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WNT \ Performance

Premium quality tools for high performance.

The premium quality tools from the **WNT Performance** product line have been designed for specific applications and are distinguished by their outstanding performance. If you make high demands on the performance of your production and want to achieve the very best results, we recommend the Premium tools in this product line.

WNT \ Standard

Quality tools for standard applications.

The quality tools of the **WNT Standard** product line are high quality, powerful and reliable and enjoy the highest trust of our customers worldwide. Tools from this product line are the first choice for many standard applications and guarantee optimal results.

Symbol explanation

Version


No drilling required


Central internal coolant


Lateral internal coolant


Coolant supply either via the flange or centrally

VHM — Solid carbide

Shank

Thread / Flank angle

M — Explanation of the types of thread can be found on → **Page 74.**

Flank angle 60°

Applications

Circlip grooves


Full radius slot milling


Slot milling


Multipurpose milling


Chamfering and deburring


Gear milling

IR = internal right, IL = internal left

ER = external right, EL = external left


IR/IL + ER/EL

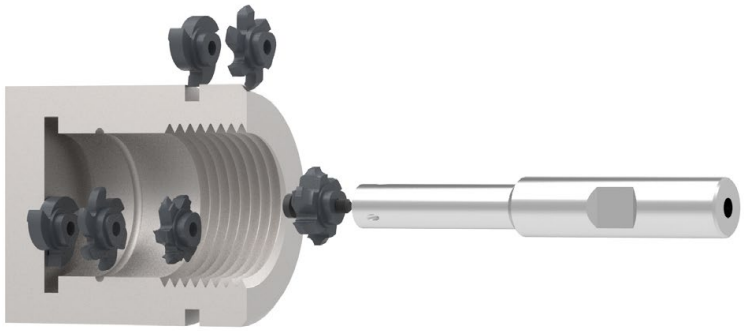
● = **Main application**

○ = Extended application

Overview Circular and Thread Milling Cutters

Modular Circular Milling Cutters with Carbide Indexable Inserts

- the perfect tool for every application
- various holders, depending on overhang
- the same threading insert for different pitches and diameters
- highest flexibility and stability
- in addition to circular thread milling, circular and linear milling operations can also be carried out



1st choice for small batch sizes
and large threads

Thread Milling Cutters with Indexable Carbide Inserts

- exchange of the insert for different threads
- same threading insert for different diameters

Solid Carbide Thread Milling Cutters

- short machining times, ideal for volume production
- one tool for all thread types
- one thread milling cutter for different diameters with the same pitch

MicroMill

SGF

UNI

Toolfinder

			from bore diameter in mm
Modular Circular Milling Cutters with Carbide Indexable Inserts	Polygon	▲ high power transmission through polygon connection ▲ 3 and 6 edged inserts ▲ stable holders in solid carbide and steel	9,6
	Mini Mill	▲ three interlocking rib location ▲ compatible with popular manufacturer systems ▲ 3 and 6 edged inserts ▲ stable holders in solid carbide and steel	9,6
	System 300	▲ proven circular milling tool ▲ 3 edged inserts	7,9
Thread Milling Cutters with Indexable Carbide Inserts	MWN	▲ multi tooth thread milling cutter ▲ double sided inserts ▲ exclusively for thread production ▲ holder for tapered threads	9,0
	GZD	▲ multi tooth drilling and thread milling cutter ▲ for thread milling in solid material ▲ core hole and thread with one tool	14,0
	GZG	▲ multi tooth thread milling cutter ▲ exclusively for thread production	18,5
	EAW	▲ single point thread milling cutter ▲ inserts with 2 or 4 cutting edges ▲ exclusively for thread production ▲ insert holder with cylindrical shank DIN 1835	17,5
	EWM	▲ single point thread milling cutter ▲ inserts with 2 or 4 cutting edges ▲ exclusively for thread production ▲ integral insert holder to DIN 69871	43,0
Solid Carbide Thread Milling Cutters	Micro Mill	▲ solid carbide circular milling cutter for small diameters	1,25
	UNI	▲ circular hole and thread milling cutter ▲ core hole, countersink and thread with one tool ▲ up to 3xD in short or long chipping materials	4,5
	H	▲ circular thread milling cutters ▲ core hole, countersink and thread with one tool ▲ specifically for hardened materials, up to 2xD	2,3
	HR	▲ single point thread milling cutter ▲ exclusively for thread production ▲ up to 3xD in materials up to 63 HRC	4,0
	SFSE	▲ solid carbide thread milling cutter with chamfering facet ▲ only one tool for threading and chamfering	2,4
	SGF	▲ solid carbide thread milling cutter without chamfering facet ▲ exclusively for thread production	3,15

Thread / Flank angle								Applications					Tool holder
60° M MF	55° G	55° BSW BSF	60° UN	60° UNC UNF	80° Pg	60° NPT	30° Tr	DIN 471/472					
11+12	13	13		15			14	6+7	8+9	10	10	16+17	18+19
27+28	28							20+21	22+23 24	23	25		29+30
34	35	35						31+32	33		33		36
37	38		38		39	39							40+41
42	42												43
44	45		46		45								47
48	48		48										49
50	50		50										51
53									52		52		
54													
55				55									
56													
57+59	57+59			58+60		58+60							
61+63 66	62+63	64		64+65									

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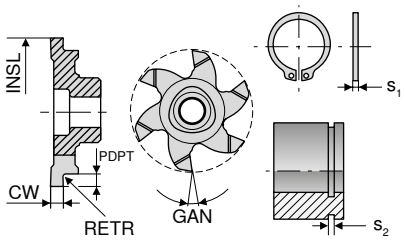
Milling inserts for circlip grooves without chamfer

Polygon | DIN 471/472



Ti500

Solid carbide

Size	$s_{2\ H13}$ mm	INSL mm	CW $_{-0,03}$ mm	PDPT mm	RETR mm	GAN °	s_1 mm	NOF	Article no. 50 880 ...
6	0,90	9,6	0,98	1,20	0,3	6	0,80	3	292
	1,10	11,7	1,18	1,00	0,3	6	1,00	3	294
	1,30	11,7	1,38	1,00	0,3	6	1,20	3	296
	1,60	11,7	1,68	1,00	0,3	6	1,50	3	298
7	1,10	16,0	1,18	0,90	0,3	6	1,00	6	301
	1,30	16,0	1,38	1,10	0,3	6	1,20	6	302
	1,60	16,0	1,68	1,25	0,3	6	1,50	6	304
	1,85	16,0	1,93	1,25	0,3	6	1,75	6	306
	1,10	17,7	1,18	0,90	0,3	6	1,00	6	308
	1,30	17,7	1,38	1,10	0,3	6	1,20	6	309
	1,60	17,7	1,68	1,25	0,3	6	1,50	6	310
	1,85	17,7	1,93	1,25	0,3	6	1,75	6	311
9	1,10	20,0	1,18	0,90	0,3	6	1,00	6	313
	1,30	20,0	1,38	1,10	0,3	6	1,20	6	314
	1,60	20,0	1,68	1,25	0,3	6	1,50	6	315
	1,85	20,0	1,93	1,25	0,3	6	1,75	6	316
	1,60	21,7	1,68	1,25	0,3	6	1,50	6	318
	1,85	21,7	1,93	1,25	0,3	6	1,75	6	319
	2,15	21,7	2,23	1,75	0,3	6	2,00	6	320
	2,65	21,7	2,73	1,75	0,3	6	2,50	6	321
10	1,30	26,0	1,38	1,10	0,3	6	1,20	6	322
	1,60	26,0	1,68	1,25	0,3	6	1,50	6	324
	1,85	26,0	1,93	1,25	0,3	6	1,75	6	326
	2,15	26,0	2,23	1,75	0,3	6	2,00	6	328
	2,65	26,0	2,73	1,75	0,3	6	2,20	6	330
	3,15	26,0	3,23	2,20	0,3	6	3,00	6	332

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	●
Hardened materials	●

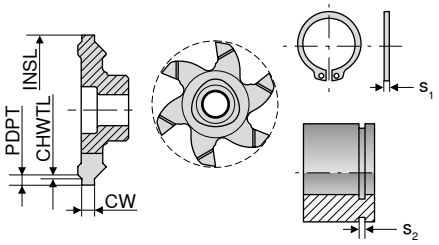
→ v_c/f_z Page 70

When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

Milling inserts for circlip grooves with chamfer

▲ both edges chamfered 0,1x45°

Polygon | DIN 471/472



Ti500

Solid carbide

Size	$s_{2\ H13}$ mm	INSL mm	CW $_{-0,03}$ mm	PDPT mm	CHWTL mm	s_1 mm	NOF	Article no. 50 879 ...
7	1,10	16,0	1,18	0,50	0,10	1,00	6	292
	1,30	16,0	1,38	0,85	0,15	1,20	6	302
	1,60	16,0	1,68	1,00	0,15	1,50	6	304
	1,85	16,0	1,93	1,25	0,20	1,75	6	306
9	1,10	20,0	1,18	0,50	0,10	1,00	6	307
	1,30	20,0	1,38	0,85	0,15	1,20	6	308
	1,60	20,0	1,68	1,00	0,15	1,50	6	309
	1,60	21,7	1,68	1,00	0,15	1,50	6	312
	1,85	20,0	1,93	1,25	0,20	1,75	6	310
	1,85	21,7	1,93	1,25	0,20	1,75	6	314
	2,15	21,7	2,23	1,50	0,20	2,00	6	316
	2,65	21,7	2,73	1,75	0,20	2,50	6	318
10	1,30	26,0	1,38	0,85	0,15	1,20	6	322
	1,60	26,0	1,68	1,00	0,15	1,50	6	324
	1,85	26,0	1,93	1,25	0,20	1,75	6	326
	2,15	26,0	2,23	1,50	0,20	2,00	6	328
	2,65	26,0	2,73	1,75	0,20	2,50	6	330
	3,15	26,0	3,23	1,75	0,20	3,00	6	332

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	●
Hardened materials	●

→ v_c/f_z Page 70

When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

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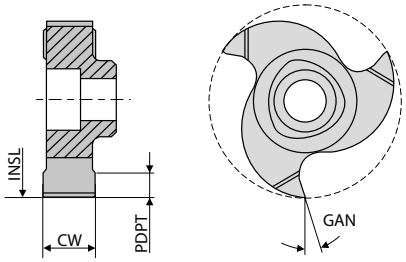
Milling insert without profile

- ▲ with double sided edge break of 0,1x45°
- ▲ size 7: from 5,0 mm groove width with ground chip breaker
- ▲ size 10: from 6,5 mm groove width with ground chip breaker

Polygon



Ti500

Solid carbide

Size	CW +/-0,02 mm	INSL mm	PDPT mm	GAN °	NOF	Article no. 50 875 ...
6	1,5	11,7	2,25	6	3	302
	2,0	11,7	2,25	6	3	304
	2,5	11,7	2,25	6	3	306
	3,0	11,7	2,25	6	3	308
7	3,5	16,0	3,50	0	3	310
	3,5	16,0	3,50	8	3	312
	3,5	16,0	3,50	12	3	314
	5,0	16,0	3,50	0	3	316
	5,0	16,0	3,50	8	3	318
	5,0	16,0	3,50	12	3	320
10	4,0	25,0	5,70	0	3	330
	4,0	25,0	5,70	8	3	332
	4,0	25,0	5,70	12	3	334
	5,0	25,0	5,70	8	3	337
	6,5	25,0	5,70	0	3	340
	6,5	25,0	5,70	8	3	342
	6,5	25,0	5,70	12	3	344
	8,0	25,0	5,70	0	3	350
	8,0	25,0	5,70	8	3	352
	8,0	25,0	5,70	12	3	354

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	●
Hardened materials	●

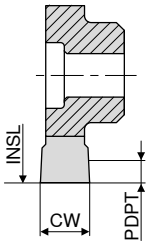
→ v_c/f_z Page 70

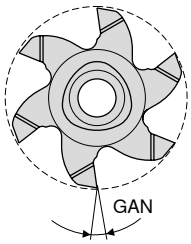
When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

Milling insert without profile

▲ both edges chamfered 0,1x45°

Polygon





Ti500

Solid carbide

Size	CW +/-0,02 mm	INSL mm	PDPT mm	GAN °	NOF	Article no. 50 876 ...
7	1,5	17,7	4,0	6	6	307
	2,0	17,7	4,0	6	6	308
	2,5	17,7	4,0	6	6	309
	3,0	16,0	3,5	6	6	302
	4,0	16,0	3,5	6	6	304
	5,0	16,0	3,5	6	6	306
9	1,5	21,7	5,0	6	6	314
	2,0	21,7	5,0	6	6	315
	2,5	21,7	5,0	6	6	316
	3,0	21,7	5,0	6	6	317
	3,0	20,0	4,2	6	6	311
	4,0	20,0	4,2	6	6	312
	5,0	20,0	4,2	6	6	313
10	1,5	27,7	6,8	6	6	330
	2,0	27,7	6,8	6	6	332
	2,5	27,7	6,8	6	6	334
	3,0	26,0	6,2	6	6	322
	3,0	27,7	6,8	6	6	336
	4,0	26,0	6,2	6	6	324
	5,0	26,0	6,2	6	6	326
	6,5	26,0	6,2	6	6	328

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	●
Hardened materials	●

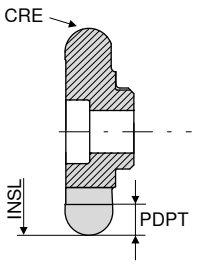
→ v_c/f_z Page 70

When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

7

Milling inserts for radius milling

Polygon



Ti500

Solid carbide

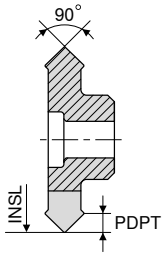
Size	CRE mm	INSL mm	PDPT mm	NOF	Article no. 50 886 ...
6	1,100	9,6	1,20	3	702
	0,788	11,7	2,25	3	704
	1,100	11,7	2,25	3	708
	1,190	11,7	2,25	3	706
7	0,788	17,7	4,20	6	712
	1,100	17,7	4,20	6	714
9	0,785	21,7	5,00	6	720
	1,000	21,7	5,00	6	722
	1,200	21,7	5,00	6	724
	1,400	21,7	5,00	6	726
	1,500	21,7	5,00	6	728

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	●
Hardened materials	●

→ v_c/f_z Page 70

Milling inserts for chamfering and deburring

Polygon



Ti500

Solid carbide

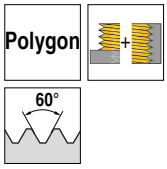
Size	PDPT mm	INSL mm	NOF	Article no. 50 884 ...
6	1,2	9,6	3	292
	1,5	11,7	3	294
7	1,9	16,0	6	302
	1,3	17,7	6	304
9	1,9	20,0	6	312
	1,6	21,7	6	314
10	2,1	26,0	6	322

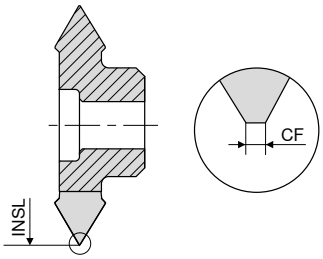
Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	●
Hardened materials	●

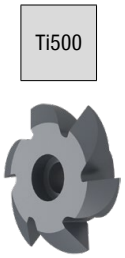
→ v_c/f_z Page 70

Thread milling insert – Partial profile

▲ with holder 50 805 010 / 50 805 011 maximum pitch of 3 mm is possible!







Solid carbide

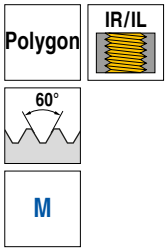
Size	TP mm	INSL mm	CF mm	NOF	Article no. 50 882 ...
6	1 - 3	11,7	0,10	3	292
7	1 - 3	17,7	0,10	6	306
	1 - 4	16,0	0,10	6	302
	2,5 - 4	16,0	0,25	6	304
9	1 - 2	21,7	0,10	6	314
	1 - 3	20,0	0,10	6	312
	2 - 4	21,7	0,15	6	316
10	1 - 3	26,0	0,10	6	322
	2,5 - 5	26,0	0,25	6	324

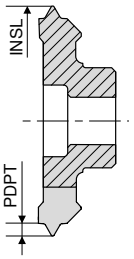
Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	●
Hardened materials	●

→ v_c/f_z Page 70

When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

Thread milling insert – Full profile





Solid carbide

Size	TP mm	INSL mm	PDPT mm	NOF	Article no. 50 881 ...
6	1	9,6	0,572	3	292
	1,5	9,6	0,875	3	293
	2	10,5	1,157	3	296
7	1,5	16,0	0,875	6	302
	2	16,0	1,157	6	304
	2,5	16,0	1,430	6	306
	3	16,0	1,702	6	310
	M20x2,5	16,0	1,430	6	308 1)
9	1,5	20,0	0,875	6	312
	2	20,0	1,157	6	314
	M24x3	20,0	1,702	6	316 1)
10	1,5	26,0	0,875	6	322
	2	26,0	1,157	6	324
	3	26,0	1,702	6	330
	3,5	26,0	1,982	6	332
	4	26,0	2,263	6	334
	4,5	26,0	2,553	6	336
	5	26,0	2,836	6	337
	M30x3,5	24,0	1,982	6	331 1)
	M36x4	26,0	2,263	6	335 1)

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	●
Hardened materials	●

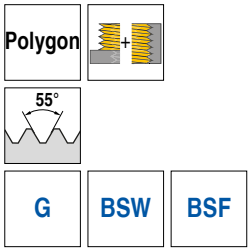
1) profile corrected

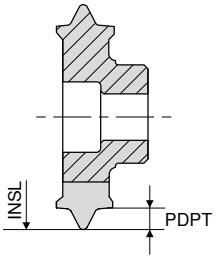
→ v_c/f_z Page 70

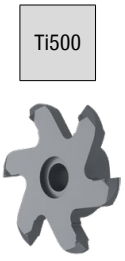
When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

Thread milling insert – Full profile

▲ 50 883 322 for threads > 1"







Solid carbide

Size	TPI 1/"	TP mm	INSL mm	PDPT mm	NOF	Article no. 50 883 ...
6	19	1,337	9,6	0,871	3	292
7	14	1,814	17,7	1,177	6	308
	14	1,814	16,0	1,177	6	304
	11	2,309	16,0	1,494	6	302
	10	2,540	16,0	1,646	6	306
9	14	1,814	20,0	1,177	6	316
	11	2,309	20,0	1,494	6	314
10	11	2,309	26,0	1,494	6	322

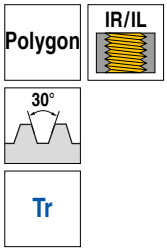
Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	●
Hardened materials	●

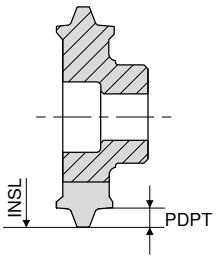
→ v_c/f_z Page 70

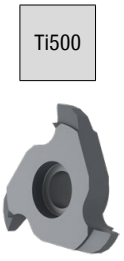
When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

Thread milling insert – Full profile

▲ DIN 103







Solid carbide

Size	TP mm	INSL mm	PDPT mm	NOF	Thread	Article no. 50 872 ...
6	2	11,7	1,25	3	Tr 16x2 - Tr 20x2	292
	3	11,0	1,75	3	Tr 18x3 - Tr 20x3	294
	4	12,0	2,25	3	Tr 20x4	296 1)
7	3	14,0	1,75	3	Tr 24x3 - Tr 32x3	302 2)
	5	15,3	2,75	3	Tr 28x5 - Tr 36x5	306 3)
	5	15,3	2,75	3	Tr 26x5	304 3)
	6	16,2	3,50	3	Tr 34x6 - Tr 42x6	310 2)
	6	16,2	3,50	3	Tr 30x6 - Tr 32x6	308 2)
10	5	25,0	2,75	3	Tr 44x5 - Tr 48x5	322 4)
	7	22,0	3,75	3	Tr 38x7 - Tr 42x7	324 4)
	7	22,0	3,75	3	Tr 44x7	326 1)
	8	25,0	4,50	3	Tr 46x8 - Tr 48x8	328 4)
	8	25,0	4,50	3	Tr 50x8 - Tr 52x8	330 4)
	9	25,0	5,00	3	Tr 55x9 - Tr 60x9	332 4)
	10	25,0	5,50	3	Tr 65x10 - Tr 80x10	334 4)

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	●
Hardened materials	●

1) profile corrected
2) Not suitable for the 50 805 011 and 50 805 010 holders
3) Not suitable for the 50 805 011 and 50 805 010 holders / profile corrected
4) Not suitable for the 50 805 026, 50 805 025 and 50 805 024 holders

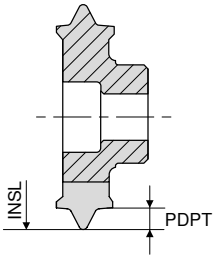
→ v_c/f_z Page 70

When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

Thread milling insert – Full profile

▲ with holder 50 805 010 / 50 805 011 maximum pitch of 3 mm is possible!

Polygon | IR/IL | 60° | UNC



Ti500

Solid carbide

Size	TPI 1/"	INSL mm	PDPT mm	NOF	Article no. 50 886 ...
6	12,0	9,6	1,228	3	202
	11,0	10,5	1,355	3	204
	10,0	11,7	1,485	3	206
7	9,0	16,0	1,577	6	212
9	8,0	18,0	1,809	6	222
	7,0	20,0	2,043	6	224
10	6,0	24,0	2,454	6	232
	5,0	26,0	2,979	6	234
	4,5	26,0	3,289	6	236

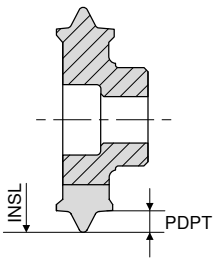
Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	●
Hardened materials	●

→ v_c/f_z Page 70

Thread milling insert – Full profile

▲ with holder 50 805 010 / 50 805 011 maximum pitch of 3 mm is possible!

Polygon | IR/IL | 60° | UNF



Ti500

Solid carbide

Size	Thread	INSL mm	PDPT mm	NOF	Article no. 50 886 ...
6	1/2 - 20	9,6	0,733	3	302
	9/16 - 18	10,5	0,827	3	304
	3/4 - 16	11,7	0,945	3	306
7	7/8 - 14	17,7	1,071	6	312
9	1 - 12	20,0	1,228	6	322

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	●
Hardened materials	●

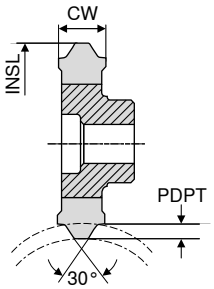
→ v_c/f_z Page 70

Gear cutters, DIN 5480

▲ Z_W = Tooth Number Wave

Polygon

Ti500



Solid carbide

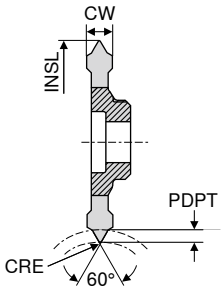
Size	Wave	Module	Z_w	CW mm	INSL mm	PDPT mm	NOF	Article no. 50 874 ...
7	W11	0,80	12	3	15,85	0,80	6	011
	W14	0,80	16	3	16,00	0,80	6	014
	W16	0,80	18	3	16,00	0,80	6	016
	W20	0,80	24	3	16,00	0,80	6	020
	W24	1,25	18	4	16,00	1,25	6	024
	W25	2,00	11	7	16,00	2,00	3	025
	W30	1,25	22	4	16,00	1,25	6	031
	W30	1,25	20	5	16,00	1,25	6	030
	W35	2,00	16	5	16,00	2,00	6	035
	W42	1,25	32	4	16,00	1,25	6	042
	W50	2,00	24	5	16,00	2,00	6	050

Gear cutters, DIN 5481

▲ Z_W = Tooth Number Wave

Polygon

Ti500



Solid carbide

Size	Wave	Z_w	CW mm	INSL mm	CRE mm	PDPT mm	NOF	Article no. 50 874 ...
10	26 x 30	35	3	26	0,3	1,638	6	126
	40 x 44	38	3	26	0,4	1,940	6	140

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	●
Hardened materials	●

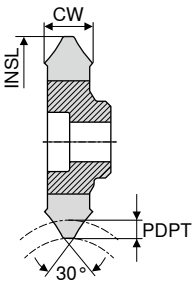
→ v_c/f_z Page 70

When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

Gear cutters, DIN 5482

▲ Z_W = Tooth Number Wave

Polygon



Ti500

Solid carbide

Size	Wave	Module	Z_w	CW mm	INSL mm	PDPT mm	NOF	Article no. 50 874 ...
7	15 x 12	1,60	8	3,0	16	1,50	6	215
	17 x 14	1,60	9	5,0	16	1,50	6	217
	20 x 17	1,60	12	5,0	16	1,50	6	220
	25 x 22	1,60	14	5,0	16	1,65	6	225
10	35 x 31	1,75	18	6,5	26	2,00	6	235
	55 x 50	2,00	26	6,5	26	2,75	6	255

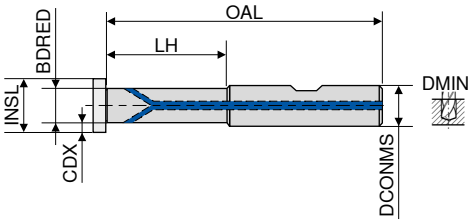
Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	●
Hardened materials	●

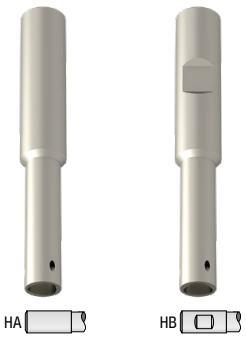
→ v_c/f_z Page 70

When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

Polygon circular end milling cutter

- ▲ for maximum machining depth, note insert width (CW)
- ▲ size 6 = for INSL 9,6; 10,5; 11,7; 12
- ▲ size 7 = for INSL 16; 17,7
- ▲ size 9 = for INSL 18; 20; 21,7
- ▲ size 10 = for INSL 24; 25; 26; 27,7





Size	LH	CDX	DCONMS $_{h6}$	OAL	BDRED	DMIN	torque moment	HM	HM
	mm	mm	mm	mm	mm	mm	Nm	Article no. 50 805 ...	Article no. 50 805 ...
6	20,00	2,25	12	67,5	7,0	12	1,0		050 [1]
	20,00	2,25	12	67,5	7,0	12	1,0		051
	20,00	2,25	12	67,5	7,0	12	1,0	052	
	30,00	2,25	12	80,0	7,0	12	1,0		053
	30,00	2,25	12	80,0	7,0	12	1,0	054	
	40,00	2,25	12	100,0	7,0	12	1,0		055
	40,00	2,25	12	100,0	7,0	12	1,0	056	
7	20,90	4,00	12	67,4	9,0	18	1,1		002 [1]
	21,00	4,00	12	67,4	9,0	18	1,1		004
	21,00	4,00	12	67,4	9,0	18	1,1	005	
	36,00	4,00	12	82,4	9,0	18	1,1		008
	36,00	4,00	12	82,4	9,0	18	1,1	085	
		4,00	12	122,5	12,0	18	1,1	010	
		4,00	12	82,4	12,0	18	1,1	011	
9	29,75	5,00	16	80,0	11,5	22	3,8		070 [1]
	30,00	5,00	16	80,0	11,5	22	3,8		071
	30,00	5,00	16	80,0	11,5	22	3,8	072	
	50,00	5,00	16	100,0	11,5	22	3,8		073
	50,00	5,00	16	100,0	11,5	22	3,8	074	
10	20,50	5,70	16	105,0	15,5	28	5,5	025	
	20,50	6,80	16	149,7	15,5	28	5,5	024	
	20,50	6,80	20	175,4	15,5	28	5,5	026	
	30,40	6,80	16	79,6	13,6	28	5,5		012 [1]
	30,50	6,80	16	79,6	13,6	28	5,5	015	
	30,50	6,80	16	79,6	13,6	28	5,5		014
	45,50	6,80	16	94,6	13,6	28	5,5	021	
	45,50	6,80	16	94,6	13,6	28	5,5		020
	60,50	6,80	16	109,6	13,6	28	5,5		022
	60,50	6,80	16	109,6	13,6	28	5,5	023	

1) Steel version


Key D

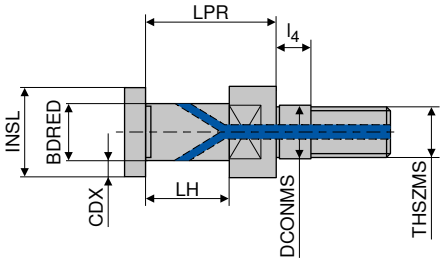

Clamping screw

Spare parts		Article no. 80 950 ...		Article no. 70 960 ...
Size				
6	T08 - IP	125	M2,5x7	246
7	T08 - IP	125	M3x13	231
9	T15 - IP	128	M4x13	236
10	T20 - IP	129	M5x13,5	243

Polygon circular screw-in milling cutter

- size 7 = for INSL 16; 17,7
- size 10 = for INSL 25; 26
- steel version

Polygon



Size	CDX	LH	DCONMS $_{h6}$	LPR	THSZMS	TQX	BDRED	l_4	torque moment	Article no. 50 799 ...
	mm	mm	mm	mm		Nm	mm	mm	Nm	
7	3,5	16,0	8,5	26,0	M8	25	9,0	5,5	1,1	002
10	5,7	25,5	12,5	38,5	M12	60	13,6	5,0	5,5	012


Key D


Clamping screw

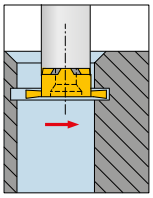
Spare parts		Article no. 80 950 ...		Article no. 70 960 ...
Size				
7	T08 - IP	125	M3x13	231
10	T20 - IP	129	M5x13,5	243

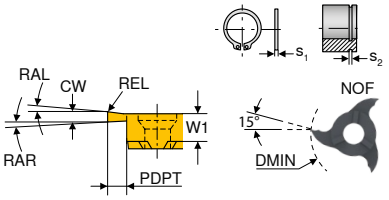
When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

MiniMill – Milling insert for circlip grooves

Mini Mill | ≥ Ø 10 mm | DIN 471/472

CWX500





Size	DMIN mm	$s_{2\ H13}$ mm	CW $_{-0,02}$ mm	PDPT mm	W1 mm	RAR °	REL mm	s_1 mm	NOF	Article no. 53 006 ...
10	10	0,70	0,74	1,5	3,50	1		0,60	3	070
	10	0,80	0,84	1,5	3,50	1		0,70	3	080
	10	0,90	0,94	1,5	3,50	1		0,80	3	090
	10	1,10	1,21	1,5	3,50	3		1,00	3	110
	10	1,30	1,41	1,5	3,50	3	0,10	1,20	3	130
	10	1,60	1,71	1,5	3,50	3	0,10	1,50	3	160
	12	1,10	1,21	2,5	3,50	3		1,00	3	112
	12	1,30	1,41	2,5	3,50	3	0,10	1,20	3	132
	12	1,60	1,71	2,5	3,50	3	0,10	1,50	3	162
18	18	0,70	0,74	1,5	5,75	1		0,60	3	270
	18	0,80	0,84	1,7	5,75	1		0,70	3	280
	18	0,90	0,94	1,9	5,75	1		0,80	3	290
	18	1,10	1,21	3,5	5,75	3		1,00	3	310
	18	1,30	1,41	3,5	5,75	3	0,10	1,20	3	330
	18	1,60	1,71	3,5	5,75	3	0,10	1,50	3	360
22	22	0,70	0,74	1,5	5,70	1		0,60	3	470
	22	0,80	0,84	1,7	5,70	1		0,70	3	480
	22	0,90	0,94	1,9	5,70	1		0,80	3	490
	22	1,00	1,04	2,1	5,70	1		0,90	3	500
	22	1,10	1,21	2,5	5,70	1		1,00	3	510
	22	1,30	1,41	4,5	5,70	3	0,10	1,20	3	530
	22	1,60	1,71	4,5	5,70	3	0,10	1,50	3	560
	22	1,85	1,96	4,5	5,70	3	0,15	1,75	3	585
	22	2,15	2,26	4,5	5,70	3	0,15	2,00	3	615
	22	2,65	2,76	4,5	5,70	3	0,15	2,50	3	665
	22	3,15	3,26	4,5	5,70	3	0,20	3,00	3	415
	22	4,15	4,26	4,5	5,70	3	0,20	4,00	3	515
	22	5,15	5,26	4,5	5,70	3	0,20	5,00	3	605

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	○
Hardened materials	○

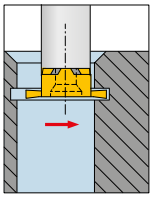
→ v_c/f_z Page 71

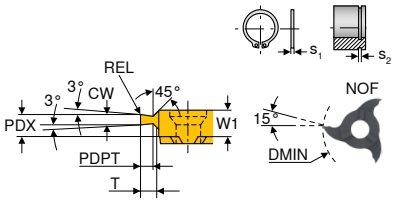
When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

MiniMill – Milling insert for circlip grooves with chamfer facet

Mini Mill | ≥ Ø 22 mm | DIN 471/472

CWX500





Size	DMIN mm	$s_{2\ H13}$ mm	CW $_{-0,02}$ mm	T mm	PDPT mm	W1 mm	PDX mm	REL mm	s_1 mm	NOF	Article no. 53 006 ...
22	22	1,10	1,21	0,50	0,49	5,85	5,07		1,00	3	805
	22	1,30	1,41	0,70	0,67	5,85	5,17		1,20	3	807
	22	1,30	1,41	0,85	0,83	5,85	5,17		1,20	3	808
	22	1,60	1,71	0,85	0,83	5,85	5,07		1,50	3	809
	22	1,60	1,71	1,00	0,97	5,85	5,07		1,50	3	810
	22	1,85	1,96	1,25	1,23	5,85	5,19	0,15	1,75	3	812
	22	2,15	2,26	1,50	1,47	5,85	5,34	0,15	2,00	3	815
	22	2,65	2,76	1,75	1,72	5,85	5,09	0,15	2,50	3	817
	22	2,65	2,76	1,50	1,47	5,85	5,09	0,15	2,50	3	816
	22	3,15	3,26	1,75	1,72	5,85	5,34	0,20	3,00	3	818
	22	4,15	4,26	2,50	2,47	5,85	5,34	0,20	4,00	3	825
	22	4,15	4,26	2,00	1,97	5,85	5,34	0,20	4,00	3	820

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	○
Hardened materials	○

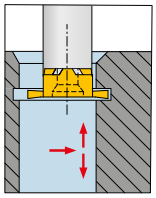
→ v_c/f_z Page 71

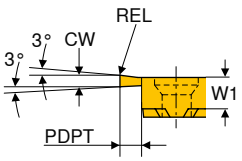
When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

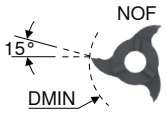
7

MiniMill – Milling insert for groove milling

Mini Mill | ≥ Ø 10 mm | CWX500







Size	DMIN mm	CW +0,02 mm	PDPT mm	W1 mm	REL mm	NOF	Article no. 53 007 ...
10	10	1,0	1,5	3,50		3	010
	10	1,5	1,5	3,50	0,2	3	015
	10	2,0	1,5	3,50	0,2	3	020
	10	2,5	1,5	3,50	0,2	3	025
	12	1,5	2,0	3,50	0,2	6	114
	12	1,5	2,5	3,50	0,2	3	115
	12	2,0	2,0	3,50	0,2	6	119
	12	2,0	2,5	3,50	0,2	3	120
	12	2,5	2,5	3,50	0,2	3	125
14	14	1,0	2,5	4,50		3	210
	14	1,5	2,5	4,50	0,2	3	215
	14	2,0	2,5	4,50	0,2	3	220
	14	2,5	2,5	4,50	0,2	3	225
	16	1,5	3,5	4,50	0,2	3	315
	16	2,0	3,5	4,50	0,2	3	320
	16	2,5	3,5	4,50	0,2	3	325
18	18	1,5	3,5	5,75	0,1	6	414
	18	1,5	3,5	5,75	0,2	3	415
	18	2,0	3,5	5,75	0,2	6	419
	18	2,0	3,5	5,75	0,2	3	420
	18	2,5	3,5	5,75	0,2	6	424
	18	2,5	3,5	5,75	0,2	3	425
	18	3,0	3,5	5,75	0,2	6	429
	18	3,0	3,5	5,75	0,2	3	430
	18	4,0	3,5	5,75	0,2	3	440
22	22	1,0	4,5	6,20	0,1	6	810
	22	1,5	4,5	6,20	0,1	6	815
	22	1,5	4,5	5,70	0,2	3	515
	22	2,0	4,5	5,70	0,2	3	520
	22	2,0	4,5	6,20	0,2	6	820
	22	2,5	4,5	5,70	0,2	3	525
	22	2,5	4,5	6,20	0,2	6	825
	22	3,0	4,5	5,70	0,2	3	530
	22	3,0	4,5	6,20	0,2	6	830
	22	3,5	4,5	5,70	0,2	3	535
	22	4,0	4,5	5,70	0,2	3	540
	22	4,0	4,5	6,20	0,2	6	840
28	25	2,0	5,0	6,50	0,2	3	620
	25	2,5	5,0	6,50	0,2	3	625
	25	3,0	5,0	6,50	0,2	3	630
	25	3,5	5,0	6,50	0,2	3	635
	25	4,0	5,0	6,50	0,2	3	640
	28	1,0	6,5	6,25	0,1	6	610
	28	1,5	6,5	6,25	0,1	6	615
	28	1,5	6,5	6,50	0,2	3	715
	28	2,0	6,5	6,25	0,2	6	721
	28	2,0	6,5	6,50	0,2	3	720
	28	2,5	6,5	6,25	0,2	6	726
	28	2,5	6,5	6,50	0,2	3	725
	28	3,0	6,5	6,50	0,2	3	730
	28	3,0	6,5	6,25	0,2	6	731
	28	3,5	6,5	6,50	0,2	3	735
	28	4,0	6,5	6,25	0,2	6	741
	28	4,0	6,5	6,50	0,2	3	740
	28	5,0	6,5	6,50	0,2	3	750
	28	6,0	6,5	6,50	0,2	3	760

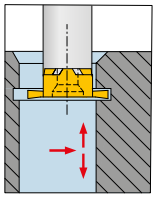
Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	○
Hardened materials	○

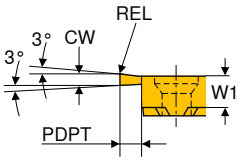
→ v_c/f_z Page 71

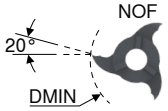
When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

MiniMill – Milling insert for groove milling (specialist for aluminium)

Mini Mill | ≥ Ø 32 mm | CWX500







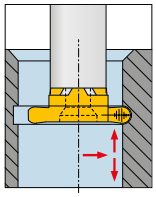
Size	DMIN mm	CW +0,02 mm	PDPT mm	W1 mm	REL mm	NOF	Article no. 53 007 ...
28	32	2,0	8,5	6,5	0,2	3	920
	32	2,5	8,5	6,5	0,2	3	925
	32	3,0	8,5	6,5	0,2	3	930

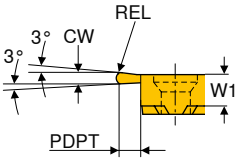
Steel	
Stainless steel	
Cast iron	
Non ferrous metals	●
Heat resistant alloys	
Hardened materials	

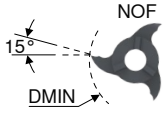
→ v_c/f_z Page 71

MiniMill – Milling insert for groove milling with full radius

Mini Mill | ≥ Ø 22 mm | CWX500







Size	DMIN mm	CW +0,03 mm	PDPT mm	W1 mm	REL mm	NOF	Article no. 53 008 ...
10	12	2,2	2,5	3,50	1,1	3	011
14	16	2,2	3,5	4,60	1,1	3	111
18	18	2,2	3,5	5,75	1,1	3	211
22	22	1,0	4,5	5,75	0,5	3	305
	22	1,6	4,5	5,75	0,8	3	308
	22	2,0	4,5	5,75	1,0	3	310
	22	2,4	4,5	5,75	1,2	3	312
	22	2,8	4,5	5,75	1,4	3	314
	22	3,0	4,5	5,75	1,5	3	315
	22	4,0	4,5	5,75	2,0	3	320
	22	4,4	4,5	5,75	2,2	3	322
	22	5,0	4,5	5,75	2,5	3	325

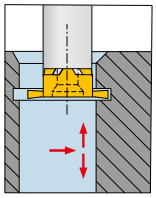
Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	○
Hardened materials	○

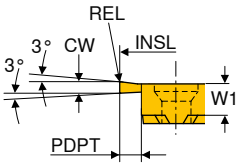
→ v_c/f_z Page 71

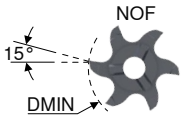
When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

MiniMill – Milling insert for groove milling, cross-pitched

Mini Mill | ≥ Ø 22 mm | CWX500







Size	DMIN mm	INSL mm	CW +0,02 mm	PDPT mm	W1 mm	REL mm	NOF	Article no. 53 015 ...
10	12	11,7	1,5	2,0	3,5	0,2	6	114
	12	11,7	2,0	2,0	3,5	0,2	6	119
14	16	15,7	1,5	2,5	4,5	0,2	6	314
	16	15,7	2,0	2,5	4,5	0,2	6	319
	16	15,7	2,5	2,5	4,5	0,2	6	324
18	18	17,7	2,0	4,0	5,8	0,2	6	419
	18	17,7	2,5	4,0	5,8	0,2	6	424
	18	17,7	3,0	4,0	5,8	0,2	6	429
	20	19,7	2,0	5,0	5,8	0,2	6	469
	20	19,7	2,5	5,0	5,8	0,2	6	474
	20	19,7	3,0	5,0	5,8	0,2	6	479
22	22	21,7	2,0	4,5	6,2	0,2	6	820
	22	21,7	2,5	4,5	6,2	0,2	6	825
	22	21,7	3,0	4,5	6,2	0,2	6	830
	22	21,7	4,0	4,5	6,2	0,2	6	840
	37	36,7	1,5	12,0	6,2	0,1	6	865
	37	36,7	2,0	12,0	6,2	0,2	6	870
28	25	24,8	2,5	5,0	6,4	0,2	6	626
	25	24,8	3,0	5,0	6,4	0,2	6	631
	25	24,8	4,0	5,0	6,4	0,2	6	641
	25	24,8	5,0	5,0	6,4	0,2	6	651
	25	24,8	6,0	5,0	6,4	0,2	6	661
	28	27,7	2,5	6,5	6,2	0,2	6	726
	28	27,7	3,0	6,5	6,2	0,2	6	731
	28	27,7	4,0	6,5	6,2	0,2	6	741
	28	27,7	5,0	6,5	6,2	0,2	6	751
	28	27,7	6,0	6,5	6,2	0,2	6	761
	35	34,7	2,0	10,0	6,2	0,2	6	770
	35	34,7	2,5	10,0	6,2	0,2	6	775
	35	34,7	3,0	10,0	6,2	0,2	6	780

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	○
Hardened materials	○

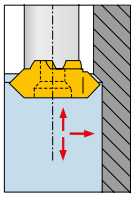
→ v_c/f_z Page 71

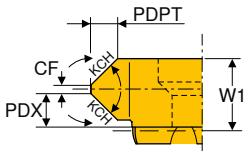
When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

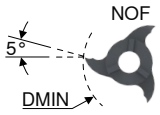
MiniMill – Milling insert for groove milling and chamfering

Mini Mill | ≥ Ø 10 mm

CWX500







Size	DMIN mm	CF +0,03 mm	PDPT mm	W1 mm	KCH °	PDX mm	NOF	Article no. 53 009 ...
10	10	0,2	0,35	3,60	15	1,80	6	015
	10	0,2	0,45	3,60	20	1,80	6	020
	10	0,2	0,70	3,60	30	1,80	6	030
	10	0,2	1,20	3,60	45	1,80	6	045
	12	1,2	0,80	3,50	45	1,20	3	035
14	16	1,4	1,20	4,50	45	1,60	3	145
18	18	2,5	1,40	5,85	45	1,70	3	258
	18	0,2	2,20	5,75	45	3,00	6	259
22	22	2,0	1,70	5,85	45	2,00	3	358
	22	0,2	2,50	6,40	45	3,90	6	463
	22	3,0	3,00	9,40	45	3,25	3	394 1)
28	28	0,2	1,90	6,05	45	3,75	6	560

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	○
Hardened materials	○

1) use clamping screw 73 082 006

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When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

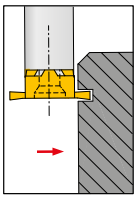
7

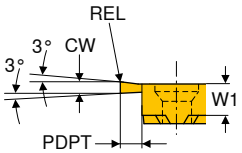
MiniMill – Milling insert for part-off

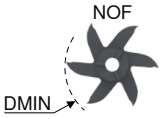
▲ PDPT = 12,0 mm in combination with holder 53 003 624
▲ reduce feed rate by 50 %

Mini Mill | ≥ Ø 37 mm

CWX500







Size	DMIN mm	CW +0,02 mm	PDPT mm	W1 mm	REL mm	NOF	Article no. 53 013 ...
22	37	0,5	12	5,6		6	705 1)
	37	0,6	12	5,7		6	706 1)
	37	0,8	12	6,0		6	708 1)
	37	1,0	12	6,2	0,1	6	710
	37	1,5	12	6,2	0,1	6	715

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	○

1) the end face is not ground free to the center

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MiniMill – Set for cut off

▲ size 22

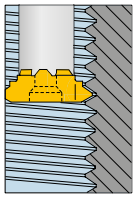
Mini Mill

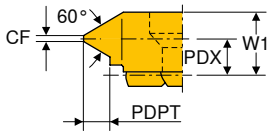
Tool	Designation	Article no.	Hole-Ø mm	Piece	Article no. 53 014 ...
Inserts	Milling inserts for separating	53 013 715	37	2	990
Tool holder	Endmill short	53 003 624		1	
Screw	M5 x 12	73 082 005		1	
Tightening Key	T20			1	

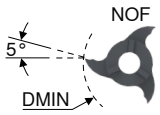
When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

MiniMill – Milling insert for internal thread milling – Partial profile

Mini Mill | ≥ M12 | 60° | CWX500







Size	Thread$_{min}$	TP mm	DMIN mm	CF mm	PDPT mm	W1 mm	PDX mm	NOF	Article no. 53 010 ...
10	M12	1,0 - 1,75	9,8	0,13	1,08	3,20	2,4	6	017
	M14	1,0 - 1,75	11,7	0,13	1,08	3,60	2,8	3	010
	M14	1,0 - 2,0	10,1	0,13	1,25	3,20	2,2	6	021
	M14	1,0 - 2,0	11,7	0,13	1,25	3,60	2,8	3	020
	M16	1,5 - 2,75	11,0	0,19	1,67	3,20	2,0	6	027
	M16	1,5 - 2,75	11,7	0,19	1,67	3,60	2,4	3	015
	M16	2,0 - 3,0	11,1	0,25	1,78	3,20	1,9	6	029
	M16	2,0 - 3,0	11,7	0,25	1,78	3,60	2,2	3	030
14	M18	1,0 - 1,75	15,7	0,12	1,08	4,60	3,8	3	210
	M18	1,0 - 2,0	15,7	0,12	1,25	4,60	3,5	3	220
	M20	1,5 - 2,75	15,7	0,18	1,67	4,60	3,5	3	215
	M22	2,5 - 3,0	15,7	0,31	1,78	4,60	3,4	3	230
18	M22	1,0 - 1,75	17,7	0,12	1,03	5,85	5,0	3	410
	M22	1,0 - 2,0	17,7	0,12	1,19	5,85	4,7	3	412
	M22	1,0 - 2,0	17,7	0,12	1,19	5,85	5,0	6	416
	M22	1,5 - 2,75	17,7	0,19	1,62	5,85	4,6	3	415
	M24	2,0 - 3,0	17,7	0,25	1,73	5,85	4,4	3	425
	M24	2,0 - 3,5	17,7	0,25	2,06	5,85	4,2	3	455
	M24	2,0 - 3,5	17,7	0,25	2,06	5,85	4,3	6	434
	M24	2,0 - 3,75	17,7	0,25	2,22	5,85	4,2	3	420
	M24	2,5 - 5,0	17,7	0,31	2,98	5,85	3,8	3	430
	M24	3,0 - 5,5	17,7	0,38	3,25	5,85	4,2	3	435
22	M27	1,0 - 2,0	21,7	0,12	1,19	5,85	4,6	3	610
	M27	1,0 - 2,0	21,7	0,12	1,19	6,20	5,0	6	710
	M27	1,5 - 2,75	21,7	0,18	1,62	5,85	4,5	3	615
	M27	2,0 - 3,75	21,7	0,25	2,22	5,85	4,2	3	620
	M27	2,5 - 4,5	21,7	0,25	2,70	5,85	3,7	3	655
	M27	2,0 - 4,5	21,7	0,25	2,70	6,05	4,2	6	755
	M30	2,5 - 5,0	21,7	0,31	2,98	5,85	3,8	3	630
	M30	3,5 - 6,0	21,7	0,44	3,52	5,85	3,4	3	640
	M30	3,5 - 6,5	21,7	0,44	3,84	5,85	3,2	3	645
28	M33	1,0 - 2,0	27,7	0,12	1,20	6,60	4,5	3	820
	M33	1,5 - 2,5	27,7	0,18	1,49	6,60	4,3	3	825
	M33	1,5 - 2,5	27,7	0,19	1,60	6,10	5,0	6	826
	M36	2,5 - 5,0	27,7	0,38	2,93	6,10	2,3	6	850
	M36	2,5 - 5,0	27,7	0,37	2,93	6,60	4,0	3	840
	M39	4,0 - 6,0	27,7	0,62	3,37	6,60	3,6	3	860

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	○

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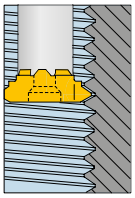
When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

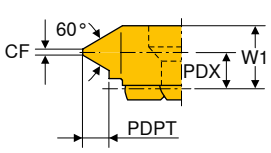
7

MiniMill – Milling insert for internal thread milling – Full profile

Mini Mill	≥ M22
60°	M

CWX500





Size	Thread$_{min}$	TP mm	DMIN mm	CF mm	PDPT mm	W1 mm	PDX mm	NOF	Article no. 53 011 ...
18	M22	1,50	17,7	0,18	0,81	5,85	4,8	3	415
	M22	1,75	17,7	0,20	0,95	5,85	4,7	3	417
	M22	2,00	17,7	0,25	1,08	5,85	4,6	3	420
	M24	2,50	17,7	0,31	1,35	5,85	4,4	3	425
	M27	3,00	17,7	0,37	1,62	5,85	4,3	3	430
	M27	3,50	17,7	0,43	1,89	5,85	4,0	3	435
22	M24	1,50	21,7	0,19	0,81	5,85	4,8	3	615
	M24	1,50	21,7	0,19	0,81	6,20	5,3	6	715
	M27	1,75	21,7	0,22	0,95	6,20	5,2	6	717
	M27	1,75	21,7	0,22	0,95	5,85	4,7	3	617
	M27	2,00	21,7	0,25	1,08	5,85	4,6	3	620
	M27	2,00	21,7	0,25	1,08	6,20	5,0	6	720
	M30	3,00	21,7	0,37	1,62	5,85	4,3	3	630
	M30	3,00	21,7	0,37	1,62	6,20	4,8	6	730
	M30	3,50	21,7	0,43	1,89	5,85	4,0	3	635
	M33	4,00	21,7	0,50	2,16	5,85	3,9	3	640
	M33	4,00	21,7	0,50	2,16	6,20	4,4	6	740
	M33	4,50	21,7	0,56	2,43	5,85	3,7	3	645

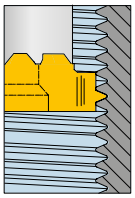
Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	○

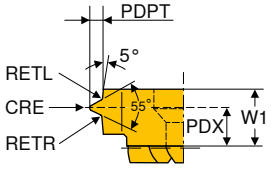
→ v_c/f_z Page 71

MiniMill – Milling insert for internal thread milling – Full profile

Mini Mill	≥ G 3/8"
55°	G

CWX500





Size	Thread$_{min}$	TP mm	DMIN mm	TPI 1/"	W1 mm	PDX mm	PDPT mm	CRE mm	RETL mm	RETR mm	NOF	Article no. 53 012 ...
10	G 3/8"	1,34	11,7	19	3,60	2,5	0,860	0,18	0,18	0,18	3	113
	G 1/2"	1,81	11,7	14	3,60	2,3	1,160	0,24	0,24	0,24	3	118
	G 1"	2,31	11,7	11	3,60	2,0	1,480	0,31	0,31	0,31	3	123
18	-	1,34	17,7	19	5,85	4,9	0,856	0,18	0,18	0,18	3	219
	G 3/4"	1,81	17,7	14	5,85	4,6	1,160	0,24	0,24	0,24	3	214
	G 1"	2,31	17,7	11	5,85	4,4	1,480	0,31	0,31	0,31	3	211
22	G 1"	2,31	21,7	11	5,85	4,0	1,480	0,31	0,31	0,31	3	311
	-	3,17	21,7	8	5,85	3,5	2,030	0,43	0,43	0,43	3	308
	BSW 1 1/2"	4,23	21,7	6	5,85	3,1	2,710	0,58	0,58	0,58	3	306

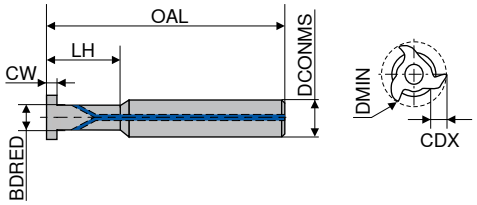
Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	○

→ v_c/f_z Page 71

MiniMill – Circular milling cutter, extra short

▲ steel Version

Mini Mill



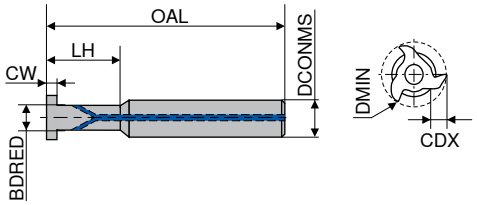
Steel

Size	DCONMS h6	BDRED	OAL	LH	DMIN	CW	CDX	torque moment	Article no. 53 004 ...
	mm	mm	mm	mm	mm	mm	mm	Nm	
10	10	6,0	60	15,2	9,7 / 11,7	≤3,35	1,4 / 2,5	2,0	015
14	10	8,0	60	17,7	13,7 / 15,7	≤4,35	2,5 / 3,5	3,5	217
	13	8,0	70	25,7	13,7 / 15,7	≤4,35	2,5 / 3,5	3,5	225
18	10	9,0	60	17,0	17,7	≤5,6	3,5	4,5	417
	13	9,0	70	25,0	17,7	≤5,6	3,5	4,5	425
22	10	11,3	60	10,7	21,7	≤9,15	4,5	7,0	610
	13	11,3	70	25,7	21,7	≤9,15	4	7,0	625
28	13	14,0	70	10,7	27,7	≤10	6,5	7,0	810
	20	14,0	100	35,7	27,7	≤10	6,5	7,0	835

MiniMill – Circular milling cutter, short

▲ steel Version

Mini Mill



Steel Steel

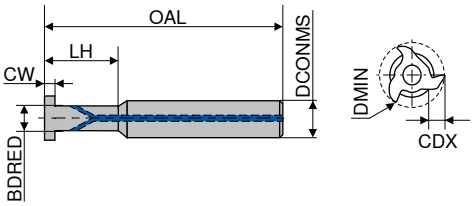
Size	DCONMS h6	BDRED	OAL	LH	DMIN	CW	CDX	torque moment	Article no. 53 002 ...	Article no. 53 003 ...
	mm	mm	mm	mm	mm	mm	mm	Nm		
10	16	6	80	12,0	9,7 / 11,7	≤3,35	1,4 / 2,5	2,0	012	012
14	16	8	80	16,0	13,7 / 15,7	≤4,35	2,5 / 3,5	3,5	216	216
18	16	9	80	18,0	17,7	≤5,6	3,5	4,5	418	418
22	16	12	80	24,0	21,7	≤9,15	4,5	7,0	624	624
28	20	14	100	35,7	27,7	≤10	6,5	7,0		835

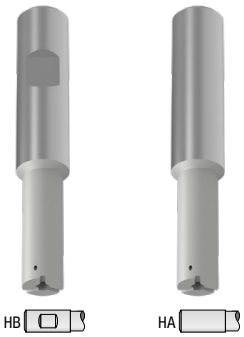
When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

7

MiniMill – Circular milling cutter, vibration-damped

Mini Mill





HM HM

Size	DCONMS h6	BDRED	OAL	LH	DMIN	CW	CDX	torque moment	Article no. 53 001 ...	Article no. 53 000 ...
	mm	mm	mm	mm	mm	mm	mm	Nm		
10	12	6,0	80	21	9,7 / 11,7	≤3,35	1,4 / 2,5	2,0	021	021
	12	6,0	90	30	9,7 / 11,7	≤3,35	1,4 / 2,5	2,0	030	030
	12	6,0	100	42	9,7 / 11,7	≤3,35	1,4 / 2,5	2,0	042	042
	12	7,3	90	30	9,7 / 11,7	≤3,35	0,9 / 1,85	2,0	130	130
	16	7,3	100	25	9,7 / 11,7	≤3,35	0,9 / 1,85	2,0	025	025
14	12	8,0	95	29	13,7 / 15,7	≤4,35	2,5 / 3,5	3,5	229	229
	12	8,0	110	42	13,7 / 15,7	≤4,35	2,5 / 3,5	3,5	242	242
	12	8,0	120	56	13,7 / 15,7	≤4,35	2,5 / 3,5	3,5	256	256
	12	9,5	110	42	13,7 / 15,7	≤4,35	1,65 / 2,7	3,5	342	342
	16	9,5	110	33	13,7 / 15,7	≤4,35	1,65 / 2,7	3,5	233	233
18	12	9,0	100	32	17,7	≤5,6	3,5	4,5	432	432
	12	9,0	100	45	17,7	≤5,6	3,5	4,5	445	445
	12	9,0	120	64	17,7	≤5,6	3,5	4,5	464	464
	16	9,0	93	25	17,7	≤5,6	3,5	4,5	425	425
	16	9,0	100	32	17,7	≤5,6	3,5	4,5	532	532
	16	9,0	110	45	17,7	≤5,6	3,5	4,5	545	545
	16	9,0	130	64	17,7	≤5,6	3,5	4,5	564	564
	16	13,0	110	64	17,7	≤5,6	1,5	4,5	465	465
	16	13,0	130	66	17,7	≤5,6	1,5	4,5	466	466
22	12		100	42	21,7	≤9,15	4,5	7,0	642	642
	12		130	60	21,7	≤9,15	4,5	7,0	660	660
	16	11,5	90	30	21,7	≤9,15	4,5	7,0	630	630
	16	12,0	100	42	21,7	≤9,15	4,5	7,0	742	742
	16	12,0	130	60	21,7	≤9,15	4,5	7,0	760	760
	16	12,0	160	85	21,7	≤9,15	4,5	7,0	685	685
	20	16,0	110	45	21,7	≤9,15	2,5	7,0	645	645
	20	16,0	130	65	21,7	≤9,15	2,5	7,0	665	665
28	16	14,3	100	42	27,7 / 24,8	≤10	6,5 / 5	7,0	842	842
	16	14,3	130	60	27,7 / 24,8	≤10	6,5 / 5	7,0	860	860
	16	14,3	160	85	27,7 / 24,8	≤10	6,5 / 5	7,0	885	885
	20	13,5	104	35	27,7 / 24,8	≤10	6,5 / 5	7,0	835	835
	20	14,3	160	85	27,7 / 24,8	≤10	6,5 / 5	7,0	985	985


Key D


Clamping screw


Clamping screw

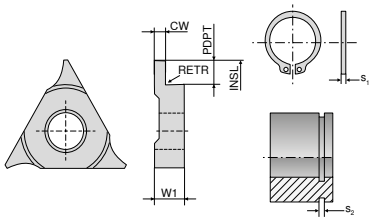
Spare parts		Article no. 80 950 ...		Article no. 73 082 ...		Article no. 73 082 ...
Size						
10	T08	110			M2,6	002
14	T10	112			M3,5	003
18	T15	113			M4	004
22	T20	114	M5	006	M5	005
28	T20	114			M5	005

Clamping screw 73 082 006 only for insert 53 009 394.

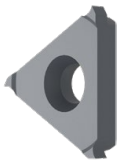
Milling inserts for circlip grooves without chamfer

System 300

DIN 471/472



Ti500



Solid carbide

Size	$s_{2\ H13}$ mm	INSL mm	W1 mm	$CW_{-0,03}$ mm	PDPT mm	RETR mm	s_1 mm	Article no. 50 853 ...
04	0,90	7,9	2,34	0,98	0,70	0,3	0,80	300
03	0,90	10,6	2,34	0,98	0,70	0,3	0,80	302
	1,10	10,6	2,34	1,18	0,90	0,3	1,00	304
	1,30	10,6	2,34	1,38	1,10	0,3	1,20	306
	1,60	10,6	2,34	1,68	1,25	0,3	1,50	308
	1,85	10,6	2,34	1,93	1,25	0,3	1,75	310
02	0,90	17,5	3,50	0,98	0,70	0,3	0,80	312
	1,10	17,5	3,50	1,18	0,90	0,3	1,00	314
	1,30	17,5	3,50	1,38	1,10	0,3	1,20	316
	1,60	17,5	3,50	1,68	1,25	0,3	1,50	318
	1,85	17,5	3,50	1,93	1,25	0,3	1,75	320
	2,15	17,5	3,50	2,23	1,75	0,3	2,00	322
	2,65	17,5	3,50	2,73	1,75	0,3	2,50	324
	3,15	17,5	3,50	3,23	2,20	0,3	3,00	326
01	0,90	23,0	4,00	0,98	0,70	0,3	0,80	328
	1,10	23,0	4,00	1,18	0,90	0,3	1,00	330
	1,30	23,0	4,00	1,38	1,10	0,3	1,20	332
	1,60	23,0	4,00	1,68	1,25	0,3	1,50	334
	1,85	23,0	4,00	1,93	1,25	0,3	1,75	336
	2,15	23,0	4,00	2,23	1,75	0,3	2,00	338
	2,65	23,0	4,00	2,73	1,75	0,3	2,50	340
	3,15	23,0	4,00	3,23	2,20	0,3	3,00	342

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	●
Hardened materials	○

→ v_c/f_z Page 70

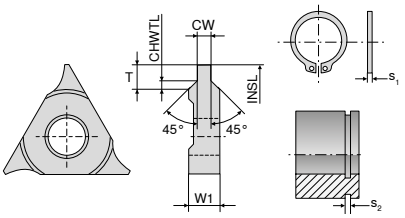
When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

7

Milling inserts for circlip grooves with chamfer

System 300

DIN 471/472



Ti500

Solid carbide

Size	$s_{2\ H13}$ mm	INSL mm	W1 mm	$CW_{-0,03}$ mm	T mm	CHWTL mm	s_1 mm	Article no. 50 852 ...
03	1,10	10,6	2,34	1,18	0,50	0,10	1,00	302
02	1,10	17,5	3,50	1,18	0,50	0,10	1,00	312
	1,30	17,5	3,50	1,38	0,85	0,15	1,20	314
	1,60	17,5	3,50	1,68	1,00	0,15	1,50	316
	1,85	17,5	3,50	1,93	1,25	0,20	1,75	317
	2,15	17,5	3,50	2,23	1,50	0,20	2,00	318
	2,65	17,5	3,50	2,73	1,50	0,20	2,50	319
01	1,10	23,0	4,00	1,18	0,50	0,10	1,00	320
	1,30	23,0	4,00	1,38	0,70	0,15	1,20	321
	1,30	23,0	4,00	1,38	0,85	0,15	1,20	322
	1,60	23,0	4,00	1,68	1,00	0,15	1,50	324
	1,60	23,0	4,00	1,68	0,85	0,15	1,50	323
	1,85	23,0	4,00	1,93	1,25	0,20	1,75	325
	2,15	23,0	4,00	2,23	1,50	0,20	2,00	326
	2,65	23,0	4,00	2,73	1,75	0,20	2,50	328
	2,65	23,0	4,00	2,73	1,50	0,20	2,50	327
	3,15	23,0	4,00	3,32	1,75	0,20	3,00	329

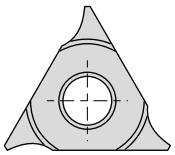
Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	●
Hardened materials	○

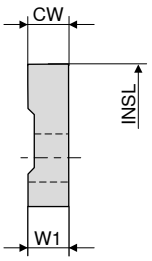
→ v_c/f_z Page 70

When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

Milling inserts without profile, ground ready-for-use

System 300





Ti500

Solid carbide

Size	CW +0,02 mm	INSL mm	W1 mm	Article no. 50 851 ...
04	2,00	7,9	2,34	302
03	2,34	10,6	2,34	304
	3,00	10,6	3,00	306
02	3,50	17,5	3,50	312
	5,00	17,5	5,00	314
	6,00	17,5	6,00	316
01	4,00	23,0	4,00	322 1)
	6,50	23,0	6,50	324 1)

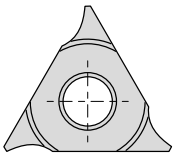
Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	●
Hardened materials	○

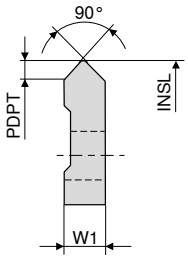
1) with circular milling cutter 50 800 090 PDPT = 3,0 mm

→ v_c/f_z Page 70

Milling inserts for chamfering and deburring

System 300





Ti500

Solid carbide

Size	PDPT mm	INSL mm	W1 mm	Article no. 50 857 ...
03	1,50	10,6	3,0	304
02	2,50	17,5	5,0	314
01	3,25	23,0	6,5	322 1)

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	●
Hardened materials	○

1) with circular milling cutter 50 800 090 PDPT = 3,0 mm

→ v_c/f_z Page 70

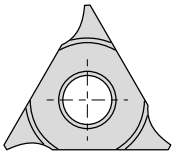
When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

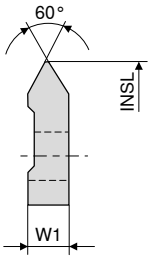
7

Thread milling insert – Partial profile

System 300

60°





Ti500

Solid carbide

Size	TP	INSL	W1	Article no. 50 855 ...
	mm	mm	mm	
02	1 - 3,5	17,5	3,5	314
01	1 - 4,0	23,0	4,0	324

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	●
Hardened materials	○

→ v_c/f_z Page 70

Thread milling insert – Full profile

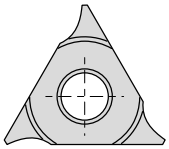
System 300

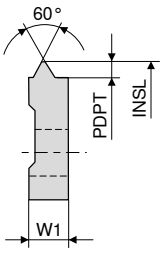
IR/IL

60°

M

MF





Ti500

Solid carbide

Size	TP	INSL	W1	PDPT	Article no. 50 859 ...
	mm	mm	mm	mm	
03	1,0	10,6	2,34	0,578	304
	1,5	10,6	2,34	0,864	308
	2,0	10,6	2,34	1,159	310
02	1,0	17,5	3,50	0,578	311
	1,5	17,5	3,50	0,864	312
	2,0	17,5	3,50	1,159	314
	2,5	16,0	3,50	1,444	317 1)
	2,5	17,5	3,50	1,444	316
	3,0	17,5	3,50	1,728	318
01	1,0	23,0	4,00	0,578	320
	1,5	23,0	4,00	0,864	322
	2,0	23,0	4,00	1,159	324
	2,5	23,0	4,00	1,444	326
	3,0	23,0	4,00	1,728	328
	3,5	23,0	4,00	2,023	330
	4,0	23,0	4,00	2,308	332
	4,5	23,0	6,50	2,602	334
	5,0	23,0	6,50	2,887	336
	6,0	23,0	6,50	3,467	338 2)

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	●
Hardened materials	○

1) M20x2,5 – profile corrected

2) with circular milling cutter 50 800 090 PDPT = 3,0 mm

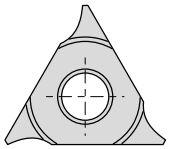
→ v_c/f_z Page 70

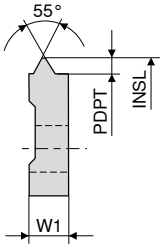
Thread milling insert – Full profile

System 300

55°

G BSW BSF





Ti500

Solid carbide

Size	TP mm	TPI 1/"	INSL mm	W1 mm	PDPT mm	Article no. 50 858 ...
02	1,814	14	17,5	3,5	1,162	314
	2,309	11	17,5	3,5	1,494	312
01	2,309	11	23,0	4,0	1,494	322

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	●
Hardened materials	○

→ v_c/f_z Page 70

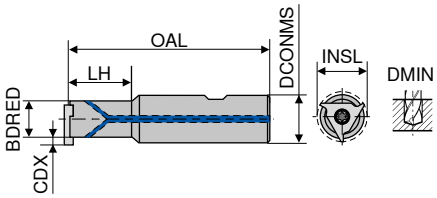
When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

7

Circular milling cutter

▲ size refers to milling inserts

System 300



HB 

Size	INSL	CDX	LH	DCONMS $_{h6}$	OAL	BDRED	DMIN	torque moment	Article no. 50 800 ...
	mm	mm	mm	mm	mm	mm	mm	Nm	
04	7,9	0,35	17,2	10	57,20	7,1	8	0,9	015 [1]
03	10,6	1,60	17,2	10	57,20	7,4	11	0,9	020 [1]
	10,6	1,60	34,2	10	74,20	7,4	11	0,9	025 [2]
02	17,5	2,60	28,7	12	74,05	12,0	20	3,8	030
	17,5	2,60	63,7	12	108,70	12,0	20	3,8	045 [2]
01	23,0	3,45	38,5	16	87,00	16,1	25	5,5	050
	23,0	3,45	67,5	16	116,00	16,1	25	5,5	070
	23,0	3,00	88,5	16	137,00	17,0	25	5,5	090 [2]

1) without through coolant
2) carbide version

Key D

Clamping screw

Spare parts for Article no.	Article no. 80 950 ...		Article no. 70 960 ...	
50 800 050	T20 - IP	129	M5x15	234
50 800 070	T20 - IP	129	M5x15	234
50 800 090	T20 - IP	129	M5x15	234
50 800 030	T15 - IP	128	M4x12,3	233
50 800 045	T15 - IP	128	M4x12,3	233
50 800 020	T06 - IP	123	M2x9	232
50 800 025	T06 - IP	123	M2x9	232
50 800 015	T06 - IP	123	M2x9	232

When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

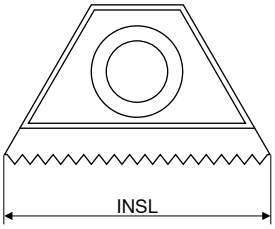
Thread milling insert

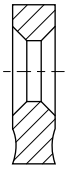
▲ can be used on both sides (except for INSL 10,4)

MWN

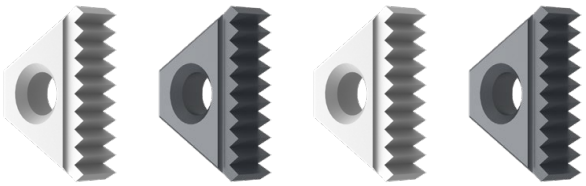
60°

M | MF





IR/IL | IR/IL TiAlN | ER/EL | ER/EL TiAlN



INSL	TP	Solid carbide	Solid carbide	Solid carbide	Solid carbide
		Article no. 50 890 ...	Article no. 50 890 ...	Article no. 50 891 ...	Article no. 50 891 ...
mm	mm				
10,4	0,50	100			
	0,75	101			
	1,00	102	302		
	1,25	103			
	1,50	104	304		
11,0	0,50	120			
	0,75	121			
	1,00	122	322		
	1,25	123			
	1,50	124	324		
16,0	0,50	140			
	0,75	141			
	1,00	142	342	142	342
	1,25	143		143	
	1,50	144	344	144	344
	1,75	145		145	
	2,00	146	346	146	346
27,0	1,00	162	362	162	362
	1,25	163		163	
	1,50	164	364	164	364
	1,75	165			
	2,00	166	366	166	366
	2,50	167		167	
	3,00	168	368	168	368
	3,50	169		169	
	4,00	170		170	
Steel		●	●	●	●
Stainless steel			●		●
Cast iron		●	●	●	●
Non ferrous metals		●	●	●	●
Heat resistant alloys					
Hardened materials					

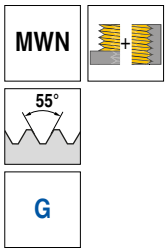
→ v_c/f_z Page 69

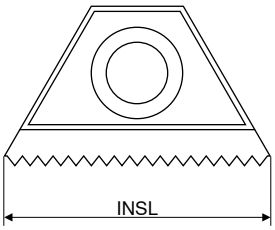
When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

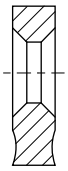
7

Thread milling insert

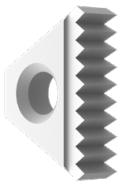
▲ can be used on both sides (except for INSL 10,4)



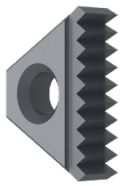




TiAlN



Solid carbide



Solid carbide

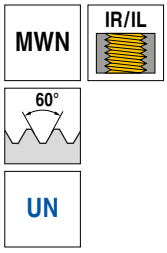
INSL mm	TPI 1/"	TP mm	Article no. 50 895 ...	Article no. 50 895 ...
10,4	19	1,337	100	300
16,0	14	1,814	142	342
	11	2,309	144	344
27,0	11	2,309	166	366

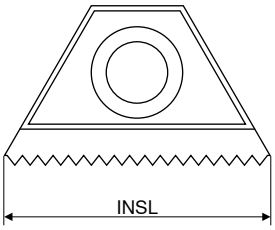
Steel	●	●
Stainless steel		●
Cast iron	●	●
Non ferrous metals	●	●
Heat resistant alloys		
Hardened materials		

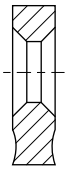
→ v_c/f_z Page 69

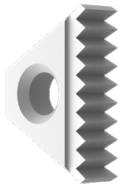
Thread milling insert

▲ can be used on both sides (except for INSL 10,4)









Solid carbide

INSL mm	TPI 1/"	TP mm	Article no. 50 892 ...
10,4	20	1,270	100
	18	1,411	102
16,0	16	1,588	144
	12	2,117	146
27,0	12	2,117	166
	8	3,175	168

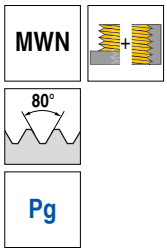
Steel	●
Stainless steel	
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	
Hardened materials	

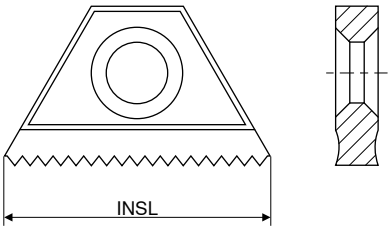
→ v_c/f_z Page 69

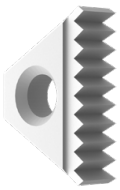
When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

Thread milling insert

▲ double sided







Solid carbide

INSL mm	TPI 1/"	TP mm	Article no. 50 896 ...
11	18	1,411	122
16	18	1,411	142
	16	1,588	144

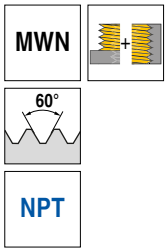
Steel	●
Stainless steel	
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	
Hardened materials	

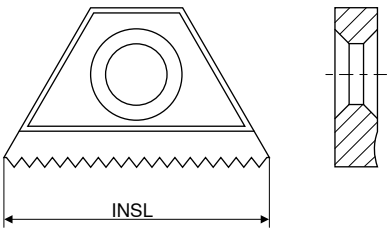
→ v_c/f_z Page 69

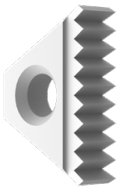
7

Thread milling insert

▲ double sided







Solid carbide

INSL mm	TPI 1/"	TP mm	Article no. 50 897 ...
16	14,0	1,814	142
	11,5	2,209	144
27	11,5	2,209	164
	8,0	3,175	166

Steel	●
Stainless steel	
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	
Hardened materials	

→ v_c/f_z Page 69

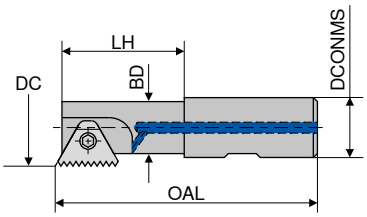
When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

Note! Thread milling inserts are marked R (right-hand thread) and L (left-hand thread). The standard tool holder cannot be used to produce a left-hand thread! Tool holder for left-hand thread available on special request.

Circular milling cutter

▲ INSL refers to milling inserts

MWN



B

INSL mm	BD mm	LH mm	DCONMS h6 mm	OAL mm	DC mm	torque moment Nm	Article no. 50 843 ...
10,4	6,8	12	12	69	9,0	0,9	101
	6,8	17	20	84	9,0	0,9	102
11,0	8,9	12	12	70	11,5	1,2	111
	8,9	20	20	85	11,5	1,2	112
16,0	13,6	22	16	90	17,0	2,5	161
	16,6	43	20	95	20,0	2,5	162
	18,6	25	25	125	22,0	2,5	163
27,0	24,0	52	25	110	30,0	9,0	271
	31,0	58	32	120	37,0	9,0	273
	24,0	92	25	150	30,0	9,0	272
	31,0	98	32	160	37,0	9,0	274

Pilot hole diameter for circular end mill 50 843 ...

BD	TP in mm									
	0,5 mm 48 G/"	0,75 mm 32 G/"	1,0 mm 24 G/"	1,25 mm 20 G/"	1,5 mm 16 G/"	2,0 mm 12 G/"	2,5 mm 10 G/"	3,0 mm 8 G/"	3,5 mm 7 G/"	4,0 mm 6 G/"
6,8	9,5	10	10,7	11,4	12					
8,9	12	12,5	13,2	13,9	14,5					
13,6	17,6	18,2	19	19,6	20	21				
16,6	20,7	21,4	22	22,6	23	24				
18,6	22,7	23,4	24	24,6	25	26				
24,0	30,7	31,4	32	32,8	33,5	34,6	36,6	39	42	45
31,0	38	38,6	39,5	40,4	41	42	44	46,5	49	52

Key D

Clamping screw

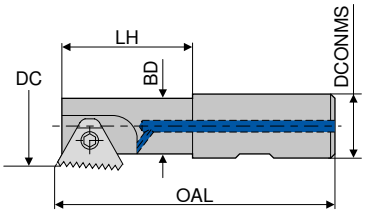
Spare parts INSL		Article no. 80 950 ...		Article no. 70 950 ...
10,4	T07	109	M2,2x5,0	200
11	T08	110	M2,6x6,5	201
16	T10	112	UNC5-40 x 8	202
27	T25	115	M5x15	203

Circular milling cutter NPT

▲ INSL refers to milling inserts

MWN

NPT



INSL mm	BD mm	Thread	LH mm	DCONMS $_{h6}$ mm	OAL mm	DC mm	torque moment Nm	Article no. 50 844 ...
16	12,5	NPT 1/2	22	16	90	15,5	2,5	161
	15,0	NPT 3/4 - 1 1/4	23	20	85	19,0	2,5	162
27	24,0	NPT 1 1/2 - 2	52	25	110	30,0	9,0	271
	31,0	NPT > 2	58	32	120	37,0	9,0	272

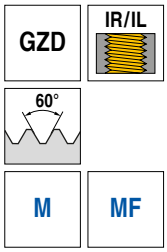
Key D

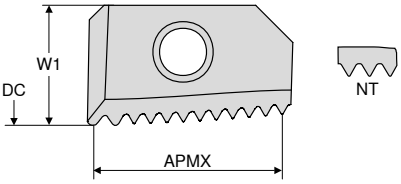
Clamping screw

Spare parts INSL		Article no. 80 950 ...		Article no. 70 950 ...
16	T10	112	UNC5-40 x 8	202
27	T25	115	M5x15	203

When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

Thread milling insert





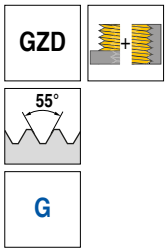
Solid carbide

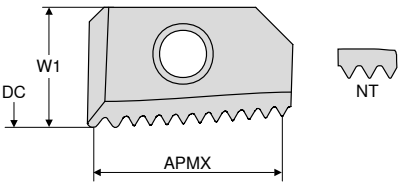
DC mm	TP mm	W1 mm	APMX mm	NT	Article no. 50 863 ...
12	1,0	7,5	12,0	13	300
	1,5	7,5	10,5	8	302
17	1,0	11,0	16,0	17	310
	1,5	11,0	16,5	12	312
	2,0	11,0	16,0	9	314
20	1,0	7,5	12,0	13	320
	1,5	7,5	10,5	8	322
25	1,0	11,0	16,0	17	330
	1,5	11,0	16,5	12	332
	2,0	11,0	16,0	9	334

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	
hardened materials	

→ v_c/f_z Page 70

Thread milling insert





Solid carbide

DC mm	TPI 1/"	W1 mm	APMX mm	NT	Article no. 50 864 ...
12	14	7,5	9,07	6	300
17	14	11,0	16,33	10	312 [1]
	14	11,0	16,33	10	314 [2]
	11	11,0	16,16	8	310
25	14	11,0	16,33	10	332
	11	11,0	16,16	8	330

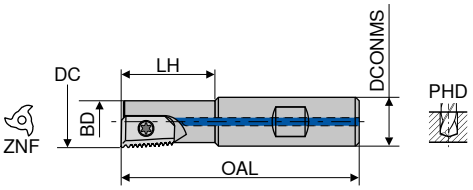
Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	
hardened materials	

1) Thread: 5/8 – 3/4 – 7/8
2) 1/2" Profile corrected

→ v_c/f_z Page 70

Circular milling cutter

GZD



DC	LH	DCONMS $_{h6}$	OAL	BD	ZNF	PHD	torque moment	Article no. 50 842 ...
mm	mm	mm	mm	mm		mm	Nm	
12	18	16	74,0	9,4	1	14	1,1	121
17	30	16	79,0	13,7	1	19	3,8	171
20	32	20	83,0	17,5	3	22	1,1	201
25	50	25	107,6	21,7	3	26	3,8	251
	85	25	142,6	21,7	3	26	3,8	252 1)

1) heavy metal version with mounted head


Key D


Clamping screw

Spare parts for Article no.		Article no. 80 950 ...		Article no. 70 960 ...	
50 842 121	T08 - IP	125	M2,5x6,5	244
50 842 171	T15 - IP	128	M4x7,5	245
50 842 201	T08 - IP	125	M2,5x6,5	244
50 842 251	T15 - IP	128	M4x7,5	245
50 842 252	T15 - IP	128	M4x7,5	245

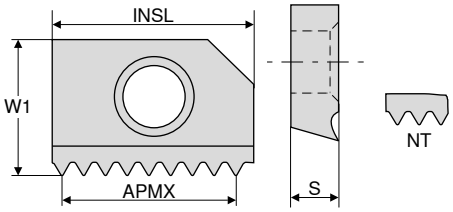
When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

Thread milling insert

GZG

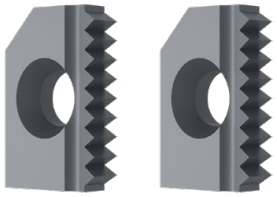
60°

M MF



ER/EL Ti500

IR/IL Ti500



INSL	TP	W1	APMX	S	NT	Solid carbide Article no. 50 887 ...	Solid carbide Article no. 50 885 ...
mm	mm	mm	mm	mm			
14,5	0,50	10,0	13,50	3,18	28		350
	0,75	10,0	13,50	3,18	19		352
	1,00	10,0	13,00	3,18	14	304	354
	1,25	10,0	12,50	3,18	11		356
	1,50	10,0	12,00	3,18	9	308	358
	1,75	10,0	12,25	3,18	8		360
	2,00	10,0	12,00	3,18	7	312	362
	2,50	10,0	10,00	3,18	5		364
	2,50	10,0	10,00	3,18	5		366 [1]
15,0	3,00	10,5	12,00	3,18	5		370
	3,50	10,5	10,50	3,18	4		372
21,0	1,00	10,0	19,00	3,18	20		380
	1,50	10,0	19,50	3,18	14		382
	1,50	10,0	18,00	3,18	13	320	
	2,00	10,0	18,00	3,18	10		384
26,0	1,50	15,0	24,00	5,00	17		390
	2,00	15,0	24,00	5,00	13		392
	3,00	15,0	21,00	5,00	8		396
	3,50	15,0	20,00	5,00	7		398
	4,00	15,0	20,00	5,00	6		400

Steel	●	●
Stainless steel	●	●
Cast iron	●	●
Non ferrous metals	●	●
Heat resistant alloys		
Hardened materials		

1) M20x2,5 – profile corrected

→ v_c/f_z Page 70

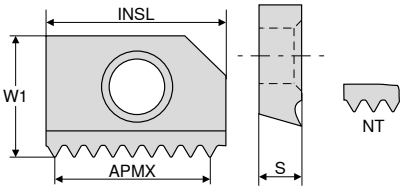
When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

Thread milling insert

GZG

55°

G



Ti500

Solid carbide

INSL	TPI	TP	W1	APMX	S	NT	Article no. 50 888 ...
mm	1/"	mm	mm	mm	mm		
14,5	18	1,411	10	11,28	3,18	9	310
	16	1,587	10	11,11	3,18	8	312
	14	1,814	10	12,69	3,18	8	314
	12	2,116	10	10,58	3,18	6	316
	11	2,309	10	11,54	3,18	6	318
21,0	14	1,814	10	18,14	3,18	11	320
	11	2,309	10	18,47	3,18	9	322
26,0	11	2,309	15	23,09	5,00	11	330

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	
Hardened materials	

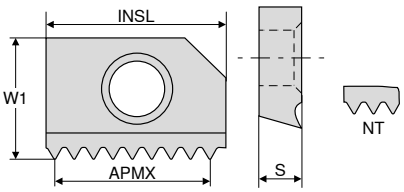
→ v_c/f_z Page 70

Thread milling insert

GZG

80°

Pg



Ti500

Solid carbide

INSL	TPI	TP	W1	APMX	S	NT	Article no. 50 894 ...
mm	1/"	mm	mm	mm	mm		
14,5	18	1,411	10	12,69	3,18	10	302
	16	1,587	10	11,11	3,18	8	304

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	
Hardened materials	

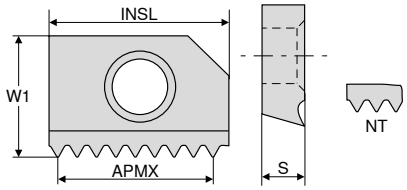
→ v_c/f_z Page 70

When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

7

Thread milling insert

GZG | IR/IL | 60° | UN



Ti500

Solid carbide

INSL	TPI	TP	W1	APMX	S	NT	Article no. 50 889 ...
mm	1/"	mm	mm	mm	mm		
14,5	18	1,411	10	12,69	3,18	10	310
	16	1,587	10	12,70	3,18	9	312
21,0	16	1,587	10	19,05	3,18	13	320
	14	1,814	10	18,14	3,18	11	322
	12	2,116	10	18,04	3,18	10	324

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	
Hardened materials	

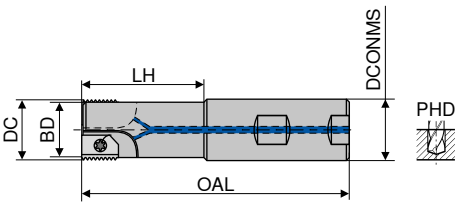
→ v_c/f_z Page 70

When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

Circular milling cutter

▲ INSL refers to milling inserts

GZG



B

INSL	DC	LH	DCONMS $_{h6}$	OAL	BD	ZNP	PHD	torque moment	Article no. 50 841 ...
mm	mm	mm	mm	mm	mm		mm	Nm	
	16	30,0	16	78	12,7	1	18,5	3,8	016
	16	50,0	16	98	12,7	1	18,5	3,8	017 [1]
14,5	20	60,0	20	110	16,8	1	23,0	3,8	020
	25	48,2	25	106	21,5	2	30,0	3,8	025
	25	92,2	25	150	21,5	2	30,0	3,8	026 [1]
	22	30,0	16	79	12,7	1	20,0	3,8	218
15,0	27	48,2	25	106	21,5	2	32,0	3,8	227
	27	60,0	20	110	16,8	1	26,0	3,8	222
	16	31,3	20	85	12,7	1	18,5	3,8	316
	22	32,8	25	92	18,7	1	26,0	3,8	322
21,0	22	62,8	25	122	18,7	1	26,0	3,8	323 [1]
	28	38,3	32	102	24,7	2	35,0	3,8	328
	28	78,3	32	142	24,5	2	35,0	3,8	327 [1]
26,0	18	48,5	25	107	20,0	1	30,0	3,8	125

1) heavy metal version

Key D

Clamping screw

Spare parts for Article no.		Article no. 80 950 ...		Article no. 70 960 ...
50 841 016	T15 - IP	128	M4x6,9	237
50 841 017	T15 - IP	128	M4x6,9	237
50 841 020	T15 - IP	128	M4x7,5	245
50 841 025	T15 - IP	128	M4x8	242
50 841 026	T15 - IP	128	M4x8	242
50 841 218	T15 - IP	128	M4x6,9	237
50 841 227	T15 - IP	128	M4x8	242
50 841 222	T15 - IP	128	M4x6,9	237
50 841 316	T15 - IP	128	M4x6,9	237
50 841 322	T15 - IP	128	M4x6,9	237
50 841 323	T15 - IP	128	M4x8	242
50 841 328	T15 - IP	128	M4x8	242
50 841 327	T15 - IP	128	M4x8	242
50 841 125	T15 - IP	128	M4x11,5	241

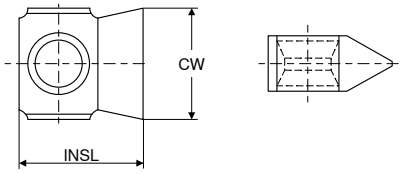
When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

Thread milling insert – Partial profile

EAW

60°

M UN



TiN

Solid carbide

DC	TP	TPI	CW	INSL	Article no. 50 867 ...
mm	mm	1/"	mm	mm	
16,5	1,5 - 3,0	16 - 10	5	7,0	115
18	2,5 - 3,5	10 - 7	5	7,8	225

55°

G

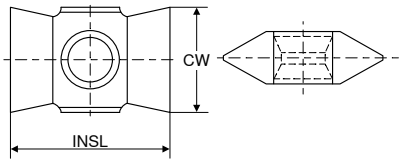
DC	TP	TPI	CW	INSL	Article no. 50 868 ...
mm	mm	1/"	mm	mm	
16,5	1,814	14	5	7	114

Thread milling insert – Partial profile

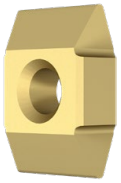
EAW

60°

M UN



TiN



Solid carbide

DC	TP	TPI	CW	INSL	Article no. 50 860 ...
mm	mm	1/"	mm	mm	
23,85	1,5 - 2,5	16 - 10	6,35	9,52	315
23,85	2,5 - 4,0	10 - 6	6,35	9,52	325
32,85	1,5 - 2,5	16 - 10	8,50	13,50	415
32,85	2,5 - 5,5	10 - 4,5	8,50	13,50	425

55°

G

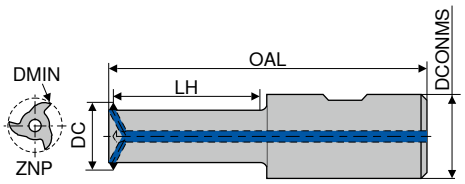
DC	TP	TPI	CW	INSL	Article no. 50 861 ...
mm	mm	1/"	mm	mm	
23,85	2,309	11	6,35	9,52	311
32,85	2,309	11	8,50	13,50	411

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	●
Hardened materials	

→ v_c/f_z Page 69

Circular milling cutter

Scope of supply:
including key



DC	DMIN	TP	TPI	LH	DCONMS $_{h6}$	OAL	ZNP	torque moment	Article no. 50 848 ...
mm	mm	mm	1/"	mm	mm	mm		Nm	
16,5 / 18,0	17,5 / 19,0	1,5 - 3,0	16 - 10	60	20	114	2	0,9	**020**
23,85	25,5	1,5 - 4,0	24 - 6	90	32	154	3	0,9	**030**
32,85	35,0	1,5 - 5,5	16 - 4,5	115	32	179	3	2,5	**040**


Key D


Clamping screw

Spare parts		Article no. 80 950 ...		Article no. 70 950 ...
for Article no.				
50 848 020	T07 - IP	**124**	M2,5x8,5	**739**
50 848 030	T07 - IP	**124**	M2,5x8,5	**739**
50 848 040	T09 - IP	**126**	M3x11	**740**

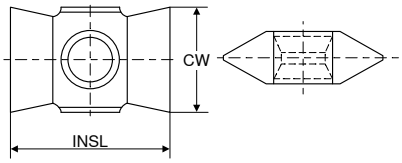
When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

Thread milling insert – Partial profile

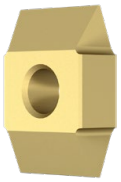
EWM

60°

M | UN



TiN



Solid carbide

DC	TP	TPI	CW	INSL	Article no. 50 870 ...
mm	mm	1/"	mm	mm	
40,25	1,5 - 3,0	16 - 9	9,5	15,50	**515**
40,25	3,0 - 6,0	9 - 4	9,5	15,50	**530**
52,55 / 66,55	1,5 - 3,0	16 - 9	12,5	19,00	**615**
52,55 / 66,55	3,0 - 6,0	9 - 4	12,5	19,00	**630**
92	6,0 - 8,0	4	14,3	28,58	**760**

55°

G

DC	TP	TPI	CW	INSL	Article no. 50 871 ...
mm	mm	1/"	mm	mm	
40,25	2,309	11	9,5	15,5	**511**
52,55	2,309	11	12,5	19,0	**611**

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	●
hardened materials	

→ v_c/f_z Page 69

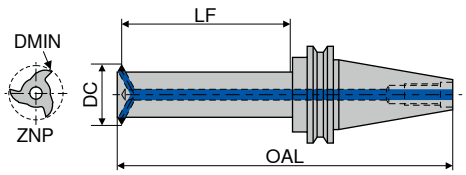
When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

Circular milling cutter

Scope of supply:

including key

EWM | IR/IL



DIN 69871

DC	DMIN	TP	TPI	LF	OAL	Adapter	ZNP	torque moment	Article no. 50 849 ...
mm	mm	mm	1/"	mm	mm			Nm	
40,25	43,0	1,5 - 6,0	16 - 4,0	145	280,5	SK 50	4	5,5	**148**
40,25	43,0	1,5 - 6,0	16 - 4,0	145	247,0	SK 40	4	5,5	**048**
52,55	56,0	1,5 - 6,0	16 - 4,0	195	279,6	SK 40	4	8,0	**064**
52,55	56,0	1,5 - 6,0	16 - 4,0	195	331,0	SK 50	4	8,0	**164**
66,55	70,5	1,5 - 6,0	16 - 4,0	260	398,0	SK 50	7	8,0	**080**
92,00	100,0	6,0 - 8,0	4,0	360	497,0	SK 50	7	8,0	**115**

Key D

Clamping screw

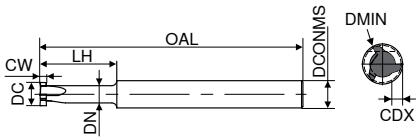
Spare parts DC		Article no. 80 950 ...		Article no. 70 950 ...
40,25	T15 - IP	**128**	M4x13	**741**
52,55	T20 - IP	**129**	M5x15	**742**
66,55	T20 - IP	**129**	M5x15	**742**
92	T20 - IP	**129**	M5x15	**742**

When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

MicroMill – Solid Carbide Circular End Milling Cutter

Micro Mill

CWX500



HA

Solid carbide

DC	CW ±0,02	CDX	LH	OAL	DN	DCONMS h6	ZEFP	DMIN	Article no. 53 050 ...
mm	mm	mm	mm	mm	mm	mm		mm	
5,8	0,7	0,8	15,2	58	3,8	6	3	6	070
	0,8	0,8	15,2	58	3,8	6	3	6	080
	0,9	0,8	15,2	58	3,8	6	3	6	090
	1,0	0,8	15,2	58	3,8	6	3	6	100
	1,5	0,8	15,2	58	3,8	6	3	6	150
7,8	0,7	1,2	25,4	68	5,0	8	3	8	170
	0,8	1,2	25,4	68	5,0	8	3	8	180
	0,9	1,2	25,4	68	5,0	8	3	8	190
	1,0	1,2	25,4	68	5,0	8	3	8	200
	1,5	1,2	25,4	68	5,0	8	3	8	250
	2,0	1,2	25,4	68	5,0	8	3	8	300

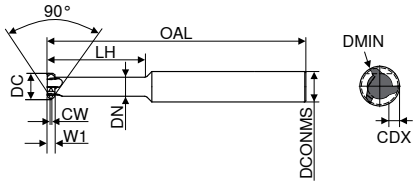
Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	●
Hardened materials	●

→ v_c/f_z Page 71

MicroMill – Solid Carbide Circular End Milling Cutter

Micro Mill

CWX500



HA

Solid carbide

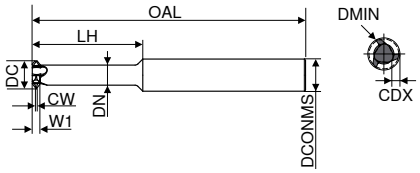
DC	W1	CW	CDX	LH	OAL	DN	DCONMS h6	ZEFP	DMIN	Article no. 53 051 ...
mm	mm	mm	mm	mm	mm	mm	mm		mm	
5,8	2	0,2	0,8	15	58	4,2	6	3	6	010
	2	0,2	0,8	25	68	4,2	6	3	6	020
7,8	2	0,2	1,2	25	68	5,0	8	3	8	110
	2	0,2	1,2	35	78	5,0	8	3	8	120

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	●
Hardened materials	●

→ v_c/f_z Page 71

MicroMill – Solid Carbide Circular Thread Milling Cutter – Full profile

Micro Mill | IR/IL | 60° | M



CWX500

HA

Solid carbide

Thread	TP	DC	W1	CW	CDX	LH	OAL	DN	DCONMS $_{h6}$	ZEFP	DMIN	Article no. 53 052 ...
	mm	mm	mm	mm	mm	mm	mm	mm	mm		mm	
M1,6	0,35	1,18	0,40	0,04	0,19	4,0	32	0,64	3	3	1,38	**160**
M1,8	0,35	1,38	0,50	0,04	0,19	5,0	32	0,70	3	3	1,58	**180**
M2	0,40	1,50	0,56	0,05	0,22	5,0	32	0,90	3	4	1,70	**200**
M2,5	0,45	1,95	0,60	0,06	0,25	6,0	32	1,15	3	4	2,15	**250**
M3	0,50	2,40	0,60	0,06	0,27	7,0	32	1,60	3	4	2,60	**300**
M3,5	0,60	2,80	0,74	0,08	0,33	8,0	32	1,80	3	4	3,00	**350**
M4	0,70	3,10	0,82	0,09	0,38	9,0	44	1,98	5	4	3,30	**400**
M5	0,80	3,60	0,98	0,10	0,43	10,0	44	2,20	5	4	3,80	**500**
M6	1,00	4,10	0,98	0,13	0,54	12,2	44	2,70	5	4	4,30	**600**

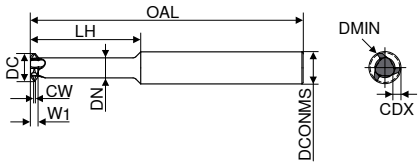
Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	●
Hardened materials	●

→ v_c/f_z Page 71

7

MicroMill – Solid Carbide Circular Thread Milling Cutter – Partial profile

Micro Mill | IR/IL | 60°



CWX500

HA

Solid carbide

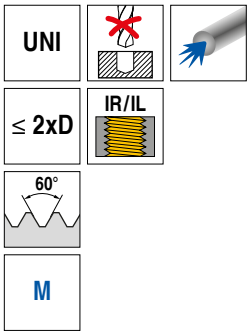
TP	DC	W1	CW	CDX	LH	OAL	DN	DCONMS $_{h6}$	ZEFP	DMIN	Article no. 53 053 ...
mm	mm	mm	mm	mm	mm	mm	mm	mm		mm	
0,5 - 1,5	5,8	2	0,06	0,91	15,2	58	3,5	6	3	6	**010**
0,5 - 1,5	7,8	2	0,06	0,91	25,4	68	5,5	8	3	8	**110**
1,0 - 2,0	7,8	2	0,12	1,19	25,4	68	5,0	8	3	8	**120**

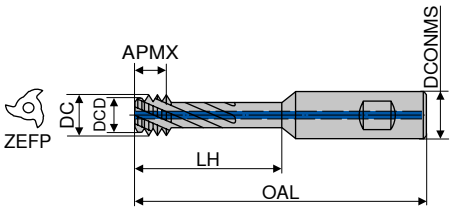
Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	●
Hardened materials	●

→ v_c/f_z Page 71

When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

Circular Thread Milling Cutter





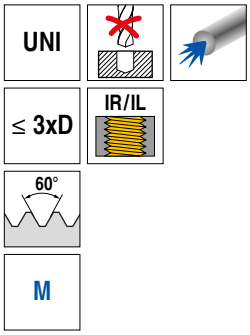
Solid carbide

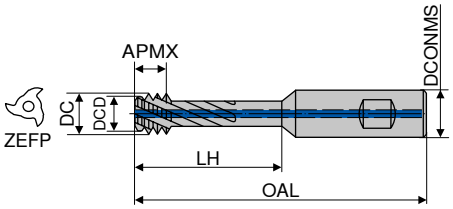
DC mm	Thread	TP mm	APMX mm	LH mm	DCONMS h6 mm	DCD mm	OAL mm	ZEFP	Article no. 50 815 ...
4,51	M6x1 - M7x1	1,00	4,1	16	8	3,41	60	3	060
6,23	M8x1,25 - M9x1,25	1,25	5,1	21	10	4,91	71	4	080
7,75	M10x1,5 - M11x1,5	1,50	6,0	26	10	6,11	76	4	100
9,16	M12x1,75	1,75	7,0	31	12	7,21	86	4	120

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	●
Hardened materials	●

→ v_c/f_z Page 68

Circular Thread Milling Cutter





Solid carbide

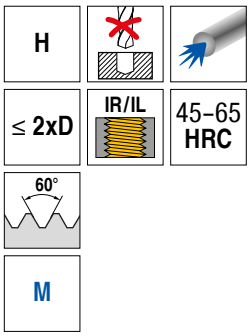
DC mm	Thread	TP mm	APMX mm	LH mm	DCONMS h6 mm	DCD mm	OAL mm	ZEFP	Article no. 50 821 ...
4,51	M6x1 - M7x1	1,00	4,1	23	8	3,41	65	3	060
6,23	M8x1,25 - M9x1,25	1,25	5,1	30	10	4,91	80	4	080
7,75	M10x1,5 - M11x1,5	1,50	6,0	37	10	6,11	85	4	100
9,16	M12x1,75	1,75	7,0	43	12	7,21	100	4	120
11,08	M14x2 - M16x2	2,00	8,1	57	16	8,91	113	4	140
14,38	M18x2,5 - M20x2,5	2,50	10,0	71	20	11,71	129	5	180

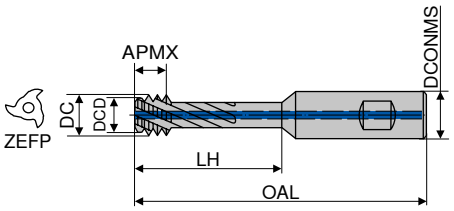
Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	○
Hardened materials	

→ v_c/f_z Page 68

Circular Thread Milling Cutter

▲ note: left-hand cutting (M04)





Solid carbide

DC mm	Thread	TP mm	APMX mm	LH mm	DCONMS $_{h6}$ mm	DCD mm	OAL mm	ZEFP	NEW Article no. 50 840 ...
2,3	M3x0,5	0,50	2,0	7,0	6	2,10	51	4	**030** 1)
3,0	M4x0,7	0,70	2,8	9,4	6	2,60	51	4	**040** 1)
3,8	M5x0,8	0,80	3,2	11,6	6	3,40	51	4	**050** 1)
4,6	M6x1 - M7x1	1,00	4,0	14,0	8	4,10	60	4	**060** 1)
6,2	M8x1,25 - M10x1,25	1,25	5,0	19,0	10	5,60	71	4	**080**
7,8	M10x1,5 - M12x1,5	1,50	6,0	25,0	10	7,00	76	4	**100**
9,2	M12x1,75	1,75	7,0	31,0	12	8,30	86	4	**120**
11,1	M14x2 - M16x2	2,00	8,0	36,0	16	10,04	98	4	**140**

Steel	
Stainless steel	
Cast iron	
Non ferrous metals	
Heat resistant alloys	○
Hardened materials	●

1) without through coolant

→ v_c/f_z Page 68

When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

Caution: left-hand cutting (M04) → spindle rotation left!

Thread Milling Cutter

▲ available on request: M1 / M1,1 / M1,2 / M1,4 / M1,6 / M1,7 / M1,8 / M2 / M2,2 / M2,3 / M2,5 / M2,6 / M3

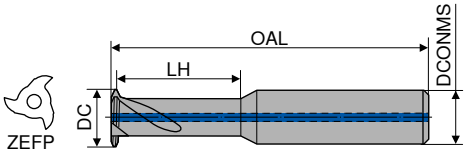
HR

IR/IL

≤ 3xD

60°

M



OSM

HA

Solid carbide

OSM

HB

Solid carbide

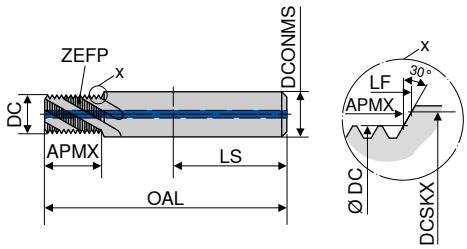
DC mm	Thread	TP mm	LH mm	DCONMS $_{h6}$ mm	OAL mm	ZEFP	Article no. 50 846 ...	Article no. 50 847 ...
3,15	M4	0,70	9	6	55	3	**040**	**040**
4,00	M5	0,80	11	6	55	3	**050**	**050**
4,80	M6 - M7	1,00	16	8	60	3	**060**	**060**
6,40	M8 - M9	1,25	22	10	71	4	**080**	**080**
8,00	M10 - M12	1,50	26	10	76	4	**100**	**100**
9,60	M12	1,75	27	12	86	4	**120**	**120**

Steel	●	●
Stainless steel	●	●
Cast iron		
Non ferrous metals	●	●
Heat resistant alloys	●	●
Hardened materials	●	●

→ v_c/f_z Page 68

Thread Milling Cutter with Chamfer Facet

SFSE | IR/IL | ≤ 2xD | 60° | M | TiAlN



Solid carbide

DC mm	Thread	TP mm	OAL mm	APMX mm	LS mm	DCONMS $_{h6}$ mm	DCSKX mm	LF mm	ZEFP	Article no. 50 811 ...
4,0	M5	0,80	62	11	36	8	5,3	11,16	3	050
4,7	M6	1,00	62	13	36	8	6,3	13,93	3	060
6,5	M8	1,25	74	18	40	10	8,3	18,62	3	080
8,0	M10	1,50	74	22	40	10			3	100 1)
10,0	M12	1,75	90	26	45	14	12,3	26,47	4	120
12,5	M16	2,00	100	35	48	16			4	160 2)

1) without chamfer
2) chamfer section at the front of the tool

60° | MF

DC mm	Thread	TP mm	OAL mm	APMX mm	LS mm	DCONMS $_{h6}$ mm	DCSKX mm	LF mm	ZEFP	Article no. 50 816 ...
6,5	M8x1	1,00	74	18	40	10	8,3	18,00	3	082
8,0	M10x1	1,00	74	22	40	10			3	102 1)
8,0	M10x1,25	1,25	74	22	40	10			3	103 1)
10,0	M12x1,25	1,25	90	26	45	14	12,3	26,61	4	123
10,0	M12x1,5	1,50	90	26	45	14	12,3	27,30	4	124
11,0	M14x1	1,00	100	31	48	16	14,3	32,70	4	142
11,0	M14x1,5	1,50	100	31	48	16	14,3	32,08	4	144
12,5	M16x1,5	1,50	100	35	48	16			4	164 2)

1) without chamfer
2) chamfer section at the front of the tool

55° | G

DC mm	Thread	TP mm	OAL mm	APMX mm	LS mm	DCONMS $_{h6}$ mm	DCSKX mm	LF mm	ZEFP	Article no. 50 818 ...
7,6	G 1/8-28	0,907	80	20	45	12	10,0	20,97	3	018
11,0	G 1/4-19	1,337	100	27	48	16	13,5	28,39	4	014
13,0	G 3/8-19	1,337	100	34	48	16			4	038 1)
16,0	G1/2-14	1,814	110	44	50	20			5	012 1)

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	●
hardened materials	

1) chamfer section at the front of the tool

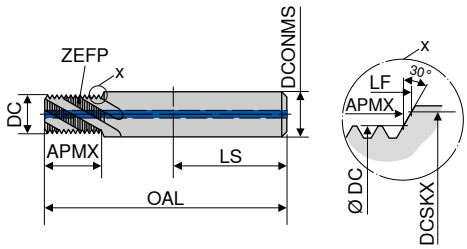
→ v_c/f_z Page 69

When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

7

Thread Milling Cutter with Chamfer Facet

SFSE | IR/IL | ≤ 2xD | 60° | UNC | TiAlN



Solid carbide

DC mm	Thread	TP mm	OAL mm	APMX mm	LS mm	DCONMS $_{h6}$ mm	DCSKX mm	LF mm	ZEFP	Article no. 50 823 ...
4,7	UNC 1/4-20	1,270	62	14	36	8	6,65	15,14	3	014
6,1	UNC 5/16-18	1,411	74	17	40	10	8,25	18,23	3	516
7,6	UNC 3/8-16	1,588	80	21	45	12	9,83	22,05	3	038
8,8	UNC 7/16-14	1,814	90	24	45	14	11,43	25,21	3	716
10,1	UNC 1/2-13	1,954	90	26	45	14	13,00	27,67	4	012
11,4	UNC 9/16-12	2,117	100	31	48	16	14,61	32,15	4	916
12,7	UNC 5/8-11	2,309	100	34	48	16			4	058 1)
15,2	UNC 3/4-10	2,540	110	42	50	20	19,35	43,74	5	034

1) chamfer section at the front of the tool

60° | UNF

DC mm	Thread	TP mm	OAL mm	APMX mm	LS mm	DCONMS $_{h6}$ mm	DCSKX mm	LF mm	ZEFP	Article no. 50 824 ...
4,7	UNF 1/4-28	0,907	62	14	36	8	6,65	15,59	3	014
6,1	UNF 5/16-24	1,058	74	17	40	10	8,25	18,05	3	516
7,6	UNF 3/8-24	1,058	80	21	45	12	9,83	22,30	3	038
8,8	UNF 7/16-20	1,270	90	24	45	14	11,43	25,49	3	716
10,1	UNF 1/2-20	1,270	90	26	45	14	13,00	28,46	4	012
11,4	UNF 9/16-18	1,411	100	31	48	16	14,61	33,03	4	916
12,7	UNF 5/8-18	1,411	100	34	48	16			4	058 1)
15,2	UNF 3/4-16	1,588	110	42	50	20	19,35	43,69	5	034

1) chamfer section at the front of the tool

60° | NPT

DC mm	Thread	TP mm	OAL mm	APMX mm	LS mm	DCONMS $_{h6}$ mm	ZEFP	Article no. 50 819 ...
5,8	NPT 1/16-27	0,941	62	10	36	8	3	116 1)
7,6	NPT 1/8-27	0,941	74	10	40	10	3	018 1)
10,1	NPT 1/4-18	1,411	90	15	45	14	3	014 1)
16,0	NPT 1/2-14	1,814	110	19	50	20	5	012 1)

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	●
hardened materials	

1) without chamfer

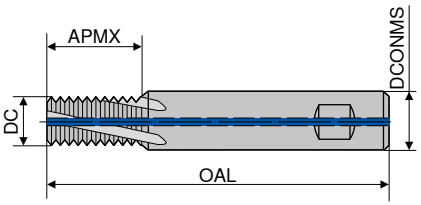
→ v_c/f_z Page 69

When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

Thread Milling Cutter with Chamfer Facet

- ▲ profile-corrected
- ▲ hard machining to Ø DC = 4 mm possible
- ▲ chamfer section at end of shank

SFSE | IR/IL | ≤ 2xD | 60° | M



Ti500

HB

Solid carbide

DC mm	Thread	TP mm	APMX mm	DCONMS $_{h6}$ mm	OAL mm	ZEFP	Article no. 54 801 ...
4,00	M5	0,80	11	8	62	3	050 [1]
4,80	M6	1,00	13	8	62	3	060 [1]
6,50	M8	1,25	18	10	74	3	080
7,95	M10	1,50	22	12	80	3	100
9,90	M12	1,75	26	14	90	4	120
11,60	M14	2,00	31	16	100	4	140
11,95	M16	2,00	35	12	90	4	160 [2]
13,95	M18	2,50	39	20	110	4	180
15,95	M20	2,50	44	16	100	4	200 [2]

1) without through coolant
2) chamfer section at the front of the tool

60° | MF

DC mm	Thread	TP mm	APMX mm	DCONMS $_{h6}$ mm	OAL mm	ZEFP	Article no. 54 803 ...
6,0	M8x1	1,00	18	10	74	3	080
8,0	M10x1	1,00	22	12	80	3	100
8,0	M10x1,25	1,25	22	12	80	3	101
9,9	M12x1	1,00	26	14	90	4	120
9,9	M12x1,25	1,25	26	14	90	4	121
9,9	M12x1,5	1,50	26	14	90	4	122
11,6	M14x1	1,00	31	16	100	4	140
11,6	M14x1,5	1,50	31	16	100	4	141
12,0	M16x1,5	1,50	35	12	90	4	160 [1]
14,0	M18x1,5	1,50	39	20	110	4	180
16,0	M20x1,5	1,50	44	16	100	4	200 [1]

1) chamfer section at the front of the tool

55° | G

DC mm	Thread	TP mm	APMX mm	DCONMS $_{h6}$ mm	OAL mm	ZEFP	Article no. 54 805 ...
6,00	G 1/16-28	0,907	16	10	74	3	116
7,95	G 1/8-28	0,907	20	12	80	3	018
9,90	G 1/4-19	1,337	27	16	100	4	014
13,95	G 3/8-19	1,337	34	14	90	4	038 [1]
15,95	G 1/2-14	1,814	43	16	100	4	012 [1]
17,95	G 5/8-14	1,814	47	18	110	4	058 [1]

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	●
hardened materials	●

1) chamfer section at the front of the tool

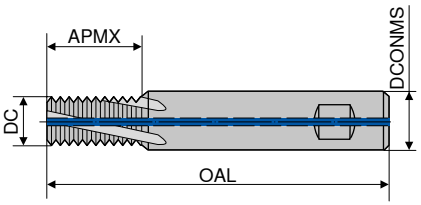
→ v_c/f_z Page 71

7

Thread Milling Cutter with Chamfer Facet

- ▲ profile-corrected
- ▲ hard machining to Ø DC = 4 mm possible
- ▲ chamfer section at end of shank

SFSE | IR/IL | ≤ 2xD | 60° | UNC | Ti500



HB

Solid carbide

DC mm	Thread	TP mm	APMX mm	DCONMS $_{h6}$ mm	OAL mm	ZEFP	Article no. 54 811 ...	
4,80	UNC 1/4-20	1,270	14	8	62	3	014	1)
5,95	UNC 5/16-18	1,411	18	10	74	3	516	
7,95	UNC 3/8-16	1,588	22	12	80	3	038	
7,95	UNC 7/16-14	1,814	22	14	90	3	716	
9,90	UNC 1/2-13	1,954	27	14	90	4	012	
11,80	UNC 9/16-12	2,117	31	16	100	4	916	
12,70	UNC 5/8-11	2,309	34	14	90	4	058	2)
15,20	UNC 3/4-10	2,540	38	20	110	5	034	

1) without through coolant
2) chamfer section at the front of the tool

60° | UNF

DC mm	Thread	TP mm	APMX mm	DCONMS $_{h6}$ mm	OAL mm	ZEFP	Article no. 54 813 ...	
4,80	UNF 1/4-28	0,907	14	8	62	3	014	1)
5,95	UNF 5/16-24	1,058	18	10	74	3	516	
7,60	UNF 3/8-24	1,058	21	12	80	3	038	
7,95	UNF 7/16-20	1,270	22	14	90	3	716	
9,90	UNF 1/2-20	1,270	26	14	90	4	012	
12,00	UNF 9/16-18	1,411	30	16	100	4	916	
13,50	UNF 5/8-18	1,411	33	14	90	4	058	2)
17,00	UNF 3/4-16	1,588	38	20	110	5	034	

1) without through coolant
2) chamfer section at the front of the tool

60° | NPT

DC mm	Thread	TP mm	APMX mm	DCONMS $_{h6}$ mm	OAL mm	ZEFP	Article no. 54 809 ...	
10,1	NPT 1/4-18	1,411	15	14	90	3	014	1)
12,8	NPT 3/8-18	1,411	15	16	100	4	038	1)
16,0	NPT 1/2-14	1,814	19	20	110	5	012	1)
18,5	NPT 3/4-14	1,814	19	20	110	5	034	1)

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	●
hardened materials	●

1) chamfer section at the front of the tool

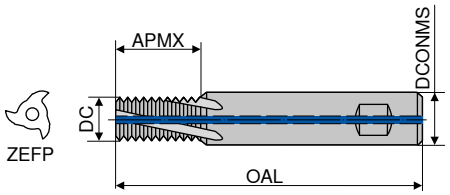
→ v_c/f_z Page 71

When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

Thread Milling Cutter

▲ available on request: M30, M36, M42, M48, M56, M64

SGF | IR/IL | ≤ 2xD | 60° | M



TiAlN

Solid carbide

DC mm	Thread	TP mm	APMX mm	DCONMS $_{h6}$ mm	OAL mm	ZEFP	Article no. 50 825 ...
2,40	M3	0,50	6	4	42	3	030 [1]
3,15	M4	0,70	8	6	55	3	040
4,00	M5	0,80	10	6	55	3	050
4,80	M6	1,00	12	6	55	3	060
6,00	M8	1,25	16	6	63	3	080
8,00	M10	1,50	20	8	70	3	100
9,90	M12	1,75	24	10	80	4	120
11,60	M14	2,00	28	12	90	4	140
12,00	M16	2,00	32	12	90	4	160
14,00	M18	2,50	36	14	90	4	180
14,00	M22	2,50	44	14	95	4	220
14,00	M20	2,50	40	14	90	4	200

1) without through coolant

60° | MF

DC mm	Thread	TP mm	APMX mm	DCONMS $_{h6}$ mm	OAL mm	ZEFP	Article no. 50 826 ...
3,35	M4x0,5	0,50	8	6	55	3	040
4,20	M5x0,5	0,50	10	6	55	3	050
5,00	M6x0,75	0,75	12	6	55	3	061
6,00	M8x0,75	0,75	16	6	63	3	081
6,00	M8x1	1,00	16	6	63	3	082
8,00	M10x1	1,00	20	8	70	3	102
10,00	M12x1	1,00	24	10	80	4	122
10,00	M12x1,5	1,50	24	10	80	4	124
10,00	M14x1,5	1,50	28	10	80	4	144
12,00	M16x1,5	1,50	32	12	90	4	164
14,00	M18x1,5	1,50	36	14	90	4	184
14,00	M20x1,5	1,50	40	14	90	4	204
14,00	M22x1,5	1,50	44	14	95	4	224
16,00	M24x1,5	1,50	36	16	90	5	244

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	●
Hardened materials	

→ v_c/f_z Page 69

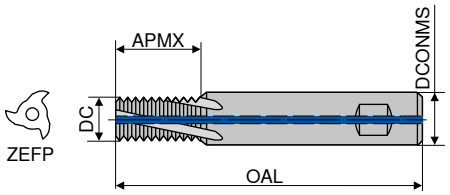
When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

7

Thread Milling Cutter

▲ available on request: M30, M36, M42, M48, M56, M64

SGF | IR/IL | ≤ 2xD | 55° | G



TiAlN

HA

Solid carbide

DC mm	Thread	TP mm	APMX mm	DCONMS $_{h6}$ mm	OAL mm	ZEFP	Article no. 50 827 ...
8	G 1/8-28	0,907	19,5	8	70	3	**018**
11	G 1/4-19	1,337	26,5	12	90	4	**014**
12	G 3/8-19	1,337	33,0	12	90	4	**038**
14	G 1/2-14	1,814	42,0	14	95	4	**012**
16	G 3/4-14	1,814	34,0	16	90	5	**034**
16	G 1-11	2,309	33,0	16	90	5	**100**
16	G 5/8-14	1,814	34,0	16	90	5	**058**

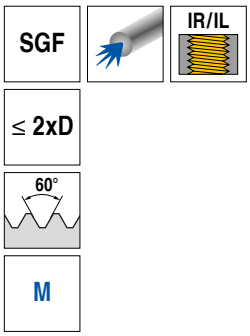
Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	●
Hardened materials	

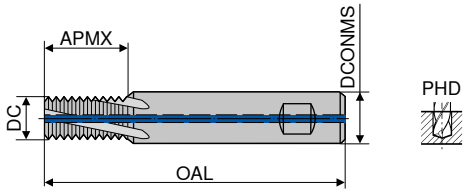
→ v_c/f_z Page 69

When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

Thread Milling Cutter

▲ profile corrected
▲ hard machining to Ø DC = 4 mm possible

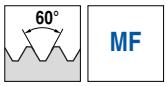




Solid carbide

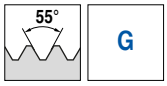
DC mm	Thread	TP mm	APMX mm	DCONMS $_{h6}$ mm	OAL mm	ZEFP	PHD mm	Article no. 54 800 ...
2,40	M3	0,50	6,5	4	42	2	2,50	030 1)
3,15	M4	0,70	9,0	6	55	3	3,30	040 2)
4,00	M5	0,80	11,0	6	55	3	4,20	050 2)
4,80	M6	1,00	13,0	6	55	3	5,00	060 2)
6,00	M8	1,25	18,0	6	60	3	6,75	080
8,00	M10	1,50	21,0	8	70	3	8,50	100
9,90	M12	1,75	26,0	10	75	4	10,25	120
11,60	M14	2,00	30,0	12	85	4	12,00	140
12,00	M16	2,00	34,0	12	85	4	14,00	160
14,00	M18	2,50	40,0	14	90	4	15,50	180
16,00	M20	2,50	42,0	16	90	4	17,50	200

1) DIN 6535 HA shank / without through coolant
2) without through coolant



DC mm	Thread	TP mm	APMX mm	DCONMS $_{h6}$ mm	OAL mm	ZEFP	PHD mm	Article no. 54 802 ...
4,0	M5	0,50	11	6	55	3	4,50	050 1)
4,8	M6	0,75	13	6	55	3	5,25	060 1)
6,0	M8	1,00	18	6	60	3	7,00	080
8,0	M10	1,25	21	8	70	3	8,75	100
9,9	M12	1,00	26	10	75	4	11,00	120
9,9	M12	1,25	26	10	75	4	10,75	121
9,9	M12	1,50	26	10	75	4	10,50	122
11,6	M14	1,00	30	12	85	4	13,00	140
11,6	M14	1,50	30	12	85	4	12,50	141
12,0	M16	1,50	34	12	85	4	14,50	160
14,0	M18	1,50	40	14	90	4	16,50	180
16,0	M20	1,50	42	16	90	4	18,50	200

1) DIN 6535 HA shank / without through coolant



DC mm	Thread	TP mm	APMX mm	DCONMS $_{h6}$ mm	OAL mm	ZEFP	PHD mm	Article no. 54 804 ...
8,0	G 1/8-28	0,907	21	8	70	3	8,80	018
9,9	G 1/4-19	1,337	26	10	75	4	11,80	014
14,0	G 3/8-19	1,337	40	14	90	4	15,25	038
16,0	G 1/2-14	1,814	42	16	90	4	19,00	012

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	●
Hardened materials	●

→ v_c/f_z Page 71

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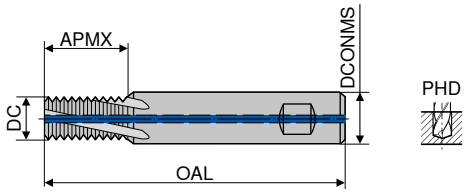
Thread Milling Cutter

▲ profile corrected

SGF | IR/IL | ≤ 2xD | 55° | BSW



Ti500

HB

Solid carbide

DC mm	Thread	TP mm	APMX mm	DCONMS $_{h6}$ mm	OAL mm	ZEFP	PHD mm	Article no. 54 806 ...
6,0	BSW 5/16 - 18	1,411	18	6	60	3	6,50	516
6,0	BSW 3/8 - 16	1,588	18	6	60	3	7,90	038
8,0	BSW 7/16 - 14	1,814	21	8	70	3	9,25	716
8,0	BSW 1/2 - 12	2,117	21	8	70	3	10,50	012
9,9	BSW 5/8 - 11	2,309	26	10	75	4	13,50	058

55° | BSF

DC mm	Thread	TP mm	APMX mm	DCONMS $_{h6}$ mm	OAL mm	ZEFP	PHD mm	Article no. 54 808 ...
6,0	BSF 5/16 - 22	1,155	18	6	60	3	6,8	516
6,0	BSF 3/8 - 20	1,270	18	6	60	3	8,3	038
8,0	BSF 7/16 - 18	1,411	21	8	70	3	9,7	716
8,0	BSF 1/2 - 16	1,588	21	8	70	3	11,1	012
9,9	BSF 5/8 - 14	1,814	26	10	75	4	14,0	058

60° | UNC

DC mm	Thread	TP mm	APMX mm	DCONMS $_{h6}$ mm	OAL mm	ZEFP	PHD mm	Article no. 54 810 ...
4,80	UNC 1/4-20	1,270	13	6	55	3	5,1	014 [1]
6,00	UNC 5/16-18	1,411	18	6	60	3	6,6	516
7,95	UNC 3/8-16	1,588	21	8	70	3	8,0	038
7,95	UNC 7/16-14	1,814	21	8	70	3	9,4	716
9,90	UNC 1/2-13	1,954	26	10	75	4	10,8	012

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	●
Hardened materials	●

1) DIN 6535 HA shank / without through coolant

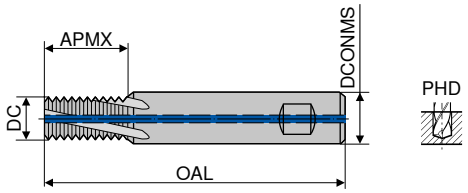
→ v_c/f_z Page 71

When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

Thread Milling Cutter

▲ profile corrected

SGF | IR/IL | ≤ 2xD | 60° | UNF



Ti500

HB

Solid carbide

DC mm	Thread	TP mm	APMX mm	DCONMS $_{h6}$ mm	OAL mm	ZEFP	PHD mm	Article no. 54 812 ...
4,8	UNF 1/4-28	0,907	13	6	55	3	5,5	**014** [1]
6,0	UNF 5/16-24	1,058	18	6	60	3	6,9	**516**
8,0	UNF 3/8-24	1,058	21	8	70	3	8,5	**038**
8,0	UNF 7/16-20	1,270	21	8	70	3	9,9	**716**
9,9	UNF 1/2-20	1,270	26	10	75	4	11,5	**012**

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	●
Hardened materials	●

1) without through coolant

→ v_c/f_z Page 71

When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

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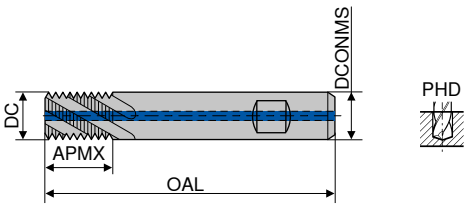
Thread Milling Cutter

SGF | IR/IL | ≤ 2xD | 60° | M



Ti500

HB

Solid carbide

DC	TP	APMX	DCONMS $_{h6}$	OAL	ZEFP	PHD	Article no. 54 832 ...
mm	mm	mm	mm	mm		mm	
8	0,50	12	8	70	3	10	**008**
8	0,75	12	8	70	3	11	**080**
10	1,00	16	10	75	4	14	**100**
10	1,50	16	10	75	4	14	**101**
12	1,00	20	12	85	4	16	**120**
12	1,50	20	12	85	4	16	**121**
12	2,00	20	12	85	4	18	**122**
16	1,00	25	16	90	5	22	**160**
16	1,50	25	16	90	5	22	**161**
16	2,00	25	16	90	5	22	**162**
16	3,00	25	16	90	5	24	**164**

Steel	●
Stainless steel	●
Cast iron	●
Non ferrous metals	●
Heat resistant alloys	●
Hardened materials	●

→ v_c/f_z Page 70

When calculating the feedrate for circular milling it is important to know whether contour feed v_f or feed on the center path v_{fm} is used. Details on → **Page 72+73.**

Material examples referring to the cutting data tables

	Index	Material	Strength N/mm² / HB / HRC	Material number	Material designation	Material number	Material designation	Material number	Material designation
P	1.1	General construction steel	< 800 N/mm²	1.0402	EN3B				
	1.2	Free cutting steel	< 800 N/mm²	1.0711	EN1A				
	1.3	Hardened steel, non alloyed	< 800 N/mm²	1.0401	EN32C				
	1.4	Alloyed hardened steel	< 1000 N/mm²	1.7325	25 CD4				
	1.5	Tempering steel, unalloyed	< 850 N/mm²	1.5752	EN36	1.0535	EN9		
	1.6	Tempering steel, unalloyed	< 1000 N/mm²	1.6582	EN24				
	1.7	Tempering steel, alloyed	< 800 N/mm²	1.7225	EN19				
	1.8	Tempering steel, alloyed	< 1300 N/mm²	1.8515	EN40B				
	1.9	Steel castings	< 850 N/mm²	0.9650	G-X 260 Cr 27	1.6750	GS-20 NiCrMo 3.7	1.6582	GS-34 CrNiMo 6
	1.10	Nitriding steel	< 1000 N/mm²	1.8509	EN41B				
	1.11	Nitriding steel	< 1200 N/mm²	1.1186	EN8	1.1160	EN14A		
	1.12	Roller bearing steel	< 1200 N/mm²	1.3505	534A99				
	1.13	Spring steel	< 1200 N/mm²		EN45		EN47		EN43
	1.14	High-speed steel	< 1300 N/mm²	1.3343	M2	1.3249	M34		
	1.15	Cold working tool steel	< 1300 N/mm²	1.2379	D2	1.2311	P20		
	1.16	Hot working tool steel	< 1300 N/mm²	1.2344	H13				
M	2.1	Cast steel and sulphured stainless steel	< 850 N/mm²	1.4581	318				
	2.2	Stainless steel, ferritic	< 750 N/mm²	1.4000	403				
	2.3	Stainless steel, martensitic	< 900 N/mm²	1.4057	EN57				
	2.4	Stainless steel, ferritic / martensitic	<1100 N/mm²	1.4028	EN56B				
	2.5	Stainless steel, austenitic / ferritic	< 850 N/mm²	1.4542	17-4PH				
	2.6	Stainless steel, austenitic	< 750 N/mm²	1.4305	303	1.4401	316	1.4301	304
	2.7	Heat resistant steel	< 1100 N/mm²	1.4876	Incoloy 800				
K	3.1	Grey cast iron with lamellar graphite	100–350 N/mm²	0.6015	Grade 150	0.6020	Grade 220	0.6025	Grade 260
	3.2	Grey cast iron with lamellar graphite	300–500 N/mm²	0.6030	Grade 300	0.6035	Grade 350	0.6040	Grade 400
	3.3	Gray cast iron with spheroidal graphite	300–500 N/mm²	0.7040	SG 400-12	0.7043	SG 370-17	0.7050	SG 500-7
	3.4	Gray cast iron with spheroidal graphite	500–900 N/mm²	0.7060	SG 600-3	0.7070	SG 700-2	0.7080	SG 800-2
	3.5	White malleable cast iron	270–450 N/mm²	0.8035	GTW-35	0.8045	GTW-45		
	3.6	White malleable cast iron	500–650 N/mm²	0.8055	GTW-55	0.8065	GTW-65		
	3.7	Black malleable cast iron	300–450 N/mm²	0.8135	GTS-35	0.8145	GTS-45		
	3.8	Black malleable cast iron	500–800 N/mm²	0.8155	GTS-55	0.8170	GTS-70		
N	4.1	Aluminium (non alloyed, low alloyed)	< 350 N/mm²	3.0255	1050 A	3.0275	1070 A	3.0285	1080 A (A8)
	4.2	Aluminium alloys < 0.5 % Si	< 500 N/mm²	3.1325	2017 A (AU4G)	3.4335	7005 (AZ5G)	3.4365	7075 (AZ5GU)
	4.3	Aluminium alloy 0.5–10 % Si	< 400 N/mm²	3.2315	A- G S1	3.2373	A-S9 G	3.2151	A-S 6 U4
	4.4	Aluminium alloys 10–15 % Si	< 400 N/mm²	3.2581	A-S12	3.2583	A-S12 U		
	4.5	Aluminum alloys > 15 % Si	< 400 N/mm²		A-S18	A-S17 U4			
	4.6	Copper (non alloyed, low alloyed)	< 350 N/mm²	2.0040	Cu-c1	2.0060	Cu-a1	2.0090	Cu-b1
	4.7	Copper wrought alloys	< 700 N/mm²	2.1247	Cub2 (Berylium Copper)	2.0855	CuN2S (Nickel Copper)	2.1310	CU-Fe2P
	4.8	Special copper alloys	< 200 HB	2.0916	Cu-A5	2.1525	Cu-S3 M		Ampco 8 (Cu-A6Fe2)
	4.9	Special copper alloys	< 300 HB	2.0978	Cu-Al11 Fe5 Ni5)		Ampco 18 (Cu- A10 Fe3)		
	4.10	Special copper alloys	> 300 HB	2.1247	Cu Be2		Ampco M4		
	4.11	Short-chipping brass, bronze, red bronze	< 600 N/mm²	2.0331	Cu Zn36 Pb1,5	2.0380	Cu Zn39 Pb2 (Ms 56)	2.0410	Cu Zn44 Pb2
	4.12	Long-chipping brass	< 600 N/mm²	2.0335	Cu Zn 36 (Ms63)	2.1293	Cu Cr1 Zr		
	4.13	Thermoplastics		PE	PVC	PS	Polystyrene		Plexiglas
	4.14	Duroplastics		PF	Bakelite		Pertinax		
	4.15	Fibre-reinforced plastics			Carbon Fibre		Fibreglass		Aramid Fibre (Kevlar)
	4.16	Magnesium and magnesium alloys	< 850 N/mm²	3.5812	Mg A7 Z1	3.5662	Mg A9	3.5105	Mg Tr3 Z2 Zn 1
	4.17	Graphite			R8500X		R8650		Technograph 15
	4.18	Tungsten and tungsten alloys			W-Ni Fe (Densimet)		W- Ni Cu (Inermet)		Denal
	4.19	Molybdenum and molybdenum alloys			TZM		MHQ		Mo W
S	5.1	Pure nickel		2.4066	Ni99 (Nickel 200)	2.4068	Lc Ni99 (Nickel 201)		
	5.2	Nickel alloys		1.3912	Fe-Ni36 (Invar)	1.3917	Fe -Ni42 (N42)	1.3922	Fe-Ni48 (N48)
	5.3	Nickel alloys	< 850 N/mm²	2.4375	Ni Cu30 Al (Monel K500)	2.4360	Ni Cu30Fe (Monel 400)	2.4668	
	5.4	Nickel molybdenum alloys		2.4600	Ni Mo30Cr2 (Hastelloy B4)	2.4617	Ni Mo28 (Hastelloy B2)	2.4819	Ni Mo16Cr16 Hastell. C276
	5.5	Nickel-chromium alloys	< 1300 N/mm²	2.4951	Ni Cr20TiAl (Nimonic 80A)	2.4858	Ni Cr21Mo (Inconel 825)	2.4856	Ni Cr22Mo9Nb Inconel 625
	5.6	Cobalt Chrome Alloys	< 1300 N/mm²	2.4964	Co Cr20 W15 Ni10		Co Cr20 Ni16 Mo7		Co Cr28 Mo 6
	5.7	Heat resistant alloys	< 1300 N/mm²	1.4718	Z45 C S 9-3	1.4747	Z80 CSN 20-02	1.4845	Z12 CN 25-20
	5.8	Nickel-cobalt-chromium alloys	< 1400 N/mm²	2.4851	Ni Cr23Fe (Inconel 601)	2.4668	Ni Cr19NbMo (Inconel 718)	2.4602	Ni Cr21Mo14 Hastelloy C22
	5.9	Pure titanium	< 900 N/mm²	3.7025	T35 (Titanium Grade 1)	3.7034	T40 (Titanium Grade 2)	3.7064	T60 (Titanium Grade 4)
	5.10	Titanium alloys	< 700 N/mm²		T-A6-Nb7 (367)		T-A5-Sn2-Mo4-Cr4 (Ti17)		T-A3-V2,5 (Gr18)
	5.11	Titanium alloys	< 1200 N/mm²	3.7165	T-A6-V4 (Ta6V)		T-A4-3V-Mo2-Fe2 (SP700)		T-A5-Sn1-Zr1-V1-Mo (Gr32)
H	6.1		< 45 HRC						
	6.2		46–55 HRC						
	6.3	Tempered steel	56–60 HRC						
	6.4		61–65 HRC						
	6.5		65–70 HRC						

7

Cutting data appoximate values

	UNI VHM OSM 2xD 50 815 ...			UNI VHM OSM 3xD 50 821 ...			H VHM 2xD 50 840 ...				HR VHM 50 846 ..., 50 847 ...		
Index	v_c m/min	Ø 6–10 f_z	Ø 12–20 f_z	v_c m/min	Ø 6–10 f_z	Ø 12–20 f_z	v_c m/min	Ø 3–5 f_z	Ø 6–10 f_z	Ø 12–16 f_z	v_c m/min	< 10 f_z	> 10 f_z
1.1	**200–250**	0,04–0,06	0,07–0,10	**150–200**	0,04–0,06	0,07–0,10							
1.2	**200–250**	0,04–0,06	0,07–0,10	**150–200**	0,04–0,06	0,07–0,10							
1.3	**200–250**	0,04–0,06	0,07–0,10	**150–200**	0,04–0,06	0,07–0,10							
1.4	**100–200**	0,02–0,04	0,04–0,07	**100–130**	0,02–0,04	0,04–0,07					**120–220**	0,02–0,04	0,04–0,07
1.5	**100–200**	0,02–0,04	0,04–0,07	**100–130**	0,02–0,04	0,04–0,07					**120–220**	0,02–0,04	0,04–0,07
1.6	**100–200**	0,02–0,04	0,04–0,07	**100–130**	0,02–0,04	0,04–0,07					**120–220**	0,02–0,04	0,04–0,07
1.7	**100–200**	0,02–0,04	0,04–0,07	**100–130**	0,02–0,04	0,04–0,07					**120–220**	0,02–0,04	0,04–0,07
1.8	**100–200**	0,02–0,04	0,04–0,07								**120–220**	0,02–0,04	0,04–0,07
1.9	**200–250**	0,04–0,06	0,07–0,10	**150–200**	0,04–0,06	0,07–0,10							
1.10	**100–200**	0,02–0,04	0,04–0,07	**100–130**	0,02–0,04	0,04–0,07					**120–220**	0,02–0,04	0,04–0,07
1.11	**100–200**	0,02–0,04	0,04–0,07								**120–220**	0,02–0,04	0,04–0,07
1.12	**100–200**	0,02–0,04	0,04–0,07								**120–220**	0,02–0,04	0,04–0,07
1.13	**100–200**	0,02–0,04	0,04–0,07								**120–220**	0,02–0,04	0,04–0,07
1.14	**100–200**	0,02–0,04	0,04–0,07								**120–220**	0,02–0,04	0,04–0,07
1.15	**100–200**	0,02–0,04	0,04–0,07								**120–220**	0,02–0,04	0,04–0,07
1.16	**100–200**	0,02–0,04	0,04–0,07								**120–220**	0,02–0,04	0,04–0,07
2.1	**100–200**	0,02–0,03	0,04–0,05	**80–160**	0,02–0,03	0,04–0,05					**60–120**	0,015–0,03	0,03–0,06
2.2	**100–200**	0,02–0,03	0,04–0,05	**80–160**	0,02–0,03	0,04–0,05					**60–120**	0,015–0,03	0,03–0,06
2.3	**100–200**	0,02–0,03	0,04–0,05								**60–120**	0,015–0,03	0,03–0,06
2.4	**100–200**	0,02–0,03	0,04–0,05								**60–120**	0,015–0,03	0,03–0,06
2.5	**100–200**	0,02–0,03	0,04–0,05	**80–160**	0,02–0,03	0,04–0,05					**60–120**	0,015–0,03	0,03–0,06
2.6	**100–200**	0,02–0,03	0,04–0,05	**80–160**	0,02–0,03	0,04–0,05					**60–120**	0,015–0,03	0,03–0,06
2.7	**100–200**	0,02–0,03	0,04–0,05								**60–120**	0,015–0,03	0,03–0,06
3.1	**200–300**	0,05–0,07	0,07–0,12	**160–240**	0,05–0,07	0,07–0,12							
3.2	**200–300**	0,05–0,07	0,07–0,12	**160–240**	0,05–0,07	0,07–0,12							
3.3	**200–300**	0,05–0,07	0,07–0,12	**160–240**	0,05–0,07	0,07–0,12							
3.4	**200–300**	0,05–0,07	0,07–0,12	**160–240**	0,05–0,07	0,07–0,12							
3.5	**150–220**	0,03–0,05	0,06–0,08	**120–160**	0,03–0,05	0,06–0,08							
3.6	**150–220**	0,03–0,05	0,06–0,08	**120–160**	0,03–0,05	0,06–0,08							
3.7	**150–220**	0,03–0,05	0,06–0,08	**120–160**	0,03–0,05	0,06–0,08							
3.8	**150–220**	0,03–0,05	0,06–0,08	**120–160**	0,03–0,05	0,06–0,08							
4.1													
4.2													
4.3													
4.4													
4.5	**220–250**	0,05–0,07	0,06–0,08	**180–200**	0,05–0,07	0,06–0,08							
4.6													
4.7													
4.8													
4.9											**60–80**	0,02–0,04	0,03–0,05
4.10											**60–80**	0,02–0,04	0,03–0,05
4.11	**250–300**	0,05–0,07	0,06–0,08	**200–240**	0,05–0,07	0,06–0,08							
4.12													
4.13													
4.14													
4.15	**250–300**	0,05–0,07	0,06–0,08	**180–200**	0,05–0,07	0,06–0,08					**400–500**	0,05–0,08	0,07–0,10
4.16	**250–300**	0,05–0,07	0,06–0,08	**180–200**	0,05–0,07	0,06–0,08							
4.17													
4.18	**50–80**	0,015–0,025	0,020–0,035								**40–60**	0,015–0,025	0,020–0,035
4.19	**100–200**	0,02–0,04	0,04–0,07								**120–220**	0,02–0,04	0,04–0,07
5.1	**200–250**	0,04–0,06	0,07–0,10	150–200	0,04–0,06	0,07–0,10							
5.2											**60–80**	0,02–0,03	0,03–0,04
5.3											**60–80**	0,02–0,03	0,03–0,04
5.4							40–80	0,005–0,015	0,015–0,03	0,02–0,05	**30–60**	0,01–0,02	0,02–0,03
5.5							40–80	0,005–0,015	0,015–0,03	0,02–0,05	**30–60**	0,01–0,02	0,02–0,03
5.6							60–100	0,005–0,015	0,02–0,04	0,03–0,06	**30–60**	0,01–0,02	0,02–0,03
5.7	**70–100**	0,02–0,03	0,04–0,05				80–120	0,005–0,015	0,02–0,04	0,03–0,06	**40–60**	0,01–0,02	0,02–0,03
5.8							40–80	0,005–0,015	0,015–0,03	0,02–0,05	**30–60**	0,01–0,02	0,02–0,03
5.9											**60–80**	0,02–0,03	0,03–0,04
5.10											**60–80**	0,02–0,03	0,03–0,04
5.11							40–80	0,005–0,015	0,015–0,03	0,02–0,05	**60–80**	0,02–0,03	0,03–0,04
6.1	**80–120**	0,02–0,04	0,04–0,06				**80–120**	0,005–0,015	0,03–0,06	0,03–0,06	**60–100**	0,02–0,04	0,03–0,06
6.2	**80–120**	0,02–0,04	0,04–0,06				**60–100**	0,005–0,015	0,02–0,04	0,02–0,04	**60–100**	0,02–0,04	0,03–0,06
6.3	**50–80**	0,015–0,025	0,020–0,035				**30–60**	0,005–0,01	0,01–0,03	0,01–0,03	**40–60**	0,015–0,025	0,020–0,035
6.4	**50–80**	0,015–0,025	0,020–0,035				**30–60**	0,005–0,01	0,005–0,015	0,005–0,02	**40–60**	0,015–0,025	0,020–0,035
6.5													

Cutting data appoximate values

	SFSE VHM TiAlN 50 811 ..., 50 816 ..., 50 818 ..., 50 819 ..., 50 823 ..., 50 824 ...			SGF VHM TiAlN 50 825 ..., 50 826 ..., 50 827 ...			MWN uncoated 50 890 ..., 50 891 ..., 50 892 ..., 50 895 ..., 50 896 ..., 50 897 ...		MWN TiAlN 50 890 ..., 50 891 ..., 50 895 ...		EAW / EWM 50 860 ..., 50 861 ..., 50 867 ..., 50 868 ..., 50 870 ..., 50 871 ...		
Index	v_c m/min	Ø 6–10 f_z	Ø 12–20 f_z	v_c m/min	Ø 6–10 f_z	Ø 12–20 f_z	v_c m/min	f_z	v_c m/min	f_z	v_c m/min	EAW f_z	EWM f_z
1.1	**100–200**	0,04–0,08	0,06–0,12	**80–150**	0,03–0,07	0,06–0,10	**50–100**	0,10–0,20	**100–200**	0,10–0,20	**250–500**	0,10–0,20	0,10–0,20
1.2	**100–200**	0,04–0,08	0,06–0,12	**80–150**	0,03–0,07	0,06–0,10	**50–100**	0,10–0,20	**100–200**	0,10–0,20	**250–500**	0,10–0,20	0,10–0,20
1.3	**100–200**	0,04–0,08	0,06–0,12	**80–150**	0,03–0,07	0,06–0,10	**50–100**	0,10–0,20	**100–200**	0,10–0,20	**250–500**	0,10–0,20	0,10–0,20
1.4	**40–80**	0,01–0,03	0,03–0,05	**40–60**	0,01–0,03	0,02–0,04	**40–70**	0,05–0,10	**80–140**	0,05–0,10	**150–250**	0,06–0,12	0,06–0,12
1.5	**40–80**	0,01–0,03	0,03–0,05	**40–60**	0,01–0,03	0,02–0,04	**40–70**	0,05–0,10	**80–140**	0,05–0,10	**150–250**	0,06–0,12	0,06–0,12
1.6	**40–80**	0,01–0,03	0,03–0,05	**40–60**	0,01–0,03	0,02–0,04	**40–70**	0,05–0,10	**80–140**	0,05–0,10	**150–250**	0,06–0,12	0,06–0,12
1.7	**40–80**	0,01–0,03	0,03–0,05	**40–60**	0,01–0,03	0,02–0,04	**40–70**	0,05–0,10	**80–140**	0,05–0,10	**150–250**	0,06–0,12	0,06–0,12
1.8	**40–80**	0,01–0,03	0,03–0,05										
1.9	**100–200**	0,04–0,08	0,06–0,12	**80–150**	0,03–0,07	0,06–0,10	**50–100**	0,10–0,20	**100–200**	0,10–0,20	**250–500**	0,10–0,20	0,10–0,20
1.10	**40–80**	0,01–0,03	0,03–0,05	**40–60**	0,01–0,03	0,02–0,04	**40–70**	0,05–0,10	**80–140**	0,05–0,10	**150–250**	0,06–0,12	0,06–0,12
1.11	**40–80**	0,01–0,03	0,03–0,05								**150–250**	0,06–0,12	0,06–0,12
1.12	**40–80**	0,01–0,03	0,03–0,05								**150–250**	0,06–0,12	0,06–0,12
1.13	**40–80**	0,01–0,03	0,03–0,05								**150–250**	0,06–0,12	0,06–0,12
1.14	**40–80**	0,01–0,03	0,03–0,05								**150–250**	0,06–0,12	0,06–0,12
1.15	**40–80**	0,01–0,03	0,03–0,05								**150–250**	0,06–0,12	0,06–0,12
1.16	**40–80**	0,01–0,03	0,03–0,05								**150–250**	0,06–0,12	0,06–0,12
2.1	**60–100**	0,02–0,06	0,05–0,08	**60–100**	0,02–0,06	0,05–0,08			**100–200**	0,02–0,05	**60–120**	0,03–0,09	0,03–0,09
2.2	**60–100**	0,02–0,06	0,05–0,08	**60–100**	0,02–0,06	0,05–0,08			**100–200**	0,02–0,05	**60–120**	0,03–0,09	0,03–0,09
2.3	**60–100**	0,02–0,06	0,05–0,08	**60–100**	0,02–0,06	0,05–0,08			**100–200**	0,02–0,05	**60–120**	0,03–0,09	0,03–0,09
2.4	**60–100**	0,02–0,06	0,05–0,08	**60–100**	0,02–0,06	0,05–0,08			**100–200**	0,02–0,05	**60–120**	0,03–0,09	0,03–0,09
2.5	**60–100**	0,02–0,06	0,05–0,08	**60–100**	0,02–0,06	0,05–0,08			**100–200**	0,02–0,05	**60–120**	0,03–0,09	0,03–0,09
2.6	**60–100**	0,02–0,06	0,05–0,08	**60–100**	0,02–0,06	0,05–0,08			**100–200**	0,02–0,05	**60–120**	0,03–0,09	0,03–0,09
2.7	**60–100**	0,02–0,06	0,05–0,08	**60–100**	0,02–0,06	0,05–0,08			**100–200**	0,02–0,05	**60–120**	0,03–0,09	0,03–0,09
3.1	**100–200**	0,04–0,08	0,08–0,14	**100–200**	0,04–0,08	0,08–0,14	**70–120**	0,10–0,15	**100–180**	0,10–0,15	**200–350**	0,10–0,20	0,10–0,20
3.2	**100–200**	0,04–0,08	0,08–0,14	**100–200**	0,04–0,08	0,08–0,14	**70–120**	0,10–0,15	**100–180**	0,10–0,15	**200–350**	0,10–0,20	0,10–0,20
3.3	**100–200**	0,04–0,08	0,08–0,14	**100–200**	0,04–0,08	0,08–0,14	**70–120**	0,10–0,15	**100–180**	0,10–0,15	**200–350**	0,10–0,20	0,10–0,20
3.4	**100–200**	0,04–0,08	0,08–0,14	**100–200**	0,04–0,08	0,08–0,14	**70–120**	0,10–0,15	**100–180**	0,10–0,15	**200–350**	0,10–0,20	0,10–0,20
3.5	**80–150**	0,03–0,06	0,05–0,08	**80–150**	0,03–0,06	0,05–0,08	**50–100**	0,08–0,12	**80–150**	0,08–0,12	**150–250**	0,04–0,12	0,04–0,12
3.6	**80–150**	0,03–0,06	0,05–0,08	**80–150**	0,03–0,06	0,05–0,08	**50–100**	0,08–0,12	**80–150**	0,08–0,12	**150–250**	0,04–0,12	0,04–0,12
3.7	**80–150**	0,03–0,06	0,05–0,08	**80–150**	0,03–0,06	0,05–0,08	**50–100**	0,08–0,12	**80–150**	0,08–0,12	**150–250**	0,04–0,12	0,04–0,12
3.8	**80–150**	0,03–0,06	0,05–0,08	**80–150**	0,03–0,06	0,05–0,08	**50–100**	0,08–0,12	**80–150**	0,08–0,12	**150–250**	0,04–0,12	0,04–0,12
4.1	**275–300**	0,06–0,09	0,08–0,10	**275–300**	0,06–0,09	0,08–0,10	**100–200**	0,10–0,20	**200–250**	0,10–0,20	**400–500**	0,08–0,15	0,08–0,15
4.2	**275–300**	0,06–0,09	0,08–0,10	**275–300**	0,06–0,09	0,08–0,10	**100–200**	0,10–0,20	**200–250**	0,10–0,20	**400–500**	0,08–0,15	0,08–0,15
4.3	**225–275**	0,05–0,07	0,06–0,08	**225–275**	0,05–0,07	0,06–0,08	**100–200**	0,10–0,20	**200–250**	0,10–0,20	**400–500**	0,08–0,15	0,08–0,15
4.4	**200–225**	0,04–0,06	0,05–0,07	**200–225**	0,04–0,06	0,05–0,07	**100–200**	0,10–0,20	**200–250**	0,10–0,20	**300–400**	0,06–0,10	0,06–0,10
4.5	**180–200**	0,03–0,05	0,04–0,06	**180–200**	0,03–0,05	0,04–0,06			**150–200**	0,08–0,10	**300–400**	0,06–0,10	0,06–0,10
4.6	**275–300**	0,06–0,09	0,08–0,10	**275–300**	0,06–0,09	0,08–0,10	**100–200**	0,12–0,15	**200–250**	0,12–0,15	**400–500**	0,08–0,15	0,08–0,15
4.7	**275–300**	0,06–0,09	0,08–0,10	**275–300**	0,06–0,09	0,08–0,10	**100–200**	0,12–0,15	**200–250**	0,12–0,15	**400–500**	0,08–0,15	0,08–0,15
4.8	**275–300**	0,06–0,09	0,08–0,10	**275–300**	0,06–0,09	0,08–0,10			**200–250**	0,03–0,06	**400–500**	0,08–0,15	0,08–0,15
4.9	**60–80**	0,02–0,03	0,03–0,04	**50–70**	0,02–0,03	0,03–0,04			**40–80**	0,12–0,15	**150–200**	0,08–0,12	0,08–0,12
4.10	**60–80**	0,02–0,03	0,03–0,04	**50–70**	0,02–0,03	0,03–0,04			**40–80**	0,12–0,15	**150–200**	0,08–0,12	0,08–0,12
4.11	**200–225**	0,04–0,06	0,05–0,07	**200–225**	0,04–0,06	0,05–0,07	**70–120**	0,04–0,08	**100–150**	0,04–0,08	**400–500**	0,08–0,15	0,08–0,15
4.12	**275–300**	0,06–0,09	0,08–0,10	**275–300**	0,06–0,09	0,08–0,10	**90–180**	0,08–0,10	**150–200**	0,08–0,10	**400–500**	0,08–0,15	0,08–0,15
4.13	**350–450**	0,10–0,13	0,12–0,15	**350–450**	0,10–0,13	0,12–0,15	**180–250**	0,15–0,20	**250–300**	0,15–0,20	**600–800**	0,15–0,25	0,15–0,25
4.14	**300–400**	0,10–0,13	0,12–0,15	**300–400**	0,10–0,13	0,12–0,15	**100–200**	0,12–0,15	**200–250**	0,12–0,15	**600–800**	0,15–0,25	0,15–0,25
4.15	**180–200**	0,04–0,06	0,05–0,07	**180–200**	0,04–0,06	0,05–0,07			**100–150**	0,04–0,08	**150–200**	0,08–0,12	0,08–0,12
4.16	**200–225**	0,04–0,06	0,05–0,07	**200–225**	0,04–0,06	0,05–0,07			**100–130**	0,04–0,08	**400–500**	0,08–0,15	0,08–0,15
4.17	**100–200**	0,04–0,08	0,08–0,14	**100–200**	0,04–0,08	0,08–0,14							
4.18													
4.19	**40–80**	0,01–0,03	0,03–0,05								**150–250**	0,08–0,12	0,08–0,12
5.1	**100–200**	0,04–0,08	0,06–0,12	**80–150**	0,03–0,07	0,06–0,10					**250–500**	0,10–0,20	0,10–0,20
5.2	**50–80**	0,02–0,04	0,03–0,05	**50–80**	0,02–0,04	0,03–0,05					**50–100**	0,02–0,08	0,02–0,08
5.3	**50–80**	0,02–0,04	0,03–0,05								**50–100**	0,02–0,08	0,02–0,08
5.4													
5.5													
5.6													
5.7													
5.8													
5.9	**50–80**	0,02–0,04	0,03–0,05	**50–80**	0,02–0,04	0,03–0,05					**50–100**	0,02–0,08	0,02–0,08
5.10	**50–80**	0,02–0,04	0,03–0,05	**50–80**	0,02–0,04	0,03–0,05					**50–100**	0,02–0,08	0,02–0,08
5.11	**50–80**	0,02–0,04	0,03–0,05	**50–80**	0,02–0,04	0,03–0,05					**50–100**	0,02–0,08	0,02–0,08
6.1													
6.2													
6.3													
6.4													
6.5													

Cutting data appoximate values

	SGF VHM Ti500			GZG / GZD				Polygon		System 300		
	54 832 ...			50 863 ..., 50 864 ..., 50 887 ..., 50 885 ..., 50 888 ..., 50 889 ..., 50 894 ...				50 872 ..., 50 874 ..., 50 875 ..., 50 876 ..., 50 879 ..., 50 880 ..., 50 881 ..., 50 882 ..., 50 883 ..., 50 884 ..., 50 886 ...		50 851 ..., 50 852 ..., 50 853 ..., 50 855 ..., 50 857 ..., 50 858 ..., 50 859 ...		
	Ti500	size		uncoated	Ti500	size		Ti500		uncoated	Ti500	
Index	v_c m/min	8 mm f_z	10–16 mm f_z	v_c m/min	v_c m/min	12–17 mm f_z	20–26 mm f_z	v_c m/min	f_z	v_c m/min	v_c m/min	f_z
1.1	80–250	0,04–0,07	0,05–0,15		180–260	0,1–0,3	0,05–0,3	150–200	0,05–0,25		120–180	0,05–0,12
1.2	80–250	0,04–0,07	0,05–0,15		180–260	0,1–0,3	0,05–0,3	150–200	0,05–0,25		120–180	0,05–0,12
1.3	80–250	0,04–0,07	0,05–0,15		180–260	0,1–0,3	0,05–0,3	100–150	0,05–0,25		120–180	0,05–0,12
1.4	60–120	0,04–0,07	0,05–0,10		180–220	0,1–0,3	0,05–0,3	100–150	0,05–0,25		100–120	0,05–0,12
1.5	60–100	0,04–0,07	0,05–0,10		180–260	0,1–0,3	0,05–0,3	150–200	0,05–0,25		120–180	0,05–0,12
1.6	60–120	0,04–0,07	0,05–0,10		180–220	0,1–0,3	0,05–0,3	100–150	0,05–0,25		100–120	0,05–0,12
1.7	80–200	0,04–0,07	0,05–0,10		180–260	0,1–0,3	0,05–0,3	100	0,05–0,25		120–180	0,05–0,12
1.8	40–100	0,03–0,05	0,04–0,06		100–150	0,1–0,2	0,05–0,2	100	0,05–0,25		80–100	0,05–0,12
1.9	60–100	0,04–0,07	0,05–0,10		180–260	0,1–0,3	0,05–0,3	100	0,05–0,25		100–120	0,05–0,12
1.10	60–120	0,04–0,07	0,05–0,10		100–150	0,1–0,2	0,05–0,2	120	0,05–0,25		100–120	0,05–0,12
1.11	40–100	0,03–0,05	0,04–0,06		100–150	0,1–0,2	0,05–0,2	100	0,05–0,25		80–100	0,05–0,12
1.12	40–100	0,03–0,05	0,04–0,06		100–150	0,1–0,2	0,05–0,2	100	0,05–0,25		80–100	0,05–0,12
1.13	40–100	0,03–0,05	0,04–0,06		100–150	0,1–0,2	0,05–0,2	100	0,05–0,25		80–100	0,05–0,12
1.14	40–100	0,03–0,05	0,04–0,06		100–120	0,1–0,2	0,05–0,2	100	0,05–0,25		80–100	0,05–0,12
1.15	40–100	0,03–0,05	0,04–0,06		100–150	0,1–0,2	0,05–0,2	100	0,05–0,25		80–100	0,05–0,12
1.16	40–100	0,03–0,05	0,04–0,06		100–150	0,1–0,2	0,05–0,2	100	0,05–0,25		80–100	0,05–0,12
2.1	50–150	0,04–0,07	0,05–0,12		130–180	0,1–0,3	0,05–0,3				120–150	0,05–0,12
2.2	50–150	0,04–0,07	0,05–0,12		130–180	0,1–0,3	0,05–0,3				120–150	0,05–0,12
2.3	50–150	0,04–0,07	0,05–0,12		130–180	0,1–0,3	0,05–0,3	120	0,05–0,25		100–120	0,05–0,12
2.4	50–150	0,04–0,07	0,05–0,12		130–180	0,1–0,3	0,05–0,3	120	0,05–0,25		100–120	0,05–0,12
2.5	50–150	0,04–0,07	0,05–0,12		130–180	0,1–0,3	0,05–0,3	120	0,05–0,25		120–180	0,05–0,12
2.6	50–150	0,04–0,07	0,05–0,12		130–180	0,1–0,3	0,05–0,3	180	0,05–0,25		120–180	0,05–0,12
2.7	50–150	0,04–0,07	0,05–0,12		130–180	0,1–0,3	0,05–0,3				80–100	0,05–0,12
3.1	80–200	0,04–0,07	0,05–0,15	100–150	130–200	0,1–0,3	0,05–0,3	180	0,05–0,25	80–120	120–180	0,05–0,12
3.2	80–200	0,04–0,07	0,05–0,15	80–120	130–200	0,1–0,3	0,05–0,3	120	0,05–0,25	80–120	120–180	0,05–0,12
3.3	80–200	0,04–0,07	0,05–0,15		130–200	0,1–0,3	0,05–0,3	180	0,05–0,25	80–120	120–180	0,05–0,12
3.4	80–200	0,04–0,07	0,05–0,15		130–200	0,1–0,3	0,05–0,3	180	0,05–0,25	80–120	120–180	0,05–0,12
3.5	80–160	0,04–0,07	0,05–0,15		130–200	0,1–0,3	0,05–0,3	180	0,05–0,25	80–120	120–180	0,05–0,12
3.6	80–160	0,04–0,07	0,05–0,15		130–200	0,1–0,3	0,05–0,3	120	0,05–0,25	80–120	120–180	0,05–0,12
3.7	80–160	0,04–0,07	0,05–0,15		130–200	0,1–0,3	0,05–0,3	180	0,05–0,25	80–120	120–180	0,05–0,12
3.8	80–160	0,04–0,07	0,05–0,15		130–200	0,1–0,3	0,05–0,3	120	0,05–0,25	80–120	120–180	0,05–0,12
4.1	250–500	0,05–0,08	0,07–0,2	300–400	400–600	0,1–0,3	0,05–0,3	400	0,15–0,4	400–500		0,05–0,25
4.2	250–500	0,05–0,08	0,07–0,2	300–400	400–600	0,1–0,3	0,05–0,3	400	0,15–0,4	300–400		0,05–0,25
4.3	250–500	0,05–0,08	0,07–0,2					300	0,15–0,4			
4.4	250–500	0,05–0,08	0,07–0,2					250	0,15–0,4			
4.5	180–250	0,05–0,07	0,06–0,12									
4.6	250–300	0,05–0,07	0,06–0,08					500	0,15–0,4		300–500	0,05–0,25
4.7												
4.8								120	0,05–0,15			
4.9												
4.10												
4.11	250–300	0,05–0,07	0,06–0,08					400	0,15–0,4		200–300	0,05–0,25
4.12								400	0,15–0,4			
4.13	350–450	0,08–0,1						500	0,15–0,4		300–500	0,05–0,25
4.14	80–400	0,05–0,1	0,08–0,25					500	0,15–0,4		300–500	0,05–0,25
4.15	180–200	0,02–0,04	0,03–0,04									
4.16												
4.17								500	0,15–0,4		300–500	0,05–0,25
4.18												
4.19												
5.1												
5.2								120	0,05–0,25		80–120	0,05–0,12
5.3								120	0,05–0,25		80–120	0,05–0,12
5.4												
5.5												
5.6												
5.7												
5.8												
5.9												
5.10								80	0,01–0,08		70–100	0,01–0,05
5.11	40–60	0,03–0,05	0,04–0,1					60	0,01–0,08		60–90	0,01–0,05
6.1	40–60	0,03–0,05	0,04–0,1								80–100	0,03–0,1
6.2	40–60	0,03–0,05	0,04–0,1					100	0,05–0,15		80	0,03–0,1
6.3								100	0,05–0,10			
6.4												
6.5												

Cutting data appoximate values

	SFSE / SGF VHM Ti500 54 800 ..., 54 801 ..., 54 802 ..., 54 803 ..., 54 804 ..., 54 805 ..., 54 806 ..., 54 808 ..., 54 809 ..., 54 810 ..., 54 811 ..., 54 812 ..., 54 813 ...				MiniMill 53 006 ..., 53 007 ..., 53 008 ..., 53 009 ..., 53 010 ..., 53 011 ..., 53 012 ..., 53 013 ..., 53 015 ...			MicroMill 53 050 ..., 53 051 ..., 53 052 ..., 53 053 ...	
Index	v_c m/min	Ø 2,4 + 3,15 f_z	Ø 4 f_z	Ø 4,8–16 f_z	v_c m/min	f_z (drilling)	f_z (threading)	v_c m/min	f_z (drilling)
1.1	**80–250**	0,03–0,04	0,03–0,06	0,05–0,15	**80–200**	0,03–0,10	0,10–0,25	**60–200**	0,02–0,05
1.2	**80–250**	0,03–0,04	0,03–0,06	0,05–0,15	**80–200**	0,03–0,10	0,10–0,25	**60–200**	0,02–0,05
1.3	**80–250**	0,03–0,04	0,03–0,06	0,05–0,15	**80–200**	0,03–0,10	0,10–0,25	**60–200**	0,02–0,05
1.4	**60–120**	0,01–0,02	0,01–0,03	0,05–0,10	**60–180**	0,03–0,08	0,10–0,15	**60–160**	0,01–0,04
1.5	**60–120**	0,01–0,02	0,01–0,03	0,05–0,10	**60–180**	0,03–0,08	0,10–0,15	**60–160**	0,02–0,05
1.6	**60–120**	0,01–0,02	0,01–0,03	0,05–0,10	**60–180**	0,03–0,08	0,10–0,15	**60–160**	0,01–0,04
1.7	**80–200**	0,03–0,04	0,03–0,06	0,05–0,10	**60–160**	0,03–0,10	0,10–0,20	**50–140**	0,02–0,05
1.8	**40–100**	0,01–0,02	0,03–0,05	0,04–0,06	**60–160**	0,02–0,07	0,10–0,20	**50–140**	0,007–0,03
1.9	**60–120**	0,01–0,02	0,04–0,07	0,05–0,10	**60–160**	0,03–0,10	0,10–0,20	**50–140**	0,02–0,05
1.10	**60–120**	0,01–0,02	0,04–0,07	0,05–0,10	**60–160**	0,03–0,10	0,10–0,20	**50–140**	0,01–0,04
1.11	**40–100**	0,01–0,02	0,03–0,05	0,04–0,06	**60–160**	0,02–0,08	0,10–0,20	**50–140**	0,007–0,03
1.12	**40–100**	0,01–0,02	0,03–0,05	0,04–0,06	**30–100**	0,02–0,07	0,10–0,20	**10–60**	0,007–0,03
1.13	**40–100**	0,01–0,02	0,03–0,05	0,04–0,06	**30–100**	0,02–0,07	0,10–0,20	**10–60**	0,007–0,03
1.14	**40–100**	0,01–0,02	0,03–0,05	0,04–0,06	**30–100**	0,02–0,07	0,10–0,20	**10–60**	0,007–0,03
1.15	**40–100**	0,01–0,02	0,03–0,05	0,04–0,06	**30–100**	0,02–0,07	0,10–0,20	**10–60**	0,007–0,03
1.16	**40–100**	0,01–0,02	0,03–0,05	0,04–0,06	**30–100**	0,02–0,07	0,10–0,20	**10–60**	0,007–0,03
2.1	**50–150**	0,03–0,04	0,03–0,04	0,05–0,12	**80–120**	0,03–0,08	0,10–0,25	**60–120**	0,01–0,04
2.2	**50–150**	0,03–0,04	0,03–0,04	0,05–0,12	**80–120**	0,03–0,10	0,10–0,25	**60–120**	0,02–0,05
2.3	**50–150**	0,03–0,04	0,03–0,04	0,05–0,12	**80–120**	0,02–0,07	0,10–0,25	**60–120**	0,007–0,03
2.4	**50–150**	0,03–0,04	0,03–0,04	0,05–0,12	**80–120**	0,02–0,07	0,10–0,25	**60–120**	0,007–0,03
2.5	**50–150**	0,03–0,04	0,03–0,04	0,05–0,12	**80–120**	0,02–0,07	0,10–0,25	**60–120**	0,007–0,03
2.6	**50–150**	0,03–0,04	0,03–0,04	0,05–0,12	**80–120**	0,02–0,07	0,10–0,25	**60–120**	0,007–0,03
2.7	**50–150**	0,03–0,04	0,03–0,04	0,05–0,12	**80–120**	0,02–0,07	0,10–0,25	**60–120**	0,007–0,03
3.1	**100–200**	0,03–0,07	0,03–0,07	0,04–0,08	**100–170**	0,03–0,10	0,2–0,3	**70–170**	0,02–0,05
3.2	**100–200**	0,03–0,07	0,03–0,07	0,04–0,08	**100–170**	0,03–0,10	0,2–0,3	**70–170**	0,02–0,05
3.3	**100–200**	0,03–0,07	0,03–0,07	0,04–0,08	**100–170**	0,03–0,10	0,2–0,3	**70–170**	0,02–0,05
3.4	**100–200**	0,03–0,07	0,03–0,07	0,04–0,08	**100–170**	0,03–0,10	0,2–0,3	**70–170**	0,02–0,05
3.5	**100–200**	0,03–0,07	0,03–0,07	0,04–0,08	**100–170**	0,03–0,10	0,2–0,3	**70–170**	0,02–0,05
3.6	**100–200**	0,03–0,07	0,03–0,07	0,04–0,08	**100–170**	0,03–0,10	0,2–0,3	**70–170**	0,02–0,05
3.7	**100–200**	0,03–0,07	0,03–0,07	0,04–0,08	**100–170**	0,03–0,10	0,2–0,3	**70–170**	0,02–0,05
3.8	**100–200**	0,03–0,07	0,03–0,07	0,04–0,08	**100–170**	0,03–0,10	0,2–0,3	**70–170**	0,02–0,05
4.1	**250–500**	0,05–0,07	0,05–0,07	0,06–0,12	**250–800**	0,04–0,15	0,05–0,2	**100–600**	0,02–0,07
4.2	**250–500**	0,05–0,07	0,05–0,07	0,06–0,12	**250–800**	0,04–0,15	0,05–0,2	**100–600**	0,02–0,07
4.3	**250–500**	0,05–0,07	0,05–0,07	0,06–0,12	**250–800**	0,04–0,15	0,05–0,2	**100–600**	0,02–0,07
4.4	**250–500**	0,05–0,07	0,05–0,07	0,06–0,12	**250–800**	0,04–0,15	0,05–0,2	**100–600**	0,02–0,07
4.5	**180–250**	0,05–0,07	0,05–0,07	0,06–0,12	**250–800**	0,04–0,15	0,05–0,2	**100–600**	0,02–0,07
4.6	**250–300**	0,05–0,07	0,05–0,07	0,06–0,08	**200–500**	0,04–0,15	0,05–0,2	**100–300**	0,02–0,07
4.7					**200–500**	0,04–0,15	0,05–0,2	**100–300**	0,02–0,07
4.8					**200–500**	0,04–0,15	0,05–0,2	**100–300**	0,02–0,07
4.9					**200–500**	0,04–0,15	0,05–0,2	**100–300**	0,02–0,07
4.10					**200–500**	0,04–0,15	0,05–0,2	**100–300**	0,02–0,07
4.11	**250–300**	0,05–0,07	0,05–0,07	0,06–0,08	**150–180**	0,04–0,15	0,05–0,2	**120–180**	0,02–0,07
4.12					**150–180**	0,04–0,15	0,05–0,2	**120–180**	0,02–0,07
4.13	**350–450**	0,08–0,1	0,08–0,1	0,1–0,12	**20–100**	0,04–0,15	0,05–0,2	**10–50**	0,02–0,1
4.14	**300–400**	0,08–0,1	0,08–0,1	0,1–0,12	**20–100**	0,04–0,15	0,05–0,2	**10–50**	0,02–0,1
4.15	**180–200**	0,02–0,04	0,02–0,04	0,03–0,04	**20–100**	0,04–0,15	0,05–0,2	**10–50**	0,02–0,07
4.16					**20–100**	0,02–0,10	0,05–0,2	**10–50**	0,02–0,05
4.17					**20–100**	0,04–0,15	0,05–0,2	**10–50**	0,02–0,07
4.18					**20–100**	0,02–0,10	0,05–0,2	**10–50**	0,02–0,05
4.19					**20–100**	0,02–0,10	0,05–0,2	**10–50**	0,02–0,05
5.1					10–100	0,005–0,05	0,05–0,1	**10–60**	0,007–0,02
5.2					10–100	0,005–0,05	0,05–0,1	**10–60**	0,007–0,02
5.3	**60–80**	0,02–0,04	0,02–0,04	0,03–0,04	10–100	0,005–0,05	0,05–0,1	**10–60**	0,007–0,02
5.4					10–100	0,005–0,05	0,05–0,1	**10–60**	0,007–0,02
5.5					10–100	0,005–0,05	0,05–0,1	**10–60**	0,007–0,02
5.6					10–100	0,005–0,05	0,05–0,1	**10–60**	0,007–0,02
5.7					10–100	0,005–0,05	0,05–0,1	**10–60**	0,007–0,02
5.8					10–100	0,005–0,05	0,05–0,1	**10–60**	0,007–0,02
5.9					10–100	0,005–0,05	0,05–0,1	**10–60**	0,007–0,02
5.10					10–100	0,005–0,05	0,05–0,1	**10–60**	0,007–0,02
5.11	**50–80**	0,01–0,03	0,01–0,03	0,01–0,03	10–100	0,005–0,05	0,05–0,1	**10–60**	0,007–0,02
6.1	**40–60**		0,03–0,05	0,03–0,05	10–60	0,002–0,05		**10–40**	0,007–0,02
6.2	**40–50**		0,03–0,05	0,03–0,05	10–60	0,002–0,05		**10–40**	0,007–0,02
6.3	**30–40**		0,02–0,04	0,02–0,04	10–60	0,002–0,05		**10–40**	0,007–0,02
6.4								**10–40**	0,007–0,02
6.5									

7

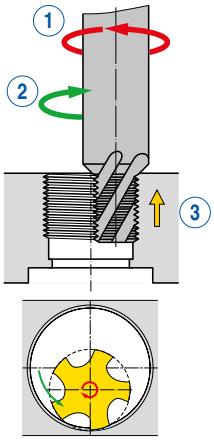
Milling Procedures

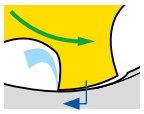
Climb milling

Characteristics:

1. Tool rotation direction „right“
2. Toolpath counter clockwise
3. Feed direction „outwards“

Right hand thread





When climb milling, the chip thickness at the end of cut is always 0 (h = 0)

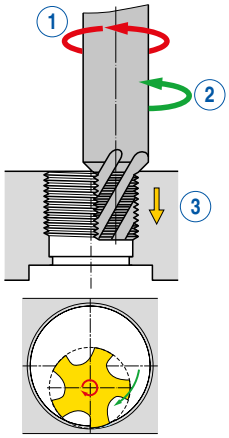
h = 0

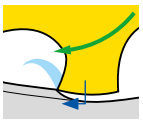
Conventional milling

Characteristics:

1. Tool rotation direction „right“
2. Toolpath clockwise
3. Feed direction „inwards“

Right hand thread

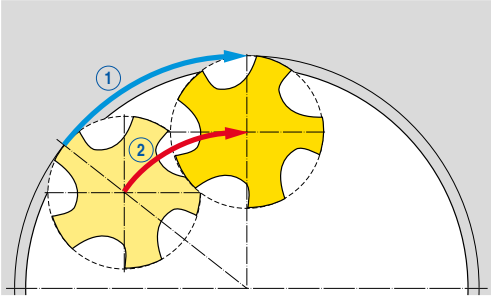




When conventional milling, the chip thickness at the end of cut is always at maximum (h = max)

h = max

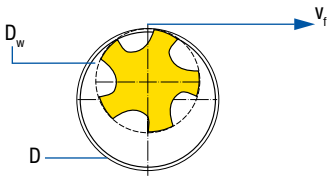
Feed rate calculation



1. Peripheral feedrate v_f
2. Centerline feedrate v_{fm}

Peripheral feedrate v_f

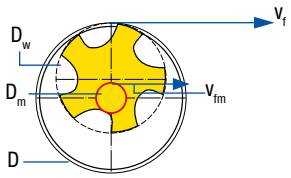
$$v_f = n \cdot f_z \cdot z \quad \text{mm/min.}$$



D_w = Effective diameter in mm
n = RPM in min^{-1}
f_z = Feed per tooth in mm

Centerline feedrate v_{fm}

$$v_{fm} = \frac{v_f \cdot (D - D_w)}{D} \quad \text{mm/min.}$$



z = Number of cutting edges (radial)
D = Nominal thread diameter = external profile diameter in mm
D_m = Centre path diameter ($D - D_w$) in mm

Tips for the User

With thread milling there are two different programme possibilities with the feed motion of the tool.

On the one hand the machine controls the feed at the diameter of the tool, on the other hand the feed control is the tool center line.
In order to ascertain which method the machine control uses, the following method should be employed:

- enter the thread milling routine into the control
- enter a safety margin into the program, so that the tool runs in air
- run the program through and check the operating time
- compare the actual time with the calculated theoretical time

If the time is longer than the calculated time the feed is controlling the tool center line.
If the time is shorter than the calculated time the feed is controlling the diameter of the tool.

Numeric calculation of cutting data for thread milling

$$n = \frac{v_c \cdot 1000}{d \cdot \pi}$$

$$v_c = \frac{d \cdot \pi \cdot n}{1000}$$

$$v_f = f_z \cdot z \cdot n$$

$$n = \frac{v_f}{f_z \cdot z}$$

$$f_z = \frac{v_f}{z \cdot n}$$

Milling – external contour

$$v_{fm} = \frac{v_f \cdot (D + d)}{D}$$

$$v_f = \frac{D \cdot v_{fm}}{(D + d)}$$

Milling – internal contour

$$v_{fm} = \frac{v_f \cdot (D - d)}{D}$$

$$v_f = \frac{D \cdot v_{fm}}{(D - d)}$$

Helical plunging

$$U_{arc} = 0{,}25 \cdot v_{fm}$$

n	=	rpm	rev./min.
v_c	=	cutting speed	m/min
d	=	tool diameter	mm
D	=	nominal thread-Ø	mm
v_f	=	feed rate at the diameter	mm/min.

Ramping in the arc

$$U_{arc} = v_{fm}$$

v_{fm}	=	feed rate at the centre	mm/min.
U_{arc}	=	programmed ramping feed rate	mm/min.
f_z	=	feed per tooth	mm
z	=	number of cutting edges of the cutter	piece

7

Correction values for the internal thread milling

The cutting edge diameter of the thread milling cutter which is entered into the machine control, can be calculated as follows:

half the cutter Ø – 0,05 x pitch p

Example: M30x3
Cutter-Ø: 20 mm

$$Ø\,\frac{20}{2} - (0{,}05 \cdot 3) = \underline{9{,}85\ mm}$$

9,85 mm is the cutting radius to be entered into the machine control

Thread types

M	Metric ISO standard thread
MF	Metric ISO fine thread
G	Whitworth thread
UNF	Unified fine thread
NPT	American taper pipe thread
BSF	Whitworth fine thread
BSW	Whitworth thread
Pg	Steel conduit thread
UN	Unified thread
Tr	Trapezoidal thread

Tool types

EAW	Thread milling cutter with solid carbide inserts and weldon flat
EWM	Thread milling cutter with solid carbide inserts and SK adaptor
GZD	Thread milling cutter with carbide inserts and Weldon flat
GZG	Thread milling cutter with carbide inserts and Weldon flat
HR	Single point thread milling cutter
SFSE	Thread milling cutter with chamfer facet
Mini Mill	Circular milling cutter with solid carbide insert
MWN	Thread milling cutter with carbide inserts and Weldon flat
Polygon	Circular milling cutter with polygon insert seat
SGF	Thread milling cutter
Micro Mill	Solid Carbide Circular End Milling Cutter
System 300	Circular milling cutter with solid carbide insert
UNI	Thread milling cutter for universal application

Coatings

TiN	▲ TiN coating ▲ maximum application temperature: 450 °C
TiAlN	▲ TiAlN multilayer coating ▲ maximum application temperature: 900 °C
Ti500	▲ TiAlN-coating ▲ maximum application temperature: 500 °C
CWX500	▲ carbide, TiAlN-coated ▲ ISO | **K30** ▲ the universal carbide grade for almost all materials
OSM	▲ hard material layer and anti-friction layer ▲ for use in high-strength steels
TiCN	▲ TiCN multilayer coating ▲ maximum application temperature: 450 °C