

A close-up photograph of a Gühring GHM High feed milling cutter. The tool is a multi-fluted, cylindrical metal cutter with a polished, reflective surface. It is positioned vertically, with its cutting edges just above a workpiece. The workpiece is a dark, metallic material with a fine, cross-hatched texture. The background is dark and out of focus, emphasizing the tool and the workpiece. The Gühring logo is visible in the top right corner.

GÜHRING

GHM
High feed
milling cutter

Roughing with maximum material removal rates



**High feed milling cutter
with indexable inserts**

Maximum number of teeth for extreme feed rates

Maximum removal rates
thanks to stable cutting insert

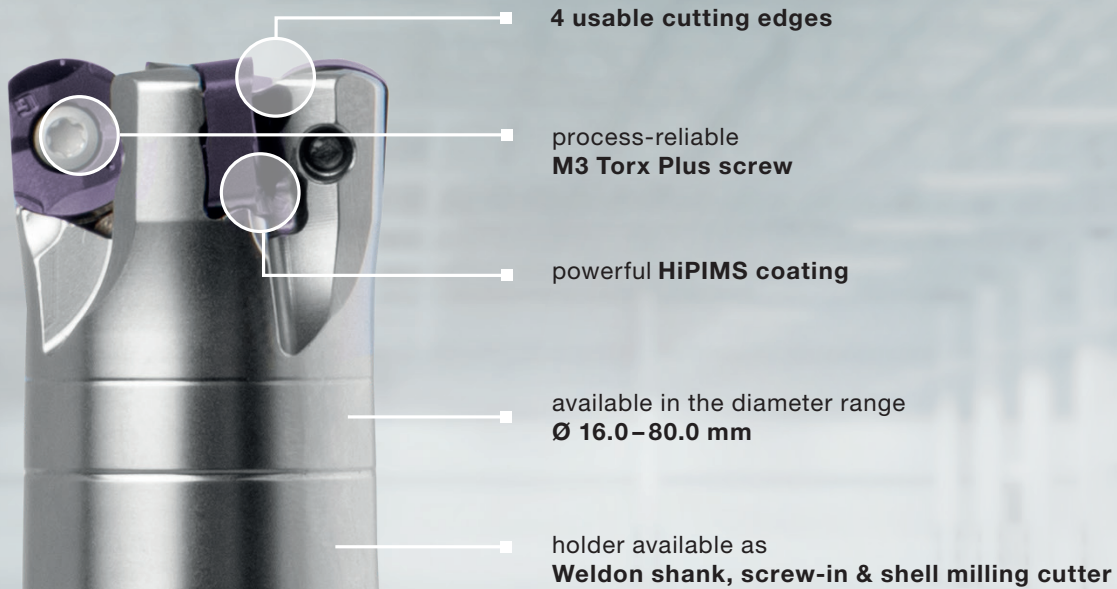
When maximum cost-effectiveness and process reliability are required for roughing with high chip removal rates, the GHM high feed milling cutter with indexable inserts is the first choice.

This is ensured by the stable and high-quality holder tools, equipped with double-sided inserts and four usable cutting edges each.

The maximum number of teeth allows this tool to achieve maximum feed rates and removal rates. In addition, the high feed milling cutter with its smooth and low-vibration operation protects the machine and spindle. This allows it to demonstrate its strengths even on smaller and unstable machines.

X Machining time reduced by 20 %

- X** double-sided indexable insert with four usable cutting edges
- X** two different types of inserts for ISO P & K and ISO M & S
- X** new: maximum number of teeth for highest material removal rates



Application example

Component: Injection moulding tool, Toolox33

Tool: #28001, Ø 25 mm

Customer target: Reduction of machining time

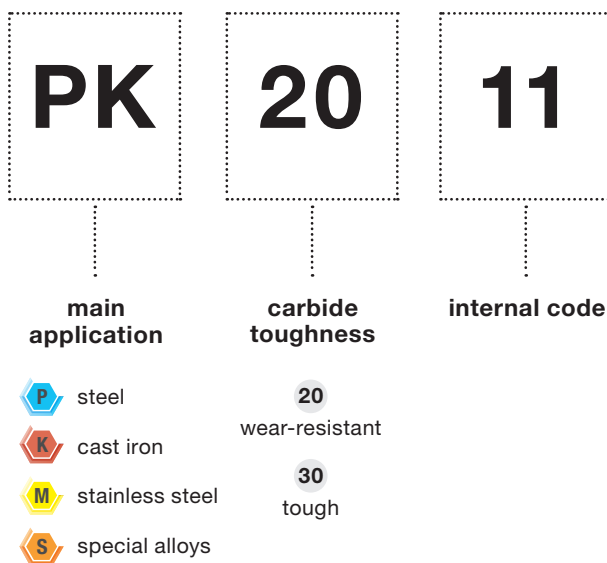
Difficulty: Dry machining, cooling with air

Cutting data:	Gühring	Competitor
	v_c 200 m/min	v_c 180 m/min
	f_z 1.2 mm	f_z 1.0 mm
	a_p 0.9 mm	a_p 0.8 mm

Indexable inserts

Precision begins with the carbide grade

Example:
PK2011



#28003

PK2011

Wear-resistant carbide grade for the machining of steel and cast iron.
First choice for all steel and cast iron materials.



#28009

PK3021

Tough carbide grade for the machining of steel and cast iron.
Alternative carbide grade for unstable conditions, long projections or vibrations.



#28004

MP3021

Tough carbide grade for the machining of stainless steels and high-alloy steel materials,
conditionally suitable for HRSA alloys in the ISO S range.

High feed milling cutter system

Quick overview, reliable selection: our article descriptions will guide you to the right tool in no time.

Holder: Weldon shank

Example: **GHM.016.050.C.016.02.07**

Gühring Highfeed Milling	Ø	neck length	Weldon shank	shank Ø	number of teeth	indexable insert size
GHM	016	050	C	016	02	07

Holder: shell milling cutter

Example: **GHM.040.040.F.16.07.07**

Gühring Highfeed Milling	Ø	head length	shell milling cutter	holder Ø	number of teeth	indexable insert size
GHM	040	040	F	16	07	07

Holder: screw-in thread

Example: **GHM.016.025.M.08.02.07**

Gühring Highfeed Milling	Ø	head length	screw-in thread	thread Ø	number of teeth	indexable insert size
GHM	016	025	M	08	02	07

Perfectly combined: matching indexable insert and holder

The correct matching of insert and holder can be easily determined at Gühring. The last two digits of the holder designation correspond to the inscribed circle of the indexable insert – and thus also to its size.

Example holder

						Article no.	28000
D mm	d mm	l mm	L mm	Z	Description	Order no.	
16	16	50	150	2	GHM.016.050.C.016.02. 07	28000 16.000	
20	20	90	160	3	GHM.020.090.C.020.03.07	28000 20.000	
25	25	100	180	4	GHM.025.100.C.025.04.07	28000 25.000	
32	32	120	200	5	GHM.032.120.C.032.05.07	28000 32.000	

Example indexable insert

						Article no.	28003
IC mm	PR mm	R mm	l mm	S mm	Size	Description	Order no.
7.05	1.9	1.0	10	3.6	07	XNMX 07 T319 T	28003 7.000



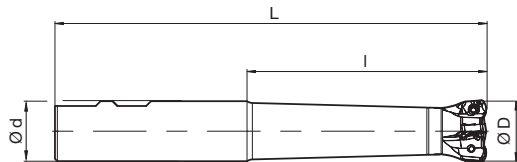
Modular milling cutters with indexable inserts

High feed milling cutters with indexable inserts, straight shank Weldon

Article no. **28000**



for double-sided indexable inserts type XNMX 07 • order Torx Plus wrench art. no. 28901 8.000 separately • use code 16.000 with reduced parameters, max. ap=0.7 mm, max. fz=0.8 mm



Article no.

28000

D mm	d mm	l mm	L mm	Z	Description
16	16	50	150	2	GHM.016.050.C.016.02.07
20	20	90	160	3	GHM.020.090.C.020.03.07
25	25	100	180	4	GHM.025.100.C.025.04.07
32	32	120	200	5	GHM.032.120.C.032.05.07

Order no.

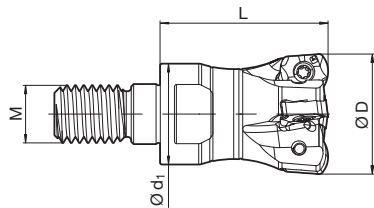
28000 16.000
28000 20.000
28000 25.000
28000 32.000

High feed milling cutters with indexable inserts, screw-in thread

Article no. **28001**



for double-sided indexable inserts type XNMX 07 • for tool holder for screw-in milling cutter art. no. 4199
• order Torx Plus wrench art. no. 28901 8.000 separately • use code 16.000 with reduced parameters, max. ap=0.7 mm, max. fz=0.8 mm



Article no.

28001

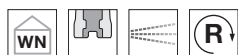
D mm	M	L mm	d1 mm	Z	Description
16	M 8	25	13	2	GHM.016.025.M.08.02.07
20	M10	28	18	3	GHM.020.028.M.10.03.07
25	M12	35	21	4	GHM.025.035.M.12.04.07
32	M16	35	29	5	GHM.032.035.M.16.05.07
35	M16	35	29	5	GHM.035.035.M.16.05.07
35	M16	35	29	6	GHM.035.035.M.16.06.07
40	M16	45	29	5	GHM.040.045.M.16.05.07
40	M16	45	29	6	GHM.040.045.M.16.06.07
42	M16	45	29	7	GHM.042.045.M.16.07.07

Order no.

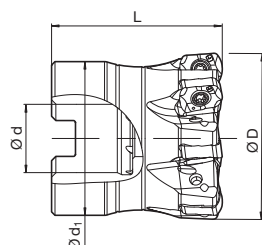
28001 16.000
28001 20.000
28001 25.000
28001 32.000
28001 35.000
28001 35.001
28001 40.000
28001 40.001
28001 42.000



High feed milling cutters with indexable inserts, shell milling cutter

Article no. **28002**


for double-sided indexable inserts type XNMX 07 • order Torx Plus wrench art. no. 28901 8.000 separately



						Article no.	28002
D	d	L	d1	Z	Description	Order no.	
mm	mm	mm	mm				
40	16	40	36	7	GHM.040.040.F.16.07.07	28002	40.000
50	22	40	42	6	GHM.050.040.F.22.06.07	28002	50.000
50	22	40	42	8	GHM.050.040.F.22.08.07	28002	50.001
52	22	40	40	8	GHM.052.040.F.22.08.07	28002	52.000
63	22	40	48	9	GHM.063.040.F.22.09.07	28002	63.000
80	27	50	60	10	GHM.080.050.F.27.10.07	28002	80.000

Clamping screw



use for indexable insert size 07, XNMX

		Article no.	28400
Size	Torque Nm	Order no.	
M3x7.5 08IP	1.4	28400 8.000	

Torx Plus wrench



T-handle Torx Plus wrench

			Article no.	28901
Size	Order no.			
08IP	28901 8.000			

Torque wrenches



Article no.		4915
Size	Torque Nm	Order no.
1/4"	0.5-2	4915 2.000

Interchangeable blade



Article no.		4960
Size	Overall length mm	Order no.
08IP	175	4960 8.000



Indexable inserts XNMX, double-sided

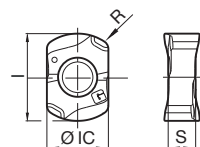
Article no. **28003**



4 usable cutting edges • stable cutting edge • type PK2011

cutting data see page 10

P	M	K	N	S	H
●	○	●	○	○	○



Article no.

28003

IC mm	PR mm	R mm	I mm	S mm	Size	Description
7.05	1.9	1.0	10	3.6	07	XNMX 07T319 T

Order no.

28003 7.000

Indexable inserts XNMX, double-sided

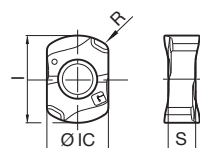
Article no. **28009**



4 usable cutting edges • stable cutting edge with good toughness • type PK3021

cutting data see page 10

P	M	K	N	S	H
●	○	●	○	○	○



Article no.

28009

IC mm	PR mm	R mm	I mm	S mm	Size	Description
7.05	1.9	1.0	10	3.6	07	XNMX 07T319 T

Order no.

28009 7.000

Indexable inserts XNMX, double-sided

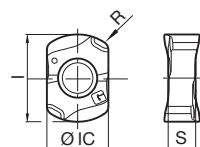
Article no. **28004**



4 usable cutting edges • stable cutting edge • type MP3021

cutting data see page 11

P	M	K	N	S	H
●	●	○	○	○	○



Article no.

28004

IC mm	PR mm	R mm	I mm	S mm	Size	Description
7.05	1.9	1.0	10	3.6	07	XNMX 07T319 T

Order no.

28004 7.000



Tool holders for screw-in milling cutters HSK-A

Article no. 4199

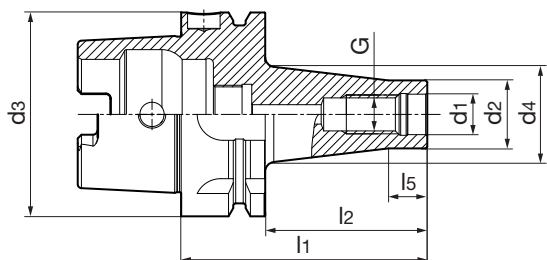


Product information:

HSK-A according to ISO 12164-1 / DIN 69893-1 • balancing quality: G 2.5 / 25,000 rev./min or rev. ≤ 1 gmm • concentricity $< 5 \mu\text{m}$, l_2 from 150 mm $< 7 \mu\text{m}$

Suitable accessories separately available:

- coolant supply set art. no. 4949



Article no.

4199

d3 mm	G	d1 mm	d2 mm	d4 mm	l1 mm	l2 mm	l5 mm	kg	Order no.
63.0	M 8	8.5	13	23	76.0	32.0	50	0.71	4199 8.063
63.0	M10	10.5	18	25	76.0	32.0	50	0.75	4199 10.063
63.0	M12	12.5	21	30	76.0	32.0	50	0.79	4199 12.063
63.0	M16	17.0	29	34	76.0	32.0	50	0.88	4199 16.063
63.0	M 8	8.5	13	30	126.0	32.0	100	0.89	4199 8.163
63.0	M10	10.5	18	35	126.0	32.0	100	1.02	4199 10.163
63.0	M 8	8.5	13	32	176.0	32.0	150	1.07	4199 8.263
63.0	M12	12.5	21	38	126.0	32.0	100	1.10	4199 12.163
63.0	M16	17.0	29	40	126.0	32.0	100	1.28	4199 16.163
63.0	M10	10.5	18	45	176.0	32.0	150	1.51	4199 10.263
63.0	M12	12.5	21	45	176.0	32.0	150	1.57	4199 12.263
63.0	M16	17.0	29	48	176.0	32.0	150	1.89	4199 16.263
100.0	M 8	8.5	13	28	79.0	50.0	50	2.09	4199 8.100
100.0	M10	10.5	18	30	79.0	50.0	50	2.13	4199 10.100
100.0	M12	12.5	21	33	79.0	50.0	50	2.16	4199 12.100
100.0	M16	17.0	29	34	79.0	50.0	50	2.23	4199 16.100
100.0	M 8	8.5	13	30	129.0	50.0	100	2.24	4199 8.101
100.0	M 8	8.5	13	30	179.0	50.0	150	2.37	4199 8.102
100.0	M10	10.5	18	35	129.0	50.0	100	2.37	4199 10.101
100.0	M12	12.5	21	38	129.0	50.0	100	2.45	4199 12.101
100.0	M16	17.0	29	40	129.0	50.0	100	2.64	4199 16.101
100.0	M10	10.5	18	38	179.0	50.0	150	2.66	4199 10.102
100.0	M12	12.5	21	45	179.0	50.0	150	2.91	4199 12.102
100.0	M16	17.0	29	50	179.0	50.0	150	3.31	4199 16.102



High feed milling cutters ISO P & K



Correction factors	Factor V_c	Factor f_z
stable machining conditions	+ 25 %	+ 25 %
short projection (< 3xD)	0 %	0 %
mid projection ($\geq 3xD$)	- 25 %	- 25 %
long projection ($\geq 5xD$)	- 40 %	- 40 %

Machining group	Application	v_c (m/min)	a_p max. (mm)	a_e max.	f_z (mm)
P1.1.1 Unalloyed steel, annealed, 0.15 % C, Rm 420 N/mm ² , 125 HB	Roughing	200	1	0.6xD	1.200
P1.1.2 Unalloyed steel, heat-treated, 0.15 % C, Rm 420 N/mm ² , 125 HB	Roughing	200	1	0.6xD	1.200
P1.1.3 Unalloyed steel, annealed, 0.45 % C, Rm 640 N/mm ² , 190 HB	Roughing	200	1	0.6xD	1.200
P1.1.4 Unalloyed steel, heat-treated, 0.45 % C, Rm 640 N/mm ² , 190 HB	Roughing	200	1	0.6xD	1.200
P1.1.5 Unalloyed steel, heat-treated, 0.45 % C, Rm 850 N/mm ² , 250 HB	Roughing	180	1	0.6xD	1.200
P1.1.6 Unalloyed steel, annealed, 0.75 % C, Rm 915 N/mm ² , 270 HB	Roughing	180	1	0.6xD	1.200
P1.1.7 Unalloyed steel, heat-treated, 0.75 % C, Rm 1020 N/mm ² , 300 HB	Roughing	160	1	0.6xD	1.200
P2.1.1 Low-alloy steel, annealed, Rm 610 N/mm ² , 180 HB	Roughing	170	1	0.6xD	1.200
P2.1.2 Low-alloy steel, heat-treated, Rm 930 N/mm ² , 275 HB	Roughing	170	1	0.6xD	1.200
P2.1.3 Low-alloy steel, heat-treated, Rm 1020 N/mm ² , 300 HB	Roughing	155	1	0.6xD	1.200
P2.1.4 Low-alloy steel, heat-treated, Rm 1190 N/mm ² , 350 HB	Roughing	155	1	0.6xD	1.200
P3.1.1 High-alloy steel and tool steel, annealed, Rm 680 N/mm ² , 200 HB	Roughing	160	1	0.6xD	1.050
P3.1.2 High-alloy steel and tool steel, hardened and tempered, Rm 1100 N/mm ² , 325 HB	Roughing	145	1	0.6xD	1.050
M1.1.1 Stainless steel, ferritic/martensitic, with machining additives					
M1.1.2 Stainless steel, ferritic/martensitic, annealed, Rm 680 N/mm ² , 200 HB					
M1.1.3 Stainless steel, ferritic/martensitic, heat-treated, Rm 810 N/mm ² , 240 HB					
M2.1.1 Stainless steel, austenitic, quenched, 180 HB					
M2.2.1 Duplex steel, high-strength stainless steels					
K1.1.1 Grey cast iron, pearlitic/ferritic, 180 HB	Roughing	255	1	0.6xD	1.200
K1.1.2 Grey cast iron, pearlitic/martensitic, 260 HB	Roughing	230	1	0.6xD	1.200
K1.2.1 Cast iron with spheroidal graphite, ferritic, 160 HB	Roughing	255	1	0.6xD	1.200
K1.2.2 Cast iron with spheroidal graphite, pearlitic, 250 HB	Roughing	230	1	0.6xD	1.200
K1.3.1 Malleable cast iron, ferritic, 130 HB	Roughing	255	1	0.6xD	1.200
K1.3.2 Malleable cast iron, pearlitic, 230 HB	Roughing	230	1	0.6xD	1.200
K2.1.1 Vermicular graphite cast iron (GJV)	Roughing	230	1	0.6xD	1.200
K2.2.1 Austenitic-ferritic spheroidal graphite cast iron (ADI)	Roughing	210	1	0.6xD	1.200
N1.1.1 Wrought aluminium alloys, non-hardened, 60 HB					
N1.1.2 Wrought aluminium alloys, hardened, 100 HB					
N2.1.1 Aluminium casting alloys, non-hardened, ≤ 12 % Si, 75 HB					
N2.1.2 Aluminium casting alloys, hardened, ≤ 12 % Si, 90 HB					
N2.1.3 Aluminium casting alloys, non-hardened, > 12 % Si, 130 HB					
N3.1.1 Copper and copper alloys: Free-machining alloy, Pb > 1 %					
N3.1.2 Copper and copper alloys: CuZn, CuSnZn					
N3.1.3 Copper and copper alloys: CuSn, lead-free copper and copper electrolyte					
N4.1.1 Non-metallic materials: Duroplastics, fibre-reinforced plastics					
N4.1.2 Non-metallic materials: Hard rubber, wood, etc.					
N4.1.3 Non-metallic materials: Graphite					
S1.1.1 Heat-resistant alloys, Fe-based, annealed, 200 HB					
S1.1.2 Heat-resistant alloys, Fe-based, hardened, 280 HB					
S1.1.3 Heat-resistant alloys, Ni- or Co-based, annealed, 250 HB					
S1.1.4 Heat-resistant alloys, Ni- or Co-based, hardened, 350 HB					
S1.1.5 Heat-resistant alloys, Ni- or Co-based, cast, 320 HB					
S2.1.1 Titanium alloys, pure titanium, Rm 400 N/mm ²					
S2.1.2 Titanium alloys, Alpha and Beta alloys, hardened, Rm 1050 N/mm ²					
H1.1.1 Hardened steel, hardened and tempered, < 55 HRC					
H1.1.2 Hardened steel, hardened and tempered, < 60 HRC					
H1.1.3 Hardened steel, hardened and tempered, > 60 HRC					
H2.1.1 Chilled cast iron, 400 HB					
H2.1.2 Chilled cast iron, hardened and tempered, < 55 HRC					



High feed milling cutters ISO M & S



Correction factors	Factor V_c	Factor f_z
stable machining conditions	+ 25 %	+ 25 %
short projection (< 3xD)	0 %	0 %
mid projection ($\geq 3xD$)	- 25 %	- 25 %
long projection ($\geq 5xD$)	- 40 %	- 40 %

Machining group	Application	v_c (m/min)	a_p max. (mm)	a_e max.	f_z (mm)
P1.1.1 Unalloyed steel, annealed, 0.15 % C, Rm 420 N/mm ² , 125 HB					
P1.1.2 Unalloyed steel, heat-treated, 0.15 % C, Rm 420 N/mm ² , 125 HB					
P1.1.3 Unalloyed steel, annealed, 0.45 % C, Rm 640 N/mm ² , 190 HB					
P1.1.4 Unalloyed steel, heat-treated, 0.45 % C, Rm 640 N/mm ² , 190 HB					
P1.1.5 Unalloyed steel, heat-treated, 0.45 % C, Rm 850 N/mm ² , 250 HB					
P1.1.6 Unalloyed steel, annealed, 0.75 % C, Rm 915 N/mm ² , 270 HB					
P1.1.7 Unalloyed steel, heat-treated, 0.75 % C, Rm 1020 N/mm ² , 300 HB					
P2.1.1 Low-alloy steel, annealed, Rm 610 N/mm ² , 180 HB					
P2.1.2 Low-alloy steel, heat-treated, Rm 930 N/mm ² , 275 HB					
P2.1.3 Low-alloy steel, heat-treated, Rm 1020 N/mm ² , 300 HB					
P2.1.4 Low-alloy steel, heat-treated, Rm 1190 N/mm ² , 350 HB					
P3.1.1 High-alloy steel and tool steel, annealed, Rm 680 N/mm ² , 200 HB					
P3.1.2 High-alloy steel and tool steel, hardened and tempered, Rm 1100 N/mm ² , 325 HB					
M1.1.1 Stainless steel, ferritic/martensitic, with machining additives	Roughing	130	1	0.6xD	1.200
M1.1.2 Stainless steel, ferritic/martensitic, annealed, Rm 680 N/mm ² , 200 HB	Roughing	120	1	0.6xD	1.080
M1.1.3 Stainless steel, ferritic/martensitic, heat-treated, Rm 810 N/mm ² , 240 HB	Roughing	120	1	0.6xD	1.080
M2.1.1 Stainless steel, austenitic, quenched, 180 HB	Roughing	110	1	0.6xD	1.050
M2.2.1 Duplex steel, high-strength stainless steels	Roughing	90	1	0.6xD	0.840
K1.1.1 Grey cast iron, pearlitic/ferritic, 180 HB					
K1.1.2 Grey cast iron, pearlitic/martensitic, 260 HB					
K1.2.1 Cast iron with spheroidal graphite, ferritic, 160 HB					
K1.2.2 Cast iron with spheroidal graphite, pearlitic, 250 HB					
K1.3.1 Malleable cast iron, ferritic, 130 HB					
K1.3.2 Malleable cast iron, pearlitic, 230 HB					
K2.1.1 Vermicular graphite cast iron (GJV)					
K2.2.1 Austenitic-ferritic spheroidal graphite cast iron (ADI)					
N1.1.1 Wrought aluminium alloys, non-hardened, 60 HB					
N1.1.2 Wrought aluminium alloys, hardened, 100 HB					
N2.1.1 Aluminium casting alloys, non-hardened, ≤ 12 % Si, 75 HB					
N2.1.2 Aluminium casting alloys, hardened, ≤ 12 % Si, 90 HB					
N2.1.3 Aluminium casting alloys, non-hardened, > 12 % Si, 130 HB					
N3.1.1 Copper and copper alloys: Free-machining alloy, Pb > 1 %					
N3.1.2 Copper and copper alloys: CuZn, CuSnZn					
N3.1.3 Copper and copper alloys: CuSn, lead-free copper and copper electrolyte					
N4.1.1 Non-metallic materials: Duroplastics, fibre-reinforced plastics					
N4.1.2 Non-metallic materials: Hard rubber, wood, etc.					
N4.1.3 Non-metallic materials: Graphite					
S1.1.1 Heat-resistant alloys, Fe-based, annealed, 200 HB	Roughing	60	1	0.6xD	1.200
S1.1.2 Heat-resistant alloys, Fe-based, hardened, 280 HB	Roughing	55	1	0.6xD	1.200
S1.1.3 Heat-resistant alloys, Ni- or Co-based, annealed, 250 HB	Roughing	55	1	0.6xD	1.200
S1.1.4 Heat-resistant alloys, Ni- or Co-based, hardened, 350 HB	Roughing	50	1	0.6xD	1.080
S1.1.5 Heat-resistant alloys, Ni- or Co-based, cast, 320 HB	Roughing	40	1	0.6xD	1.080
S2.1.1 Titanium alloys, pure titanium, Rm 400 N/mm ²	Roughing	75	1	0.6xD	1.050
S2.1.2 Titanium alloys, Alpha and Beta alloys, hardened, Rm 1050 N/mm ²	Roughing	50	1	0.6xD	0.840
H1.1.1 Hardened steel, hardened and tempered, < 55 HRC					
H1.1.2 Hardened steel, hardened and tempered, < 60 HRC					
H1.1.3 Hardened steel, hardened and tempered, > 60 HRC					
H2.1.1 Chilled cast iron, 400 HB					
H2.1.2 Chilled cast iron, hardened and tempered, < 55 HRC					



Technical information on high feed milling cutters



Manufacturer know-how for practical use:

Our tips and information show you how to achieve the best machining results with our high-feed milling cutter.

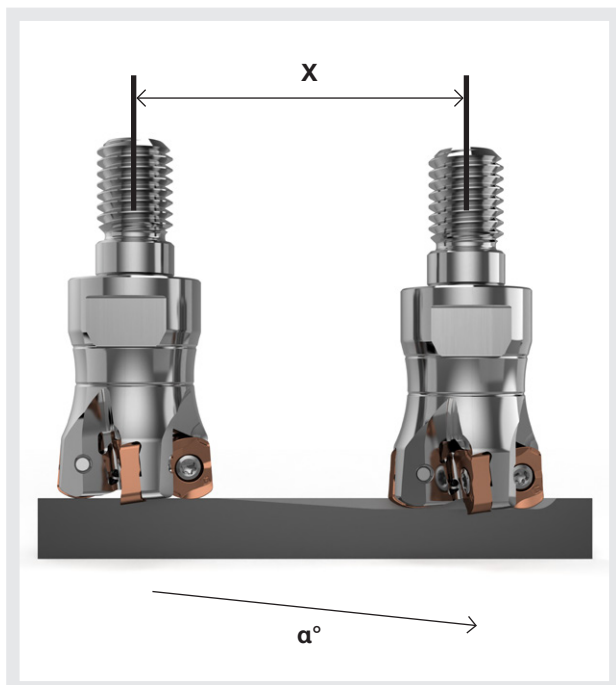
Perfect machining results

Information for the most common applications.



Circular milling / Circular interpolation

milling cutter Ø	smallest possible Ø	largest possible Ø	maximum pitch per revolution
mm	mm	mm	mm
16	24.8	28.4	0.96 / 1.0
20	32.8	36.4	0.91 / 1.0
25	42.8	46.4	0.87 / 1.0
32	56.8	60.4	0.88 / 1.0
35	62.8	66.4	0.83 / 0.94
40	72.8	76.4	0.89 / 0.99
42	76.8	80.4	0.85 / 0.94
50	92.8	96.4	0.82 / 0.89
52	96.8	100.4	0.85 / 0.92
63	118.8	122.4	0.91 / 0.97
80	152.8	156.4	0.79 / 0.83

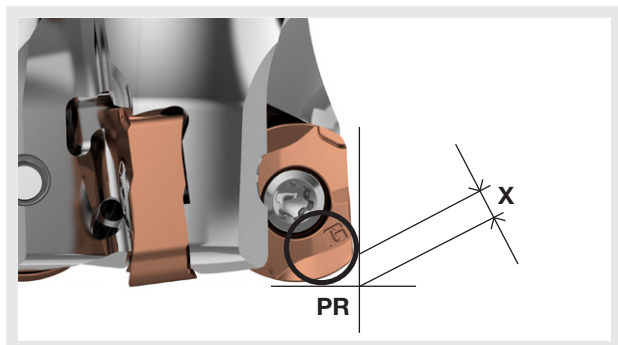


Ramping / Angled plunge

milling cutter Ø	maximum ramp angle α°	maximum distance X	maximum milling depth a_p
mm	α°	mm	mm
16	2.0	28.6	1
20	1.3	44.1	1
25	0.9	63.7	1
32	0.65	88.1	1
35	0.55	104.2	1
40	0.50	114.6	1
42	0.45	127.3	1
50	0.35	163.7	1
52	0.35	163.7	1
63	0.30	191.0	1
80	0.2	286.5	1

Programming radius residual material

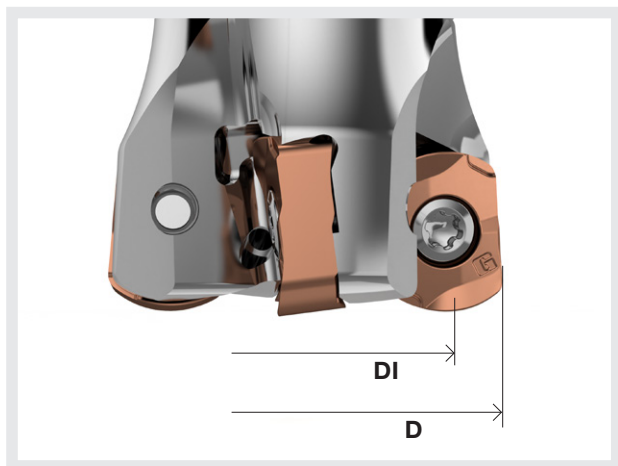
The specified programming radius makes it easier for you to select the follow-up tool for finishing.



indexable insert	programming radius PR	residual material X
	mm	mm
XNMX07T319	1.9	0.4

Effective diameter

For ideal utilisation and programming of the available milling width a_e during face milling.



D nominal-Ø	DI inner-Ø
mm	mm
16	9.2
20	13.2
25	18.2
32	25.3
35	28.3
40	33.3
42	35.2
50	43.3
52	45.3
63	56.3
80	73.4

Secure assembly, perfect milling

Only a correctly mounted tool enables maximum performance.



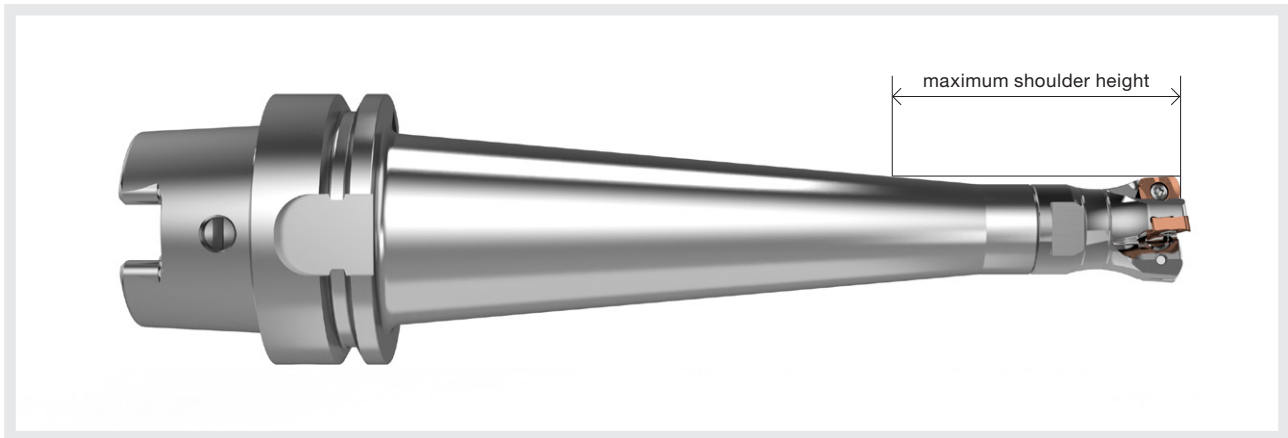
Instructions for proper assembly:

Please ensure a clean interface, free from dust, chips, oil, grease and coolant. Please refer to the values of wrench size and tightening torque values according to the table.

milling cutter Ø	thread size	wrench size SW	tightening torque
mm		mm	Nm
16	M8	10	23
20	M10	15	46
25	M12	17	80
32-42	M16	24	90

Milling shoulders and pockets

With the information on the maximum 90° shoulder height, we make it easier to select the right tool to avoid collisions.



milling cutter	holder HSK63	holder HSK100	maximum shoulder height
28001 16.000	4199 08.063	4199 08.100	47 mm / 43 mm
	4199 08.163	4199 08.101	50 mm
	4199 08.263	4199 08.102	55 mm
28001 20.000	4199 10.063	4199 10.100	49 mm / 46 mm
	4199 10.163	4199 10.101	49 mm
	4199 10.263	4199 10.102	49 mm
28001 25.000	4199 12.063	4199 12.100	63 mm / 58 mm
	4199 12.163	4199 12.101	66 mm
	4199 12.263	4199 12.102	68 mm
28001 32.000	4199 16.063	4199 16.100	69 mm
	4199 16.163	4199 16.101	70 mm
	4199 16.263	4199 16.102	68 mm
28001 35.000 28001 35.001	4199 16.063	4199 16.100	83 mm
	4199 16.163	4199 16.101	92 mm
	4199 16.263	4199 16.102	90 mm
28001 40.000 28001 40.001	4199 16.063	4199 16.100	94 mm
	4199 16.163	4199 16.101	142 mm
	4199 16.263	4199 16.102	135 mm
28001 16.000	4199 16.063	4199 16.100	94 mm
	4199 16.163	4199 16.101	144 mm
	4199 16.263	4199 16.102	148 mm



GHM high feed milling cutter

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