6172819
VTSFT-TC6030	9/16 - 12	110	20	55	11,0	4	DIN 376	2B	6172837	6172836
VTSFT-TC6031	9/16 - 18	100	15	44	11,0	4	DIN 374	2B	6172839	6172838
VTSFT-TC6032	5/8 - 11	110	20	55	12,0	4	DIN 376	2B	6172911	6172840
VTSFT-TC6033	5/8 - 18	100	15	45	12,0	4	DIN 374	2B	6172913	6172912
VTSFT-TC6034	3/4 - 10	125	25	65	14,0	4	DIN 376	2B	6172915	6172914
VTSFT-TC6035	3/4 - 16	110	17	55	14,0	4	DIN 374	2B	6172917	6172916



THE ALL-STAR PROGRAMME FEATURES ONLY THE MOST POPULAR PLATFORMS, GRADES, AND SIZES. FOR THE COMPLETE OFFERING, VISIT WIDIA NOVO™ OR WIDIA.COM.

INDEXABLE MILLING
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TURNING

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



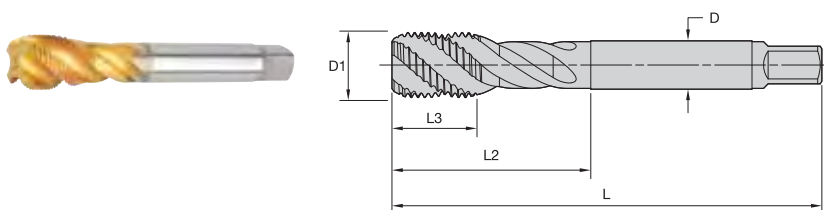
● first choice
○ alternate choice

P	●	○
M	○	○
K	○	○
N	○	○
S	○	○
H	○	○

catalogue number	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit	WU41EG	WP49EG
VTSFT6511	M3 X 0,5	56	8	18	3,5	2	DIN 371	6H	-	5368724
VTSFT6514	M4 X 0,7	63	11	21	4,5	3	DIN 371	6H	-	5368732
VTSFT6516	M5 X 0,8	70	12	25	6,0	3	DIN 371	6H	-	5368737
VTSFT6518	M6 X 1	80	12	30	6,0	3	DIN 371	6H	-	5368742
VTSFT6521	M8 X 1,25	90	15	35	8,0	3	DIN 371	6H	5368748	5368750
VTSFT6523	M10 X 1,5	100	18	39	10,0	3	DIN 371	6H	5368753	5368755
VTSFT6556	M12 X 1,25	100	21	39	9,0	3	DIN 374	6H	-	5402199
VTSFT6557	M12 X 1,5	100	21	39	9,0	3	DIN 374	6H	-	5402202
VTSFT6531	M12 X 1,75	110	21	44	9,0	3	DIN 376	6H	5402259	5402261
VTSFT6560	M14 X 1,5	100	21	47	11,0	3	DIN 374	6H	-	5402207
VTSFT6533	M14 X 2	110	24	52	11,0	3	DIN 376	6H	5402264	5402266
VTSFT6562	M16 X 1,5	100	21	46	12,0	3	DIN 374	6H	-	5402210
VTSFT6535	M16 X 2	110	24	51	12,0	3	DIN 376	6H	5402269	5402270
VTSFT6564	M18 X 1,5	110	21	50	14,0	4	DIN 374	6H	-	5402214
VTSFT6538	M20 X 2,5	140	30	64	16,0	4	DIN 376	6H	-	5402277

NOTE: Suggested for use in rigid and synchronous holders.

VT-SFT • Form C Semi-Bottoming Chamfer • DIN EN ISO 228



● first choice
○ alternate choice

P	●	○
M	○	○
K	○	○
N	○	○
S	○	○
H	○	○

catalogue number	D1 TPI	L	L2	L3	D	number of flutes	thread type	WU41EG	WP49EG
VTSFT8605	1/8 - 28	90	35	15	7,0	3	G	6058815	6058814
VTSFT8606	1/4 - 19	100	44	15	11,0	3	G	6058817	6058816
VTSFT8607	3/8 - 19	100	47	15	12,0	4	G	6058819	6058818
VTSFT8608	1/2 - 14	125	55	18	16,0	4	G	6058871	6058820
VTSFT8610	3/4 - 14	140	65	20	20,0	4	G	6058875	6058874
VTSFT8612	1 - 11	160	74	24	25,0	5	G	6058879	-

INDEXABLE MILLING

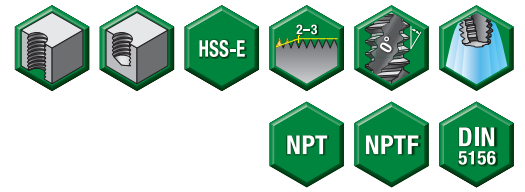
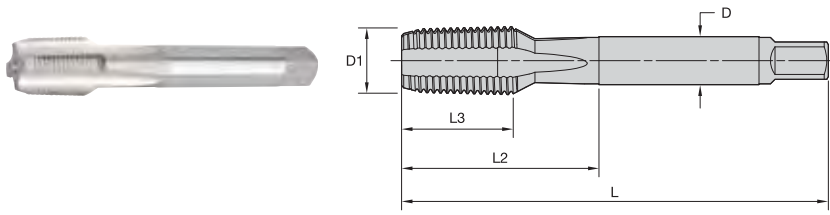
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VT-STR • Form C Semi-Bottoming Chamfer • NPT and NPTF



- first choice
- alternate choice



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

catalogue number	D1 TPI	L	L2	L3	D	number of flutes	thread type	WU40EG
VTSTR8301	1/16 - 27	90	35	13	6,0	3	NPT	6058953
VTSTR8302	1/8 - 27	90	36	13	7,0	4	NPT	6058954
VTSTR8303	1/4 - 18	100	39	20	11,0	4	NPT	6058955
VTSTR8307	1 - 11.5	160	71	32	25,0	5	NPT	6058959



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Application Data • 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, WU40EG	10	14	17	VT-SFT	WP49EG, WU40EG	6	9	13
	P2	VT-SPO	WP42EG, WU41EG	16	21	27	VT-SFT	WP42EG, WU41EG	11	15	22
		VT-SPO	WP49EG, WU40EG	8	11	13	VT-SFT	WP49EG, WU40EG	4	6	9
	P3	VT-SPO	WP42EG, WU41EG	9	12	15	VT-SFT	WP42EG, WU41EG	6	9	13
		VT-SPO	WP49EG, WU40EG	5	6	8	VT-SFT	WP49EG, WU40EG	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, WU40EG	5	6	8	VT-SFT	WP49EG, WU40EG	2	3	4
		VT-SFT NPT	WU41EG	5	6	8	VT-SFT NPT	WU41EG	5	6	8
	M3	VT-SFT NPT	WP49EG, WU40EG	2	3	4	VT-SFT NPT	WP49EG, WU40EG	2	3	4
		VT-SPO	WP42EG, WU41EG	7	9	11	VT-SFT	WP42EG, WU41EG	4	6	9
		VT-SPO	WP49EG, WU40EG	3	5	6	VT-SFT	WP49EG, WU40EG	2	3	4
K1	VT-STR NPT	WU41EG	10	14	17	VT-STR NPT	WU41EG	10	14	17	
	VT-STR NPT	WU40EG	6	8	10	VT-STR NPT	WU40EG	6	8	10	
K2	VT-SPO	WP42EG, WU41EG	21	27	34	VT-SFT	WP42EG, WU41EG	13	18	26	
	VT-SPO	WP49EG, WU40EG	10	14	17	VT-SFT	WP49EG, WU40EG	6	9	13	
N	N1	VT-SPO	WP42EG, WU41EG	34	46	57	VT-SFT	WP42EG, WU41EG	23	34	48
		VT-SPO	WU40EG	17	23	29	VT-SFT	WU40EG	11	15	22
	N2	VT-SPO	WP42EG, WU41EG	30	40	50	VT-SFT	WP42EG, WU41EG	19	27	39
		VT-SPO	WU40EG	15	20	25	VT-SFT	WU40EG	11	15	22
	N4	VT-SPO	WP42EG, WU41EG	7	9	11	VT-SFT	WP42EG, WU41EG	4	6	9
VT-SPO		WU40EG	3	5	6	VT-SFT	WU40EG	2	3	4	

* Grades: WP42EG = TiCN
 WU41EG = TiN
 WP49EG = oxide
 WU40EG = bright



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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.

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

¹Tap 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



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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

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TDS452
TDS453

GT20
GT30



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TDS412
TDS413

GT40
GT41



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GT22
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TDS452
TDS453

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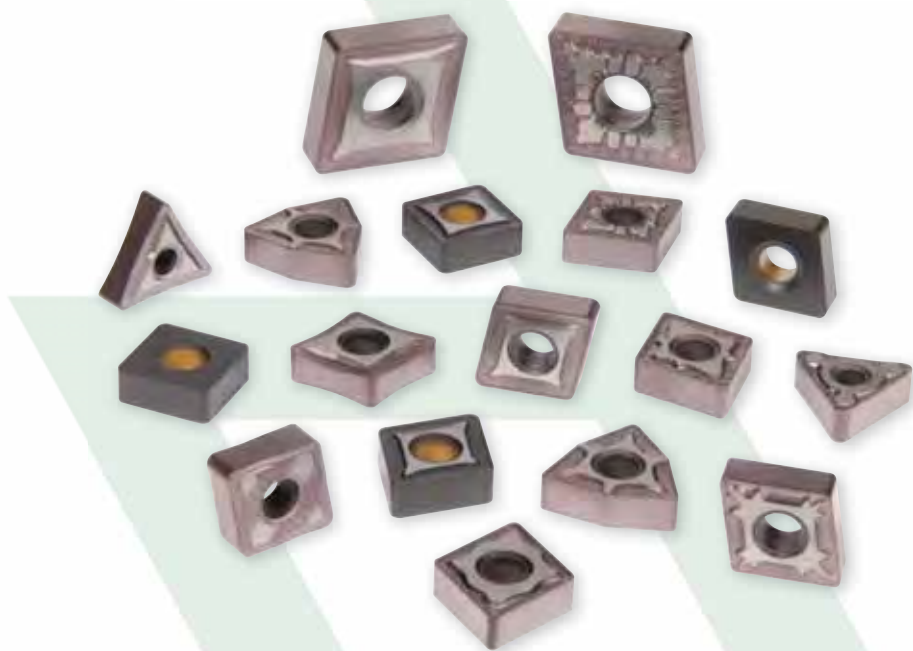
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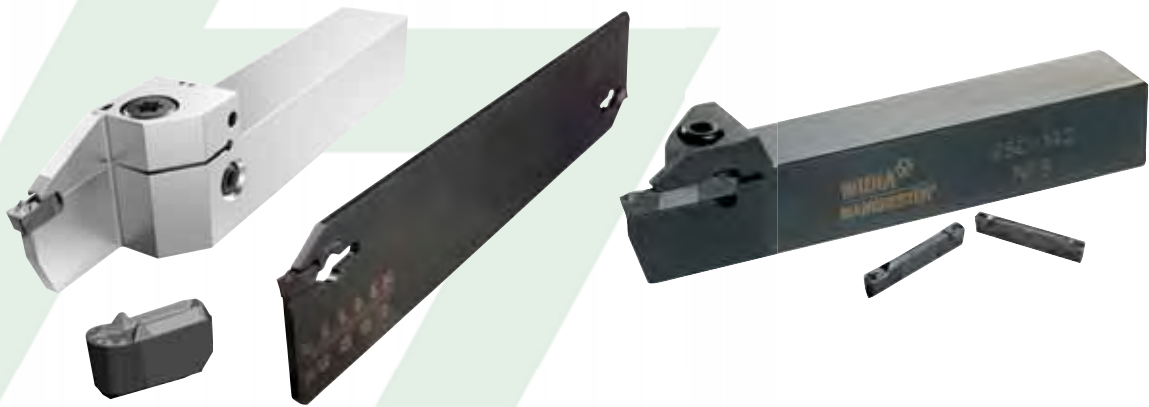


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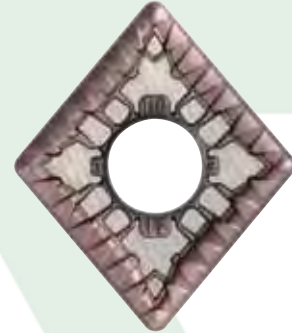
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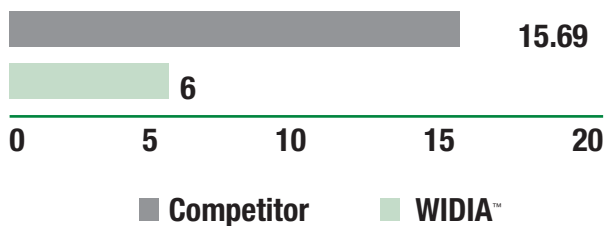
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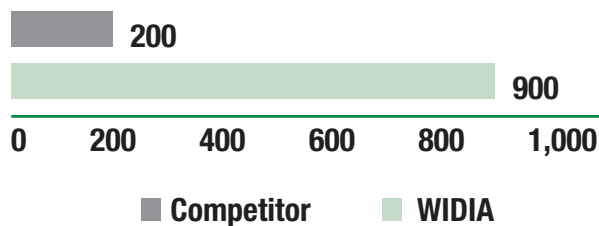
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Engine Block Success Story:
Victory Grade WK15CT

Time per piece (min)



Pieces per edge



	COMPETITOR	WIDIA
Tool	—	CNMG434RH
Grade	—	WP15CT
Cutting Speed Vc	60.96 m/min (200 sfm)	39.62 m/min (130 sfm)
Feet per tooth f	0.102 mm (0.004")	0.203 mm (0.008")
Depth of cut ap	1.016 mm (0.04")	0.889 mm (0.035")
Length of cut L	101.6 mm (4")	
Number of passes	4	2
Coolant	Dry	
Time per piece	15.69	6.02

	COMPETITOR	WIDIA
Tool	—	SCMT3252
Grade	—	WK15CT
Cutting Speed Vc	152.4 m/min (500 sfm)	
Feet per tooth f	0.254 mm (0.01")	
Depth of cut ap	1.905 mm (0.075")	
Length of cut L	50.8 mm (2")	
Number of passes	1	
Coolant	External Cutting Oil	
Time per piece	200	900

Victory™ Turning

Victory turning inserts provide excellent tool life with superior surface finish in rough and finish turning of all types of workpiece materials.

Materials:



- Reduced cycle times: high speed and feed capabilities.
- Long tool life: new multilayer coating provides better wear resistance.
- Proven seating: smooth and secure seating surface.
- Specifically engineered multilayer coating and chip groove geometries provide high-speed capability with effective chipbreaking for finishing to roughing operations.

Post-coat treatment

- Improves edge toughness.
- Long, predictable tool life.
- Reduces depth-of-cut notching.
- Wide range of applications.

Improved edge toughness

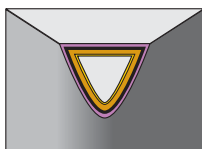
- Provides smooth outer surface to reduce forces, friction, and workpiece sticking.

New geometry identification system.

Post-coat grinding

- Provides secure seating surface.

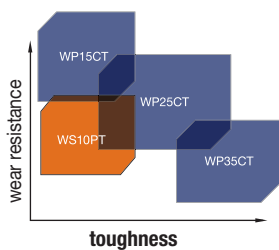
MT-CVD/CVD-TiN-TiCN-Al₂O₃-ZrCN



Alpha alumina layer

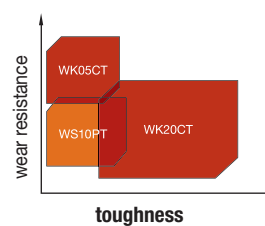
- Provides coating integrity at elevated speeds.
- Higher productivity and dependability at high cutting temperatures.

Victory Toughness/Wear Resistance



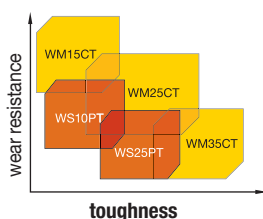
WP Grades for Steel

- Three grades and seven primary geometries for use in roughing to finishing operations.
- Increase cutting speed and/or feed rate to gain productivity.



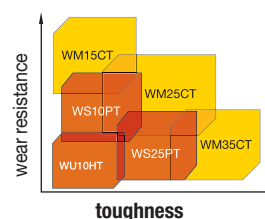
WK Grades for Cast Iron

- Two grades to cover all of your cast iron turning operations.
- Very good balance of wear resistance and toughness for long predictable tool life. Flat top geometry for machining cast iron. For finishing to roughing applications.
- New grade WK15CT.



WM Grades for Stainless Steel

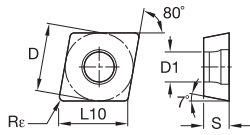
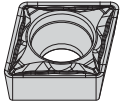
- Three grades across 12 geometries for use in roughing to finishing operations.
- Increase cutting speed and/or feed rate by up to 30% over similar competitive grades.



WS Grades for High-Temp Alloys

- Two grades for use in roughing to finishing operations.
- Very good wear resistance for longer tool life.
- One uncoated grade for use in titanium.

CCMT-FP



- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WM15CT	WM25CT	WK20CT	WS10PT	WS25PT
CCMT060202FP	6,35	6,45	2,38	0,2	2,80	● 4169857	○ 4170140	○	○ 4168778	○	○	○
CCMT060204FP	6,35	6,45	2,38	0,4	2,80	○ 4169858	○ 4170141	○	○ 4168779	○ 4170032	○ 5684337	○ 5684340
CCMT060208FP	6,35	6,45	2,38	0,8	2,80	○	○ 4170142	○	○ 4168780	○	○	○
CCMT09T302FP	9,53	9,67	3,97	0,2	4,40	○	○	○	○ 4168781	○	○	○
CCMT09T304FP	9,53	9,67	3,97	0,4	4,40	○ 4169861	○ 4170294	○	○ 4168782	○ 4170084	○ 5684341	○ 5684343
CCMT09T308FP	9,53	9,67	3,97	0,8	4,40	○ 4169861	○ 4170295	○ 4168741	○	○ 4170085	○	○ 5684338
CCMT120404FP	12,70	12,90	4,76	0,4	5,50	○	○ 4170296	○	○ 4168784	○	○	○
CCMT120408FP	12,70	12,90	4,76	0,8	5,50	○	○ 4170297	○	○	○	○	○

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING



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INDEXABLE MILLING

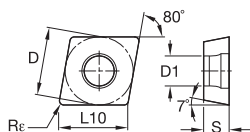
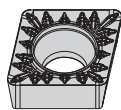
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

CCMT-MP



- first choice
- alternate choice

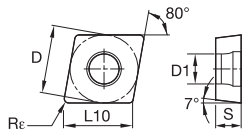
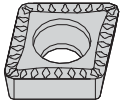
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M	●	○	○	○	○
K	○	○	○	○	○
N	○	○	○	○	○
S	○	○	○	○	○
H	○	○	○	○	○

ISO catalogue number	D	L10	S	Re	D1		WP15CT	WP25CT	WM25CT	WK20CT	WS10PT
CCMT060204MP	6,35	6,45	2,38	0,4	2,80		4170197	4170217	4168906	4170237	5684351
CCMT09T304MP	9,53	9,67	3,97	0,4	4,40		4170198	4170218	4168907	4170237	5684351
CCMT09T308MP	9,53	9,67	3,97	0,8	4,40		4170199	4170219	4168908	4170239	5684351
CCMT09T312MP	9,53	9,67	3,97	1,2	4,40		4170200	4170221	4168909	4170241	5684351
CCMT120408MP	12,70	12,90	4,76	0,8	5,50		4170200	4170221	4168909	4170241	5684351
CCMT120412MP	12,70	12,90	4,76	1,2	5,50		4170222	4170241	4170241	4170240	5684351



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CCMT-MU



- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Re	D1	WP15CT	WP25CT	WP35CT	WM25CT	WK20CT	WS10PT	WS25PT
CCMT090304MU	9,53	9,67	3,18	0,4	4,40	●	○	○	○	○	○	○
CCMT090308MU	9,53	9,67	3,18	0,8	4,40	○	○	○	○	○	○	○
CCMT09T304MU	9,53	9,67	3,97	0,4	4,40	○	○	○	○	○	○	○
CCMT09T308MU	9,53	9,67	3,97	0,8	4,40	○	○	○	○	○	○	○
CCMT120404MU	12,70	12,90	4,76	0,4	5,50	○	○	○	○	○	○	○
CCMT120408MU	12,70	12,90	4,76	0,8	5,50	○	○	○	○	○	○	○

- ★ INDEXABLE MILLING
- ★ SOLID END MILLING
- ★ HOLEMAKING
- ★ TAPPING
- ★ TURNING

INDEXABLE MILLING

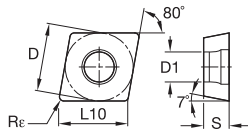
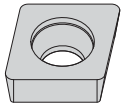
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

CCMW

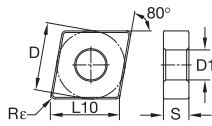
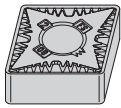


- first choice
- alternate choice

P	●	○
M	●	○
K	●	○
N	●	○
S	●	○
H	●	○

ISO catalogue number	D	L10	S	Rε	D1	WS10PT	WS25PT
CCMW090304	9,53	9,67	3,18	0,4	4,40	4170369	4170370
CCMW090308	9,53	9,67	3,18	0,8	4,40	4170371	
CCMW09T304	9,53	9,67	3,97	0,4	4,40		

CNGG-FS



- first choice
- alternate choice

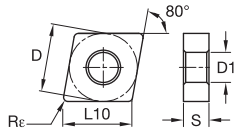
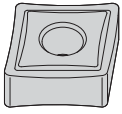
P	●	○
M	●	○
K	●	○
N	●	○
S	●	○
H	●	○

ISO catalogue number	D	L10	S	Rε	D1	WS10PT	WS25PT
CNGG120401FS	12,70	12,90	4,76	0,1	5,16	5548576	
CNGG120402FS	12,70	12,90	4,76	0,2	5,16	5548575	
CNGG120404FS	12,70	12,90	4,76	0,4	5,16	5548577	5538204
CNGG120408FS	12,70	12,90	4,76	0,8	5,16	5548578	



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CNGP



- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Re	D1	WS10PT	WU10HT
CNGP120401	12,70	12,90	4,76	0,1	5,16	5549137	-
CNGP120404	12,70	12,90	4,76	0,4	5,16	5549139	5549207
CNGP120408	12,70	12,90	4,76	0,8	5,16	5549190	5549208

★ INDEXABLE MILLING

★ SOLID END MILLING

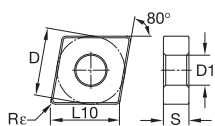
★ HOLEMAKING

★ TAPPING

★ TURNING

INDEXABLE MILLING

CNMA



- first choice
- alternate choice

P	●	○
M	●	○
K	●	○
N	●	○
S	●	○
H	●	○

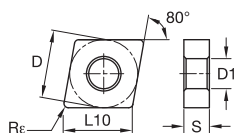
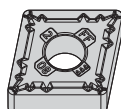
ISO catalogue number	D	L10	S	Re	D1	WK05CT	WK20CT
CNMA120408	12,70	12,90	4,76	0,8	5,16	4171596	4171864
CNMA120412	12,70	12,90	4,76	1,2	5,16	4171597	4171865
CNMA120416	12,70	12,90	4,76	1,6	5,16	4171866	4171866
CNMA160612	15,88	16,12	6,35	1,2	6,35	4171868	4171868
CNMA160616	15,88	16,12	6,35	1,6	6,35	4171869	4171869
CNMA190612	19,05	19,34	6,35	1,2	7,93	4171871	4171871
CNMA190616	19,05	19,34	6,35	1,6	7,93	4171872	4171872

SOLID END MILLING

HOLEMAKING

TAPPING

CNMG-FF



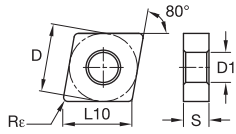
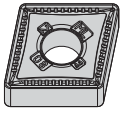
- first choice
- alternate choice

P	●	○
M	●	○
K	●	○
N	●	○
S	●	○
H	●	○

ISO catalogue number	D	L10	S	Re	D1	WP15CT
CNMG120408FF	12,70	12,90	4,76	0,8	5,16	4171026

TURNING

CNMG-ML



- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Re	D1	WP15CT	WP25CT	WK05CT	WK20CT
CNMG120404ML	12,70	12,90	4,76	0,4	5,16	4171059	4170458	-	4171390
CNMG120408ML	12,70	12,90	4,76	0,8	5,16	4171060	4170459	4171658	4171391
CNMG120412ML	12,70	12,90	4,76	1,2	5,16	-	4170460	-	4171392

HOLDERS AND CLAMP STYLES



D-Style Clamping

- Used for negative style inserts.
- Clamp assembly contains clamp, screw, and retaining ring.
- Quick insert indexing.
- Ensures insert repeatability and seating.
- Reduced chatter and extended tool life.

P-Style Clamping

- Lever-type clamping system for negative indexable inserts.
- No interference to chip flow.
- Fast insert changes.

P-style available in metric sizes only.

S-Style Clamping

- Screw clamping system for positive indexable inserts.
- Compact design for high reliability and cost efficiency.
- Carbide shim for additional tool protection.

C-Style Clamping

- Height-adjustable clamp permits use of additional chipbreakers.
- Universal clamping system for positive and negative flat top inserts.
- Robust engineering makes it easy to handle.
- Carbide shim for extra tool protection.

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INDEXABLE MILLING

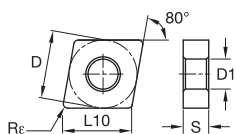
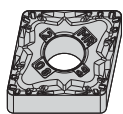
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

CNMG-MR



- first choice
- alternate choice

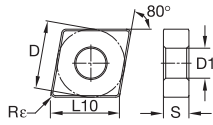
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M	●	●	●	○
K	○	○	○	○
N	○	○	○	○
S	○	○	○	○
H	○	○	○	○

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM25CT
CNMG120404MR	12,70	12,90	4,76	0,4	5,16	-	4170546	4170043	-
CNMG120408MR	12,70	12,90	4,76	0,8	5,16	4171131	4170547	4170044	4172955
CNMG120412MR	12,70	12,90	4,76	1,2	5,16	4171132	4170548	4170045	-
CNMG160608MR	15,88	16,12	6,35	0,8	6,35	-	4170549	-	-
CNMG160612MR	15,88	16,12	6,35	1,2	6,35	-	4170550	-	-
CNMG160616MR	15,88	16,12	6,35	1,6	6,35	4171136	-	-	-
CNMG190612MR	19,05	19,34	6,35	1,2	7,93	-	4170552	-	4172961
CNMG190616MR	19,05	19,34	6,35	1,6	7,93	-	4170563	-	4172962



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CNMG-MS



- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Rε	D1	WS10PT	WS25PT	WU10HT
CNMG120404MS	12,70	12,90	4,76	0,4	5,16	5908742	5908743	○
CNMG120408MS	12,70	12,90	4,76	0,8	5,16	5908745	5908746	○
CNMG120412MS	12,70	12,90	4,76	1,2	5,16	5908748	5908749	○
CNMG160608MS	15,88	16,12	6,35	0,8	6,35	5908754	5908755	○
CNMG160612MS	15,88	16,12	6,35	1,2	6,35	5908757	5908758	○
CNMG190608MS	19,05	19,34	6,35	0,8	7,93	○	5908761	5908762
CNMG190612MS	19,05	19,34	6,35	1,2	7,92	○	5908764	○

- ★ INDEXABLE MILLING
- ★ SOLID END MILLING
- ★ HOLEMAKING
- ★ TAPPING
- ★ TURNING

INDEXABLE MILLING

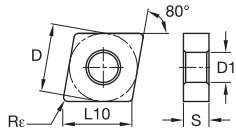
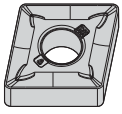
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

CNMG-RH



- first choice
- alternate choice

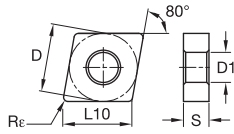
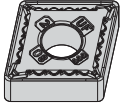
P	●	●	●	○	○
M	●	○	○	○	○
K	○	○	○	○	○
N	○	○	○	○	○
S	○	○	○	○	○
H	○	○	○	○	○

ISO catalogue number	D	L10	S	Re	D1	WP15CT	WP25CT	WP35CT	WM25CT	WK20CT
CNMG120408RH	12,70	12,90	4,76	0,8	5,16	4170979	4171504	5684356	4173035	4171903
CNMG120412RH	12,70	12,90	4,76	1,2	5,16	4170980	4171505	4171698	4173036	4171904
CNMG120416RH	12,70	12,90	4,76	1,6	5,16	4170981	-	4171699	-	4171905
CNMG160608RH	15,88	16,12	6,35	0,8	6,35	4170982	4171507	4171700	4173038	4171906
CNMG160612RH	15,88	16,12	6,35	1,2	6,35	4170983	4171508	4171701	-	4171907
CNMG160616RH	15,88	16,12	6,35	1,6	6,35	4170984	4171509	4171702	-	4171908
CNMG190608RH	19,05	19,34	6,35	0,8	7,93	-	4171510	4171703	4173041	-
CNMG190612RH	19,05	19,34	6,35	1,2	7,93	4170986	4171511	4171704	4173042	4171910
CNMG190616RH	19,05	19,34	6,35	1,6	7,93	-	4171512	4171705	4173043	4171911
CNMG190624RH	19,05	19,34	6,35	2,4	7,93	4171523	-	-	-	-



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CNMG-UF

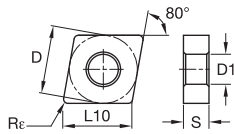
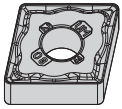


- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Re	D1	WM15CT	WS10PT
CNMG120404UF	12,70	12,90	4,76	0,4	5,16	4169353	5645600
CNMG120408UF	12,70	12,90	4,76	0,8	5,16	4169354	5645588

CNMG-UM

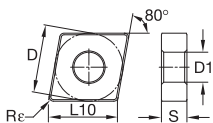
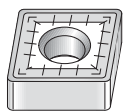


- first choice
- alternate choice

P	■	○	○	○
M	■	○	○	○
K	■	○	○	○
N	■	○	○	○
S	■	○	○	○
H	■	○	○	○

ISO catalogue number	D	L10	S	Re	D1	WP25CT	WM15CT	WM25CT	WM35CT
CNMG120404UM	12,70	12,90	4,76	0,4	5,16	-	-	4172380	-
CNMG120408UM	12,70	12,90	4,76	0,8	5,16	5645219	4172335	4172381	4172411
CNMG120412UM	12,70	12,90	4,76	1,2	5,16	-	-	4172382	-

CNMM-8

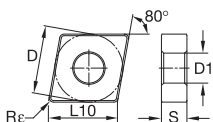
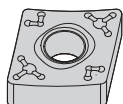


- first choice
- alternate choice

P	●
M	○
K	○
N	○
S	○
H	○

ISO catalogue number	D	L10	S	Re	D1	WP25CT
CNMM1906168	19,05	19,34	6,35	1,6	7,93	5418451

CNMM-65



- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Re	D1	WP15CT	WP25CT	WP35CT	WM25CT
CNMM12040865	12,70	12,90	4,76	0,8	5,16	5698348	5698349	5698360	5698347
CNMM12041265	12,70	12,90	4,76	1,2	5,16	5698362	-	-	-
CNMM16061265	15,88	16,12	6,35	1,2	6,35	-	5698370	-	5698368
CNMM19061265	19,05	19,34	6,35	1,2	7,93	-	5491016	5698376	5698374
CNMM19061665	19,05	19,34	6,35	1,6	7,93	5698378	-	-	5698377
CNMM19062465	19,05	19,34	6,35	2,4	7,93	5698410	5698411	-	-

INDEXABLE MILLING

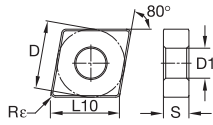
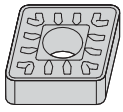
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

CNMM-SR

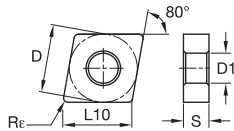
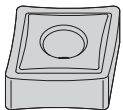


- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM25CT
CNMM190616SR	19,05	19,34	6,35	1,6	7,93	5696643	-	-	5696642
CNMM190624SR	19,05	19,34	6,35	2,4	7,93	-	5696644	-	-
CNMM250924SR	25,40	25,79	9,53	2,4	9,12	5696645	5696646	5696647	-

CNMP

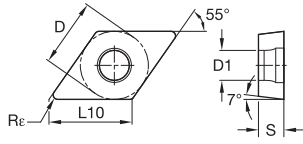
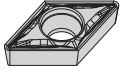


- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Rε	D1	WM25CT	WS10PT	WS25PT
CNMP120404	12,70	12,90	4,76	0,4	5,16	4173652	4172439	-
CNMP120408	12,70	12,90	4,76	0,8	5,16	4173653	4172440	4172614

DCMT-FP



- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Re	D1	WP15CT	WP25CT	WM15CT	WM25CT
DCMT070202FP	6,35	7,75	2,38	0,2	2,80	-	4170299	-	4168787
DCMT070204FP	6,35	7,75	2,38	0,4	2,80	4169995	4170300	4168788	4168787
DCMT11T302FP	9,53	11,63	3,97	0,2	4,40	-	4170302	-	4168790
DCMT11T304FP	9,53	11,63	3,97	0,4	4,40	4169997	4170303	4168765	4168791
DCMT11T308FP	9,53	11,63	3,97	0,8	4,40	4169998	4170304	-	4168792
DCMT150404FP	12,70	15,50	4,76	0,4	5,50	-	4170306	-	-
DCMT150408FP	12,70	15,50	4,76	0,8	5,50	4170001	4170307	-	-

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING



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INDEXABLE MILLING

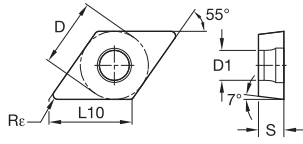
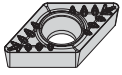
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

DCMT-MP

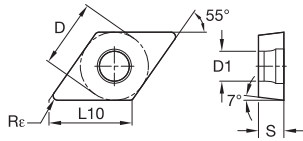
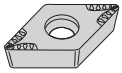


- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WM25CT	WK20CT
DCMT11T304MP	9,53	11,63	3,97	0,4	4,40	4170201	4170223	4170242	4170242
DCMT11T308MP	9,53	11,63	3,97	0,8	4,40	4170202	4170224	4168912	4170243
DCMT11T312MP	9,53	11,63	3,97	1,2	4,40	4170213			

DCMT-MU

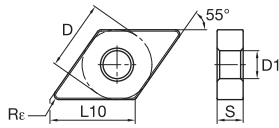
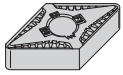


- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WM25CT	WK20CT	WS10PT	WS25PT
DCMT070204MU	6,35	7,75	2,38	0,4	2,80	6128273					
DCMT070208MU	6,35	7,75	2,38	0,8	2,80		6128274				
DCMT11T304MU	9,53	11,63	3,97	0,4	4,40	5623585	5623583	5623581	5623587	5623582	5623584
DCMT11T308MU	9,52	11,63	3,97	0,8	4,40	5623600	6128278	5623588	5623589	5623601	5623603
DCMT150408MU	12,70	15,50	4,76	0,8	5,50		5623608	5623604			5623610
DCMT150412MU	12,70	15,50	4,76	1,2	5,50		6128283				

DNGG-FS

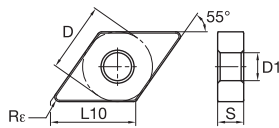
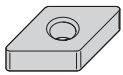


- first choice
- alternate choice

P	●	○
M	●	○
K	●	○
N	○	○
S	●	○
H	○	○

ISO catalogue number	D	L10	S	Re	D1	WS10PT
DNGG150604FS	12,70	15,50	6,35	0,4	5,16	5548678
DNGG150608FS	12,70	15,50	6,35	0,8	5,16	5548679

DNMA



- first choice
- alternate choice

P	○	○
M	○	○
K	○	○
N	○	○
S	○	○
H	○	○

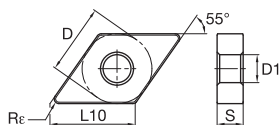
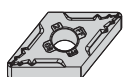
ISO catalogue number	D	L10	S	Re	D1	WK05CT	WK20CT
DNMA110408	9,53	11,63	4,76	0,8	3,81	4171873	4171873
DNMA150608	12,70	15,50	6,35	0,8	5,16	4171878	4171878
DNMA150612	12,70	15,50	6,35	1,2	5,16	4171879	4171879
DNMA150616	12,70	15,50	6,35	1,6	5,16	4171880	4171880



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INDEXABLE MILLING

DNMG-FF



- first choice
- alternate choice

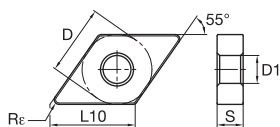
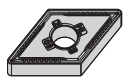
P	●	●
M	●	●
K	○	○
N	○	○
S	○	○
H	○	○

ISO catalogue number	D	L10	S	Rε	D1	WP15CT
DNMG110408FF	9,53	11,63	4,76	0,8	3,81	4171029
DNMG150604FF	12,70	15,50	6,35	0,4	5,16	4171032
DNMG150608FF	12,70	15,50	6,35	0,8	5,16	4171043

SOLID END MILLING

HOLEMAKING

DNMG-ML



- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WK20CT
DNMG110404ML	9,53	11,63	4,76	0,4	3,81	4171062	4170461	4171394
DNMG150604ML	12,70	15,50	6,35	0,4	5,16	4171068	4170485	-
DNMG150608ML	12,70	15,50	6,35	0,8	5,16	4171069	4170486	4171400
DNMG150612ML	12,70	15,50	6,35	1,2	5,16	4171070	4170487	-

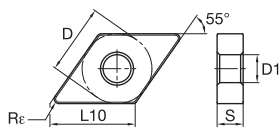
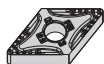
TAPPING

TURNING



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DNMG-MR

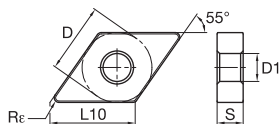


- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WM25CT
DNMG150604MR	12,70	15,50	6,35	0,4	5,16	●	○	○
DNMG150608MR	12,70	15,50	6,35	0,8	5,16	○	○	○
DNMG150612MR	12,70	15,50	6,35	1,2	5,16	○	○	○

DNMG-MS



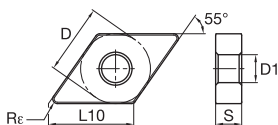
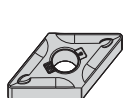
- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Rε	D1	WS10PT	WS25PT
DNMG150604MS	12,70	15,50	6,35	0,4	5,16	○	○
DNMG150608MS	12,70	15,50	6,35	0,8	5,16	○	○
DNMG150612MS	12,70	15,50	6,35	1,2	5,16	○	○

INDEXABLE MILLING

DNMG-RH



- first choice
- alternate choice

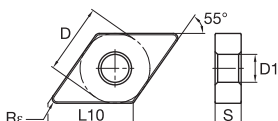
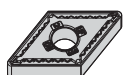
P	●	●	●	○
M	●	●	●	○
K	○	○	○	●
N	○	○	○	○
S	○	○	○	○
H	○	○	○	○

ISO catalogue number	D	L10	S	Re	D1	WP15CT	WP25CT	WP35CT	WK20CT
DNMG150408RH	12,70	15,50	4,76	0,8	5,16	○	4171524	○	○
DNMG150608RH	12,70	15,50	6,35	0,8	5,16	4170991	4171526	4171709	4171914
DNMG150612RH	12,70	15,50	6,35	1,2	5,16	4170992	4171527	4171710	4171915
DNMG150616RH	12,70	15,50	6,35	1,6	5,16	○	○	○	4171916

SOLID END MILLING

HOLEMAKING

DNMG-UF



- first choice
- alternate choice

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

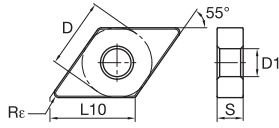
ISO catalogue number	D	L10	S	Re	D1	WM15CT	WM25CT	WS10PT
DNMG110404UF	9,53	11,63	4,76	0,4	3,81	○	○	5645603
DNMG150604UF	12,70	15,50	6,35	0,4	5,16	4169361	4169387	○
DNMG150608UF	12,70	15,50	6,35	0,8	5,16	4169362	○	○

TURNING



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DNMG-UM

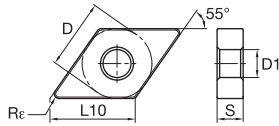
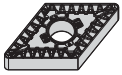


- first choice
- alternate choice

P	●
M	●
K	●
N	○
S	○
H	○

ISO catalogue number	D	L10	S	Re	D1	WM25CT
DNMG110404UM	9,53	11,63	4,76	0,4	3,81	4172383
DNMG110408UM	9,53	11,63	4,76	0,8	3,81	4172384
DNMG150604UM	12,70	15,50	6,35	0,4	5,16	4172389
DNMG150608UM	12,70	15,50	6,35	0,8	5,16	4172390

DNMG-UR



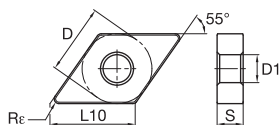
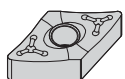
- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Re	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS25PT
DNMG110408UR	9,53	11,63	4,76	0,8	3,81	-	4170509	-	-	-	-	-	-	-
DNMG150608UR	12,70	15,50	6,35	0,8	5,16	4171105	4170513	4169969	4169427	4169456	4169492	4169488	-	-
DNMG150612UR	12,70	15,50	6,35	1,2	5,16	4171106	4170514	-	-	-	-	5680172	4171432	-
DNMG150616UR	12,70	15,50	6,35	1,6	5,16	-	-	-	-	-	4169494	-	-	-

INDEXABLE MILLING

DNMM-65



- first choice
- alternate choice

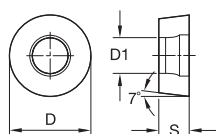
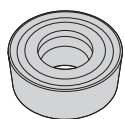
P	●	●	●	●
M	●	●	○	○
K	○	○	○	○
N	○	○	○	○
S	○	○	○	○
H	○	○	○	○

ISO catalogue number	D	L10	S	Re	D1		WP15CT	WP25CT	WP35CT
DNMM15060865	12,70	15,50	6,35	0,8	5,16	●	5698413	5698414	5698415
DNMM15061265	12,70	15,50	6,35	1,2	5,16	○	5494773	-	-

SOLID END MILLING

HOLEMAKING

RCMT



- first choice
- alternate choice

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

ISO catalogue number	D	S	D1		WP15CT	WP25CT	WP35CT	WK20CT
RCMT0602M0	6,00	2,38	2,80	●	4169975	4170536	-	4170478
RCMT0803M0	8,00	3,18	3,40	○	4169976	4170537	-	4170479
RCMT10T3M0	10,00	3,97	4,40	○	4169977	4170538	4170752	4170480
RCMT1204M0	12,00	4,76	4,40	○	4169978	4170539	4170803	4170481
RCMT1606M0	16,00	6,35	5,50	○	4169979	-	4170804	4170482

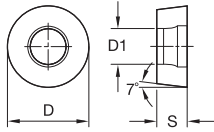
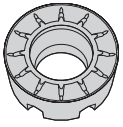
TAPPING

TURNING



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RCMT-43

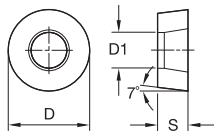
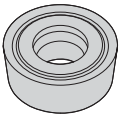


- first choice
- alternate choice

P	●	○
M	○	○
K	○	○
N	○	○
S	○	○
H	○	○

ISO catalogue number	D	S	D1	WP35CT	6128303	6128304
RCMT0803M043	8,00	3,18	3,40	●	○	○
RCMT1204M043	12,00	4,76	4,40	○	○	○

RCMX

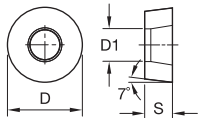
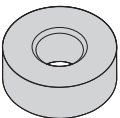


- first choice
- alternate choice

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

ISO catalogue number	D	S	D1	WP15CT	WP25CT	WP35CT	WK20CT
RCMX2006M0T	20,00	6,35	6,50	○	○	○	○

RNMA



- first choice
- alternate choice

P	○	○
M	○	○
K	○	○
N	○	○
S	○	○
H	○	○

ISO catalogue number	D	S	D1	WK20CT
RNMA120400	12,70	4,76	5,16	○

INDEXABLE MILLING

SOLID END MILLING

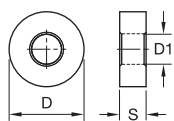
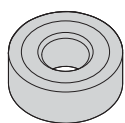
HOLEMAKING

TAPPING

TURNING

INDEXABLE MILLING

RNMG-RH



- first choice
- alternate choice

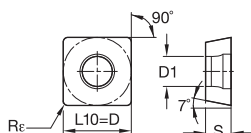
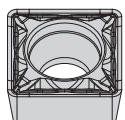
P	●
M	○
K	○
N	○
S	○
H	○

ISO catalogue number	D	S	D1	WP15CT
RNMG120400RH	12,70	4,76	5,16	4170996

SOLID END MILLING

HOLEMAKING

SCMT-FP



- first choice
- alternate choice

P	●
M	○
K	○
N	○
S	○
H	○

ISO catalogue number	D	L10	S	Rε	D1	WP25CT
SCMT09T308FP	9,53	9,53	3,97	0,8	4,40	4170309
SCMT120408FP	12,70	12,70	4,76	0,8	5,50	4170311

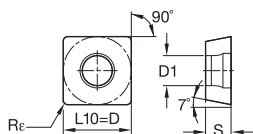
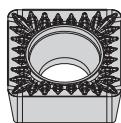
TAPPING

TURNING



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SCMT-MP

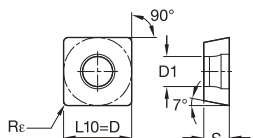
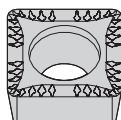


- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Re	D1	WP15CT	WP25CT	WM25CT	WK20CT
SCMT09T304MP	9,53	9,53	3,97	0,4	4,40	○	○	○	○
SCMT09T308MP	9,53	9,53	3,97	0,8	4,40	○	○	○	○
SCMT120408MP	12,70	12,70	4,76	0,8	5,50	○	○	○	○
SCMT120412MP	12,70	12,70	4,76	1,2	5,50	○	○	○	○

SCMT-MU



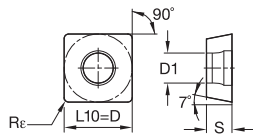
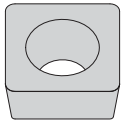
- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Re	D1	WP25CT	WP35CT	WM25CT	WK20CT	WS10PT
SCMT09T304MU	9,53	9,53	3,97	0,4	4,40	○	○	○	○	○
SCMT09T308MU	9,53	9,53	3,97	0,8	4,40	○	○	○	○	○
SCMT120408MU	12,70	12,70	4,76	0,8	5,50	○	○	○	○	○

INDEXABLE MILLING

SCMW



- first choice
- alternate choice

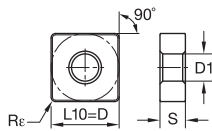
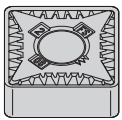
P	●
M	○
K	●
N	○
S	○
H	○

ISO catalogue number	D	L10	S	Rc	D1	WK20CT
SCMW120408	12,70	12,70	4,76	0,8	5,50	4170380

SOLID END MILLING

HOLEMAKING

SNGG-FS



- first choice
- alternate choice

P	●
M	○
K	○
N	○
S	○
H	○

ISO catalogue number	D	L10	S	Rc	D1	WU10HT
SNGG120408FS	12,70	12,70	4,76	0,8	5,16	5549997

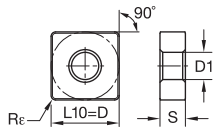
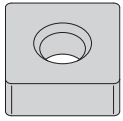
TAPPING

TURNING



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SNMA

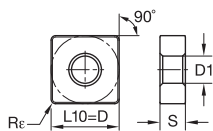
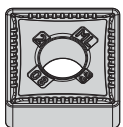


- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WK20CT
SNMA120408	12,70	12,70	4,76	0,8	5,16	●	○	○
SNMA120412	12,70	12,70	4,76	1,2	5,16	○	○	○
SNMA150608	15,88	15,88	6,35	0,8	6,35	○	○	○
SNMA190616	19,05	19,05	6,35	1,6	7,93	○	○	○

SNMG-ML



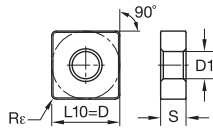
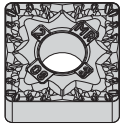
- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WK20CT
SNMG120404ML	12,70	12,70	4,76	0,4	5,16	○	○	○
SNMG120408ML	12,70	12,70	4,76	0,8	5,16	○	○	○
SNMG120412ML	12,70	12,70	4,76	1,2	5,16	○	○	○

INDEXABLE MILLING

SNMG-MR



- first choice
- alternate choice

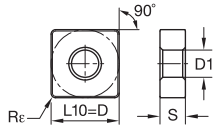
P	●	●	●	○
M	●	○	○	○
K	○	○	○	○
N	○	○	○	○
S	○	○	○	○
H	○	○	○	○

ISO catalogue number	D	L10	S	Rc	D1	WP15CT	WP25CT	WP35CT	WM25CT
SNMG120408MR	12,70	12,70	4,76	0,8	5,16	4171146	4170571	4170057	-
SNMG120412MR	12,70	12,70	4,76	1,2	5,16	-	5684355	-	-
SNMG150612MR	15,88	15,88	6,35	1,2	6,35	4171147	-	-	4173029
SNMG190612MR	19,05	19,05	6,35	1,2	7,93	-	4170572	-	-

SOLID END MILLING

HOLEMAKING

SNMG-MS



- first choice
- alternate choice

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

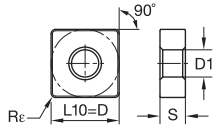
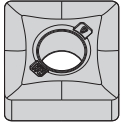
ISO catalogue number	D	L10	S	Rc	D1	WS10PT	WS25PT
SNMG120408MS	12,70	12,70	4,76	0,8	5,16	5908847	5908848
SNMG120412MS	12,70	12,70	4,76	1,2	5,16	5908850	-

TURNING



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SNMG-RH

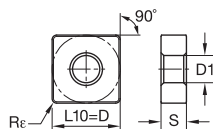
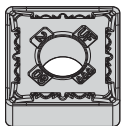


- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM25CT	WK20CT
SNMG120408RH	12,70	12,70	4,76	0,8	5,16	4170999	4171533	4171715	4171918	
SNMG120412RH	12,70	12,70	4,76	1,2	5,16	4170999	4171534	4171716	4171919	
SNMG120416RH	12,70	12,70	4,76	1,6	5,16		4171535			
SNMG150608RH	15,88	15,88	6,35	0,8	6,35	4171001	4171536		4171921	
SNMG150612RH	15,88	15,88	6,35	1,2	6,35	4171002	4171537		4171922	
SNMG150616RH	15,88	15,88	6,35	1,6	6,35	4171003	4171538	4171720	4171923	
SNMG190612RH	19,05	19,05	6,35	1,2	7,93	4171005	4171540	4171722	4173056	4171925
SNMG190616RH	19,05	19,05	6,35	1,6	7,93					4171926

SNMG-UF



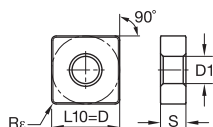
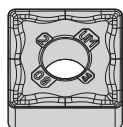
- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Rε	D1	WS10PT
SNMG120404UF	12,70	12,70	4,76	0,4	5,16	5645610

INDEXABLE MILLING

SNMG-UM



- first choice
- alternate choice

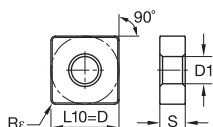
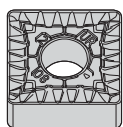
P	●	○	○	○
M	●	○	○	○
K	●	○	○	○
N	○	○	○	○
S	○	○	○	○
H	○	○	○	○

ISO catalogue number	D	L10	S	Rc	D1	WM25CT	WM35CT
SNMG120404UM	12,70	12,70	4,76	0,4	5,16	4172393	-
SNMG120408UM	12,70	12,70	4,76	0,8	5,16	4172394	4172424
SNMG120412UM	12,70	12,70	4,76	1,2	5,16	4172395	4172425

SOLID END MILLING

HOLEMAKING

SNMG-UR



- first choice
- alternate choice

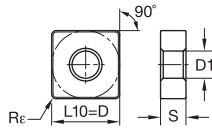
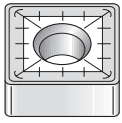
P	●	○	○	○	○
M	○	○	○	○	○
K	○	○	○	○	○
N	○	○	○	○	○
S	○	○	○	○	○
H	○	○	○	○	○

ISO catalogue number	D	L10	S	Rc	D1	WP15CT	WP25CT	WP35CT	WM25CT	WM35CT	WK20CT	WS25PT
SNMG120408UR	12,70	12,70	4,76	0,8	5,16	4171108	4170516	4169989	4169458	-	4171494	-
SNMG120412UR	12,70	12,70	4,76	1,2	5,16	4171109	4170517	4169990	4169459	-	-	-
SNMG120416UR	12,70	12,70	4,76	1,6	5,16	-	-	-	4169460	-	-	5680173
SNMG150612UR	15,88	15,88	6,35	1,2	6,35	-	4170518	4169991	4169461	-	4171437	-
SNMG150616UR	15,88	15,88	6,35	1,6	6,35	-	4170519	-	-	-	-	-
SNMG190612UR	19,05	19,05	6,35	1,2	7,93	-	4170520	-	-	4169500	-	-
SNMG190616UR	19,05	19,05	6,35	1,6	7,93	-	-	-	4169464	-	-	-

TAPPING

TURNING

SNMM-8

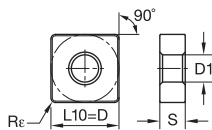
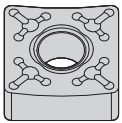


- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT
SNMM1906168	19,05	19,05	6,35	1,6	7,93	●	○	○
SNMM2507248	25,40	25,40	7,94	2,4	9,12	5429112	5429111	5370813

SNMM-65



- first choice
- alternate choice

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

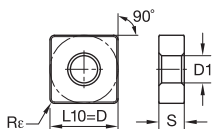
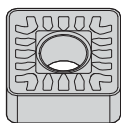
ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM25CT
SNMM12040865	12,70	12,70	4,76	0,8	5,16	○	5696564	5696555	5696563
SNMM12041265	12,70	12,70	4,76	1,2	5,16	○	5696567	○	○
SNMM19061665	19,05	19,05	6,35	1,6	7,93	5696615	○	○	○



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INDEXABLE MILLING

SNMM-SR



- first choice
- alternate choice

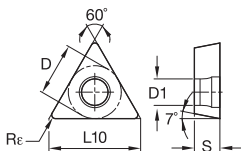
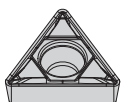
P	●	●	●	○
M	●	○	○	○
K	○	○	○	○
N	○	○	○	○
S	○	○	○	○
H	○	○	○	○

ISO catalogue number	D	L10	S	Re	D1	WP15CT	WP25CT	WP35CT	WM25CT
SNMM190616SR	19,05	19,05	6,35	1,6	7,93	5478876	5478877	-	5696648
SNMM250724SR	25,40	25,40	7,94	2,4	9,12	-	5429119	5946214	-
SNMM250924SR	25,40	25,40	9,53	2,4	9,12	5382277	5382390	5373074	5402173

SOLID END MILLING

HOLEMAKING

TCMT-FP



- first choice
- alternate choice

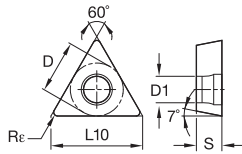
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M	○	○	○	○
K	○	○	○	○
N	○	○	○	○
S	○	○	○	○
H	○	○	○	○

ISO catalogue number	D	L10	S	Re	D1	WP15CT	WP25CT	WM25CT	WK20CT
TCMT110202FP	6,35	11,00	2,38	0,2	2,90	-	-	4168800	-
TCMT110204FP	6,35	11,00	2,38	0,4	2,80	4170006	4170313	4168801	-
TCMT16T304FP	9,53	16,50	3,97	0,4	4,40	4170008	4170315	-	-
TCMT16T308FP	9,53	16,50	3,97	0,8	4,40	-	4170316	-	4170100

TAPPING

TURNING

TCMT-MP

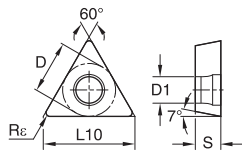
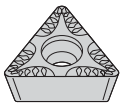


- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Re	D1	WP15CT	WP25CT	WM25CT	WK20CT
TCMT16T304MP	9,53	16,50	3,97	0,4	4,40	●	○	○	○
TCMT16T308MP	9,53	16,50	3,97	0,8	4,40	○	○	○	○
TCMT16T312MP	9,53	16,50	3,97	1,2	4,40	○	○	○	○

TCMT-MU



- first choice
- alternate choice

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

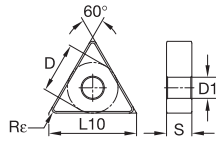
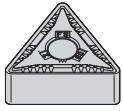
ISO catalogue number	D	L10	S	Re	D1	WP15CT	WP25CT	WP35CT	WM25CT	WK20CT	WS10PT	WS25PT
TCMT16T304MU	9,53	16,50	3,97	0,4	4,40	○	○	○	○	○	○	○
TCMT16T308MU	9,53	16,50	3,97	0,8	4,40	○	○	○	○	○	○	○
TCMT220412MU	12,70	22,00	4,76	1,2	5,50	○	○	○	○	○	○	○



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INDEXABLE MILLING

TNGG-FS



- first choice
- alternate choice

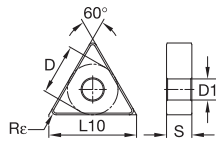
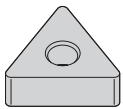
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M	●	○
K	●	○
N	○	○
S	●	○
H	○	○

ISO catalogue number	D	L10	S	Rε	D1	WS25PT
TNGG160404FS	9,53	16,50	4,76	0,4	3,81	5538231

SOLID END MILLING

HOLEMAKING

TNMA



- first choice
- alternate choice

P	●	○
M	●	○
K	●	○
N	○	○
S	○	○
H	○	○

ISO catalogue number	D	L10	S	Rε	D1	WK20CT
TNMA160408	9,53	16,50	4,76	0,8	3,81	4171890
TNMA160412	9,53	16,50	4,76	1,2	3,81	4171891
TNMA220412	12,70	22,00	4,76	1,2	5,16	4171894
TNMA220416	12,70	22,00	4,76	1,6	5,16	4171895

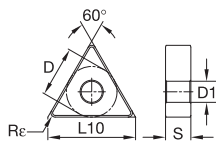
TAPPING

TURNING



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TNMG-ML

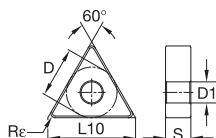


- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Re	D1	WP15CT	WP25CT	WK20CT
TNMG160404ML	9,53	16,50	4,76	0,4	3,81	4171075	4170491	-
TNMG160408ML	9,53	16,50	4,76	0,8	3,81	4171076	4170492	4171410
TNMG160412ML	9,53	16,50	4,76	1,2	3,81	4171077	-	-

TNMG-MR



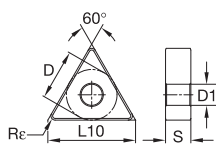
- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Re	D1	WP15CT	WP25CT
TNMG160404MR	9,53	16,50	4,76	0,4	3,81	4171150	4170573
TNMG160408MR	9,53	16,50	4,76	0,8	3,81	4171151	4170574
TNMG160412MR	9,53	16,50	4,76	1,2	3,81	4171152	-

INDEXABLE MILLING

TNMG-MS



- first choice
- alternate choice

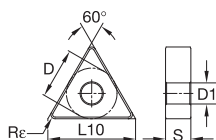
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M	●	○	○
K	○	○	○
N	○	○	○
S	○	○	○
H	○	○	○

ISO catalogue number	D	L10	S	Rε	D1	WS10PT	WS25PT
TNMG160404MS	9,53	16,50	4,76	0,4	3,81	5908927	5908928
TNMG160408MS	9,53	16,50	4,76	0,8	3,81	5908930	5908931

SOLID END MILLING

HOLEMAKING

TNMG-RH



- first choice
- alternate choice

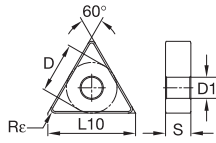
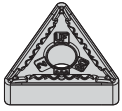
P	●	○	○
M	○	○	○
K	○	○	○
N	○	○	○
S	○	○	○
H	○	○	○

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WK20CT
TNMG160408RH	9,53	16,50	4,76	0,8	3,81	4171007	4171542	-	4171927
TNMG160412RH	9,53	16,50	4,76	1,2	3,81	-	4171725	-	-
TNMG220408RH	12,70	22,00	4,76	0,8	5,16	4171544	-	-	-

TAPPING

TURNING

TNMG-UF

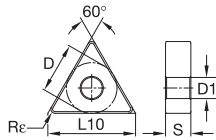
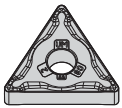


- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Rε	D1	WS10PT
TNMG160404UF	9,53	16,50	4,76	0,4	3,81	5432605

TNMG-UM



- first choice
- alternate choice

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

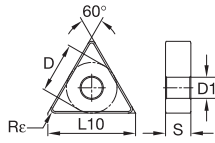
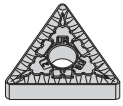
ISO catalogue number	D	L10	S	Rε	D1	WM25CT	WS10PT
TNMG160404UM	9,53	16,50	4,76	0,4	3,81	-	5550226
TNMG160408UM	9,53	16,50	4,76	0,8	3,81	4172397	-



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INDEXABLE MILLING

TNMG-UR



- first choice
- alternate choice

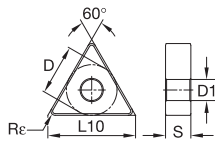
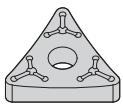
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M	●	○	○	○	○
K	○	○	○	○	○
N	○	○	○	○	○
S	○	○	○	○	○
H	○	○	○	○	○

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WM25CT	WK20CT	WS25PT
TNMG160408UR	9,53	16,50	4,76	0,8	3,81	4171115	4170522	4169465	4171441	5579395
TNMG160412UR	9,53	16,50	4,76	1,2	3,81	-	4170523	4169466	-	5680175
TNMG160416UR	9,53	16,50	4,76	1,6	3,81	4171117	-	-	4171443	-

SOLID END MILLING

HOLEMAKING

TNMM-65



- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT
TNMM16040865	9,53	16,50	4,76	0,8	3,81	-	-	5696619
TNMM22040865	12,70	22,00	4,76	0,8	5,16	5696621	5696622	5696623

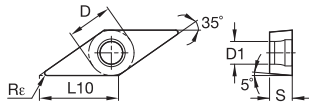
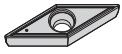
TAPPING

TURNING



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VBMT

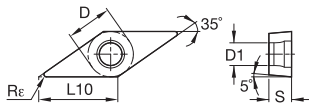
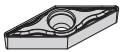


- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT
VBMT160404	9,53	16,61	4,76	0,4	4,40	4169983	4170553	4170807
VBMT160408	9,53	16,61	4,76	0,8	4,40	4169984	4170554	4170808

VBMT-FP



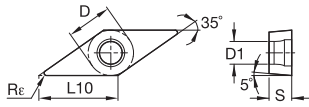
- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WM15CT	WM25CT	WK20CT
VBMT110304FP	6,35	11,07	3,18	0,4	2,80	-	4170319	-	4168807	-
VBMT160402FP	9,53	16,61	4,76	0,2	4,40	-	4170321	-	4168809	-
VBMT160404FP	9,53	16,61	4,76	0,4	4,40	4170014	4170322	4168776	4168810	4170103
VBMT160408FP	9,53	16,61	4,76	0,8	4,40	4170323	-	-	-	-

INDEXABLE MILLING

VBMT-MP



- first choice
- alternate choice

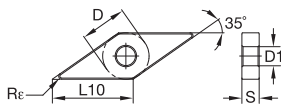
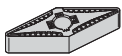
P	●	○
M	●	○
K	○	○
N	○	○
S	○	○
H	○	○

ISO catalogue number	D	L10	S	Rε	D1	WP25CT	WM25CT	WK20CT
VBMT160404MP	9,53	16,61	4,76	0,4	4,40	4170235	4168921	-
VBMT160408MP	9,53	16,61	4,76	0,8	4,40	4170236	4168922	4170254

SOLID END MILLING

HOLEMAKING

VNGG-FS



- first choice
- alternate choice

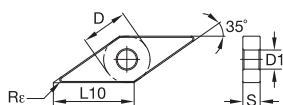
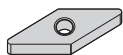
P	○
M	○
K	○
N	○
S	○
H	○

ISO catalogue number	D	L10	S	Rε	D1	WS10PT
VNGG160401FS	9,53	16,61	4,76	0,1	3,81	5548684
VNGG160402FS	9,53	16,61	4,76	0,2	3,81	5548683

TAPPING

TURNING

VNMA

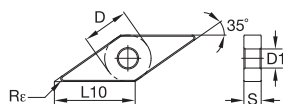


- first choice
- alternate choice

P	●	○
M	●	○
K	●	○
N	○	○
S	○	○
H	○	○

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WK20CT
VNMA160408	9,53	16,61	4,76	0,8	3,81			4171897

VNMG-ML



- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WK20CT
VNMG160404ML	9,53	16,61	4,76	0,4	3,81	4171079	4170495	-
VNMG160408ML	9,53	16,61	4,76	0,8	3,81	-	4170496	4171414



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INDEXABLE MILLING



SOLID END MILLING



HOLEMAKING



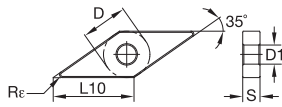
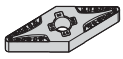
TAPPING



TURNING

INDEXABLE MILLING

VNMG-MR



- first choice
- alternate choice

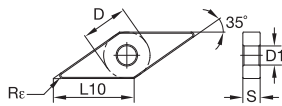
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M	●	●
K	○	○
N	○	○
S	○	○
H	○	○

ISO catalogue number	D	L10	S	Re	D1	WP15CT	WP25CT
VNMG160408MR	9,53	16,61	4,76	0,8	3,81	4171157	4170580

SOLID END MILLING

HOLEMAKING

VNMG-MS



- first choice
- alternate choice

P	○	○
M	○	○
K	○	○
N	○	○
S	○	○
H	○	○

ISO catalogue number	D	L10	S	Re	D1	WS10PT	WS25PT
VNMG160404MS	9,53	16,61	4,76	0,4	3,81	5908944	5908945
VNMG160408MS	9,53	16,61	4,76	0,8	3,81	5908947	5908948

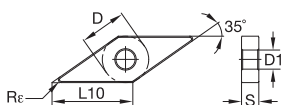
TAPPING

TURNING



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VNMG-UF

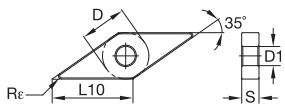


- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Rε	D1	WM15CT	WS10PT
VNMG160404UF	9,53	16,61	4,76	0,4	3,81	4169372	5645616

VNMG-UR



- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Rε	D1	WP25CT	WM25CT	WK20CT	WS10PT
VNMG160408UR	9,53	16,61	4,76	0,8	3,81	4170529	4169473	4171449	-
VNMG160412UR	9,53	16,61	4,76	1,2	3,81	4170530	4169474	4171450	5680176

INDEXABLE MILLING

SOLID END MILLING

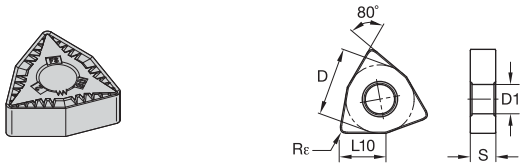
HOLEMAKING

TAPPING

TURNING

INDEXABLE MILLING

WNGG-FS



- first choice
- alternate choice

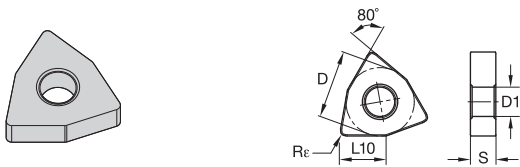
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M	●	●	●	●
K	●	○	○	○
N	●	○	○	○
S	●	●	●	●
H	○	○	○	○

ISO catalogue number	D	L10	S	Rε	D1	WS10PT	WS25PT	WU10HT
WNGG080404FS	12,70	8,69	4,76	0,4	5,16	●	●	○
WNGG080408FS	12,70	8,69	4,76	0,8	5,16	○	○	○

SOLID END MILLING

HOLEMAKING

WNMA



- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Rε	D1	WK05CT	WK20CT
WNMA080408	12,70	8,69	4,76	0,8	5,16	○	○
WNMA080412	12,70	8,69	4,76	1,2	5,16	○	○

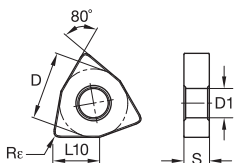
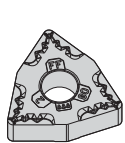
TAPPING

TURNING



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WNMG-FF

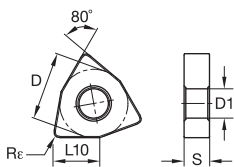
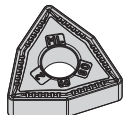


- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Rε	D1	WP15CT
WNMG080404FF	12,70	8,69	4,76	0,4	5,16	4171057

WNMG-ML



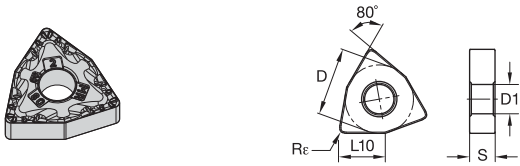
- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WK05CT	WK20CT
WNMG080404ML	12,70	8,69	4,76	0,4	5,16	4171083	4170498	4171678	4171417
WNMG080408ML	12,70	8,69	4,76	0,8	5,16	4171084	4170499	4171679	4171418

INDEXABLE MILLING

WNMG-MR



- first choice
- alternate choice

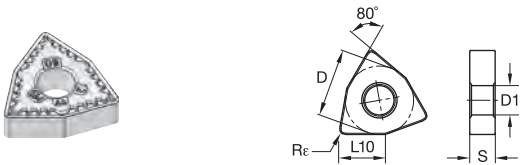
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M	●	○	○	○
K	○	○	○	○
N	○	○	○	○
S	○	○	○	○
H	○	○	○	○

ISO catalogue number	D	L10	S	Re	D1	WP15CT	WP25CT	WP35CT	WM25CT
WNMG080408MR	12,70	8,69	4,76	0,8	5,16	4171158	4170581	4170067	4173033
WNMG080412MR	12,70	8,69	4,76	1,2	5,16	4170582	4170068		

SOLID END MILLING

HOLEMAKING

WNMG-MS



- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Re	D1	WS10PT	WS25PT	WU10HT
WNMG060408MS	9,53	6,52	4,76	0,8	3,81		5908967	
WNMG080404MS	12,70	8,69	4,76	0,4	5,16	5908969	5908970	
WNMG080408MS	12,70	8,69	4,76	0,8	5,16	5908972	5908973	5908974

TAPPING

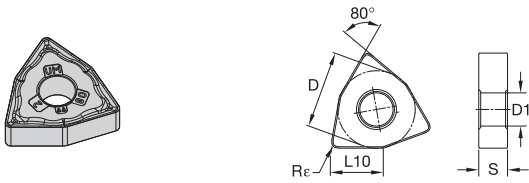
TURNING



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INDEXABLE MILLING

WNMG-UM



- first choice
- alternate choice

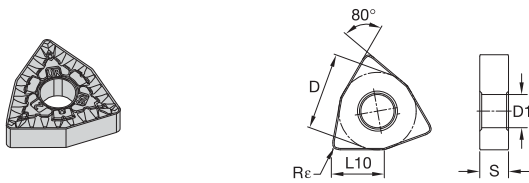
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M	●	●	●	●	●	●
K	○	○	○	○	○	○
N	○	○	○	○	○	○
S	○	○	○	○	○	○
H	○	○	○	○	○	○

ISO catalogue number	D	L10	S	Rε	D1	WM15CT	WM25CT	WM35CT	WS10PT
WNMG060404UM	9,53	6,52	4,76	0,4	3,81	-	4172403	-	-
WNMG080404UM	12,70	8,69	4,76	0,4	5,16	4172377	4172406	4172435	-
WNMG080408UM	12,70	8,69	4,76	0,8	5,16	4172378	4172407	4172436	-
WNMG080412UM	12,70	8,69	4,76	1,2	5,16	-	4172408	-	5645269

SOLID END MILLING

HOLEMAKING

WNMG-UR



- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK20CT	WS10PT
WNMG060408UR	9,53	6,52	4,76	0,8	3,81	-	-	-	-	4169475	-	-	-
WNMG080408UR	12,70	8,69	4,76	0,8	5,16	4171127	4170533	4170040	4169442	4169475	4169509	-	-
WNMG080412UR	12,70	8,69	4,76	1,2	5,16	4171128	4170041	-	-	4169477	4169510	4171454	5579420

TURNING



THE ALL-STAR PROGRAMME FEATURES ONLY THE MOST POPULAR PLATFORMS, GRADES, AND SIZES. FOR THE COMPLETE OFFERING, VISIT WIDIA NOVO™ OR WIDIA.COM.

Speed and Feed Chart • Positive Inserts • Metric

DIN ISO 513	VDI 3323	A Finishing (ap x f = 1 x 0,10)			B Medium (ap x f = 2 x 0,20)			C Roughing (ap x f = 4 x 0,25)								
Material Group	Geometry ap [mm] f [mm]	min	Start	max	min	Start	max	min	Start	max	min	Start	max	min	Start	max
		FP 0,2-2,0 0,05-0,20			FP • MP 0,3-4,5 0,08-0,35			FP • MP 0,3-4,5 0,08-0,35			MP 0,7-5,0 0,12-0,40			MP 0,7-5,0 0,12-0,40		
P		WP15CT			WP15CT			WP15CT / WP25CT			WP25CT			WP35CT		
	1	340	490	590	280	400	480	250	360	430	200	290	350	180	260	310
	2	340	480	580	260	370	440	240	340	410	190	270	320	130	190	230
	3	290	420	500	180	260	310	170	240	290	160	230	280	130	180	220
	4	260	370	440	190	270	320	180	250	300	130	190	230	110	150	180
	5	200	280	340	140	200	240	130	190	230	90	130	160	75	110	130
	6	270	390	470	200	290	350	190	270	320	140	200	240	110	160	190
	7	260	370	440	190	270	320	180	250	300	130	190	230	110	150	180
	8	220	320	380	160	230	280	150	210	250	110	150	180	85	120	140
	9	200	280	340	140	200	240	130	190	230	90	130	160	75	110	130
	10	270	390	470	200	290	350	190	270	320	140	200	240	110	160	190
	11	200	280	340	130	190	230	120	170	200	90	130	160	75	110	130
	12	150	220	260	140	200	240	130	180	220	120	170	200	110	160	190
	13.1	130	190	230	120	170	200	110	150	180	100	140	170	90	130	160
13.2	65	95	115	60	85	100	55	75	90	50	70	85	45	65	80	
M		FP 0,2-2,0 0,05-0,20			FP • MP 0,3-4,5 0,08-0,35			FP • MP 0,3-4,5 0,08-0,35			MP 0,3-4,5 0,08-0,35			MP 0,3-4,5 0,08-0,35		
		WM15CT			WM15CT			WM25CT			WM25CT			WM35CT		
	14.1	180	250	300	150	220	260	140	190	230	140	200	240	110	150	180
	14.2	140	200	240	130	180	220	110	160	190	110	160	190	85	120	140
	14.3	110	150	180	100	140	170	85	120	140	85	120	140	65	90	110
14.4	90	130	160	75	110	130	70	95	110	70	100	120	55	80	95	
K		FP 0,2-2,0 0,05-0,20			FP • MP • .CMW 0,3-4,5 0,08-0,35			FP • MP • .CMW 0,3-4,5 0,08-0,35			MP • .CMW 1,0-8,0 0,1-0,5			MP • .CMW 1,0-8,0 0,1-0,5		
		WK05CT / WK20CT			WK05CT / WK20CT			-			WK20CT			-		
	15	290	410	490	230	330	400	-	-	-	180	260	310	-	-	-
	16	230	330	400	180	250	300	-	-	-	140	200	240	-	-	-
	17	250	360	430	210	300	360	-	-	-	180	250	300	-	-	-
	18	240	340	410	190	270	320	-	-	-	150	210	250	-	-	-
	19	340	490	590	290	410	490	-	-	-	240	340	410	-	-	-
20	290	410	490	230	330	400	-	-	-	180	260	310	-	-	-	



INDEXABLE MILLING



SOLID END MILLING



HOLEMAKING



TAPPING



TURNING

Speed and Feed Chart • Negative Inserts • Metric

DIN ISO 513	VDI 3323	A Finishing (doc x feed = 1,00 x 0,10)			B Medium (doc x feed = 2,00 x 0,20)			C Roughing (doc x feed = 4,00 x 0,25)			D Heavy roughing (doc x feed = 6,00 x 0,60)											
Material Group		min	Start	max	min	Start	max	min	Start	max	min	Start	max	min	Start	max						
P	Geometry	FF • ML			ML • UR • MR			ML • UR • MR			UR • MR • RH			UR • MR • RH			RH			RH		
	DOC [mm]	0,20 – 2,00			0,80 – 5,00			0,80 – 5,00			1,00 – 8,00			1,00 – 8,00			2,00 – 15,00			2,00 – 15,00		
	f [mm]	0,05 – 0,20			0,16 – 0,40			0,16 – 0,40			0,20 – 0,60			0,20 – 0,60			0,40 – 1,00			0,40 – 1,00		
		WP15CT			WP15CT			WP25CT			WP15CT			WP25CT			WP25CT			WP35CT		
	1	340	490	590	280	400	480	250	360	430	200	290	350	180	260	310	150	220	260	150	210	250
	2	340	480	580	260	370	440	240	340	415	190	270	320	130	190	230	110	160	190	110	150	180
	3	290	420	500	180	260	310	170	240	290	160	230	280	130	180	220	110	150	180	100	140	170
	4	260	370	440	190	270	320	180	250	300	130	190	230	110	150	180	90	130	160	70	100	120
	5	200	280	340	140	200	240	130	190	230	90	130	160	75	110	130	65	90	110	55	80	95
	6	270	390	470	200	290	350	190	270	320	140	200	240	110	160	190	90	130	160	75	110	130
	7	260	370	440	190	270	320	180	250	300	130	190	230	110	150	180	85	120	140	70	100	120
	8	220	320	380	160	230	280	150	210	250	110	150	180	85	120	140	70	100	120	65	90	110
	9	200	280	340	140	200	240	130	190	230	90	130	160	75	110	130	65	90	110	55	80	95
	10	270	390	470	200	290	350	190	270	320	140	200	240	110	160	190	90	130	160	75	110	130
11	200	280	340	130	190	230	120	170	200	90	130	160	75	110	130	65	90	110	55	80	95	
12	150	220	260	140	200	240	130	180	220	120	170	200	110	160	190	110	150	180	100	140	170	
13.1	130	190	230	120	170	200	110	150	180	100	140	170	90	130	160	85	120	140	75	110	130	
13.2	65	95	115	60	85	100	55	75	90	50	70	85	45	65	80	45	60	70	40	55	65	
M	Geometry	FF • UF • UM			FF • UM • .NMP			FF • UM • .NMP			UM • .NMP • UR • RH			UM • .NMP • UR • RH			RH					
	DOC [mm]	0,20 – 2,00			0,60 – 5,00			0,60 – 5,00			0,50 – 6,00			0,50 – 6,00			4,00 – 15,00					
	f [mm]	0,05 – 0,20			0,12 – 0,40			0,12 – 0,40			0,10 – 0,60			0,10 – 0,60			0,40 – 1,00					
		WM15CT			WM15CT			WM25CT			WM25CT			WM35CT			WM35CT					
	14.1	180	250	300	150	220	260	140	190	230	140	200	240	110	150	180	110	150	180	-	-	-
14.2	140	200	240	130	180	220	110	160	190	110	160	190	85	120	140	85	120	140	-	-	-	
14.3	110	150	180	100	140	170	85	120	140	85	120	140	65	90	110	65	90	110	-	-	-	
14.4	90	130	160	75	110	130	70	95	110	70	100	120	55	80	95	60	80	95	-	-	-	
K	Geometry	FF			.NMA • ML						UR • .NMA • RH						UR • RH • .NMA					
	DOC [mm]	0,10 – 2,67			1,00 – 8,00						1,00 – 8,00						2,00 – 15,00					
	f [mm]	0,05 – 0,15			0,20 – 0,60						0,12 – 0,60						0,25 – 1,20					
		WK05CT / WK20CT			WK05CT / WK20CT						WK05CT / WK20CT						WK05CT / WK20CT					
	15	290	415	490	230	330	400	-	-	-	180	260	310	-	-	-	160	230	280	-	-	-
	16	230	330	400	180	250	300	-	-	-	140	200	240	-	-	-	120	170	200	-	-	-
	17	250	360	430	210	300	360	-	-	-	180	250	300	-	-	-	150	220	260	-	-	-
18	240	340	415	190	270	320	-	-	-	150	210	250	-	-	-	130	180	220	-	-	-	
19	340	490	590	290	415	490	-	-	-	240	340	415	-	-	-	220	310	370	-	-	-	
20	290	415	490	230	330	400	-	-	-	180	260	310	-	-	-	160	230	280	-	-	-	
S	Geometry	.NMP			.NMP • UM						.NMP • UR											
	DOC [mm]	0,50 – 1,00			0,50 – 1,00						0,50 – 6,00											
	f [mm]	0,10 – 0,50			0,10 – 0,50						0,10 – 0,60											
		WS10PT / WS25PT			WS10PT / WS25PT / WM25CT						WM25CT											
	21	55	80	95	50	65	80	-	-	-	45	60	70	-	-	-	-	-	-	-	-	-
	22	50	65	80	35	50	60	-	-	-	35	50	60	-	-	-	-	-	-	-	-	-
	23	35	50	60	30	40	50	-	-	-	25	40	45	-	-	-	-	-	-	-	-	-
	24	20	30	40	20	25	30	-	-	-	20	25	30	-	-	-	-	-	-	-	-	-
	25	25	35	40	20	25	30	-	-	-	20	25	30	-	-	-	-	-	-	-	-	-
26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
27	45	60	70	35	50	60	-	-	-	35	45	55	-	-	-	-	-	-	-	-	-	

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

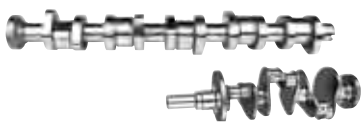
TAPPING

TURNING

Material Capabilities and Components Machined with Victory™ Grades

P

Steel Turning



Crankshaft/Camshaft
Roughing and Finishing



Connecting Rods
Boring



Gears
Roughing and Finishing



M

Stainless Steel Turning



Turbo Charger
Roughing and Finishing



Flanges
Roughing and Finishing



Bearing Housing
Roughing and Finishing



K

Cast Iron Turning



Cylinder Liner
Roughing and Finishing



Engine Block



Brake Drum and Disc



Inserts for Machining Aluminium

WIDIA™ offers a series of inserts specifically designed for machining aluminium materials. These inserts are available in both an uncoated and a PVD grade for better performance and better tool life.

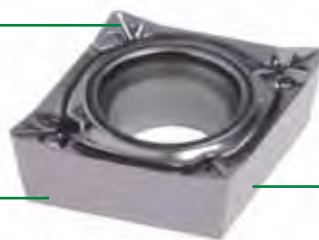
- Easy-to-choose platform — two geometry and three grades.
- Longer tool life.

Materials:



High positive rake for smooth chip flow.

G tolerance inserts for better precision.



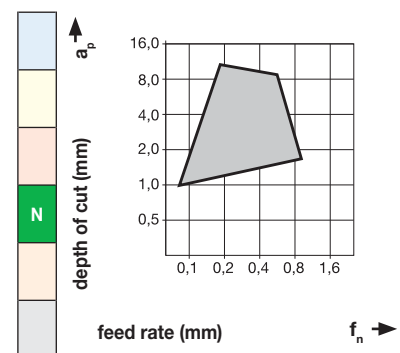
High polish inserts to prevent built-up edge and for longer tool life.

Positive Inserts

AL1



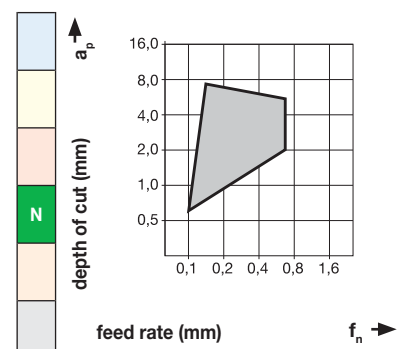
For turning cast aluminium, light alloys, non-ferrous metals, high-melting metals, plastics, glass fibre, reinforced plastics, laminated board, carbon, and fine ceramics.



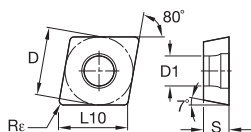
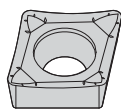
AL3



For cost-effective machining of aluminium, non-ferrous metals, and plastics. Extremely sharp cutting edges result in optimum part finishes with low cutting forces and short chips. Finishing of steel, stainless steel, and grey iron is possible with the coated grade HCK10™.



CCGT-AL3

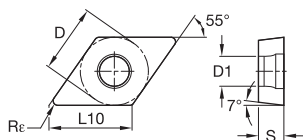
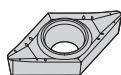


- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Re	D1	HCK10	HWK15
CCGT060202AL3	6,35	6,45	2,38	0,2	2,80	2022257	2022258
CCGT060204AL3	6,35	6,45	2,38	0,4	2,80	2022259	2022260
CCGT09T302AL3	9,53	9,67	3,97	0,2	4,40	2022854	2022854
CCGT09T304AL3	9,53	9,67	3,97	0,4	4,40	2022262	2022262
CCGT120408AL3	12,70	12,90	4,76	0,8	5,50	2022325	2022326

DCGT-AL3



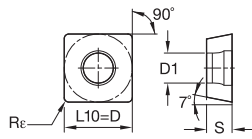
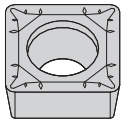
- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Re	D1	HCK10	HWK15
DCGT070204AL3	6,35	7,75	2,38	0,4	2,80	2022330	2022330
DCGT11T302AL3	9,53	11,63	3,97	0,2	4,40	2022861	2022861
DCGT11T304AL3	9,53	11,63	3,97	0,4	4,40	2014890	2022331
DCGT11T308AL3	9,53	11,63	3,97	0,8	4,40	2022483	2022483

INDEXABLE MILLING

SCGT-AL3



- first choice
- alternate choice

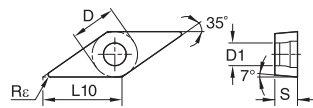
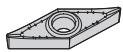
P	■	■	■
M	■	■	■
K	■	■	■
N	■	●	●
S	■	■	■
H	■	■	■

ISO catalogue number	D	L10	S	Rε	D1	HWK15
SCGT120408AL3	12,70	12,70	4,76	0,8	5,50	2023638

SOLID END MILLING

HOLEMAKING

VCGT-AL3



- first choice
- alternate choice

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

ISO catalogue number	D	L10	S	Rε	D1	HCK10	HWK15
VCGT110302AL3	6,35	11,07	3,18	0,2	2,80	2024559	2024559
VCGT160404AL3	9,53	16,61	4,76	0,4	4,40	2022484	2022485
VCGT160408AL3	9,53	16,61	4,76	0,8	4,40	2022488	2022488

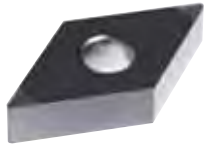
TAPPING

TURNING

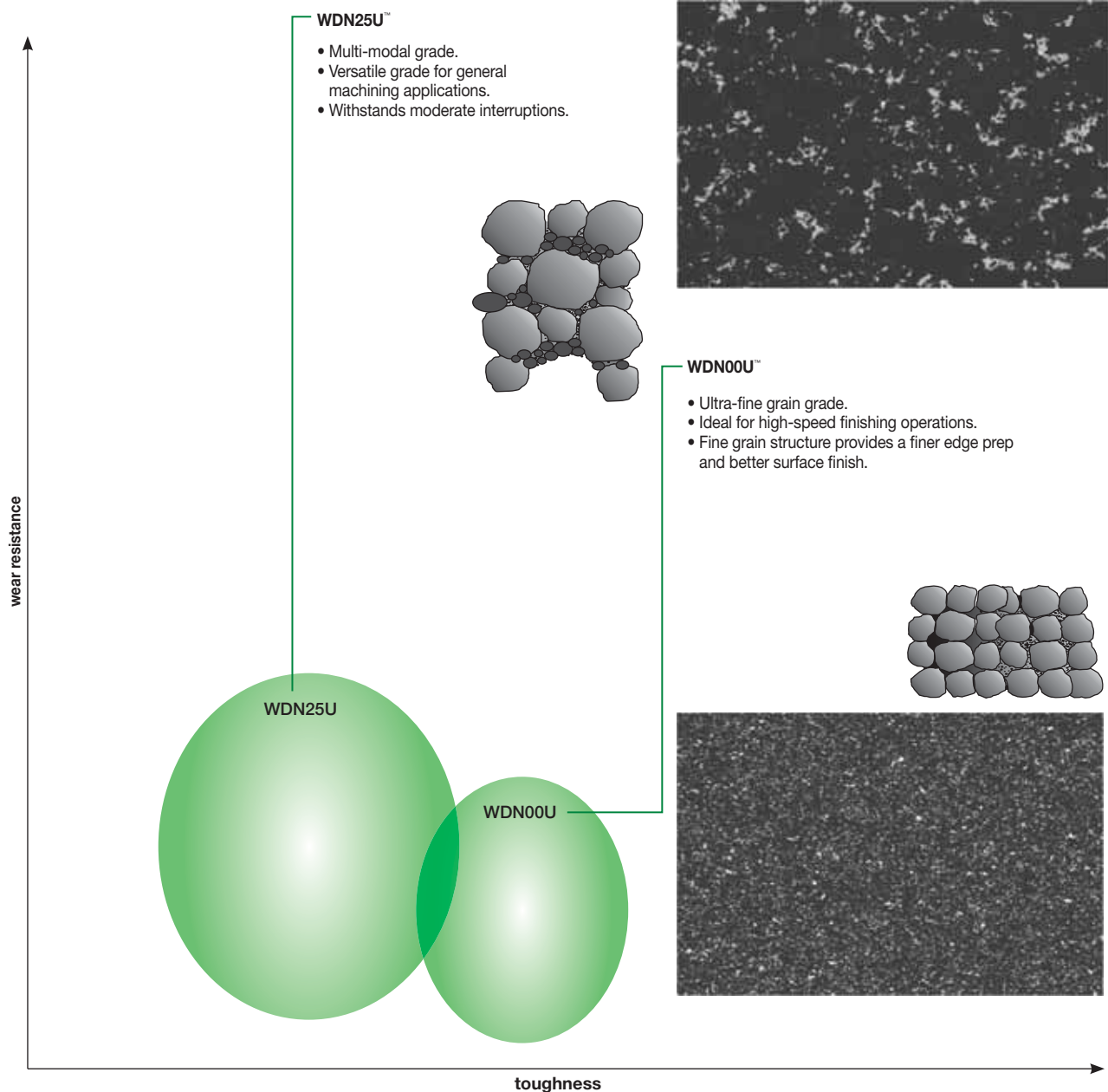


THE ALL-STAR PROGRAMME FEATURES ONLY THE MOST POPULAR PLATFORMS, GRADES, AND SIZES. FOR THE COMPLETE OFFERING, VISIT WIDIA NOVO™ OR WIDIA.COM.

PCD Grades for Turning Non-Ferrous Materials



- Two PCD grades — WDN25U and WDN00U — cover a wide range of applications.
- Grades provide outstanding performance to increase productivity and cut manufacturing costs.
- High abrasion and chipping resistance.
- Used in machining aluminium alloys with low- and high-silicon content, copper alloys, ceramics, and plastics.
- Suitable for machining highly abrasive materials such as titanium and Metal Matrix Composites (MMC).



Tools for External Turning

Modern machining operations performed on CNC machine tools and flexible production facilities require high-performance tools that provide straight forward design and application versatility. WIDIA™ offers an extensive range of toolholders for external turning to meet even the most exacting production demands across a broad spectrum of workpiece shapes and sizes.

Whatever your operation requirements — from light finishing cuts at very high cutting speeds to heavy roughing applications — there is a WIDIA solution. The complete programme includes toolholders for pin-, screw-, or clamp-type holding.



D-Style Clamping

- Used for negative style inserts.
- Clamp assembly contains clamp, screw, and retaining ring.
- Quick insert indexing.
- Ensures insert repeatability and seating.
- Reduced chatter and extended tool life.

P-Style Clamping

- Lever-type clamping system for negative indexable inserts.
- No interference to chip flow.
- Fast insert changes.

P-style available in metric sizes only.

S-Style Clamping

- Screw clamping system for positive indexable inserts.
- Compact design for high reliability and cost efficiency.
- Carbide shim for additional tool protection.

C-Style Clamping

- Height-adjustable clamp permits use of additional chipbreakers.
- Universal clamping system for positive and negative flat top inserts.
- Robust engineering makes it easy to handle.
- Carbide shim for extra tool protection.

Victory™ Insert MR Geometry



For medium to light roughing of steels, difficult-to-machine high alloy titanium and aluminium materials. High strength to deal with heavy chip deformation.

Victory Insert RH Geometry



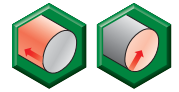
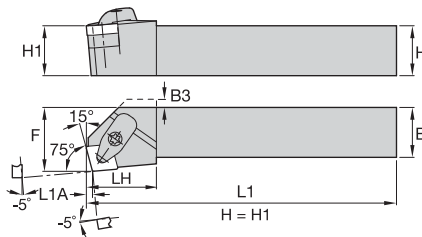
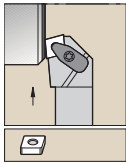
For medium-duty to roughing. Outstanding chip control. High edge strength for interrupted cuts, forging skin or scale. Preferred for all cast iron such as grey, malleable, and nodular.

Victory Insert UM Geometry



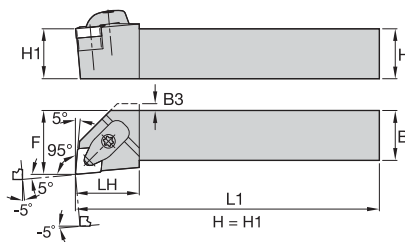
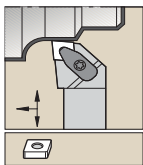
For medium-duty turning operations. Soft-cutting chipbreaker. Used in applications producing varying chip sections, such as profile or copy turning.

DCKN 75°



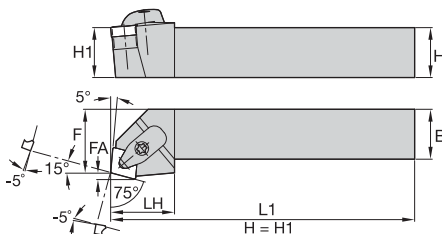
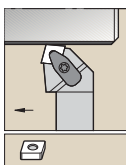
order number	catalogue number	H	B	F	L1	LH	L1A	B3	gage insert
right hand									
5697857	DCKNR2525M12KC04	25	25	32,0	150	32,0	3,1	—	CN..120408
left hand									
5697854	DCKNL2525M12KC04	25	25	32,0	150	32,0	3,1	—	CN..120408

DCLN 95°



order number	catalogue number	H	B	F	L1	LH	B3	gage insert
right hand								
5697893	DCLNR2525M12KC04	25	25	32,0	150	32,0	—	CN..120408
5697894	DCLNR2525M16KC06	25	25	32,0	150	33,0	—	CN..160612
5697895	DCLNR3232P16KC06	32	32	40,0	170	33,0	—	CN..160612
left hand								
5697884	DCLNL2525M12KC04	25	25	32,0	150	32,0	—	CN..120408
5697885	DCLNL2525M16KC06	25	25	32,0	150	33,0	—	CN..160612

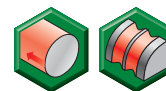
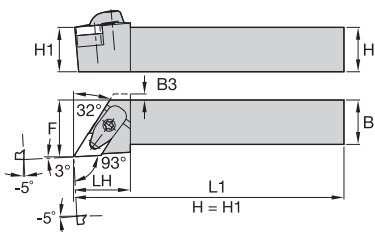
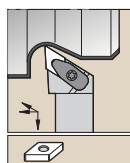
DCRN 75°



order number	catalogue number	H	B	F	L1	LH	FA	gage insert
right hand								
5697904	DCRNR2525M12KC04	25	25	32,0	150	32,0	3,3	CN..120408
left hand								
5697900	DCRNL2525M12KC04	25	25	32,0	150	32,0	3,3	CN..120408

INDEXABLE MILLING

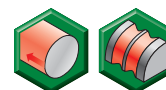
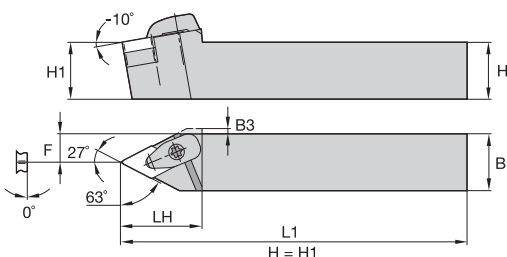
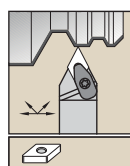
DDJN 93°



order number	catalogue number	H	B	F	L1	LH	B3	gage insert
right hand								
5697930	DDJNR2525M15KC06	25	25	32,0	150	32,0	—	DN..150608
left hand								
5697920	DDJNL2525M15KC06	25	25	32,0	150	32,0	—	DN..150608

HOLEMAKING

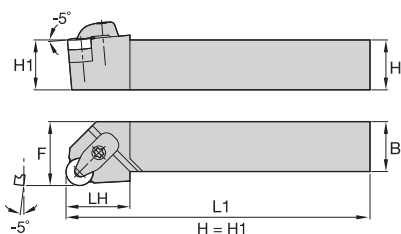
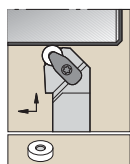
DDNN 63°



order number	catalogue number	H	B	F	L1	LH	B3	gage insert
right hand								
5697942	DDNNR2525M15KC06	25	25	13,0	150	40,0	—	DN..150608
left hand								
5697936	DDNNL2525M15KC06	25	25	13,0	150	40,0	—	DN..150608

TAPPING

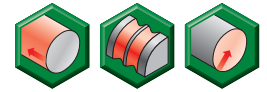
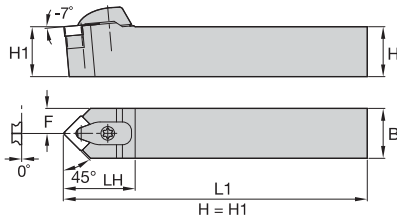
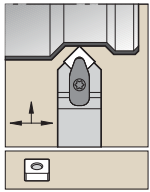
DRGN



order number	catalogue number	H	B	F	L1	LH	gage insert
right hand							
5697948	DRGNR2525M12KC04	25	25	32,0	150	32,0	RN..120400

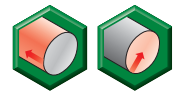
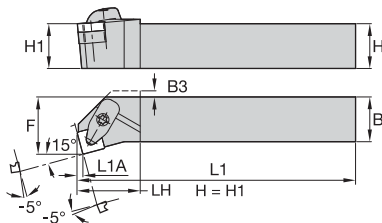
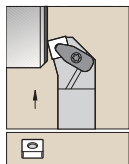
TURNING

DSDN 45°



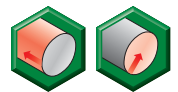
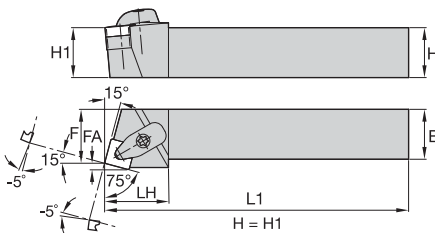
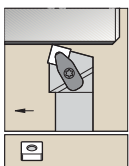
order number	catalogue number	H	B	F	L1	LH	gage insert
5697955	DSDNN2525M12KC04	25	25	12,0	150	36,0	SN..120408

DSKN 75°



order number	catalogue number	H	B	F	L1	LH	L1A	B3	gage insert
right hand 5696686	DSKNR2525M12KC04	25	25	32,0	150	32,0	3,1	4,0	SN..120408

DSRN 75°



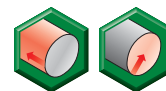
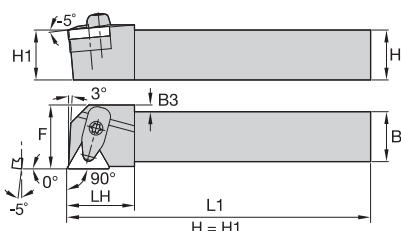
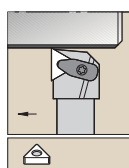
order number	catalogue number	H	B	F	L1	LH	FA	gage insert
right hand 5696704	DSRNR2525M12KC04	25	25	27,0	150	32,0	3,3	SN..120408
left hand 5696700	DSRNL2525M12KC04	25	25	27,0	150	32,0	3,3	SN..120408



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INDEXABLE MILLING

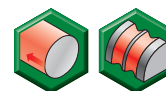
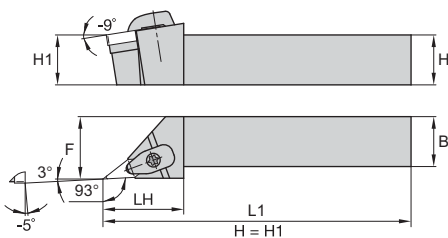
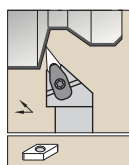
DTGN 90°



order number	catalogue number	H	B	F	L1	LH	B3	gage insert
right hand								
5696730	DTGNR2525M16KC04	25	25	32,0	150	25,0	—	TN..160408
left hand								
5696728	DTGNL2525M16KC04	25	25	32,0	150	25,0	—	TN..160408

SOLID END MILLING

DVJN 93°

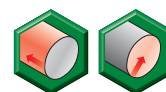
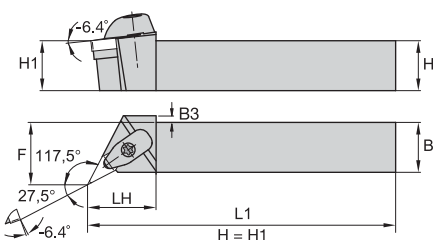
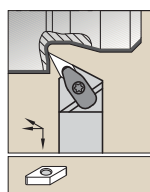


order number	catalogue number	H	B	F	L1	LH	gage insert
right hand							
5696738	DVJNR2525M16KC04	25	25	32,0	150	46,0	VN..160408
left hand							
5696733	DVJNL2525M16KC04	25	25	32,0	150	46,0	VN..160408

HOLEMAKING

TAPPING

DVON 117,5°



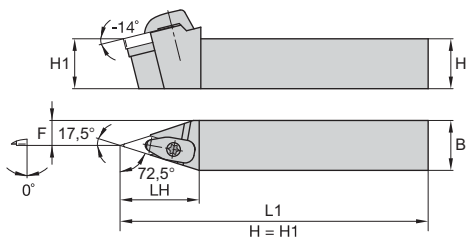
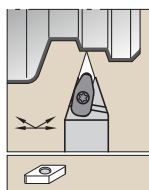
order number	catalogue number	H	B	F	L1	LH	B3	gage insert
right hand								
5696746	DVONR2525M16KC04	25	25	32,0	150	38,0	—	VN..160408
left hand								
5696743	DVONL2525M16KC04	25	25	32,0	150	38,0	—	VN..160408

TURNING



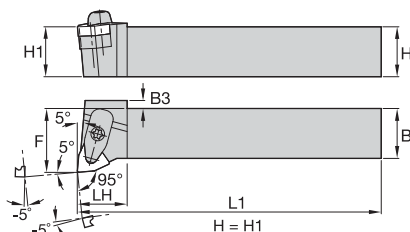
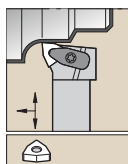
THE ALL-STAR PROGRAMME FEATURES ONLY THE MOST POPULAR PLATFORMS, GRADES, AND SIZES. FOR THE COMPLETE OFFERING, VISIT WIDIA NOVO™ OR WIDIA.COM.

DVNN 72,5°



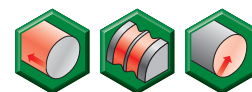
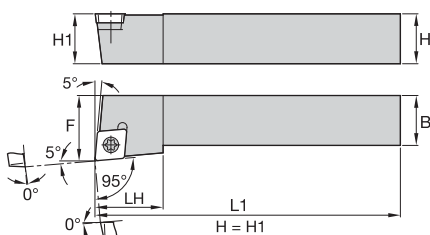
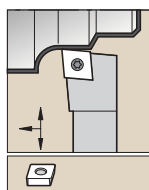
order number	catalogue number	H	B	F	L1	LH	gage insert
5696749	DVNN2525M16KC04	25	25	12,0	150	48,0	VN..160408

DWLN 95°



order number	catalogue number	H	B	F	L1	LH	B3	gage insert
right hand 5696760	DWLN2525M08KC04	25	25	32,0	150	25,0	4,0	WN..080408
left hand 5696754	DWLNL2525M08KC04	25	25	32,0	150	25,0	4,0	WN..080408

SCLC 95°



order number	catalogue number	H	B	F	L1	LH	gage insert
right hand 3879416	SCLCR1616H09	16	16	20,0	100	15,8	CC..09T308
3879414	SCLCR2020K12	20	20	25,0	125	19,8	CC..120408



INDEXABLE MILLING



SOLID END MILLING



HOLEMAKING



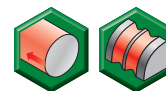
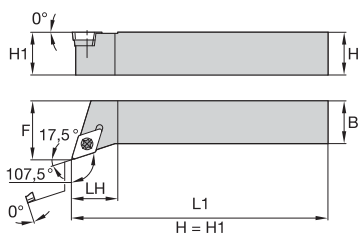
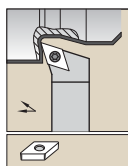
TAPPING



TURNING

INDEXABLE MILLING

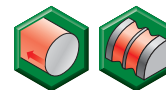
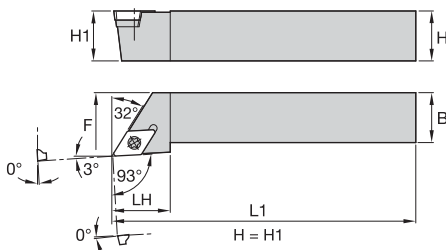
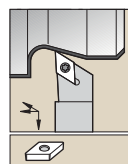
SDHC 107,5°



order number	catalogue number	H	B	F	L1	LH	gage insert
right hand 3879440	SDHCR2525M11	25	25	32,0	150	20,0	DC..11T308
left hand 3879438	SDHCL2525M11	25	25	32,0	150	20,0	DC..11T308

SOLID END MILLING

SDJC 93°

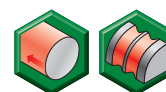
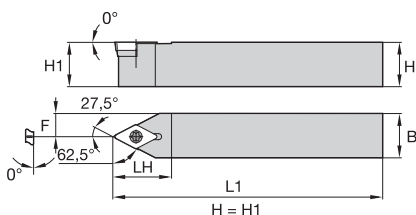
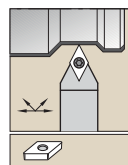


order number	catalogue number	H	B	F	L1	LH	gage insert
right hand 3879461	SDJCR2525M11	25	25	32,0	150	22,1	DC..11T308
left hand 3879453	SDJCL2525M11	25	25	32,0	150	22,1	DC..11T308

HOLEMAKING

TAPPING

SDNC 62,5°



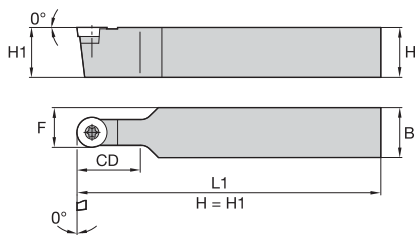
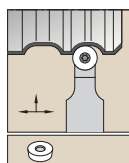
order number	catalogue number	H	B	F	L1	LH	gage insert
3879849	SDNCN2525M11	25	25	12,5	150	24,9	DC..11T308

TURNING



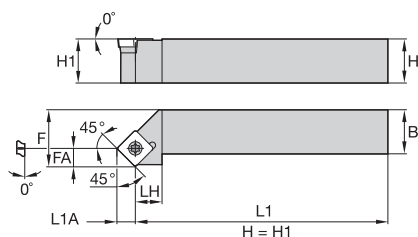
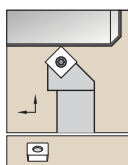
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SRDC



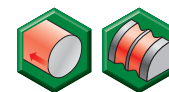
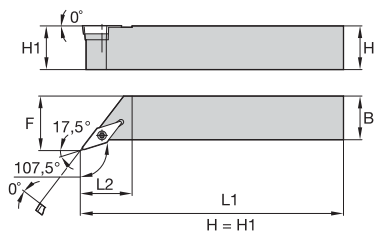
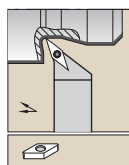
order number	catalogue number	H	B	F	L1	CD	gage insert
3900183	SRDCN2525M06	25	25	15,0	150	19,7	RC..0602M0
3879737	SRDCN2525M08	25	25	16,5	150	25,0	RC..0803M0
3879734	SRDCN2525M10	25	25	17,5	150	25,0	RC..10T3M0
3879738	SRDCN2525M12	25	25	18,5	150	25,0	RC..1204M0

SSSC 45°



order number	catalogue number	H	B	F	L1	LH	FA	L1A	gage insert
right hand 3879746	SSSCR2020K12	20	20	25,0	125	25,0	8,3	8,3	SC..120408

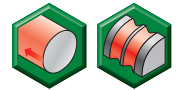
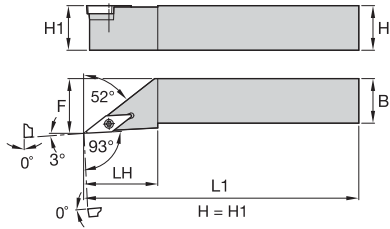
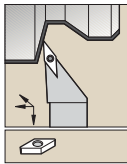
SVHB 107,5°



order number	catalogue number	H	B	F	L1	L2	gage insert
right hand 3879765	SVHBR2525M16	25	25	32,0	150	28,0	VB..160408
left hand 3879766	SVHBL2525M16	25	25	32,0	150	28,0	VB..160408

INDEXABLE MILLING

SVJB 93°

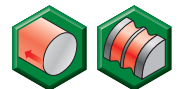
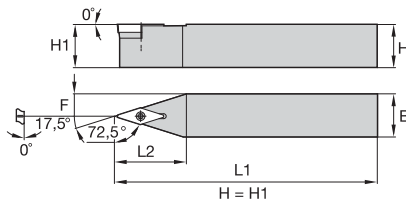
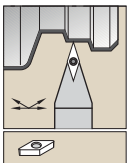


SOLID END MILLING

order number	catalogue number	H	B	F	L1	LH	gage insert
right hand							
3879776	SVJBR2020K16	20	20	25,0	125	35,0	VB..160408
3879775	SVJBR2525M16	25	25	32,0	150	35,0	VB..160408
3879773	SVJBR3225P16	32	25	32,0	170	35,0	VB..160408
left hand							
3879774	SVJBL2525M16	25	25	32,0	150	35,0	VB..160408

HOLEMAKING

SVVB 72,5°



TAPPING

order number	catalogue number	H	B	F	L1	L2	gage insert
3879778	SVVBN2525M16	25	25	12,5	150	33,0	VB..160408

TURNING



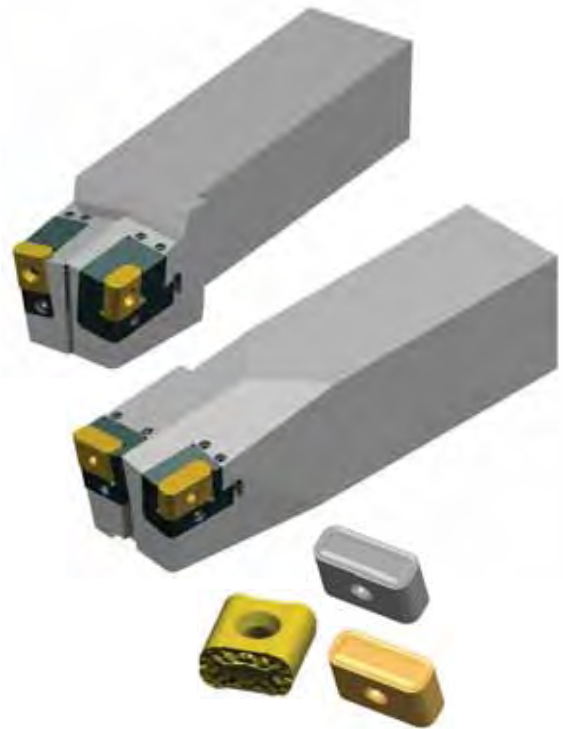
THE ALL-STAR PROGRAMME FEATURES ONLY THE MOST POPULAR PLATFORMS, GRADES, AND SIZES. FOR THE COMPLETE OFFERING, VISIT WIDIA NOVO™ OR WIDIA.COM.

Heavy-Duty Turning

This line of heavy-duty machining tooling offers a wide selection of geometries and grades for cost-effective machining in these operations.

Railway

Tooling built specifically for machining railway wheels and axles. In terms of wheel processing, they are usually defined by group, such as “New” wheel tooling for machining newly cast or forged wheels, or “RWRT” (railway wheel re-turning) tooling for machining used wheels and form milling tools for milling the form of used railway wheels.



Bar Peeling

An extremely efficient method for sizing and finishing surfaces on round material stock.



Tools for Internal Boring

Today's modern boring operations require the most reliable, high-performance tools. WIDIA™ offers an extensive range of toolholders for internal boring to meet the most precise production demands. Internal boring bars provide consistent results and enhanced production reliability.



D-Style Clamping

- Used for negative style inserts.
- Clamp assembly contains clamp, screw, and retaining ring.
- Quick insert indexing.
- Ensures insert repeatability and seating.
- Reduced chatter and extended tool life.

P-Style Clamping

- Lever-type clamping system for negative indexable inserts.
- No interference to chip flow.
- Fast insert changes.

P-style available in metric sizes only.

S-Style Clamping

- Screw clamping system for positive indexable inserts.
- Compact design for high reliability and cost efficiency.
- Carbide shim for additional tool protection.

C-Style Clamping

- Height-adjustable clamp permits use of additional chipbreakers.
- Universal clamping system for positive and negative flat top inserts.
- Robust engineering makes it easy to handle.
- Carbide shim for extra tool protection.

Victory™ Insert FP Geometry



For finishing to medium turning operations with optimal chip control over a wide range of cutting conditions and workpiece materials.

Victory Insert MP Geometry



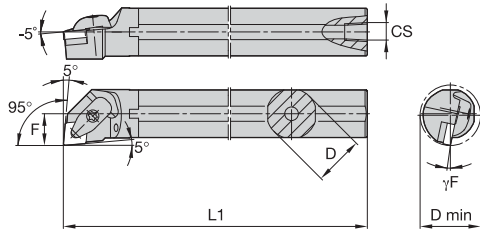
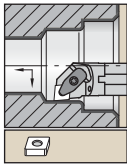
For medium to rough turning with reduced cutting forces and improved chip control for high feed rates. Suitable for high metal removal rates and spindling applications.

Victory Insert FF Geometry



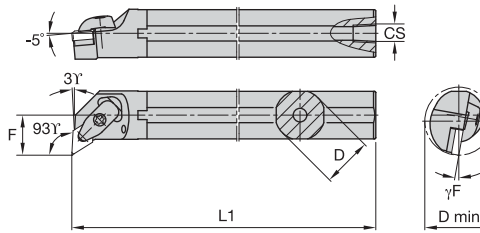
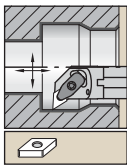
For finish turning, producing smooth, accurate surfaces. Very good chip control, especially at low depths of cut.

A-DCLN 95°



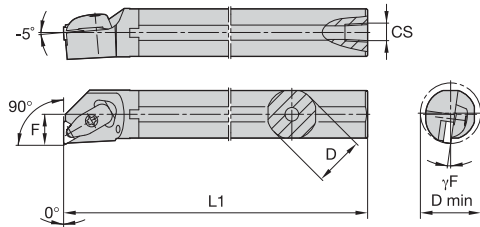
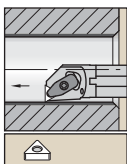
order number	catalogue number	D	D min	F	L1	CS	γF°	gage insert
right hand								
5696071	A25RDCLNR12KC04	25	32,0	17,0	200	1/4-18 NPT	-12,0	CN.120408
5696073	A32SDCLNR12KC04	32	40,0	22,0	250	1/4-18 NPT	-12,0	CN.120408
left hand								
5696072	A25RDCLNL12KC04	25	32,0	17,0	200	1/4-18 NPT	-12,0	CN.120408
5696074	A32SDCLNL12KC04	32	40,0	22,0	250	1/4-18 NPT	-12,0	CN.120408

A-DDUN 93°



order number	catalogue number	D	D min	F	L1	CS	γF°	gage insert
right hand								
5696211	A32SDDUNR11KC04	32	40,0	22,0	250	1/4-18 NPT	-12,0	DN..110408
5696213	A32SDDUNR15KC06	32	40,0	22,0	250	1/4-18 NPT	-12,0	DN..150608
left hand								
5696214	A32SDDUNL15KC06	32	40,0	22,0	250	1/4-18 NPT	-12,0	DN..150608

A-DTFN 90°



order number	catalogue number	D	D min	F	L1	CS	γF°	gage insert
right hand								
5696219	A25RDTFNR16KC04	25	32,0	17,0	200	1/4-18 NPT	-14,0	TN..160408
5696261	A32SDTFNR16KC04	32	40,0	22,0	250	1/4-18 NPT	-12,0	TN..160408
left hand								
5696260	A25RDTFNL16KC04	25	32,0	17,0	200	1/4-18 NPT	-14,0	TN..160408

INDEXABLE MILLING

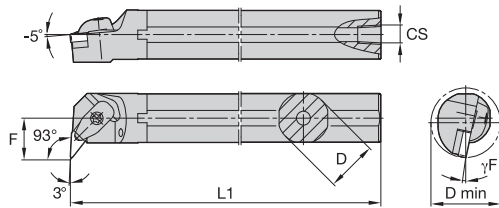
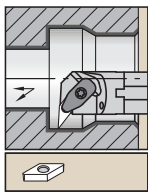
SOLID END MILLING

HOLEMAKING

TAPPING

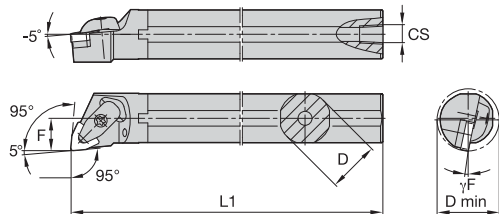
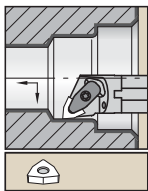
TURNING

A-DVUN 93°



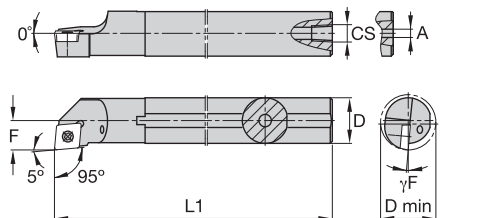
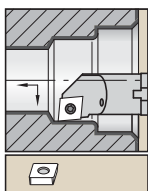
order number	catalogue number	D	D min	F	L1	CS	γF°	gage insert
right hand								
5696263	A32SDVUNR16KC04	32	40,0	22,0	250	1/4-18 NPT	-10.5	VN..160408

A-DWLN 95°



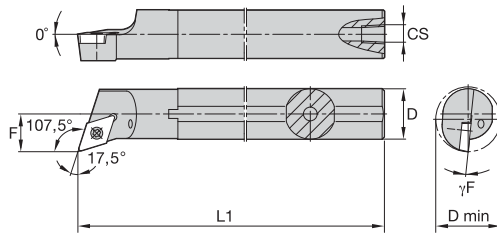
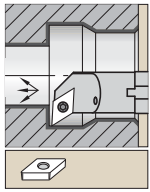
order number	catalogue number	D	D min	F	L1	CS	γF°	gage insert
right hand								
5696269	A25RDWLN08KC04	25	32,0	17,0	200	1/4-18 NPT	-12.0	WN..080408
5696281	A32SDWLN08KC04	32	40,0	22,0	250	1/4-18 NPT	-14.0	WN..080408
left hand								
5696268	A25RDWLN06KC04	25	32,0	17,0	200	1/4-18 NPT	-14.0	WN..060408
5696280	A25RDWLN08KC04	25	32,0	17,0	200	1/4-18 NPT	-12.0	WN..080408
5696282	A32SDWLN08KC04	32	40,0	22,0	250	1/4-18 NPT	-14.0	WN..080408

A-SCLC 95°



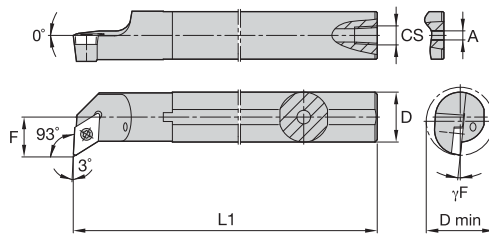
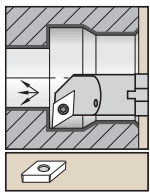
order number	catalogue number	D	D min	F	L1	A	CS	γF°	gage insert
right hand									
3883285	A08JSCLCR06	8	11,0	6,0	110	2,4	—	-8.0	CC..060204
3883283	A10KSCLCR06	10	13,0	7,0	125	3,2	—	-7.0	CC..060204
3883271	A16RSCLCR09	16	20,0	11,0	200	—	1/8-27 NPT	-7.0	CC..09T308
3883269	A20SSCLCR09	20	25,0	13,0	250	4,0	1/8-27 NPT	-5.0	CC..09T308
left hand									
3883272	A16RSCLCL09	16	20,0	11,0	200	4,0	1/8-27 NPT	-7.0	CC..09T308
3883270	A20SSCLCL09	20	25,0	13,0	250	—	1/8-27 NPT	-5.0	CC..09T308

A-SDQC 107,5°



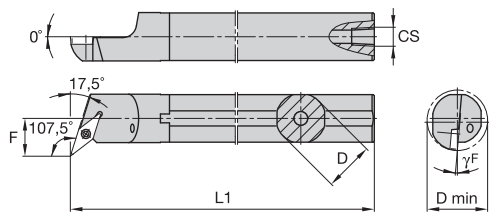
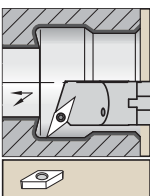
order number	catalogue number	D	D min	F	L1	CS	γF°	gage insert
right hand								
3883474	A20SSDQCR11	20	25,0	13,0	250	1/8-27 NPT	-5.0	DC..11T308
3883462	A25TSDQCR11	25	32,0	17,0	300	1/4-18 NPT	-4.0	DC..11T308
left hand								
3883475	A20SSDQCL11	20	25,0	13,0	250	1/8-27 NPT	-5.0	DC..11T308
3883473	A25TSDQCL11	25	32,0	17,0	300	1/4-18 NPT	-4.0	DC..11T308

A-SDUC 93°



order number	catalogue number	D	D min	F	L1	A	CS	γF°	gage insert
right hand									
3883291	A20SSDU CR11	20	25,0	13,0	250	—	1/8-27 NPT	-5.0	DC..11T308
3883288	A25TSDUCR11	25	32,0	17,0	300	—	1/8-27 NPT	-4.0	DC..11T308
left hand									
3883292	A20SSDU CL11	20	25,0	13,0	250	—	1/8-27 NPT	-5.0	DC..11T308
3883290	A25TSDUCL11	25	32,0	17,0	300	—	1/8-27 NPT	-4.0	DC..11T308

A-SVQB 107,5°



order number	catalogue number	D	D min	F	L1	CS	γF°	gage insert
right hand								
3883434	A25TSVQBR16	25	32,0	17,0	300	1/4-18 NPT	-6.0	VB..160408
left hand								
3883435	A25TSVQBL16	25	32,0	17,0	300	1/4-18 NPT	-6.0	VB..160408

★ INDEXABLE MILLING

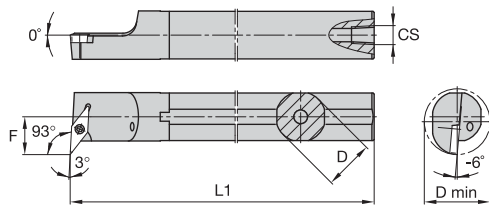
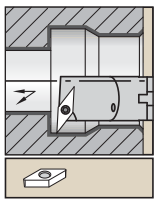
★ SOLID END MILLING

★ HOLE MAKING

★ TAPPING

★ TURNING

A-SVUB 93°



order number	catalogue number	D	D min	F	L1	CS	gage insert
right hand							
3883438	A25TSVUBR16	25	32,0	17,0	300	1/4-18 NPT	VB..160408
left hand							
3883439	A25TSVUBL16	25	32,0	17,0	300	1/4-18 NPT	VB..160408

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING



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Cartridges

Modern machining operations demand high-quality, high-performance toolholders that provide straightforward design and application versatility.

Standard WIDIA™ cartridges are ideal for turning tools with one, or several, cutting edges. A wide range of cartridge sizes and styles provide numerous combinations and application possibilities.



Simple and secure mounting to the tool by a single cartridge clamping screw.

High accuracy on “F” dimension ensures proper application to minimum bore dimensions.

Same clamping systems as standard turning toolholders.

Overall sizes to DIN and ISO are ideal for single- and multi-tooth turning, boring, and spotting tools.

See pages E6–E60 for inserts.
Steel shank with through coolant.

Precise axial and radial positioning by adjustment screws.



GROOVING & CUT-OFF

WGC

Pages E80–E88

The most versatile tool in the market in grooving, profiling, and cut-off operations.



WMT™

Pages E90–E100

The WMT platform is the economical and reliable option for all your grooving, cut-off, turning, and profiling applications.



AUTOMOTIVE



Gears

Cylinder Housing

Brakes and Steering



WIDIA™ manufactures tools to meet application needs in steel, cast iron, and aluminium automotive components.

TO SEE ALL PRODUCT LINES, VISIT OUR DIGITAL RESOURCES



WIDIA NOVO™ Application
Download to your desktop or tablet:
widia.com/novo



WIDIA™ Machining Central Mobile App
Download for iOS or Android:
widia.com/en/featured/WidiaMobileApp

WGC is the first choice and most versatile tool for grooving, profiling and cut-off operations.

Grooving:

- First choice for external grooving applications in most workpiece materials.
- Through coolant capability and efficient coolant delivery for enhanced productivity.
- Available in integral and modular style toolholders.
- Groove width 2–10mm (0.0787–0.394").

Cut-Off:

- Specially engineered chipbreakers for effective parting/cut-off, and deep grooving.
- Positive geometry for lower forces.
- Secure seating offers greatest stability.
- Groove width: 1.4–8mm (0.055–0.315").

Profiling:

- Full radius chipbreakers for multidirectional turning and generating complex profiles.
- Rigid design ensures smooth surface finish.
- Groove width: 3–8mm (0.118–0.315").

4 BENEFITS IN 1

VERSATILE

GROOVING, PROFILING, AND CUT-OFF OPERATIONS

SIMPLE

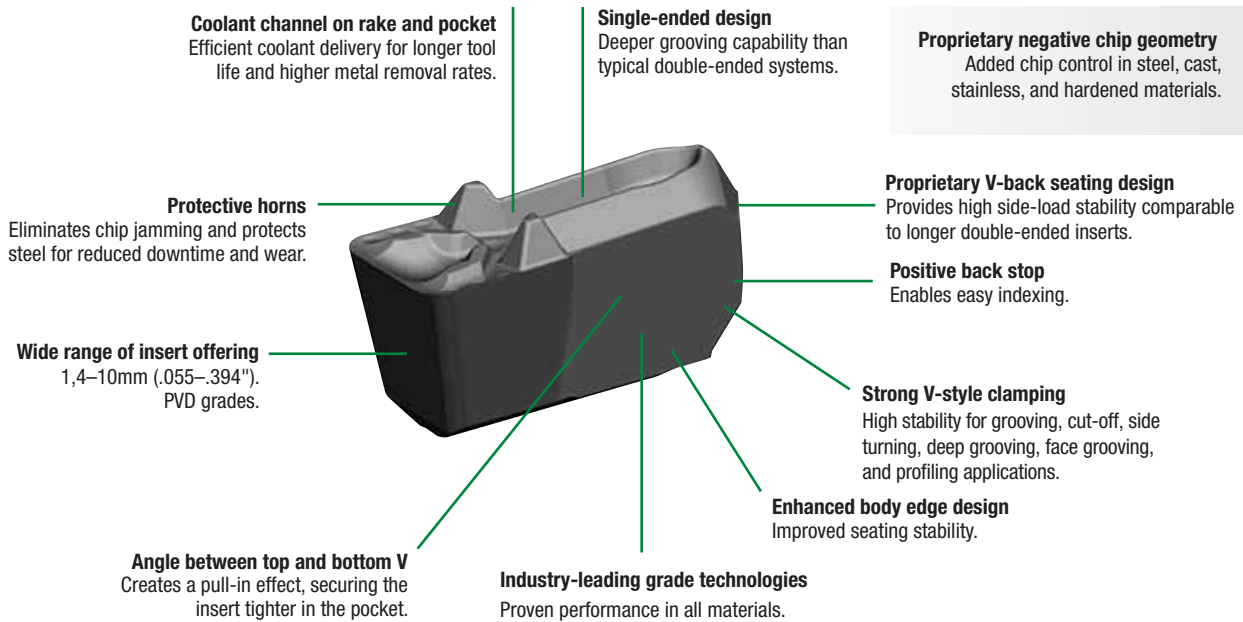
EASY TO SELECT AND APPLY

STABLE

TRIPLE-V SEATING FOR SECURE CLAMPING

PRODUCTIVE

LOW CUTTING FORCES IN THROUGH COOLANT FOR BETTER CHIP EVACUATION



Grooving
Precision Moulded



P M N S

PT-Positive Rake



P M K H

PN-Negative Rake



P M N S

F-Fine



P K

M-Medium



P M

R-Rough

Profiling
Precision Moulded

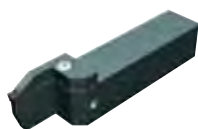


P M N S

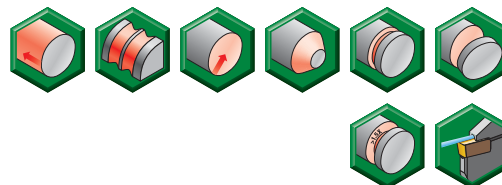
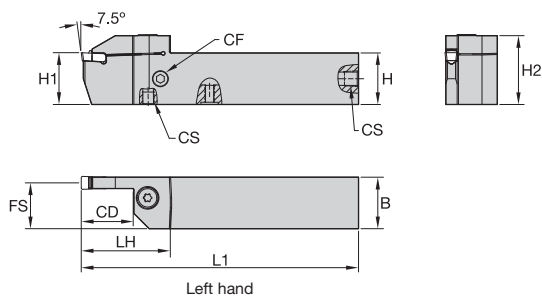
PC-Full Radius

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

Integral Straight • Metric



Left hand



order number	catalogue number	SSC	CD	H1	H	B	H2	L1	FS	LH	CF	CS
right hand												
6461946	WGCSMR2020K0216	2	16	20	20	20	27	125	19	31	—	—
6461948	WGCSMR2525M0216	2	16	25	25	25	32	150	24	31	—	—
6461952	WGCSMR2525M0226	2	26	25	25	25	34	150	24	42	—	—
6462005	WGCSMR2020K0322C	3	22	20	20	20	30	125	19	43	M8X1	M8X1
6462006	WGCSMR2525M0326C	3	26	25	25	25	35	150	24	47	G 1/8	G 1/8
6462008	WGCSMR2525M0416C	4	16	25	25	25	34	150	23	37	G 1/8	G 1/8
6462010	WGCSMR2525M0426C	4	26	25	25	25	35	150	23	47	G 1/8	G 1/8
left hand												
6461954	WGCSML2020K0216	2	16	20	20	20	27	125	19	31	—	—
6461960	WGCSML2525M0226	2	26	25	25	25	34	150	24	42	—	—
6462080	WGCSML2020K0322C	3	22	20	20	20	30	125	19	43	M8X1	M8X1
6462091	WGCSML2525M0326C	3	26	25	25	25	35	150	24	47	G 1/8	G 1/8
6462099	WGCSML2525M0526C	5	26	25	25	25	35	150	23	47	G 1/8	G 1/8

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

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING



THE ALL-STAR PROGRAMME FEATURES ONLY THE MOST POPULAR PLATFORMS, GRADES, AND SIZES. FOR THE COMPLETE OFFERING, VISIT WIDIA NOVO™ OR WIDIA.COM.

INDEXABLE MILLING

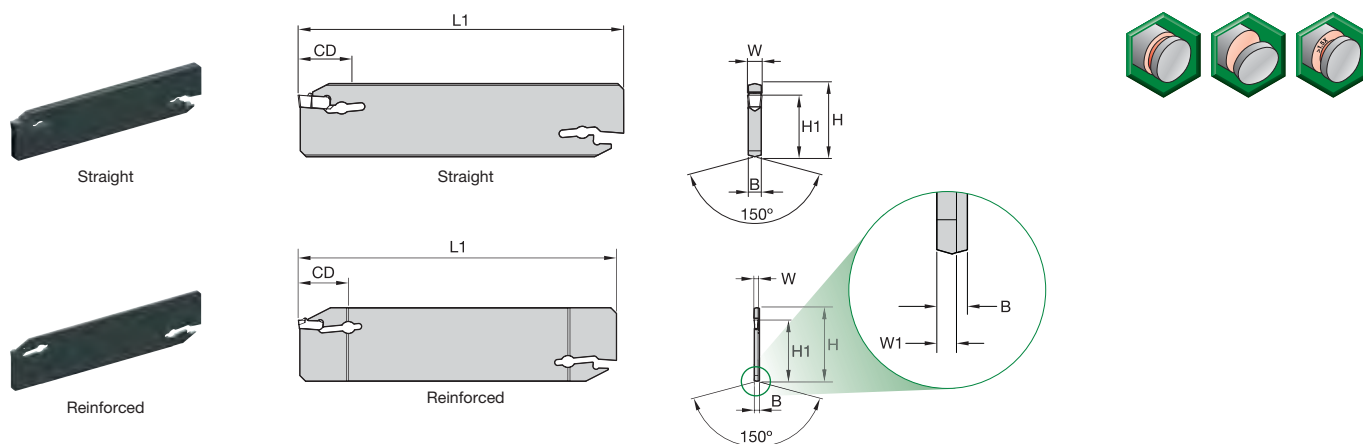
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Double-Ended Cut-Off Blade



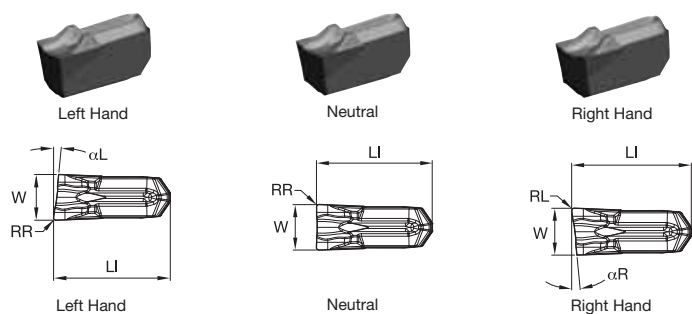
order number	catalogue number	SSC	H	W	W1	H1	L1	B	CD
neutral hand									
6499212	WGCBNS26J0230	2	26	2,0	—	21,5	110	1,65	30
6499213	WGCBNS32M0250	2	32	2,0	—	25,1	150	1,65	50
6499214	WGCBNS26J0340	3	26	3,0	—	21,5	110	2,40	40
6499215	WGCBNS32M0350	3	32	3,0	—	25,1	150	2,40	50
6499217	WGCBNS32M0450	4	32	4,0	—	25,1	150	3,40	50
6499218	WGCBNS32M0560	5	32	5,0	—	25,1	150	4,40	60
6499221	WGCBNS52X08120	8	53	8,0	—	45,3	260	7,00	120

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



THE ALL-STAR PROGRAMME FEATURES ONLY THE MOST POPULAR PLATFORMS, GRADES, AND SIZES. FOR THE COMPLETE OFFERING, VISIT WIDIA NOVO™ OR WIDIA.COM.

Cut-Off Inserts • F Precision Moulded • Metric



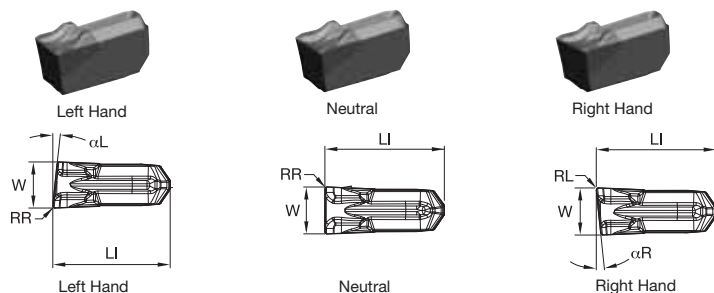
- first choice
- alternate choice

P	●
M	●
K	○
N	○
S	●
H	

catalogue number	SSC	W	W tol ±	LI	αR	αL	RR	RL	WU25PT
WC020M02N00F02	2	2,00	0,050	9,00	—	—	0,20	0,20	6470548
WC020M02R06F02	2	2,00	0,050	9,00	6	—	—	0,20	6470549
WC030M03L06F02	3	3,00	0,075	9,60	—	6	0,20	—	6470550
WC030M03N00F02	3	3,00	0,075	9,60	—	—	0,20	0,20	6470561
WC030M03R06F02	3	3,00	0,075	9,60	6	—	—	—	6470562
WC040M04N00F02	4	4,00	0,075	10,19	—	—	0,20	0,20	6470564

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

Cut-Off Inserts • M Precision Moulded • Metric



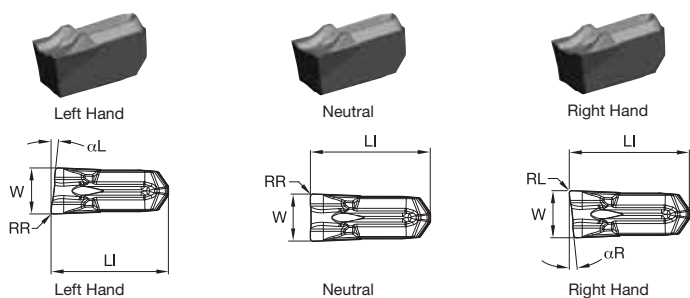
- first choice
- alternate choice

P	●
M	●
K	○
N	○
S	●
H	

catalogue number	SSC	W	W tol ±	LI	αR	αL	RR	RL	WU25PT
WC020M02N00M02	2	2,00	0,050	8,98	—	—	0,20	0,20	6461862
WC030M03N00M02	3	3,00	0,075	9,60	—	—	0,20	0,20	6461865
WC040M04N00M02	4	4,00	0,075	10,20	—	—	0,20	0,20	6461868
WC050M05N00M03	5	5,00	0,075	12,25	—	—	0,30	0,30	6461870
WC080M08N00M04	8	8,00	0,075	17,46	—	—	0,40	0,40	6461882

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

Cut-Off Inserts • R Precision Moulded • Metric



- first choice
- alternate choice

P	●
M	●
K	○
N	○
S	●
H	

catalogue number	SSC	W	W tol ±	LI	αR	αL	RR	RL	WU25PT
WC020M02N00R02	2	2,00	0,050	8,98	—	—	0,20	0,20	6470427
WC030M03N00R02	3	3,00	0,075	9,60	—	—	0,20	0,20	6470430
WC030M03R06R02	3	3,00	0,075	9,61	6	—	—	0,20	6470461

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

Grooving Inserts • PT Precision Moulded • Metric



- first choice
- alternate choice

P	●
M	●
K	○
N	○
S	●
H	

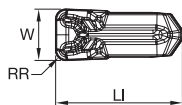
catalogue number	SSC	W	W tol ±	LI	RR	WU25PT
WG0212M02U02PT	2	2,13	0,050	8,97	0,20	6461734
WG0312M03U02PT	3	3,13	0,075	9,60	0,20	6461736
WG0312M03U04PT	3	3,13	0,075	9,60	0,40	6461737
WG0412M04U04PT	4	4,13	0,075	10,19	0,40	6461738
WG0412M04U08PT	4	4,13	0,075	10,19	0,80	6461739
WG0612M06U04PT	6	6,13	0,075	14,59	0,40	6461822
WG0812M08U08PT	8	8,13	0,075	17,45	0,80	6461825

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



THE ALL-STAR PROGRAMME FEATURES ONLY THE MOST POPULAR PLATFORMS, GRADES, AND SIZES. FOR THE COMPLETE OFFERING, VISIT WIDIA NOVO™ OR WIDIA.COM.

Grooving Inserts • PN Precision Moulded • Metric



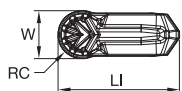
- first choice
- alternate choice

P	●
M	●
K	○
N	○
S	●
H	

catalogue number	SSC	W	W tol ±	RR	LI	WU25PT
WG0312M03U04PN	3	3,13	0,075	0,40	9,60	6471043
WG0412M04U08PN	4	4,13	0,075	0,80	10,20	6471045
WG0812M08U08PN	8	8,13	0,075	0,80	17,46	6471050

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

Grooving Inserts • PC Full Radius Precision Ground • Metric



- first choice
- alternate choice

P	●
M	●
K	○
N	○
S	●
H	

catalogue number	SSC	W	W tol ±	RC	LI	WU25PT
WR0200M02P00PC	2	2,00	0,025	1,00	8,91	6470467
WR0300M03P00PC	3	3,00	0,025	1,50	9,54	6470468
WR0400M04P00PC	4	4,00	0,025	2,00	10,13	6470469
WR0500M05P00PC	5	5,00	0,025	2,50	12,18	6470470
WR0800M08P00PC	8	8,00	0,025	4,00	17,41	6470482

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

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

WGC Feed Rates

Plunge feed rates

- first choice
- alternate choice

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

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

Cut-Off Feed Rates

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

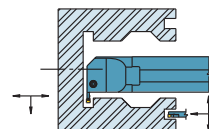
NOTE: For cut-off inserts with a lead angle, maximum feed rate should be reduced by up to 40%.

Maximum Feed Rate Values

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

I.D. and Face Grooving

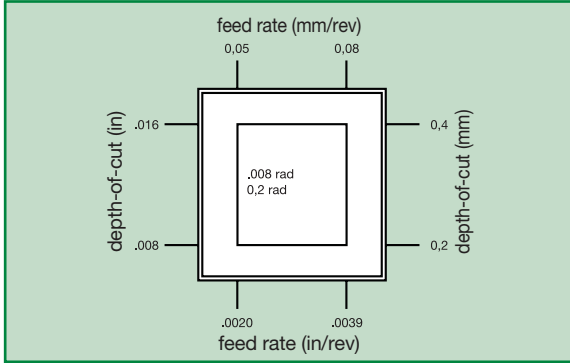
For I.D. and face grooving applications, reduce feed rate by 20%.



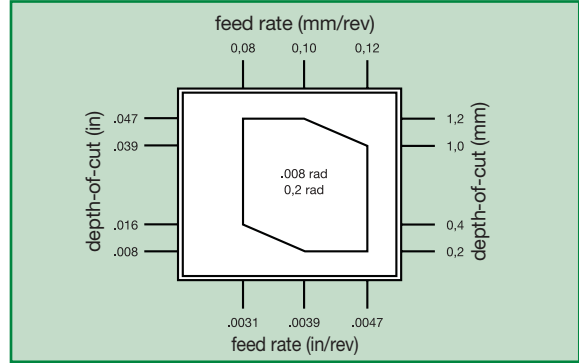
WGC Feed Rates

Turn and profile feed rates

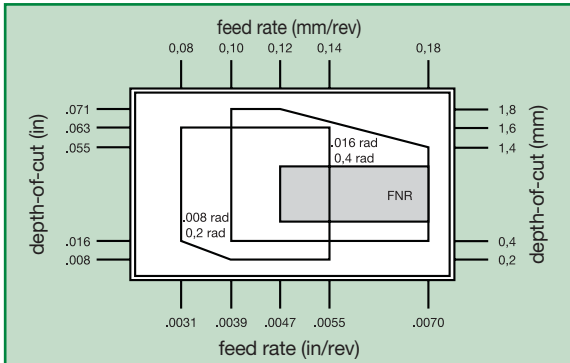
Seat Size 1F



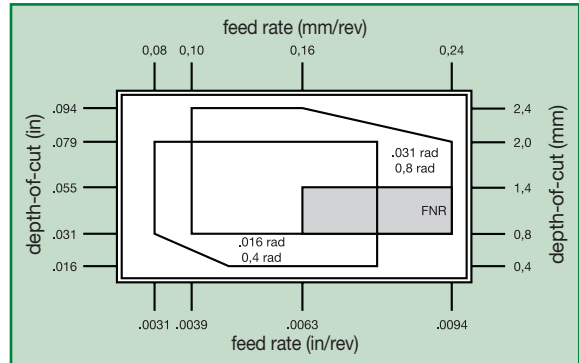
Seat Size 2



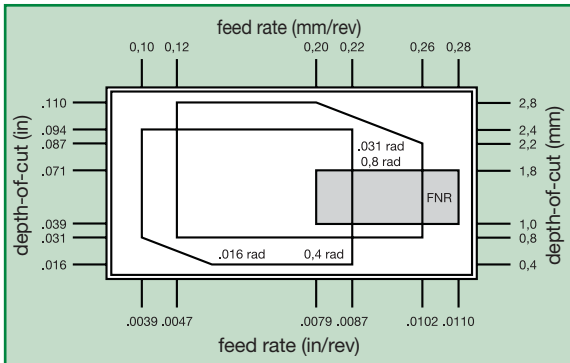
Seat Size 3



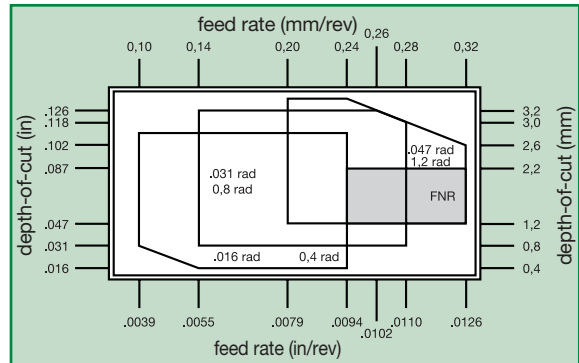
Seat Size 4



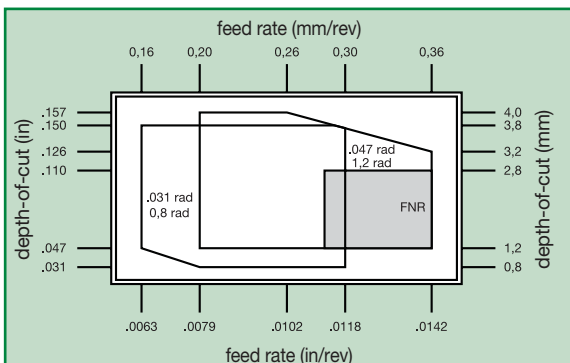
Seat Size 5



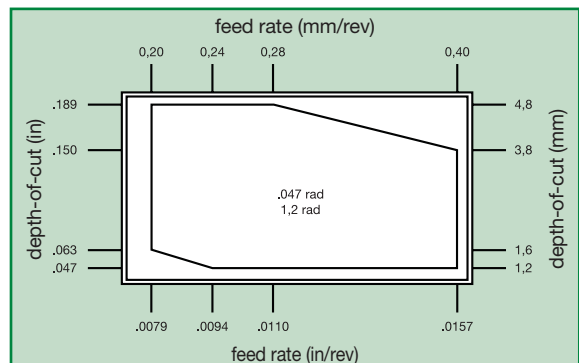
Seat Size 6



Seat Size 8



Seat Size 10



* FNR = Full Nose Radius



INDEXABLE MILLING



SOLID END MILLING



HOLEMAKING



TAPPING



TURNING

Recommended Starting Speeds • Inch and Metric

Maximum Feed Rate Values

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

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

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

INDEXABLE MILLING

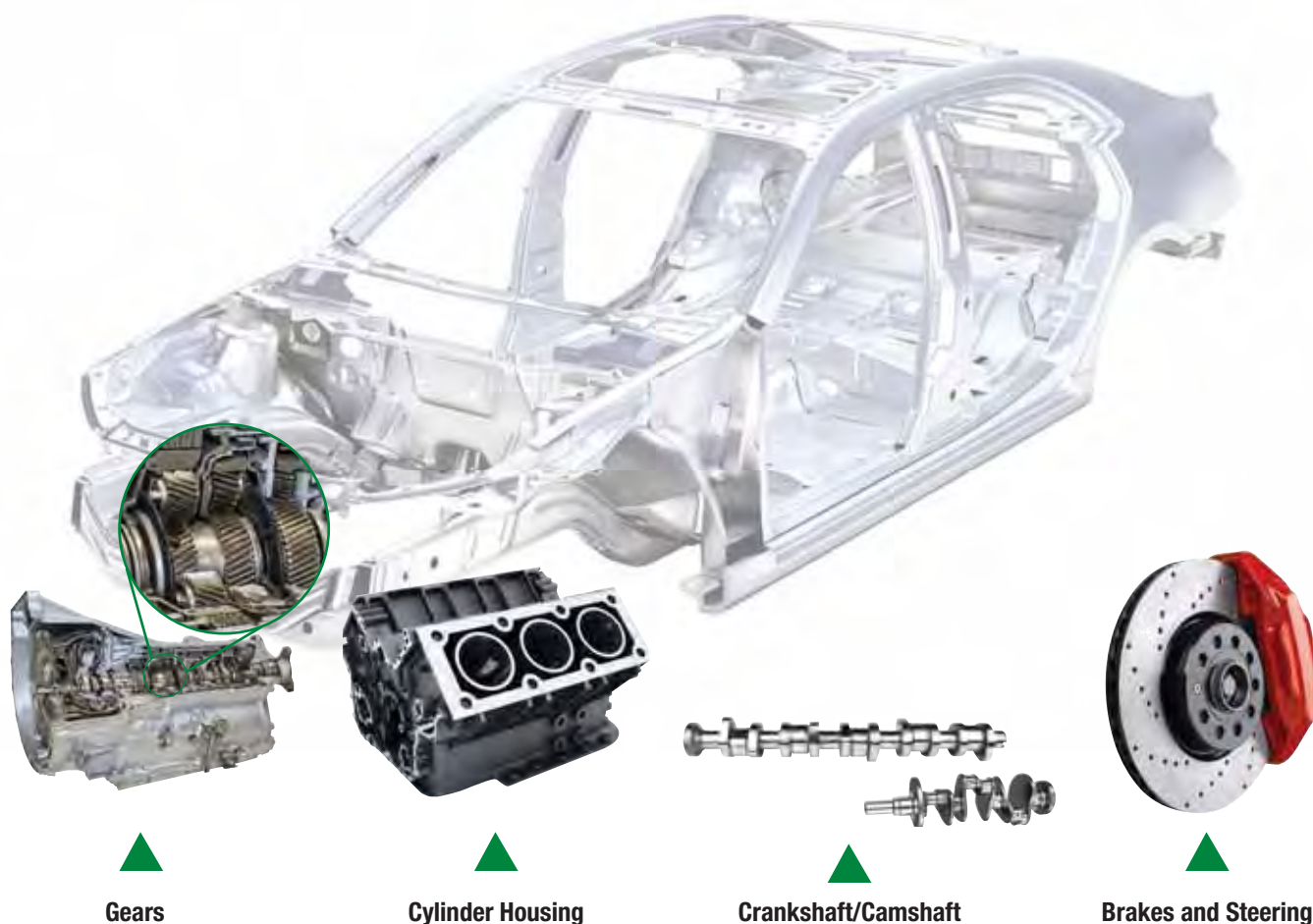
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Automotive



WIDIA™ manufactures tools to meet application needs in steel, cast iron, and aluminium automotive components.

TO SEE ALL PRODUCT LINES, VISIT OUR DIGITAL RESOURCES



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The most advanced turning, grooving, cut-off, and profiling system. WMT provides a complete line of grooving geometries and an extensive grade selection to meet the most demanding application requirements.

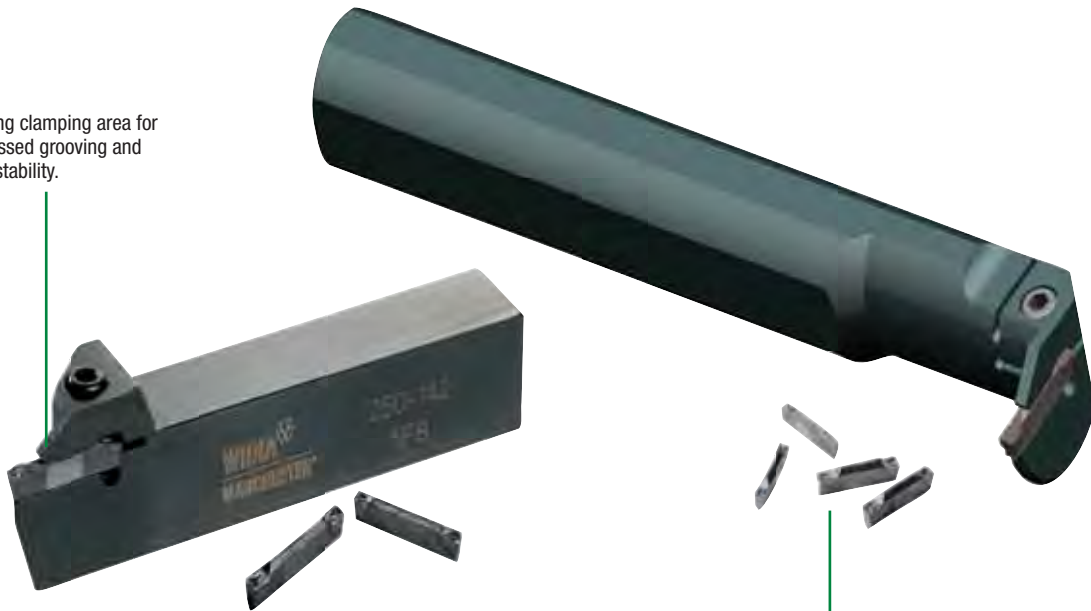
Rigid Clamping with Advanced Chip Control

- Specifically designed to increase speeds and feeds.
- Excellent geometry for even your most demanding deep grooving applications.
- The WMT system enables heavy stock removal of turning applications.

WMT Toolholders

- Outstanding system rigidity and clamping capabilities.
- Guarantees fast cycle times and limited turret indexes.
- Precise insert positioning for accurate machining.
- Double-V shape aiding in operator-friendly insert indexing and optimum insert positioning.
- Choice of integral modular holders.

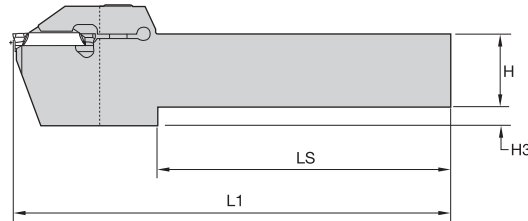
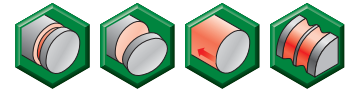
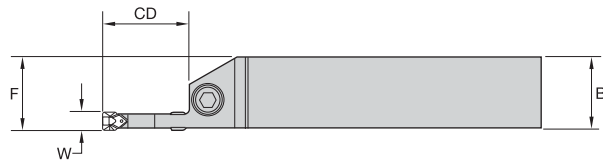
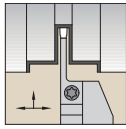
Extra-long clamping area for unsurpassed grooving and turning stability.



Interchangeable grooving and cut-off inserts designed for excellent chip control.



Integral Toolholders • Metric



Right Hand Tool

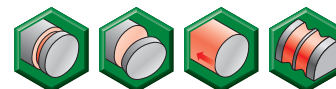
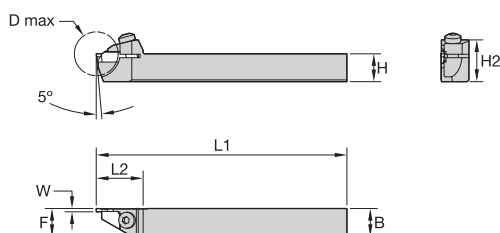
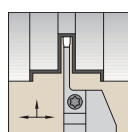
order number	catalogue number	SSC	W	H	B	CD	F	H3	L1	LS
right hand										
3650516	WMTSR2525M116	1	1,50	25,0	25,0	17	25,0	—	150	116
3539162	WMTCR1212H213	2	2,00	12,0	12,0	—	12,0	—	100	74
3650456	WMTSR1616K216	2	2,00	16,0	16,0	17	16,0	6	125	93
3650458	WMTSR2020K216	2	2,00	20,0	20,0	17	20,0	—	125	93
3650506	WMTSR2525M216	2	2,00	25,0	25,0	17	25,0	—	150	118
3650460	WMTSR1616K311	3	3,00	16,0	16,0	11	16,0	—	125	93
3650462	WMTSR1616K322	3	3,00	16,0	16,0	22	16,0	5	125	85
3650468	WMTSR2020K311	3	3,00	20,0	20,0	11	20,0	—	125	93
3650470	WMTSR2020K322	3	3,00	20,0	20,0	22	20,0	5	125	85
3650479	WMTSR2525M311	3	3,00	25,0	25,0	11	25,0	—	150	118
3650481	WMTSR2525M322	3	3,00	25,0	25,0	22	25,0	—	150	110
3653751	WMTSR2020K20	4	4,00	20,0	20,0	20	20,0	5	125	83
3650504	WMTSR2020K411	4	4,00	20,0	20,0	11	20,0	—	125	92
3653752	WMTSR2525M411	4	4,00	25,0	25,0	11	25,0	—	150	117
3650483	WMTSR2525M422	4	4,00	25,0	25,0	22	25,0	—	150	109
3650473	WMTSL2020K514	5	5,00	20,0	20,0	14	20,0	—	125	88
3650475	WMTSR2020L525	5	5,00	20,0	20,0	25	20,0	5	140	93
3650485	WMTSR2525M514	5	5,00	25,0	25,0	14	25,0	—	150	115
3650487	WMTSR2525M525	5	5,00	25,0	25,0	25	25,0	—	150	104
3650489	WMTSR2525M614	6	6,00	25,0	25,0	14	25,0	—	150	113
3650491	WMTSR2525M625	6	6,00	25,0	25,0	25	25,0	—	150	104
left hand										
3539163	WMTCL1212H213	2	2,00	12,0	12,0	—	12,0	—	100	74
3650457	WMTSL1616K216	2	2,00	16,0	16,0	17	16,0	6	125	93
3650459	WMTSL2020K216	2	2,00	20,0	20,0	17	20,0	—	125	93
3650507	WMTSL2525M216	2	2,00	25,0	25,0	17	25,0	—	150	118
3650463	WMTSL1616K322	3	3,00	16,0	16,0	22	16,0	5	125	85
3650469	WMTSL2020K311	3	3,00	20,0	20,0	11	20,0	—	125	93
3650471	WMTSL2020K322	3	3,00	20,0	20,0	22	20,0	5	125	85
3650480	WMTSL2525M311	3	3,00	25,0	25,0	11	25,0	—	150	118
3650482	WMTSL2525M322	3	3,00	25,0	25,0	22	25,0	—	150	110
3653763	WMTSL2525M411	4	4,00	25,0	25,0	11	25,0	—	150	117
3650484	WMTSL2525M422	4	4,00	25,0	25,0	22	25,0	—	150	109
3650474	WMTSL2020K514	5	5,00	20,0	20,0	14	20,0	—	125	88
3650486	WMTSL2525M514	5	5,00	25,0	25,0	14	25,0	—	150	113
3650488	WMTSL2525M525	5	5,00	25,0	25,0	25	25,0	—	150	104
3650490	WMTSL2525M614	6	6,00	25,0	25,0	14	25,0	—	150	114
3650493	WMTSL2525M625	6	6,00	25,0	25,0	25	25,0	—	150	104

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



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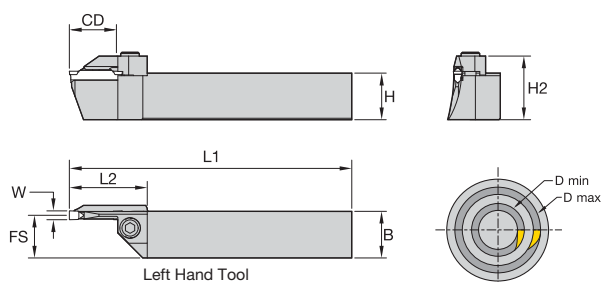
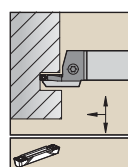
Integral Toolholders for Swiss-Style Machines • Metric



order number	catalogue number	SSC	W	H	B	F	D max	H2	L1	L2
right hand										
3650508	WMTCR1010H110	1	1,50	10,0	10,0	10,0	20	16	100	21
3650510	WMTCR1212H110	1	1,50	12,0	12,0	12,0	20	18	100	21
3650512	WMTCR1616K113	1	1,50	16,0	15,9	16,0	26	24	125	24
3653413	WMTCR1010H210	2	2,00	10,0	10,0	10,0	20	16	100	21
3653415	WMTCR1212H210	2	2,00	12,0	12,0	12,0	20	18	100	21
3653417	WMTCR1616K213	2	2,00	16,0	15,8	16,0	26	24	125	24
left hand										
3650509	WMTCL1010H110	1	1,50	10,0	10,0	10,0	20	16	100	21
3650511	WMTCL1212H110	1	1,50	12,0	12,0	12,0	20	18	100	21
3650513	WMTCL1616K113	1	1,50	16,0	15,9	16,0	26	24	125	24
3653414	WMTCL1010H210	2	2,00	10,0	10,0	10,0	20	16	100	21
3653416	WMTCL1212H210	2	2,00	12,0	12,0	12,0	20	18	100	21
3653418	WMTCL1616K213	2	2,00	16,0	15,8	16,0	26	24	125	24

NOTE: Insert exterior edge in line with toolholder edge for 10mm and 12mm shank toolholders.
SSC = Pocket Seat Reference. To correspond with the SSC on the toolholder.

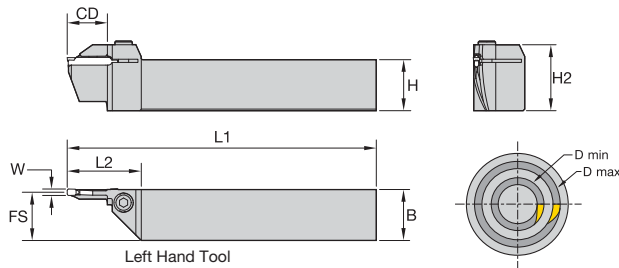
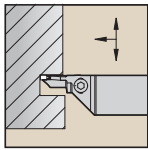
Integral Toolholders for Face Grooving • Curve Out • Metric



order number	catalogue number	SSC	W	H	B	FS	CD	D max	D min	H2	L1	L2
right hand												
3653421	WMTBR2525M313-038-052	3	3,00	24,8	24,8	23,5	13	52	38	32	150	34
3653423	WMTBR2525M316-052-070	3	3,00	24,8	24,8	23,5	16	70	52	32	150	34
3653425	WMTBR2525M316-070-100	3	3,00	24,8	24,8	23,5	16	100	70	32	150	34
3653427	WMTBR2525M319-100-205	3	3,00	25,0	24,8	23,5	19	205	100	32	150	37
3653764	WMTBR2525M412-032-052	4	4,00	24,8	24,8	23,0	13	52	32	32	150	34
3653766	WMTBR2525M415-052-070	4	4,00	24,8	24,8	23,0	16	70	52	32	150	34
left hand												
3653422	WMTBL2525M313-038-052	3	3,00	24,8	24,8	23,5	13	52	38	32	150	34
3653424	WMTBL2525M316-052-070	3	3,00	24,8	24,8	23,5	16	70	52	32	150	34
3653426	WMTBL2525M316-070-100	3	3,00	24,8	24,8	23,5	16	100	70	32	150	34
3653428	WMTBL2525M319-100-205	3	3,00	24,8	24,8	23,5	19	205	100	32	150	37
3653771	WMTBL2525M418-100-205	4	4,00	24,8	24,8	23,0	19	205	100	32	150	37

NOTE: Insert cutting edge for WMT Face Grooving system is positioned +0,75mm above centre.
The WMT Face Grooving system is not designed to cut diameters of less than 12,6mm.
Toolholders that accept 3mm width inserts have an integral clamp.
Toolholders that accept 5mm and 6mm width inserts are supplied with a detachable clamp.
SSC = Pocket Seat Reference. To correspond with the SSC on the toolholder.

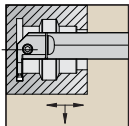
Integral Toolholders for Face Grooving • Curve In • Metric



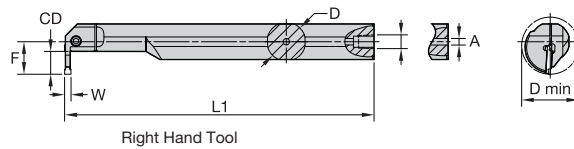
order number	catalogue number	SSC	W	H	B	FS	CD	D max	D min	H2	L1	L2
right hand												
3634282	WMTAR2525M316-070-100	3	3,00	24,8	24,8	23,5	16	100	70	32	150	34
3634284	WMTAR2525M319-100-205	3	3,00	24,8	24,8	23,5	19	205	100	32	150	37
left hand												
3634285	WMTAL2525M319-100-205	3	3,00	24,8	24,8	23,5	19	205	100	32	150	37

NOTE: Insert cutting edge for WMT Face Grooving system is positioned +0,75mm above centre.
 The WMT Face Grooving system is not designed to cut diameters of less than 12,6mm.
 Toolholders that accept 3mm width inserts have an integral clamp.
 Toolholders that accept 5mm and 6mm width inserts are supplied with a detachable clamp.
 SSC = Pocket Seat Reference. To correspond with the SSC on the toolholder.

Integral I.D. Grooving Boring Bars • Metric



Right Hand Tool



order number	catalogue number	SSC	W	F	CD	D	D min	L1	A
right hand									
5423874	A25RWMTER0316M	3	3,00	26,0	16	25,00	41	200	6,40
5423875	A32SWMTER0319M	3	3,00	29,0	19	32,00	47	250	6,40
5423876	A25RWMTER0416M	4	4,00	26,0	16	25,00	41	200	6,40
5423877	A32SWMTER0419M	4	4,00	29,0	19	32,00	47	250	6,40
5423878	A32SWMTER0519M	5	5,00	29,0	19	32,00	47	250	6,40
left hand									
5423882	A25RWMTEL0316M	3	3,00	26,0	16	25,00	41	200	6,40
5423883	A32SWMTEL0319M	3	3,00	29,0	19	32,00	47	250	6,40
5423884	A25RWMTEL0416M	4	4,00	26,0	16	25,00	41	200	6,40
5423885	A32SWMTEL0419M	4	4,00	29,0	19	32,00	47	250	6,40
5423886	A32SWMTEL0519M	5	5,00	29,0	19	32,00	47	250	6,40

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



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INDEXABLE MILLING

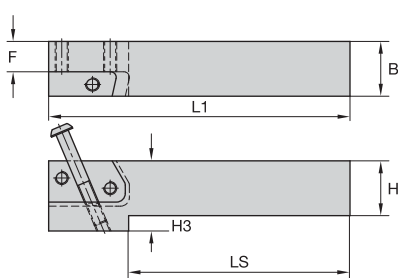
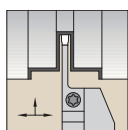
SOLID END MILLING

HOLEMAKING

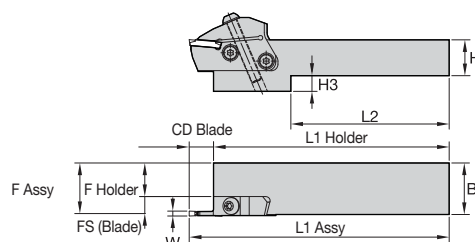
TAPPING

TURNING

Modular Toolholders • Metric



Right Hand Tool
2 blade screws required

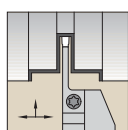


F Assy = F (Holder) + FS (Blade) + W/2
L1 Assy = L1 (Holder) + CD (Blade)

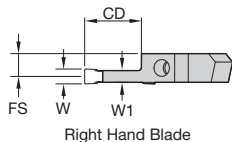
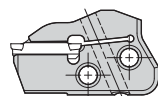
order number	catalogue number	H	B	L1	LS	F	H3
right hand 5349629	WGMSR2525	25	25	126,0	95,78	13,84	7

NOTE: Use the larger seat size toolholder for optimal performance.

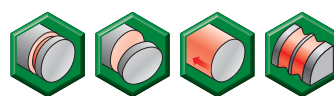
Modular Blades • Metric



Right Hand Blade



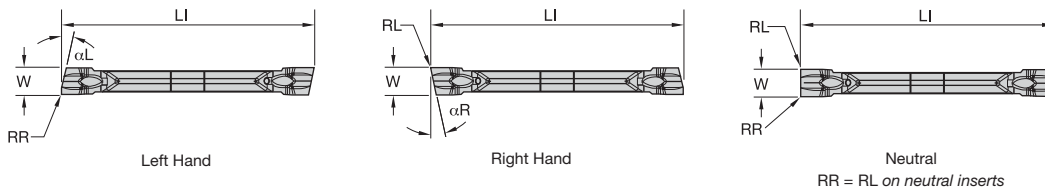
Right Hand Blade



order number	catalogue number	SSC	CD	W	FS	W1
right hand 5359130	WMTWGMR319S	3	19,00	3,00	10,38	2,54
5359131	WMTWGMR419S	4	19,00	4,00	10,00	3,30

NOTE: Blade and clamp screw torque equals 8–10 Nm (71–88 in. lbs.).
SSC = Pocket Seat Reference. To correspond with the SSC on the toolholder.

Cut-Off Inserts • WMT-CM

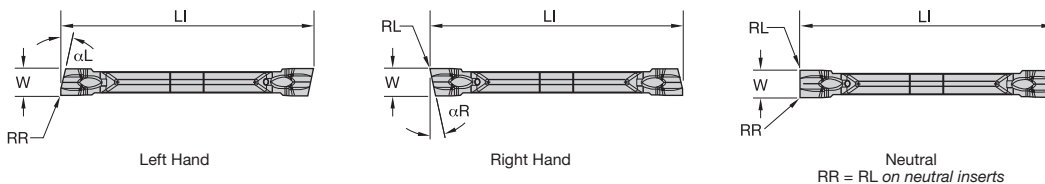


- first choice
- alternate choice

P	Blue	○
M	Yellow	●
K	Red	○
N	Green	●
S	Orange	●
H	Grey	○

catalogue number	SSC	W	RR	RL	LI	αR	αL	hand	WU25PT
WMTC015R05CM08	1	1,50	0,08	0,08	19,31	5	—	R - Right	4169670
WMTC015R12CM08	1	1,50	0,08	0,08	19,28	12	—	R - Right	4169672
WMTC020R05CM08	2	1,99	0,08	0,08	19,21	5	—	R - Right	4169675
WMTC020R12CM08	2	2,00	0,08	0,08	19,26	12	—	R - Right	4169678
WMTC030R05CM17	3	3,00	0,17	0,17	25,40	5	—	R - Right	4169684
WMTC030R12CM17	3	3,00	0,17	0,17	25,40	12	—	R - Right	4169688
WMTC040R05CM17	4	4,00	0,17	0,17	25,40	5	—	R - Right	4169694
WMTC040R12CM17	4	4,00	0,17	0,17	25,40	12	—	R - Right	4169696
WMTC015N00CM08	1	1,50	0,08	0,08	19,30	—	—	N - Neutral	4169668
WMTC020N00CM08	2	2,00	0,08	0,08	19,21	—	—	N - Neutral	4169673
WMTC030N00CM17	3	3,00	0,17	0,17	25,40	—	—	N - Neutral	4169682
WMTC040N00CM17	4	4,00	0,17	0,17	25,40	—	—	N - Neutral	4169692
WMTC015L05CM08	1	1,50	0,08	0,08	19,31	—	5	L - Left	4169671
WMTC020L05CM08	2	1,99	0,08	0,08	19,21	—	5	L - Left	4169677
WMTC020L12CM08	2	2,00	0,08	0,08	19,25	—	12	L - Left	4169680
WMTC030L05CM17	3	3,00	0,17	0,17	25,40	—	5	L - Left	4169686
WMTC030L12CM17	3	3,00	0,17	0,17	25,40	—	12	L - Left	4169690

Cut-Off Inserts with Wiper • WMT-CM-W



- first choice
- alternate choice

P	Blue	○
M	Yellow	●
K	Red	○
N	Green	●
S	Orange	●
H	Grey	○

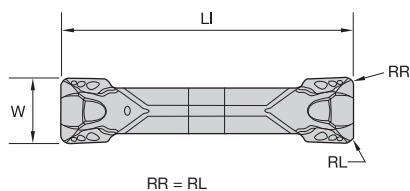
catalogue number	SSC	W	RR	RL	LI	αR	αL	hand	WU25PT
WMTC020R05CMW08	2	2,00	0,08	0,08	19,20	5	—	R - Right	4169676
WMTC020R12CMW08	2	2,00	0,08	0,08	19,27	12	—	R - Right	4169679
WMTC030R05CMW17	3	3,00	0,17	0,17	25,40	5	—	R - Right	4169685
WMTC030R12CMW17	3	3,00	0,17	0,17	25,40	12	—	R - Right	4169689
WMTC015N00CMW08	1	1,50	0,08	0,08	19,30	—	—	N - Neutral	4169669
WMTC020N00CMW08	2	2,00	0,08	0,08	19,21	—	—	N - Neutral	4169674
WMTC030N00CMW17	3	3,00	0,17	0,17	25,40	—	—	N - Neutral	4169683
WMTC040N00CMW17	4	4,00	0,17	0,17	25,40	—	—	N - Neutral	4169693
WMTC020L12CMW08	2	2,00	0,08	0,08	19,27	—	12	L - Left	4169681
WMTC030L05CMW17	3	3,00	0,17	0,17	25,40	—	5	L - Left	4169687
WMTC030L12CMW17	3	3,00	0,17	0,17	25,40	—	12	L - Left	4169691

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



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Grooving and Turning Inserts • WMT-U-PT • Moulded



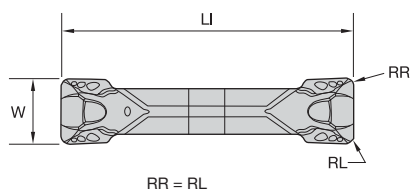
● first choice
○ alternate choice

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

catalogue number	SSC	W	RR	LI	WP10CT	WP25CT	WU10PT	WU25PT
WMTS205M2U02PT	2	2,13	0,15	19,23	4169554	4169555	4116131	4116132
WMTS305M3U03PT	3	3,13	0,31	25,81	4169556	4169557	4113568	4113569
WMTS305M3U06PT	3	3,13	0,61	25,78	4169558	4169559	4113570	4113571
WMTS405M4U03PT	4	4,13	0,31	25,53	4169560	4169561	4113577	4113578
WMTS405M4U06PT	4	4,13	0,61	25,53	4169562	4169563	4113579	4113580
WMTS505M5U03PT	5	5,13	0,30	28,76	4169564	4169565	4116148	4116149
WMTS505M5U06PT	5	5,13	0,61	28,76	4169566	4169567	4116150	4116151
WMTS605M6U03PT	6	6,13	0,30	28,76	4169568	4169569	4117253	4117254
WMTS605M6U06PT	6	6,13	0,59	28,76	4169570	4169571	4117255	4117256

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

Grooving and Turning Inserts • WMT-P-PT • Precision



● first choice
○ alternate choice

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

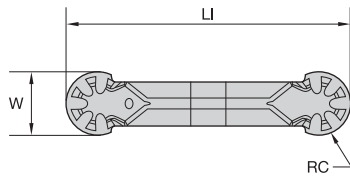
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WMTS200M2P02PT	2	2,00	0,15	19,10	4116129	4116130	-
WMTS300M3P03PT	3	3,00	0,31	25,65	4113563	4113564	4113566
WMTS300M3P06PT	3	3,00	0,61	25,65	4113565	4113567	-
WMTS400M4P03PT	4	4,00	0,31	25,40	4113572	4113574	4113573
WMTS400M4P06PT	4	4,00	0,60	25,40	4113575	4113576	-
WMTS500M5P03PT	5	5,00	0,30	28,63	4116143	4116144	4116145
WMTS500M5P06PT	5	5,00	0,61	28,63	4116146	4116147	-
WMTS600M6P03PT	6	6,00	0,30	28,63	4117239	4117240	-
WMTS600M6P06PT	6	6,00	0,58	28,63	4117241	4117242	-
WMTS800M8P06PT	8	8,00	0,61	28,57	-	4117258	-
WMTS800M8P15PT	8	8,00	1,50	28,57	4117259	4117260	-

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



THE ALL-STAR PROGRAMME FEATURES ONLY THE MOST POPULAR PLATFORMS, GRADES, AND SIZES. FOR THE COMPLETE OFFERING, VISIT WIDIA NOVO™ OR WIDIA.COM.

Plunge and Contour Inserts • WMT-U-PC • Moulded



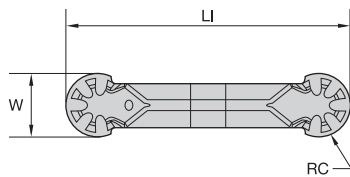
● first choice
○ alternate choice

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

catalogue number	SSC	W	RC	LI	WP10CT	WU10PT	WU25PT
WMTR305M3UPC	3	3,13	1,53	25,53	-	4170172	4170173
WMTR405M4UPC	4	4,13	2,03	25,58	-	4170177	4170178
WMTR505M5UPC	5	5,13	2,53	29,01	-	4170182	4170183
WMTR605M6UPC	6	6,12	3,03	28,77	4170189	4170187	4170188
WMTR805M8UPC	8	8,13	4,03	29,22	-	4170192	4170193

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

Plunge and Contour Inserts • WMT-P-PC • Precision



● first choice
○ alternate choice

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

catalogue number	SSC	W	RC	LI	WU10PT	WU25PT
WMTR300M3PPC	3	3,00	1,50	25,40	4170170	4170171
WMTR400M4PPC	4	4,00	2,00	25,45	-	4170176
WMTR500M5PPC	5	5,00	2,50	28,88	4170180	4170181
WMTR600M6PPC	6	6,00	3,00	28,65	4170185	4170186
WMTR800M8PPC	8	8,00	4,00	29,08	4170190	-

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

INDEXABLE MILLING

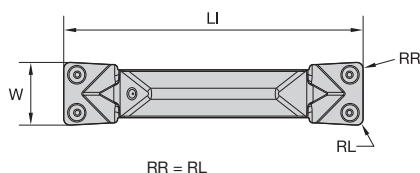
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Grooving and Turning Inserts • WMT-U-PH • Moulded



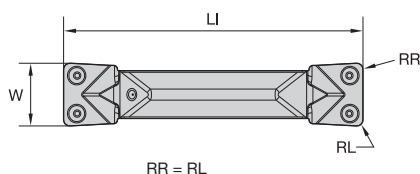
● first choice
○ alternate choice

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S	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
H	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

catalogue number	SSC	W	RR	LI	WU10PT	WU25PT
WMTS305M3U03PH	3	3,13	0,30	25,81	5346392	5346393
WMTS305M3U06PH	3	3,13	0,60	25,81	5346394	5346395
WMTS405M4U03PH	4	4,13	0,30	25,53	5346396	5346397
WMTS405M4U06PH	4	4,13	0,60	25,53	5346398	5346399
WMTS505M5U03PH	5	5,13	0,30	28,76	5346400	5346401
WMTS505M5U06PH	5	5,13	0,60	28,76	5346402	5346403
WMTS605M6U03PH	6	6,13	0,30	28,76	5346404	5346405
WMTS605M6U06PH	6	6,13	0,60	28,76	5346406	5346407

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

Grooving and Turning Inserts • WMT-P-PH • Precision



● first choice
○ alternate choice

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

catalogue number	SSC	W	RR	LI	WU10PT	WU25PT	WU10HT
WMTS300M3P03PH	3	3,00	0,30	25,65	5346412	5346413	5346414
WMTS300M3P06PH	3	3,00	0,60	25,65	5346415	5346416	-
WMTS400M4P03PH	4	4,00	0,30	25,40	5346418	5346419	5346420
WMTS400M4P06PH	4	4,00	0,60	25,40	5346421	5346422	-
WMTS500M5P03PH	5	5,00	0,30	28,63	-	5346425	5346426
WMTS500M5P06PH	5	5,00	0,60	28,63	5346427	5346428	-
WMTS600M6P03PH	6	6,00	0,30	28,63	5346430	5346431	-
WMTS600M6P06PH	6	6,00	0,60	28,63	5346432	5346433	-

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



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Feed Values for Grooving Inserts

CM Cut-Off Medium

- Double-ended, V-bottom and top, mechanically clamped.
- Neutral, right-, and left-hand lead angles up to 12°.
- Designed to increase speed and feed.
- Chip geometry designed for excellent chip control and minimised cutting pressure on various materials.
- Ideal for 300 Series stainless steel, tool steel, titanium, INCONEL®, and other nickel-based alloys at moderate speeds and feeds.



CM-W Cut-Off Medium with Wiper

- Wiper flats where surface finish is critical.
- Double-ended, V-bottom, and top, mechanically clamped.
- Neutral, right-, and left-hand lead angles up to 12°.
- Designed to increase speed and feed.
- Chip geometry designed for excellent chip control and minimised cutting pressure on various materials.



PT Plunge, Groove, and Turn Inserts

- High positive rake geometry for low cutting force, especially in soft materials.
- Deep grooving tool for plunge and turn O.D. and face grooving operations.
- Delivers chip control over full range of DOC when turning.
- Cuts in both axial and radial directions.



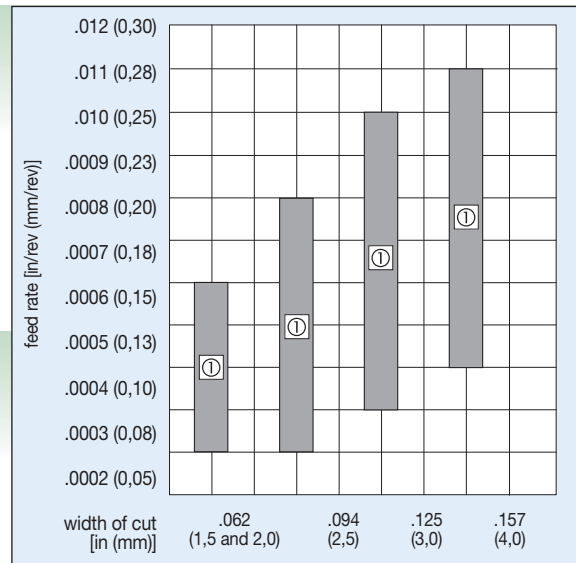
PC Grooving and Profiling Inserts

- Superior chip control.
- Full nose radius geometry for plunge and contour operations.
- Effective cutting edge geometry exceeds 180° for increased versatility.

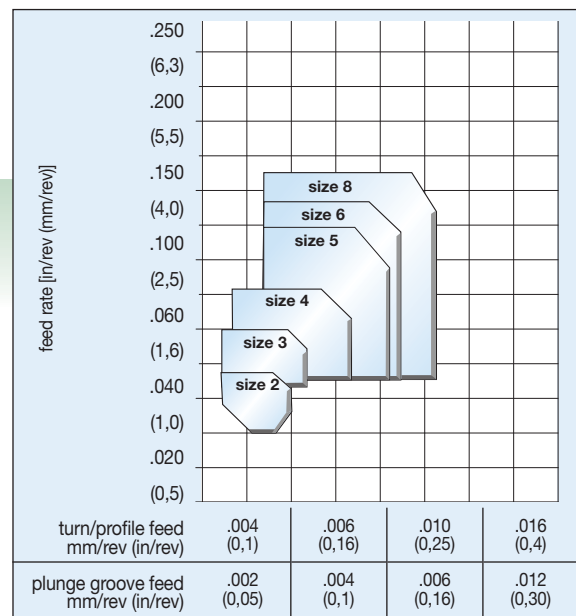
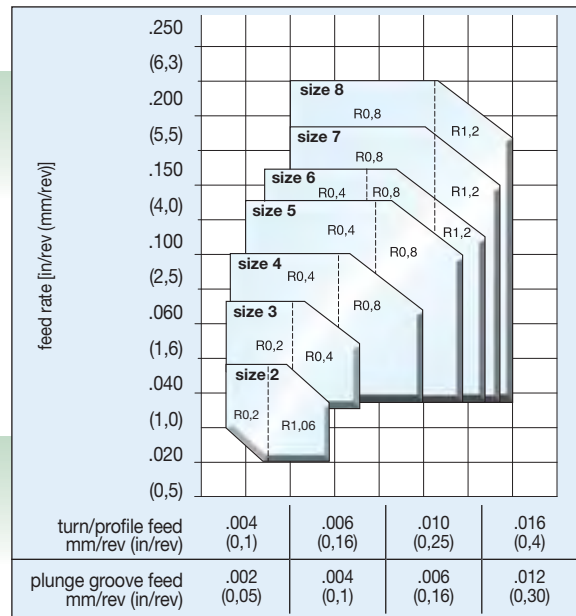


PH Plunge, Groove, and Turn Inserts

- Excellent performance in greater than 35 HRC.
- Deep grooving tool for plunge and turn O.D. and face grooving operations.
- Delivers chip control over full range of DOC when turning.
- Delivers superior chip control in interrupted cuts.



① Recommended Starting Feed



INDEXABLE MILLING



SOLID END MILLING



HOLEMAKING



TAPPING



TURNING

Recommended Cutting Speeds • Metric

Material Group		Cutting Speed – vc m/min														
		WU10HT			WU10PT			WU25PT			WP10CT			WP25CT		
		min	Start	max	min	Start	max	min	Start	max	min	Start	max	min	Start	max
P	0/1	100	100	110	190	200	210	170	175	180	210	225	240	170	175	180
	2	95	95	105	180	185	190	150	160	170	210	220	230	185	195	205
	3	95	95	105	180	185	190	150	160	170	210	220	230	185	195	205
	4	70	70	75	165	170	175	135	145	155	140	145	155	125	125	135
	5	85	90	95	170	175	180	140	150	160	180	190	195	155	165	170
	6	50	50	50	140	150	160	120	125	130	70	75	80	70	75	80
M	1	70	75	80	120	125	130	120	125	130	-	-	-	-	-	-
	2	50	50	50	100	100	110	70	75	80	-	-	-	-	-	-
	3	50	50	50	95	100	105	85	90	95	-	-	-	-	-	-
K	1	85	90	95	190	200	210	155	165	170	215	225	235	180	190	195
	2	75	75	80	185	190	200	155	165	175	205	215	225	175	185	195
	3	70	75	80	170	175	180	140	150	160	210	225	240	190	200	210
N	1	70	75	80	140	150	160	110	120	130	-	-	-	-	-	-
	2	70	75	80	140	150	80	110	120	80	-	-	-	-	-	-
	3	70	75	80	140	150	80	110	120	80	-	-	-	-	-	-
	4	70	75	80	140	150	80	110	120	80	-	-	-	-	-	-
	5	70	75	80	140	150	80	110	120	80	-	-	-	-	-	-
	6	70	75	80	140	150	80	110	120	80	-	-	-	-	-	-
	7	70	75	80	140	150	120	110	120	105	-	-	-	-	-	-
S	1	20	25	30	70	75	80	60	65	65	-	-	-	-	-	-
	2	20	25	30	65	65	70	50	50	50	-	-	-	-	-	-
	3	50	50	50	100	100	110	70	75	80	-	-	-	-	-	-
	4	-	-	-	70	75	80	50	50	50	-	-	-	-	-	-
H	1	-	-	-	15	30	60	15	30	60	-	-	-	-	-	-
	2	-	-	-	15	30	60	15	30	60	-	-	-	-	-	-
	3	-	-	-	15	30	60	15	30	60	-	-	-	-	-	-
	4	-	-	-	15	30	60	15	30	60	-	-	-	-	-	-

INDEXABLE MILLING

SOLID END MILLING





















HOLEMAKING

TAPPING

TURNING



Indexable Milling Icons

	Counterboring		Spiral Circular		Face Milling		Helical Milling		Plunge Milling
	Ramping Blank		Slotting: Ball Nose		Side Milling/ Shoulder Milling: Ball Nose		Side Milling/ Shoulder Milling: Square End		Chamfer Milling
	Side Milling: Roughing		3D Profiling		3D Profiling: Inclined Square End Mill		Pocketing		Plain Shank
	Weldon® Shank		Weldon Shank: 2 Flat		Screw-On Shank		Shell Mill Shank		Through Coolant: Radial: Indexable Milling






Solid End Milling Icons

	Plunge Milling		Ramping Blank		Slotting: Ball Nose		Slotting: Ball Nose with AP Dimension		Slotting: Square End
	Slotting: Square End with AP Dimension		Trochoidal Milling		Trochoidal Milling: Ball Nose		Side Milling: Shoulder Milling: Ball Nose		Side Milling/ Shoulder Milling: Ball Nose with AE/AP Dimension
	Side Milling/ Shoulder Milling: Square End		Side Milling/ Shoulder Milling: Square End with AE/AP Dimension		3D Profiling		3D Profiling: 3D Profiling with AE/AP Dimensions		Corner Style: Ball Nose
	Corner Style: Corner Chamfer		Corner Style: Corner Radius		Corner Style: Square End		Corner Style: Torus		Cylindrical/Plain Shank
	Shank: Cylindrical Weldon®		Shank: Safe-Lock™		Helix Angle: 20°		Helix Angle: 30°		Helix Angle: 35°
	Helix Angle: 37°		Helix Angle: 38°		Helix Angle: 43°		Helix Angle: 45°		DIN Number 6527
	DIN Number 6528		Tool Dimensions: Flute Configuration: X (Variable)		Tool Dimensions: Flute Configuration: 2		Tool Dimensions: Flute Configuration: 3		Tool Dimensions: Flute Configuration: 4
	Tool Dimensions: Flute Configuration: 5		Tool Dimensions: Flute Configuration: 6		Tool Dimensions: Flute Configuration: 7		Manufacturer's Specs: JIS		














Holemaking Icons

	Drilling		Drilling: Inclined Entry		Drilling: Inclined Exit		Drilling: Exit Offset		Drilling: Stacked Plates
	Drilling: Convex		Drilled Hole		Chain Drilling		Drilling: Cross Hole		Drilling: Half Cylinder
	Drilling: Corner Drilling 45°		Drilling Depth: 3x		Drilling Depth: 4x		Drilling Depth: 5x		Drilling Depth: 8x
	Drilling Depth: 12x		Drilling Depth: 30x		Shank: Cylindrical Plain ≤h6		Shank: Cylindrical with Flat		Flat Shank
	Helix Angle 30°		DIN Number 6537		DIN Number 6535		Through Coolant: Radial: Drilling		Flood Coolant: Drilling
	Through Coolant: Radial: Indexable Drilling		Tool Dimensions: 2-Flute/2-Margin/ Coolant		Tool Dimensions: 2-Flute/4-Margin/ Coolant				

Tapping Icons

	Reaming: Through Hole		Reaming: Blind Hole		Threading: Through Hole		Tapping: Blind Hole		HSS-E: High-Speed Steel with Cobalt Alloy for Materials with Higher Hardness
	Chamfer Form B (3.5-5.5)		Chamfer Form B (2-3)		Chamfer Form C (1.5-2)		Chamfer Form C (3-5)		Tapping Helix: Angle: 0°
	Tapping Helix: Angle: 42°		Tapping Helix: Angle: 45°		Multipurpose Taps: Spiral Point		Tension/ Compression		DIN Number 371
	DIN Number 374		DIN Number 376		DIN Number 5156		Flood Coolant: Tapping		Class of Fit: 2B
	Class of Fit: 6H		Class of Fit: 6G		Unified Fine Thread		Unified Course Thread		American Tapered Pipe Thread for Threads with Dryseal Material
	Manufacturer's Specs: NPTF		Manufacturer's Specs: G		ISO Metric Coarse Thread		ISO Metric Fine Thread		

Turning Icons

	Through Coolant: Grooving		Turning		Profiling		Facing		Face Grooving
	Chamfering		Back Boring		Grooving		Cut-Off		I.D. Turning
	I.D. Chamfering		I.D. Grooving		O.D. Deep Grooving				

DIN

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

material group	description	content	tensile strength RM (MPa)*	hardness (HB)	hardness (HRC)	material number
P0	Low-Carbon Steels, Long Chipping	C <0,25%	<530	<125	–	–
P1	Low-Carbon Steels, Short Chipping, Free Machining	C <0,25%	<530	<125	–	C15, Ck22, ST37-2, S235JR, 9SMnPb28, GS38
P2	Medium- and High-Carbon Steels	C >0,25%	>530	<220	<25	ST52, S355JR, C35, GS60, Cf53
P3	Alloy Steels and Tool Steels	C >0,25%	600–850	<330	<35	16MnCr5, Ck45, 21CrMoV5-7, 38SMn28
P4	Alloy Steels and Tool Steels	C >0,25%	850–1400	340–450	35–48	100Cr6, 30CrNiMo8, 42CrMo4, C70W2, S6525, X120Mn12
P5	Ferritic, Martensitic, and PH Stainless Steels	–	600–900	<330	<35	100Cr6, 30CrNiMo8, 42CrMo4, C70W2, S6525, X120Mn12
P6	High-Strength Ferritic, Martensitic, and PH Stainless Steels	–	900–1350	350–450	35–48	X102CrMo17, G-X120Cr29
M1	Austenitic Stainless Steel	–	<600	130–200	–	X5CrNi 18 10, X2CrNiMo 17 13 2, G-X25CrNiSi18 9, X15CrNiSi 20 12
M2	High-Strength Austenitic Stainless and Cast Stainless Steels	–	600–800	150–230	<25	X2CrNiMo 13 4, X5NiCr 32 21, X5CrNiNb 18 10, G-X15CrNi 25-20
M3	Duplex Stainless Steel	–	<800	135–275	<30	X8CrNiMo27 5, X2CrNiMoN22 5 3, X20CrNiSi25 4, G-X40CrNiSi27 4
K1	Grey Cast Iron	–	125–500	120–290	<32	GG15, GG25, GG30, GG40, GTW40
K2	Low- and Medium-Strength Ductile Irons (Nodular Irons) and Compacted Graphite Irons (CGI)	–	<600	130–260	<28	GGG40, GTS35
K3	High-Strength Ductile Irons and Austempered Ductile Iron (ADI)	–	>600	180–350	<43	GGG60, GTW55, GTS65
N1	Wrought Aluminium	–	–	–	–	AlMg1, Al99.5, AlCuMg1, AlCuBiPb, AlMgSi1, ALMg-SiPb
N2	Low-Silicon Aluminium Alloys and Magnesium Alloys	Si <12,2%	–	–	–	GAISiCu4, GDAISi10Mg
N3	High-Silicon Aluminium Alloys and Magnesium Alloys	Si >12,2%	–	–	–	G-ALSi12, G-AISi17Cu4, G-AISi21CuNiMg
N4	Copper-, Brass-, Zinc-Based on Machinability Index Range of 70–100	–	–	–	–	CuZn40, Ms60, G-CuSn5ZnPb, CuZn37, CuSi3Mn
N5	Nylon, Plastics, Rubbers, Phenolics, Resins, Fibreglass	–	–	–	–	Lexan®, Hostalen™, Polystyrol, Makralon
N6	Carbon, Graphite Composites, CFRP	–	–	–	–	CFK, GFK
N7	Metal Matrix Composites (MMC)	–	–	–	–	–
S1	Iron-Based, Heat-Resistant Alloys	–	500–1200	160–260	25–48	X1NiCrMoCu32 28 7, X12NiCrSi36 16, X5NiCrAlTi31 20, X40CoCrNi20 20
S2	Cobalt-Based, Heat-Resistant Alloys	–	1000–1450	250–450	25–48	Haynes® 188, Stellite® 6,21,31
S3	Nickel-Based, Heat-Resistant Alloys	–	600–1700	160–450	<48	INCONEL® 690, INCONEL 625, Hastelloy®, Nimonic® 75
S4	Titanium and Titanium Alloys	–	900–1600	300–400	33–48	Ti1, TiAl5Sn2, TiAl6V4, TiAl4Mo4Sn2
H1	Hardened Materials	–	–	–	44–48	GX260NiCr42, GX330NiCr42, GX300CrNiSi952, GX300CrMo153, Hardox® 400
H2	Hardened Materials	–	–	–	48–55	–
H3	Hardened Materials	–	–	–	56–60	–
H4	Hardened Materials	–	–	–	>60	–

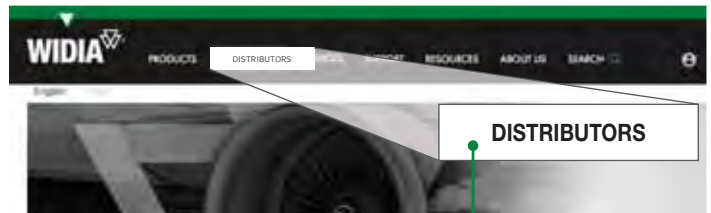
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- Significantly reduce cycle time.
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- Achieve measurable productivity improvements.
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IMPORTANT SAFETY INSTRUCTIONS: READ BEFORE USING THE TOOLS IN THIS CATALOGUE

METALCUTTING SAFETY

Projectile and Fragmentation Hazards

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

To avoid injury:

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

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

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

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

Breathing and Skin Contact Hazards

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

To avoid injury:

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

HCK10, M100, M200, M370, NOVO, Stellite, Top Cut 4, TOP DRILL, TOP DRILL M1, TOP DRILL S, TOP DRILL S+, VariDrill, VariMill, VariMill I, VariMill II, VariMill III, VariTap, Victory, VSM11, VSM17, VSM490-10, VSM490-15, VSM890, VSM890-12, VXF, VXF-07, VXF-12, WDN00U, WDN25U, WIDIA, WIDIA-Hanita, WK15PD, WM15PD, WMT, WP15PE, WP20PD, WS15PE, WS40PM, WU10PM, WU20PD, WU25PD, and X-Feed are trademarks of Kennametal, Inc. and are used as such herein. The absence of a product, service name, or logo from this list does not constitute a waiver of Kennametal's trademark or other intellectual property rights concerning that name or logo.

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