

UP **2** DATE

The Revolution in Turning

High Dynamic Turning with FreeTurn

FREETURN

The revolution in turning

ALULINE

With optimised coating and geometry for the effective machining of aluminium and non-ferrous metals

MONSTERMILL TCR

Titanium machining done to perfection

PCD MILLING TOOLS

Hard cutting material = long tool life

MAXIMILL 271

New system size for more economy

TEAM CUTTING TOOLS



KOMET



klenk

CERATIZIT is a high-tech engineering group specialised in tooling and hard material technologies.

Tooling the Future

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FreeTurn

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AWARD
by AMB 2018



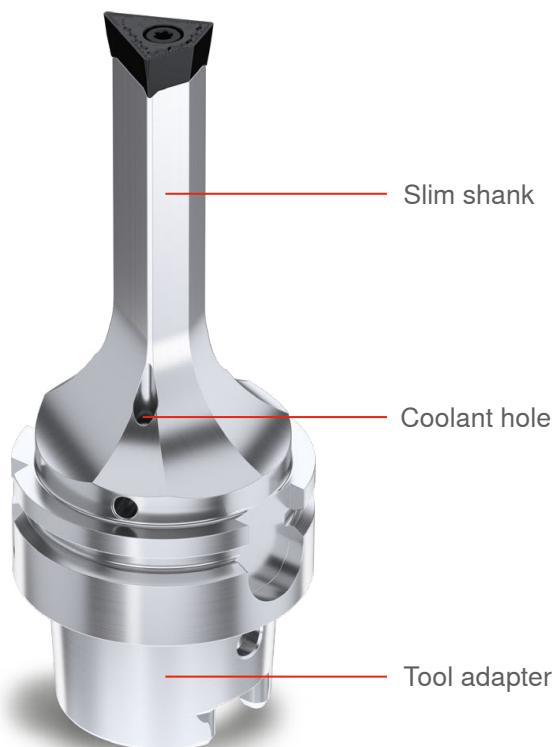
High Dynamic Turning (HDT)

With High Dynamic Turning, HDT for short, and the dynamic FreeTurn turning tools, CERATIZIT is turning the conventional method of turning completely on its head. All familiar turning operations such as roughing, finishing, contour turning, facing and longitudinal turning can now be completed using just one tool.



Conventional application:

5 tools

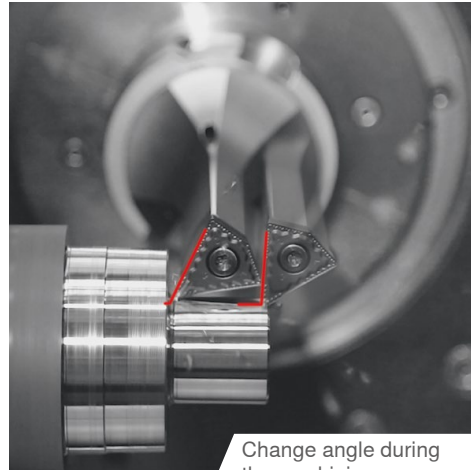


Application with FreeTurn:

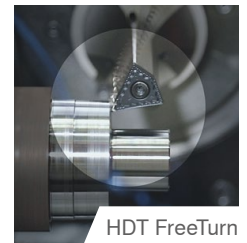
1 tool

Variable approach angle

- ▲ Can be changed during machining
- ▲ Adjustable feed rates
- ▲ Perfect chip control
- ▲ Dynamic turning in all directions
- ▲ Pull and push cut

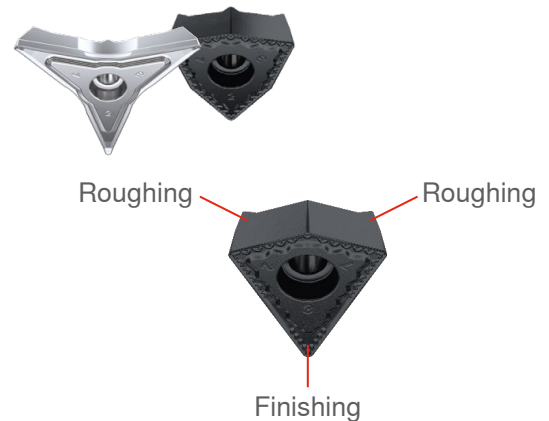


Comparison



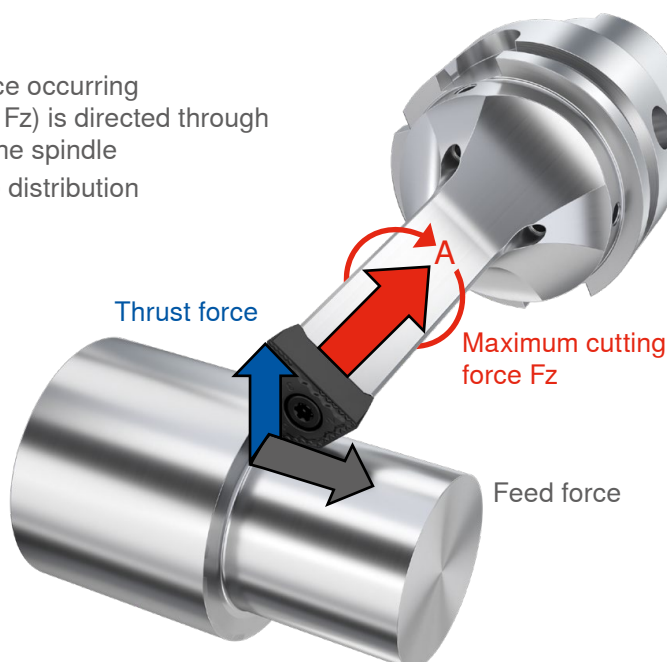
Flexibility

- ▲ Turning with just one tool
- ▲ Huge savings on tool types
- ▲ No tool changes = huge time savings
- ▲ Indexable inserts with up to three ISO geometries can be used on one holder
- ▲ An indexable insert with multiple cutters can consist of different point angles, flanging radii, chip breakers, coatings and cutting materials and can be customised for use.



Stability

- ▲ The main force occurring (cutting force F_z) is directed through the tool into the spindle
- ▲ Optimal force distribution

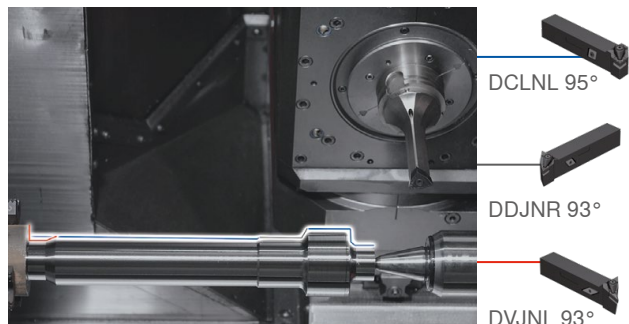


Time comparison

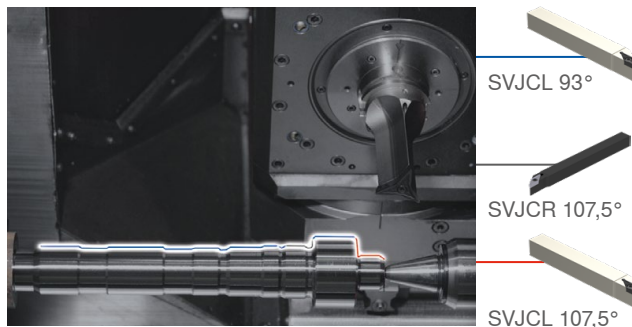
Material 42CrMo4

Dynamic cutting parameters in the process based on catalogue cutting data

Roughing



Finishing



Conventional production

Conventional production time for a single part with six different tools

= **03:32 minutes**

Production with FreeTurn

Production time for a single part with the HDT

= **2:50 minutes**

25 %
Time savings

Productivity

- ▲ Almost all workpiece contours can be machined
- ▲ 40% higher feed rate value
- ▲ Up to 90% fewer empty runs
- ▲ Adjustable feed rates during the process
- ▲ Improved surface quality thanks to ideal adjustment of the approach angle
- ▲ The versatility of the FreeTurn means fewer tool changes
- ▲ Fewer tool spaces required in the machine

Follow our video: A time comparison between conventional machining and the HDT. You'll be amazed!



Further information on the product can be found on page **18-29**



AluLine

With optimised coating and geometry for the effective machining of aluminium and non-ferrous metals

Solid carbide milling tools from CERATIZIT ensure you always do a good job: We have added milling tools for machining aluminium and non-ferrous metals to our product portfolio. This means you will now be able to find the ideal product for any application.

This AluLine milling cutter allows you to master even the toughest demands when working with aluminium and non-ferrous metals. This is all made possible thanks to the special geometry and the specifically tailored coating.

”

Our AluLine milling cutter impresses with its outstanding coating. It achieves first-rate results even in dry machining.

Product Manager CERATIZIT, Michael Wucher

Advantages/ benefits

- ▲ **Economical and process-secure machining of aluminium and non-ferrous metals.**
Optimal performance thanks to the perfectly coordinated combination of geometry, substrate and coating.
- ▲ **Optimal/versatile tool selection for almost all applications in the machining of non-ferrous metals**
The product portfolio has increased in size following the program extension and now offers access to around 2500 items.
- ▲ **Extremely long tool service life possible**
Thanks to the wear-resistant DLC coating.



Further information on the product can be found on page **30–65**

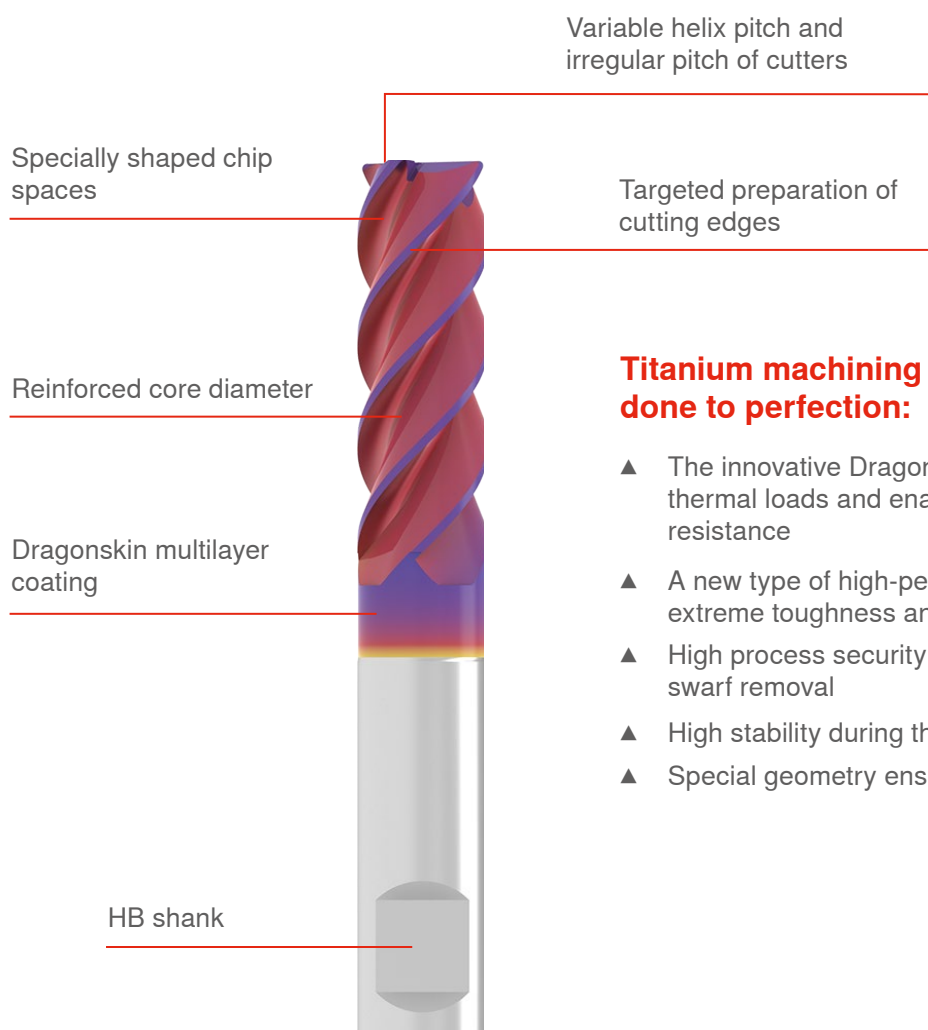


MonsterMill TCR

Titanium machining done
to perfection



Developed for machining titanium parts – predestined for use in the area of medical technology and for the aerospace industry: The MonsterMill TCR milling cutter is setting new standards in titanium machining and impresses thanks to its process security and long tool life.



Titanium machining done to perfection:

- ▲ The innovative Dragonskin coating reduces thermal loads and enables high levels of wear resistance
- ▲ A new type of high-performance substrate for extreme toughness and torsional strength
- ▲ High process security thanks to safe and targeted swarf removal
- ▲ High stability during the process
- ▲ Special geometry ensures strong performance

Test Report

Material	3.7164 TiAl6V4
Ø Milling cutter diameter (mm)	12
Number of flutes	5
Speed v_c (m/min)	90
Rotation n (rpm)	2,388
Feed per tooth f_z (mm)	0,120
Table feed v_f (mm/min)	1,433
Cutting depth a_p (mm)	18
Cutting width a_e (mm)	0,75
Coolant type	Emulsion

Tool life T_{Total} min.

450
Minutes

CERATIZIT

Tool life T_{Total} min.

360
Minutes

Competitor



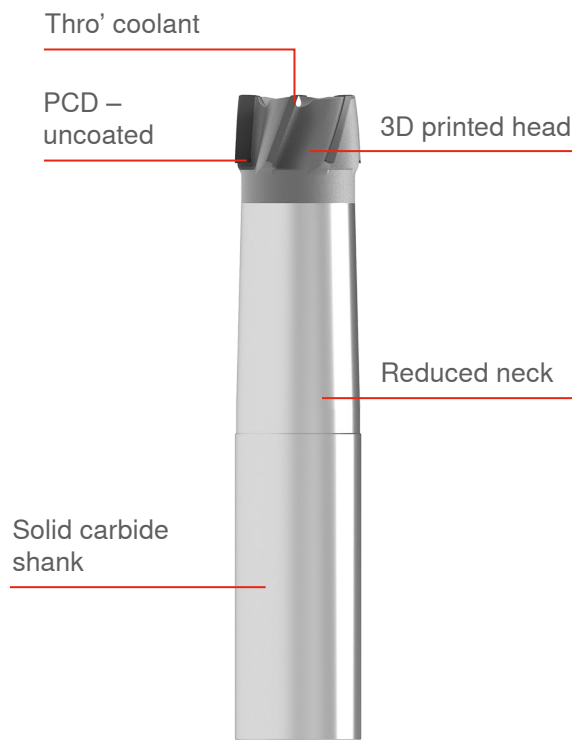
Further information on the product can be found on page **66–79**

PCD milling tools

Hard cutting material
= long tool life

PCD – polycrystalline diamond

The polycrystalline diamond is a synthetically produced diamond material which comes very close to the hardness of monocrystalline diamond (natural diamond). Its high level of hardness makes it possible to machine and withstand particularly abrasive materials. Tools with PCD cutting materials are therefore extremely well suited for machining lightweight construction materials like aluminium, magnesium and fibre-reinforced plastics. When circular milling with PCD-equipped tools, fewer radius corrections are required before the end of the tool life in comparison to solid carbide tools. This significantly increases the process security.



Additively manufactured PCD tools

- ▲ Diameter range 10–32 mm
- ▲ More cutting edges than conventionally produced PCD face mills
- ▲ High blade angle for silent running
- ▲ As a screw-in cutter for variable tool length
- ▲ In projection lengths 2.5 x DC in hybrid design with solid carbide base body

PCD –
uncoated

Reduced neck

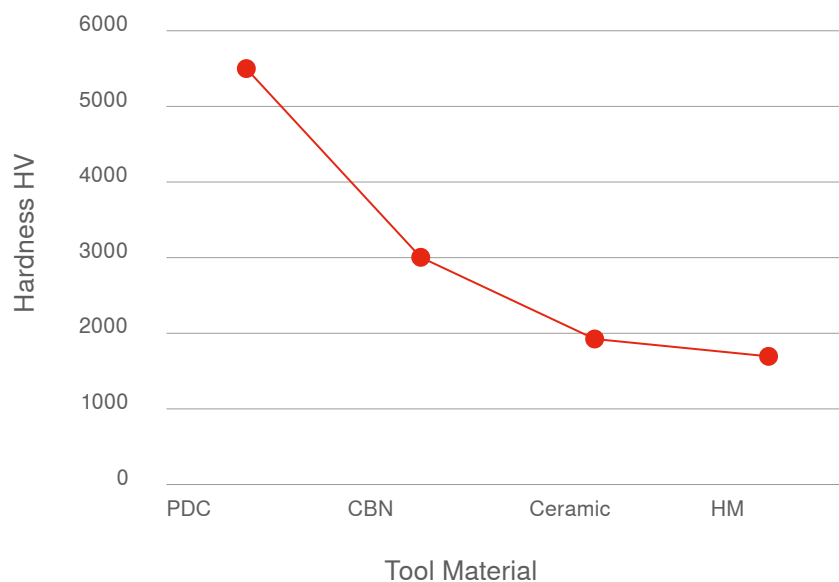
Solid
carbide
shank



PCD end mill

- ▲ With up to 4 cutting edges
- ▲ High resistance to wear
- ▲ Extremely high cutting speeds
- ▲ Specialist for aluminium and graphite

Hardness comparison of ultra-hard cutting materials



Further information on the
product can be found on
page **80–91**

MaxiMill 271

New system size for more economy

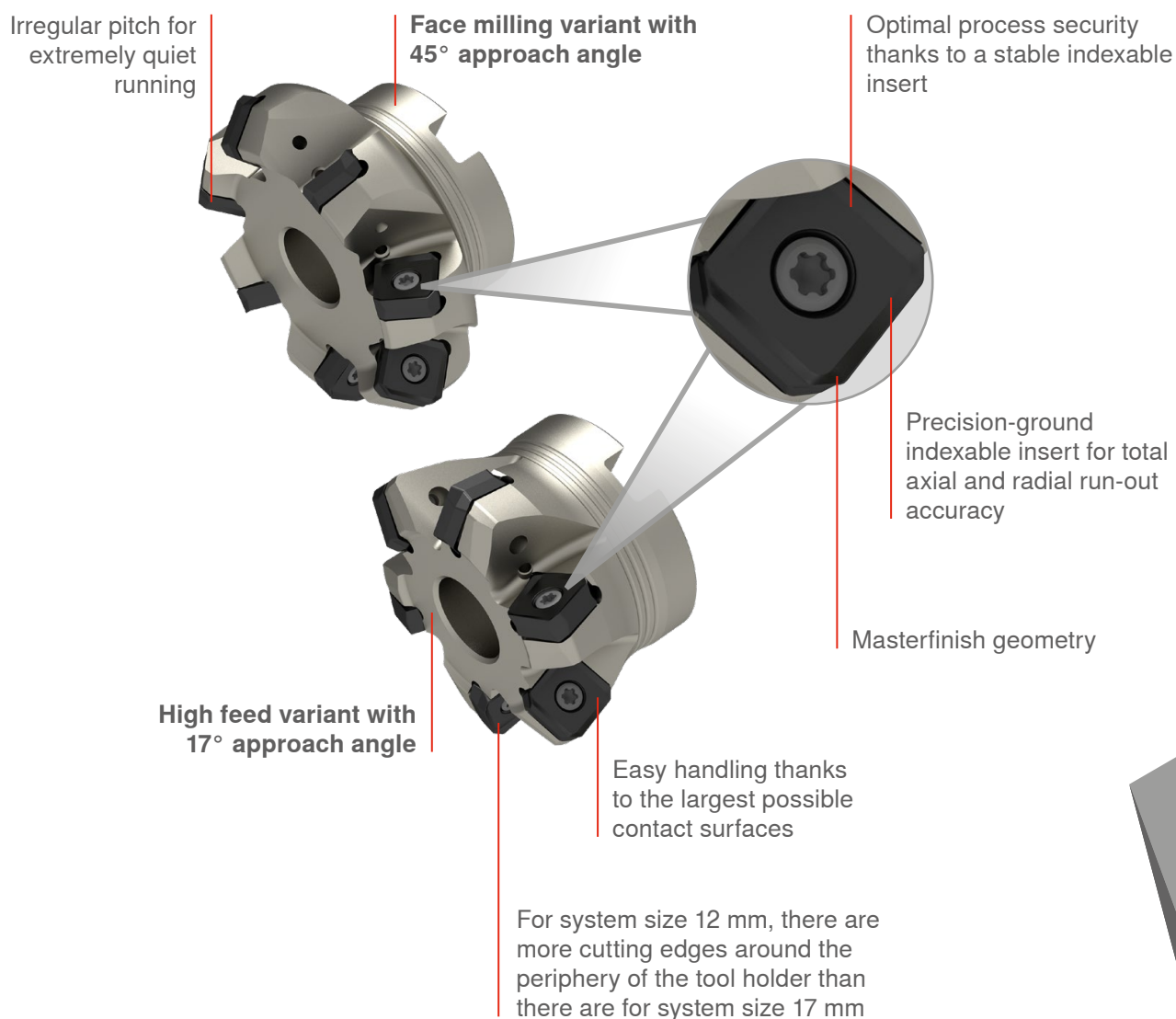


Further information on the product can be found on page **92-99**

Advantages/ benefits

- ▲ **Optimal surface quality**
Produced with the Masterfinish geometry
- ▲ **Flexible usage / wide range of applications**
Product portfolio with fine and standard pitch holders
- ▲ **High chip volume and cutting data and outstanding process security**
Thanks to stable and highly streamlined indexable inserts
- ▲ **Excellent efficiency**
8 usable cutting edges
- ▲ **Perfect face and radial run-out properties**
Thanks to the tool holder's close tolerances in combination with the indexable inserts' precision peripherally ground cutting edges

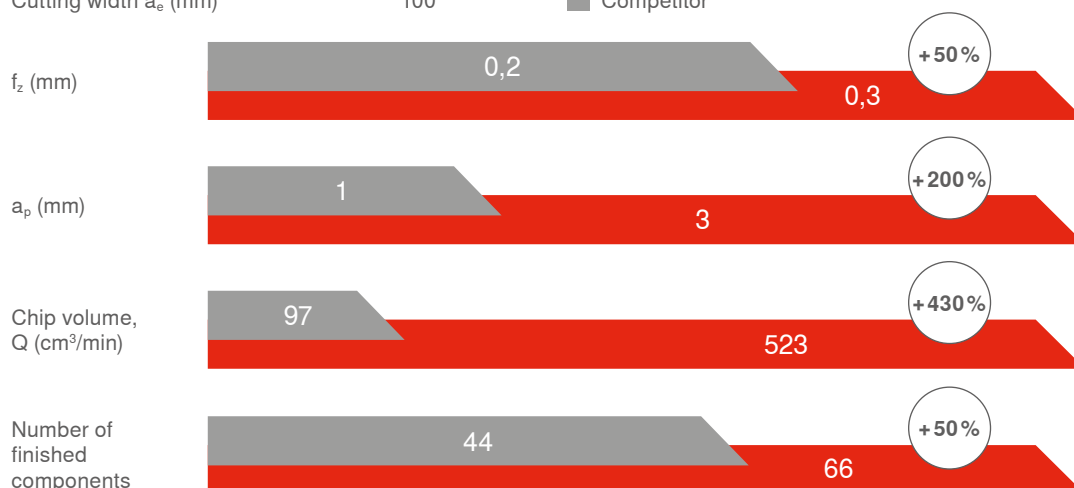
Efficiency, process security and flexibility. That's what MaxiMill 271 stands for. The extremely soft-cutting tool system can be used in a wide range of applications thanks to the fine and standard pitch holders, while the wiper insert also helps achieve first-class finishes. Furthermore, the system stands out thanks to the cutter's excellent wear behaviour and also impresses with optimal chip formation and removal.



Test Report

Ø Milling cutter diameter (mm)	125
Material	S355
Speed v_c (m/min)	200
Cutting width a_e (mm)	100

■ CERATIZIT
■ Competitor



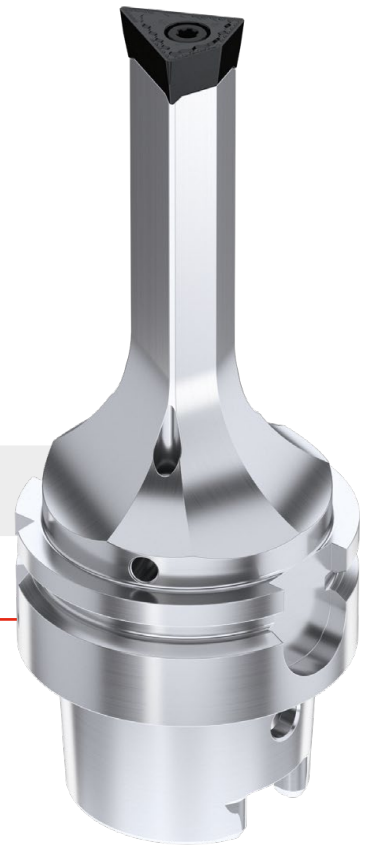
FreeTurn

Be part of the
FreeTurn generation!

Turning Tools

FreeTurn

18-29



Solid Carbide milling cutters

AluLine	30–65
MonsterMill TCR	66–79
CircularLine CCR-Ti	70



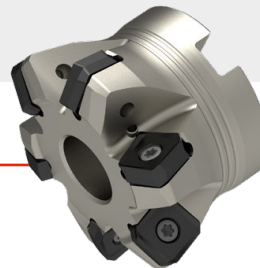
Tools made from ultra-hard cutting materials

PCD milling cutters	80–91
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Milling tools with indexable inserts

MaxiMill 271-12	92–99
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Vices

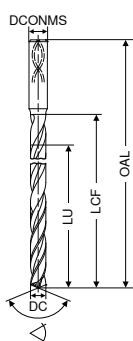
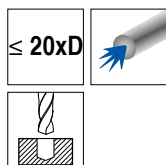
Magnet – workpiece support, set	100
---------------------------------	-----

Solid Carbide Drilling

Co-pilot deep hole twist drills	16–17
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WTX – Co-pilot deep hole twist drills

- ▲ Cutting tolerance j6 optimally coordinated as an intermediate tolerance between the pilot drill and deep hole twist drill
- ▲ Pilot hole necessary
- ▲ up to 20xD without peck drilling
- ▲ Excellent alignment precision
- ▲ Reliable chip removal



HA

137°

Solid carbide

NEW T7

Article no.

11 018 ...

£

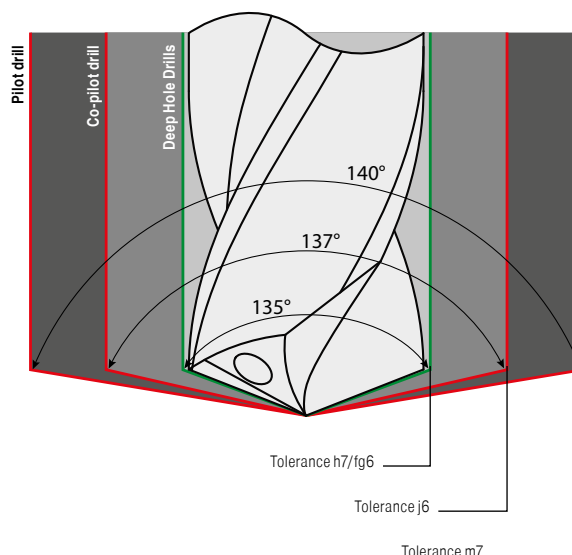
DC _{j6}	DCONMS _{h5}	OAL	LCF	LU	
mm	mm	mm	mm	mm	
3.0	6	120	80	60	168.18 03000
4.0	6	130	90	80	175.11 04000
4.2	6	160	110	84	189.59 04200
4.5	6	160	110	90	189.59 04500
4.8	6	160	120	96	201.77 04800
5.0	6	160	120	100	201.77 05000
5.5	6	185	140	110	209.54 05500
5.8	6	185	140	116	209.54 05800
6.0	6	185	140	120	209.54 06000
6.5	8	210	160	130	239.35 06500
6.8	8	210	160	136	239.35 06800
7.0	8	210	160	140	239.35 07000
7.5	8	230	180	150	266.02 07500
7.8	8	230	180	156	266.02 07800
8.0	8	230	180	160	266.02 08000
8.5	10	260	195	170	293.63 08500
8.8	10	290	230	176	327.96 08800
9.0	10	290	230	180	327.96 09000

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

Technical Information

- ▲ Ensures an even safer deep hole drilling process
- ▲ Reduction in material cutting time for the deep hole twist drill
- ▲ For optimal guidance of the deep hole twist drill for hole depths > 30xD

Tolerance and angle



Tolerance table

ISO tolerances for shafts and holes

of Ø	3	6	10	18	
up to and including	6	10	18	30	
p6	20	24	29	35	
h7	0	0	0	0	Deep hole twist drill 16xD to 30xD
j6	-12	-15	-18	-21	Co-pilot drill
fg6	6	7	8	9	
	-2	-2	-3	-4	
m6	-6	-8			Deep hole twist drill > 30xD
	-14	-17			
m7	12	15	18	21	
	4	6	7	8	
	16	21	25	29	WTX UNI / WPC
	4	6	7	8	

i Please observe the strategy for producing deep holes in the main catalogue for 2019 on → **page 134**

Cutting data standard values – WTX – Co-pilot deep hole twist drills

	Index	Material	Strength N/mm ² / HB / HRC	v _c m/min	Ø > 3-5	Ø > 5-8	Ø > 8-12
					f mm/rev.	f mm/rev.	f mm/rev.
P	1.1	General construction steel	< 800 N/mm ²	95	0,10	0,15	0,20
	1.2	Free cutting steel	< 800 N/mm ²	95	0,10	0,15	0,20
	1.3	Hardened steel, non alloyed	< 800 N/mm ²	100	0,14	0,20	0,275
	1.4	Alloyed hardened steel	< 1000 N/mm ²	90	0,10	0,15	0,20
	1.5	Tempering steel, unalloyed	< 850 N/mm ²	90	0,14	0,20	0,275
	1.6	Tempering steel, unalloyed	< 1000 N/mm ²	90	0,10	0,15	0,20
	1.7	Tempering steel, alloyed	< 800 N/mm ²	90	0,14	0,20	0,275
	1.8	Tempering steel, alloyed	< 1300 N/mm ²	70	0,10	0,15	0,20
	1.9	Steel castings	< 850 N/mm ²	70	0,10	0,15	0,20
	1.10	Nitriding steel	< 1000 N/mm ²	90	0,10	0,15	0,20
	1.11	Nitriding steel	< 1200 N/mm ²	90	0,10	0,15	0,20
	1.12	Roller bearing steel	< 1200 N/mm ²	70	0,10	0,15	0,20
	1.13	Spring steel	< 1200 N/mm ²				
	1.14	High-speed steel	< 1300 N/mm ²				
	1.15	Cold working tool steel	< 1300 N/mm ²				
	1.16	Hot working tool steel	< 1300 N/mm ²	70	0,10	0,15	0,20
M	2.1	Cast steel and sulphured stainless steel	< 850 N/mm ²	70	0,08	0,12	0,15
	2.2	Stainless steel, ferritic	< 750 N/mm ²	70	0,08	0,12	0,15
	2.3	Stainless steel, martensitic	< 900 N/mm ²	45	0,08	0,12	0,15
	2.4	Stainless steel, ferritic / martensitic	< 1100 N/mm ²	45	0,08	0,12	0,15
	2.5	Stainless steel, austenitic / ferritic	< 850 N/mm ²	50	0,08	0,12	0,15
	2.6	Stainless steel, austenitic	< 750 N/mm ²	50	0,08	0,12	0,15
	2.7	Heat resistant steel	< 1100 N/mm ²				
K	3.1	Grey cast iron with lamellar graphite	100-350 N/mm ²	100	0,23	0,335	0,425
	3.2	Grey cast iron with lamellar graphite	300-500 N/mm ²	95	0,23	0,335	0,425
	3.3	Gray cast iron with spheroidal graphite	300-500 N/mm ²	100	0,20	0,25	0,35
	3.4	Gray cast iron with spheroidal graphite	500-900 N/mm ²	95	0,20	0,25	0,35
	3.5	White malleable cast iron	270-450 N/mm ²	100	0,20	0,25	0,35
	3.6	White malleable cast iron	500-650 N/mm ²	95	0,20	0,25	0,35
	3.7	Black malleable cast iron	300-450 N/mm ²	100	0,20	0,25	0,35
	3.8	Black malleable cast iron	500-800 N/mm ²	95	0,20	0,25	0,35
N	4.1	Aluminium (non alloyed, low alloyed)	< 350 N/mm ²				
	4.2	Aluminium alloys < 0.5 % Si	< 500 N/mm ²				
	4.3	Aluminium alloy 0.5-10 % Si	< 400 N/mm ²				
	4.4	Aluminium alloys 10-15 % Si	< 400 N/mm ²				
	4.5	Aluminum alloys > 15 % Si	< 400 N/mm ²				
	4.6	Copper (non alloyed, low alloyed)	< 350 N/mm ²				
	4.7	Copper wrought alloys	< 700 N/mm ²				
	4.8	Special copper alloys	< 200 HB				
	4.9	Special copper alloys	< 300 HB				
	4.10	Special copper alloys	> 300 HB				
	4.11	Short-chipping brass, bronze, red bronze	< 600 N/mm ²				
	4.12	Long-chipping brass	< 600 N/mm ²				
	4.13	Thermoplastics					
	4.14	Duroplastics					
	4.15	Fibre-reinforced plastics					
	4.16	Magnesium and magnesium alloys	< 850 N/mm ²				
	4.17	Graphite					
	4.18	Tungsten and tungsten alloys					
	4.19	Molybdenum and molybdenum alloys					
S	5.1	Pure nickel					
	5.2	Nickel alloys					
	5.3	Nickel alloys	< 850 N/mm ²				
	5.4	Nickel molybdenum alloys					
	5.5	Nickel-chromium alloys	< 1300 N/mm ²				
	5.6	Cobalt Chrome Alloys	< 1300 N/mm ²				
	5.7	Heat resistant alloys	< 1300 N/mm ²				
	5.8	Nickel-cobalt-chromium alloys	< 1400 N/mm ²				
	5.9	Pure titanium	< 900 N/mm ²				
	5.10	Titanium alloys	< 700 N/mm ²				
	5.11	Titanium alloys	< 1200 N/mm ²				
H	6.1	Tempered steel	< 45 HRC				
	6.2		46-55 HRC				
	6.3		56-60 HRC				
	6.4		61-65 HRC				
	6.5		65-70 HRC				

i The cutting data depends extremely on the external conditions, the material and machine type. The indicated values are possible values which have to be increased or reduced according to the application conditions.

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CERATIZIT \ Performance

Premium quality tools for high performance.

The premium quality tools from the **CERATIZIT 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.

Symbol explanation

-28P	Polished chip breaker
H216T	Carbide Grade

F	Fine Machining
M	Medium Machining
R	Rough Machining



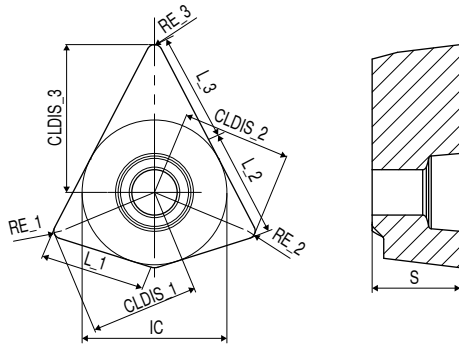
	Smooth cut
	Irregular cutting depth
	Interrupted cut

Overview – FreeTurn

	Inserts		Type			Tool holder			
	Designation	Chip groove	CTCP125	CTPM125	H216T	HSK-T 63 / LPR = 100	HSK-T 63 / LPR = 125	PSC 63 / LPR = 100	PSC 63 / LPR = 125
	FT15 M 808055R08-MMF		19	19		22	22	23	23
	FT15 M 808055R0804-MMF		19						
	FT15 M 808055R121208-MMF		19						
	FT15 G 353535R04-28P	-28P			20	22	22	23	23
	FT15 G 353535R08-28P	-28P			20				
	FT15 M 555555R04-FFF		21			22	22	23	23
	FT15 M 555555R04-FFF		21	21					
	FT17 M 808080R04-MMM		24			25	25	26	26
	FT17 M 808080R08-MMM		24	24					
	FT17 M 808080R12-MMM		24						

i You will find a detailed explanation of the designation system on → **page 29**

FT15 . 808055...

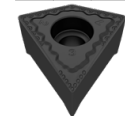


Designation	IC	CLDIS_1	L_1	CLDIS_2	L_2	CLDIS_3	L_3	S
	mm	mm	mm	mm	mm	mm	mm	mm
FT15 M 808055R080804-MMF	15	11.22	10.8	11.22	11.4	15.78	11.4	9.14
FT15 M 808055R08-MMF	15	11.22	10.8	11.22	11.2	15.31	11.2	9.14
FT15 M 808055R121208-MMF	15	11.00	10.7	11.00	11.2	15.31	11.2	9.14

CTCP125

CTPM125

DRAGONSKIN



M M F

NEW FW

Article no.

74 003 ...

£

19.57 00400

19.57 00200

19.57 00600

DRAGONSKIN



M M F

NEW FW

Article no.

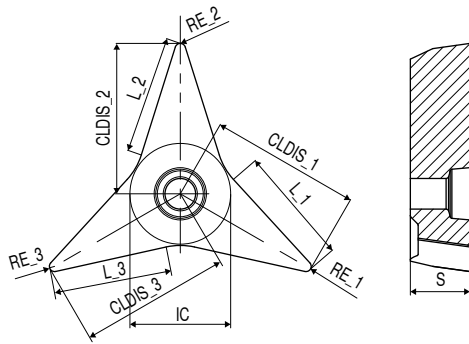
74 003 ...

£

19.57 10200

ISO	RE_1	RE_2	RE_3
	mm	mm	mm
FT15 M 808055R080804-MMF	0.8	0.8	0.4
FT15 M 808055R08-MMF	0.8	0.8	0.8
FT15 M 808055R121208-MMF	1.2	1.2	0.8
Steel			● ○
Stainless steel			○ ●
Cast iron			○
Non ferrous metals			
Heat resistant alloys			

FT15 . 353535...



Designation	IC	CLDIS_1	L_1	CLDIS_2	L_2	CLDIS_3	L_3	S
	mm	mm	mm	mm	mm	mm	mm	mm
FT15 G 353535R04-28P	15	24.01	16.1	24.01	16.1	24.01	16.1	9.14
FT15 G 353535R08-28P	15	23.08	15.2	23.08	15.2	23.08	15.2	9.14

-28P
H216T

DRAGONSKIN



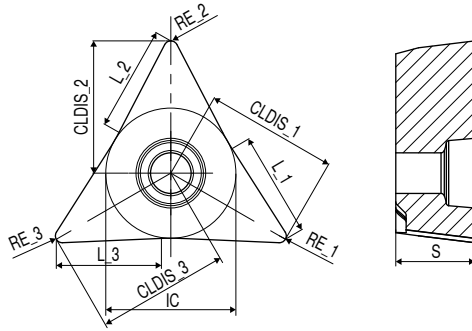
F F F

NEW FW
Article no.
74 001 ...
£
32.71 20200
32.71 20400

ISO	RE_1	RE_2	RE_3
	mm	mm	mm
FT15 G 353535R04-28P	0.4	0.4	0.4
FT15 G 353535R08-28P	0.8	0.8	0.8

Steel
Stainless steel
Cast iron
Non ferrous metals
Heat resistant alloys

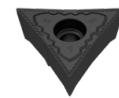
FT15 . 555555...



Designation	IC	CLDIS_1	L_1	CLDIS_2	L_2	CLDIS_3	L_3	S
	mm	mm	mm	mm	mm	mm	mm	mm
FT15 M 555555R04-FFF	15	15.78	12.6	15.78	12.6	15.78	12.6	9.14
FT15 M 555555R08-FFF	15	15.31	12.3	15.31	12.3	15.31	12.3	9.14

CTCP125

CTPM125



F F F

F F F

ISO	RE_1	RE_2	RE_3					
	mm	mm	mm					
FT15 M 555555R04-FFF	0.4	0.4	0.4					
FT15 M 555555R08-FFF	0.8	0.8	0.8					

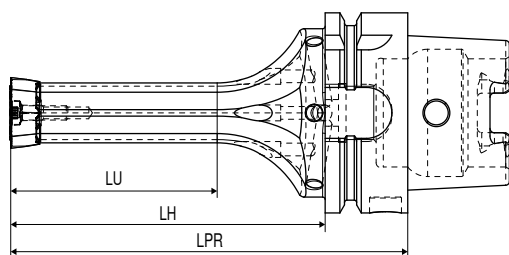
NEW FW
Article no.
74 002 ...
£
16.84 00200
16.84 00400

NEW FW
Article no.
74 002 ...
£
16.84 10400

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

FreeTurn – HSK-T tool holder FT15

- ▲ Tool holder for FreeTurn indexable insert
- ▲ DirectCooling coolant supply



Figures show version FT15 . 808055...



DirectCooling

NEW FT

Article no.
74 700 ...

£

ISO designation	Adapter	LPR	LH	LU	Insert	
		mm	mm	mm		
HSK-T63-100-FT15 353535	HSK-T 63	100	74	40	FT15 . 353535...	532.38 00137
HSK-T63-100-FT15 555555	HSK-T 63	100	74	40	FT15 . 555555...	532.38 00337
HSK-T63-100-FT15 808055	HSK-T 63	100	74	40	FT15 . 808055...	532.38 00537
HSK-T63-125-FT15 353535	HSK-T 63	125	99	65	FT15 . 353535...	541.90 00237
HSK-T63-125-FT15 555555	HSK-T 63	125	99	65	FT15 . 555555...	541.90 00437
HSK-T63-125-FT15 808055	HSK-T 63	125	99	65	FT15 . 808055...	541.90 00637

Spare parts

Adapter

HSK-T 63

Y7



Key D

Article no.
80 950 ...

£

12.90 121

2A



Clamping screw

Article no.
70 950 ...

£

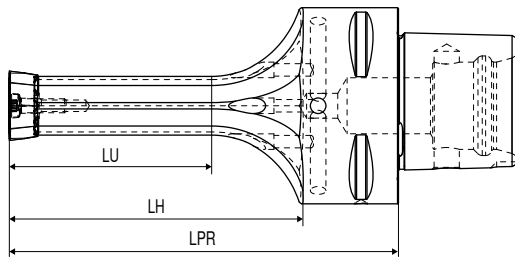
7.81 25900

T20 - IP

M4,5x18 - IP

FreeTurn – PSC tool holder FT15

- ▲ Tool holder for FreeTurn indexable insert
- ▲ DirectCooling coolant supply



Figures show version FT15 . 808055...



DirectCooling

NEW FT

Article no.
74 700 ...

£

ISO designation	Adapter	LPR	LH	LU	Insert	
		mm	mm	mm		
PSC-63-100-FT15 353535	PSC 63	100	69.4	40	FT15 . 353535...	618.10 00193
PSC-63-100-FT15 555555	PSC 63	100	69.6	40	FT15 . 555555...	618.10 00393
PSC-63-100-FT15 808055	PSC 63	100	69.3	40	FT15 . 808055...	618.10 00593
PSC-63-125-FT15 353535	PSC 63	125	94.4	65	FT15 . 353535...	627.62 00293
PSC-63-125-FT15 555555	PSC 63	125	94.6	65	FT15 . 555555...	627.62 00493
PSC-63-125-FT15 808055	PSC 63	125	94.3	65	FT15 . 808055...	627.62 00693

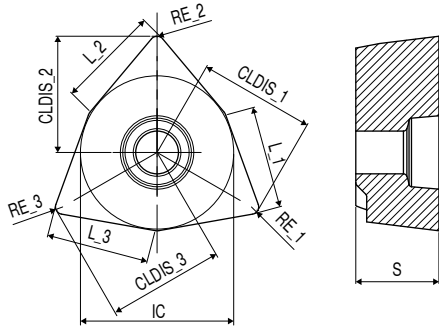
Spare parts

Adapter

PSC 63	12.90	121	7.81	25900
--------	-------	-----	------	-------

Y7	2A
	
Key D	Clamping screw
Article no. 80 950 ...	Article no. 70 950 ...
£	£
12.90	7.81
121	25900

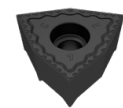
FT17 . 808080...



Designation	IC	CLDIS_1	L_1	CLDIS_2	L_2	CLDIS_3	L_3	S
	mm	mm	mm	mm	mm	mm	mm	mm
FT17 M 808080R012-MMM	17	12.56	11.2	12.56	11.2	12.56	11.2	9.14
FT17 M 808080R04-MMM	17	13.00	11.3	13.00	11.3	13.00	11.3	9.14
FT17 M 808080R08-MMM	17	12.78	11.3	12.78	11.3	12.78	11.3	9.14

CTCP125

CTPM125



M M M

M M M

NEW FW

NEW FW

Article no.

Article no.

74 000 ...

74 000 ...

£

£

22.59 00600

22.59 00200

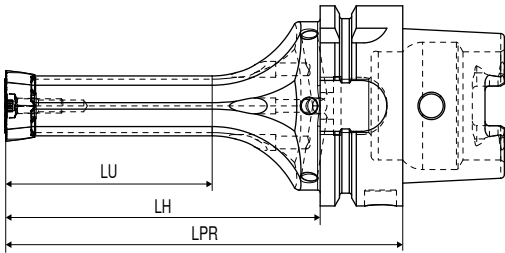
22.59 00400

22.59 10400

ISO	RE_1	RE_2	RE_3
	mm	mm	mm
FT17 M 808080R012-MMM	1.2	1.2	1.2
FT17 M 808080R04-MMM	0.4	0.4	0.4
FT17 M 808080R08-MMM	0.8	0.8	0.8
Steel	●		○
Stainless steel		○	●
Cast iron		○	
Non ferrous metals			
Heat resistant alloys			

FreeTurn – HSK-T tool holder FT17

- ▲ Tool holder for FreeTurn indexable insert
- ▲ DirectCooling coolant supply



DirectCooling

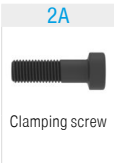
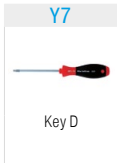
NEW FT
Article no.
74 701 ...

ISO designation	Adapter	LPR	LH	LU	Insert	
		mm	mm	mm		
HSK-T63-100-FT17 808080	HSK-T 63	100	74	40	FT17 . 808080...	532.38 00737
HSK-T63-125-FT17 808080	HSK-T 63	125	99	65	FT17 . 808080...	541.90 00837

Spare parts

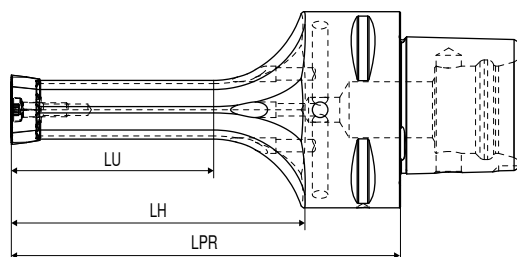
Adapter

HSK-T 63	T20 - IP	Article no. 80 950 ... £ 12.90	121	M4,5x18 - IP	Article no. 70 950 ... £ 7.81	25900
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FreeTurn – PSC tool holder FT17

- ▲ Tool holder for FreeTurn indexable insert
- ▲ DirectCooling coolant supply



DirectCooling

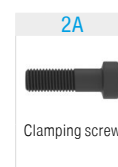
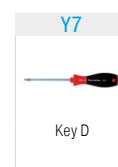
NEW FT
Article no.
74 701 ...

ISO designation	Adapter	LPR	LH	LU	Insert	
		mm	mm	mm		
PSC-63-100-FT17 808080	PSC 63	100	69.3	40	FT17 . 808080...	618.10 00793
PSC-63-125-FT17 808080	PSC 63	125	94.3	65	FT17 . 808080...	627.62 00893

Spare parts

Adapter

PSC 63	T20 - IP	Article no. 80 950 ...	Article no. 70 950 ...
		£ 12.90 121	£ 7.81 25900



Cutting data approximate values

	Index	Material	Strength N/mm ² / HB / HRC	F		M		-28P
				DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	H216T
				CTCP125	CTPM125	CTCP125	CTPM125	v _c in m/min
				v _c in m/min		v _c in m/min		
P	1.1	General construction steel	< 800 N/mm ²	200-270	120-260	200-260	120-250	
	1.2	Free cutting steel	< 800 N/mm ²	230-280	130-220	230-280	120-220	
	1.3	Hardened steel, non alloyed	< 800 N/mm ²	240-290	130-250	240-290	120-250	
	1.4	Alloyed hardened steel	< 1000 N/mm ²	200-270	130-220	200-250	130-200	
	1.5	Tempering steel, unalloyed	< 850 N/mm ²	220-260	100-180	210-250	100-170	
	1.6	Tempering steel, unalloyed	< 1000 N/mm ²	210-250	100-180	190-240	100-170	
	1.7	Tempering steel, alloyed	< 800 N/mm ²	210-280	60-180	200-270	50- 160	
	1.8	Tempering steel, alloyed	< 1300 N/mm ²	190-240	60-180	180-230	50- 160	
	1.9	Steel castings	< 850 N/mm ²	170-240	80-180	160-220	60- 160	
	1.10	Nitriding steel	< 1000 N/mm ²	180-240	100-180	180-230	100-180	
	1.11	Nitriding steel	< 1200 N/mm ²	170-240	100-180	170-240	80-180	
	1.12	Roller bearing steel	< 1200 N/mm ²	200-270	80-180	190-260	70-170	
	1.13	Spring steel	< 1200 N/mm ²	170-240	60-180	170-230	60-170	
	1.14	High-speed steel	< 1300 N/mm ²	180-230	80-180	170-210	70-160	
	1.15	Cold working tool steel	< 1300 N/mm ²	150-230	80-150	130-220	60-120	
	1.16	Hot working tool steel	< 1300 N/mm ²	140-220	80-150	130-220	60-120	
M	2.1	Cast steel and sulphured stainless steel	< 850 N/mm ²	200-280	200-280	200-280	120-280	
	2.2	Stainless steel, ferritic	< 750 N/mm ²	200-280	200-280	200-280	120-280	
	2.3	Stainless steel, martensitic	< 900 N/mm ²	190-260	190-260	190-260	120-260	
	2.4	Stainless steel, ferritic / martensitic	< 1100 N/mm ²	190-240	190-240	190-240	120-240	
	2.5	Stainless steel, austenitic / ferritic	< 850 N/mm ²		100-220		100-220	
	2.6	Stainless steel, austenitic	< 750 N/mm ²		100-220		100-220	
	2.7	Heat resistant steel	< 1100 N/mm ²		40-100		40-100	
K	3.1	Grey cast iron with lamellar graphite	100-350 N/mm ²	200-260		120-210		
	3.2	Grey cast iron with lamellar graphite	300-500 N/mm ²	190-250		160-200		
	3.3	Gray cast iron with spheroidal graphite	300-500 N/mm ²	170-240		150-200		
	3.4	Gray cast iron with spheroidal graphite	500-900 N/mm ²	140-190		130-190		
	3.5	White malleable cast iron	270-450 N/mm ²	240-290		160-230		
	3.6	White malleable cast iron	500-650 N/mm ²	170-290		150-210		
	3.7	Black malleable cast iron	300-450 N/mm ²	240-290		160-230		
	3.8	Black malleable cast iron	500-800 N/mm ²	170-290		150-210		
N	4.1	Aluminium (non alloyed, low alloyed)	< 350 N/mm ²					300-2500
	4.2	Aluminium alloys < 0.5 % Si	< 500 N/mm ²					200-2000
	4.3	Aluminium alloy 0.5-10 % Si	< 400 N/mm ²					400-1500
	4.4	Aluminium alloys 10-15 % Si	< 400 N/mm ²					400-1500
	4.5	Aluminum alloys > 15 % Si	< 400 N/mm ²					200-800
	4.6	Copper (non alloyed, low alloyed)	< 350 N/mm ²					150-300
	4.7	Copper wrought alloys	< 700 N/mm ²					150-400
	4.8	Special copper alloys	< 200 HB					150-400
	4.9	Special copper alloys	< 300 HB					150-400
	4.10	Special copper alloys	> 300 HB					150-400
	4.11	Short-chipping brass, bronze, red bronze	< 600 N/mm ²					200-600
	4.12	Long-chipping brass	< 600 N/mm ²					150-400
	4.13	Thermoplastics						100-200
	4.14	Duroplastics						80-180
	4.15	Fibre-reinforced plastics						60-150
	4.16	Magnesium and magnesium alloys	< 850 N/mm ²					
	4.17	Graphite						
	4.18	Tungsten and tungsten alloys						
	4.19	Molybdenum and molybdenum alloys						100-140
S	5.1	Pure nickel						
	5.2	Nickel alloys						
	5.3	Nickel alloys	< 850 N/mm ²					
	5.4	Nickel molybdenum alloys						
	5.5	Nickel-chromium alloys	< 1300 N/mm ²					
	5.6	Cobalt Chrome Alloys	< 1300 N/mm ²					
	5.7	Heat resistant alloys	< 1300 N/mm ²					
	5.8	Nickel-cobalt-chromium alloys	< 1400 N/mm ²					
	5.9	Pure titanium	< 900 N/mm ²					
	5.10	Titanium alloys	< 700 N/mm ²					
	5.11	Titanium alloys	< 1200 N/mm ²					
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					

i The cutting data depends extremely on the external conditions, e.g. stability of the tool and tool clamping, material and machine type.
The indicated values are possible cutting data which have to be increased or reduced according to the application conditions.

Cutting data approximate values

-F						
RE	f			a _p		
	min.	Recom- mended	max.	min.	Recom- mended	max.
mm	mm/rev.			mm		
0,4	0,07	0,15	0,22	0,2	1	2
0,8	0,1	0,2	0,3	0,4	1,4	2,6
1,2						

-M						
RE	f			a _p		
	min.	Recom- mended	max.	min.	Recom- mended	max.
mm	mm/rev.			mm		
0,4	0,1	0,17	0,25	0,3	1,3	2,5
0,8	0,15	0,25	0,4	0,5	2	3,2
1,2	0,17	0,3	0,5	0,5	2,5	3,5

-F						
RE	f			a _p		
	min.	Recom- mended	max.	min.	Recom- mended	max.
mm	mm/rev.			mm		
0,4	0,07	0,12	0,2	0,2	1	2
0,8	0,1	0,17	0,27	0,4	1,4	2,6
1,2						

-M						
RE	f			a _p		
	min.	Recom- mended	max.	min.	Recom- mended	max.
mm	mm/rev.			mm		
0,4	0,1	0,15	0,22	0,3	1,3	2,5
0,8	0,15	0,22	0,35	0,5	2	3,2
1,2	0,17	0,25	0,4	0,5	2,5	3,5

-28P						
RE	f			a _p		
	min.	Recom- mended	max.	min.	Recom- mended	max.
mm	mm/rev.			mm		
0,4	0,07	0,15	0,25	0,3	1,5	3,5
0,8	0,15	0,25	0,4	0,5	2	3,5
1,2						

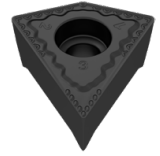
Correction Factor

Feedrate f [mm/U] should be multiplied by correction factor f_k

Approach angle	Correction Factor
	f _k
95° - 120°	0,90
85° - 95°	1,00
85° - 65°	1,10
65° - 30°	1,20

ISO Designation System

FreeTurn – indexable insert designation



FT15 M/G 808055R080804 Q MMF CTCP125

1 2 3 4 5 6 7 8 9 10 11 12

- | | |
|---|---|
| 1 FreeTurn | 7 Corner radius 1 in mm |
| 2 Nominal diameter in mm | 8 Corner radius 2 in mm |
| 3 ISO tolerance (M = sintered, G = polished) | 9 Corner radius 3 in mm |
| 4 Cutter angle 1 in degrees | 10 Masterfinish – wiper geometry |
| 5 Cutter angle 2 in degrees | 11 Chip breaker (M = medium, F = fine) |
| 6 Cutter angle 3 in degrees | 12 Carbide Grade |

FreeTurn – holder designation

HSK - T63 - 100 - FT15 808055

1 2 3 4 5 6 7 8



- | | |
|--------------------------|------------------------------------|
| 1 System | 5 Nominal diameter in mm |
| 2 Size | 6 Cutter angle 1 in degrees |
| 3 Overhang length | 7 Cutter angle 2 in degrees |
| 4 FreeTurn | 8 Cutter angle 3 in degrees |

Grade description

CTCP125

- ▲ Carbide, TiCN-Al₂O₃-coated
- ▲ ISO | **P25** | M20 | **K30**
- ▲ The first choice for universal machining of steels

CTPM125

- ▲ ISO | **P35** | **M25** | S25
- ▲ The universal carbide grade with maximum toughness, without affecting the necessary hot hardness and wear resistance for stainless machining

H216T

- ▲ Carbide, uncoated
- ▲ ISO | **K15** | **N15**
- ▲ The uncoated carbide grade for machining aluminium and other non-ferrous metals
- ▲ Also highly suitable for HSC machining

Table of contents

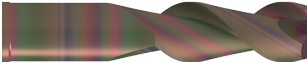
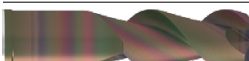
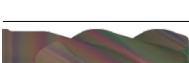
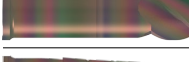
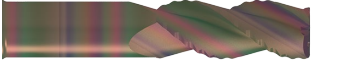
Overview High Performance Milling Cutters	30
Product programme	31-60
Technical Information	
Cutting Data	61-65

WNT \ Performance

Premium quality tools for high performance.

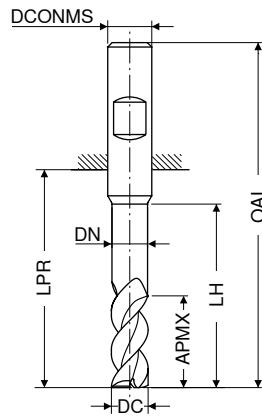
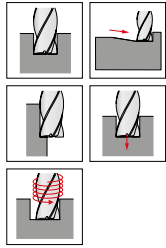
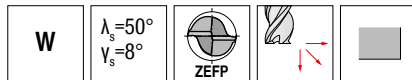
The premium quality tools from the **WNT Performance** product line have been designed for specific applications and are distinguished by their outstanding performance. If you make high demands on the performance of your production and want to achieve the very best results, we recommend the Premium tools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

Overview High Performance Milling Cutters

AluLine																	
Tool type	Number of flutes	Diameter in mm	Steel	Stainless steel	Cast iron	Non ferrous metals	Heat resistant alloys	hardened materials	Sharp	Chamfer	Radius	Full Radius	Length	Tool design	coated	uncoated	Pages
		Ø DC															
	W	2	2-20	HA													31-34
	W	2	2-20	HA													35+36
	W	3	2-20	HA													37-42
	W	3	3-20	HA										HPC			43
	W	3	3-20	HA													44-49
	W	4	2-20	HA													50-53
	WF	3	3-20	HA													54
	WR	4	3-25	HA										HPC			55+56
	W	6	6-20	HA										HPC			57
	W	2	3-20	HA													58-60

AluLine – End milling cutter

▲ With polished chip flutes



DLC

DLC



Factory standard

Factory standard

Factory standard

Factory standard

HA

HA

HB

HB

DC _{h6}	APMX	DN	LH	LPR	OAL	DCONMS _{h6}	ZEFP
mm	mm	mm	mm	mm	mm	mm	
5.0	10.5	4.8	15	22	58	6	2
5.5	13.0	5.3	18	22	58	6	2
6.0	13.0	5.8	18	22	58	6	2
6.5	17.0	6.2	24	28	64	8	2
7.0	17.0	6.7	24	28	64	8	2
7.5	17.0	7.2	24	28	64	8	2
8.0	17.0	7.7	24	28	64	8	2
8.5	21.0	8.2	30	34	74	10	2
9.0	21.0	8.7	30	34	74	10	2
9.5	21.0	9.2	30	34	74	10	2
10.0	21.0	9.7	30	34	74	10	2
10.5	25.0	10.1	36	40	85	12	2
11.0	25.0	10.6	36	40	85	12	2
11.5	25.0	11.1	36	40	85	12	2
12.0	25.0	11.6	36	40	85	12	2
12.5	29.0	12.1	42	46	91	14	2
13.0	29.0	12.6	42	46	91	14	2
13.5	29.0	13.1	42	46	91	14	2
14.0	29.0	13.6	42	46	91	14	2
14.5	33.0	14.0	48	52	100	16	2
15.0	33.0	14.5	48	52	100	16	2
15.5	33.0	15.0	48	52	100	16	2
16.0	33.0	15.5	48	52	100	16	2
16.5	38.0	16.0	54	58	106	18	2
17.0	38.0	16.5	54	58	106	18	2
17.5	38.0	17.0	54	58	106	18	2
18.0	38.0	17.5	54	58	106	18	2
18.5	42.0	18.0	60	64	114	20	2
19.0	42.0	18.5	60	64	114	20	2
19.5	42.0	19.0	60	64	114	20	2
20.0	42.0	19.5	60	64	114	20	2

NEW V1
Article no.
53 623 ...
£

NEW V1
Article no.
53 625 ...
£

NEW V1
Article no.
53 624 ...
£

NEW V1
Article no.
53 626 ...
£

38.84 05100
47.24 05600
44.09 06100
50.39 06600
49.34 07100
48.29 07600
46.19 08100
77.69 08600
75.59 09100
73.49 09600
70.34 10100
107.08 10600
104.98 11100
101.83 11600
99.73 12100

49.34 05100
57.74 05600
55.64 06100
61.94 06600
60.89 07100
59.84 07600
58.79 08100
91.33 08600
89.23 09100
87.13 09600
85.03 10100
121.78 10600
119.68 11100
116.53 11600
119.68 12100

38.84 05100
47.24 05600
44.09 06100
50.39 06600
49.34 07100
48.29 07600
46.19 08100
77.69 08600
75.59 09100
73.49 09600
70.34 10100
107.08 10600
104.98 11100
101.83 11600
99.73 12100

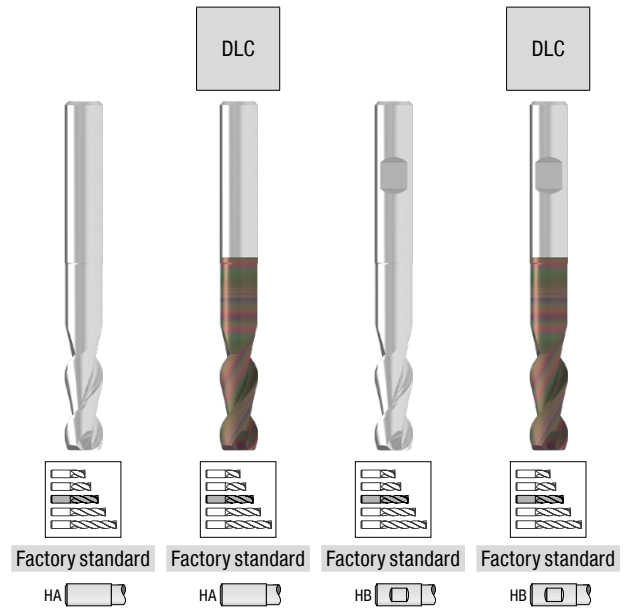
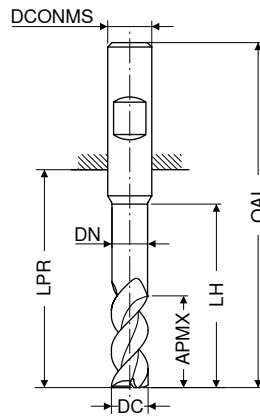
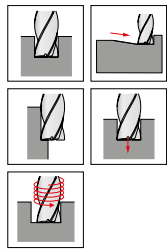
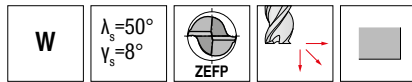
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57.74 05600
55.64 06100
61.94 06600
60.89 07100
59.84 07600
58.79 08100
91.33 08600
89.23 09100
87.13 09600
85.03 10100
121.78 10600
119.68 11100
116.53 11600
119.68 12100

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

→ v_c/f_z Page 62+63

AluLine – End milling cutter

▲ With polished chip flutes



DC _{h6}	APMX	DN	LH	LPR	OAL	DCONMS _{h6}	ZEFP	NEW V1 Article no. 53 633 ...	NEW V1 Article no. 53 635 ...	NEW V1 Article no. 53 634 ...	NEW V1 Article no. 53 636 ...
mm	mm	mm	mm	mm	mm	mm		£	£	£	£
2.0	5.5	1.8	10.0	19	55	6	2	38.21 02300	49.14 02300	38.21 02300	49.14 02300
2.5	6.5	2.3	12.5	22	58	6	2	48.91 02800	59.83 02800	48.91 02800	59.83 02800
3.0	8.0	2.8	15.0	22	58	6	2	50.18 03300	61.12 03300	50.18 03300	61.12 03300
3.5	10.5	3.3	20.0	26	62	6	2	47.29 03800	58.22 03800	47.29 03800	58.22 03800
4.0	10.5	3.8	20.0	26	62	6	2	48.31 04300	59.24 04300	48.31 04300	59.24 04300
4.5	13.0	4.3	25.0	34	70	6	2	49.93 04800	60.85 04800	49.93 04800	60.85 04800
5.0	13.0	4.8	25.0	34	70	6	2	51.13 05300	62.05 05300	51.13 05300	62.05 05300
5.5	16.0	5.3	30.0	34	70	6	2	62.35 05800	73.27 05800	62.35 05800	73.27 05800
6.0	16.0	5.8	30.0	34	70	6	2	57.40 06300	70.08 06300	57.40 06300	70.08 06300
6.5	21.0	6.2	40.0	44	80	8	2	68.70 06800	81.39 06800	68.70 06800	81.39 06800
7.0	21.0	6.7	40.0	44	80	8	2	67.00 07300	79.70 07300	67.00 07300	79.70 07300
7.5	21.0	7.2	40.0	44	80	8	2	65.21 07800	77.89 07800	65.21 07800	77.89 07800
8.0	21.0	7.7	40.0	44	80	8	2	62.19 08300	76.46 08300	62.19 08300	76.46 08300
8.5	26.0	8.2	50.0	54	94	10	2	105.89 08800	120.12 08800	105.89 08800	120.12 08800
9.0	26.0	8.7	50.0	54	94	10	2	99.02 09300	113.30 09300	99.02 09300	113.30 09300
9.5	26.0	9.2	50.0	54	94	10	2	96.25 09800	110.55 09800	96.25 09800	110.55 09800
10.0	26.0	9.7	50.0	54	94	10	2	91.82 10300	107.70 10300	91.82 10300	107.70 10300
10.5	31.0	10.1	60.0	64	109	12	2	140.58 10800	156.53 10800	140.58 10800	156.53 10800
11.0	31.0	10.6	60.0	64	109	12	2	142.45 11300	158.29 11300	142.45 11300	158.29 11300
11.5	31.0	11.1	60.0	64	109	12	2	132.66 11800	148.61 11800	132.66 11800	148.61 11800
12.0	31.0	11.6	60.0	64	109	12	2	130.35 12300	152.46 12300	130.35 12300	152.46 12300
12.5	36.0	12.1	70.0	74	119	14	2			203.28 12800	225.50 12800
13.0	36.0	12.6	70.0	74	119	14	2			201.41 13300	223.63 13300
13.5	36.0	13.1	70.0	74	119	14	2			199.87 13800	222.09 13800
14.0	36.0	13.6	70.0	74	119	14	2			201.74 14300	231.55 14300
14.5	41.0	14.0	80.0	84	132	16	2			275.99 14800	305.80 14800
15.0	41.0	14.5	80.0	84	132	16	2			269.83 15300	299.64 15300
15.5	41.0	15.0	80.0	84	132	16	2			263.34 15800	293.15 15800
16.0	41.0	15.5	80.0	84	132	16	2			277.20 16300	311.96 16300
16.5	47.0	16.0	90.0	94	142	18	2			358.38 16800	393.25 16800
17.0	47.0	16.5	90.0	94	142	18	2			348.59 17300	383.46 17300
17.5	47.0	17.0	90.0	94	142	18	2			338.36 17800	373.34 17800
18.0	47.0	17.5	90.0	94	142	18	2			334.29 18300	372.24 18300
18.5	52.0	18.0	100.0	104	154	20	2			443.19 18800	481.25 18800
19.0	52.0	18.5	100.0	104	154	20	2			431.09 19300	469.04 19300
19.5	52.0	19.0	100.0	104	154	20	2			418.44 19800	456.61 19800
20.0	52.0	19.5	100.0	104	154	20	2			411.07 20300	458.70 20300

Steel

Stainless steel

Cast iron

Non ferrous metals

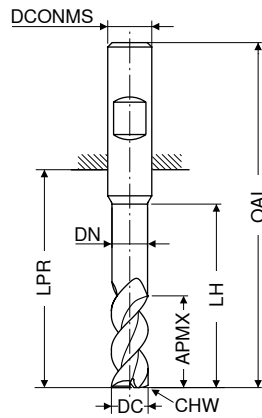
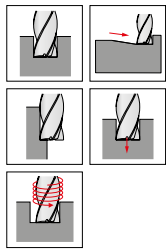
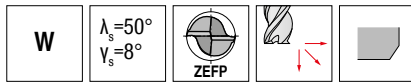
Heat resistant alloys

Hardened materials

→ v_c/f_z Page 62+63

AluLine – End milling cutter

▲ With polished chip flutes



DLC



Factory standard

Factory standard

Factory standard

Factory standard

HA

HA

HB

HB

DC _{h6}	APMX	DN	LH	LPR	OAL	DCONMS _{h6}	CHW	ZEFP	NEW V1 Article no. 53 619 ... £	NEW V1 Article no. 53 621 ... £	NEW V1 Article no. 53 620 ... £	NEW V1 Article no. 53 622 ... £
5.0	10.5	4.8	15	22	58	6	0.1	2	38.84 05100	49.34 05100	38.84 05100	49.34 05100
5.5	13.0	5.3	18	22	58	6	0.1	2	47.24 05600	57.74 05600	47.24 05600	57.74 05600
6.0	13.0	5.8	18	22	58	6	0.1	2	44.09 06100	55.64 06100	44.09 06100	55.64 06100
6.5	17.0	6.2	24	28	64	8	0.1	2	50.39 06600	61.94 06600	50.39 06600	61.94 06600
7.0	17.0	6.7	24	28	64	8	0.1	2	49.34 07100	60.89 07100	49.34 07100	60.89 07100
7.5	17.0	7.2	24	28	64	8	0.1	2	48.29 07600	59.84 07600	48.29 07600	59.84 07600
8.0	17.0	7.7	24	28	64	8	0.1	2	46.19 08100	58.79 08100	46.19 08100	58.79 08100
8.5	21.0	8.2	30	34	74	10	0.1	2	77.69 08600	91.33 08600	77.69 08600	91.33 08600
9.0	21.0	8.7	30	34	74	10	0.1	2	75.59 09100	89.23 09100	75.59 09100	89.23 09100
9.5	21.0	9.2	30	34	74	10	0.1	2	73.49 09600	87.13 09600	73.49 09600	87.13 09600
10.0	21.0	9.7	30	34	74	10	0.1	2	70.34 10100	85.03 10100	70.34 10100	85.03 10100
10.5	25.0	10.1	36	40	85	12	0.1	2	107.08 10600	121.78 10600	107.08 10600	121.78 10600
11.0	25.0	10.6	36	40	85	12	0.1	2	104.98 11100	119.68 11100	104.98 11100	119.68 11100
11.5	25.0	11.1	36	40	85	12	0.1	2	101.83 11600	116.53 11600	101.83 11600	116.53 11600
12.0	25.0	11.6	36	40	85	12	0.1	2	99.73 12100	119.68 12100	99.73 12100	119.68 12100
12.5	29.0	12.1	42	46	91	14	0.1	2			143.82 12600	163.77 12600
13.0	29.0	12.6	42	46	91	14	0.1	2			142.77 13100	162.72 13100
13.5	29.0	13.1	42	46	91	14	0.1	2			140.67 13600	161.67 13600
14.0	29.0	13.6	42	46	91	14	0.1	2			142.77 14100	170.07 14100
14.5	33.0	14.0	48	52	100	16	0.1	2			195.26 14600	222.56 14600
15.0	33.0	14.5	48	52	100	16	0.1	2			190.01 15100	218.36 15100
15.5	33.0	15.0	48	52	100	16	0.1	2			185.81 15600	213.11 15600
16.0	33.0	15.5	48	52	100	16	0.1	2			195.26 16100	227.81 16100
16.5	38.0	16.0	54	58	106	18	0.1	2			253.00 16600	285.55 16600
17.0	38.0	16.5	54	58	106	18	0.1	2			245.65 17100	278.20 17100
17.5	38.0	17.0	54	58	106	18	0.1	2			239.35 17600	270.85 17600
18.0	38.0	17.5	54	58	106	18	0.1	2			236.21 18100	270.85 18100
18.5	42.0	18.0	60	64	114	20	0.1	2			312.84 18600	347.48 18600
19.0	42.0	18.5	60	64	114	20	0.1	2			304.44 19100	339.09 19100
19.5	42.0	19.0	60	64	114	20	0.1	2			294.99 19600	330.69 19600
20.0	42.0	19.5	60	64	114	20	0.1	2			289.74 20100	333.84 20100

Steel

Stainless steel

Cast iron

Non ferrous metals

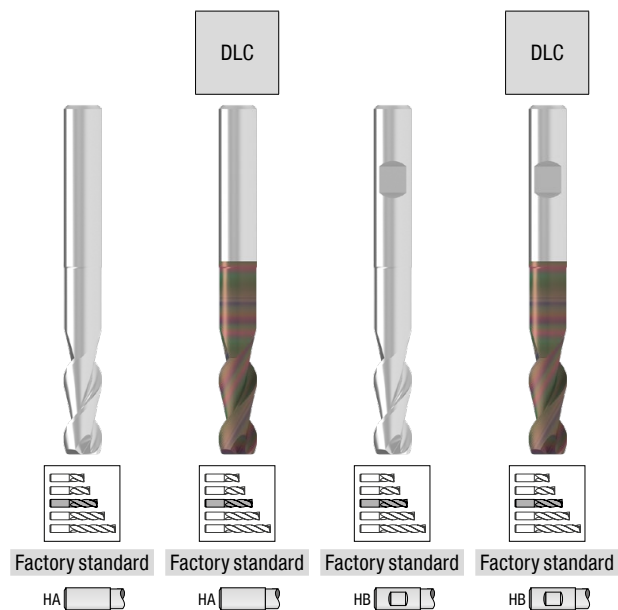
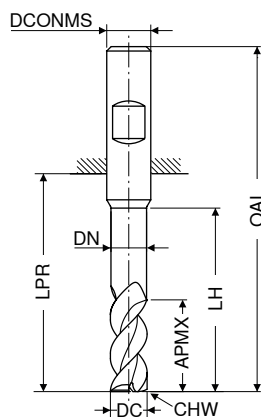
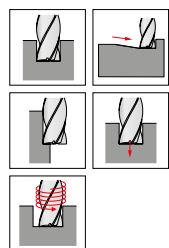
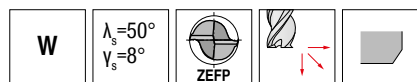
Heat resistant alloys

Hardened materials

→ v_c/f_z Page 62+63

AluLine – End milling cutter

▲ With polished chip flutes



DC _{h6}	APMX	DN	LH	LPR	OAL	DCONMS _{h6}	CHW	ZEFP	NEW V1 Article no. 53 629 ... £	NEW V1 Article no. 53 631 ... £	NEW V1 Article no. 53 630 ... £	NEW V1 Article no. 53 632 ... £
2.0	5.5	1.8	10.0	19	55	6	0.05	2	38.21 02300	49.14 02300	38.21 02300	49.14 02300
2.5	6.5	2.3	12.5	22	58	6	0.05	2	48.91 02800	59.83 02800	48.91 02800	59.83 02800
3.0	8.0	2.8	15.0	22	58	6	0.10	2	50.18 03300	61.12 03300	50.18 03300	61.12 03300
3.5	10.5	3.3	20.0	26	62	6	0.10	2	47.29 03800	58.22 03800	47.29 03800	58.22 03800
4.0	10.5	3.8	20.0	26	62	6	0.10	2	48.31 04300	59.24 04300	48.31 04300	59.24 04300
4.5	13.0	4.3	25.0	34	70	6	0.10	2	49.93 04800	60.85 04800	49.93 04800	60.85 04800
5.0	13.0	4.8	25.0	34	70	6	0.10	2	51.13 05300	62.05 05300	51.13 05300	62.05 05300
5.5	16.0	5.3	30.0	34	70	6	0.10	2	62.35 05800	73.27 05800	62.35 05800	73.27 05800
6.0	16.0	5.8	30.0	34	70	6	0.10	2	51.13 06300	63.81 06300	51.13 06300	63.81 06300
6.5	21.0	6.2	40.0	44	80	8	0.10	2	68.70 06800	81.39 06800	68.70 06800	81.39 06800
7.0	21.0	6.7	40.0	44	80	8	0.10	2	67.00 07300	79.70 07300	67.00 07300	79.70 07300
7.5	21.0	7.2	40.0	44	80	8	0.10	2	65.21 07800	77.89 07800	65.21 07800	77.89 07800
8.0	21.0	7.7	40.0	44	80	8	0.10	2	62.19 08300	76.46 08300	62.19 08300	76.46 08300
8.5	26.0	8.2	50.0	54	94	10	0.10	2	105.89 08800	120.12 08800	105.89 08800	120.12 08800
9.0	26.0	8.7	50.0	54	94	10	0.10	2	99.02 09300	113.30 09300	99.02 09300	113.30 09300
9.5	26.0	9.2	50.0	54	94	10	0.10	2	96.25 09800	110.55 09800	96.25 09800	110.55 09800
10.0	26.0	9.7	50.0	54	94	10	0.10	2	91.82 10300	107.70 10300	91.82 10300	107.70 10300
10.5	31.0	10.1	60.0	64	109	12	0.10	2	140.58 10800	156.53 10800	140.58 10800	156.53 10800
11.0	31.0	10.6	60.0	64	109	12	0.10	2	142.45 11300	158.29 11300	142.45 11300	158.29 11300
11.5	31.0	11.1	60.0	64	109	12	0.10	2	132.66 11800	148.61 11800	132.66 11800	148.61 11800
12.0	31.0	11.6	60.0	64	109	12	0.10	2	130.35 12300	152.46 12300	130.35 12300	152.46 12300
12.5	36.0	12.1	70.0	74	119	14	0.10	2			203.28 12800	225.50 12800
13.0	36.0	12.6	70.0	74	119	14	0.10	2			201.41 13300	223.63 13300
13.5	36.0	13.1	70.0	74	119	14	0.10	2			199.87 13800	222.09 13800
14.0	36.0	13.6	70.0	74	119	14	0.10	2			201.74 14300	231.55 14300
14.5	41.0	14.0	80.0	84	132	16	0.10	2			275.99 14800	305.80 14800
15.0	41.0	14.5	80.0	84	132	16	0.10	2			269.83 15300	299.64 15300
15.5	41.0	15.0	80.0	84	132	16	0.10	2			263.34 15800	293.15 15800
16.0	41.0	15.5	80.0	84	132	16	0.10	2			277.20 16300	311.96 16300
16.5	47.0	16.0	90.0	94	142	18	0.10	2			358.38 16800	393.25 16800
17.0	47.0	16.5	90.0	94	142	18	0.10	2			348.59 17300	383.46 17300
17.5	47.0	17.0	90.0	94	142	18	0.10	2			338.36 17800	373.34 17800
18.0	47.0	17.5	90.0	94	142	18	0.10	2			334.29 18300	372.24 18300
18.5	52.0	18.0	100.0	104	154	20	0.10	2			443.19 18800	481.25 18800
19.0	52.0	18.5	100.0	104	154	20	0.10	2			431.09 19300	469.04 19300
19.5	52.0	19.0	100.0	104	154	20	0.10	2			418.44 19800	456.61 19800
20.0	52.0	19.5	100.0	104	154	20	0.10	2			411.07 20300	458.70 20300

Steel

Stainless steel

Cast iron

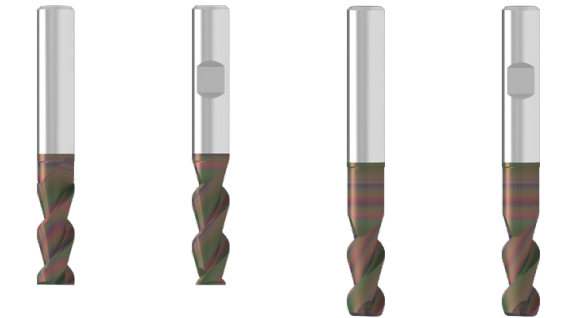
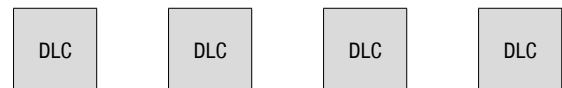
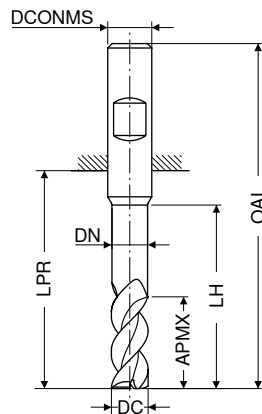
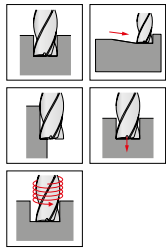
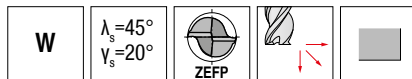
Non ferrous metals

Heat resistant alloys

Hardened materials

→ v_c/f_z Page 62+63

AluLine – End milling cutter



Factory standard



DC _{h6}	APMX	DN	LH	LPR	OAL	DCONMS _{h6}	ZEFP				
mm	mm	mm	mm	mm	mm	mm					
2.0	5.5	1.8	10.0	19	55	6	2				
2.5	6.5	2.3	12.5	22	58	6	2				
3.0	8.0	2.8	15.0	22	58	6	2				
3.5	10.5	3.3	20.0	26	62	6	2				
4.0	10.5	3.8	20.0	26	62	6	2				
4.5	13.0	4.3	25.0	34	70	6	2				
5.0	10.5	4.8	15.0	22	58	6	2	58.79	05100	58.79	05100
5.0	13.0	4.8	25.0	34	70	6	2				
5.5	13.0	5.3	18.0	22	58	6	2	59.84	05600	59.84	05600
5.5	16.0	5.3	30.0	34	70	6	2				
6.0	13.0	5.8	18.0	22	58	6	2	56.69	06100	56.69	06100
6.0	16.0	5.8	30.0	34	70	6	2				
6.5	17.0	6.2	24.0	28	64	8	2	65.09	06600	65.09	06600
6.5	21.0	6.2	40.0	44	80	8	2				
7.0	17.0	6.7	24.0	28	64	8	2	64.04	07100	64.04	07100
7.0	21.0	6.7	40.0	44	80	8	2				
7.5	17.0	7.2	24.0	28	64	8	2	62.99	07600		
7.5	17.0	7.2	24.0	49	85	8	2			80.83	07600
7.5	21.0	7.2	40.0	44	80	8	2				
8.0	17.0	7.7	24.0	28	64	8	2	60.89	08100		
8.0	17.0	7.7	24.0	49	85	8	2			80.83	08100
8.0	21.0	7.7	40.0	44	80	8	2				
8.5	21.0	8.2	30.0	34	74	10	2	94.48	08600	94.48	08600
8.5	26.0	8.2	50.0	54	94	10	2				
9.0	21.0	8.7	30.0	34	74	10	2	93.43	09100	93.43	09100
9.0	26.0	8.7	50.0	54	94	10	2				
9.5	21.0	9.2	30.0	34	74	10	2	91.33	09600	91.33	09600
9.5	26.0	9.2	50.0	54	94	10	2				
10.0	21.0	9.7	30.0	34	74	10	2	87.13	10100	87.13	10100
10.0	26.0	9.7	50.0	54	94	10	2				
10.5	25.0	10.1	36.0	40	85	12	2	127.03	10600	127.03	10600
10.5	31.0	10.1	60.0	64	109	12	2				
11.0	25.0	10.6	36.0	40	85	12	2	123.88	11100	123.88	11100
11.0	31.0	10.6	60.0	64	109	12	2				
11.5	25.0	11.1	36.0	40	85	12	2	120.73	11600	120.73	11600
11.5	31.0	11.1	60.0	64	109	12	2				
12.0	25.0	11.6	36.0	40	85	12	2	119.68	12100	119.68	12100
12.0	31.0	11.6	60.0	64	109	12	2				
12.5	29.0	12.1	42.0	46	91	14	2			163.77	12600
12.5	36.0	12.1	70.0	74	119	14	2				
13.0	29.0	12.6	42.0	46	91	14	2			160.62	13100
13.0	36.0	12.6	70.0	74	119	14	2				

Steel

Stainless steel

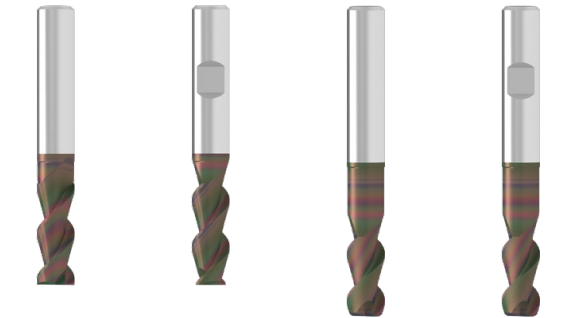
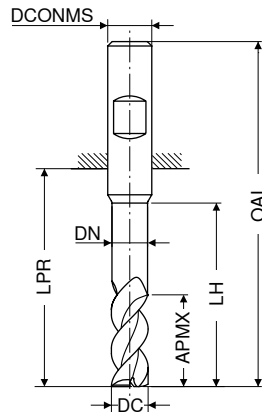
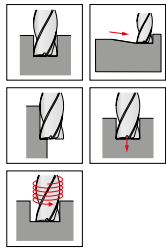
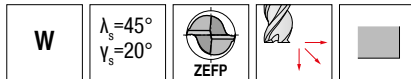
Cast iron

Non ferrous metals

Heat resistant alloys

Hardened materials

AluLine – End milling cutter



Factory standard Factory standard Factory standard Factory standard



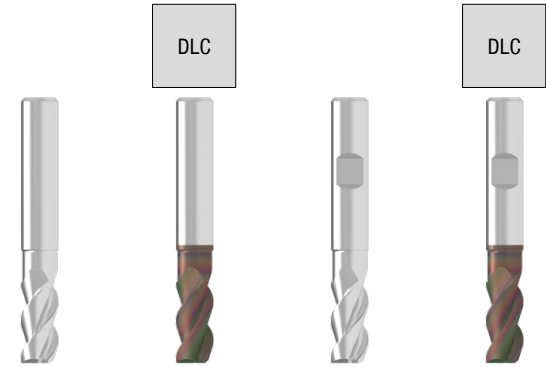
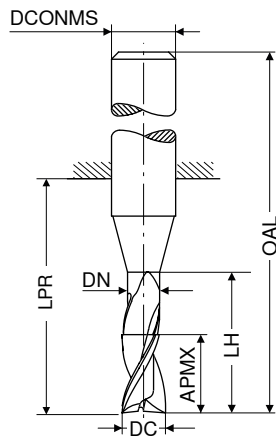
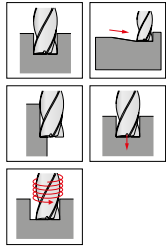
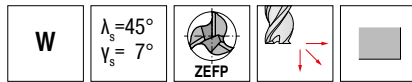
DC _{h6}	APMX	DN	LH	LPR	OAL	DCONMS _{h6}	ZEFP				
mm	mm	mm	mm	mm	mm	mm					
13.5	29.0	13.1	42.0	46	91	14	2				
13.5	36.0	13.1	70.0	74	119	14	2				
14.0	29.0	13.6	42.0	46	91	14	2				
14.0	36.0	13.6	70.0	74	119	14	2				
14.5	33.0	14.0	48.0	52	100	16	2				
14.5	41.0	14.0	80.0	84	132	16	2				
15.0	33.0	14.5	48.0	52	100	16	2				
15.0	41.0	14.5	80.0	84	132	16	2				
15.5	33.0	15.0	48.0	52	100	16	2				
15.5	41.0	15.0	80.0	84	132	16	2				
16.0	33.0	15.5	48.0	52	100	16	2				
16.0	41.0	15.5	80.0	84	132	16	2				
16.5	38.0	16.0	54.0	58	106	18	2				
16.5	47.0	16.0	90.0	94	142	18	2				
17.0	38.0	16.5	54.0	58	106	18	2				
17.0	47.0	16.5	90.0	94	142	18	2				
17.5	38.0	17.0	54.0	58	106	18	2				
17.5	47.0	17.0	90.0	94	142	18	2				
18.0	38.0	17.5	54.0	58	106	18	2				
18.0	47.0	17.5	90.0	94	142	18	2				
18.5	42.0	18.0	60.0	64	114	20	2				
18.5	52.0	18.0	100.0	104	154	20	2				
19.0	42.0	18.5	60.0	64	114	20	2				
19.0	52.0	18.5	100.0	104	154	20	2				
19.5	42.0	19.0	60.0	64	114	20	2				
19.5	52.0	19.0	100.0	104	154	20	2				
20.0	42.0	19.5	60.0	64	114	20	2				
20.0	52.0	19.5	100.0	104	154	20	2				

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

→ v_c/f_z Page 62+63

AluLine – End milling cutter

▲ With polished chip flutes



Factory standard

HA

HA

HB

HB

DC _{h6}	APMX	DN	LH	LPR	OAL	DCONMS _{h6}	ZEFP
mm	mm	mm	mm	mm	mm	mm	
2.0	4.5	1.8	6.0	14	50	6	3
2.5	5.5	2.3	7.5	19	55	6	3
3.0	6.5	2.8	9.0	19	55	6	3
3.5	8.5	3.3	12.0	19	55	6	3
4.0	8.5	3.8	12.0	19	55	6	3
4.5	10.5	4.3	15.0	22	58	6	3
5.0	10.5	4.8	15.0	22	58	6	3
5.5	13.0	5.3	18.0	22	58	6	3
6.0	13.0	5.8	18.0	22	58	6	3
6.5	17.0	6.2	24.0	28	64	8	3
7.0	17.0	6.7	24.0	28	64	8	3
7.5	17.0	7.2	24.0	28	64	8	3
8.0	17.0	7.7	24.0	28	64	8	3
8.5	21.0	8.2	30.0	34	74	10	3
9.0	21.0	8.7	30.0	34	74	10	3
9.5	21.0	9.2	30.0	34	74	10	3
10.0	21.0	9.7	30.0	34	74	10	3
10.5	25.0	10.1	36.0	40	85	12	3
11.0	25.0	10.6	36.0	40	85	12	3
11.5	25.0	11.1	36.0	40	85	12	3
12.0	25.0	11.6	36.0	40	85	12	3
12.5	29.0	12.1	42.0	46	91	14	3
13.0	29.0	12.6	42.0	46	91	14	3
13.5	29.0	13.1	42.0	46	91	14	3
14.0	29.0	13.6	42.0	46	91	14	3
14.5	33.0	14.0	48.0	52	100	16	3
15.0	33.0	14.5	48.0	52	100	16	3
15.5	33.0	15.0	48.0	52	100	16	3
16.0	33.0	15.5	48.0	52	100	16	3
16.5	38.0	16.0	54.0	58	106	18	3
17.0	38.0	16.5	54.0	58	106	18	3
17.5	38.0	17.0	54.0	58	106	18	3
18.0	38.0	17.5	54.0	58	106	18	3
18.5	42.0	18.0	60.0	64	114	20	3
19.0	42.0	18.5	60.0	64	114	20	3
19.5	42.0	19.0	60.0	64	114	20	3
20.0	42.0	19.5	60.0	64	114	20	3

NEW V1	NEW V1	NEW V1	NEW V1
Article no.	Article no.	Article no.	Article no.
53 615 ...	53 617 ...	53 616 ...	53 618 ...
£	£	£	£
35.69 02100	46.19 02100	35.69 02100	46.19 02100
35.69 02600	45.14 02600	35.69 02600	45.14 02600
35.69 03100	46.19 03100	35.69 03100	46.19 03100
37.79 03600	48.29 03600	37.79 03600	48.29 03600
38.84 04100	48.29 04100	38.84 04100	48.29 04100
49.34 04600	58.79 04600	49.34 04600	58.79 04600
43.04 05100	52.49 05100	43.04 05100	52.49 05100
50.39 05600	59.84 05600	50.39 05600	59.84 05600
44.09 06100	55.64 06100	44.09 06100	55.64 06100
52.49 06600	65.09 06600	52.49 06600	65.09 06600
51.44 07100	62.99 07100	51.44 07100	62.99 07100
50.39 07600	61.94 07600	50.39 07600	61.94 07600
48.29 08100	60.89 08100	48.29 08100	60.89 08100
81.88 08600	94.48 08600	81.88 08600	94.48 08600
79.78 09100	92.38 09100	79.78 09100	92.38 09100
77.69 09600	90.28 09600	77.69 09600	90.28 09600
73.49 10100	88.18 10100	73.49 10100	88.18 10100
113.38 10600	127.03 10600	113.38 10600	127.03 10600
110.23 11100	124.93 11100	110.23 11100	124.93 11100
107.08 11600	120.73 11600	107.08 11600	120.73 11600
104.98 12100	124.93 12100	104.98 12100	124.93 12100
		143.82 12600	163.77 12600
		142.77 13100	162.72 13100
		140.67 13600	161.67 13600
		142.77 14100	170.07 14100
		195.26 14600	222.56 14600
		190.01 15100	218.36 15100
		185.81 15600	213.11 15600
		195.26 16100	227.81 16100
		253.00 16600	285.55 16600
		245.65 17100	278.20 17100
		239.35 17600	270.85 17600
		236.21 18100	270.85 18100
		312.84 18600	347.48 18600
		304.44 19100	339.09 19100
		294.99 19600	330.69 19600
		289.74 20100	333.84 20100

Steel

Stainless steel

Cast iron

Non ferrous metals

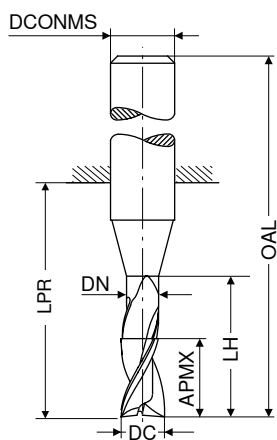
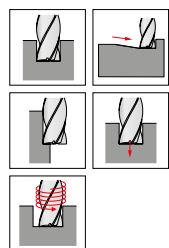
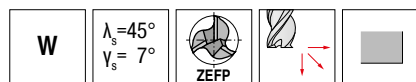
Heat resistant alloys

Hardened materials

→ v_c/f_z Page 62+63

AluLine – End milling cutter

▲ With polished chip flutes



DC _{h6}	APMX	DN	LH	LPR	OAL	DCONMS _{h6}	ZEFP
mm	mm	mm	mm	mm	mm	mm	
2.0	5.5	1.8	10.0	19	55	6	3
2.5	6.5	2.3	12.5	22	58	6	3
3.0	8.0	2.8	15.0	22	58	6	3
3.5	10.5	3.3	20.0	26	62	6	3
4.0	10.5	3.8	20.0	26	62	6	3
4.5	13.0	4.3	25.0	34	70	6	3
5.0	13.0	4.8	25.0	34	70	6	3
5.5	16.0	5.3	30.0	34	70	6	3
6.0	16.0	5.8	30.0	34	70	6	3
6.5	21.0	6.2	40.0	44	80	8	3
7.0	21.0	6.7	40.0	44	80	8	3
7.5	21.0	7.2	40.0	44	80	8	3
8.0	21.0	7.7	40.0	44	80	8	3
8.5	26.0	8.2	50.0	54	94	10	3
9.0	26.0	8.7	50.0	54	94	10	3
9.5	26.0	9.2	50.0	54	94	10	3
10.0	26.0	9.7	50.0	54	94	10	3
10.5	31.0	10.1	60.0	64	109	12	3
11.0	31.0	10.6	60.0	64	109	12	3
11.5	31.0	11.1	60.0	64	109	12	3
12.0	31.0	11.6	60.0	64	109	12	3
12.5	36.0	12.1	70.0	74	119	14	3
13.0	36.0	12.6	70.0	74	119	14	3
13.5	36.0	13.1	70.0	74	119	14	3
14.0	36.0	13.6	70.0	74	119	14	3
14.5	41.0	14.0	80.0	84	132	16	3
15.0	41.0	14.5	80.0	84	132	16	3
15.5	41.0	15.0	80.0	84	132	16	3
16.0	41.0	15.5	80.0	84	132	16	3
16.5	47.0	16.0	90.0	94	142	18	3
17.0	47.0	16.5	90.0	94	142	18	3
17.5	47.0	17.0	90.0	94	142	18	3
18.0	47.0	17.5	90.0	94	142	18	3
18.5	52.0	18.0	100.0	104	154	20	3
19.0	52.0	18.5	100.0	104	154	20	3
19.5	52.0	19.0	100.0	104	154	20	3
20.0	52.0	19.5	100.0	104	154	20	3

Factory standard	Factory standard	Factory standard	Factory standard
HA	HA	HB	HB
NEW V1	NEW V1	NEW V1	NEW V1
Article no.	Article no.	Article no.	Article no.
53 615 ...	53 617 ...	53 616 ...	53 618 ...
£	£	£	£
43.04 02200	52.49 02200	43.04 02200	52.49 02200
41.99 02700	52.49 02700	41.99 02700	52.49 02700
43.04 03200	53.54 03200	43.04 03200	53.54 03200
45.14 03700	55.64 03700	45.14 03700	55.64 03700
46.19 04200	56.69 04200	46.19 04200	56.69 04200
58.79 04700	68.24 04700	58.79 04700	68.24 04700
51.44 05200	61.94 05200	51.44 05200	61.94 05200
59.84 05700	70.34 05700	59.84 05700	70.34 05700
52.49 06200	64.04 06200	52.49 06200	64.04 06200
64.04 06700	75.59 06700	64.04 06700	75.59 06700
61.94 07200	73.49 07200	61.94 07200	73.49 07200
59.84 07700	72.44 07700	59.84 07700	72.44 07700
57.74 08200	70.34 08200	57.74 08200	70.34 08200
97.63 08700	111.28 08700	97.63 08700	111.28 08700
95.53 09200	108.13 09200	95.53 09200	108.13 09200
92.38 09700	106.03 09700	92.38 09700	106.03 09700
88.18 10200	102.88 10200	88.18 10200	102.88 10200
135.42 10700	150.12 10700	135.42 10700	150.12 10700
132.27 11200	145.92 11200	132.27 11200	145.92 11200
128.08 11700	142.77 11700	128.08 11700	142.77 11700
125.98 12200	145.92 12200	125.98 12200	145.92 12200
		172.17 12700	192.11 12700
		171.12 13200	191.06 13200
		169.02 13700	190.01 13700
		171.12 14200	198.41 14200
		234.11 14700	261.40 14700
		228.86 15200	256.15 15200
		223.61 15700	250.90 15700
		235.16 16200	266.65 16200
		303.39 16700	335.94 16700
		294.99 17200	327.54 17200
		286.60 17700	319.14 17700
		283.45 18200	318.09 18200
		406.27 18700	441.97 18700
		395.77 19200	430.42 19200
		384.23 19700	418.87 19700
		376.88 20200	420.97 20200

Steel

Stainless steel

Cast iron

Non ferrous metals

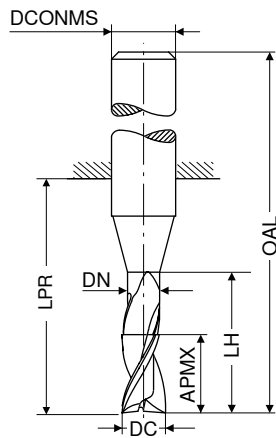
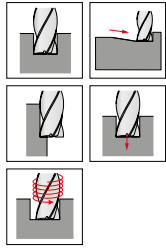
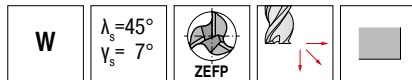
Heat resistant alloys

Hardened materials

→ v_c/f_z Page 62+63

AluLine – End milling cutter

▲ With polished chip flutes



Factory standard		Factory standard		Factory standard		Factory standard	
HA		HA		HB		HB	
NEW V1	Article no.	NEW V1	Article no.	NEW V1	Article no.	NEW V1	Article no.
£	53 615 ...	£	53 617 ...	£	53 616 ...	£	53 618 ...
56.69	02400	67.19	02400	56.69	02400	67.19	02400
56.69	02900	66.14	02900	56.69	02900	66.14	02900
57.74	03400	68.24	03400	57.74	03400	68.24	03400
60.89	03900	71.39	03900	60.89	03900	71.39	03900
61.94	04400	71.39	04400	61.94	04400	71.39	04400
77.69	04900	88.18	04900	77.69	04900	88.18	04900
68.24	05400	78.74	05400	68.24	05400	78.74	05400
79.78	05900	90.28	05900	79.78	05900	90.28	05900
70.34	06400	81.88	06400	70.34	06400	81.88	06400
85.03	06900	96.58	06900	85.03	06900	96.58	06900
82.93	07400	94.48	07400	82.93	07400	94.48	07400
80.83	07900	92.38	07900	80.83	07900	92.38	07900
76.64	08400	90.28	08400	76.64	08400	90.28	08400
130.18	08900	143.82	08900	130.18	08900	143.82	08900
127.03	09400	140.67	09400	127.03	09400	140.67	09400
123.88	09900	136.47	09900	123.88	09900	136.47	09900
117.58	10400	132.27	10400	117.58	10400	132.27	10400
180.57	10900	195.26	10900	180.57	10900	195.26	10900
175.32	11400	190.01	11400	175.32	11400	190.01	11400
170.07	11900	184.76	11900	170.07	11900	184.76	11900
166.92	12400	187.91	12400	166.92	12400	187.91	12400
				272.95	12900	292.89	12900
				269.80	13400	290.79	13400
				267.70	13900	288.70	13900
				270.85	14400	298.14	14400
				370.58	14900	397.87	14900
				362.18	15400	389.48	15400
				352.73	15900	380.03	15900
				371.63	16400	404.17	16400
				480.81	16900	512.30	16900
				467.16	17400	499.70	17400
				453.51	17900	486.06	17900
				448.26	18400	482.91	18400
				594.19	18900	629.88	18900
				578.44	19400	613.08	19400
				561.64	19900	596.29	19900
				551.15	20400	595.24	20400

Steel

Stainless steel

Cast iron

Non ferrous metals

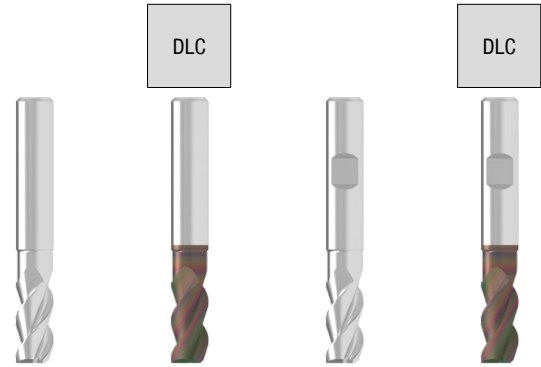
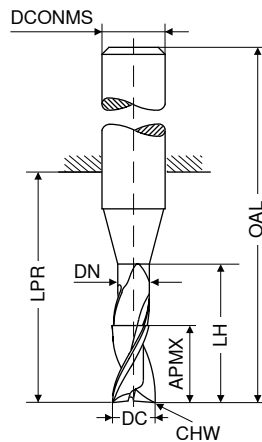
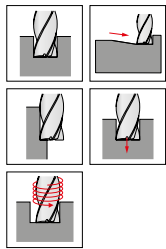
Heat resistant alloys

Hardened materials

→ v_c/f_z Page 62+63

AluLine – End milling cutter

▲ With polished chip flutes



Factory standard



Factory standard



Factory standard



Factory standard



HA



HA



HB



HB

DC _{h6}	APMX	DN	LH	LPR	OAL	DCONMS _{h6}	CHW	ZEFP	NEW V1 Article no. 53 611 ...	NEW V1 Article no. 53 613 ...	NEW V1 Article no. 53 612 ...	NEW V1 Article no. 53 614 ...
mm	mm	mm	mm	mm	mm	mm	mm		£	£	£	£
2.0	4.5	1.8	6.0	14	50	6	0.05	3	35.69 02100	46.19 02100	35.69 02100	46.19 02100
2.5	5.5	2.3	7.5	19	55	6	0.05	3	35.69 02600	45.14 02600	35.69 02600	45.14 02600
3.0	6.5	2.8	9.0	19	55	6	0.10	3	35.69 03100	46.19 03100	35.69 03100	46.19 03100
3.5	8.5	3.3	12.0	19	55	6	0.10	3	37.79 03600	48.29 03600	37.79 03600	48.29 03600
4.0	8.5	3.8	12.0	19	55	6	0.10	3	38.84 04100	48.29 04100	38.84 04100	48.29 04100
4.5	10.5	4.3	15.0	22	58	6	0.10	3	49.34 04600	58.79 04600	49.34 04600	58.79 04600
5.0	10.5	4.8	15.0	22	58	6	0.10	3	43.04 05100	52.49 05100	43.04 05100	52.49 05100
5.5	13.0	5.3	18.0	22	58	6	0.10	3	50.39 05600	59.84 05600	50.39 05600	59.84 05600
6.0	13.0	5.8	18.0	22	58	6	0.20	3	44.09 06100	55.64 06100	44.09 06100	55.64 06100
6.5	17.0	6.2	24.0	28	64	8	0.20	3	52.49 06600	65.09 06600	52.49 06600	65.09 06600
7.0	17.0	6.7	24.0	28	64	8	0.20	3	51.44 07100	62.99 07100	51.44 07100	62.99 07100
7.5	17.0	7.2	24.0	28	64	8	0.20	3	50.39 07600	61.94 07600	50.39 07600	61.94 07600
8.0	17.0	7.7	24.0	28	64	8	0.20	3	48.29 08100	60.89 08100	48.29 08100	60.89 08100
8.5	21.0	8.2	30.0	34	74	10	0.20	3	81.88 08600	94.48 08600	81.88 08600	94.48 08600
9.0	21.0	8.7	30.0	34	74	10	0.20	3	79.78 09100	92.38 09100	79.78 09100	92.38 09100
9.5	21.0	9.2	30.0	34	74	10	0.20	3	77.69 09600	90.28 09600	77.69 09600	90.28 09600
10.0	21.0	9.7	30.0	34	74	10	0.20	3	73.49 10100	88.18 10100	73.49 10100	88.18 10100
10.5	25.0	10.1	36.0	40	85	12	0.20	3	113.38 10600	127.03 10600	113.38 10600	127.03 10600
11.0	25.0	10.6	36.0	40	85	12	0.20	3	110.23 11100	124.93 11100	110.23 11100	124.93 11100
11.5	25.0	11.1	36.0	40	85	12	0.20	3	107.08 11600	120.73 11600	107.08 11600	120.73 11600
12.0	25.0	11.6	36.0	40	85	12	0.20	3	104.98 12100	124.93 12100	104.98 12100	124.93 12100
12.5	29.0	12.1	42.0	46	91	14	0.20	3			143.82 12600	163.77 12600
13.0	29.0	12.6	42.0	46	91	14	0.20	3			142.77 13100	162.72 13100
13.5	29.0	13.1	42.0	46	91	14	0.20	3			140.67 13600	161.67 13600
14.0	29.0	13.6	42.0	46	91	14	0.20	3			142.77 14100	170.07 14100
14.5	33.0	14.0	48.0	52	100	16	0.20	3			195.26 14600	222.56 14600
15.0	33.0	14.5	48.0	52	100	16	0.20	3			190.01 15100	218.36 15100
15.5	33.0	15.0	48.0	52	100	16	0.20	3			185.81 15600	213.11 15600
16.0	33.0	15.5	48.0	52	100	16	0.20	3			195.26 16100	227.81 16100
16.5	38.0	16.0	54.0	58	106	18	0.20	3			253.00 16600	285.55 16600
17.0	38.0	16.5	54.0	58	106	18	0.20	3			245.65 17100	278.20 17100
17.5	38.0	17.0	54.0	58	106	18	0.20	3			239.35 17600	270.85 17600
18.0	38.0	17.5	54.0	58	106	18	0.20	3			236.21 18100	270.85 18100
18.5	42.0	18.0	60.0	64	114	20	0.20	3			312.84 18600	347.48 18600
19.0	42.0	18.5	60.0	64	114	20	0.20	3			304.44 19100	339.09 19100
19.5	42.0	19.0	60.0	64	114	20	0.20	3			294.99 19600	330.69 19600
20.0	42.0	19.5	60.0	64	114	20	0.20	3			289.74 20100	333.84 20100

Steel

Stainless steel

Cast iron

Non ferrous metals

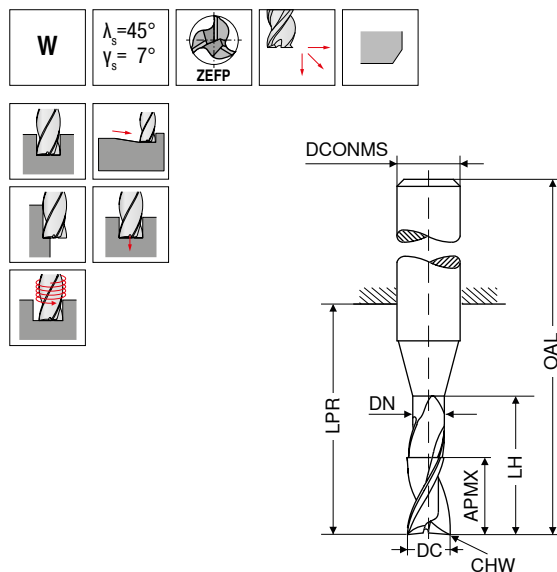
Heat resistant alloys

Hardened materials

→ v_c/f_z Page 62+63

AluLine – End milling cutter

▲ With polished chip flutes



Factory standard		Factory standard		Factory standard		Factory standard	
HA		HA		HB		HB	
NEW V1	Article no.	NEW V1	Article no.	NEW V1	Article no.	NEW V1	Article no.
£	53 611 ...	£	53 613 ...	£	53 612 ...	£	53 614 ...
43.04	02200	52.49	02200	43.04	02200	52.49	02200
41.99	02700	52.49	02700	41.99	02700	52.49	02700
43.04	03200	53.54	03200	43.04	03200	53.54	03200
45.14	03700	55.64	03700	45.14	03700	55.64	03700
46.19	04200	56.69	04200	46.19	04200	56.69	04200
58.79	04700	68.24	04700	58.79	04700	68.24	04700
51.44	05200	61.94	05200	51.44	05200	61.94	05200
59.84	05700	70.34	05700	59.84	05700	70.34	05700
52.49	06200	64.04	06200	52.49	06200	64.04	06200
64.04	06700	75.59	06700	64.04	06700	75.59	06700
61.94	07200	73.49	07200	61.94	07200	73.49	07200
59.84	07700	72.44	07700	59.84	07700	72.44	07700
57.74	08200	70.34	08200	57.74	08200	70.34	08200
97.63	08700	111.28	08700	97.63	08700	111.28	08700
95.53	09200	108.13	09200	95.53	09200	108.13	09200
92.38	09700	106.03	09700	92.38	09700	106.03	09700
88.18	10200	102.88	10200	88.18	10200	102.88	10200
135.42	10700	150.12	10700	135.42	10700	150.12	10700
132.27	11200	145.92	11200	132.27	11200	145.92	11200
128.08	11700	142.77	11700	128.08	11700	142.77	11700
125.98	12200	145.92	12200	125.98	12200	145.92	12200
				200.51	12700	221.51	12700
				199.46	13200	219.41	13200
				197.36	13700	218.36	13700
				199.46	14200	226.76	14200
				272.95	14700	300.24	14700
				266.65	15200	293.94	15200
				260.35	15700	287.65	15700
				274.00	16200	305.49	16200
				353.78	16700	386.33	16700
				344.33	17200	376.88	17200
				334.89	17700	366.38	17700
				330.69	18200	365.33	18200
				437.77	18700	473.46	18700
				426.22	19200	460.86	19200
				413.62	19700	448.26	19700
				406.27	20200	450.36	20200

Steel

Stainless steel

Cast iron

Non ferrous metals

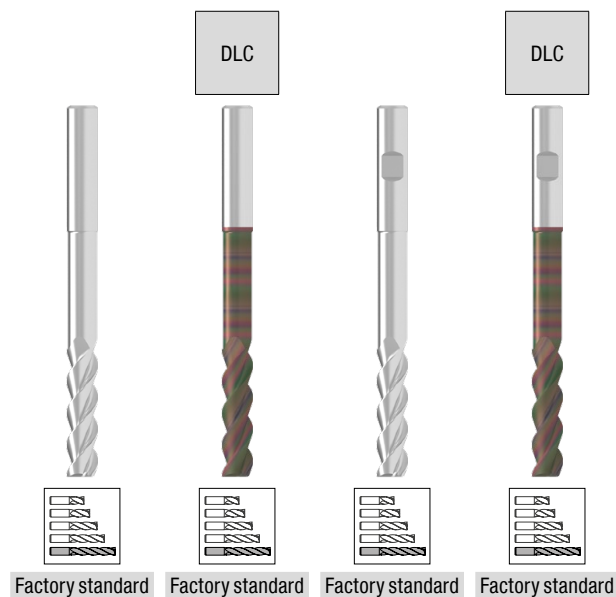
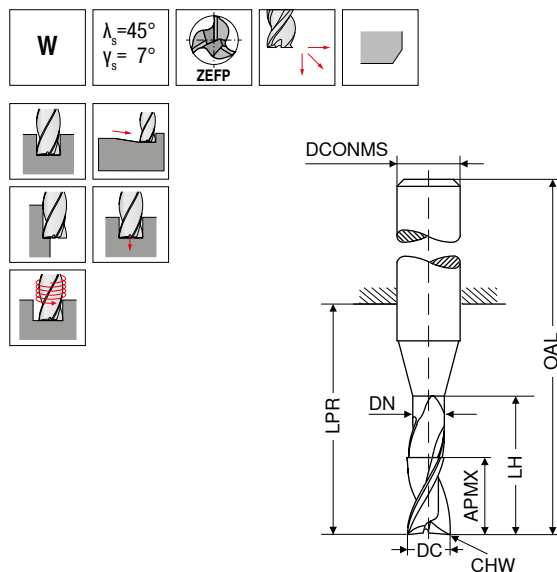
Heat resistant alloys

Hardened materials

→ v_c/f_z Page 62+63

AluLine – End milling cutter

▲ With polished chip flutes



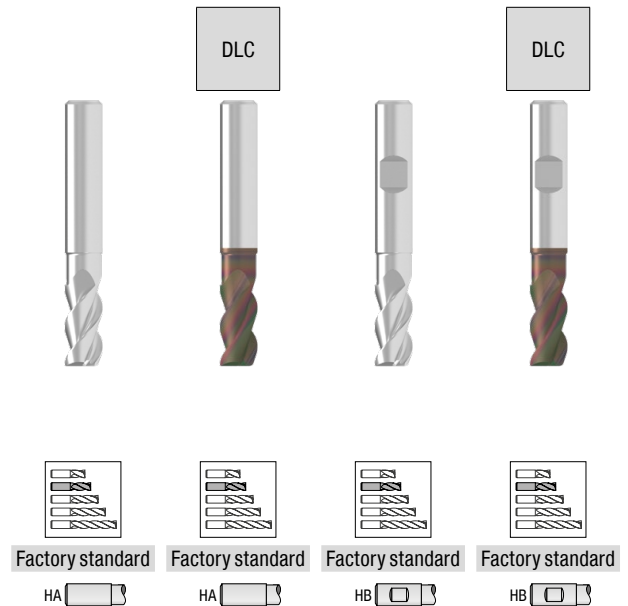
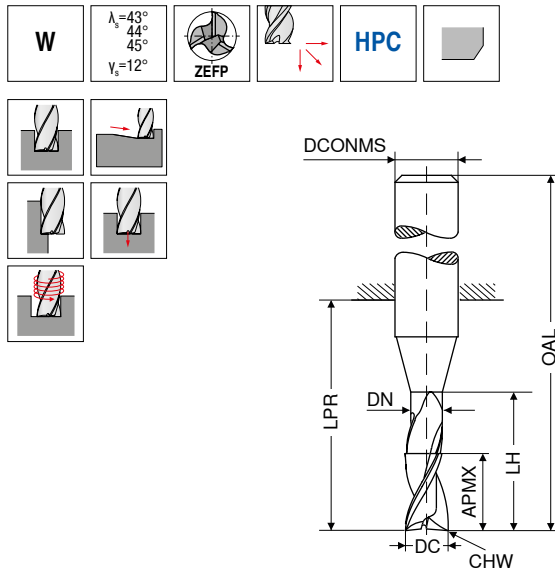
DC _{h6}	APMX	DN	LH	LPR	OAL	DCONMS _{h6}	CHW	ZEFP	NEW V1 Article no. 53 611 ...	NEW V1 Article no. 53 613 ...	NEW V1 Article no. 53 612 ...	NEW V1 Article no. 53 614 ...
mm	mm	mm	mm	mm	mm	mm	mm		£	£	£	£
2.0	8.5	1.8	16	26	62	6	0.05	3	56.69 02400	67.19 02400	56.69 02400	67.19 02400
2.5	10.5	2.3	20	31	67	6	0.05	3	56.69 02900	66.14 02900	56.69 02900	66.14 02900
3.0	12.5	2.8	24	31	67	6	0.10	3	57.74 03400	68.24 03400	57.74 03400	68.24 03400
3.5	16.5	3.3	32	38	74	6	0.10	3	60.89 03900	71.39 03900	60.89 03900	71.39 03900
4.0	16.5	3.8	32	38	74	6	0.10	3	61.94 04400	71.39 04400	61.94 04400	71.39 04400
4.5	20.5	4.3	40	52	88	6	0.10	3	77.69 04900	88.18 04900	77.69 04900	88.18 04900
5.0	20.5	4.8	40	52	88	6	0.10	3	68.24 05400	78.74 05400	68.24 05400	78.74 05400
5.5	25.0	5.3	48	52	88	6	0.10	3	79.78 05900	90.28 05900	79.78 05900	90.28 05900
6.0	25.0	5.8	48	52	88	6	0.20	3	70.34 06400	81.88 06400	70.34 06400	81.88 06400
6.5	33.0	6.2	64	68	104	8	0.20	3	85.03 06900	96.58 06900	85.03 06900	96.58 06900
7.0	33.0	6.7	64	68	104	8	0.20	3	82.93 07400	94.48 07400	82.93 07400	94.48 07400
7.5	33.0	7.2	64	68	104	8	0.20	3	80.83 07900	92.38 07900	80.83 07900	92.38 07900
8.0	33.0	7.7	64	68	104	8	0.20	3	76.64 08400	90.28 08400	76.64 08400	90.28 08400
8.5	41.0	8.2	80	84	124	10	0.20	3	130.18 08900	143.82 08900	130.18 08900	143.82 08900
9.0	41.0	8.7	80	84	124	10	0.20	3	127.03 09400	140.67 09400	127.03 09400	140.67 09400
9.5	41.0	9.2	80	84	124	10	0.20	3	123.88 09900	136.47 09900	123.88 09900	136.47 09900
10.0	41.0	9.7	80	84	124	10	0.20	3	117.58 10400	132.27 10400	117.58 10400	132.27 10400
10.5	49.0	10.1	96	100	145	12	0.20	3	180.57 10900	195.26 10900	180.57 10900	195.26 10900
11.0	49.0	10.6	96	100	145	12	0.20	3	175.32 11400	190.01 11400	175.32 11400	190.01 11400
11.5	49.0	11.1	96	100	145	12	0.20	3	170.07 11900	184.76 11900	170.07 11900	184.76 11900
12.0	49.0	11.6	96	100	145	12	0.20	3	166.92 12400	187.91 12400	166.92 12400	187.91 12400
12.5	57.0	12.1	112	116	161	14	0.20	3			272.95 12900	292.89 12900
13.0	57.0	12.6	112	116	161	14	0.20	3			269.80 13400	290.79 13400
13.5	57.0	13.1	112	116	161	14	0.20	3			267.70 13900	288.70 13900
14.0	57.0	13.6	112	116	161	14	0.20	3			270.85 14400	298.14 14400
14.5	65.0	14.0	128	132	180	16	0.20	3			370.58 14900	397.87 14900
15.0	65.0	14.5	128	132	180	16	0.20	3			362.18 15400	389.48 15400
15.5	65.0	15.0	128	132	180	16	0.20	3			352.73 15900	380.03 15900
16.0	65.0	15.5	128	132	180	16	0.20	3			371.63 16400	404.17 16400
16.5	74.0	16.0	144	148	196	18	0.20	3			480.81 16900	512.30 16900
17.0	74.0	16.5	144	148	196	18	0.20	3			467.16 17400	499.70 17400
17.5	74.0	17.0	144	148	196	18	0.20	3			453.51 17900	486.06 17900
18.0	74.0	17.5	144	148	196	18	0.20	3			448.26 18400	482.91 18400
18.5	82.0	18.0	160	164	214	20	0.20	3			594.19 18900	629.88 18900
19.0	82.0	18.5	160	164	214	20	0.20	3			578.44 19400	613.08 19400
19.5	82.0	19.0	160	164	214	20	0.20	3			561.64 19900	596.29 19900
20.0	82.0	19.5	160	164	214	20	0.20	3			551.15 20400	595.24 20400

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

→ v_c/f_z Page 62+63

AluLine – End milling cutter

▲ With graduated flute depth



DC _{f8}	APMX	DN	LH	LPR	OAL	DCONMS _{h6}	CHW	ZEFP	NEW V1 Article no. 53 584 ... £	NEW V1 Article no. 53 598 ... £	NEW V1 Article no. 53 597 ... £	NEW V1 Article no. 53 599 ... £
3.0	8	2.7	12	21	57	6	0.1	3	44.09 03000	54.59 03000	44.09 03000	54.59 03000
3.5	8	3.2	12	21	57	6	0.1	3	45.14 03600	54.59 03600	45.14 03600	54.59 03600
4.0	11	3.7	18	21	57	6	0.1	3	44.09 04000	54.59 04000	44.09 04000	54.59 04000
4.5	11	4.2	18	21	57	6	0.1	3	44.09 04600	55.64 04600	44.09 04600	55.64 04600
5.0	13	4.7	18	21	57	6	0.1	3	44.09 05000	55.64 05000	44.09 05000	55.64 05000
5.5	13	5.2	18	21	57	6	0.1	3	44.09 05600	55.64 05600	44.09 05600	55.64 05600
6.0	13	5.7	18	21	57	6	0.2	3	45.14 06000	56.69 06000	45.14 06000	56.69 06000
6.5	21	6.1	25	27	63	8	0.2	3	52.49 06600	67.19 06600	52.49 06600	67.19 06600
7.0	21	6.6	25	27	63	8	0.2	3	51.44 07000	67.19 07000	51.44 07000	65.09 07000
7.5	21	7.1	25	27	63	8	0.2	3	52.49 07600	65.09 07600	52.49 07600	65.09 07600
8.0	21	7.4	25	27	63	8	0.2	3	52.49 08000	66.14 08000	52.49 08000	66.14 08000
8.5	22	7.9	30	33	73	10	0.2	3	95.53 08600	110.23 08600	95.53 08600	110.23 08600
9.0	22	8.4	30	33	73	10	0.2	3	95.53 09000	110.23 09000	95.53 09000	110.23 09000
9.5	22	8.9	30	33	73	10	0.2	3	95.53 09600	110.23 09600	95.53 09600	110.23 09600
10.0	22	9.2	30	33	73	10	0.2	3	95.53 10000	110.23 10000	95.53 10000	110.23 10000
10.5	26	9.7	36	38	83	12	0.2	3	133.32 10600	154.32 10600	133.32 10600	154.32 10600
11.0	26	10.0	36	38	83	12	0.2	3	133.32 11000	154.32 11000	133.32 11000	154.32 11000
11.5	26	10.5	36	38	83	12	0.2	3	133.32 11600	153.27 11600	133.32 11600	153.27 11600
12.0	26	11.0	36	38	83	12	0.2	3	133.32 12000	153.27 12000	133.32 12000	153.27 12000
12.5	26	11.5	36	38	83	14	0.2	3			164.82 12600	192.11 12600
13.0	26	12.0	36	38	83	14	0.2	3			164.82 13000	192.11 13000
13.5	26	12.5	36	38	83	14	0.2	3			164.82 13600	192.11 13600
14.0	26	13.0	36	38	83	14	0.2	3			164.82 14000	192.11 14000
14.5	36	13.5	42	44	92	16	0.2	3			258.25 14600	289.74 14600
15.0	36	14.0	42	44	92	16	0.2	3			258.25 15000	289.74 15000
15.5	36	14.5	42	44	92	16	0.2	3			258.25 15600	289.74 15600
16.0	36	15.0	42	44	92	16	0.2	3			258.25 16000	289.74 16000
16.5	36	15.5	42	44	92	18	0.2	3			338.04 16600	373.73 16600
17.0	36	16.0	42	44	92	18	0.2	3			338.04 17000	372.68 17000
17.5	36	16.5	42	44	92	18	0.2	3			338.04 17600	372.68 17600
18.0	36	17.0	42	44	92	18	0.2	3			338.04 18000	372.68 18000
18.5	41	17.5	52	54	104	20	0.2	3			390.53 18600	434.62 18600
19.0	41	18.0	52	54	104	20	0.2	3			390.53 19000	434.62 19000
19.5	41	18.5	52	54	104	20	0.2	3			390.53 19600	434.62 19600
20.0	41	19.0	52	54	104	20	0.2	3			390.53 20000	434.62 20000

Steel

Stainless steel

Cast iron

Non ferrous metals

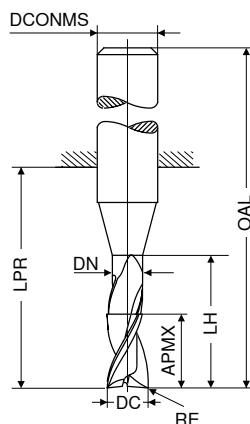
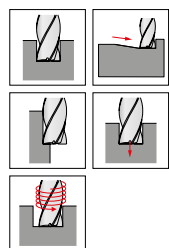
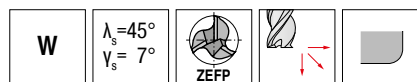
Heat resistant alloys

Hardened materials

→ v_c/f_z Page 62+63

AluLine – End milling cutter with corner radius

▲ With polished chip flutes



Factory standard

Factory standard

Factory standard

Factory standard



DC _{h6}	RE _{±0,05}	APMX	DN	LH	LPR	OAL	DCONMS _{h6}	ZEFP
mm	mm	mm	mm	mm	mm	mm	mm	
2	0.3	4.5	1.8	6	14	50	6	3
2	0.5	4.5	1.8	6	14	50	6	3
3	0.3	6.5	2.7	9	19	55	6	3
3	0.5	6.5	2.7	9	19	55	6	3
3	1.0	6.5	2.7	9	19	55	6	3
4	0.3	8.5	3.7	12	19	55	6	3
4	0.5	8.5	3.7	12	19	55	6	3
4	1.0	8.5	3.7	12	19	55	6	3
5	0.3	10.5	4.7	15	22	58	6	3
5	0.5	10.5	4.7	15	22	58	6	3
5	1.0	10.5	4.7	15	22	58	6	3
6	0.3	13.0	5.7	18	22	58	6	3
6	0.5	13.0	5.7	18	22	58	6	3
6	1.0	13.0	5.7	18	22	58	6	3
6	1.5	13.0	5.7	18	22	58	6	3
8	0.3	17.0	7.4	24	28	64	8	3
8	0.5	17.0	7.4	24	28	64	8	3
8	1.0	17.0	7.4	24	28	64	8	3
8	1.5	17.0	7.4	24	28	64	8	3
8	2.0	17.0	7.4	24	28	64	8	3
10	0.3	21.0	9.2	30	34	74	10	3
10	0.5	21.0	9.2	30	34	74	10	3
10	1.0	21.0	9.2	30	34	74	10	3
10	1.5	21.0	9.2	30	34	74	10	3
10	2.0	21.0	9.2	30	34	74	10	3
10	3.0	21.0	9.2	30	34	74	10	3
12	0.3	25.0	11.0	36	40	85	12	3
12	0.5	25.0	11.0	36	40	85	12	3
12	1.0	25.0	11.0	36	40	85	12	3
12	1.5	25.0	11.0	36	40	85	12	3
12	2.0	25.0	11.0	36	40	85	12	3
12	3.0	25.0	11.0	36	40	85	12	3
12	4.0	25.0	11.0	36	40	85	12	3
16	0.3	33.0	15.0	48	52	100	16	3
16	0.5	33.0	15.0	48	52	100	16	3
16	1.0	33.0	15.0	48	52	100	16	3
16	1.5	33.0	15.0	48	52	100	16	3
16	2.0	33.0	15.0	48	52	100	16	3
16	3.0	33.0	15.0	48	52	100	16	3
16	4.0	33.0	15.0	48	52	100	16	3
20	0.5	42.0	19.0	60	64	114	20	3
20	1.0	42.0	19.0	60	64	114	20	3
20	1.5	42.0	19.0	60	64	114	20	3
20	2.0	42.0	19.0	60	64	114	20	3
20	3.0	42.0	19.0	60	64	114	20	3
20	4.0	42.0	19.0	60	64	114	20	3

NEW V1
Article no.
53 708 ...
£

NEW V1
Article no.
53 710 ...
£

NEW V1
Article no.
53 709 ...
£

NEW V1
Article no.
53 711 ...
£

37.79 02103
37.79 02105
38.84 03103
38.84 03105
38.84 03110
40.94 04103
40.94 04105
40.94 04110
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111.28 12110
111.28 12115
111.28 12120
111.28 12130
111.28 12140

47.24 02103
47.24 02105
48.29 03103
48.29 03105
48.29 03110
51.44 04103
51.44 04105
51.44 04110
56.69 05103
56.69 05105
56.69 05110
58.79 06103
58.79 06105
58.79 06110
58.79 06115
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64.04 08105
64.04 08110
64.04 08115
64.04 08120
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93.43 10105
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132.27 12105
132.27 12110
132.27 12115
132.27 12120
132.27 12130
132.27 12140

37.79 02103
37.79 02105
38.84 03103
38.84 03105
38.84 03110
40.94 04103
40.94 04105
40.94 04110
46.19 05103
46.19 05105
46.19 05110
46.19 06103
46.19 06105
46.19 06110
46.19 06115
51.44 08103
51.44 08105
51.44 08110
51.44 08115
51.44 08120
78.74 10103
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78.74 10130
111.28 12103
111.28 12105
111.28 12110
111.28 12115
111.28 12120
111.28 12130
111.28 12140

47.24 02103
47.24 02105
48.29 03103
48.29 03105
48.29 03110
51.44 04103
51.44 04105
51.44 04110
55.64 05103
55.64 05105
55.64 05110
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58.79 06105
58.79 06110
58.79 06115
64.04 08103
64.04 08105
64.04 08110
64.04 08115
64.04 08120
93.43 10103
93.43 10105
93.43 10110
93.43 10115
93.43 10120
93.43 10130
132.27 12103
132.27 12105
132.27 12110
132.27 12115
132.27 12120
132.27 12130
132.27 12140

Steel

Stainless steel

Cast iron

Non ferrous metals

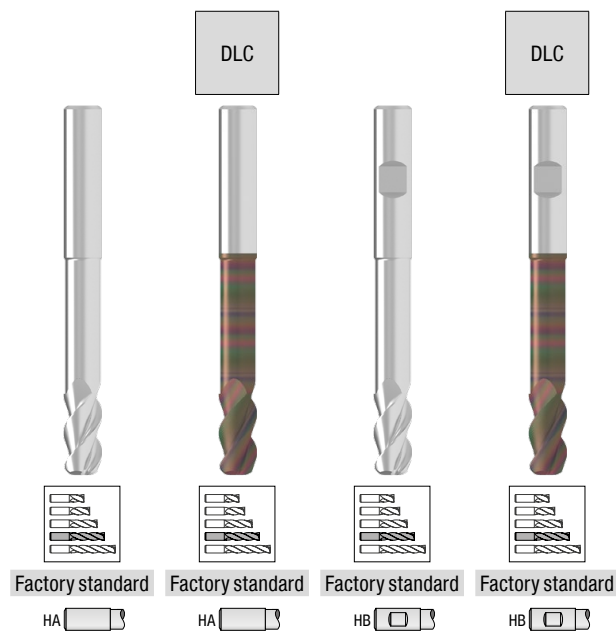
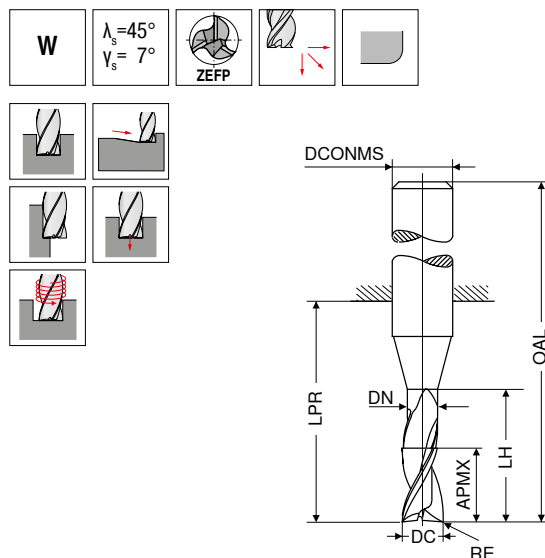
Heat resistant alloys

Hardened materials

→ v_c/f_z Page 62+63

AluLine – End milling cutter with corner radius

▲ With polished chip flutes



DC _{h6}	RE _{±0,05}	APMX	DN	LH	LPR	OAL	DCONMS _{h6}	ZEFP	NEW V1	NEW V1	NEW V1	NEW V1
mm	mm	mm	mm	mm	mm	mm	mm		Article no.	Article no.	Article no.	Article no.
2	0.3	5.5	1.8	10	19	55	6	3	53 708 ...	53 710 ...	53 709 ...	53 711 ...
2	0.5	5.5	1.8	10	19	55	6	3	45.14 02203	54.59 02203	45.14 02203	54.59 02203
3	0.3	8.0	2.7	15	22	58	6	3	45.14 02205	54.59 02205	45.14 02205	54.59 02205
3	0.5	8.0	2.7	15	22	58	6	3	47.24 03203	57.74 03203	46.19 03203	56.69 03203
3	1.0	8.0	2.7	15	22	58	6	3	47.24 03205	57.74 03205	46.19 03205	56.69 03205
4	0.3	10.5	3.7	20	26	62	6	3	47.24 03210	57.74 03210	46.19 03210	56.69 03210
4	0.5	10.5	3.7	20	26	62	6	3	49.34 04203	58.79 04203	49.34 04203	58.79 04203
4	1.0	10.5	3.7	20	26	62	6	3	49.34 04205	58.79 04205	49.34 04205	58.79 04205
5	0.3	13.0	4.7	25	34	70	6	3	49.34 04210	58.79 04210	49.34 04210	58.79 04210
5	0.5	13.0	4.7	25	34	70	6	3	54.59 05203	65.09 05203	54.59 05203	65.09 05203
5	1.0	13.0	4.7	25	34	70	6	3	54.59 05205	65.09 05205	54.59 05205	65.09 05205
6	0.3	16.0	5.7	30	34	70	6	3	54.59 05210	65.09 05210	54.59 05210	65.09 05210
6	0.5	16.0	5.7	30	34	70	6	3	55.64 06203	67.19 06203	55.64 06203	67.19 06203
6	1.0	16.0	5.7	30	34	70	6	3	55.64 06205	67.19 06205	55.64 06205	67.19 06205
6	1.5	16.0	5.7	30	34	70	6	3	55.64 06210	67.19 06210	55.64 06210	67.19 06210
8	0.3	21.0	7.4	40	44	80	8	3	55.64 06215	67.19 06215	55.64 06215	67.19 06215
8	0.5	21.0	7.4	40	44	80	8	3	60.89 08203	74.54 08203	60.89 08203	74.54 08203
8	1.0	21.0	7.4	40	44	80	8	3	60.89 08205	74.54 08205	60.89 08205	74.54 08205
8	1.5	21.0	7.4	40	44	80	8	3	60.89 08210	74.54 08210	60.89 08210	74.54 08210
8	2.0	21.0	7.4	40	44	80	8	3	60.89 08215	74.54 08215	60.89 08215	74.54 08215
10	0.3	26.0	9.2	50	54	94	10	3	60.89 08220	74.54 08220	60.89 08220	74.54 08220
10	0.5	26.0	9.2	50	54	94	10	3	94.48 10203	109.18 10203	94.48 10203	109.18 10203
10	1.0	26.0	9.2	50	54	94	10	3	94.48 10205	109.18 10205	94.48 10205	109.18 10205
10	1.5	26.0	9.2	50	54	94	10	3	94.48 10210	109.18 10210	94.48 10210	109.18 10210
10	2.0	26.0	9.2	50	54	94	10	3	94.48 10215	109.18 10215	94.48 10215	109.18 10215
10	3.0	26.0	9.2	50	54	94	10	3	94.48 10220	109.18 10220	94.48 10220	109.18 10220
12	0.3	31.0	11.0	60	64	109	12	3	94.48 10230	109.18 10230	94.48 10230	109.18 10230
12	0.5	31.0	11.0	60	64	109	12	3	133.32 12203	154.32 12203	133.32 12203	154.32 12203
12	1.0	31.0	11.0	60	64	109	12	3	133.32 12205	154.32 12205	133.32 12205	154.32 12205
12	1.5	31.0	11.0	60	64	109	12	3	133.32 12210	154.32 12210	133.32 12210	154.32 12210
12	2.0	31.0	11.0	60	64	109	12	3	133.32 12215	154.32 12215	133.32 12215	154.32 12215
12	3.0	31.0	11.0	60	64	109	12	3	133.32 12220	154.32 12220	133.32 12220	154.32 12220
12	4.0	31.0	11.0	60	64	109	12	3	133.32 12230	154.32 12230	133.32 12230	154.32 12230
16	0.3	41.0	15.0	80	84	132	16	3	133.32 12240	154.32 12240	133.32 12240	154.32 12240
16	0.5	41.0	15.0	80	84	132	16	3			286.60 16203	319.14 16203
16	1.0	41.0	15.0	80	84	132	16	3			286.60 16205	319.14 16205
16	1.5	41.0	15.0	80	84	132	16	3			286.60 16210	319.14 16210
16	2.0	41.0	15.0	80	84	132	16	3			286.60 16215	319.14 16215
16	3.0	41.0	15.0	80	84	132	16	3			286.60 16220	319.14 16220
16	4.0	41.0	15.0	80	84	132	16	3			286.60 16230	319.14 16230
20	0.5	52.0	19.0	100	104	154	20	3			286.60 16240	319.14 16240
20	1.0	52.0	19.0	100	104	154	20	3			451.41 20205	495.51 20205
20	1.5	52.0	19.0	100	104	154	20	3			451.41 20210	495.51 20210
20	2.0	52.0	19.0	100	104	154	20	3			451.41 20215	495.51 20215
20	3.0	52.0	19.0	100	104	154	20	3			451.41 20220	495.51 20220
20	4.0	52.0	19.0	100	104	154	20	3			451.41 20230	495.51 20230
20											451.41 20240	495.51 20240

Steel

Stainless steel

Cast iron

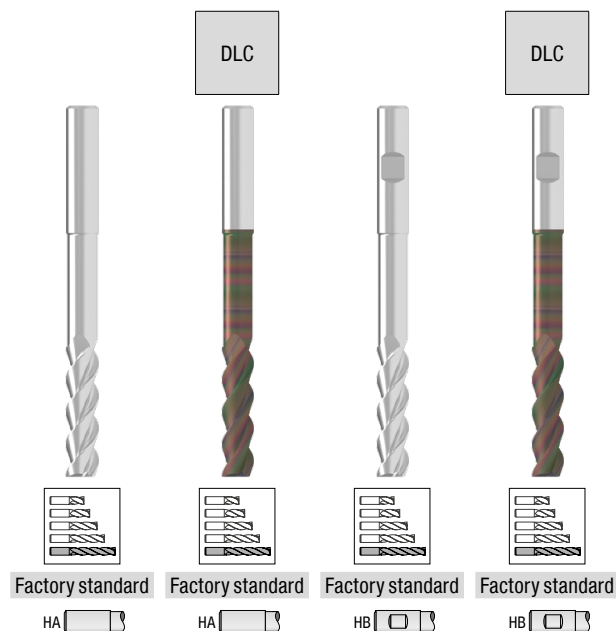
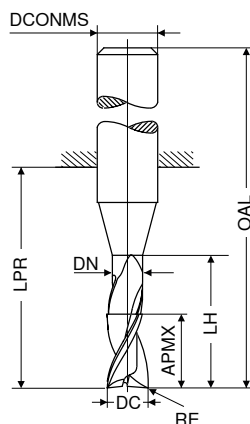
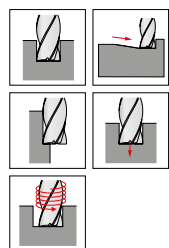
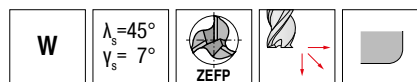
Non ferrous metals

Heat resistant alloys

Hardened materials

AluLine – End milling cutter with corner radius

▲ With polished chip flutes



DC _{h6}	RE _{±0.05}	APMX	DN	LH	LPR	OAL	DCONMS _{h6}	ZEFP	NEW V1 Article no. 53 708 ...	NEW V1 Article no. 53 710 ...	NEW V1 Article no. 53 709 ...	NEW V1 Article no. 53 711 ...
mm	mm	mm	mm	mm	mm	mm	mm		£	£	£	£
2	0.3	8.5	1.8	16	26	62	6	3	49.34 02403	58.79 02403	49.34 02403	58.79 02403
2	0.5	8.5	1.8	16	26	62	6	3	49.34 02405	58.79 02405	49.34 02405	58.79 02405
3	0.3	12.5	2.7	24	31	67	6	3	50.39 03403	59.84 03403	50.39 03403	59.84 03403
3	0.5	12.5	2.7	24	31	67	6	3	50.39 03405	59.84 03405	50.39 03405	59.84 03405
3	1.0	12.5	2.7	24	31	67	6	3	50.39 03410	59.84 03410	50.39 03410	59.84 03410
4	0.3	16.5	3.7	32	38	74	6	3	55.64 04403	65.09 04403	55.64 04403	65.09 04403
4	0.5	16.5	3.7	32	38	74	6	3	55.64 04405	65.09 04405	55.64 04405	65.09 04405
4	1.0	16.5	3.7	32	38	74	6	3	55.64 04410	65.09 04410	53.54 04410	62.99 04410
5	0.3	20.5	4.7	40	52	88	6	3	59.84 05403	69.29 05403	59.84 05403	69.29 05403
5	0.5	20.5	4.7	40	52	88	6	3	59.84 05405	69.29 05405	59.84 05405	69.29 05405
5	1.0	20.5	4.7	40	52	88	6	3	59.84 05410	69.29 05410	59.84 05410	69.29 05410
6	0.3	25.0	5.7	48	52	88	6	3	60.89 06403	72.44 06403	60.89 06403	72.44 06403
6	0.5	25.0	5.7	48	52	88	6	3	60.89 06405	72.44 06405	60.89 06405	72.44 06405
6	1.0	25.0	5.7	48	52	88	6	3	60.89 06410	72.44 06410	60.89 06410	72.44 06410
6	1.5	25.0	5.7	48	52	88	6	3	60.89 06415	72.44 06415	60.89 06415	72.44 06415
8	0.3	33.0	7.4	64	68	104	8	3	81.88 08403	94.48 08403	81.88 08403	94.48 08403
8	0.5	33.0	7.4	64	68	104	8	3	81.88 08405	94.48 08405	81.88 08405	94.48 08405
8	1.0	33.0	7.4	64	68	104	8	3	81.88 08410	94.48 08410	81.88 08410	94.48 08410
8	1.5	33.0	7.4	64	68	104	8	3	81.88 08415	94.48 08415	81.88 08415	94.48 08415
8	2.0	33.0	7.4	64	68	104	8	3	81.88 08420	94.48 08420	81.88 08420	94.48 08420
10	0.3	41.0	9.2	80	84	124	10	3	125.98 10403	140.67 10403	125.98 10403	140.67 10403
10	0.5	41.0	9.2	80	84	124	10	3	125.98 10405	140.67 10405	125.98 10405	140.67 10405
10	1.0	41.0	9.2	80	84	124	10	3	125.98 10410	140.67 10410	125.98 10410	140.67 10410
10	1.5	41.0	9.2	80	84	124	10	3	125.98 10415	140.67 10415	125.98 10415	140.67 10415
10	2.0	41.0	9.2	80	84	124	10	3	125.98 10420	140.67 10420	125.98 10420	140.67 10420
10	3.0	41.0	9.2	80	84	124	10	3	125.98 10430	140.67 10430	125.98 10430	140.67 10430
12	0.3	49.0	11.0	96	100	145	12	3	178.47 12403	198.41 12403	178.47 12403	198.41 12403
12	0.5	49.0	11.0	96	100	145	12	3	178.47 12405	198.41 12405	178.47 12405	198.41 12405
12	1.0	49.0	11.0	96	100	145	12	3	178.47 12410	198.41 12410	178.47 12410	198.41 12410
12	1.5	49.0	11.0	96	100	145	12	3	178.47 12415	198.41 12415	178.47 12415	198.41 12415
12	2.0	49.0	11.0	96	100	145	12	3	178.47 12420	198.41 12420	178.47 12420	198.41 12420
12	3.0	49.0	11.0	96	100	145	12	3	178.47 12430	198.41 12430	178.47 12430	198.41 12430
12	4.0	49.0	11.0	96	100	145	12	3	178.47 12440	198.41 12440	178.47 12440	198.41 12440
16	0.3	65.0	15.0	128	132	180	16	3			326.49 16403	359.03 16403
16	0.5	65.0	15.0	128	132	180	16	3			326.49 16405	359.03 16405
16	1.0	65.0	15.0	128	132	180	16	3			326.49 16410	359.03 16410
16	1.5	65.0	15.0	128	132	180	16	3			326.49 16415	359.03 16415
16	2.0	65.0	15.0	128	132	180	16	3			326.49 16420	359.03 16420
16	3.0	65.0	15.0	128	132	180	16	3			326.49 16430	359.03 16430
16	4.0	65.0	15.0	128	132	180	16	3			326.49 16440	359.03 16440
20	0.5	82.0	19.0	160	164	214	20	3			535.40 20405	579.49 20405
20	1.0	82.0	19.0	160	164	214	20	3			535.40 20410	579.49 20410
20	1.5	82.0	19.0	160	164	214	20	3			535.40 20415	579.49 20415
20	2.0	82.0	19.0	160	164	214	20	3			535.40 20420	579.49 20420
20	3.0	82.0	19.0	160	164	214	20	3			535.40 20430	579.49 20430
20	4.0	82.0	19.0	160	164	214	20	3			535.40 20440	579.49 20440

Steel

Stainless steel

Cast iron

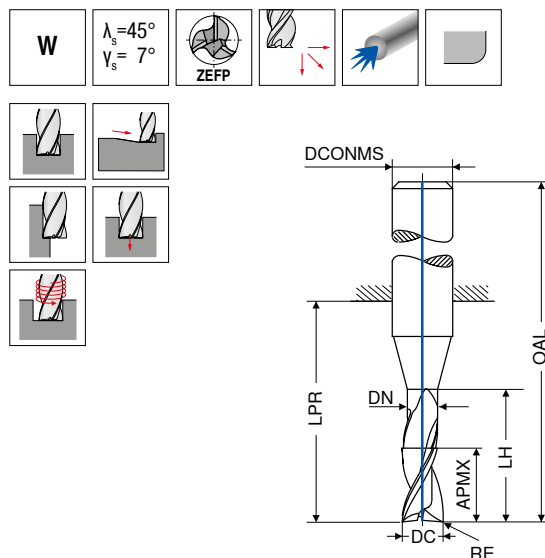
Non ferrous metals

Heat resistant alloys

Hardened materials

AluLine – End milling cutter with corner radius

▲ With polished chip flutes



DLC		DLC	
Factory standard	Factory standard	Factory standard	Factory standard
HA	HA	HB	HB
NEW V1	NEW V1	NEW V1	NEW V1
Article no.	Article no.	Article no.	Article no.
53 712 ...	53 714 ...	53 713 ...	53 715 ...
£	£	£	£
53.54 06103	65.09 06103	53.54 06103	65.09 06103
53.54 06105	65.09 06105	53.54 06105	65.09 06105
53.54 06110	65.09 06110	53.54 06110	65.09 06110
53.54 06115	65.09 06115	53.54 06115	65.09 06115
71.39 08103	83.98 08103	71.39 08103	83.98 08103
71.39 08105	83.98 08105	71.39 08105	83.98 08105
71.39 08110	83.98 08110	71.39 08110	83.98 08110
71.39 08115	83.98 08115	71.39 08115	83.98 08115
71.39 08120	83.98 08120	71.39 08120	83.98 08120
109.18 10103	123.88 10103	109.18 10103	123.88 10103
109.18 10105	123.88 10105	109.18 10105	123.88 10105
109.18 10110	123.88 10110	109.18 10110	123.88 10110
109.18 10115	123.88 10115	109.18 10115	123.88 10115
109.18 10120	123.88 10120	109.18 10120	123.88 10120
109.18 10130	123.88 10130	109.18 10130	123.88 10130
155.37 12103	175.32 12103	155.37 12103	175.32 12103
155.37 12105	175.32 12105	155.37 12105	175.32 12105
155.37 12110	175.32 12110	155.37 12110	175.32 12110
155.37 12115	175.32 12115	155.37 12115	175.32 12115
155.37 12120	175.32 12120	155.37 12120	175.32 12120
155.37 12130	175.32 12130	155.37 12130	175.32 12130
155.37 12140	175.32 12140	155.37 12140	175.32 12140
		233.06 16103	264.55 16103
		233.06 16105	264.55 16105
		233.06 16110	264.55 16110
		233.06 16115	264.55 16115
		233.06 16120	264.55 16120
		233.06 16130	264.55 16130
		233.06 16140	264.55 16140
		474.51 20105	517.55 20105
		474.51 20110	517.55 20110
		474.51 20115	517.55 20115
		474.51 20120	517.55 20120
		474.51 20130	517.55 20130
		474.51 20140	517.55 20140

Steel

Stainless steel

Cast iron

Non ferrous metals

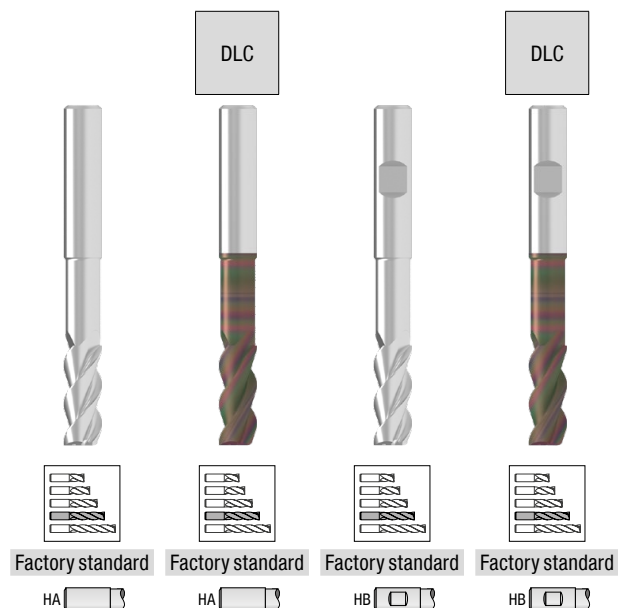
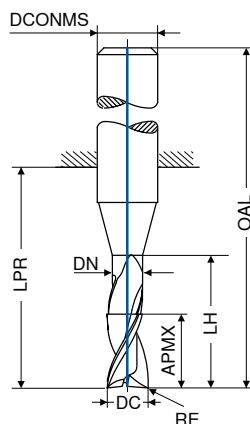
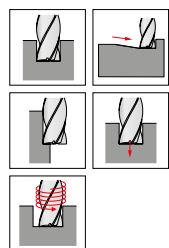
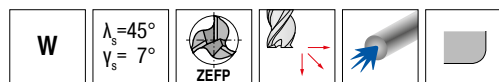
Heat resistant alloys

Hardened materials

→ v_c/f_z Page 62+63

AluLine – End milling cutter with corner radius

▲ With polished chip flutes



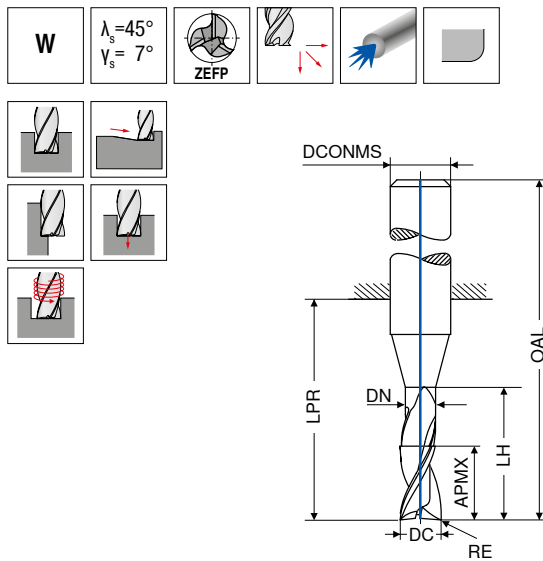
DC _{h6}	RE _{±0,01}	APMX	DN	LH	LPR	OAL	DCONMS _{h5}	ZEFP	NEW V1 Article no. 53 712 ... £	NEW V1 Article no. 53 714 ... £	NEW V1 Article no. 53 713 ... £	NEW V1 Article no. 53 715 ... £
6	0.3	16	5.7	30	34	70	6	3	64.04 06203	75.59 06203	64.04 06203	75.59 06203
6	0.5	16	5.7	30	34	70	6	3	64.04 06205	75.59 06205	64.04 06205	75.59 06205
6	1.0	16	5.7	30	34	70	6	3	64.04 06210	75.59 06210	64.04 06210	75.59 06210
6	1.5	16	5.7	30	34	70	6	3	64.04 06215	75.59 06215	64.04 06215	75.59 06215
8	0.3	21	7.4	40	44	80	8	3	85.03 08203	98.68 08203	85.03 08203	98.68 08203
8	0.5	21	7.4	40	44	80	8	3	85.03 08205	98.68 08205	85.03 08205	98.68 08205
8	1.0	21	7.4	40	44	80	8	3	85.03 08210	98.68 08210	85.03 08210	98.68 08210
8	1.5	21	7.4	40	44	80	8	3	85.03 08215	98.68 08215	85.03 08215	98.68 08215
8	2.0	21	7.4	40	44	80	8	3	85.03 08220	98.68 08220	85.03 08220	98.68 08220
10	0.3	26	9.2	50	54	94	10	3	131.23 10203	145.92 10203	131.23 10203	145.92 10203
10	0.5	26	9.2	50	54	94	10	3	131.23 10205	145.92 10205	131.23 10205	145.92 10205
10	1.0	26	9.2	50	54	94	10	3	131.23 10210	145.92 10210	131.23 10210	145.92 10210
10	1.5	26	9.2	50	54	94	10	3	131.23 10215	145.92 10215	131.23 10215	145.92 10215
10	2.0	26	9.2	50	54	94	10	3	131.23 10220	145.92 10220	131.23 10220	145.92 10220
10	3.0	26	9.2	50	54	94	10	3	131.23 10230	145.92 10230	131.23 10230	145.92 10230
12	0.3	31	11.0	60	64	109	12	3	185.81 12203	206.81 12203	185.81 12203	206.81 12203
12	0.5	31	11.0	60	64	109	12	3	185.81 12205	206.81 12205	185.81 12205	206.81 12205
12	1.0	31	11.0	60	64	109	12	3	185.81 12210	206.81 12210	185.81 12210	206.81 12210
12	1.5	31	11.0	60	64	109	12	3	185.81 12215	206.81 12215	185.81 12215	206.81 12215
12	2.0	31	11.0	60	64	109	12	3	185.81 12220	206.81 12220	185.81 12220	206.81 12220
12	3.0	31	11.0	60	64	109	12	3	185.81 12230	206.81 12230	185.81 12230	206.81 12230
12	4.0	31	11.0	60	64	109	12	3	185.81 12240	206.81 12240	185.81 12240	206.81 12240
16	0.3	41	15.0	80	84	132	16	3			322.29 16203	354.83 16203
16	0.5	41	15.0	80	84	132	16	3			322.29 16205	354.83 16205
16	1.0	41	15.0	80	84	132	16	3			322.29 16210	354.83 16210
16	1.5	41	15.0	80	84	132	16	3			322.29 16215	354.83 16215
16	2.0	41	15.0	80	84	132	16	3			322.29 16220	354.83 16220
16	3.0	41	15.0	80	84	132	16	3			322.29 16230	354.83 16230
16	4.0	41	15.0	80	84	132	16	3			322.29 16240	354.83 16240
20	0.5	52	19.0	100	104	154	20	3			508.10 20205	552.19 20205
20	1.0	52	19.0	100	104	154	20	3			508.10 20210	552.19 20210
20	1.5	52	19.0	100	104	154	20	3			508.10 20215	552.19 20215
20	2.0	52	19.0	100	104	154	20	3			508.10 20220	552.19 20220
20	3.0	52	19.0	100	104	154	20	3			508.10 20230	552.19 20230
20	4.0	52	19.0	100	104	154	20	3			508.10 20240	552.19 20240

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

→ v_c/f_z Page 62+63

AluLine – End milling cutter with corner radius

▲ With polished chip flutes



		DLC				DLC	
							
							
Factory standard		Factory standard		Factory standard		Factory standard	
HA 		HA 		HB 		HB 	
NEW V1		NEW V1		NEW V1		NEW V1	
Article no.		Article no.		Article no.		Article no.	
53 712 ...		53 714 ...		53 713 ...		53 715 ...	
£		£		£		£	
80.83	06403	92.38	06403	86.08	06403	97.63	06403
80.83	06405	92.38	06405	86.08	06405	97.63	06405
80.83	06410	92.38	06410	86.08	06410	97.63	06410
80.83	06415	92.38	06415	86.08	06415	97.63	06415
107.08	08403	119.68	08403	113.38	08403	127.03	08403
107.08	08405	119.68	08405	113.38	08405	127.03	08405
107.08	08410	119.68	08410	113.38	08410	127.03	08410
107.08	08415	119.68	08415	113.38	08415	127.03	08415
107.08	08420	119.68	08420	113.38	08420	127.03	08420
163.77	10403	178.47	10403	175.32	10403	188.96	10403
163.77	10405	178.47	10405	175.32	10405	188.96	10405
163.77	10410	178.47	10410	175.32	10410	188.96	10410
163.77	10415	178.47	10415	175.32	10415	188.96	10415
163.77	10420	178.47	10420	175.32	10420	188.96	10420
163.77	10430	178.47	10430	175.32	10430	188.96	10430
232.01	12403	253.00	12403	247.75	12403	268.75	12403
232.01	12405	253.00	12405	247.75	12405	268.75	12405
232.01	12410	253.00	12410	247.75	12410	268.75	12410
232.01	12415	253.00	12415	247.75	12415	268.75	12415
232.01	12420	253.00	12420	247.75	12420	268.75	12420
232.01	12430	253.00	12430	247.75	12430	268.75	12430
232.01	12440	253.00	12440	247.75	12440	268.75	12440
				600.49	16403	631.98	16403
				600.49	16405	631.98	16405
				600.49	16410	631.98	16410
				600.49	16415	631.98	16415
				600.49	16420	631.98	16420
				600.49	16430	631.98	16430
				600.49	16440	631.98	16440
				912.28	20405	956.37	20405
				912.28	20410	956.37	20410
				912.28	20415	956.37	20415
				912.28	20420	956.37	20420
				912.28	20430	956.37	20430
				912.28	20440	956.37	20440

Steel

Stainless steel

Cast iron

Non ferrous metals

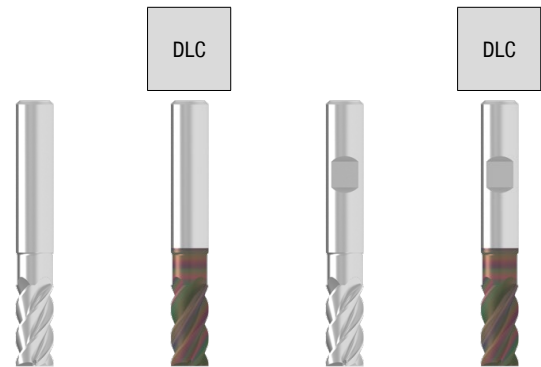
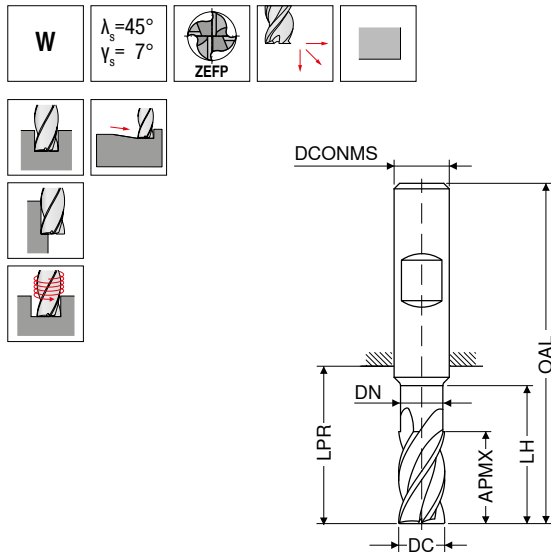
Heat resistant alloys

Hardened materials

→ v_c/f_z Page 62+63

AluLine – End milling cutter

▲ With polished chip flutes



Factory standard



NEW V1

Article no.

53 704 ...

£

46.19 05100

47.24 06100

67.19 08100

89.23 10100

137.52 12100



Factory standard



NEW V1

Article no.

53 706 ...

£

58.79 05100

58.79 06100

80.83 08100

103.93 10100

157.47 12100



Factory standard



NEW V1

Article no.

53 705 ...

£

46.19 05100

47.24 06100

67.19 08100

89.23 10100

137.52 12100

158.52 14100

250.90 16100

269.80 18100

460.86 20100



Factory standard



NEW V1

Article no.

53 707 ...

£

58.79 05100

58.79 06100

80.83 08100

103.93 10100

157.47 12100

185.81 14100

282.40 16100

305.49 18100

503.90 20100

DC _{h6}	APMX	DN	LH	LPR	OAL	DCONMS _{h6}	ZEFP
mm	mm	mm	mm	mm	mm	mm	
5	10.5	4.8	15	22	58	6	4
6	13.0	5.8	18	22	58	6	4
8	17.0	7.7	24	28	64	8	4
10	21.0	9.7	30	34	74	10	4
12	25.0	11.6	36	40	85	12	4
14	29.0	13.6	42	46	91	14	4
16	33.0	15.5	48	52	100	16	4
18	38.0	17.5	54	58	106	18	4
20	42.0	19.5	60	64	114	20	4

Steel

Stainless steel

Cast iron

Non ferrous metals

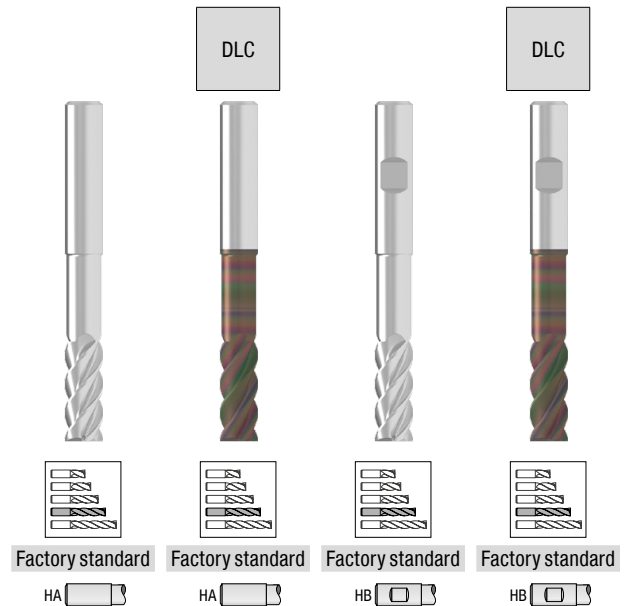
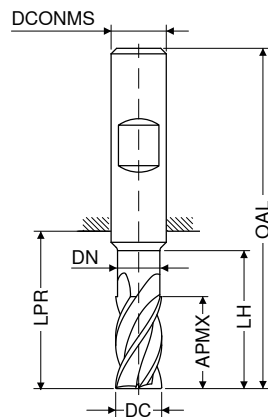
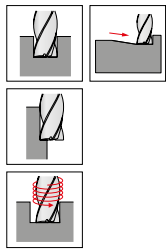
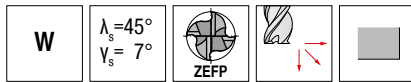
Heat resistant alloys

Hardened materials

→ v_c/f_z Page 62+63

AluLine – End milling cutter

▲ With polished chip flutes



DC _{h6}	APMX	DN	LH	LPR	OAL	DCONMS _{h6}	ZEFP	Article no. 53 704 ...	Article no. 53 706 ...	Article no. 53 705 ...	Article no. 53 707 ...
mm	mm	mm	mm	mm	mm	mm		£	£	£	£
2	5.5	1.8	10	19	55	6	4	37.79 02200	48.29 02200	37.79 02200	47.24 02200
3	8.0	2.8	15	22	58	6	4	49.34 03200	59.84 03200	49.34 03200	58.79 03200
4	10.5	3.8	20	26	62	6	4	47.24 04200	57.74 04200	47.24 04200	56.69 04200
5	13.0	4.8	25	34	70	6	4	45.14 05200	56.69 05200	45.14 05200	56.69 05200
6	16.0	5.8	30	34	70	6	4	47.24 06200	58.79 06200	47.24 06200	58.79 06200
8	21.0	7.7	40	44	80	8	4	67.19 08200	80.83 08200	67.19 08200	80.83 08200
10	26.0	9.7	50	54	94	10	4	89.23 10200	103.93 10200	89.23 10200	103.93 10200
12	31.0	11.6	60	64	109	12	4	137.52 12200	157.47 12200	137.52 12200	157.47 12200
14	36.0	13.6	70	74	119	14	4			165.87 14200	193.16 14200
16	41.0	15.5	80	84	132	16	4			250.90 16200	282.40 16200
18	47.0	17.5	90	94	142	18	4			269.80 18200	305.49 18200
20	52.0	19.5	100	104	154	20	4			460.86 20200	503.90 20200

Steel

Stainless steel

Cast iron

Non ferrous metals

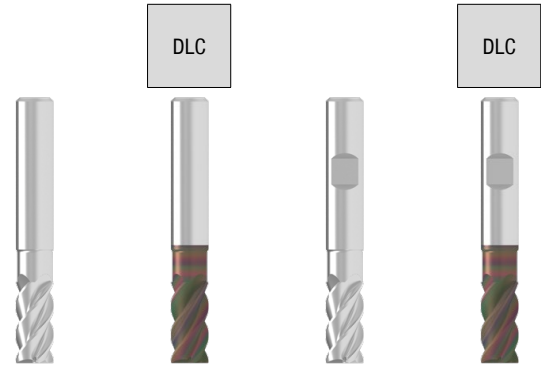
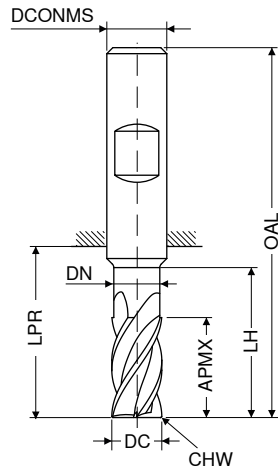
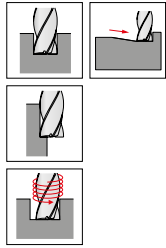
Heat resistant alloys

Hardened materials

→ v_c/f_z Page 62+63

AluLine – End milling cutter

▲ With polished chip flutes



Factory standard



HA



Factory standard



HA



Factory standard



HB



Factory standard



HB

DC _{h6}	APMX	DN	LH	LPR	OAL	DCONMS _{h6}	CHW	ZEFP
mm	mm	mm	mm	mm	mm	mm	mm	
5	10.5	4.8	15	22	58	6	0.1	4
6	13.0	5.8	18	22	58	6	0.2	4
8	17.0	7.7	24	28	64	8	0.2	4
10	21.0	9.7	30	34	74	10	0.2	4
12	25.0	11.6	36	40	85	12	0.2	4
14	29.0	13.6	42	46	91	14	0.2	4
16	33.0	15.5	48	52	100	16	0.2	4
18	38.0	17.5	54	58	106	18	0.2	4
20	42.0	19.5	60	64	114	20	0.2	4

NEW V1
Article no.
53 700 ...

£

46.19 05100

47.24 06100

67.19 08100

89.23 10100

137.52 12100

NEW V1
Article no.
53 702 ...

£

58.79 05100

58.79 06100

80.83 08100

103.93 10100

157.47 12100

NEW V1
Article no.
53 701 ...

£

46.19 05100

47.24 06100

67.19 08100

89.23 10100

137.52 12100

158.52 14100

250.90 16100

269.80 18100

460.86 20100

NEW V1
Article no.
53 703 ...

£

58.79 05100

58.79 06100

80.83 08100

103.93 10100

157.47 12100

185.81 14100

282.40 16100

305.49 18100

503.90 20100

Steel

Stainless steel

Cast iron

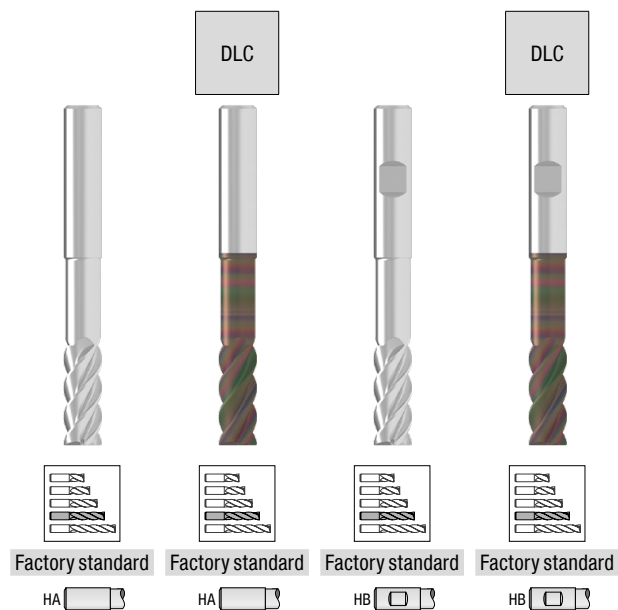
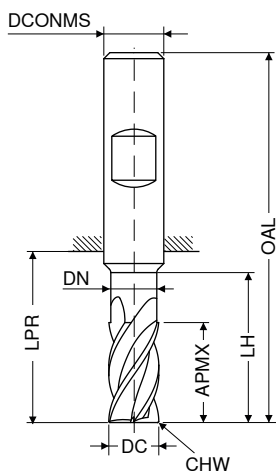
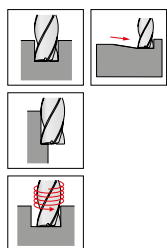
Non ferrous metals

Heat resistant alloys

Hardened materials

→ v_c/f_z Page 62+63

▲ With polished chip flutes

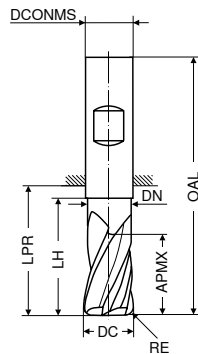
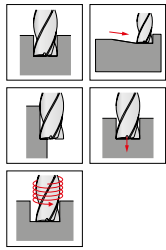
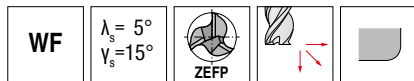


DC _{h6}	APMX	DN	LH	LPR	OAL	DCONMS _{h6}	CHW	ZEFP	NEW V1	NEW V1	NEW V1	NEW V1
									Article no. 53 700 ...	Article no. 53 702 ...	Article no. 53 701 ...	Article no. 53 703 ...
mm	mm	mm	mm	mm	mm	mm	mm		£		£	
2	5.5	1.8	10	19	55	6	0.05	4	37.79	02200	47.24	02200
3	8.0	2.8	15	22	58	6	0.10	4	49.34	03200	58.79	03200
4	10.5	3.8	20	26	62	6	0.10	4	47.24	04200	56.69	04200
5	13.0	4.8	25	34	70	6	0.10	4	45.14	05200	56.69	05200
6	16.0	5.8	30	34	70	6	0.20	4	47.24	06200	58.79	06200
8	21.0	7.7	40	44	80	8	0.20	4	67.19	08200	67.19	08200
10	26.0	9.7	50	54	94	10	0.20	4	89.23	10200	103.93	10200
12	31.0	11.6	60	64	109	12	0.20	4	137.52	12200	157.47	12200
14	36.0	13.6	70	74	119	14	0.20	4			165.87	14200
16	41.0	15.5	80	84	132	16	0.20	4			250.90	16200
18	47.0	17.5	90	94	142	18	0.20	4			269.80	18200
20	52.0	19.5	100	104	154	20	0.20	4			460.86	20200

Hardened materials

→ v_c/f_z Page 62+63

AluLine – Roughing-Finishing Cutter



Factory standard

Factory standard

Factory standard

Factory standard

Factory standard

Factory standard



DC _{es}	RE _{±0,05}	APMX	DN	LH	LPR	OAL	DCONMS _{h6}	ZEFP	NEW V1 Article no. 53 582 ... £	NEW V1 Article no. 53 583 ... £	NEW V1 Article no. 53 582 ... £	NEW V1 Article no. 53 583 ... £	NEW V1 Article no. 53 582 ... £	NEW V1 Article no. 53 583 ... £
3	0.10	5	2.7	18	44	80	6	3			62.99 03301	62.99 03301		
4	0.10	7	3.7	24	44	80	6	3			65.09 04301	65.09 04301		
5	0.15	8	4.7	16	18	54	6	3	54.59 05101	54.59 05101	68.24 05301	68.24 05301		
5	0.15	8	4.7	30	44	80	6	3						
5	0.15	13	4.7	18	21	57	6	3					54.59 05201	54.59 05201
6	0.20	10	5.7	17	18	54	6	3	54.59 06102	54.59 06102				
6	0.20	10	5.7	42	44	80	6	3			74.54 06302	74.54 06302		
6	0.20	13	5.7	18	21	57	6	3					54.59 06202	54.59 06202
8	0.25	13	7.4	20	22	58	8	3	64.04 08103	64.04 08103				
8	0.25	13	7.4	62	64	100	8	3			81.88 08303	81.88 08303		
8	0.25	21	7.4	25	27	63	8	3					67.19 08203	67.19 08203
10	0.30	16	9.2	24	26	66	10	3	87.13 10103	87.13 10103				
10	0.30	16	9.2	58	60	100	10	3			115.48 10303	115.48 10303		
10	0.30	22	9.2	30	32	72	10	3					92.38 10203	92.38 10203
12	0.35	19	11.0	26	28	73	12	3	120.73 12104	120.73 12104				
12	0.35	19	11.0	73	75	120	12	3			148.02 12304	148.02 12304		
12	0.35	26	11.0	36	38	83	12	3					124.93 12204	124.93 12204
16	0.50	25	15.0	32	34	82	16	3		202.61 16105				
16	0.50	25	15.0	100	102	150	16	3				248.80 16305		
16	0.50	36	15.0	42	44	92	16	3						212.06 16205
20	0.60	32	19.0	40	42	92	20	3		338.04 20106				
20	0.60	32	19.0	100	100	150	20	3				369.53 20306		
20	0.60	41	19.0	52	54	104	20	3						362.18 20206

Steel

Stainless steel

Cast iron

Non ferrous metals

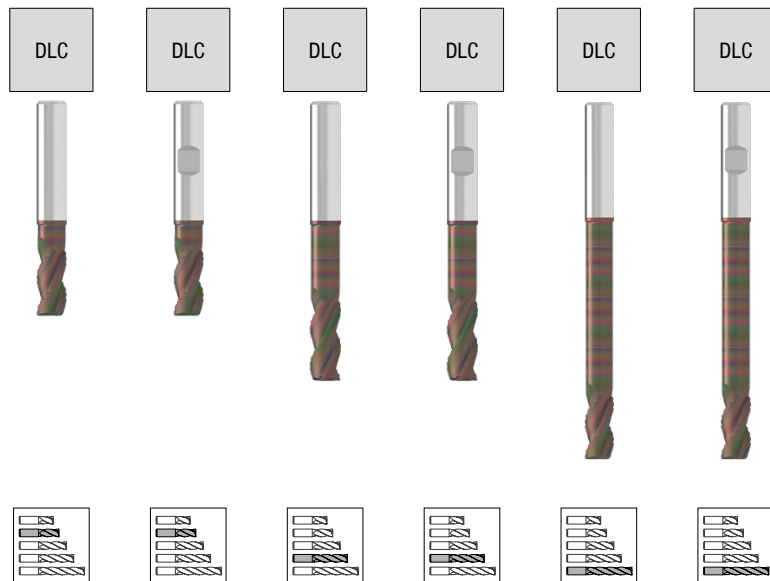
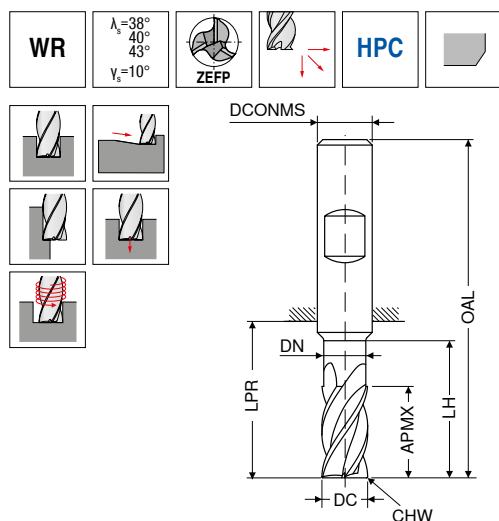
Heat resistant alloys

Hardened materials

→ v_c/f_z Page 62+63

AluLine – Rough milling cutter

▲ With polished chip flutes



									Factory standard		Factory standard		Factory standard		Factory standard		Factory standard		Factory standard	
									HA		HB		HA		HB		HA		HB	
DC _{d11}	APMX	DN	LH	LPR	OAL	DCONMS _{h6}	CHW	ZEFP	NEW V1	Article no.	NEW V1	Article no.	NEW V1	Article no.	NEW V1	Article no.	NEW V1	Article no.	NEW V1	Article no.
mm	mm	mm	mm	mm	mm	mm	mm		£	53 578 ...	£	53 579 ...	£	53 578 ...	£	53 579 ...	£	53 578 ...	£	53 579 ...
6	13	5.8	18	22	58	6	0.4	3	51.44	06100	51.44	06100								
6	13	5.8	48	52	88	6	0.4	3									59.84	06400	59.84	06400
6	16	5.8	30	34	70	6	0.4	3					54.59	06200	54.59	06200				
8	17	7.7	24	28	64	8	0.4	3	62.99	08100	62.99	08100					82.93	08400	82.93	08400
8	17	7.7	65	68	104	8	0.4	3												
8	21	7.7	40	44	80	8	0.4	3					74.54	08200	74.54	08200				
10	21	9.7	30	34	74	10	0.4	3	79.78	10100	79.78	10100								
10	21	9.7	80	84	124	10	0.4	3									117.58	10400	117.58	10400
10	26	9.7	50	54	94	10	0.4	3					102.88	10200	102.88	10200				
12	25	11.6	36	40	85	12	0.4	3	102.88	12100	102.88	12100								
12	25	11.6	96	100	145	12	0.4	3									165.87	12400	165.87	12400
12	31	11.6	60	64	109	12	0.4	3					146.97	12200	146.97	12200				
16	33	15.5	48	52	100	16	0.4	3			160.62	16100								
16	33	15.5	128	132	180	16	0.4	3											338.04	16400
16	41	15.5	80	84	132	16	0.4	3						259.30	16200					
20	42	19.5	60	64	114	20	0.4	3			244.60	20100								
20	42	19.5	160	164	214	20	0.4	3											558.49	20400
20	52	19.5	100	104	154	20	0.4	3						420.97	20200					

Steel

Stainless steel

Cast iron

Non ferrous metals

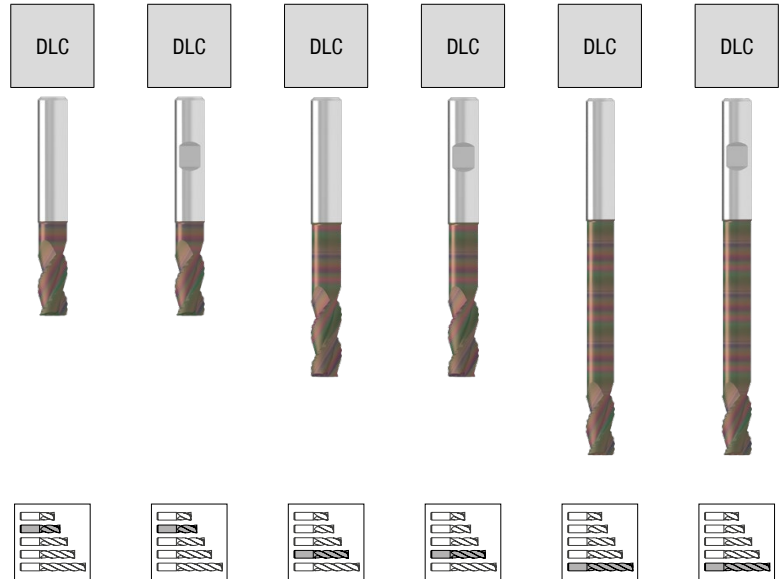
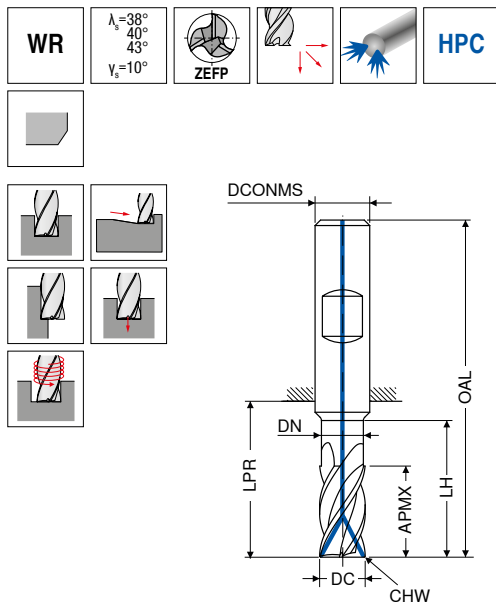
Heat resistant alloys

Hardened materials

→ v_c/f_z Page 62+63

AluLine – Rough milling cutter

▲ With polished chip flutes



Factory standard Factory standard Factory standard Factory standard Factory standard Factory standard



DC _{d11}	APMX	DN	LH	LPR	OAL	DCONMS _{h6}	CHW	ZEFP	NEW V1 Article no. 53 580 ... £	NEW V1 Article no. 53 581 ... £	NEW V1 Article no. 53 580 ... £	NEW V1 Article no. 53 581 ... £	NEW V1 Article no. 53 580 ... £	NEW V1 Article no. 53 581 ... £
6	13	5.8	18	22	58	6	0.4	3	65.09	06100	65.09	06100		
6	13	5.8	48	52	88	6	0.4	3					82.93	06400
6	16	5.8	30	34	70	6	0.4	3			73.49	06200	73.49	06200
8	17	7.7	24	28	64	8	0.4	3	82.93	08100	82.93	08100		
8	17	7.7	64	68	104	8	0.4	3					111.28	08400
8	21	7.7	40	44	80	8	0.4	3			95.53	08200	95.53	08200
10	21	9.7	30	34	74	10	0.4	3	113.38	10100	113.38	10100		
10	21	9.7	80	84	124	10	0.4	3					179.52	10400
10	26	9.7	50	54	94	10	0.4	3			137.52	10200	137.52	10200
12	25	11.6	36	40	85	12	0.4	3	167.97	12100	167.97	12100		
12	25	11.6	96	100	145	12	0.4	3					223.61	12400
12	31	11.6	60	64	109	12	0.4	3			172.17	12200	172.17	12200
16	33	15.5	48	52	100	16	0.4	3		260.35	16100			
16	33	15.5	128	132	180	16	0.4	3						621.48
16	41	15.5	80	84	132	16	0.4	3				356.93	16200	
20	42	19.5	60	64	114	20	0.4	3		529.10	20100			
20	42	19.5	160	164	214	20	0.4	3						949.02
20	52	19.5	100	104	154	20	0.4	3				537.50	20200	

Steel

Stainless steel

Cast iron

Non ferrous metals

Heat resistant alloys

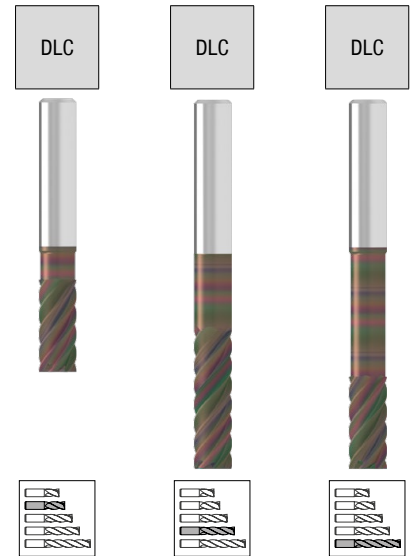
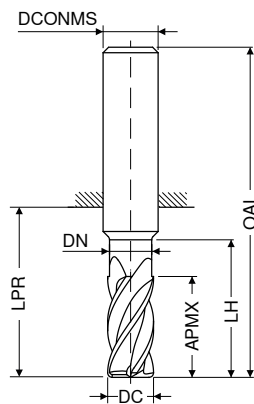
Hardened materials

→ v_c/f_z Page 62+63

AluLine – High Accuracy Finish Milling Cutter

▲ max. taper of 0.003 mm for high precision and parallelism of vertical walls

▲ Tool with cutting edge correction



Factory standard Factory standard Factory standard

HA

HA

HA

DC ₁₈	APMX	DN	LH	LPR	OAL	DCONMS _{h6}	ZEFP
mm	mm	mm	mm	mm	mm	mm	
6	16	5.7	20	22	58	6	6
6	16	5.7	42	44	80	6	6
8	19	7.4	26	28	64	8	6
8	19	7.4	62	64	100	8	6
10	25	9.2	32	34	74	10	6
10	25	9.2	58	60	100	10	6
12	30	11.0	37	39	84	12	6
12	30	11.0	73	75	120	12	6
12	45			75	120	12	6
16	40	15.0	44	45	93	16	6
16	40	15.0	100	102	150	16	6
16	65			102	150	16	6
20	50	19.0	53	54	104	20	6
20	50	19.0	98	100	150	20	6
20	75			100	150	20	6

NEW V1	NEW V1	NEW V1
Article no.	Article no.	Article no.
53 639 ...	53 639 ...	53 639 ...
£	£	£
83.98 06100		97.63 06400
92.38 08100		110.23 08400
120.73 10100		173.22 10400
148.02 12100		222.56 12400
	140.67 12200	
298.14 16100		454.56 16400
	241.45 16200	
429.37 20100		561.64 20400
	517.55 20200	

Steel

Stainless steel

Cast iron

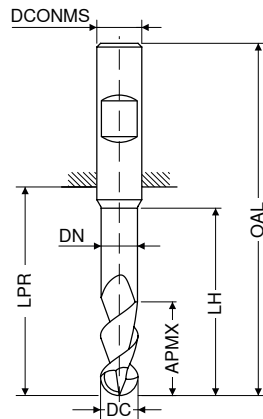
Non ferrous metals

Heat resistant alloys

Hardened materials

→ v_c/f_z Page 64+65

AluLine – Ball Nosed Cutter



Factory standard

Factory standard

Factory standard

Factory standard



DC _{fs}	APMX	DN	LH	LPR	OAL	DCONMS _{h6}	ZEFP
mm	mm	mm	mm	mm	mm	mm	
3	6	2.7	16	22	50	3	2
4	7	3.7	17	26	54	4	2
5	8	4.6	18	26	54	5	2
6	10	5.5	21	26	62	6	2
8	12	7.5	27	31	67	8	2
10	13	9.4	32	34	74	10	2
12	16	11.4	38	48	93	12	2
14	16	13.2	38	55	100	14	2
16	20	15.0	44	52	100	16	2
20	25	19.0	50	54	104	20	2

NEW V1
Article no.
53 607 ...
£

NEW V1
Article no.
53 608 ...
£

NEW V1
Article no.
53 609 ...
£

NEW V1
Article no.
53 610 ...
£

37.79 03100
47.24 04100
53.54 05100
52.49 06100
69.29 08100
94.48 10100
130.18 12100
164.82 14100
216.26 16100
305.49 20100

48.29 03100
56.69 04100
65.09 05100
64.04 06100
82.93 08100
109.18 10100
151.17 12100
192.11 14100
248.80 16100
349.58 20100

52.49 06100
69.29 08100
94.48 10100
130.18 12100
164.82 14100
216.26 16100
305.49 20100

64.04 06100
82.93 08100
109.18 10100
151.17 12100
192.11 14100
248.80 16100
349.58 20100

Steel

Stainless steel

Cast iron

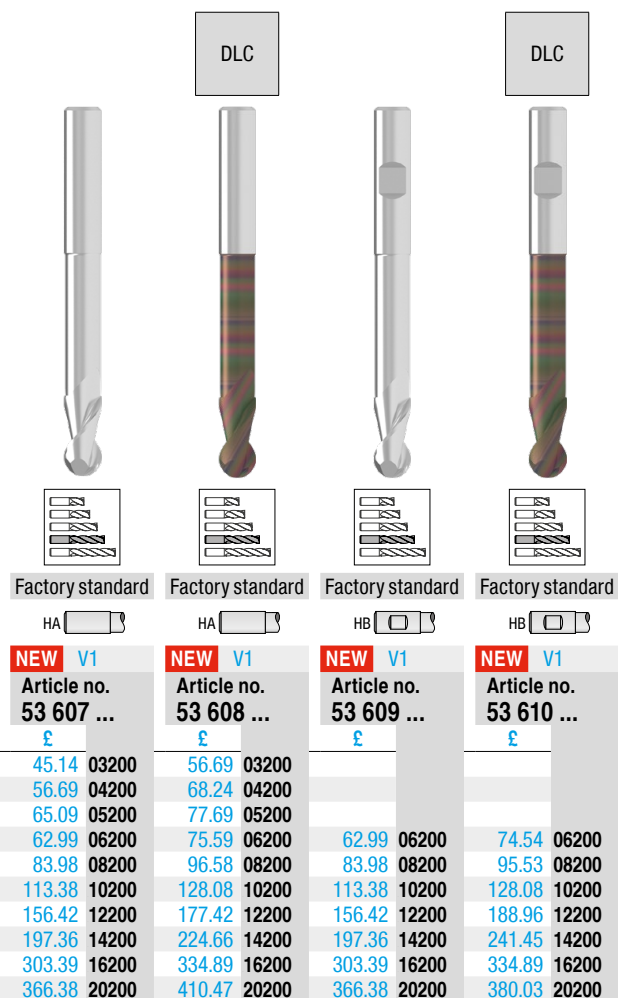
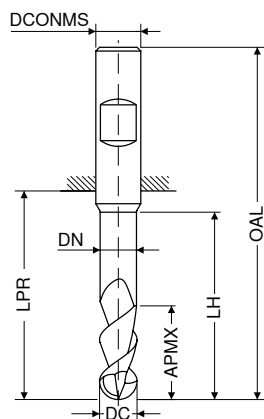
Non ferrous metals

Heat resistant alloys

Hardened materials

→ v_c/f_z Page 64+65

W	$\lambda_s = 45^\circ$ $\gamma_s = 13^\circ$	 ZEFP		
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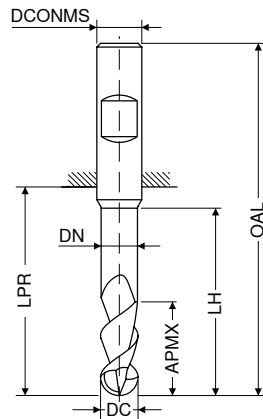


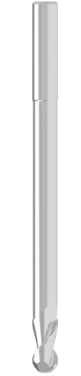
DC ₁₈	APMX	DN	LH	LPR	OAL	DCONMS ₁₆	ZEFP
mm	mm	mm	mm	mm	mm	mm	
3	10	2.7	32	47	75	3	2
4	13	3.7	36	47	75	4	2
5	15	4.6	40	47	75	5	2
6	16	5.5	44	64	100	6	2
8	22	7.5	54	64	100	8	2
10	25	9.4	60	61	101	10	2
12	26	11.4	60	63	108	12	2
14	26	13.2	60	65	110	14	2
16	30	15.0	92	102	150	16	2
20	40	19.0	92	100	150	20	2

Material	1	2	3	4
Steel				
Stainless steel				
Cast iron				
Non ferrous metals				
Heat resistant alloys				
Hardened materials				

→ v_c/f_z Page 64+65

AluLine – Ball Nosed Cutter



	DLC		DLC
			
Factory standard	Factory standard	Factory standard	Factory standard
HA 	HA 	HB 	HB 
NEW V1	NEW V1	NEW V1	NEW V1
Article no.	Article no.	Article no.	Article no.
53 607 ...	53 608 ...	53 609 ...	53 610 ...
£	£	£	£
60.89 03400	70.34 03400		
75.59 04400	85.03 04400		
86.08 06400	97.63 06400	86.08 06400	97.63 06400
83.98 08400	96.58 08400	83.98 08400	96.58 08400
151.17 10400	165.87 10400	151.17 10400	165.87 10400
208.91 12400	228.86 12400	208.91 12400	228.86 12400
433.57 16400	466.11 16400	433.57 16400	466.11 16400

DC ₁₈	APMX	DN	LH	LPR	OAL	DCONMS _{h6}	ZEFP
mm	mm	mm	mm	mm	mm	mm	
3	10	2.7	82	97	125	3	2
4	13	3.7	86	97	125	4	2
6	16	5.5	94	114	150	6	2
8	22	7.5	104	114	150	8	2
10	25	9.4	110	111	151	10	2
12	26	11.4	105	106	151	12	2
16	30	15.0	192	202	250	16	2

Steel

Stainless steel

Cast iron

Non ferrous metals

Heat resistant alloys

Hardened materials

→ v_c/f_z Page 64+65

Material examples referring to the cutting data tables

	Index	Material	Strength N/mm ² / HB / HRC	Material number	Material designation	Material number	Material designation	Material number	Material designation
P	1.1	General construction steel	< 800 N/mm ²	1.0402	EN3B				
	1.2	Free cutting steel	< 800 N/mm ²	1.0711	EN1A				
	1.3	Hardened steel, non alloyed	< 800 N/mm ²	1.0401	EN32C				
	1.4	Alloyed hardened steel	< 1000 N/mm ²	1.7325	25 CD4				
	1.5	Tempering steel, unalloyed	< 850 N/mm ²	1.5752	EN36	1.0535	EN9		
	1.6	Tempering steel, unalloyed	< 1000 N/mm ²	1.6582	EN24				
	1.7	Tempering steel, alloyed	< 800 N/mm ²	1.7225	EN19				
	1.8	Tempering steel, alloyed	< 1300 N/mm ²	1.8515	EN40B				
	1.9	Steel castings	< 850 N/mm ²	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/mm ²	1.8509	EN41B				
	1.11	Nitriding steel	< 1200 N/mm ²	1.1186	EN8	1.1160	EN14A		
	1.12	Roller bearing steel	< 1200 N/mm ²	1.3505	534A99				
	1.13	Spring steel	< 1200 N/mm ²		EN45		EN47		EN43
	1.14	High-speed steel	< 1300 N/mm ²	1.3343	M2	1.3249	M34		
	1.15	Cold working tool steel	< 1300 N/mm ²	1.2379	D2	1.2311	P20		
	1.16	Hot working tool steel	< 1300 N/mm ²	1.2344	H13				
M	2.1	Cast steel and sulphured stainless steel	< 850 N/mm ²	1.4581	318				
	2.2	Stainless steel, ferritic	< 750 N/mm ²	1.4000	403				
	2.3	Stainless steel, martensitic	< 900 N/mm ²	1.4057	EN57				
	2.4	Stainless steel, ferritic / martensitic	< 1100 N/mm ²	1.4028	EN56B				
	2.5	Stainless steel, austenitic / ferritic	< 850 N/mm ²	1.4542	17-4PH				
	2.6	Stainless steel, austenitic	< 750 N/mm ²	1.4305	303	1.4401	316	1.4301	304
	2.7	Heat resistant steel	< 1100 N/mm ²	1.4876	Incoloy 800				
K	3.1	Grey cast iron with lamellar graphite	100–350 N/mm ²	0.6015	Grade 150	0.6020	Grade 220	0.6025	Grade 260
	3.2	Grey cast iron with lamellar graphite	300–500 N/mm ²	0.6030	Grade 300	0.6035	Grade 350	0.6040	Grade 400
	3.3	Gray cast iron with spheroidal graphite	300–500 N/mm ²	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/mm ²	0.7060	SG 600-3	0.7070	SG 700-2	0.7080	SG 800-2
	3.5	White malleable cast iron	270–450 N/mm ²	0.8035	GTW-35	0.8045	GTW-45		
	3.6	White malleable cast iron	500–650 N/mm ²	0.8055	GTW-55	0.8065	GTW-65		
	3.7	Black malleable cast iron	300–450 N/mm ²	0.8135	GTS-35	0.8145	GTS-45		
	3.8	Black malleable cast iron	500–800 N/mm ²	0.8155	GTS-55	0.8170	GTS-70		
N	4.1	Aluminium (non alloyed, low alloyed)	< 350 N/mm ²	3.0255	1050 A	3.0275	1070 A	3.0285	1080 A (A8)
	4.2	Aluminium alloys < 0.5 % Si	< 500 N/mm ²	3.1325	2017 A (AU4G)	3.4335	7005 (AZ5G)	3.4365	7075 (AZ5GU)
	4.3	Aluminium alloy 0.5–10 % Si	< 400 N/mm ²	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/mm ²	3.2581	A-S12	3.2583	A-S12 U		
	4.5	Aluminum alloys > 15 % Si	< 400 N/mm ²		A-S18	A-S17 U4			
	4.6	Copper (non alloyed, low alloyed)	< 350 N/mm ²	2.0040	Cu-c1	2.0060	Cu-a1	2.0090	Cu-b1
	4.7	Copper wrought alloys	< 700 N/mm ²	2.1247	Cub2 (Beryllium 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-A11 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/mm ²	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/mm ²	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/mm ²	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/mm ²	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/mm ²	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/mm ²	2.4964	Co Cr20 W15 Ni10		Co Cr20 Ni16 Mo7		Co Cr28 Mo 6
	5.7	Heat resistant alloys	< 1300 N/mm ²	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/mm ²	2.4851	Ni Cr23Fe (Inconel 601)	2.4668	Ni Cr19NbMo (Inconel 718)	2.4602	Ni Cr21Mo14 Hastelloy C22
	5.9	Pure titanium	< 900 N/mm ²	3.7025	T35 (Titanium Grade 1)	3.7034	T40 (Titanium Grade 2)	3.7064	T60 (Titanium Grade 4)
	5.10	Titanium alloys	< 700 N/mm ²		T-A6-Nb7 (367)		T-A5-Sn2-Mo4-Cr4 (Ti17)		T-A3-V2,5 (Gr18)
	5.11	Titanium alloys	< 1200 N/mm ²	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						

Cutting data standard values – AluLine – End mills – ZEFP = 2

Index	Type short / medium length v _c m/min	Type long / extra long v _c m/min	a _{p,max} x DC	Ø DC = 2 mm			Ø DC = 2,5 mm			Ø DC = 3,0–3,5 mm			Ø DC = 4,0–4,5 mm			Ø DC = 5,0–5,5 mm			Ø DC = 6,0–7,5 mm		
				a _e 0,1–0,2 x DC	a _e 0,3–0,4 x DC	a _e 0,6–1,0 x DC	a _e 0,1–0,2 x DC	a _e 0,3–0,4 x DC	a _e 0,6–1,0 x DC	a _e 0,1–0,2 x DC	a _e 0,3–0,4 x DC	a _e 0,6–1,0 x DC	a _e 0,1–0,2 x DC	a _e 0,3–0,4 x DC	a _e 0,6–1,0 x DC	a _e 0,1–0,2 x DC	a _e 0,3–0,4 x DC	a _e 0,6–1,0 x DC	a _e 0,1–0,2 x DC	a _e 0,3–0,4 x DC	a _e 0,6–1,0 x DC
				f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm
4.1	700	300	1,0	0,036	0,028	0,020	0,045	0,035	0,025	0,054	0,042	0,030	0,072	0,055	0,040	0,090	0,067	0,045	0,100	0,075	0,050
4.2	700	300	1,0	0,036	0,028	0,020	0,045	0,035	0,025	0,054	0,042	0,030	0,072	0,055	0,040	0,090	0,067	0,045	0,100	0,075	0,050
4.3	420	200	1,0	0,027	0,021	0,015	0,034	0,026	0,019	0,041	0,032	0,023	0,054	0,042	0,030	0,070	0,052	0,035	0,080	0,060	0,040
4.4	420	180	1,0	0,027	0,021	0,015	0,034	0,026	0,019	0,041	0,032	0,023	0,054	0,042	0,030	0,070	0,052	0,035	0,080	0,060	0,040
4.5	280	140	1,0	0,027	0,021	0,015	0,034	0,026	0,019	0,041	0,032	0,023	0,054	0,042	0,030	0,070	0,052	0,035	0,080	0,060	0,040
4.6	200	110	1,0	0,018	0,014	0,010	0,022	0,017	0,013	0,027	0,021	0,015	0,036	0,028	0,020	0,050	0,037	0,025	0,060	0,045	0,030
4.7	180	100	1,0	0,018	0,014	0,010	0,022	0,017	0,013	0,027	0,021	0,015	0,036	0,028	0,020	0,050	0,037	0,025	0,060	0,045	0,030
4.8	175	75	1,0	0,018	0,014	0,010	0,022	0,017	0,013	0,027	0,021	0,015	0,036	0,028	0,020	0,050	0,037	0,025	0,060	0,045	0,030
4.9	175	75	1,0	0,018	0,014	0,010	0,022	0,017	0,013	0,027	0,021	0,015	0,036	0,028	0,020	0,050	0,037	0,025	0,060	0,045	0,030
4.10	175	75	1,0	0,018	0,014	0,010	0,022	0,017	0,013	0,027	0,021	0,015	0,036	0,028	0,020	0,050	0,037	0,025	0,060	0,045	0,030
4.11	280	125	1,0	0,018	0,014	0,010	0,022	0,017	0,013	0,027	0,021	0,015	0,036	0,028	0,020	0,050	0,037	0,025	0,060	0,045	0,030
4.12	210	100	1,0	0,018	0,014	0,010	0,022	0,017	0,013	0,027	0,021	0,015	0,036	0,028	0,020	0,050	0,037	0,025	0,060	0,045	0,030
4.13																					
4.14																					
4.15																					
4.16	220	130	1,0	0,027	0,021	0,015	0,034	0,026	0,019	0,041	0,032	0,023	0,054	0,042	0,030	0,070	0,052	0,035	0,080	0,060	0,040
4.17																					
4.18																					
4.19																					

Cutting data standard values – AluLine – End mills – ZEFP = 3–4

Index	Type short / medium length v _c m/min	Type long / extra long v _c m/min	a _{p,max} x DC	Ø DC = 3,0–3,5 mm			Ø DC = 4,0–4,5 mm			Ø DC = 5,0–5,5 mm			Ø DC = 6,0–7,5 mm			Ø DC = 8,0–8,5 mm			Ø DC = 10 mm		
				a _e 0,1–0,2 x DC	a _e 0,3–0,4 x DC	a _e 0,6–1,0 x DC	a _e 0,1–0,2 x DC	a _e 0,3–0,4 x DC	a _e 0,6–1,0 x DC	a _e 0,1–0,2 x DC	a _e 0,3–0,4 x DC	a _e 0,6–1,0 x DC	a _e 0,1–0,2 x DC	a _e 0,3–0,4 x DC	a _e 0,6–1,0 x DC	a _e 0,1–0,2 x DC	a _e 0,3–0,4 x DC	a _e 0,6–1,0 x DC	a _e 0,1–0,2 x DC	a _e 0,3–0,4 x DC	a _e 0,6–1,0 x DC
				f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm
4.1	700	300	1,0	0,048	0,037	0,027	0,063	0,048	0,035	0,080	0,060	0,040	0,100	0,075	0,050	0,120	0,089	0,060	0,130	0,097	0,065
4.2	700	300	1,0	0,048	0,037	0,027	0,063	0,048	0,035	0,080	0,060	0,040	0,100	0,075	0,050	0,120	0,089	0,060	0,130	0,097	0,065
4.3	420	200	1,0	0,041	0,032	0,023	0,054	0,042	0,030	0,070	0,052	0,035	0,080	0,060	0,040	0,100	0,075	0,050	0,120	0,089	0,060
4.4	420	180	1,0	0,041	0,032	0,023	0,054	0,042	0,030	0,070	0,052	0,035	0,080	0,060	0,040	0,100	0,075	0,050	0,120	0,089	0,060
4.5	280	140	1,0	0,041	0,032	0,023	0,054	0,042	0,030	0,070	0,052	0,035	0,080	0,060	0,040	0,100	0,075	0,050	0,120	0,089	0,060
4.6	200	110	1,0	0,027	0,021	0,015	0,036	0,028	0,020	0,050	0,037	0,025	0,060	0,045	0,030	0,080	0,060	0,040	0,100	0,075	0,050
4.7	180	100	1,0	0,027	0,021	0,015	0,036	0,028	0,020	0,050	0,037	0,025	0,060	0,045	0,030	0,080	0,060	0,040	0,100	0,075	0,050
4.8	175	75	1,0	0,027	0,021	0,015	0,036	0,028	0,020	0,050	0,037	0,025	0,060	0,045	0,030	0,080	0,060	0,040	0,100	0,075	0,050
4.9	175	75	1,0	0,027	0,021	0,015	0,036	0,028	0,020	0,050	0,037	0,025	0,060	0,045	0,030	0,080	0,060	0,040	0,100	0,075	0,050
4.10	175	75	1,0	0,027	0,021	0,015	0,036	0,028	0,020	0,050	0,037	0,025	0,060	0,045	0,030	0,080	0,060	0,040	0,100	0,075	0,050
4.11	280	125	1,0	0,027	0,021	0,015	0,036	0,028	0,020	0,050	0,037	0,025	0,060	0,045	0,030	0,080	0,060	0,040	0,100	0,075	0,050
4.12	210	100	1,0	0,027	0,021	0,015	0,036	0,028	0,020	0,050	0,037	0,025	0,060	0,045	0,030	0,080	0,060	0,040	0,100	0,075	0,050
4.13																					
4.14																					
4.15																					
4.16	220	130	1,0	0,041	0,032	0,023	0,054	0,042	0,030	0,070	0,052	0,035	0,080	0,060	0,040	0,100	0,075	0,050	0,120	0,089	0,060
4.17																					
4.18																					
4.19																					

Index	Ø DC = 8,0–9,5 mm			Ø DC = 10,0–11,5 mm			Ø DC = 12,0–13,5 mm			Ø DC = 14,0–15,5 mm			Ø DC = 16,0–17,5 mm			Ø DC = 18,0–19,5 mm			Ø DC = 20 mm			● 1st choice	○ suitable	
	a_p 0,1–0,2 x DC	a_p 0,3–0,4 x DC	a_p 0,6–1,0 x DC	a_p 0,1–0,2 x DC	a_p 0,3–0,4 x DC	a_p 0,6–1,0 x DC	a_p 0,1–0,2 x DC	a_p 0,3–0,4 x DC	a_p 0,6–1,0 x DC	a_p 0,1–0,2 x DC	a_p 0,3–0,4 x DC	a_p 0,6–1,0 x DC	a_p 0,1–0,2 x DC	a_p 0,3–0,4 x DC	a_p 0,6–1,0 x DC	a_p 0,1–0,2 x DC	a_p 0,3–0,4 x DC	a_p 0,6–1,0 x DC	a_p 0,1–0,2 x DC	a_p 0,3–0,4 x DC	a_p 0,6–1,0 x DC	Emulsion	Compressed air	MMS
	f_z mm	f_z mm	f_z mm	f_z mm	f_z mm	f_z mm	f_z mm	f_z mm	f_z mm	f_z mm	f_z mm	f_z mm	f_z mm	f_z mm	f_z mm	f_z mm	f_z mm	f_z mm	f_z mm	f_z mm				
4.1	0,120	0,089	0,060	0,140	0,104	0,070	0,160	0,119	0,080	0,201	0,156	0,110	0,254	0,194	0,150	0,269	0,219	0,170	0,316	0,258	0,200	●	○*	○
4.2	0,120	0,089	0,060	0,140	0,104	0,070	0,160	0,119	0,080	0,201	0,156	0,110	0,254	0,194	0,150	0,269	0,219	0,170	0,316	0,258	0,200	●	○*	○
4.3	0,100	0,075	0,050	0,120	0,089	0,060	0,140	0,104	0,070	0,164	0,127	0,090	0,203	0,155	0,120	0,221	0,181	0,140	0,269	0,219	0,170	●	○*	○
4.4	0,100	0,075	0,050	0,120	0,089	0,060	0,140	0,104	0,070	0,164	0,127	0,090	0,203	0,155	0,120	0,221	0,181	0,140	0,269	0,219	0,170	●	○*	○
4.5	0,100	0,075	0,050	0,120	0,089	0,060	0,140	0,104	0,070	0,164	0,127	0,090	0,203	0,155	0,120	0,221	0,181	0,140	0,269	0,219	0,170	●	○*	○
4.6	0,080	0,060	0,040	0,100	0,075	0,050	0,120	0,089	0,060	0,128	0,099	0,070	0,135	0,103	0,080	0,158	0,129	0,100	0,190	0,155	0,120	●	○*	○
4.7	0,080	0,060	0,040	0,100	0,075	0,050	0,120	0,089	0,060	0,128	0,099	0,070	0,135	0,103	0,080	0,158	0,129	0,100	0,190	0,155	0,120	●	○*	○
4.8	0,080	0,060	0,040	0,100	0,075	0,050	0,120	0,089	0,060	0,128	0,099	0,070	0,135	0,103	0,080	0,158	0,129	0,100	0,190	0,155	0,120	●	○*	○
4.9	0,080	0,060	0,040	0,100	0,075	0,050	0,120	0,089	0,060	0,128	0,099	0,070	0,135	0,103	0,080	0,158	0,129	0,100	0,190	0,155	0,120	●	○*	○
4.10	0,080	0,060	0,040	0,100	0,075	0,050	0,120	0,089	0,060	0,128	0,099	0,070	0,135	0,103	0,080	0,158	0,129	0,100	0,190	0,155	0,120	●	○*	○
4.11	0,080	0,060	0,040	0,100	0,075	0,050	0,120	0,089	0,060	0,128	0,099	0,070	0,135	0,103	0,080	0,158	0,129	0,100	0,190	0,155	0,120	●	○*	○
4.12	0,080	0,060	0,040	0,100	0,075	0,050	0,120	0,089	0,060	0,128	0,099	0,070	0,135	0,103	0,080	0,158	0,129	0,100	0,190	0,155	0,120	●	○*	○
4.13																								
4.14																								
4.15																								
4.16	0,100	0,075	0,050	0,120	0,089	0,060	0,140	0,104	0,070	0,164	0,127	0,090	0,203	0,155	0,120	0,221	0,181	0,140	0,269	0,219	0,170	●	○*	○
4.17																								
4.18																								
4.19																								

* = only suitable for DLC coated cutters

Index	Ø DC = 12 mm			Ø DC = 14 mm			Ø DC = 16 mm			Ø DC = 18 mm			Ø DC = 20 mm			Ø DC = 25 mm			● 1st choice	○ suitable	
	a ₀ 0,1-0,2 x DC	a ₀ 0,3-0,4 x DC	a ₀ 0,6-1,0 x DC	a ₀ 0,1-0,2 x DC	a ₀ 0,3-0,4 x DC	a ₀ 0,6-1,0 x DC	a ₀ 0,1-0,2 x DC	a ₀ 0,3-0,4 x DC	a ₀ 0,6-1,0 x DC	a ₀ 0,1-0,2 x DC	a ₀ 0,3-0,4 x DC	a ₀ 0,6-1,0 x DC	a ₀ 0,1-0,2 x DC	a ₀ 0,3-0,4 x DC	a ₀ 0,6-1,0 x DC	a ₀ 0,1-0,2 x DC	a ₀ 0,3-0,4 x DC	a ₀ 0,6-1,0 x DC	Emulsion	Compressed air	MMS
	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm					
4.1	0,140	0,104	0,070	0,146	0,113	0,080	0,152	0,116	0,090	0,166	0,136	0,105	0,190	0,155	0,120	0,213	0,174	0,135	●	○*	○
4.2	0,140	0,104	0,070	0,146	0,113	0,080	0,152	0,116	0,090	0,166	0,136	0,105	0,190	0,155	0,120	0,213	0,174	0,135	●	○*	○
4.3	0,140	0,104	0,070	0,164	0,127	0,090	0,203	0,155	0,120	0,221	0,181	0,140	0,269	0,219	0,170	0,316	0,258	0,200	●	○*	○
4.4	0,140	0,104	0,070	0,164	0,127	0,090	0,203	0,155	0,120	0,221	0,181	0,140	0,269	0,219	0,170	0,316	0,258	0,200	●	○*	○
4.5	0,140	0,104	0,070	0,164	0,127	0,090	0,203	0,155	0,120	0,221	0,181	0,140	0,269	0,219	0,170	0,316	0,258	0,200	●	○*	○
4.6	0,120	0,089	0,060	0,128	0,099	0,070	0,135	0,103	0,080	0,158	0,129	0,100	0,190	0,155	0,120	0,221	0,181	0,140	●	○*	○
4.7	0,120	0,089	0,060	0,128	0,099	0,070	0,135	0,103	0,080	0,158	0,129	0,100	0,190	0,155	0,120	0,221	0,181	0,140	●	○*	○
4.8	0,120	0,089	0,060	0,128	0,099	0,070	0,135	0,103	0,080	0,158	0,129	0,100	0,190	0,155	0,120	0,221	0,181	0,140	●	○*	○
4.9	0,120	0,089	0,060	0,128	0,099	0,070	0,135	0,103	0,080	0,158	0,129	0,100	0,190	0,155	0,120	0,221	0,181	0,140	●	○*	○
4.10	0,120	0,089	0,060	0,128	0,099	0,070	0,135	0,103	0,080	0,158	0,129	0,100	0,190	0,155	0,120	0,221	0,181	0,140	●	○*	○
4.11	0,120	0,089	0,060	0,128	0,099	0,070	0,135	0,103	0,080	0,158	0,129	0,100	0,190	0,155	0,120	0,221	0,181	0,140	●	○*	○
4.12	0,120	0,089	0,060	0,128	0,099	0,070	0,135	0,103	0,080	0,158	0,129	0,100	0,190	0,155	0,120	0,221	0,181	0,140	●	○*	○
4.13																					
4.14																					
4.15																					
4.16	0,140	0,104	0,070	0,164	0,127	0,090	0,203	0,155	0,120	0,221	0,181	0,140	0,269	0,219	0,170	0,316	0,258	0,200	●	○*	○
4.17																					
4.18																					
4.19																					

* = only suitable for DLC coated cutters

Cutting data – AluLine – Ball Nosed End Mills

Index	Type short / medium length v _c m/min	Type long / extra long v _c m/min	a _{p max} x DC	Ø DC = 3 mm			Ø DC = 4 mm			Ø DC = 5 mm			Ø DC = 6 mm			Ø DC = 8 mm			Ø DC = 10 mm		
				a _e 0,1-0,2 x DC	a _e 0,3-0,4 x DC	a _e 0,6-1,0 x DC	a _e 0,1-0,2 x DC	a _e 0,3-0,4 x DC	a _e 0,6-1,0 x DC	a _e 0,1-0,2 x DC	a _e 0,3-0,4 x DC	a _e 0,6-1,0 x DC	a _e 0,1-0,2 x DC	a _e 0,3-0,4 x DC	a _e 0,6-1,0 x DC	a _e 0,1-0,2 x DC	a _e 0,3-0,4 x DC	a _e 0,6-1,0 x DC	a _e 0,1-0,2 x DC	a _e 0,3-0,4 x DC	a _e 0,6-1,0 x DC
				f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm
4.1	750	450	0,03	0,054	0,042	0,030	0,072	0,055	0,040	0,090	0,067	0,045	0,100	0,075	0,050	0,120	0,089	0,060	0,140	0,104	0,070
4.2	750	450	0,03	0,054	0,042	0,030	0,072	0,055	0,040	0,090	0,067	0,045	0,100	0,075	0,050	0,120	0,089	0,060	0,140	0,104	0,070
4.3	600	360	0,03	0,041	0,032	0,023	0,054	0,042	0,030	0,070	0,052	0,035	0,080	0,060	0,040	0,100	0,075	0,050	0,120	0,089	0,060
4.4	400	240	0,03	0,041	0,032	0,023	0,054	0,042	0,030	0,070	0,052	0,035	0,080	0,060	0,040	0,100	0,075	0,050	0,120	0,089	0,060
4.5	400	240	0,03	0,041	0,032	0,023	0,054	0,042	0,030	0,070	0,052	0,035	0,080	0,060	0,040	0,100	0,075	0,050	0,120	0,089	0,060
4.6	230	170	0,03	0,027	0,021	0,015	0,036	0,028	0,020	0,050	0,037	0,025	0,060	0,045	0,030	0,080	0,060	0,040	0,100	0,075	0,050
4.7	190	145	0,03	0,027	0,021	0,015	0,036	0,028	0,020	0,050	0,037	0,025	0,060	0,045	0,030	0,080	0,060	0,040	0,100	0,075	0,050
4.8	80	55	0,03	0,027	0,021	0,015	0,036	0,028	0,020	0,050	0,037	0,025	0,060	0,045	0,030	0,080	0,060	0,040	0,100	0,075	0,050
4.9	80	55	0,03	0,027	0,021	0,015	0,036	0,028	0,020	0,050	0,037	0,025	0,060	0,045	0,030	0,080	0,060	0,040	0,100	0,075	0,050
4.10	80	55	0,03	0,027	0,021	0,015	0,036	0,028	0,020	0,050	0,037	0,025	0,060	0,045	0,030	0,080	0,060	0,040	0,100	0,075	0,050
4.11	145	85	0,03	0,027	0,021	0,015	0,036	0,028	0,020	0,050	0,037	0,025	0,060	0,045	0,030	0,080	0,060	0,040	0,100	0,075	0,050
4.12	135	105	0,03	0,027	0,021	0,015	0,036	0,028	0,020	0,050	0,037	0,025	0,060	0,045	0,030	0,080	0,060	0,040	0,100	0,075	0,050
4.13	240	145	0,03				0,135	0,104	0,075	0,200	0,149	0,100	0,240	0,179	0,120	0,300	0,224	0,150	0,400	0,298	0,200
4.14	65	40	0,03				0,135	0,104	0,075	0,200	0,149	0,100	0,240	0,179	0,120	0,300	0,224	0,150	0,400	0,298	0,200
4.15																					
4.16	350	210	0,03	0,041	0,032	0,023	0,054	0,042	0,030	0,070	0,052	0,035	0,080	0,060	0,040	0,100	0,075	0,050	0,120	0,089	0,060
4.17																					
4.18																					
4.19																					



Feedrate guides for radius and torus cutters can be found in our main catalogue in the solid carbide milling cutters section on → **page 356**

Cutting data – AluLine – High Accuracy Finishing Cutters

Index	Type short / medium length v _c m/min	Type long / extra long v _c m/min	a _{p max} x DC	Ø DC = 6 mm			Ø DC = 8 mm			Ø DC = 10 mm			Ø DC = 12 mm			Ø DC = 16 mm		
				a _e 0,1-0,2 x DC	a _e 0,3-0,4 x DC	a _e 0,6-1,0 x DC	a _e 0,1-0,2 x DC	a _e 0,3-0,4 x DC	a _e 0,6-1,0 x DC	a _e 0,1-0,2 x DC	a _e 0,3-0,4 x DC	a _e 0,6-1,0 x DC	a _e 0,1-0,2 x DC	a _e 0,3-0,4 x DC	a _e 0,6-1,0 x DC	a _e 0,1-0,2 x DC	a _e 0,3-0,4 x DC	a _e 0,6-1,0 x DC
				f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm
4.1	500	360	2,0	0,030	0,018		0,040	0,024		0,045	0,027		0,050	0,030		0,060	0,036	
4.2	500	360	2,0	0,030	0,018		0,040	0,024		0,045	0,027		0,050	0,030		0,060	0,036	
4.3	300	220	2,0	0,018	0,011		0,020	0,012		0,025	0,015		0,030	0,018		0,050	0,030	
4.4	210	150	2,0	0,018	0,011		0,020	0,012		0,025	0,015		0,030	0,018		0,050	0,030	
4.5	210	150	2,0	0,018	0,011		0,020	0,012		0,025	0,015		0,030	0,018		0,050	0,030	
4.6	150	110	2,0	0,018	0,011		0,020	0,012		0,025	0,015		0,030	0,018		0,050	0,030	
4.7	140	100	2,0	0,018	0,011		0,020	0,012		0,025	0,015		0,030	0,018		0,050	0,030	
4.8	60	40	2,0	0,018	0,011		0,020	0,012		0,025	0,015		0,030	0,018		0,050	0,030	
4.9	60	40	2,0	0,018	0,011		0,020	0,012		0,025	0,015		0,030	0,018		0,050	0,030	
4.10	60	40	2,0	0,018	0,011		0,020	0,012		0,025	0,015		0,030	0,018		0,050	0,030	
4.11	140	100	2,0	0,018	0,011		0,020	0,012		0,025	0,015		0,030	0,018		0,050	0,030	
4.12	150	110	2,0	0,018	0,011		0,020	0,012		0,025	0,015		0,030	0,018		0,050	0,030	
4.13																		
4.14																		
4.15																		
4.16	200	140	2,0	0,018	0,011		0,020	0,012		0,025	0,015		0,030	0,018		0,050	0,030	
4.17																		
4.18																		
4.19																		

Index	Ø DC = 12 mm			Ø DC = 14 mm			Ø DC = 16 mm			Ø DC = 20 mm			●	○	
	a _e 0,1-0,2 x DC	a _e 0,3-0,4 x DC	a _e 0,6-1,0 x DC	a _e 0,1-0,2 x DC	a _e 0,3-0,4 x DC	a _e 0,6-1,0 x DC	a _e 0,1-0,2 x DC	a _e 0,3-0,4 x DC	a _e 0,6-1,0 x DC	a _e 0,1-0,2 x DC	a _e 0,3-0,4 x DC	a _e 0,6-1,0 x DC	1st choice	suitable	
	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	Emulsion	Compressed air	MMS
4.1	0,160	0,119	0,080	0,201	0,156	0,110	0,254	0,194	0,150	0,316	0,258	0,200	●		○
4.2	0,160	0,119	0,080	0,201	0,156	0,110	0,254	0,194	0,150	0,316	0,258	0,200	●		○
4.3	0,140	0,104	0,070	0,164	0,127	0,090	0,203	0,155	0,120	0,269	0,219	0,170	●		○
4.4	0,140	0,104	0,070	0,164	0,127	0,090	0,203	0,155	0,120	0,269	0,219	0,170	●		○
4.5	0,140	0,104	0,070	0,164	0,127	0,090	0,203	0,155	0,120	0,269	0,219	0,170	●		○
4.6	0,120	0,089	0,060	0,128	0,099	0,070	0,135	0,103	0,080	0,190	0,155	0,120	●		○
4.7	0,120	0,089	0,060	0,128	0,099	0,070	0,135	0,103	0,080	0,190	0,155	0,120	●		○
4.8	0,120	0,089	0,060	0,128	0,099	0,070	0,135	0,103	0,080	0,190	0,155	0,120	●		○
4.9	0,120	0,089	0,060	0,128	0,099	0,070	0,135	0,103	0,080	0,190	0,155	0,120	●		○
4.10	0,120	0,089	0,060	0,128	0,099	0,070	0,135	0,103	0,080	0,190	0,155	0,120	●		○
4.11	0,120	0,089	0,060	0,128	0,099	0,070	0,135	0,103	0,080	0,190	0,155	0,120	●		○
4.12	0,120	0,089	0,060	0,128	0,099	0,070	0,135	0,103	0,080	0,190	0,155	0,120	●		○
4.13	0,500	0,373	0,250	0,548	0,424	0,300	0,592	0,452	0,350	0,712	0,581	0,450	●		○
4.14	0,500	0,373	0,250	0,548	0,424	0,300	0,592	0,452	0,350	0,712	0,581	0,450	●		○
4.15															
4.16	0,140	0,104	0,070	0,164	0,127	0,090	0,203	0,155	0,120	0,269	0,219	0,170	●		○
4.17															
4.18															
4.19															

Index	Ø DC = 20 mm			●	○	
				1st choice	suitable	
	a _e 0,1–0,2 x DC	a _e 0,3–0,4 x DC	a _e 0,6–1,0 x DC	Emulsion	Compressed air	MMS
f _z mm						
4.1	0,070	0,042		●		○
4.2	0,070	0,042		●		○
4.3	0,060	0,036		●		○
4.4	0,060	0,036		●		○
4.5	0,060	0,036		●		○
4.6	0,060	0,036		●		○
4.7	0,060	0,036		●		○
4.8	0,060	0,036		●		○
4.9	0,060	0,036		●		○
4.10	0,060	0,036		●		○
4.11	0,060	0,036		●		○
4.12	0,060	0,036		●		○
4.13						
4.14						
4.15						
4.16	0,060	0,036		●		○
4.17						
4.18						
4.19						

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Product programme	67-72
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WNT \ Performance

Premium quality tools for high performance.

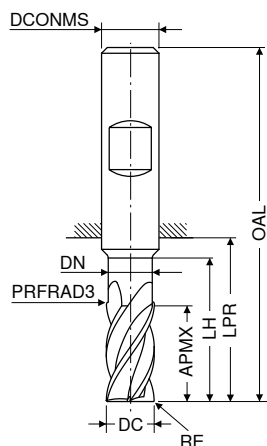
The premium quality tools from the **WNT Performance** product line have been designed for specific applications and are distinguished by their outstanding performance. If you make high demands on the performance of your production and want to achieve the very best results, we recommend the Premium tools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

Overview High Performance Milling Cutters

	Tool type	Number of flutes	Diameter in mm Ø DC	Steel Stainless steel Cast iron Non ferrous metals Heat resistant alloys hardened materials	Sharp Chamfer Radius Full Radius	Length	Tool design	coated uncoated	Pages
									
MonsterMill									
	TCR	4-5	4-20				HPC	☒ ☐	67-69
	TCR	4	2-16					☒ ☐	71
	TCR	2-5	2-16				HPC	☒ ☐	72
CircularLine									
	CCR Ti	5	6-20				HPC	☒ ☐	70

MonsterMill – End milling cutter with corner radius

▲ PRFRAD3 = 1 mm



Factory standard

Factory standard

Factory standard

Factory standard



DC _{e8}	RE	APMX	DN	LH	LPR	OAL	DCONMS _{h5}	ZEFP	NEW V1 Article no. 52 503 ... £	NEW V1 Article no. 52 504 ... £	NEW V1 Article no. 52 505 ... £	NEW V1 Article no. 52 506 ... £
4	0.1	11		14	21	57	6	4	56.85 04000	64.48 04000		
4	0.1	11	3.8	17	21	57	6	5			61.91 04000 ¹⁾	69.54 04000 ¹⁾
5	0.1	13		16	21	57	6	4	56.85 05000	64.48 05000		
5	0.1	13	4.8	19	21	57	6	5			64.74 05000 ¹⁾	72.37 05000 ¹⁾
6	0.1	13			21	57	6	4	56.85 06000	64.48 06000		
6	0.1	13	5.8	19	21	57	6	5			64.74 06000 ¹⁾	72.37 06000 ¹⁾
8	0.2	21			27	63	8	4	78.86 08000	89.63 08000		
8	0.2	21	7.7	25	27	63	8	5			78.86 08000 ¹⁾	89.63 08000 ¹⁾
10	0.2	22			32	72	10	4	95.83 10000	109.13 10000		
10	0.2	22	9.7	30	32	72	10	5			113.40 10000 ¹⁾	126.68 10000 ¹⁾
12	0.2	26			38	83	12	4	102.63 12000	117.67 12000		
12	0.2	26	11.6	36	38	83	12	5			142.85 12000 ¹⁾	157.74 12000 ¹⁾
16	0.3	36			44	92	16	4	178.18 16000	196.54 16000		
16	0.3	36	15.5	42	44	92	16	5			197.01 16000 ¹⁾	215.48 16000 ¹⁾
20	0.3	41			54	104	20	4	259.59 20000	282.23 20000		
20	0.3	41	19.5	52	54	104	20	5			316.99 20000 ¹⁾	339.62 20000 ¹⁾

Steel

Stainless steel

Cast iron

Non ferrous metals

Heat resistant alloys

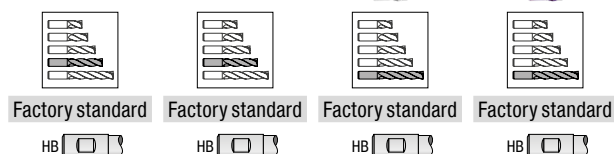
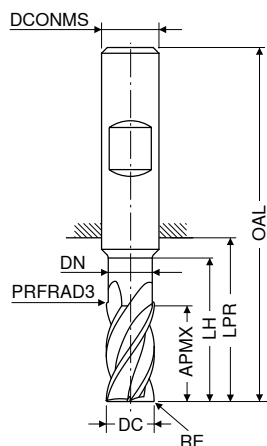
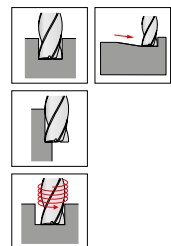
Hardened materials

1) Cutter not suitable for full slot milling, use for finishing and trochoidal milling when slotting only!

→ v_c/f_z Page 74+75

MonsterMill – End milling cutter with corner radius

▲ PRFRAD3 = 1 mm



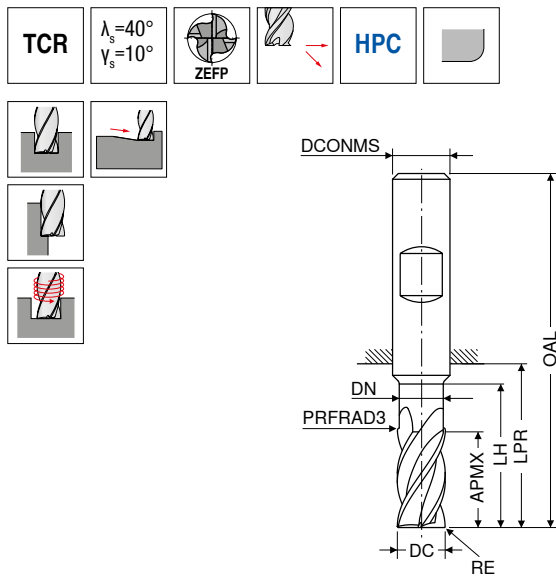
DC _{e8}	RE	APMX	DN	LH	LPR	OAL	DCONMS _{h5}	ZEFP	NEW V1 Article no. 52 507 ... £	NEW V1 Article no. 52 508 ... £	NEW V1 Article no. 52 507 ... £	NEW V1 Article no. 52 508 ... £
4	0.4	8.5	3.8	20	26	62	6	4			59.66 04104	67.29 04104
4	0.5	8.5	3.8	20	26	62	6	4			59.66 04105	67.29 04105
4	0.8	8.5	3.8	20	26	62	6	4			59.66 04108	67.29 04108
4	0.2	11.0		14	21	57	6	4	56.85 04002	64.48 04002		
4	0.4	11.0		14	21	57	6	4	56.85 04004	64.48 04004		
4	0.5	11.0		14	21	57	6	4	56.85 04005	64.48 04005		
5	0.5	10.5	4.8	25	34	70	6	4			67.01 05105	74.64 05105
5	0.8	10.5	4.8	25	34	70	6	4			67.01 05108	74.64 05108
5	0.5	13.0		16	21	57	6	4	59.66 05005	67.29 05005		
5	1.0	13.0		16	21	57	6	4	59.66 05010	67.29 05010		
6	0.4	13.0			21	57	6	4	59.66 06004	67.29 06004		
6	0.5	13.0			21	57	6	4	59.66 06005	67.29 06005		
6	0.6	13.0			21	57	6	4	59.66 06006	67.29 06006		
6	0.6	13.0	5.8	30	34	70	6	4			70.99 06106	78.62 06106
6	0.8	13.0			21	57	6	4	59.66 06008	67.29 06008		
6	0.8	13.0	5.8	30	34	70	6	4			70.99 06108	78.62 06108
6	1.0	13.0	5.8	30	34	70	6	4			70.99 06110	78.62 06110
6	1.0	13.0			21	57	6	4	62.77 06010	70.40 06010		
6	1.5	13.0			21	57	6	4	62.77 06015	70.40 06015		
8	0.8	17.0	7.7	40	44	80	8	4			98.96 08108	109.70 08108
8	1.0	17.0	7.7	40	44	80	8	4			98.96 08110	109.70 08110
8	1.5	17.0	7.7	40	44	80	8	4			98.96 08115	109.70 08115
8	2.0	17.0	7.7	40	44	80	8	4			98.96 08120	109.70 08120
8	0.5	21.0			27	63	8	4	78.86 08005	89.63 08005		
8	0.8	21.0			27	63	8	4	78.86 08008	89.63 08008		
8	1.0	21.0			27	63	8	4	82.28 08010	93.02 08010		
8	1.2	21.0			27	63	8	4	82.28 08012	93.02 08012		
8	1.5	21.0			27	63	8	4	82.28 08015	93.02 08015		
8	2.0	21.0			27	63	8	4	82.28 08020	93.02 08020		
10	0.5	21.0	9.7	50	54	94	10	4			121.83 10105	135.11 10105
10	1.0	21.0	9.7	50	54	94	10	4			121.83 10110	135.11 10110
10	1.5	21.0	9.7	50	54	94	10	4			121.83 10115	135.11 10115
10	2.0	21.0	9.7	50	54	94	10	4			121.83 10120	135.11 10120
10	0.5	22.0			32	72	10	4	95.83 10005	109.13 10005		
10	1.0	22.0			32	72	10	4	98.96 10010	112.26 10010		
10	1.2	22.0			32	72	10	4	98.96 10012	112.26 10012		
10	1.5	22.0			32	72	10	4	98.96 10015	112.26 10015		
10	1.6	22.0			32	72	10	4	98.96 10016	112.26 10016		
10	2.0	22.0			32	72	10	4	98.96 10020	112.26 10020		
12	0.5	25.0	11.6	60	65	110	12	4			153.01 12105	167.91 12105
12	1.0	25.0	11.6	60	65	110	12	4			153.01 12110	167.91 12110
12	1.5	25.0	11.6	60	65	110	12	4			153.01 12115	167.91 12115
12	2.0	25.0	11.6	60	65	110	12	4			153.01 12120	167.91 12120

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

→ v_c/f_z Page 74+75

MonsterMill – End milling cutter with corner radius

▲ PRFRAD3 = 1 mm

DPX52S
DRAGONSKINDPX52S
DRAGONSKIN

Factory standard Factory standard Factory standard Factory standard

HB

HB

HB

HB

DC _{e8}	RE	APMX	DN	LH	LPR	OAL	DCONMS _{h5}	ZEFP	NEW V1 Article no. 52 507 ... £	NEW V1 Article no. 52 508 ... £	NEW V1 Article no. 52 507 ... £	NEW V1 Article no. 52 508 ... £
12	3.0	25.0	11.6	60	65	110	12	4			156.59 12130	171.60 12130
12	4.0	25.0	11.6	60	65	110	12	4			156.59 12140	171.60 12140
12	0.5	26.0			38	83	12	4	102.63 12005	117.67 12005		
12	1.0	26.0			38	83	12	4	106.04 12010	121.02 12010		
12	1.2	26.0			38	83	12	4	106.04 12012	121.02 12012		
12	1.5	26.0			38	83	12	4	106.04 12015	121.02 12015		
12	1.6	26.0			38	83	12	4	106.04 12016	121.02 12016		
12	2.0	26.0			38	83	12	4	106.04 12020	121.02 12020		
12	2.5	26.0			38	83	12	4	106.04 12025	121.02 12025		
12	3.0	26.0			38	83	12	4	106.04 12030	121.02 12030		
14	1.0	29.0	13.6	70	75	120	14	4			212.02 14110	230.38 14110
14	2.0	29.0	13.6	70	75	120	14	4			212.02 14120	230.38 14120
14	3.0	29.0	13.6	70	75	120	14	4			215.71 14130	234.07 14130
14	4.0	29.0	13.6	70	75	120	14	4			215.71 14140	234.07 14140
16	1.0	33.0	15.5	80	84	132	16	4			254.51 16110	272.87 16110
16	2.0	33.0	15.5	80	84	132	16	4			254.51 16120	272.87 16120
16	3.0	33.0	15.5	80	84	132	16	4			257.86 16130	276.22 16130
16	4.0	33.0	15.5	80	84	132	16	4			257.86 16140	276.22 16140
16	1.0	36.0			44	92	16	4	186.04 16010	204.40 16010		
16	1.6	36.0			44	92	16	4	186.04 16016	204.40 16016		
16	2.0	36.0			44	92	16	4	186.04 16020	204.40 16020		
16	2.5	36.0			44	92	16	4	186.04 16025	204.40 16025		
16	3.0	36.0			44	92	16	4	186.04 16030	204.40 16030		
16	3.2	36.0			44	92	16	4	190.54 16032	208.90 16032		
16	4.0	36.0			44	92	16	4	190.54 16040	208.90 16040		
18	1.0	38.0	17.5	90	94	142	18	4			331.65 18110	354.29 18110
18	2.0	38.0	17.5	90	94	142	18	4			331.65 18120	354.29 18120
18	3.0	38.0	17.5	90	94	142	18	4			335.35 18130	357.98 18130
18	4.0	38.0	17.5	90	94	142	18	4			335.35 18140	357.98 18140
20	2.0	41.0			54	104	20	4	259.59 20020	282.23 20020		
20	3.0	41.0			54	104	20	4	259.59 20030	282.23 20030		
20	4.0	41.0			54	104	20	4	264.33 20040	286.96 20040		
20	5.0	41.0			54	104	20	4	264.33 20050	286.96 20050		
20	6.3	41.0			54	104	20	4	268.02 20063	290.66 20063		
20	1.0	42.0	19.5	100	104	154	20	4			362.49 20110	385.12 20110
20	2.0	42.0	19.5	100	104	154	20	4			362.49 20120	385.12 20120
20	3.0	42.0	19.5	100	104	154	20	4			365.83 20130	388.47 20130
20	4.0	42.0	19.5	100	104	154	20	4			365.83 20140	388.47 20140

Steel

Stainless steel

Cast iron

Non ferrous metals

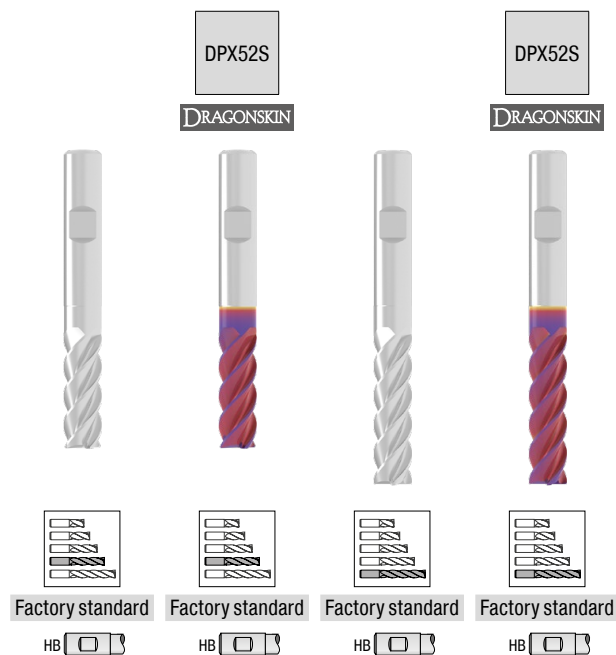
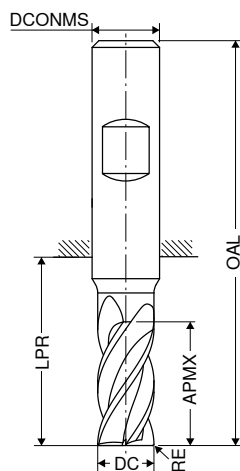
Heat resistant alloys

Hardened materials

→ v_c/f_z Page 74+75

CircularLine – End milling cutter with corner radius

▲ Chip breaker 0.9 x DC



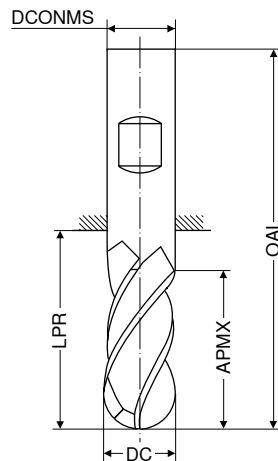
DC _{e8}	RE _{±0,01}	APMX	LPR	OAL	DCONMS _{h5}	ZEFP
mm	mm	mm	mm	mm	mm	
6	0.1	18	29	65	6	5
6	0.1	24	31	67	6	5
8	0.2	24	34	70	8	5
8	0.2	32	44	80	8	5
10	0.2	30	40	80	10	5
10	0.2	40	50	90	10	5
12	0.2	36	50	95	12	5
12	0.2	48	55	100	12	5
16	0.2	48	62	110	16	5
16	0.3	64	72	120	16	5
20	0.3	60	75	125	20	5
20	0.3	80	90	140	20	5

NEW V1	NEW V1	NEW V1	NEW V1
Article no.	Article no.	Article no.	Article no.
52 509 ...	52 510 ...	52 509 ...	52 510 ...
£	£	£	£
68.14	75.79	74.05	81.71
06000	06000	06100	06100
89.34	100.10	93.02	103.77
08000	08000	08100	08100
111.70	124.95	118.25	131.53
10000	10000	10100	10100
143.08	158.09	149.31	164.33
12000	12000	12100	12100
221.37	239.73	235.46	253.94
16000	16000	16100	16100
292.04	314.68	360.98	383.62
20000	20000	20100	20100

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

→ v_c/f_z Page 76+77

MonsterMill – Ball Nosed Cutter



Factory standard

Factory standard

Factory standard

Factory standard



DC _{es}	APMX	LPR	OAL	DCONMS _{h5}	ZEFP	NEW V1 Article no. 52 513 ... £	NEW V1 Article no. 52 514 ... £	NEW V1 Article no. 52 513 ... £	NEW V1 Article no. 52 514 ... £
2	4	18	54	6	4	48.36 02000	59.66 02000	70.40 02100	84.28 02100
2	4	44	80	6	4			70.40 03100	84.28 03100
3	5	44	80	6	4				
3	5	18	54	6	4	48.36 03000	59.66 03000		
4	8	44	80	6	4			70.40 04100	84.28 04100
4	8	18	54	6	4	48.36 04000	59.66 04000		
5	9	44	80	6	4			74.64 05100	88.19 05100
5	9	18	54	6	4	52.32 05000	66.46 05000		
6	10	44	80	6	4			74.64 06100	88.19 06100
6	10	18	54	6	4	52.32 06000	66.46 06000		
8	12	64	100	8	4			76.03 08100	94.44 08100
8	12	22	58	8	4	58.23 08000	75.50 08000		
10	14	60	100	10	4			98.65 10100	121.02 10100
10	14	26	66	10	4	78.03 10000	99.79 10000		
12	16	55	100	12	4			126.91 12100	151.51 12100
12	16	28	73	12	4	100.10 12000	130.61 12000		
16	20	52	100	16	4			174.95 16100	216.87 16100
16	20	34	82	16	4	154.97 16000	195.97 16000		

Steel

Stainless steel

Cast iron

Non ferrous metals

Heat resistant alloys

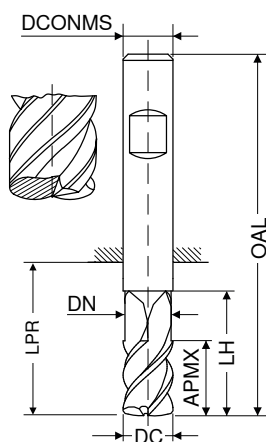
Hardened materials

→ v_c/f_z Page 78+79

MonsterMill – Torus Face Milling Cutter

▲ r_{30} = programmed corner radius

▲ APMX does not correspond to the maximum cutting depth



DIN 6527

DIN 6527

DIN 6527

DIN 6527



NEW V1
Article no.
52 511 ...
£

NEW V1
Article no.
52 512 ...
£

NEW V1
Article no.
52 511 ...
£

NEW V1
Article no.
52 512 ...
£

DC _{e8}	r_{30}	APMX	DN	LH	LPR	OAL	DCONMS _{h5}	ZEFP										
mm	mm	mm	mm	mm	mm	mm	mm											
2	0.3	1.5	1.7	13	18	54	6	2										
2	0.3	1.5	1.7	18	39	75	6	2										
3	0.3	1.5	2.7	15	18	54	6	2										
3	0.3	1.5	2.7	20	39	75	6	2										
4	0.5	2.5	3.6	16	22	58	6	2										
4	0.5	2.5	3.6	24	49	85	6	2										
5	0.5	3.5	4.6	18	29	65	6	4										
5	0.5	3.5	4.6	28	64	100	6	4										
6	1.0	3.5	5.2	20	29	65	6	4										
6	1.0	3.5	5.2	28	64	100	6	4										
8	1.5	4.8	7.0	24	34	70	8	5										
8	1.5	4.8	7.0	40	64	100	8	5										
10	2.0	5.8	9.0	26	45	85	10	5										
10	2.0	5.8	9.0	48	60	100	10	5										
12	2.0	6.8	11.0	30	48	93	12	5										
12	2.0	6.8	11.0	56	75	120	12	5										
16	2.5	8.8	14.5	35	52	100	16	5										
16	2.5	8.8	14.5	65	102	150	16	5										

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

→ v_c/f_z Page 78+79

Material examples referring to the cutting data tables

	Index	Material	Strength N/mm ² / HB / HRC	Material number	Material designation	Material number	Material designation	Material number	Material designation
P	1.1	General construction steel	< 800 N/mm ²	1.0402	EN3B				
	1.2	Free cutting steel	< 800 N/mm ²	1.0711	EN1A				
	1.3	Hardened steel, non alloyed	< 800 N/mm ²	1.0401	EN32C				
	1.4	Alloyed hardened steel	< 1000 N/mm ²	1.7325	25 CD4				
	1.5	Tempering steel, unalloyed	< 850 N/mm ²	1.5752	EN36	1.0535	EN9		
	1.6	Tempering steel, unalloyed	< 1000 N/mm ²	1.6582	EN24				
	1.7	Tempering steel, alloyed	< 800 N/mm ²	1.7225	EN19				
	1.8	Tempering steel, alloyed	< 1300 N/mm ²	1.8515	EN40B				
	1.9	Steel castings	< 850 N/mm ²	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/mm ²	1.8509	EN41B				
	1.11	Nitriding steel	< 1200 N/mm ²	1.1186	EN8	1.1160	EN14A		
	1.12	Roller bearing steel	< 1200 N/mm ²	1.3505	534A99				
	1.13	Spring steel	< 1200 N/mm ²		EN45		EN47		EN43
	1.14	High-speed steel	< 1300 N/mm ²	1.3343	M2	1.3249	M34		
	1.15	Cold working tool steel	< 1300 N/mm ²	1.2379	D2	1.2311	P20		
	1.16	Hot working tool steel	< 1300 N/mm ²	1.2344	H13				
M	2.1	Cast steel and sulphured stainless steel	< 850 N/mm ²	1.4581	318				
	2.2	Stainless steel, ferritic	< 750 N/mm ²	1.4000	403				
	2.3	Stainless steel, martensitic	< 900 N/mm ²	1.4057	EN57				
	2.4	Stainless steel, ferritic / martensitic	< 1100 N/mm ²	1.4028	EN56B				
	2.5	Stainless steel, austenitic / ferritic	< 850 N/mm ²	1.4542	17-4PH				
	2.6	Stainless steel, austenitic	< 750 N/mm ²	1.4305	303	1.4401	316	1.4301	304
	2.7	Heat resistant steel	< 1100 N/mm ²	1.4876	Incoloy 800				
K	3.1	Grey cast iron with lamellar graphite	100–350 N/mm ²	0.6015	Grade 150	0.6020	Grade 220	0.6025	Grade 260
	3.2	Grey cast iron with lamellar graphite	300–500 N/mm ²	0.6030	Grade 300	0.6035	Grade 350	0.6040	Grade 400
	3.3	Gray cast iron with spheroidal graphite	300–500 N/mm ²	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/mm ²	0.7060	SG 600-3	0.7070	SG 700-2	0.7080	SG 800-2
	3.5	White malleable cast iron	270–450 N/mm ²	0.8035	GTW-35	0.8045	GTW-45		
	3.6	White malleable cast iron	500–650 N/mm ²	0.8055	GTW-55	0.8065	GTW-65		
	3.7	Black malleable cast iron	300–450 N/mm ²	0.8135	GTS-35	0.8145	GTS-45		
	3.8	Black malleable cast iron	500–800 N/mm ²	0.8155	GTS-55	0.8170	GTS-70		
N	4.1	Aluminium (non alloyed, low alloyed)	< 350 N/mm ²	3.0255	1050 A	3.0275	1070 A	3.0285	1080 A (A8)
	4.2	Aluminium alloys < 0.5 % Si	< 500 N/mm ²	3.1325	2017 A (AU4G)	3.4335	7005 (AZ5G)	3.4365	7075 (AZ5GU)
	4.3	Aluminium alloy 0.5–10 % Si	< 400 N/mm ²	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/mm ²	3.2581	A-S12	3.2583	A-S12 U		
	4.5	Aluminum alloys > 15 % Si	< 400 N/mm ²		A-S18	A-S17 U4			
	4.6	Copper (non alloyed, low alloyed)	< 350 N/mm ²	2.0040	Cu-c1	2.0060	Cu-a1	2.0090	Cu-b1
	4.7	Copper wrought alloys	< 700 N/mm ²	2.1247	Cub2 (Beryllium 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-A11 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/mm ²	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/mm ²	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/mm ²	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/mm ²	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/mm ²	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/mm ²	2.4964	Co Cr20 W15 Ni10		Co Cr20 Ni16 Mo7		Co Cr28 Mo 6
	5.7	Heat resistant alloys	< 1300 N/mm ²	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/mm ²	2.4851	Ni Cr23Fe (Inconel 601)	2.4668	Ni Cr19NbMo (Inconel 718)	2.4602	Ni Cr21Mo14 Hastelloy C22
	5.9	Pure titanium	< 900 N/mm ²	3.7025	T35 (Titanium Grade 1)	3.7034	T40 (Titanium Grade 2)	3.7064	T60 (Titanium Grade 4)
	5.10	Titanium alloys	< 700 N/mm ²		T-A6-Nb7 (367)		T-A5-Sn2-Mo4-Cr4 (Ti17)		T-A3-V2,5 (Gr18)
	5.11	Titanium alloys	< 1200 N/mm ²	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						

Cutting data standard values – MonsterMill – TCR, end mills 52 503 ... / 52 504 ... /

Index	long V_c m/min	extra long V_c m/min	long $a_{p\max}$ x DC	extra long $a_{p\max}$ x DC	Ø DC = 4 mm			Ø DC = 5 mm			Ø DC = 6 mm			Ø DC = 8 mm		
					a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,6–1,0 x DC
					f_z mm	f_z mm	f_z mm	f_z mm	f_z mm	f_z mm	f_z mm	f_z mm	f_z mm	f_z mm	f_z mm	f_z mm
2.1	110	88	1,0	0,5	0,022	0,017	0,012	0,032	0,024	0,016	0,042	0,031	0,021	0,050	0,037	0,025
2.2	100	80	1,0	0,5	0,022	0,017	0,012	0,032	0,024	0,016	0,042	0,031	0,021	0,050	0,037	0,025
2.3	80	64	1,0	0,5	0,022	0,017	0,012	0,032	0,024	0,016	0,042	0,031	0,021	0,050	0,037	0,025
2.4	80	64	1,0	0,5	0,022	0,017	0,012	0,032	0,024	0,016	0,042	0,031	0,021	0,050	0,037	0,025
2.5	100	80	1,0	0,5	0,022	0,017	0,012	0,032	0,024	0,016	0,042	0,031	0,021	0,050	0,037	0,025
2.6	100	80	1,0	0,5	0,022	0,017	0,012	0,032	0,024	0,016	0,042	0,031	0,021	0,050	0,037	0,025
2.7	55	44	1,0	0,5	0,036	0,028	0,020	0,054	0,040	0,027	0,070	0,052	0,035	0,080	0,060	0,040
5.1	55	44	1,0	0,5	0,036	0,028	0,020	0,054	0,040	0,027	0,070	0,052	0,035	0,080	0,060	0,040
5.2	55	44	1,0	0,5	0,036	0,028	0,020	0,054	0,040	0,027	0,070	0,052	0,035	0,080	0,060	0,040
5.3	55	44	1,0	0,5	0,036	0,028	0,020	0,054	0,040	0,027	0,070	0,052	0,035	0,080	0,060	0,040
5.4	55	44	1,0	0,5	0,036	0,028	0,020	0,054	0,040	0,027	0,070	0,052	0,035	0,080	0,060	0,040
5.5	55	44	1,0	0,5	0,036	0,028	0,020	0,054	0,040	0,027	0,070	0,052	0,035	0,080	0,060	0,040
5.6	55	44	1,0	0,5	0,036	0,028	0,020	0,054	0,040	0,027	0,070	0,052	0,035	0,080	0,060	0,040
5.7	55	44	1,0	0,5	0,036	0,028	0,020	0,054	0,040	0,027	0,070	0,052	0,035	0,080	0,060	0,040
5.8	55	44	1,0	0,5	0,036	0,028	0,020	0,054	0,040	0,027	0,070	0,052	0,035	0,080	0,060	0,040
5.9	120	96	1,0	0,5	0,045	0,035	0,025	0,060	0,045	0,030	0,070	0,052	0,035	0,100	0,075	0,050
5.10	100	80	1,0	0,5	0,036	0,028	0,020	0,054	0,040	0,027	0,070	0,052	0,035	0,080	0,060	0,040
5.11	80	64	1,0	0,5	0,027	0,021	0,015	0,040	0,030	0,020	0,050	0,037	0,025	0,060	0,045	0,030

Cutting data standard values – MonsterMill – TCR, end mills 52 505 ... / 52 506 ...

Index	long V_c m/min	long $a_{p\max}$ x DC	Ø DC = 4 mm		Ø DC = 5 mm		Ø DC = 6 mm		Ø DC = 8 mm		Ø DC = 10 mm		Ø DC = 12 mm		Ø DC = 16 mm	
			a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC	a_e 0,1–0,2 x DC	a_e 0,3–0,4 x DC
			f_z mm	f_z mm	f_z mm	f_z mm	f_z mm	f_z mm	f_z mm	f_z mm	f_z mm	f_z mm	f_z mm	f_z mm	f_z mm	f_z mm
2.1	110	1,0	0,017	0,012	0,024	0,016	0,031	0,021	0,037	0,025	0,048	0,032	0,060	0,040	0,065	0,050
2.2	100	1,0	0,017	0,012	0,024	0,016	0,031	0,021	0,037	0,025	0,048	0,032	0,060	0,040	0,065	0,050
2.3	80	1,0	0,017	0,012	0,024	0,016	0,031	0,021	0,037	0,025	0,048	0,032	0,060	0,040	0,065	0,050
2.4	80	1,0	0,017	0,012	0,024	0,016	0,031	0,021	0,037	0,025	0,048	0,032	0,060	0,040	0,065	0,050
2.5	100	1,0	0,017	0,012	0,024	0,016	0,031	0,021	0,037	0,025	0,048	0,032	0,060	0,040	0,065	0,050
2.6	100	1,0	0,017	0,012	0,024	0,016	0,031	0,021	0,037	0,025	0,048	0,032	0,060	0,040	0,065	0,050
2.7	55	1,0	0,028	0,020	0,040	0,027	0,052	0,035	0,060	0,040	0,075	0,050	0,075	0,050	0,077	0,060
5.1	55	1,0	0,028	0,020	0,040	0,027	0,052	0,035	0,060	0,040	0,075	0,050	0,075	0,050	0,077	0,060
5.2	55	1,0	0,028	0,020	0,040	0,027	0,052	0,035	0,060	0,040	0,075	0,050	0,075	0,050	0,077	0,060
5.3	55	1,0	0,028	0,020	0,040	0,027	0,052	0,035	0,060	0,040	0,075	0,050	0,075	0,050	0,077	0,060
5.4	55	1,0	0,028	0,020	0,040	0,027	0,052	0,035	0,060	0,040	0,075	0,050	0,075	0,050	0,077	0,060
5.5	55	1,0	0,028	0,020	0,040	0,027	0,052	0,035	0,060	0,040	0,075	0,050	0,075	0,050	0,077	0,060
5.6	55	1,0	0,028	0,020	0,040	0,027	0,052	0,035	0,060	0,040	0,075	0,050	0,075	0,050	0,077	0,060
5.7	55	1,0	0,028	0,020	0,040	0,027	0,052	0,035	0,060	0,040	0,075	0,050	0,075	0,050	0,077	0,060
5.8	55	1,0	0,028	0,020	0,040	0,027	0,052	0,035	0,060	0,040	0,075	0,050	0,075	0,050	0,077	0,060
5.9	120	1,0	0,035	0,025	0,045	0,030	0,052	0,035	0,075	0,050	0,089	0,060	0,104	0,070	0,077	0,060
5.10	100	1,0	0,028	0,020	0,040	0,027	0,052	0,035	0,060	0,040	0,075	0,050	0,089	0,060	0,077	0,060
5.11	80	1,0	0,021	0,015	0,030	0,020	0,037	0,025	0,045	0,030	0,060	0,040	0,075	0,050	0,077	0,060

52 507 ... / 52 508 ...

	Ø DC = 10 mm			Ø DC = 12 mm			Ø DC = 16 mm			Ø DC = 20 mm			● 1st choice		○ suitable	
	a _e 0,1–0,2 x DC	a _e 0,3–0,4 x DC	a _e 0,6–1,0 x DC	a _e 0,1–0,2 x DC	a _e 0,3–0,4 x DC	a _e 0,6–1,0 x DC	a _e 0,1–0,2 x DC	a _e 0,3–0,4 x DC	a _e 0,6–1,0 x DC	a _e 0,1–0,2 x DC	a _e 0,3–0,4 x DC	a _e 0,6–1,0 x DC	Emulsion	Compressed air	MMS	
Index	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm				
2.1	0,064	0,048	0,032	0,080	0,060	0,040	0,085	0,065	0,050	0,111	0,090	0,070	●			
2.2	0,064	0,048	0,032	0,080	0,060	0,040	0,085	0,065	0,050	0,111	0,090	0,070	●			
2.3	0,064	0,048	0,032	0,080	0,060	0,040	0,085	0,065	0,050	0,111	0,090	0,070	●			
2.4	0,064	0,048	0,032	0,080	0,060	0,040	0,085	0,065	0,050	0,111	0,090	0,070	●			
2.5	0,064	0,048	0,032	0,080	0,060	0,040	0,085	0,065	0,050	0,111	0,090	0,070	●			
2.6	0,064	0,048	0,032	0,080	0,060	0,040	0,085	0,065	0,050	0,111	0,090	0,070	●			
2.7	0,100	0,075	0,050	0,100	0,075	0,050	0,101	0,077	0,060	0,111	0,090	0,070	●			
5.1	0,100	0,075	0,050	0,100	0,075	0,050	0,101	0,077	0,060	0,111	0,090	0,070	●			
5.2	0,100	0,075	0,050	0,100	0,075	0,050	0,101	0,077	0,060	0,111	0,090	0,070	●			
5.3	0,100	0,075	0,050	0,100	0,075	0,050	0,101	0,077	0,060	0,111	0,090	0,070	●			
5.4	0,100	0,075	0,050	0,100	0,075	0,050	0,101	0,077	0,060	0,111	0,090	0,070	●			
5.5	0,100	0,075	0,050	0,100	0,075	0,050	0,101	0,077	0,060	0,111	0,090	0,070	●			
5.6	0,100	0,075	0,050	0,100	0,075	0,050	0,101	0,077	0,060	0,111	0,090	0,070	●			
5.7	0,100	0,075	0,050	0,100	0,075	0,050	0,101	0,077	0,060	0,111	0,090	0,070	●			
5.8	0,100	0,075	0,050	0,100	0,075	0,050	0,101	0,077	0,060	0,111	0,090	0,070	●			
5.9	0,120	0,089	0,060	0,140	0,104	0,070	0,101	0,077	0,060	0,190	0,155	0,120	●			
5.10	0,100	0,075	0,050	0,120	0,089	0,060	0,101	0,077	0,060	0,158	0,129	0,100	●			
5.11	0,080	0,060	0,040	0,100	0,075	0,050	0,101	0,077	0,060	0,126	0,103	0,080	●			

	Ø DC = 20 mm		● 1st choice	○ suitable	
	a _e 0,1–0,2 x DC	a _e 0,3–0,4 x DC	Emulsion	Compressed air	MMS
Index	f _z mm	f _z mm			
2.1	0,090	0,070	●		
2.2	0,090	0,070	●		
2.3	0,090	0,070	●		
2.4	0,090	0,070	●		
2.5	0,090	0,070	●		
2.6	0,090	0,070	●		
2.7	0,090	0,070	●		
5.1	0,090	0,070	●		
5.2	0,090	0,070	●		
5.3	0,090	0,070	●		
5.4	0,090	0,070	●		
5.5	0,090	0,070	●		
5.6	0,090	0,070	●		
5.7	0,090	0,070	●		
5.8	0,090	0,070	●		
5.9	0,155	0,120	●		
5.10	0,129	0,100	●		
5.11	0,103	0,080	●		

Cutting data standard values – CircularLine – CCR-Ti, long

Index	long V_c m/min	max. angle of engagement	Ø DC = 6 mm				Ø DC = 8 mm				Ø DC = 10 mm			
			a_e 0,05 x DC	a_e 0,10 x DC	a_e 0,15 x DC	h_m	a_e 0,05 x DC	a_e 0,10 x DC	a_e 0,15 x DC	h_m	a_e 0,05 x DC	a_e 0,10 x DC	a_e 0,15 x DC	h_m
			f_z mm	f_z mm	f_z mm		f_z mm	f_z mm	f_z mm		f_z mm	f_z mm	f_z mm	
2.1	200	45°	0,080	0,057	0,046	0,018	0,098	0,070	0,057	0,022	0,125	0,089	0,072	0,028
2.2	180	45°	0,080	0,057	0,046	0,018	0,098	0,070	0,057	0,022	0,125	0,089	0,072	0,028
2.3	160	45°	0,080	0,057	0,046	0,018	0,098	0,070	0,057	0,022	0,125	0,089	0,072	0,028
2.4	160	45°	0,080	0,057	0,046	0,018	0,098	0,070	0,057	0,022	0,125	0,089	0,072	0,028
2.5	140	45°	0,080	0,057	0,046	0,018	0,098	0,070	0,057	0,022	0,125	0,089	0,072	0,028
2.6	140	45°	0,080	0,057	0,046	0,018	0,098	0,070	0,057	0,022	0,125	0,089	0,072	0,028
2.7														
5.1	120	40°	0,045	0,032	0,026	0,010	0,052	0,037	0,030	0,012	0,067	0,047	0,039	0,015
5.2	80	40°	0,045	0,032	0,026	0,010	0,052	0,037	0,030	0,012	0,067	0,047	0,039	0,015
5.3	80	40°	0,045	0,032	0,026	0,010	0,052	0,037	0,030	0,012	0,067	0,047	0,039	0,015
5.4	60	40°	0,045	0,032	0,026	0,010	0,052	0,037	0,030	0,012	0,067	0,047	0,039	0,015
5.5	60	40°	0,045	0,032	0,026	0,010	0,052	0,037	0,030	0,012	0,067	0,047	0,039	0,015
5.6	60	40°	0,045	0,032	0,026	0,010	0,052	0,037	0,030	0,012	0,067	0,047	0,039	0,015
5.7	60	40°	0,045	0,032	0,026	0,010	0,052	0,037	0,030	0,012	0,067	0,047	0,039	0,015
5.8	60	40°	0,045	0,032	0,026	0,010	0,052	0,037	0,030	0,012	0,067	0,047	0,039	0,015
5.9	140	40°	0,060	0,042	0,034	0,013	0,070	0,049	0,040	0,016	0,089	0,063	0,052	0,020
5.10	120	40°	0,060	0,042	0,034	0,013	0,070	0,049	0,040	0,016	0,089	0,063	0,052	0,020
5.11	100	40°	0,045	0,032	0,026	0,010	0,052	0,037	0,030	0,012	0,067	0,047	0,039	0,015

Cutting data standard values – CircularLine – CCR-Ti, extra-long

Index	extra long V_c m/min	max. angle of engagement	Ø DC = 6 mm			Ø DC = 8 mm			Ø DC = 10 mm			Ø DC = 12 mm		
			a_e 0,05 x DC	a_e 0,10 x DC	h_m	a_e 0,05 x DC	a_e 0,10 x DC	h_m	a_e 0,05 x DC	a_e 0,10 x DC	h_m	a_e 0,05 x DC	a_e 0,10 x DC	h_m
			f_z mm	f_z mm		f_z mm	f_z mm		f_z mm	f_z mm		f_z mm	f_z mm	
2.1	170	45°	0,080	0,057	0,018	0,098	0,070	0,022	0,125	0,089	0,028	0,125	0,089	0,028
2.2	150	45°	0,080	0,057	0,018	0,098	0,070	0,022	0,125	0,089	0,028	0,125	0,089	0,028
2.3	130	45°	0,080	0,057	0,018	0,098	0,070	0,022	0,125	0,089	0,028	0,125	0,089	0,028
2.4	130	45°	0,080	0,057	0,018	0,098	0,070	0,022	0,125	0,089	0,028	0,125	0,089	0,028
2.5	110	45°	0,080	0,057	0,018	0,098	0,070	0,022	0,125	0,089	0,028	0,125	0,089	0,028
2.6	110	45°	0,080	0,057	0,018	0,098	0,070	0,022	0,125	0,089	0,028	0,125	0,089	0,028
2.7														
5.1	100	40°	0,022	0,016	0,005	0,027	0,019	0,006	0,036	0,025	0,008	0,045	0,032	0,010
5.2	70	40°	0,022	0,016	0,005	0,027	0,019	0,006	0,036	0,025	0,008	0,045	0,032	0,010
5.3	70	40°	0,022	0,016	0,005	0,027	0,019	0,006	0,036	0,025	0,008	0,045	0,032	0,010
5.4														
5.5														
5.6														
5.7														
5.8														
5.9	120	40°	0,031	0,022	0,007	0,036	0,025	0,008	0,045	0,032	0,010	0,054	0,038	0,012
5.10	100	40°	0,031	0,022	0,007	0,036	0,025	0,008	0,045	0,032	0,010	0,054	0,038	0,012
5.11	90	40°	0,022	0,016	0,005	0,027	0,019	0,006	0,036	0,025	0,008	0,045	0,032	0,010

Index	Ø DC = 12 mm				Ø DC = 16 mm				Ø DC = 20 mm				● 1st choice		○ suitable
	a _e 0,05 x DC	a _e 0,10 x DC	a _e 0,15 x DC	h _m	a _e 0,05 x DC	a _e 0,10 x DC	a _e 0,15 x DC	h _m	a _e 0,05 x DC	a _e 0,10 x DC	a _e 0,15 x DC	h _m	Emulsion	Compressed air	MMS
	f _z mm	f _z mm	f _z mm		f _z mm	f _z mm	f _z mm		f _z mm						
2.1	0,161	0,114	0,093	0,036	0,188	0,133	0,108	0,042	0,268	0,190	0,155	0,06	●		
2.2	0,161	0,114	0,093	0,036	0,188	0,133	0,108	0,042	0,268	0,190	0,155	0,06	●		
2.3	0,161	0,114	0,093	0,036	0,188	0,133	0,108	0,042	0,268	0,190	0,155	0,06	●		
2.4	0,161	0,114	0,093	0,036	0,188	0,133	0,108	0,042	0,268	0,190	0,155	0,06	●		
2.5	0,161	0,114	0,093	0,036	0,188	0,133	0,108	0,042	0,268	0,190	0,155	0,06	●		
2.6	0,161	0,114	0,093	0,036	0,188	0,133	0,108	0,042	0,268	0,190	0,155	0,06	●		
2.7															
5.1	0,085	0,060	0,049	0,019	0,117	0,083	0,068	0,026	0,163	0,115	0,094	0,036	●		
5.2	0,085	0,060	0,049	0,019	0,117	0,083	0,068	0,026	0,163	0,115	0,094	0,036	●		
5.3	0,085	0,060	0,049	0,019	0,117	0,083	0,068	0,026	0,163	0,115	0,094	0,036	●		
5.4	0,085	0,060	0,049	0,019	0,117	0,083	0,068	0,026	0,163	0,115	0,094	0,036	●		
5.5	0,085	0,060	0,049	0,019	0,117	0,083	0,068	0,026	0,163	0,115	0,094	0,036	●		
5.6	0,085	0,060	0,049	0,019	0,117	0,083	0,068	0,026	0,163	0,115	0,094	0,036	●		
5.7	0,085	0,060	0,049	0,019	0,117	0,083	0,068	0,026	0,163	0,115	0,094	0,036	●		
5.8	0,085	0,060	0,049	0,019	0,117	0,083	0,068	0,026	0,163	0,115	0,094	0,036	●		
5.9	0,113	0,080	0,065	0,025	0,157	0,111	0,090	0,035	0,217	0,153	0,125	0,049	●		
5.10	0,113	0,080	0,065	0,025	0,157	0,111	0,090	0,035	0,217	0,153	0,125	0,049	●		
5.11	0,085	0,060	0,049	0,019	0,117	0,083	0,068	0,026	0,163	0,115	0,094	0,036	●		

Index	Ø DC = 16 mm			Ø DC = 20 mm			● 1st choice		○ suitable
	a_e 0,05 x DC	a_e 0,10 x DC	h_m	a_e 0,05 x DC	a_e 0,10 x DC	h_m	Emulsion	Compressed air	MMS
	f_z mm	f_z mm		f_z mm	f_z mm				
2.1	0,161	0,114	0,036	0,188	0,133	0,042	●		
2.2	0,161	0,114	0,036	0,188	0,133	0,042	●		
2.3	0,161	0,114	0,036	0,188	0,133	0,042	●		
2.4	0,161	0,114	0,036	0,188	0,133	0,042	●		
2.5	0,161	0,114	0,036	0,188	0,133	0,042	●		
2.6	0,161	0,114	0,036	0,188	0,133	0,042	●		
2.7									
5.1	0,058	0,041	0,013	0,080	0,057	0,018	●		
5.2	0,058	0,041	0,013	0,080	0,057	0,018	●		
5.3	0,058	0,041	0,013	0,080	0,057	0,018	●		
5.4									
5.5									
5.6									
5.7									
5.8									
5.9	0,076	0,054	0,017	0,107	0,076	0,024	●		
5.10	0,076	0,054	0,017	0,107	0,076	0,024	●		
5.11	0,058	0,041	0,013	0,080	0,057	0,018	●		

Cutting data standard values – MonsterMill – TCR, ball-nosed end mills 52 513 ... /

Index	long V _c m/min	extra long V _c m/min	a _{p max} x DC	Ø DC = 2 mm		Ø DC = 3 mm		Ø DC = 4 mm		Ø DC = 5 mm		Ø DC = 6 mm		Ø DC = 8 mm	
				a _e 0,1–0,2 x DC	a _e 0,3–0,4 x DC	a _e 0,1–0,2 x DC	a _e 0,3–0,4 x DC	a _e 0,1–0,2 x DC	a _e 0,3–0,4 x DC	a _e 0,1–0,2 x DC	a _e 0,3–0,4 x DC	a _e 0,1–0,2 x DC	a _e 0,3–0,4 x DC	a _e 0,1–0,2 x DC	a _e 0,3–0,4 x DC
				f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm
2.1	60	55	0,1–0,2	0,009	0,007	0,011	0,008	0,012	0,009	0,012	0,009	0,018	0,014	0,029	0,023
2.2	55	50	0,1–0,2	0,009	0,007	0,011	0,008	0,012	0,009	0,012	0,009	0,018	0,014	0,029	0,023
2.3	45	40	0,1–0,2	0,009	0,007	0,011	0,008	0,012	0,009	0,012	0,009	0,018	0,014	0,029	0,023
2.4	45	40	0,1–0,2	0,009	0,007	0,011	0,008	0,012	0,009	0,012	0,009	0,018	0,014	0,029	0,023
2.5	55	50	0,1–0,2	0,009	0,007	0,011	0,008	0,012	0,009	0,012	0,009	0,018	0,014	0,029	0,023
2.6	55	50	0,1–0,2	0,009	0,007	0,010	0,008	0,012	0,010	0,012	0,010	0,020	0,015	0,025	0,020
2.7	33	28	0,1–0,2	0,012	0,009	0,014	0,010	0,016	0,012	0,016	0,012	0,024	0,018	0,038	0,030
5.1	33	28	0,1–0,2	0,012	0,009	0,014	0,010	0,016	0,012	0,016	0,012	0,024	0,018	0,038	0,030
5.2	33	28	0,1–0,2	0,012	0,009	0,014	0,010	0,016	0,012	0,016	0,012	0,024	0,018	0,038	0,030
5.3	33	28	0,1–0,2	0,012	0,009	0,014	0,010	0,016	0,012	0,016	0,012	0,024	0,018	0,038	0,030
5.4	33	28	0,1–0,2	0,012	0,009	0,014	0,010	0,016	0,012	0,016	0,012	0,024	0,018	0,038	0,030
5.5	33	28	0,1–0,2	0,012	0,009	0,014	0,010	0,016	0,012	0,016	0,012	0,024	0,018	0,038	0,030
5.6	33	28	0,1–0,2	0,012	0,009	0,014	0,010	0,016	0,012	0,016	0,012	0,024	0,018	0,038	0,030
5.7	33	28	0,1–0,2	0,012	0,009	0,014	0,010	0,016	0,012	0,016	0,012	0,024	0,018	0,038	0,030
5.8	33	28	0,1–0,2	0,012	0,009	0,014	0,010	0,016	0,012	0,016	0,012	0,024	0,018	0,038	0,030
5.9	65	60	0,1–0,2	0,017	0,013	0,020	0,014	0,022	0,017	0,022	0,017	0,034	0,025	0,053	0,042
5.10	55	50	0,1–0,2	0,014	0,011	0,017	0,012	0,019	0,014	0,019	0,014	0,029	0,022	0,046	0,036
5.11	45	40	0,1–0,2	0,012	0,009	0,014	0,010	0,016	0,012	0,016	0,012	0,024	0,018	0,038	0,030

Cutting data standard values – MonsterMill – TCR, torus cutters 52 511 ... / 52 512 ...

Index	long V _c m/min	extra long V _c m/min	a _{p max} x DC	Ø DC = 2 mm	Ø DC = 3 mm	Ø DC = 4 mm	Ø DC = 5 mm	Ø DC = 6 mm	Ø DC = 8 mm	Ø DC = 10 mm	Ø DC = 12 mm	Ø DC = 16 mm	● 1st choice	○ suitable	
				a _e 0,1-1,0 x DC	a _e 0,1-1,0 x DC	a _e 0,1-1,0 x DC	a _e 0,1-1,0 x DC	a _e 0,1-1,0 x DC	a _e 0,1-1,0 x DC	a _e 0,1-1,0 x DC	a _e 0,1-1,0 x DC	a _e 0,1-1,0 x DC	Emulsion	Compressed air	MMS
				f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm			
2.1	120	110	0,06	0,015	0,040	0,055	0,065	0,075	0,100	0,120	0,150	0,180	●		
2.2	110	100	0,06	0,015	0,040	0,055	0,065	0,075	0,100	0,120	0,150	0,180	●		
2.3	90	80	0,06	0,015	0,040	0,055	0,065	0,075	0,100	0,120	0,150	0,180	●		
2.4	90	80	0,06	0,015	0,040	0,055	0,065	0,075	0,100	0,120	0,150	0,180	●		
2.5	110	100	0,06	0,015	0,040	0,055	0,065	0,075	0,100	0,120	0,150	0,180	●		
2.6	110	100	0,06	0,015	0,040	0,055	0,065	0,075	0,100	0,120	0,150	0,180	●		
2.7															
5.1	65	55	0,06	0,015	0,040	0,055	0,065	0,075	0,100	0,120	0,150	0,180	●		
5.2	65	55	0,06	0,015	0,040	0,055	0,065	0,075	0,100	0,120	0,150	0,180	●		
5.3	65	55	0,06	0,015	0,040	0,055	0,065	0,075	0,100	0,120	0,150	0,180	●		
5.4	65	55	0,06	0,015	0,040	0,055	0,065	0,075	0,100	0,120	0,150	0,180	●		
5.5	65	55	0,06	0,015	0,040	0,055	0,065	0,075	0,100	0,120	0,150	0,180	●		
5.6	65	55	0,06	0,015	0,040	0,055	0,065	0,075	0,100	0,120	0,150	0,180	●		
5.7	65	55	0,06	0,015	0,040	0,055	0,065	0,075	0,100	0,120	0,150	0,180	●		
5.8	65	55	0,06	0,015	0,040	0,055	0,065	0,075	0,100	0,120	0,150	0,180	●		
5.9	130	120	0,06	0,040	0,060	0,070	0,090	0,120	0,150	0,180	0,210	0,300	●		
5.10	110	100	0,06	0,030	0,040	0,060	0,080	0,100	0,120	0,150	0,180	0,240	●		
5.11	90	80	0,06	0,015	0,040	0,055	0,065	0,075	0,100	0,120	0,150	0,180	●		

52 514 ...

Index	Ø DC = 10 mm		Ø DC = 12 mm		Ø DC = 16 mm		● 1st choice		○ suitable
	a _e 0,1-0,2 x DC	a _e 0,3-0,4 x DC	a _e 0,1-0,2 x DC	a _e 0,3-0,4 x DC	a _e 0,1-0,2 x DC	a _e 0,3-0,4 x DC	Emulsion	Compressed air	MMS
	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm	f _z mm			
2.1	0,032	0,025	0,035	0,030	0,039	0,034	●		
2.2	0,032	0,025	0,035	0,030	0,039	0,034	●		
2.3	0,032	0,025	0,035	0,030	0,039	0,034	●		
2.4	0,032	0,025	0,035	0,030	0,039	0,034	●		
2.5	0,032	0,025	0,035	0,030	0,039	0,034	●		
2.6	0,030	0,025	0,035	0,030	0,040	0,035	●		
2.7	0,042	0,033	0,047	0,040	0,052	0,045	●		
5.1	0,042	0,033	0,047	0,040	0,052	0,045	●		
5.2	0,042	0,033	0,047	0,040	0,052	0,045	●		
5.3	0,042	0,033	0,047	0,040	0,052	0,045	●		
5.4	0,042	0,033	0,047	0,040	0,052	0,045	●		
5.5	0,042	0,033	0,047	0,040	0,052	0,045	●		
5.6	0,042	0,033	0,047	0,040	0,052	0,045	●		
5.7	0,042	0,033	0,047	0,040	0,052	0,045	●		
5.8	0,042	0,033	0,047	0,040	0,052	0,045	●		
5.9	0,059	0,046	0,066	0,056	0,073	0,063	●		
5.10	0,050	0,040	0,056	0,048	0,062	0,054	●		
5.11	0,042	0,033	0,047	0,040	0,052	0,045	●		

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CERATIZIT \ Performance

Premium quality tools for high performance.

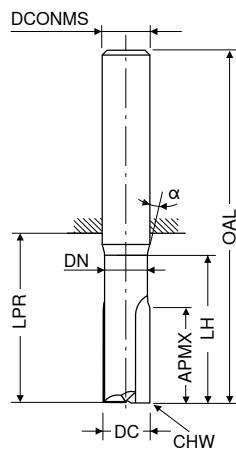
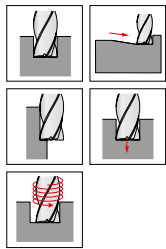
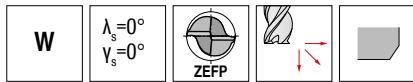
The premium quality tools from the **CERATIZIT Performance** product line have been designed for specific applications and are distinguished by their outstanding performance. If you make high demands on the performance of your production and want to achieve the very best results, we recommend the Premium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

Overview of PCD milling cutters

	Tool type	Number of flutes	Diameter in mm Ø DC	Steel Stainless steel Cast iron Non ferrous metals Heat resistant alloys hardened materials	Sharp Chamfer Radius Full Radius	Length	Tool design coated uncoated	Pages
Endmill								
	W	2	3-10	HA 			☐	81
	W	1-2	2-12	HA 			☐	82
	W	4	6-20	HA 			☐	83
	W	4-10	10-32	HA 			☐	84
Ball nose end milling cutters								
	W	1-2	2-20	HA 			☐	85
Torus end milling cutters								
	W	1-2	2-20	HA 			☐	86+87
Screw in Cutter								
	W	4-10	10-32					88

PCD end mill

▲ Transition angle $\alpha = 45^\circ$



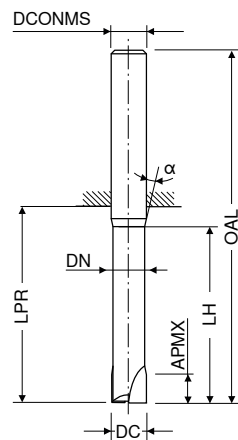
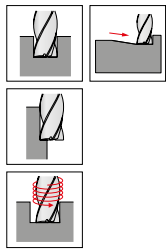
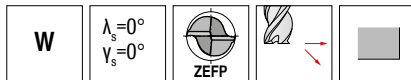
DC _{h7}	APMX	DN	LH	LPR	OAL	DCONMS _{h6}	CHW	ZEFP	NEW V1 Article no. 50 010 ... £	NEW V1 Article no. 50 010 ... £
3	6	2.8	11	21	57	6	0.1	2	237.06	03100
3	6	2.8	22	64	100	6	0.1	2		244.35 03300
4	8	3.5	13	21	57	6	0.1	2	262.85	04100
4	8	3.5	26	64	100	6	0.1	2		270.27 04300
5	10	4.4	15	21	57	6	0.1	2	284.99	05100
5	10	4.4	30	64	100	6	0.1	2		292.41 05300
6	12	5.4	19	21	57	6	0.1	2	314.55	06100
6	12	5.4	38	64	100	6	0.1	2		321.84 06300
8	16	7.2	26	28	64	8	0.1	2	411.21	08100
8	16	7.2	52	64	100	8	0.1	2		426.06 08300
10	20	9.0	31	34	74	10	0.1	2	488.70	10100
10	20	9.0	60	60	100	10	0.1	2		496.13 10300

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

→ v_c/f_z Page 90+91

PCD end mill

▲ Transition angle $\alpha = 15^\circ$



HA

DC _{h7}	APMX	DN	LH	LPR	OAL	DCONMS _{h6}	ZEFP
mm	mm	mm	mm	mm	mm	mm	
2	2.0	1.7	6	39	75	6	1
2	2.0	1.7	10	39	75	6	1
2	2.0	1.7	14	39	75	6	1
3	2.5	2.5	9	39	75	6	2
3	2.5	2.5	15	39	75	6	2
3	2.5	2.5	21	39	75	6	2
4	2.5	3.5	12	39	75	6	2
4	2.5	3.5	20	39	75	6	2
4	2.5	3.5	28	39	75	6	2
5	3.0	4.4	15	39	75	6	2
5	3.0	4.4	25	39	75	6	2
5	3.0	4.4	35	39	75	6	2
6	6.0	5.4	18	64	100	6	2
6	6.0	5.4	30	64	100	6	2
6	6.0	5.4	42	64	100	6	2
8	7.0	7.2	24	64	100	8	2
8	7.0	7.2	40	64	100	8	2
10	8.0	9.0	30	60	100	10	2
10	8.0	9.0	50	60	100	10	2
12	9.0	11.0	36	60	105	12	2
12	9.0	11.0	58	60	105	12	2

NEW V1

Article no.

50 011 ...

£

177.93 02100

177.93 02300

177.93 02200

214.79 03100

214.79 03300

214.79 03200

222.21 04100

222.21 04300

222.21 04200

233.28 05100

233.28 05300

233.28 05200

273.92 06100

273.92 06300

273.92 06200

355.86 08100

355.86 08300

403.79 10100

403.79 10300

451.85 12100

451.85 12300

Steel

Stainless steel

Cast iron

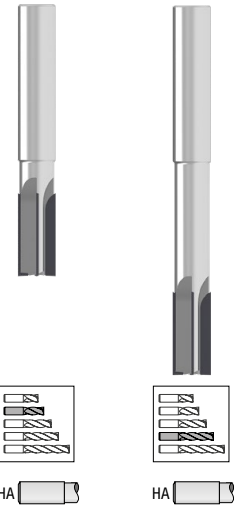
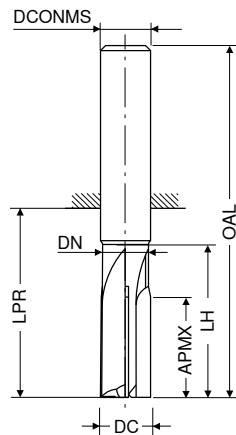
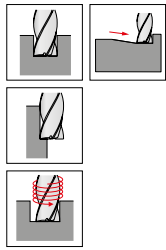
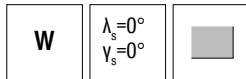
Non ferrous metals

Heat resistant alloys

Hardened materials

→ v_c/f_z Page 90+91

PCD end mill



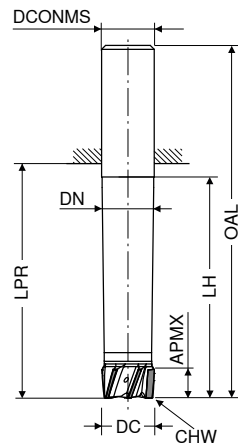
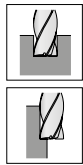
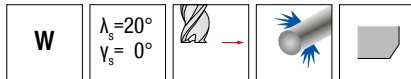
NEW	V1	NEW	V1
Article no.	Article no.	Article no.	Article no.
50 013 ...	50 013 ...	50 013 ...	50 013 ...
£	£	£	£
465.89	06100	473.31	06200
617.90	08100	628.97	08200
761.94	10100	773.01	10200
872.64	12100	891.14	12200
1,149.53	16100	1,204.88	16200
1,408.05	20100	1,497.15	20200

DC _{h7}	APMX	DN	LH	LPR	OAL	DCONMS _{h6}	ZEFP
mm	mm	mm	mm	mm	mm	mm	
6	12	5.4	19.0	21	57	6	4
6	12	5.4	38.0	64	100	6	4
8	16	7.2	26.0	28	64	8	4
8	16	7.2	52.0	64	100	8	4
10	20	9.0	31.0	34	74	10	4
10	20	9.0	62.0	60	100	10	4
12	24	11.0	36.5	39	84	12	4
12	24	11.0	73.0	70	115	12	4
16	32	15.0	44.0	45	93	16	4
16	32	15.0	88.0	82	130	16	4
20	38	19.0	52.5	54	104	20	4
20	38	19.0	105.0	110	160	20	4

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

→ v_c/f_z Page 90+91

PCD end mill



HA

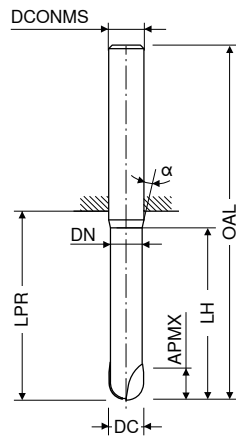
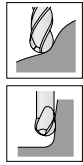
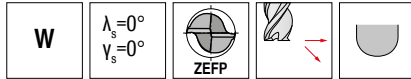
DC	APMX	DN	LH	LPR	OAL	DCONMS	CHW	ZEFP	
mm	mm	mm	mm	mm	mm	mm	mm		
10	5	9.6	25.0	27	67	10	0.2	4	803.12 10200
12	5	11.6	30.0	33	78	12	0.2	4	803.12 12200
16	10	15.6	40.0	43	91	16	0.2	5	902.75 16200
20	10	19.6	50.0	54	104	20	0.2	6	1,006.70 20200
25	10	24.6	62.5	68	124	25	0.2	8	1,315.58 25200
32	10	31.6	80.0	87	147	32	0.2	10	1,682.10 32200

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

→ v_c/f_z Page 90+91

PCD radius cutter

▲ Transition angle $\alpha = 15^\circ$



HA

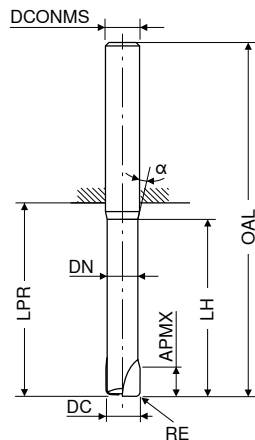
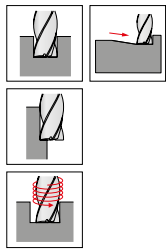
DC _{h7}	APMX	DN	LH	LPR	OAL	DCONMS _{h6}	ZEFP	NEW V1	Article no.	£
2	2.0	1.7	6	39	75	6	1		50 014 ...	181.58 02100
2	2.0	1.7	10	39	75	6	1			181.58 02200
2	2.0	1.7	14	39	75	6	1			181.58 02300
2	2.0	1.7	35	39	75	6	1			181.58 02400
3	2.5	2.5	9	39	75	6	2			214.79 03100
3	2.5	2.5	15	39	75	6	2			214.79 03200
3	2.5	2.5	21	39	75	6	2			214.79 03300
3	2.5	2.5	35	39	75	6	2			214.79 03400
4	2.5	3.5	12	39	75	6	2			222.21 04100
4	2.5	3.5	20	39	75	6	2			222.21 04200
4	2.5	3.5	28	39	75	6	2			222.21 04300
4	2.5	3.5	35	39	75	6	2			222.21 04400
5	3.0	4.4	15	39	75	6	2			233.28 05100
5	3.0	4.4	25	39	75	6	2			233.28 05200
5	3.0	4.4	35	39	75	6	2			233.28 05400
6	6.0	5.4	18	64	100	6	2			281.34 06100
6	6.0	5.4	30	64	100	6	2			281.34 06200
6	6.0	5.4	40	64	100	8	2			337.37 06300
6	6.0	5.4	42	64	100	6	2			281.34 06400
8	7.0	7.2	24	64	100	8	2			359.51 08100
8	7.0	7.2	40	64	100	8	2			359.51 08300
8	7.0	7.2	40	60	100	10	2			378.00 08900
10	8.0	9.0	30	60	100	10	2			389.07 10100
10	8.0	9.0	40	55	100	12	2			411.21 10200
10	8.0	9.0	50	60	100	10	2			389.07 10300
12	9.0	11.0	36	60	105	12	2			451.85 12100
12	9.0	11.0	40	55	100	16	2			503.55 12200
12	9.0	11.0	58	60	105	12	2			451.85 12400
16	11.0	15.0	45	82	130	16	2			606.83 16200
16	11.0	15.0	50	82	130	16	2			606.83 16300
20	13.0	19.0	60	110	160	20	2			765.59 20400

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

→ v_c/f_z Page 90+91

PCD torus cutter

▲ Transition angle $\alpha = 15^\circ$



HA

DC _{h7}	RE	APMX	DN	LH	LPR	OAL	DCONMS _{h6}	ZEFP	NEW V1	Article no.	£
2	0.3	2.0	1.7	6	39	75	6	1		50 012 ...	185.09 02103
2	0.3	2.0	1.7	10	39	75	6	1			185.09 02203
2	0.3	2.0	1.7	14	39	75	6	1			185.09 02303
2	0.3	2.0	1.7	35	39	75	6	1			185.09 02403
3	0.3	2.5	2.5	9	39	75	6	2			223.43 03103
3	0.3	2.5	2.5	15	39	75	6	2			223.43 03203
3	0.3	2.5	2.5	21	39	75	6	2			223.43 03303
3	0.3	2.5	2.5	35	39	75	6	2			223.43 03403
4	0.3	2.5	3.5	12	39	75	6	2			231.12 04103
4	0.3	2.5	3.5	20	39	75	6	2			231.12 04203
4	0.3	2.5	3.5	28	39	75	6	2			231.12 04303
4	0.3	2.5	3.5	35	39	75	6	2			231.12 04403
5	0.3	3.0	4.4	15	39	75	6	2			242.60 05103
5	0.3	3.0	4.4	25	39	75	6	2			242.60 05203
5	0.3	3.0	4.4	35	39	75	6	2			242.60 05303
6	0.3	6.0	5.4	18	64	100	6	2			284.85 06103
6	0.3	6.0	5.4	30	64	100	6	2			284.85 06203
6	0.3	6.0	5.4	42	64	100	6	2			284.85 06403
6	0.5	6.0	5.4	18	64	100	6	2			284.85 06105
6	0.5	6.0	5.4	30	64	100	6	2			284.85 06205
6	0.5	6.0	5.4	42	64	100	6	2			284.85 06405
6	1.0	6.0	5.4	18	64	100	6	2			284.85 06110
6	1.0	6.0	5.4	40	64	100	8	2			339.39 06310
6	1.0	6.0	5.4	42	64	100	6	2			284.85 06410
8	0.3	7.0	7.2	24	64	100	8	2			370.04 08103
8	0.3	7.0	7.2	40	64	100	8	2			370.04 08203
8	0.5	7.0	7.2	24	64	100	8	2			370.04 08105
8	0.5	7.0	7.2	40	64	100	8	2			370.04 08205
8	1.0	7.0	7.2	24	64	100	8	2			370.04 08110
8	1.0	7.0	7.2	40	64	100	8	2			370.04 08210
8	2.0	7.0	7.2	24	64	100	8	2			370.04 08120
8	2.0	7.0	7.2	40	60	100	10	2			389.34 08920
8	2.0	7.0	7.2	40	64	100	8	2			370.04 08220
10	0.5	8.0	9.0	30	60	100	10	2			419.99 10105
10	0.5	8.0	9.0	50	60	100	10	2			419.99 10305
10	1.0	8.0	9.0	30	60	100	10	2			419.99 10110
10	1.0	8.0	9.0	50	60	100	10	2			419.99 10310
10	1.5	8.0	9.0	30	60	100	10	2			419.99 10115
10	1.5	8.0	9.0	50	60	100	10	2			419.99 10315
10	2.0	8.0	9.0	30	60	100	10	2			419.99 10120
10	2.0	8.0	9.0	50	60	100	10	2			419.99 10320

Steel

Stainless steel

Cast iron

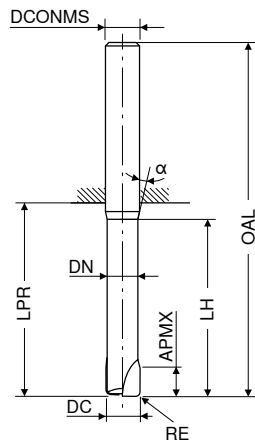
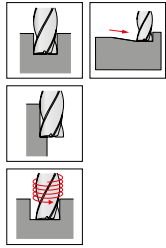
Non ferrous metals

Heat resistant alloys

Hardened materials

PCD torus cutter

▲ Transition angle $\alpha = 15^\circ$



HA

DC _{h7}	RE	APMX	DN	LH	LPR	OAL	DCONMS _{h6}	ZEFP	NEW V1	Article no.
mm	mm	mm	mm	mm	mm	mm	mm			50 012 ...
10	3.0	8.0	9.0	30	60	100	10	2		£ 419.99 10130
10	3.0	8.0	9.0	40	55	100	12	2		£ 443.07 10230
10	3.0	8.0	9.0	50	60	100	10	2		£ 419.99 10330
12	0.5	9.0	11.0	36	60	105	12	2		£ 469.94 12105
12	0.5	9.0	11.0	58	60	105	12	2		£ 469.94 12305
12	1.0	9.0	11.0	36	60	105	12	2		£ 469.94 12110
12	1.0	9.0	11.0	58	60	105	12	2		£ 469.94 12310
12	1.5	9.0	11.0	36	60	105	12	2		£ 469.94 12115
12	1.5	9.0	11.0	58	60	105	12	2		£ 469.94 12315
12	4.0	9.0	11.0	40	52	100	16	2		£ 527.45 12240
16	3.0	11.0	15.0	45	82	130	16	2		£ 631.13 16130
16	5.0	11.0	15.0	50	82	130	16	2		£ 631.13 16250
20	6.0	13.0	19.0	60	140	160	20	2		£ 646.52 20260

Steel

Stainless steel

Cast iron

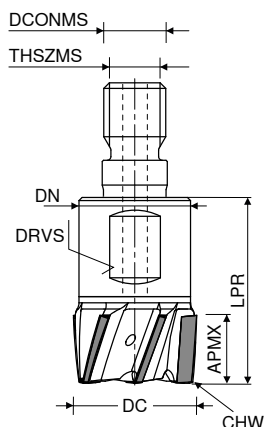
Non ferrous metals

Heat resistant alloys

Hardened materials

→ v_c/f_z Page 90+91

PCD screw-in cutter



DC	APMX	DN	OAL	DCONMS	CHW	DRVS	ZEFP	THSZMS
mm	mm	mm	mm	mm	mm	mm		
10	5	9.6	22	5.5	0.2	8	4	M5
12	5	11.5	22	6.5	0.2	8	4	M6
16	10	13.8	28	8.5	0.2	13	5	M8
20	10	18.0	30	10.5	0.2	16	6	M10
25	10	21.0	35	12.5	0.2	18	8	M12
32	10	29.0	35	17.0	0.2	27	10	M16

NEW	V8
Article no.	
50 015 ...	
£	
789.08	10100
799.88	12100
887.36	16100
992.66	20100
1,199.07	25100
1,410.75	32100

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

→ v_c/f_z Page 90+91

Material examples referring to the cutting data tables

	Index	Material	Strength N/mm ² / HB / HRC	Material number	Material designation	Material number	Material designation	Material number	Material designation
P	1.1	General construction steel	< 800 N/mm ²	1.0402	EN3B				
	1.2	Free cutting steel	< 800 N/mm ²	1.0711	EN1A				
	1.3	Hardened steel, non alloyed	< 800 N/mm ²	1.0401	EN32C				
	1.4	Alloyed hardened steel	< 1000 N/mm ²	1.7325	25 CD4				
	1.5	Tempering steel, unalloyed	< 850 N/mm ²	1.5752	EN36	1.0535	EN9		
	1.6	Tempering steel, unalloyed	< 1000 N/mm ²	1.6582	EN24				
	1.7	Tempering steel, alloyed	< 800 N/mm ²	1.7225	EN19				
	1.8	Tempering steel, alloyed	< 1300 N/mm ²	1.8515	EN40B				
	1.9	Steel castings	< 850 N/mm ²	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/mm ²	1.8509	EN41B				
	1.11	Nitriding steel	< 1200 N/mm ²	1.1186	EN8	1.1160	EN14A		
	1.12	Roller bearing steel	< 1200 N/mm ²	1.3505	534A99				
	1.13	Spring steel	< 1200 N/mm ²		EN45		EN47		EN43
	1.14	High-speed steel	< 1300 N/mm ²	1.3343	M2	1.3249	M34		
	1.15	Cold working tool steel	< 1300 N/mm ²	1.2379	D2	1.2311	P20		
	1.16	Hot working tool steel	< 1300 N/mm ²	1.2344	H13				
M	2.1	Cast steel and sulphured stainless steel	< 850 N/mm ²	1.4581	318				
	2.2	Stainless steel, ferritic	< 750 N/mm ²	1.4000	403				
	2.3	Stainless steel, martensitic	< 900 N/mm ²	1.4057	EN57				
	2.4	Stainless steel, ferritic / martensitic	< 1100 N/mm ²	1.4028	EN56B				
	2.5	Stainless steel, austenitic / ferritic	< 850 N/mm ²	1.4542	17-4PH				
	2.6	Stainless steel, austenitic	< 750 N/mm ²	1.4305	303	1.4401	316	1.4301	304
	2.7	Heat resistant steel	< 1100 N/mm ²	1.4876	Incoloy 800				
K	3.1	Grey cast iron with lamellar graphite	100–350 N/mm ²	0.6015	Grade 150	0.6020	Grade 220	0.6025	Grade 260
	3.2	Grey cast iron with lamellar graphite	300–500 N/mm ²	0.6030	Grade 300	0.6035	Grade 350	0.6040	Grade 400
	3.3	Gray cast iron with spheroidal graphite	300–500 N/mm ²	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/mm ²	0.7060	SG 600-3	0.7070	SG 700-2	0.7080	SG 800-2
	3.5	White malleable cast iron	270–450 N/mm ²	0.8035	GTW-35	0.8045	GTW-45		
	3.6	White malleable cast iron	500–650 N/mm ²	0.8055	GTW-55	0.8065	GTW-65		
	3.7	Black malleable cast iron	300–450 N/mm ²	0.8135	GTS-35	0.8145	GTS-45		
	3.8	Black malleable cast iron	500–800 N/mm ²	0.8155	GTS-55	0.8170	GTS-70		
N	4.1	Aluminium (non alloyed, low alloyed)	< 350 N/mm ²	3.0255	1050 A	3.0275	1070 A	3.0285	1080 A (A8)
	4.2	Aluminium alloys < 0.5 % Si	< 500 N/mm ²	3.1325	2017 A (AU4G)	3.4335	7005 (AZ5G)	3.4365	7075 (AZ5GU)
	4.3	Aluminium alloy 0.5–10 % Si	< 400 N/mm ²	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/mm ²	3.2581	A-S12	3.2583	A-S12 U		
	4.5	Aluminum alloys > 15 % Si	< 400 N/mm ²		A-S18	A-S17 U4			
	4.6	Copper (non alloyed, low alloyed)	< 350 N/mm ²	2.0040	Cu-c1	2.0060	Cu-a1	2.0090	Cu-b1
	4.7	Copper wrought alloys	< 700 N/mm ²	2.1247	Cub2 (Beryllium 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-A11 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/mm ²	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/mm ²	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/mm ²	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/mm ²	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/mm ²	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/mm ²	2.4964	Co Cr20 W15 Ni10		Co Cr20 Ni16 Mo7		Co Cr28 Mo 6
	5.7	Heat resistant alloys	< 1300 N/mm ²	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/mm ²	2.4851	Ni Cr23Fe (Inconel 601)	2.4668	Ni Cr19NbMo (Inconel 718)	2.4602	Ni Cr21Mo14 Hastelloy C22
	5.9	Pure titanium	< 900 N/mm ²	3.7025	T35 (Titanium Grade 1)	3.7034	T40 (Titanium Grade 2)	3.7064	T60 (Titanium Grade 4)
	5.10	Titanium alloys	< 700 N/mm ²		T-A6-Nb7 (367)		T-A5-Sn2-Mo4-Cr4 (Ti17)		T-A3-V2,5 (Gr18)
	5.11	Titanium alloys	< 1200 N/mm ²	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						

Cutting data standard values – PCD milling cutter

		50 011 / 50 012		50 010 / 50 013		50 014		50 015			
											
Index	V_c m/min	a_p max. mm	a_e	a_p max. mm	a_e	a_p max. mm	a_e	a_p max. mm	a_e	a_p max. mm	a_e
4.1	700	0,15xDC	1xDC	1xDC	0,1xDC	0,15xDC	0,1xDC	0,9xAPMX	0,3xDC	0,1xDC	1xDC
4.2	600	0,15xDC	1xDC	1xDC	0,1xDC	0,15xDC	0,1xDC	0,9xAPMX	0,3xDC	0,1xDC	1xDC
4.3	450	0,15xDC	1xDC	1xDC	0,1xDC	0,15xDC	0,1xDC	0,9xAPMX	0,3xDC	0,1xDC	1xDC
4.4	350	0,15xDC	1xDC	1xDC	0,1xDC	0,15xDC	0,1xDC	0,9xAPMX	0,3xDC	0,1xDC	1xDC
4.5	250	0,15xDC	1xDC	1xDC	0,1xDC	0,15xDC	0,1xDC	0,9xAPMX	0,3xDC	0,1xDC	1xDC
4.6	400	0,15xDC	1xDC	1xDC	0,1xDC	0,15xDC	0,1xDC	0,9xAPMX	0,3xDC	0,1xDC	1xDC
4.7											
4.8											
4.9											
4.10											
4.11	300–800							0,9xAPMX	0,3xDC	0,1xDC	1xDC
4.12											
4.13	100–350	0,2xDC	1xDC	1xDC	0,1xDC	0,2xDC	0,1xDC	0,9xAPMX	0,3xDC	0,1xDC	1xDC
4.14	80–150	0,2xDC	1xDC	1xDC	0,1xDC	0,2xDC	0,1xDC	0,9xAPMX	0,3xDC	0,1xDC	1xDC
4.15	100–150	0,2xDC	1xDC	1xDC	0,1xDC	0,2xDC	0,1xDC	0,9xAPMX	0,3xDC	0,1xDC	1xDC
4.16	700							0,9xAPMX	0,3xDC	0,1xDC	1xDC
4.17	500–800	0,2xDC	1xDC	1xDC	0,1xDC	0,2xDC	0,1xDC	0,9xAPMX	0,3xDC	0,1xDC	1xDC
4.18											
4.19											

	Ø DC = 2 mm	Ø DC = 3 mm	Ø DC = 4 mm	Ø DC = 5 mm	Ø DC = 6 mm	Ø DC = 8 mm	Ø DC = 10 mm	Ø DC = 12 mm	Ø DC = 16 mm	Ø DC = 20 mm	Ø DC = 25 mm	Ø DC = 32 mm	● 1st choice		○ suitable	
													Emulsion	Compressed air	MMS	
	0,018	0,0265	0,035	0,0475	0,06	0,065	0,07	0,08	0,09	0,12	0,14	0,16	●		○	
	0,018	0,0265	0,035	0,0475	0,06	0,065	0,07	0,08	0,09	0,12	0,14	0,16	●		○	
	0,018	0,0265	0,035	0,0475	0,06	0,065	0,07	0,08	0,09	0,12	0,14	0,16	●		○	
	0,018	0,0265	0,035	0,0475	0,06	0,065	0,07	0,08	0,09	0,12	0,14	0,16	●		○	
	0,018	0,0265	0,035	0,0475	0,06	0,065	0,07	0,08	0,09	0,12	0,14	0,16	●		○	
	0,018	0,0265	0,035	0,0475	0,06	0,065	0,07	0,08	0,09	0,12	0,14	0,16	●		○	
							0,07	0,08	0,09	0,12	0,14	0,16	●		○	
	0,021	0,0305	0,04	0,05	0,06	0,07	0,08	0,115	0,15	0,2	0,22	0,26	●		○	
	0,025	0,0375	0,05	0,075	0,1	0,15	0,2	0,25	0,3	0,4	0,44	0,46	●		○	
	0,021	0,0305	0,04	0,05	0,06	0,07	0,08	0,115	0,15	0,2	0,22	0,26	●		○	
							0,07	0,08	0,09	0,12	0,14	0,16	●		○	
	0,021	0,0305	0,04	0,05	0,06	0,07	0,08	0,115	0,15	0,2	0,22	0,26	●		○	

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Chip Breakers Overview	99

Symbol explanation



lateral internal coolant

- ZNF = Number of flutes
- = Main Application
- = Extended application

CERATIZIT \ Performance

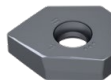
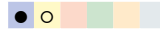
Premium quality tools for high performance.

The premium quality tools from the **CERATIZIT 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.

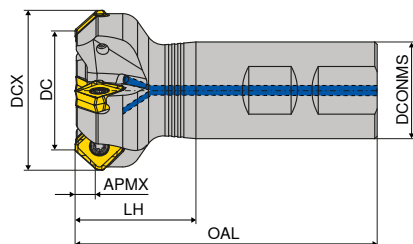
Overview – carrier tools

	$a_{p \max.}$ mm	Ø-range mm	Pages
MaxiMill – end mill C 271-12	6,8	 Ø 32-40	93
MaxiMill – face mill A 271-12	6,8	 Ø 40-250	94
MaxiMill – face mill A 271-12 HFC	2,6	 Ø 40-250	94

Overview – Milling Inserts

Inserts	Cutting edges per insert		Pages
SOHU 1204..	8	 	95
XOHU 1204..	2	 	96

MaxiMill – End milling cutter C 271-12



Designation	DC	DCX	ZNF	APMX	OAL	LH	DCONMS _{h6}	RPMX	torque moment	Insert	NEW 2B/40 Article no. 50 786 ... £
C271.32.R.03-12-B-40	32	45	3	6.8	100	40	32	18400	3,2	SOHU 1204../X0HU 1204..	296.45 03203
C271.40.R.04-12-B32-40	40	53	4	6.8	100	40	32	16800	3,2	SOHU 1204../X0HU 1204..	370.55 04004

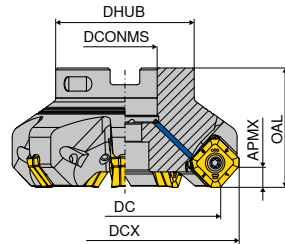
Spare parts DC

32 - 40

Y7	Y7	2A/28	2A/28	Y7
				
TORX® blade	Key D	Molykote	Clamping screw	Torque screwdriver
Article no. 80 950 ... £	Article no. 80 950 ... £	Article no. 70 950 ... £	Article no. 70 950 ... £	Article no. 80 021 ... £
6.69 054	12.05 120	3.98 303	2.85 859	123.15 032

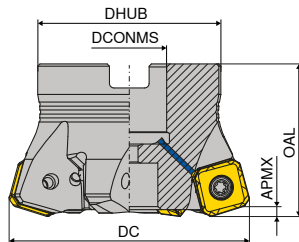
MaxiMill – A 271-12 Face mill

▲ 8 cutting edges per insert



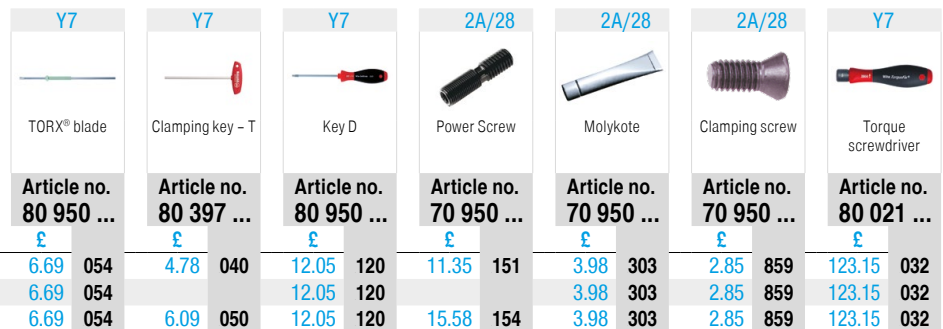
Designation	DC	DCX	ZNF	APMX	OAL	DHUB	DCONMS _{H6}	RPMX	torque moment Nm	Insert	NEW 2B/40		NEW 2B/40	
											Article no. 50 787 ...	£	Article no. 50 787 ...	£
A271.40.R.04-12	40	53	4	6.8	40	38	16	17900	3,2	SOHU 1204.. / XOHU 1204..			370.55	04004
A271.50.R.05-12	50	63	5	6.8	40	43	22	15200	3,2	SOHU 1204.. / XOHU 1204..			379.82	05005
A271.63.R.07-12	63	76	7	6.8	40	48	22	13100	3,2	SOHU 1204.. / XOHU 1204..			481.73	06307
A271.80.R.06-12	80	93	6	6.8	50	58	27	11300	3,2	SOHU 1204.. / XOHU 1204..	481.73	08006	555.82	08008
A271.80.R.08-12	80	93	8	6.8	50	58	27	11300	3,2	SOHU 1204.. / XOHU 1204..			555.82	08008
A271.100.R.07-12	100	113	7	6.8	63	78	32	9900	3,2	SOHU 1204.. / XOHU 1204..	611.36	10007	694.82	10010
A271.100.R.10-12	100	113	10	6.8	63	78	32	9900	3,2	SOHU 1204.. / XOHU 1204..			694.82	10010
A271.125.R.08-12	125	138	8	6.8	63	88	40	8700	3,2	SOHU 1204.. / XOHU 1204..	741.09	12508	852.27	12512
A271.125.R.12-12	125	138	12	6.8	63	88	40	8700	3,2	SOHU 1204.. / XOHU 1204..			852.27	12512
A271.160.R.09-12	160	173	9	6.8	63	98	40	7600	3,2	SOHU 1204.. / XOHU 1204..	861.55	16009	1,000.91	16014
A271.160.R.14-12	160	173	14	6.8	63	98	40	7600	3,2	SOHU 1204.. / XOHU 1204..			1,000.91	16014
A271.200.R.11-12	200	213	11	6.8	63	132	60	6700	3,2	SOHU 1204.. / XOHU 1204..	1,080.00	20011	1,220.91	20017
A271.200.R.17-12	200	213	17	6.8	63	132	60	6700	3,2	SOHU 1204.. / XOHU 1204..			1,220.91	20017
A271.250.R.13-12	250	263	13	6.8	63	132	60	6000	3,2	SOHU 1204.. / XOHU 1204..	1,300.00	25013	1,527.27	25021
A271.250.R.21-12	250	263	21	6.8	63	132	60	6000	3,2	SOHU 1204.. / XOHU 1204..			1,527.27	25021

MaxiMill – A 271-12 HFC Face mill



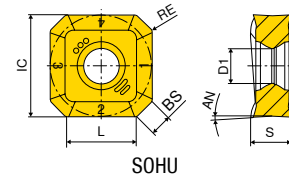
Designation	DC	ZNF	APMX	OAL	DHUB	DCONMS _{H6}	RPMX	torque moment Nm	Insert	NEW 2B/40	
										Article no. 50 788 ...	£
A271.50.R.04-12-HFC	50	4	2.6	40	43	22	14600	3,2	SOHU 1204..	379.82	05004
A271.63.R.06-12-HFC	63	6	2.6	40	48	22	12500	3,2	SOHU 1204..	481.73	06306
A271.80.R.07-12-HFC	80	7	2.6	50	58	27	10800	3,2	SOHU 1204..	555.82	08007

Spare parts	Y7		Y7		Y7		2A/28		2A/28		2A/28		Y7	
	Article no. 80 950 ...	£	Article no. 80 397 ...	£	Article no. 80 950 ...	£	Article no. 70 950 ...	£	Article no. 70 950 ...	£	Article no. 70 950 ...	£	Article no. 80 021 ...	£
40 (5078704004)	6.69	054	4.78	040	12.05	120	11.35	151	3.98	303	2.85	859	123.15	032
50 - 250	6.69	054			12.05	120			3.98	303	2.85	859	123.15	032
50 (5078805004)	6.69	054	6.09	050	12.05	120	15.58	154	3.98	303	2.85	859	123.15	032

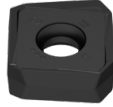
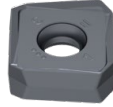


SOHU

Designation	IC	D1	L	BS	S	AN
	mm	mm	mm	mm	mm	°
SOHU 1204..	13.36	4.4	8.8	1.7	5.00	7.4

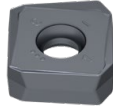
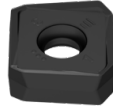


SOHU

		-M50 CTCP230		-M50 CTPP235		-M50 CTCM235		-M50 CTPM240	
		DRAGONSKIN		DRAGONSKIN		DRAGONSKIN		DRAGONSKIN	
									
		SOHU NEW 1B/61		SOHU NEW 1B/61		SOHU NEW 1B/61		SOHU NEW 1B/61	
		Article no. 51 138 ...		Article no. 51 138 ...		Article no. 51 138 ...		Article no. 51 138 ...	
		£		£		£		£	
		23.44 02000		23.44 12000		23.44 32000		23.44 42000	
ISO	RE								
	mm								
1204ABSR	0.8								
Steel		●		●		○		○	
Stainless steel		○		○		●		●	
Cast iron									
Non ferrous metals									
Heat resistant alloys									
Hardened materials									

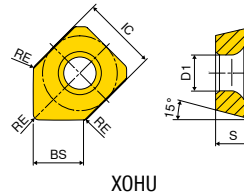
i The indexable inserts with chip breaker -M50 are available from October 2019.

SOHU

		-F50 CTPM245		-R50 CTCK215		-R50 CTPK220		-F50 CTC5240	
		DRAGONSKIN		DRAGONSKIN		DRAGONSKIN		DRAGONSKIN	
									
		SOHU NEW 1H/17		SOHU NEW 1B/61		SOHU NEW 1B/61		SOHU NEW 1H/D4	
		Article no. 51 140 ...		Article no. 51 139 ...		Article no. 51 139 ...		Article no. 51 140 ...	
		£		£		£		£	
		28.82 47000		23.44 52000		23.44 62000		28.82 17000	
ISO	RE								
	mm								
1204ABSR	0.8								
Steel		●		○		○			
Stainless steel		●							
Cast iron				●		●			
Non ferrous metals									
Heat resistant alloys								●	
Hardened materials									

XOHU

Designation	IC	D1	L	BS	S
	mm	mm	mm	mm	mm
XOHU 1204..	13.36	4.4	8.8	7.3	5.00

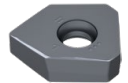


XOHU

XOHU

-M50
CTPP235

DRAGONSKIN



XOHU

NEW 1B/61

Article no.

51 141 ...

£

29.01 12000

ISO	RE
	mm
1204ABSR	0.8
Steel	●
Stainless steel	○
Cast iron	
Non ferrous metals	
Heat resistant alloys	
Hardened materials	

Material examples referring to the cutting data tables

	Index	Material	Strength N/mm ² / HB / HRC	Material number	Material designation	Material number	Material designation	Material number	Material designation
P	1.1	General construction steel	< 800 N/mm ²	1.0402	EN3B				
	1.2	Free cutting steel	< 800 N/mm ²	1.0711	EN1A				
	1.3	Hardened steel, non alloyed	< 800 N/mm ²	1.0401	EN32C				
	1.4	Alloyed hardened steel	< 1000 N/mm ²	1.7325	25 CD4				
	1.5	Tempering steel, unalloyed	< 850 N/mm ²	1.5752	EN36	1.0535	EN9		
	1.6	Tempering steel, unalloyed	< 1000 N/mm ²	1.6582	EN24				
	1.7	Tempering steel, alloyed	< 800 N/mm ²	1.7225	EN19				
	1.8	Tempering steel, alloyed	< 1300 N/mm ²	1.8515	EN40B				
	1.9	Steel castings	< 850 N/mm ²	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/mm ²	1.8509	EN41B				
	1.11	Nitriding steel	< 1200 N/mm ²	1.1186	EN8	1.1160	EN14A		
	1.12	Roller bearing steel	< 1200 N/mm ²	1.3505	534A99				
	1.13	Spring steel	< 1200 N/mm ²		EN45		EN47		EN43
	1.14	High-speed steel	< 1300 N/mm ²	1.3343	M2	1.3249	M34		
	1.15	Cold working tool steel	< 1300 N/mm ²	1.2379	D2	1.2311	P20		
	1.16	Hot working tool steel	< 1300 N/mm ²	1.2344	H13				
M	2.1	Cast steel and sulphured stainless steel	< 850 N/mm ²	1.4581	318				
	2.2	Stainless steel, ferritic	< 750 N/mm ²	1.4000	403				
	2.3	Stainless steel, martensitic	< 900 N/mm ²	1.4057	EN57				
	2.4	Stainless steel, ferritic / martensitic	< 1100 N/mm ²	1.4028	EN56B				
	2.5	Stainless steel, austenitic / ferritic	< 850 N/mm ²	1.4542	17-4PH				
	2.6	Stainless steel, austenitic	< 750 N/mm ²	1.4305	303	1.4401	316	1.4301	304
	2.7	Heat resistant steel	< 1100 N/mm ²	1.4876	Incoloy 800				
K	3.1	Grey cast iron with lamellar graphite	100–350 N/mm ²	0.6015	Grade 150	0.6020	Grade 220	0.6025	Grade 260
	3.2	Grey cast iron with lamellar graphite	300–500 N/mm ²	0.6030	Grade 300	0.6035	Grade 350	0.6040	Grade 400
	3.3	Gray cast iron with spheroidal graphite	300–500 N/mm ²	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/mm ²	0.7060	SG 600-3	0.7070	SG 700-2	0.7080	SG 800-2
	3.5	White malleable cast iron	270–450 N/mm ²	0.8035	GTW-35	0.8045	GTW-45		
	3.6	White malleable cast iron	500–650 N/mm ²	0.8055	GTW-55	0.8065	GTW-65		
	3.7	Black malleable cast iron	300–450 N/mm ²	0.8135	GTS-35	0.8145	GTS-45		
	3.8	Black malleable cast iron	500–800 N/mm ²	0.8155	GTS-55	0.8170	GTS-70		
N	4.1	Aluminium (non alloyed, low alloyed)	< 350 N/mm ²	3.0255	1050 A	3.0275	1070 A	3.0285	1080 A (A8)
	4.2	Aluminium alloys < 0.5 % Si	< 500 N/mm ²	3.1325	2017 A (AU4G)	3.4335	7005 (AZ5G)	3.4365	7075 (AZ5GU)
	4.3	Aluminium alloy 0.5–10 % Si	< 400 N/mm ²	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/mm ²	3.2581	A-S12	3.2583	A-S12 U		
	4.5	Aluminum alloys > 15 % Si	< 400 N/mm ²		A-S18		A-S17 U4		
	4.6	Copper (non alloyed, low alloyed)	< 350 N/mm ²	2.0040	Cu-c1	2.0060	Cu-a1	2.0090	Cu-b1
	4.7	Copper wrought alloys	< 700 N/mm ²	2.1247	Cub2 (Beryllium 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-A11 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/mm ²	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/mm ²	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/mm ²	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/mm ²	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/mm ²	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/mm ²	2.4964	Co Cr20 W15 Ni10		Co Cr20 Ni16 Mo7		Co Cr28 Mo 6
	5.7	Heat resistant alloys	< 1300 N/mm ²	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/mm ²	2.4851	Ni Cr23Fe (Inconel 601)	2.4668	Ni Cr19NbMo (Inconel 718)	2.4602	Ni Cr21Mo14 Hastelloy C22
	5.9	Pure titanium	< 900 N/mm ²	3.7025	T35 (Titanium Grade 1)	3.7034	T40 (Titanium Grade 2)	3.7064	T60 (Titanium Grade 4)
	5.10	Titanium alloys	< 700 N/mm ²		T-A6-Nb7 (367)		T-A5-Sn2-Mo4-Cr4 (Ti17)		T-A3-V2,5 (Gr18)
	5.11	Titanium alloys	< 1200 N/mm ²	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						

Cutting data approximate values

Cutting Material hard ($v_c \uparrow$) → tough ($v_c \downarrow$)																
Index	DRAGONSKIN		DRAGONSKIN		DRAGONSKIN		DRAGONSKIN		DRAGONSKIN		DRAGONSKIN		DRAGONSKIN		DRAGONSKIN	
	CTCP230		CTPP235		CTCM235		CTPM240		CTPM245		CTCK215		CTPK220		CTC5240	
																
1.1	280	170	240	140	240	140	220	130			350	210	300	180		
1.2	230	140	190	110	190	110	170	100			300	180	250	150		
1.3	280	170	240	140	240	140	220	130			350	210	300	180		
1.4	250	150	220	130	210	130	200	120	250							
1.5	250	150	210	130	210	130	190	110			320	190	270	160		
1.6	250	150	210	130	210	130	190	110			320	190	270	160		
1.7	250	150	220	130	210	130	200	120	220							
1.8	190	110	160	100	150	90	140	80	180							
1.9	230	140	200	120	200	120	180	100	250		300	180	260	160		
1.10	250	150	220	130	210	130	200	120	220							
1.11	140	90	120	70	100	60	100	60	180							
1.12	250	150	220	130	210	130	200	120	250							
1.13	250	150	210	130	210	130	190	110	250		320	190	270	160		
1.14	100	60	90	50	120	70	90	50	120							
1.15	130	80	110	70	150	90	120	70	220							
1.16	130	80	110	70	150	90	120	70	160							
2.1	90	60	80	50	110	70	80	50	240							
2.2	130	80	110	70	150	90	120	70	240							
2.3	90	60	80	50	110	70	80	50	260							
2.4	130	80	110	70	150	90	120	70	280							
2.5			190	110	250	140	190	110	180	160						
2.6			190	110	260	150	210	120	200	180						
2.7			190	110	260	150	210	120	150	130						
3.1											360	160	320	160		
3.2											360	160	320	160		
3.3											230	140	210	130		
3.4											160	100	140	80		
3.5											250	150	200	120		
3.6											250	150	200	120		
3.7											210	130	170	100		
3.8											210	130	170	100		
4.1																
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4.17																
4.18																
4.19																
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5.2																50
5.3																50
5.4																40
5.5																40
5.6																40
5.7																40
5.8																40
5.9																90
5.10																60
5.11																60
6.1																
6.2																
6.3																
6.4																
6.5																

MaxiMill 271-12 system

Cutting data approximate values

for standard inserts

Material	F			M			R		
	v_c m/min	f_z mm	a_p mm	v_c m/min	f_z mm	a_p mm	v_c m/min	f_z mm	a_p mm
Steel				150-250	0,20-0,40	0,3-6,0	150-250	0,20-0,40	0,3-6,0
Stainless steel				150-200	0,15-0,30	0,3-6,0	150-200	0,15-0,30	0,3-6,0
Cast iron				250-350	0,15-0,35	0,3-6,0	250-350	0,15-0,35	0,3-6,0
Non ferrous metals									
Heat resistant alloys	25-80	0,10-0,25	0,3-6,0	25-80	0,10-0,35	0,3-6,0			
hardened materials									

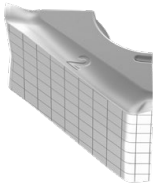
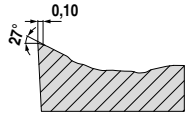
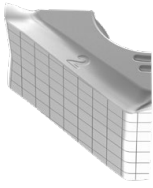
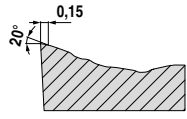
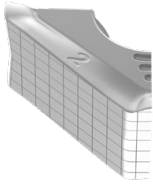
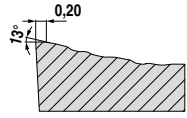
for wiper inserts

Material	F			M			R		
	v_c m/min	f_z mm	a_p mm	v_c m/min	f_z mm	a_p mm	v_c m/min	f_z mm	a_p mm
Steel	150-250	0,20-0,40	0,3-4,0						
Stainless steel	150-200	0,15-0,30	0,3-4,0						
Cast iron	250-350	0,15-0,35	0,3-4,0						
Non ferrous metals									
Heat resistant alloys	25-80	0,10-0,35	0,3-4,0						
hardened materials									

for HFC tools

Material	F			M			R		
	v_c m/min	f_z mm	a_p mm	v_c m/min	f_z mm	a_p mm	v_c m/min	f_z mm	a_p mm
Steel				150-250	0,20-1,20	0,3-2,6	150-250	0,20-1,20	0,3-2,6
Stainless steel				150-200	0,20-0,80	0,3-2,6	150-200	0,20-0,80	0,3-2,6
Cast iron				250-350	0,20-1,00	0,3-2,6	250-350	0,20-1,00	0,3-2,6
Non ferrous metals									
Heat resistant alloys				25-80	0,20-0,80	0,3-2,6	25-80	0,20-0,80	0,3-2,6
hardened materials									

Chip Breakers Overview

	Model	Machining			Sectional illustration	f_z in mm
		fine	Medium	rough		
-F50 ▲ Positive Geometry ▲ Medium rough machining ▲ For unstable clamping with steel machining ▲ First choice for stainless steel materials			CTPM245	CTPM245		0,20-0,30
			CTPM245	CTPM245		
		CTC5240	CTC5240	CTC5240		
-M50 ▲ Universal Geometry ▲ Medium to heavy rough machining ▲ First choice for general steel materials			CTCP230/CTPP235	CTCP230/CTPP235		0,20-0,50
			CTCM235/CTPM240	CTCM235/CTPM240		
-R50 ▲ Stable Geometry ▲ Heavy rough machining ▲ For heavily interrupted cuts ▲ First choice for cast iron materials						0,20-0,50
			CTCK215/CTPK220	CTCK215/CTPK220		

Magnet – workpiece support, set

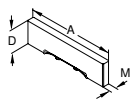


- ▲ With clearance on the underside
- ▲ Flexible and rational clamping
- ▲ Height accuracy +/- 0.01 mm
- ▲ Quick and easy to install thanks to magnetic adhesion

Workpiece supports overview

Description	A	D	M	price	Article no.	Type association
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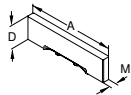
Magnet – workpiece support, set



- ▲ Stainless spring steel
- ▲ Pressed magnets
- ▲ Delivered in set: 5 pairs of 2 pieces
- ▲ Price per set

			£	Y4	NCG	HSG / -S / -Z	ESG 4	ESG mini	HDG 2	ZSG 4	ZSG 3	DSG 4	MSG 2	HSG
80	5 / 10 / 15 / 20 / 22	2.5	251.75	80 878 79800	●		●							
125	8 / 12 / 20 / 25 / 27	2.5	284.05	80 878 79900	●		●							

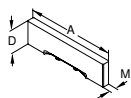
Magnet – workpiece support, set



- ▲ Stainless spring steel
- ▲ Pressed magnets
- ▲ Delivered in set: 5 pairs of 2 pieces
- ▲ Price per set

			£	Y4	NCG	HSG / -S / -Z	ESG 4	ESG mini	HDG 2	ZSG 4	ZSG 3	DSG 4	MSG 2	HSG
100	12 / 20 / 25 / 30 / 32	2.5	270.75	80 892 79700	●			●	●	●				
125	12 / 25 / 30 / 35 / 37	2.5	284.05	80 892 79800	●			●	●	●				
160	15 / 30 / 40 / 45 / 47	2.5	299.25	80 892 79900	●		●		●	●				

Magnet – workpiece support, set



- ▲ Stainless spring steel
- ▲ Pressed magnets
- ▲ Delivered in set: 5 pairs of 2 pieces
- ▲ Price per set

			£	Y4	NCG	HSG / -S / -Z	ESG 4	ESG mini	HDG 2	ZSG 4	ZSG 3	DSG 4	MSG 2	HSG
125	9 / 22 / 27 / 32 / 34	2.5	284.05	80 901 79900	●				●	●		●		

Workpiece support, magnetic

Scope of supply:

Including stop pin 50 mm/100 mm



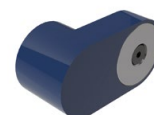
NEW Y4

Article no.
80 892 ...

Length

	£	
60	93.10	23800
115	135.85	23900

Extension for workpiece support, magnetic



NEW Y4

Article no.
80 892 ...

Size
mm
68x30

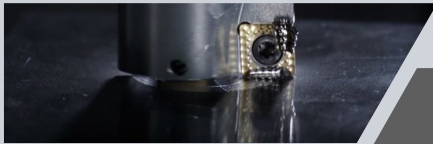
£
72.20 25400

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