

UP **2** DATE

Machining titanium the easy way!

MaxiMill – 211-DC with DirectCooling

Faster. Longer. Safer.

... ADDITIONAL PRODUCT HIGHLIGHTS

- ▲ **Cermet grade CTEP110-P:**
Be amazed with our Coating update
for finish turning
- ▲ Precise aluminum machining complex
small components with the new
Micro milling cutters AluLine – Micro

CERATIZIT is a high-technology engineering group specialised in cutting tools and hard material solutions.

Tooling a Sustainable Future

ceratizit.com



Welcome!



Placing your order is quick and easy

Customer Service Centre

Freephone Number

UK: 0800 073 2073

Ireland: 1800 93 22 55

Freefax Number

UK: 0800 073 2074

E-Mail

info.uk@ceratizit.com



It couldn't be easier

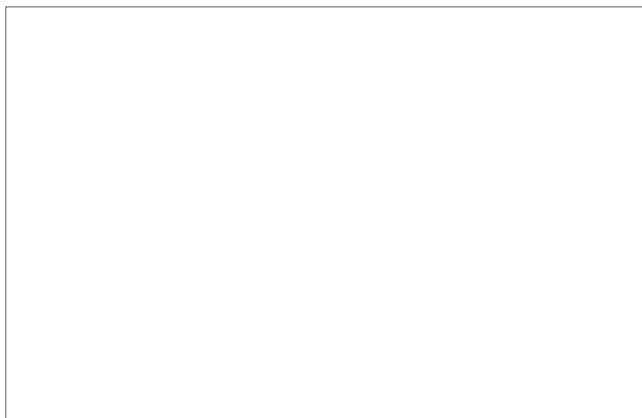
Ordering via the Online Shop

<https://cuttingtools.ceratizit.com>



On-site technical support

Your Local Technical Sales Engineer



Your customer number



Precision cooling strategy

with the additively manufactured
MaxiMill – 211-DC milling system


CERATIZIT

The ideal nozzle position for decisive added value when machining titanium and other heat-resistant materials

Want to achieve maximum process security despite high cutting speeds while working efficiently?

We offer you these exact advantages in a single tool – our 3D-printed MaxiMill – 211-DC indexable insert milling system manufactured here at CERATIZIT. The patented shoulder mill stands out for its decisive added value when machining titanium and other heat-resistant materials, thanks to an **optimum DirectCooling supply on the indexable insert flanks**. Because these materials in particular require the most effective possible cooling with emulsion to achieve a good machining result.



 → from page 44
You can find further information on the product here.

cts.ceratizit.com/gb/en/maximill-211-dc



CERATIZIT

The cool way to machine titanium alloys

Optimising the flank cooling system for machining titanium and super alloys was a top priority for the base body of the MaxiMill – 211-DC. So our developers at CERATIZIT came up with a concept that wouldn't have been possible with conventional machining processes. The aim was to deliver as much coolant as possible straight to the cutting edge. This called for a highly complex design that was feasible thanks to additive manufacturing.



3D-printed tool holder with perfectly positioned coolant channels

Advantage/benefit

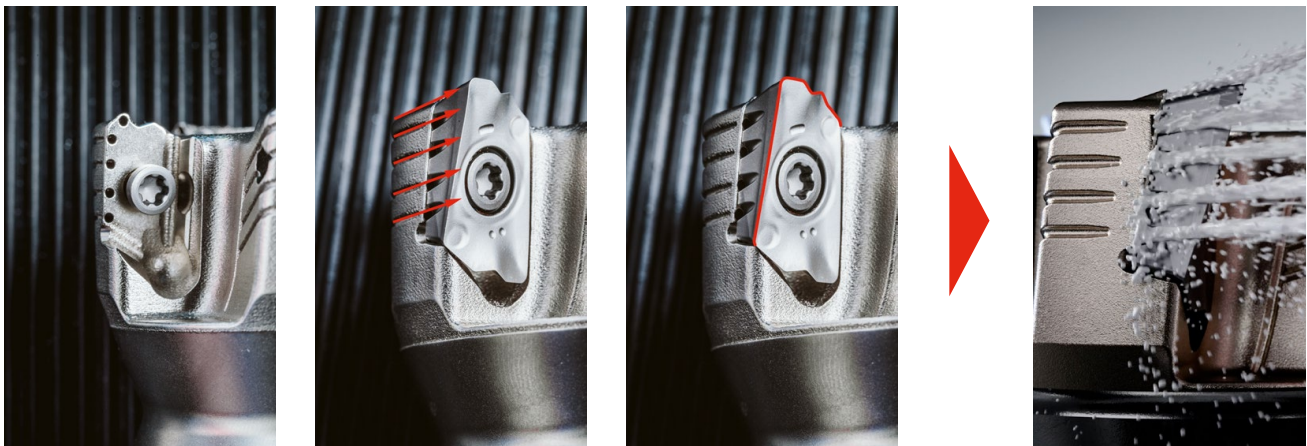
- ▲ Optimum DirectCooling supply on the indexable insert flanks
- ▲ Indexable insert geometry and nozzle position perfectly tailored to DirectCooling

Less wear to indexable inserts
Enables higher machining parameters

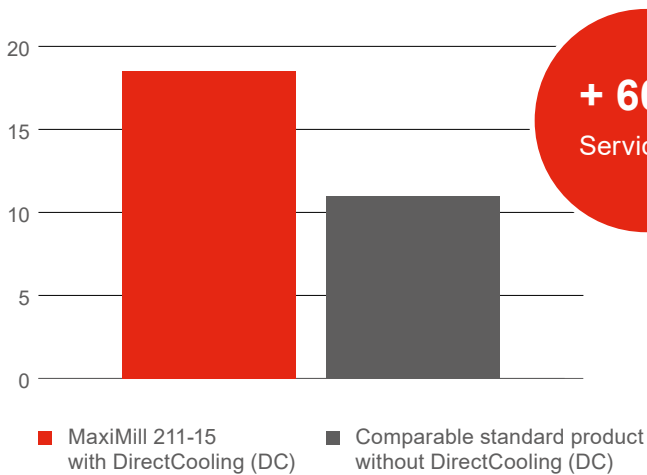
→ Lowers tool costs
→ Optimises production time

The perfect combination: an ideal nozzle position with matching insert geometry

Produced with additive manufacturing, the base body of the milling cutter on the MaxiMill – 211-DC opens up scope for the complexity required for flank cooling. This creates the perfect combination of geometric and functional properties – the ideal nozzle position, paired with an **insert geometry that is precisely tailored** for cooling – guaranteeing full-coverage wetting of the coolant on the indexable insert cutting surface.



Test report: Service life [min] compared to standard tools



Machine: GROB G1050
Workpiece: TiAl6V4
Tool: MaxiMill – 211-DC
 v_c : 65 m/min.
 a_p : 6 mm / a_e 18 mm / f_z 0,13 mm
Coolant pressure: 80 bar

“

Having that extra time on the service life really takes the pressure off for our customers when machining titanium and super alloys. Plus, they benefit from a reliable process – with significantly lower tool usage.

Manuel Höfferer, Application Manager Aerospace & Defence

”





Small-scale aluminium machining

with AluLine – Micro



WNT

Micro cutter for complex micro components

AluLine – Micro: with DLC coating and minimal tolerances

Workpieces are getting smaller all the time – from the medtech sector, to the latest smartphones, through to elegant watch cases. This means the tools used to make these components are going miniature as well. So we decided to completely redesign the micro cutters in our AluLine – Micro range and adapt them to the industry's requirements.



→ from page 34

You can find further information on the product here.



cts.ceratizit.com/gb/en/aluline-micro

Advantages of the AluLine – Micro cutters

- ▲ Latest geometry
- ▲ Polish grinding for uniform cutting edges and optimal chip removal
- ▲ Wear-resistant, thin and ultra-smooth DLC coating
- ▲ Outstanding price-performance ratio
- ▲ Extensive, integrated range up to overhang lengths of 12xD
- ▲ Also suitable for shrinking with shank diameter of 4 mm
- ▲ Smallest tolerances, for maximum contour quality on the component (3 μm at diameter of 0.2 mm)

Large portfolio of micro tools for machining aluminium

We offer a range of tool variants for AluLine – Micro:

- ▲ Radius and torus cutters, plus end mills with corner chamfer
- ▲ Various shank versions and geometries
- ▲ Diameters ranging from 0.2 mm to 3.0 mm
- ▲ Overhang lengths from 3xD to 12xD

With this product range, CNC machinists can be confident they have the right tool for most micro-cutting jobs involving aluminium alloys, copper and other non-ferrous metals.



Corner chamfer

Full Radius



Torus



Cermet cutting material grades take finish turning to the next level

CERATIZIT

Coating update for cermet CTEP110-P grade

Cermet cutting inserts are a top choice for those looking to lower their costs when finishing steel. These cutting inserts are more heat-resistant than those made of carbide, so CNC Machinists can use higher cutting data and shorten their processes. Other stand-out features include dimensional accuracy and long service lives, especially when the cutting inserts are equipped with a powerful DRAGONSKIN coating including insert detection – which is exactly what the new cermet inserts from CERATIZIT do.



→ from page 14

You can find further information on the product here.



cts.ceratizit.com/gb/en/cermet-inserts


Why choose cermet?

Cermet offers a number of advantages over carbide in certain applications, creating the conditions for very high cutting speeds in combination with long service lives – while delivering extremely smooth surfaces on the workpiece.

Efficient production thanks to all-round package with optimised characteristics

Advantages of the CTEP110-P cermet cutting material with a new coating:

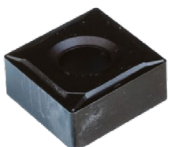
- ▲ Unique multilayer CVD coating
- ▲ Gold-coloured indicator layer for insert detection
- ▲ Improved texture and grain sizes of TiCN- & Al₂O₃ layers
- ▲ Special post-treatment process
- ▲ Optimised chip breakers
- ▲ Perfect match between chip breakers and grade

- 
- Cutting edges utilised to best possible extent
 - Reduced surface roughness
 - High wear resistance
 - Maximum cutting speed
 - Perfect chip control
 - Improved service life
 - Lower parts per cost (CPP)

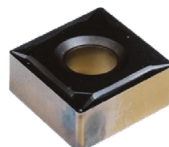


Tool change before tool breakage

Thanks to the newly updated coating with insert detection, wear is more readily identified simply by taking a quick look at the cutting edges. This lets you utilise each individual cutting edge on the indexable insert to the best possible extent while avoiding tedious tool breakages.



Predecessor insert with coating / without insert detection



CTEP110-P with coating upgrade and insert detection

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Micro cutter
AluLine – Micro





Cermet indexable inserts CTEP110-P

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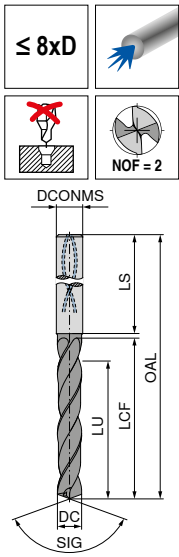
64 Verso system jaws



Shoulder milling system **MaxiMill – 211-DC**

WTX – High Speed Drill, DIN 6537

- ▲ For corrosion and acid-resistant steels
- ▲ Developed for high cutting speeds
- ▲ Three guide lands for low friction



NEW
Speed VA
Ti800



SIG 135°
Solid carbide

10 701 ...

DC _{h7} mm	DCONMS _{h6} mm	OAL mm	LCF mm	LU mm	LS mm	£ T4	
3.0	6	72	34	29	36	194.07	03000
3.1	6	72	34	29	36	194.07	03100
3.2	6	72	34	29	36	194.07	03200
3.3	6	72	34	29	36	194.07	03300
3.4	6	72	34	29	36	194.07	03400
3.5	6	72	34	29	36	194.07	03500
3.6	6	72	34	29	36	194.07	03600
3.7	6	72	34	29	36	194.07	03700
3.8	6	81	43	36	36	194.07	03800
3.9	6	81	43	36	36	194.07	03900
4.0	6	81	43	36	36	194.07	04000
4.1	6	81	43	36	36	194.07	04100
4.2	6	81	43	36	36	194.07	04200
4.3	6	81	43	36	36	194.07	04300
4.4	6	81	43	36	36	194.07	04400
4.5	6	81	43	36	36	194.07	04500
4.6	6	81	43	36	36	194.07	04600
4.8	6	95	57	48	36	194.07	04800
5.0	6	95	57	48	36	194.07	05000
5.1	6	95	57	48	36	194.07	05100
5.2	6	95	57	48	36	194.07	05200
5.3	6	95	57	48	36	194.07	05300
5.4	6	95	57	48	36	194.07	05400
5.5	6	95	57	48	36	194.07	05500
5.6	6	95	57	48	36	194.07	05600
5.7	6	95	57	48	36	194.07	05700
5.8	6	95	57	48	36	194.07	05800
5.9	6	95	57	48	36	194.07	05900
6.0	6	95	57	48	36	194.07	06000
6.1	8	114	76	64	36	236.34	06100
6.2	8	114	76	64	36	236.34	06200
6.3	8	114	76	64	36	236.34	06300
6.4	8	114	76	64	36	236.34	06400
6.5	8	114	76	64	36	236.34	06500
6.6	8	114	76	64	36	236.34	06600
6.8	8	114	76	64	36	236.34	06800
6.9	8	114	76	64	36	236.34	06900
7.0	8	114	76	64	36	236.34	07000
7.5	8	114	76	64	36	236.34	07500
7.8	8	114	76	64	36	236.34	07800
8.0	8	114	76	64	36	236.34	08000
8.1	10	142	95	80	40	308.20	08100
8.2	10	142	95	80	40	308.20	08200
8.3	10	142	95	80	40	308.20	08300
8.5	10	142	95	80	40	308.20	08500

10 701 ...

DC _{h7} mm	DCONMS _{h6} mm	OAL mm	LCF mm	LU mm	LS mm	£ T4	
8.8	10	142	95	80	40	308.20	08800
9.0	10	142	95	80	40	308.20	09000
9.3	10	142	95	80	40	308.20	09300
9.5	10	142	95	80	40	308.20	09500
9.8	10	142	95	80	40	308.20	09800
10.0	10	142	95	80	40	308.20	10000
10.2	12	162	114	96	45	420.02	10200
10.5	12	162	114	96	45	420.02	10500
10.8	12	162	114	96	45	420.02	10800
11.0	12	162	114	96	45	420.02	11000
11.5	12	162	114	96	45	420.02	11500
11.8	12	162	114	96	45	420.02	11800
12.0	12	162	114	96	45	420.02	12000
12.2	14	178	133	112	45	578.73	12200
12.5	14	178	133	112	45	578.73	12500
12.8	14	178	133	112	45	578.73	12800
13.0	14	178	133	112	45	578.73	13000
13.5	14	178	133	112	45	578.73	13500
13.8	14	178	133	112	45	578.73	13800
14.0	14	178	133	112	45	578.73	14000
14.5	16	203	152	128	48	765.98	14500
15.0	16	203	152	128	48	765.98	15000
15.5	16	203	152	128	48	765.98	15500
16.0	16	203	152	128	48	765.98	16000
16.5	18	222	171	144	48	1,053.20	16500
17.0	18	222	171	144	48	1,053.20	17000
17.5	18	222	171	144	48	1,053.20	17500
18.0	18	222	171	144	48	1,053.20	18000

P	●
M	●
K	●
N	○
S	●
H	
O	

→ v_c Page 13

Cutting data standard values – WTX – Speed VA

	Material sub-group	Index	Tensile strength N/mm ² / HB / HRC	10 701 ...					
				with through coolant v _c (m/min)	8xD				
					Ø 3–5	Ø 5–8	Ø 8–12	Ø 12–16	Ø 16–20
P	Unalloyed steel	P.1.1	420 N/mm ² / 125 HB	165	0,12	0,17	0,23	0,28	0,31
		P.1.2	640 N/mm ² / 190 HB	160	0,11	0,16	0,22	0,26	0,30
		P.1.3	840 N/mm ² / 250 HB	150	0,11	0,15	0,20	0,25	0,28
		P.1.4	910 N/mm ² / 270 HB	145	0,10	0,15	0,19	0,24	0,27
		P.1.5	1010 N/mm ² / 300 HB	135	0,10	0,14	0,18	0,23	0,26
	Low-alloy steel	P.2.1	610 N/mm ² / 180 HB	165	0,14	0,20	0,27	0,33	0,37
		P.2.2	930 N/mm ² / 275 HB	150	0,13	0,18	0,24	0,30	0,34
		P.2.3	1010 N/mm ² / 300 HB	135	0,11	0,16	0,22	0,27	0,30
		P.2.4	1200 N/mm ² / 375 HB	105	0,11	0,15	0,19	0,24	0,27
	High-alloy steel and high-alloy tool steel	P.3.1	680 N/mm ² / 200 HB	115	0,11	0,16	0,22	0,27	0,30
		P.3.2	1100 N/mm ² / 300 HB	90	0,10	0,13	0,18	0,22	0,25
		P.3.3	1300 N/mm ² / 400 HB	90	0,08	0,11	0,14	0,17	0,19
	Stainless steel	P.4.1	680 N/mm ² / 200 HB	70	0,08	0,11	0,14	0,18	0,20
		P.4.2	1010 N/mm ² / 300 HB	70	0,08	0,11	0,14	0,18	0,20
M	Stainless steel	M.1.1	610 N/mm ² / 180 HB	80	0,09	0,13	0,18	0,22	0,25
		M.2.1	300 HB	75	0,08	0,11	0,15	0,19	0,21
		M.3.1	780 N/mm ² / 230 HB	75	0,08	0,11	0,15	0,19	0,21
K	Grey cast iron	K.1.1	350 N/mm ² / 180 HB	150	0,15	0,24	0,33	0,41	0,47
		K.1.2	500 N/mm ² / 260 HB	125	0,14	0,20	0,27	0,33	0,37
	Spherulitic graphite cast iron	K.2.1	540 N/mm ² / 160 HB	200	0,15	0,22	0,31	0,38	0,43
		K.2.2	845 N/mm ² / 250 HB	125	0,14	0,20	0,27	0,33	0,37
	Malleable iron	K.3.1	440 N/mm ² / 130 HB	115	0,15	0,21	0,29	0,35	0,40
		K.3.2	780 N/mm ² / 230 HB	100	0,12	0,17	0,23	0,28	0,32
N	Aluminium wrought alloy	N.1.1	60 HB						
		N.1.2	340 N/mm ² / 100 HB						
	Cast aluminium alloy	N.2.1	250 N/mm ² / 75 HB						
		N.2.2	300 N/mm ² / 90 HB						
		N.2.3	440 N/mm ² / 130 HB						
	Copper and copper alloys (bronze/brass)	N.3.1	375 N/mm ² / 110 HB						
		N.3.2	300 N/mm ² / 90 HB	145	0,14	0,20	0,27	0,33	0,37
N.3.3	340 N/mm ² / 100 HB								
Magnesium alloys	N.4.1	70 HB							
S	Heat-resistant alloys	S.1.1	680 N/mm ² / 200 HB	35	0,07	0,10	0,14	0,17	0,19
		S.1.2	950 N/mm ² / 280 HB	25	0,05	0,07	0,10	0,12	0,14
		S.2.1	840 N/mm ² / 250 HB	25	0,05	0,07	0,10	0,12	0,14
		S.2.2	1180 N/mm ² / 350 HB	20	0,06	0,09	0,12	0,15	0,17
		S.2.3	1080 N/mm ² / 320 HB	20	0,05	0,07	0,10	0,12	0,14
	Titanium alloys	S.3.1	400 N/mm ²						
		S.3.2	1050 N/mm ² / 320 HB	35	0,08	0,11	0,15	0,18	0,20
S.3.3	1400 N/mm ² / 410 HB	30	0,06	0,09	0,12	0,15	0,17		
H	Hardened steel	H.1.1	46–55 HRC						
		H.1.2	56–60 HRC						
		H.1.3	61–65 HRC						
		H.1.4	66–70 HRC						
	Chilled iron	H.2.1	400 HB						
Hardened cast iron	H.3.1	55 HRC							
O	Non-metal materials	O.1.1	≤ 150 N/mm ²						
		O.1.2	≤ 100 N/mm ²						
		O.2.1	≤ 1000 N/mm ²						
		O.2.2	≤ 1000 N/mm ²						
		O.3.1							

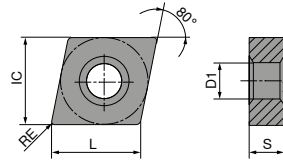
* Tensile strength



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.

CNMG

Designation	L mm	S mm	D1 mm	IC mm
CNMG 1204..	12.9	4.76	5.16	12.7



CNMG

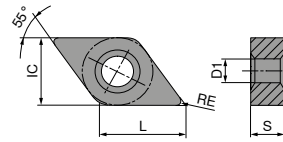
ISO	RE mm
120404EN	0.4
120408EN	0.8
120412EN	1.2

P	●	●
M	○	○
K	○	○
N		
S		
H		
O		

NEW	NEW
-CF20 CTEP110-P	-TFQ CTEP110-P
DRAGONSKIN	DRAGONSKIN
F CERMET CNMG	F CERMET CNMG
76 101 ...	76 110 ...
£ 1A/78	£ 1A/78
13.16 02801	15.30 02801
13.16 03001	15.30 03001
	15.30 03201

DNMG

Designation	L mm	S mm	D1 mm	IC mm
DNMG 1104..	11.6	4.76	3.81	9.52
DNMG 1506..	15.5	6.35	5.16	12.70



DNMG

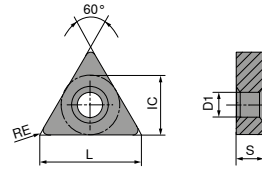
ISO	RE mm
110404EN	0.4
110408EN	0.8
150604EN	0.4
150608EN	0.8
150612EN	1.2

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

NEW	NEW
-CF20 CTEP110-P	-TFQ CTEP110-P
DRAGONSKIN	DRAGONSKIN
○ ○ ○	○ ○ ○
F CERMET DNMG	F CERMET DNMG
76 102 ...	76 153 ...
£ 1A/78	£ 1A/78
15.86 00401	
15.86 00601	
20.82 02801	23.15 02801
20.82 03001	23.15 03001
20.82 03201	

TNMG

Designation	L mm	S mm	D1 mm	IC mm
TNMG 1604..	16.5	4.76	3.81	9.52



TNMG

NEW

-CF20
CTEP110-P

DRAGONSKIN



F
CERMET
TNMG

76 149 ...

£
1A/78

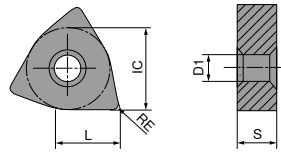
ISO	RE mm
160404EN	0.4
160408EN	0.8
160412EN	1.2

13.16	01601
13.16	01801
13.16	02001

P	●
M	○
K	○
N	
S	
H	
O	

WNMG

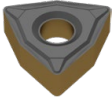
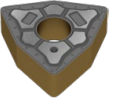
Designation	L mm	S mm	D1 mm	IC mm
WNMG 0604..	6.5	4.76	3.81	9.52
WNMG 0804..	8.6	4.76	5.16	12.70



WNMG

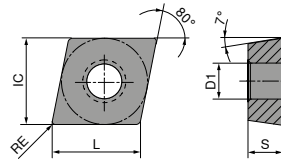
ISO	RE mm
060404EN	0.4
060408EN	0.8
080404EN	0.4
080408EN	0.8

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

NEW	NEW
-CF20 CTEP110-P	-TFQ CTEP110-P
DRAGONSKIN	DRAGONSKIN
○ ○ ○	○ ○ ○
	
F CERMET WNMG	F CERMET WNMG
76 171 ...	76 177 ...
£ 1A/78	£ 1A/78
12.60 00401	14.99 00601
12.60 00601	
18.76 01601	18.76 01801
16.31 01801	

CCGT / CCMT

Designation	L mm	S mm	D1 mm	IC mm
CC.T 0602..	6.4	2.38	2.8	6.35
CC.T 09T3..	9.7	3.97	4.4	9.52
CC.T 1204..	12.9	4.76	5.5	12.70



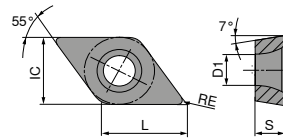
CCGT / CCMT

ISO	RE mm				
060202EN	0.2				
060204EN	0.4				
09T302EN	0.2				
09T304EN	0.4				
09T308EN	0.8				
120404EN	0.4				
P			●		●
M			○		○
K			○		○
N					
S					
H					
O					

	NEW	NEW
	-CF05 CTEP110-P	-CF55 CTEP110-P
	DRAGONSKIN	DRAGONSKIN
	○ ○ ○	○ ○ ○
	F CERMET CCGT	F CERMET CCMT
	76 247 ...	76 248 ...
	£ 1A/78	£ 1A/78
	18.04 00201	9.81 00401
	18.04 00401	
	19.22 01401	
	19.22 01601	12.60 01601
	19.22 01801	12.60 01801
	24.07 02001	17.78 02801

DCGT / DCMT

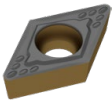
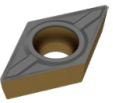
Designation	L mm	S mm	D1 mm	IC mm
DC.T 0702..	7.75	2.38	2.8	6.35
DC.T 11T3..	11.60	3.97	4.4	9.52



DCGT / DCMT

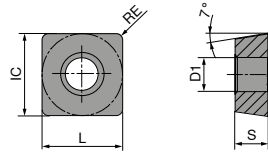
ISO	RE mm
070201EN	0.1
070202EN	0.2
070204EN	0.4
11T302EN	0.2
11T304EN	0.4
11T308EN	0.8

P	●	●
M	○	○
K	○	○
N		
S		
H		
O		

NEW	NEW
-CF05 CTEP110-P	-CF55 CTEP110-P
DRAGONSKIN	DRAGONSKIN
○ ○ □	○ ○ □
	
F CERMET DCGT	F CERMET DCMT
76 245 ...	76 246 ...
£ 1A/78	£ 1A/78
18.04 00101	
18.04 00201	10.24 00201
18.04 00401	10.24 00401
23.88 01401	
23.88 01601	14.20 01601
23.88 01801	14.20 01801

SCGT / SCMT

Designation	L mm	S mm	D1 mm	IC mm
SC.T 09T3..	9.52	3.97	4.4	9.52



SCGT / SCMT

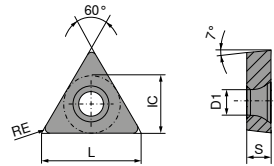
NEW	NEW
-CF05 CTEP110-P	-CF55 CTEP110-P
DRAGONSKIN	DRAGONSKIN
F CERMET SCGT	F CERMET SCMT
76 261 ...	76 260 ...
£ 1A/78	£ 1A/78
19.66 00401	12.60 00401
19.66 00601	12.60 00601

ISO	RE mm
09T304EN	0.4
09T308EN	0.8

P	●	●
M	○	○
K	○	○
N		
S		
H		
O		

TCGT / TCMT



Designation	L mm	S mm	D1 mm	IC mm
TC.T 1102..	11.0	2.38	2.8	6.35
TC.T 16T3..	16.5	3.97	4.4	9.52



TCGT / TCMT

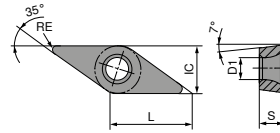
ISO	RE mm
110202EN	0.2
110204EN	0.4
110208EN	0.8
16T304EN	0.4
16T308EN	0.8

P	●	●
M	○	○
K	○	○
N		
S		
H		
O		

NEW	NEW
-CF05 CTEP110-P	-CF55 CTEP110-P
DRAGONSKIN	DRAGONSKIN
○ ○ □	○ ○ □
	
F CERMET TCGT	F CERMET TCMT
76 272 ...	76 266 ...
£ 1A/78	£ 1A/78
17.62 01401	10.04 01601
17.62 01601	
17.62 01801	
22.32 02801	13.93 03001

VCGT / VCMT

Designation	L mm	S mm	D1 mm	IC mm
VC.T 1103..	11.1	3.18	2.9	6.35
VC.T 1604..	16.6	4.76	4.4	9.52



VCGT / VCMT

ISO	RE mm	76 276 ...	76 292 ...
110301EN	0.1	£ 21.86 01201 1A/78	£ 16.97 01601
110302EN	0.2	£ 21.86 01401	
110304EN	0.4	£ 21.86 01601	
160404EN	0.4	£ 26.07 02801	£ 20.82 02801
160408EN	0.8	£ 26.07 03001	£ 20.82 03001
P		●	●
M		○	○
K		○	○
N			
S			
H			
O			

NEW

-CF05
CTEP110-P

DRAGONSKIN

F
CERMET
VCGT

76 276 ...

NEW

-CF55
CTEP110-P

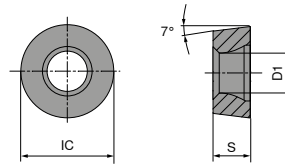
DRAGONSKIN

F
CERMET
VCMT

76 292 ...

RCMT

Designation	S mm	D1 mm	IC mm
RCMT 0803..	3.18	3.4	8



RCMT

NEW

-M23
CTCP115-P

DRAGONSKIN



M
RCMT

74 121 ...

£
1A/08

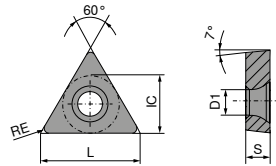
8.22 21300

ISO	RE mm
0803M0SN	4

P	●
M	
K	○
N	
S	
H	
O	

TCGT

Designation	L mm	S mm	D1 mm	IC mm
TCGT 16T3..	16.5	3.97	4.4	9.52



TCGT

-27
CTPX715

DRAGONSKIN



M
TCGT

70 276 ...

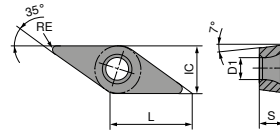
£
1A/90
19.00 72600

ISO	RE mm
16T302FN	0.2

P	●
M	●
K	○
N	●
S	●
H	
O	○

VCGT

Designation	L mm	S mm	D1 mm	IC mm
VCGT 1604..	16.6	4.76	4.4	9.52



VCGT

-25P CTPX710	-27 CTPX715
DRAGONSKIN	DRAGONSKIN
M VCGT	M VCGT
70 282 ...	70 280 ...
£ 1A/90 26.80	£ 1A/90 25.54
72600	72600 73200


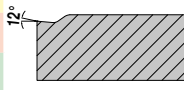

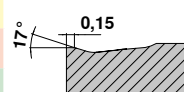
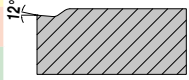

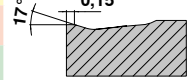
ISO	RE mm
160402FN	0.2
160412FN	1.2


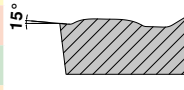

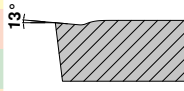
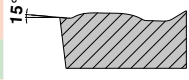

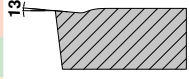
P	●	●
M	●	●
K		○
N	●	●
S	●	●
H		
O		○

			CTEP110-P		CTCP115-P			CTPX710-25P		CTPX715-27	
			DRAGONSKIN		DRAGONSKIN						
	Material sub-group	Index	Tensile strength N/mm ² / HB / HRC								
P	Unalloyed steel	P.1.1	420 N/mm ² / 125 HB	500	P.1.1	370	340	275			
		P.1.2	640 N/mm ² / 190 HB	440	P.1.2	315	300	235			
		P.1.3	840 N/mm ² / 250 HB	380	P.1.3	270	260	200			
		P.1.4	910 N/mm ² / 270 HB	360	P.1.4	250	250	190			
		P.1.5	1010 N/mm ² / 300 HB	330	P.1.5	230	235	170			
	Low-alloy steel	P.2.1	610 N/mm ² / 180 HB	450	P.2.1	325	300	240			
		P.2.2	930 N/mm ² / 275 HB	360	P.2.2	250	250	185			
		P.2.3	1010 N/mm ² / 300 HB	330	P.2.3	230	235	170			
		P.2.4	1200 N/mm ² / 375 HB	250	P.2.4	170	190	125			
	High-alloy steel and high-alloy tool steel	P.3.1	680 N/mm ² / 200 HB	380	P.3.1	200	150	140			
		P.3.2	1100 N/mm ² / 300 HB	310	P.3.2	140	95	80			
		P.3.3	1300 N/mm ² / 400 HB	230	P.3.3	85	35	25			
	Stainless steel	P.4.1	680 N/mm ² / 200 HB	380	P.4.1	200	155	140			
		P.4.2	1010 N/mm ² / 300 HB	340	P.4.2	170	130	110			
M	Stainless steel	M.1.1	610 N/mm ² / 180 HB	380	M.1.1		150	140			
		M.2.1	300 HB		M.2.1		90	80			
		M.3.1	780 N/mm ² / 230 HB		M.3.1		130	120			
K	Grey cast iron	K.1.1	350 N/mm ² / 180 HB	450	K.1.1	255		200			
		K.1.2	500 N/mm ² / 260 HB	340	K.1.2	235		160			
	Spherulitic graphite cast iron	K.2.1	540 N/mm ² / 160 HB	480	K.2.1	270		190			
		K.2.2	845 N/mm ² / 250 HB	380	K.2.2	205		150			
	Malleable iron	K.3.1	440 N/mm ² / 130 HB	460	K.3.1	250		210			
		K.3.2	780 N/mm ² / 230 HB	280	K.3.2	210		180			
N	Aluminium wrought alloy	N.1.1	60 HB		N.1.1		1840	1750			
		N.1.2	340 N/mm ² / 100 HB		N.1.2		1600	1500			
	Cast aluminium alloy	N.2.1	250 N/mm ² / 75 HB		N.2.1		1250	1200			
		N.2.2	300 N/mm ² / 90 HB		N.2.2		1250	1200			
		N.2.3	440 N/mm ² / 130 HB		N.2.3		750	700			
	Copper and copper alloys (bronze/brass)	N.3.1	375 N/mm ² / 110 HB		N.3.1		650	625			
		N.3.2	300 N/mm ² / 90 HB		N.3.2		630	600			
Magnesium alloys	N.3.3	340 N/mm ² / 100 HB		N.3.3		500	475				
	N.4.1	70 HB		N.4.1		340	325				
S	Heat-resistant alloys	S.1.1	680 N/mm ² / 200 HB		S.1.1		110	40			
		S.1.2	950 N/mm ² / 280 HB		S.1.2		85	30			
		S.2.1	840 N/mm ² / 250 HB		S.2.1		75	30			
		S.2.2	1180 N/mm ² / 350 HB		S.2.2		45	25			
		S.2.3	1080 N/mm ² / 320 HB		S.2.3		45	20			
	Titanium alloys	S.3.1	400 N/mm ²		S.3.1		100	110			
		S.3.2	1050 N/mm ² / 320 HB		S.3.2		60	70			
H	Hardened steel	H.1.1	46–55 HRC		H.1.1						
		H.1.2	56–60 HRC		H.1.2						
		H.1.3	61–65 HRC		H.1.3						
		H.1.4	66–70 HRC		H.1.4						
	Chilled iron	H.2.1	400 HB		H.2.1						
	Hardened cast iron	H.3.1	55 HRC		H.3.1						
O	Non-metal materials	O.1.1	≤ 150 N/mm ²		O.1.1			140			
		O.1.2	≤ 100 N/mm ²		O.1.2						
		O.2.1	≤ 1000 N/mm ²		O.2.1			150			
		O.2.2	≤ 1000 N/mm ²		O.2.2						
		O.3.1			O.3.1						




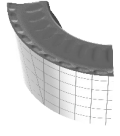


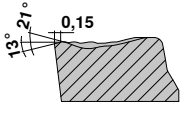
* Tensile strength






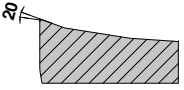
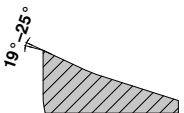
Standard chip breakers / application notes

Negative		Model	Smooth cut	Irregular cutting depth	Interrupted cut	Sectional illustration		Geometry	
						a _p mm	f mm		
Main application steel and cast iron, secondary application stainless steels	-CF / -CF20	 F	CTEP110-P / TCM10			 12°	0,30–1,50	0,07–0,25	CN.. DN.. TN.. WN..
	<ul style="list-style-type: none"> ▲ Fine finishing ▲ Sharp cutting edge for low cutting forces ▲ Good chip control even at small depths of cut 		CTEP110-P / TCM10						
Main application steel and cast iron, secondary application stainless steels	-TFQ	 F	CTEP110-P / CTC115-P	CTCP115-P / CTC125-P		 17° 0,15	0,50–5,00	0,10–0,60	CN.. DN.. WN..
	<ul style="list-style-type: none"> ▲ Wiper geometry ▲ Finishing to medium machining ▲ Very high feeds ▲ High surface quality 		CTEP110-P	CTCP115-P / CTC125-P					

Positive		Model	Smooth cut	Irregular cutting depth	Interrupted cut	Sectional illustration		Geometry	
						a _p mm	f mm		
Main application steel and cast iron, secondary application stainless steels and super alloys	-CF05	 F	CTEP110-P / TCM407	TCM10 / TCM407		 15°	0,20–1,30	0,06–0,25	CC.. DC.. SC.. TC.. VC..
	<ul style="list-style-type: none"> ▲ Fine finishing ▲ For all common steel materials, stainless steels and GGG ▲ Good swarf control ▲ High surface quality 		CTEP110-P	TCM10 / TCM407					
Main application steel and cast iron, secondary application stainless steels and super alloys	-CF55	 F M	CTEP110-P	TCM10 / CTEP110-P		 13°	0,20–1,30	0,06–0,25	CC.. DC.. SC.. TC.. VC..
	<ul style="list-style-type: none"> ▲ Finishing to medium machining ▲ Suitable for general and stainless steels ▲ Low cutting forces ▲ Good swarf control ▲ High surface quality 		CTEP110-P	CTEP110-P					

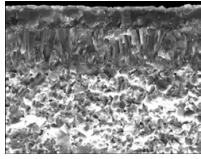
Standard chip breakers / application notes

Positive		Model	Smooth cut	Irregular cutting depth	Interrupted cut	Sectional illustration		Geometry
						a _p mm	f mm	
Main application steel and cast iron, secondary application stainless steels and super alloys	-M23	  	CTCP115-P / CTCP125-P	CTCP125-P	CTCP125-P		RC..	
	▲ Soft cutting geometry with outstanding chip breaking behaviour at low cutting depths in finish machining		CTCP115-P / CTCP125-P	CTCP125-P	CTCP125-P			
					0,30–4,0	1,0–0,45		

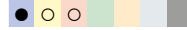
Positive									
Main application non-ferrous metals, secondary application stainless steels, steels, super alloys, cast iron	-25P	 	CTPX710	CTPX710			CC.. DC.. SC.. VC..		
	▲ Sharp cutting edge		CTPX710	CTPX710					
	▲ Good swarf control on soft aluminium alloys		CTPX710 / H216T	CTPX710 / H216T	CTPX710 / H216T				
	▲ Low adhesion		CTPX710	CTPX710					
					0,50–4,50	0,05–0,60			
Main application non-ferrous metals, secondary application stainless steels, steels, super alloys, cast iron	-27	  	CTPX715	CTPX715			CC.. DC.. RC.. SC.. TC.. VC..		
	▲ The universal Alu geometry		CTPX715	CTPX715					
	▲ Sharp cutting edge		CTPX715 / H216T	CTPX715 / H216T					
	▲ Extremely positive rake angle		CTPX715 / H216T	CTPX715 / H216T	CTPX715 / H216T				
	▲ Low adhesion		CTPX715	CTPX715					
	▲ High feed rates								
					1,00–10,00	0,10–0,75			

Grade description

CTEP110-P



ISO | P10 | M10 | K05



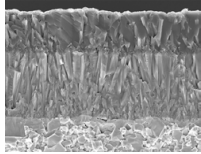
Specifications:

Composition: Co/Ni 12.2%; additives 26.4%; Ti(C,N) balance | Grain size: 0.8-1.0 μm | Hardness: HV₃₀ 1650 | Layer system: CVD TiCN-Al₂O₃ + TiN cover layer

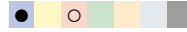
Recommended use:

Coated cermet grade with reserves of toughness for finish machining at high cutting speeds.

CTCP115-P



ISO | P15 | K25



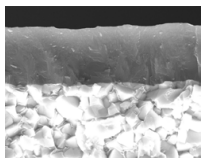
Specification:

Composition: Co 5.5%; mixed carbides 6.4%; WC balance | Grain size: 1 μm | Hardness: HV₃₀ 1530 | Layer system: CVD TiCN-Al₂O₃

Usage recommendation:

The wear-resistant high-performance grade for steel machining with stable conditions and a continuous cut.

CTPX710



ISO | P10 | M10 | K10 | N10 | S15



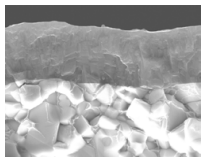
Specification:

Composition: Co 6.0%; WC balance | Grain size: 0.8 μm | Hardness: HV₃₀ 1820 | Layer system: PVD AlTiN

Usage recommendation:

The universal carbide grade for the most demanding machining requirements on multiple materials.

CTPX715



ISO | P15 | M15 | K15 | N15 | S20 | O10

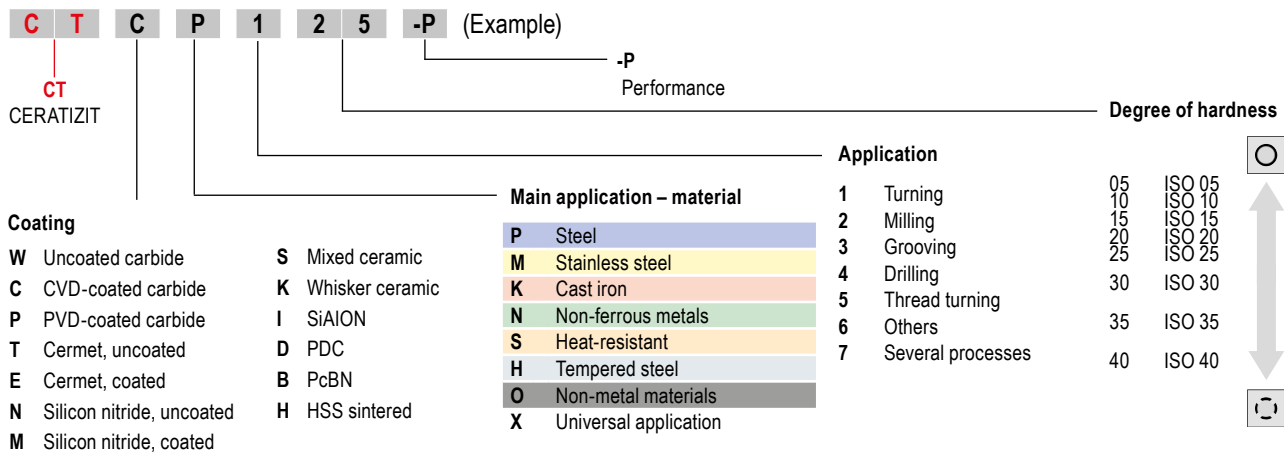


Specification:

Composition: Co 6.0%; WC balance | Grain size: 1 μm | Hardness: HV₃₀ 1650 | Layer system: PVD AlTiN

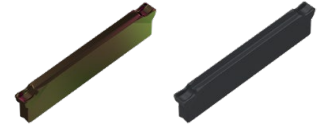
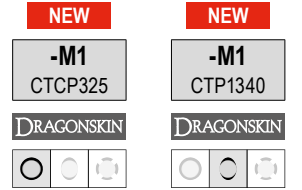
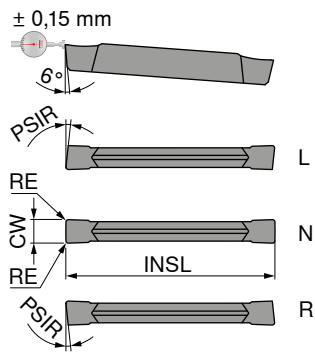
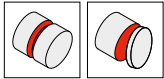
Usage recommendation:

The universal carbide grade for the most demanding machining requirements on multiple materials.



Insert GX 35

▲ For parting and grooving



Designation	IH	INSL mm	CW $\pm 0,15$ mm	RE $\pm 0,15$ mm	PSIR °	for tool holder
GX 35-E3.00 L 6	L	35	3	0.2	6	-GX35
GX 35-E3.00 N 0.20	N	35	3	0.2		-GX35
GX 35-E3.00 R 6	R	35	3	0.2	6	-GX35

70 390 ...	70 390 ...
£	£
1C/72	1C/72
21.07 92300	21.07 62300
21.07 93300	21.07 63300
21.07 94300	21.07 64300

P	●	●
M	○	●
K	●	●
N		○
S	○	●
H		
O		○

→ v_c Page 33

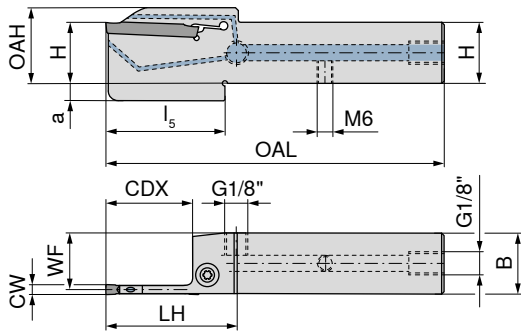


Note: reduce feed rate by 20–50 % with R/L version!
→ Page 33

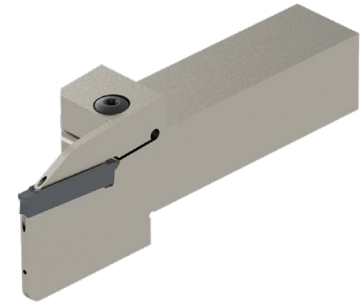
MonoClamp – Radial Monoholder GX-DC 35

Scope of supply:

Mono holder incl. key and clamping screw



Illustrations show right-hand versions



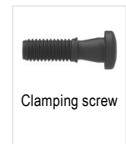
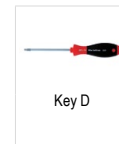
NEW

Left-hand

NEW

Right-hand

ISO designation	H mm	B mm	CW mm	WF mm	OAH mm	OAL mm	LH mm	l ₅ mm	CDX mm	a mm	for grooving inserts	Left-hand		Right-hand	
												£	...	£	...
E20 R/L 0034S3-2020X-S-DC-GX35	20	20	3	18.75	31	117	55	48	34	10	GX 35-E3.00	220.50	32001	220.50	32000
E25 R/L 0034S3-2525X-S-DC-GX35	25	25	3	23.75	36	132	55	48	34	10	GX 35-E3.00	230.30	32501	230.30	32500



Spare parts
for grooving inserts
GX 35-E3.00

	£	...	£	...
T20 - IP	22.06	129	13.47	92200



→ Chapter 16 Adapters and accessories
Here you will find the suitable base adaptors.

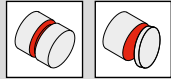
Material examples for cutting data tables

	Material sub-group	Index	Composition / Structure / Heat treatment	Tensile strength N/mm ² / HB / HRC	Material number	Material designation	Material number	Material designation
P	Unalloyed steel	P.1.1	< 0,15 % C Annealed	420 N/mm ² / 125 HB	1.0401	C15	1.1141	Ck15
		P.1.2	< 0,45 % C Annealed	640 N/mm ² / 190 HB	1.1191	C45E	1.0718	9SMnPb28
		P.1.3	< 0,45 % C Tempered	840 N/mm ² / 250 HB	1.1191	C45E	1.0535	C55
		P.1.4	< 0,75 % C Annealed	910 N/mm ² / 270 HB	1.1223	C60R	1.0535	C55
		P.1.5	< 0,75 % C Tempered	1010 N/mm ² / 300 HB	1.1223	C60R	1.0727	45S20
	Low-alloy steel	P.2.1	Annealed	610 N/mm ² / 180 HB	1.7131	16MnCr5	1.6587	17CrNiMo6
		P.2.2	Tempered	930 N/mm ² / 275 HB	1.7131	16MnCr5	1.6587	17CrNiMo6
		P.2.3	Tempered	1010 N/mm ² / 300 HB	1.7225	42CrMo4	1.3505	100Cr6
		P.2.4	Tempered	1200 N/mm ² / 375 HB	1.7225	42CrMo4	1.3505	100Cr6
	High-alloy steel and high-alloy tool steel	P.3.1	Annealed	680 N/mm ² / 200 HB	1.4021	X20Cr13	1.4034	X46Cr13
		P.3.2	Hardened and tempered	1100 N/mm ² / 300 HB	1.2343	X38CrMoV5-1	1.4034	X46Cr13
		P.3.3	Hardened and tempered	1300 N/mm ² / 400 HB	1.2343	X38CrMoV5-1	1.4034	X46Cr13
	Stainless steel	P.4.1	Ferritic / martensitic Annealed	680 N/mm ² / 200 HB	1.4016	X6Cr17	1.2316	X36CrMo16
		P.4.2	Martensitic Tempered	1010 N/mm ² / 300 HB	1.4112	X90CrMoV18	1.2316	X36CrMo16
M	Stainless steel	M.1.1	Austenitic / austenitic-ferritic Quenched	610 N/mm ² / 180 HB	1.4301	X5CrNi18-10	1.4571	X6CrNiMoTi17-12-2
		M.2.1	Austenitic Tempered	300 HB	1.4841	X15CrNiSi25-21	1.4539	X1NiCrMoCu25-20-5
		M.3.1	Austenitic / ferritic (Duplex)	780 N/mm ² / 230 HB	1.4462	X2CrNiMoN22-5-3	1.4501	X2CrNiMoCuWN25-7-4
K	Grey cast iron	K.1.1	Pearlitic / ferritic	350 N/mm ² / 180 HB	0.6010	GG-10	0.6025	GG-25
		K.1.2	Pearlitic (martensitic)	500 N/mm ² / 260 HB	0.6030	GG-30	0.6045	GG-45
	Spherulitic graphite cast iron	K.2.1	Ferritic	540 N/mm ² / 160 HB	0.7040	GGG-40	0.7060	GGG-60
		K.2.2	Pearlitic	845 N/mm ² / 250 HB	0.7070	GGG-70	0.7080	GGG-80
	Malleable iron	K.3.1	Ferritic	440 N/mm ² / 130 HB	0.8035	GTW-35-04	0.8045	GTW-45
		K.3.2	Pearlitic	780 N/mm ² / 230 HB	0.8165	GTS-65-02	0.8170	GTS-70-02
N	Aluminium wrought alloy	N.1.1	Non-hardenable	60 HB	3.0255	Al99,5	3.3315	AlMg1
		N.1.2	Hardenable Age-hardened	340 N/mm ² / 100 HB	3.1355	AlCuMg2	3.2315	AlMgSi1
	Cast aluminium alloy	N.2.1	≤ 12 % Si, non-hardenable	250 N/mm ² / 75 HB	3.2581	G-AlSi12	3.2163	G-AlSi9Cu3
		N.2.2	≤ 12 % Si, hardenable Age-hardened	300 N/mm ² / 90 HB	3.2134	G-AlSi5Cu1Mg	3.2373	G-AlSi9Mg
		N.2.3	> 12 % Si, non-hardenable	440 N/mm ² / 130 HB		G-AlSi17Cu4Mg		G-AlSi18CuNiMg
	Copper and copper alloys (bronze/brass)	N.3.1	Free-machining alloys, PB > 1 %	375 N/mm ² / 110 HB	2.0380	CuZn39Pb2 (Ms58)	2.0410	CuZn44Pb2
		N.3.2	CuZn, CuSnZn	300 N/mm ² / 90 HB	2.0331	CuZn15	2.4070	CuZn28Sn1As
		N.3.3	CuSn, lead-free copper and electrolytic copper	340 N/mm ² / 100 HB	2.0060	E-Cu57	2.0590	CuZn40Fe
	Magnesium alloys	N.4.1	Magnesium and magnesium alloys	70 HB	3.5612	MgAl6Zn	3.5312	MgAl3Zn
	S	Heat-resistant alloys	S.1.1	Fe - basis Annealed	680 N/mm ² / 200 HB	1.4864	X12NiCrSi 36-16	1.4865
S.1.2			Fe - basis Age-hardened	950 N/mm ² / 280 HB	1.4980	X6NiCrTiMoVB25-15-2	1.4876	X10NiCrAlTi32-20
S.2.1			Ni or Co basis Annealed	840 N/mm ² / 250 HB	2.4631	NiCr20TiAl (Nimonic80A)	3.4856	NiCr22Mo9Nb
S.2.2			Ni or Co basis Age-hardened	1180 N/mm ² / 350 HB	2.4668	NiCr19Nb5Mo3 (Inconel 718)	2.4955	NiFe25Cr20NbTi
S.2.3			Ni or Co basis Cast	1080 N/mm ² / 320 HB	2.4765	CoCr20W15Ni	1.3401	G-X120Mn12
Titanium alloys		S.3.1	Pure titanium	400 N/mm ²	3.7025	Ti99,8	3.7034	Ti99,7
		S.3.2	Alpha + beta alloys Age-hardened	1050 N/mm ² / 320 HB	3.7165	TiAl6V4	Ti-6246	Ti-6Al-2Sn-4Zr-6Mo
S.3.3	Beta alloys	1400 N/mm ² / 410 HB	Ti555.3	Ti-5Al-5V-5Mo-3Cr	R56410	Ti-10V-2Fe-3Al		
H	Hardened steel	H.1.1	Hardened and tempered	46–55 HRC				
		H.1.2	Hardened and tempered	56–60 HRC				
		H.1.3	Hardened and tempered	61–65 HRC				
		H.1.4	Hardened and tempered	66–70 HRC				
	Chilled iron	H.2.1	Cast	400 HB				
Hardened cast iron	H.3.1	Hardened and tempered	55 HRC					
O	Non-metal materials	O.1.1	Plastics, duroplastic	≤ 150 N/mm ²				
		O.1.2	Plastics, thermoplastic	≤ 100 N/mm ²				
		O.2.1	Aramid fibre-reinforced	≤ 1000 N/mm ²				
		O.2.2	Glass/carbon-fibre reinforced	≤ 1000 N/mm ²				
		O.3.1	Graphite					

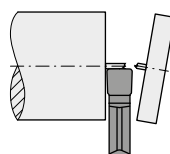
* Tensile strength

Cutting data values for grooving inserts

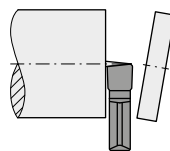
Index	GX	
	CTCP325	CTP1340
	DRAGONSKIN	
	v_c (m/min)	
P.1.1	220	180
P.1.2	195	150
P.1.3	170	125
P.1.4	165	115
P.1.5	150	100
P.2.1	200	155
P.2.2	160	110
P.2.3	150	100
P.2.4	120	70
P.3.1	150	110
P.3.2	95	75
P.3.3	45	40
P.4.1	150	110
P.4.2	125	95
M.1.1	150	110
M.2.1	95	80
M.3.1	135	100
K.1.1	170	150
K.1.2	150	125
K.2.1	160	140
K.2.2	145	120
K.3.1	210	170
K.3.2	140	120
N.1.1		300
N.1.2		200
N.2.1		300
N.2.2		200
N.2.3		150
N.3.1		300
N.3.2		300
N.3.3		200
N.4.1		200
S.1.1	35	35
S.1.2	30	30
S.2.1	20	20
S.2.2	15	15
S.2.3	15	15
S.3.1		85
S.3.2		40
S.3.3		30
H.1.1		
H.1.2		
H.1.3		
H.1.4		
H.2.1		
H.3.1		
O.1.1		130
O.1.2		
O.2.1		105
O.2.2		
O.3.1		

GX-M1	
Groove width CW (mm)	
	Parting / Grooving
	Feed rate f (mm/rev.)
3	0,10–0,20

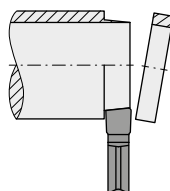
References for Parting off



From \varnothing 5 mm on, reduce feed “f” by approx. 50 %. No parting across centre (risk of breakage).

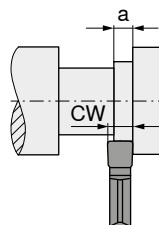


For parting pip-free, use R or L inserts. In order to minimize lateral deflection reduce feed by approx. 20–50 %.

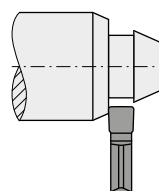


In order to prevent ring formation, use R or L inserts. Reduce feed “f” because of lateral deflection by approx. 20–50 %.

References for grooving



When grooving with an axial displacement the width „a” should amount to at least 70 % of the grooving width „CW”.



When grooving oblique surfaces the feed should be reduced by approx. 20–50 % until fully engaged.

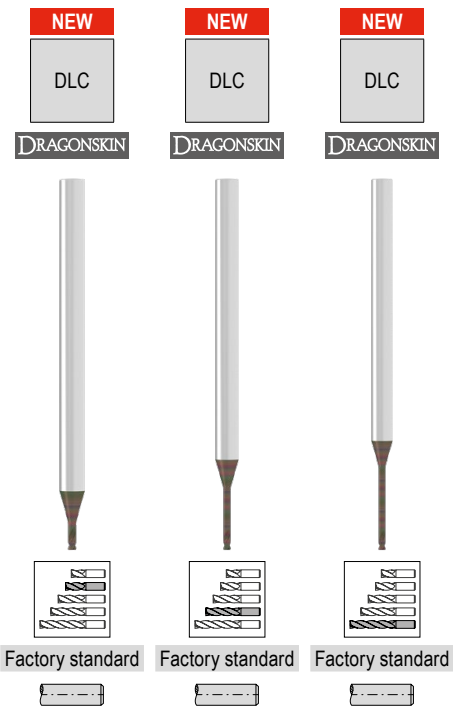
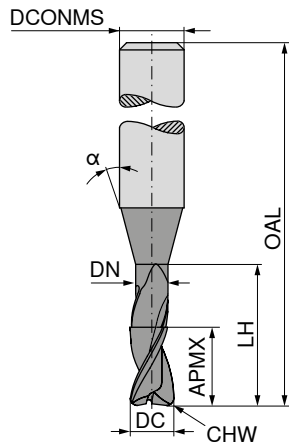
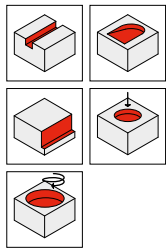
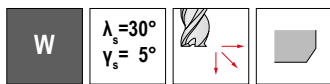


The cutting data is strongly influenced by external conditions, such as the stability of the tool and workpiece clamping, material and type of machine. The specified values represent guideline cutting data that can be adjusted by approx. $\pm 20\%$ according to the usage conditions.

AluLine – Micro-end milling cutter

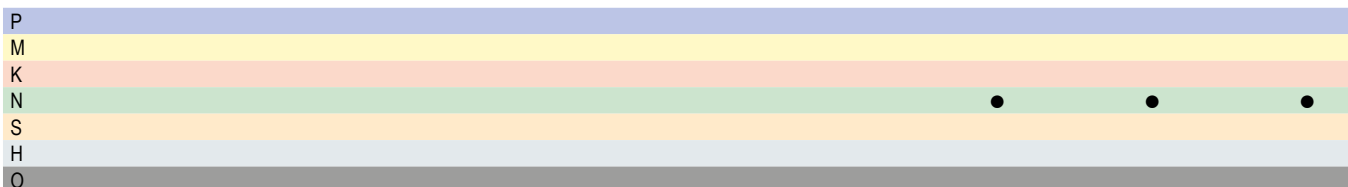
The specialist for machining non-ferrous metals

▲ T_x = maximum engagement depth



DC _{0.01}	APMX	DN	LH	OAL	LPR	α°	DCONMS _{ns}	T_x	CHW	ZEFP
mm	mm	mm	mm	mm	mm		mm	mm	mm	
0.2	0.2	0.18	0.6	45	17	15	4	3 x DC	0.02	2
0.2	0.2	0.18	1.0	45	17	15	4	5 x DC	0.02	2
0.2	0.2	0.18	1.6	45	17	15	4	8 x DC	0.02	2
0.2	0.2	0.18	2.0	50	22	15	4	10 x DC	0.02	2
0.3	0.3	0.28	0.9	45	17	15	4	3 x DC	0.03	2
0.3	0.3	0.28	1.5	45	17	15	4	5 x DC	0.03	2
0.3	0.3	0.28	2.4	50	22	15	4	8 x DC	0.03	2
0.3	0.3	0.28	3.0	50	22	15	4	10 x DC	0.03	2
0.4	0.4	0.37	1.2	45	17	15	4	3 x DC	0.04	2
0.4	0.4	0.37	2.0	45	17	15	4	5 x DC	0.04	2
0.4	0.4	0.37	3.2	50	22	15	4	8 x DC	0.04	2
0.4	0.4	0.37	4.0	50	22	15	4	10 x DC	0.04	2
0.5	0.5	0.45	1.5	45	17	15	4	3 x DC	0.05	2
0.5	0.5	0.45	1.5	45	17	15	3	3 x DC	0.05	2
0.5	0.5	0.45	2.5	45	17	15	4	5 x DC	0.05	2
0.5	0.5	0.45	2.5	45	17	15	3	5 x DC	0.05	2
0.5	0.5	0.45	4.0	45	17	15	3	8 x DC	0.05	2
0.5	0.5	0.45	4.0	50	22	15	4	8 x DC	0.05	2
0.5	0.5	0.45	5.0	50	22	15	3	10 x DC	0.05	2
0.5	0.5	0.45	5.0	50	22	15	4	10 x DC	0.05	2
0.6	0.6	0.58	2.0	45	17	15	4	3,3 x DC	0.06	2
0.6	0.6	0.58	3.0	50	22	15	4	5 x DC	0.06	2
0.6	0.6	0.58	5.0	50	22	15	4	8,3 x DC	0.06	2
0.6	0.6	0.58	6.0	50	22	15	4	10 x DC	0.06	2
0.8	0.8	0.77	2.5	45	17	15	4	3,1 x DC	0.08	2
0.8	0.8	0.77	4.0	50	22	15	4	5 x DC	0.08	2
0.8	0.8	0.77	6.5	50	22	15	4	8,1 x DC	0.08	2
0.8	0.8	0.77	8.0	50	22	15	4	10 x DC	0.08	2
1.0	1.0	0.95	3.0	45	17	15	4	3 x DC	0.10	2
1.0	1.0	0.95	3.0	45	17	15	3	3 x DC	0.10	2
1.0	1.0	0.95	5.0	45	17	15	3	5 x DC	0.10	2
1.0	1.0	0.95	5.0	50	22	15	4	5 x DC	0.10	2
1.0	1.0	0.95	8.0	50	22	15	3	8 x DC	0.10	2
1.0	1.0	0.95	8.0	50	22	15	4	8 x DC	0.10	2
1.0	1.0	0.95	10.0	50	22	15	3	10 x DC	0.10	2
1.0	1.0	0.95	10.0	55	27	15	4	10 x DC	0.10	2
1.0	1.0	0.95	12.0	55	27	15	3	12 x DC	0.10	2
1.0	1.0	0.95	12.0	55	27	15	4	12 x DC	0.10	2
1.2	1.2	1.15	3.0	45	17	15	4	2,5 x DC	0.10	2
1.2	1.2	1.15	6.0	50	22	15	4	5 x DC	0.10	2
1.2	1.2	1.15	10.0	55	27	15	4	8,3 x DC	0.10	2
1.2	1.2	1.15	12.0	55	27	15	4	10 x DC	0.10	2

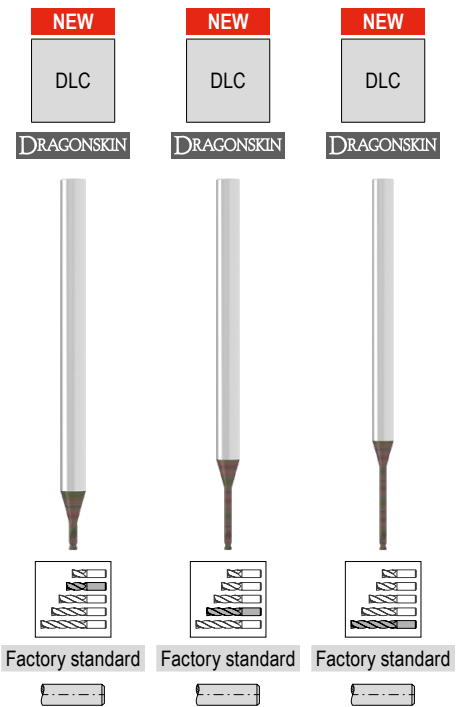
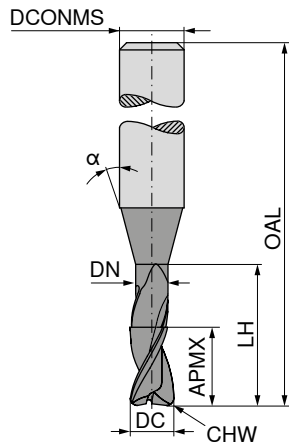
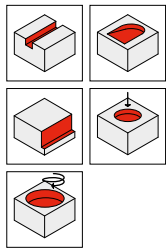
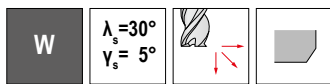
53 900 ...	53 900 ...	53 900 ...	
£	£	£	
V1/5B	V1/5B	V1/5B	
87.40	02101		
87.40	02201		
	97.30	02301	
	87.40	02401	
87.40	03101		
96.50	03201		
	87.40	03301	
	87.40	03401	
80.30	04101		
80.30	04201		
	80.30	04301	
	80.30	04401	
67.40	05101		
67.40	05100		
67.40	05201		
67.40	05200		
	67.40	05300	
	67.40	05301	
	67.40	05400	
	67.40	05401	
67.40	06101		
67.40	06201		
	85.30	06301	
	67.40	06401	
67.40	08101		
67.40	08201		
	67.40	08301	
	67.40	08401	
64.00	10101		
64.00	10100		
64.00	10200		
64.00	10201		
	64.00	10300	
	64.00	10301	
	64.00	10400	
	64.00	10401	
		64.00	10500
		64.00	10501
67.40	12101		
67.40	12201		
	67.40	12301	
	70.90	12401	



AluLine – Micro-end milling cutter

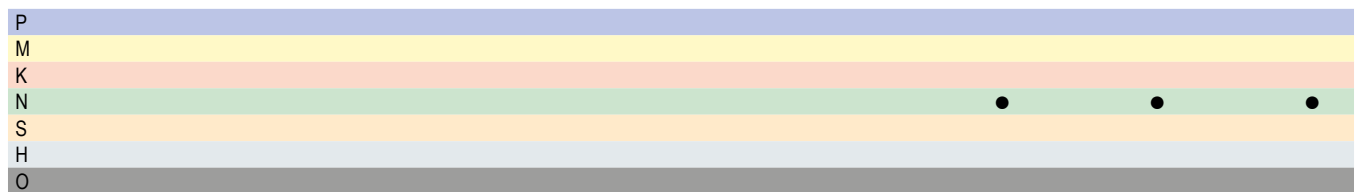
The specialist for machining non-ferrous metals

▲ T_x = maximum engagement depth



DC _{0.01} mm	APMX mm	DN mm	LH mm	OAL mm	LPR mm	α°	DCONMS _{ns} mm	T_x	CHW mm	ZEPF
1.3	1.3	1.25	4.0	45	17	15	4	3,1 x DC	0.10	2
1.3	1.3	1.25	7.0	50	22	15	4	5,4 x DC	0.10	2
1.3	1.3	1.25	11.0	55	27	15	4	8,5 x DC	0.10	2
1.3	1.3	1.25	13.0	55	27	15	4	10 x DC	0.10	2
1.5	1.5	1.44	5.0	50	22	15	4	3,3 x DC	0.10	2
1.5	1.5	1.44	5.0	45	17	15	3	3,3 x DC	0.10	2
1.5	1.5	1.44	7.5	50	22	15	3	5 x DC	0.10	2
1.5	1.5	1.44	7.5	50	22	15	4	5 x DC	0.10	2
1.5	1.5	1.44	12.0	55	27	15	3	8 x DC	0.10	2
1.5	1.5	1.44	12.0	55	27	15	4	8 x DC	0.10	2
1.5	1.5	1.44	15.0	55	27	15	3	10 x DC	0.10	2
1.5	1.5	1.44	15.0	60	32	15	4	10 x DC	0.10	2
1.6	1.6	1.52	5.0	50	22	15	4	3,1 x DC	0.10	2
1.6	1.6	1.52	8.0	50	22	15	4	5 x DC	0.10	2
1.6	1.6	1.52	13.0	55	27	15	4	8,1 x DC	0.10	2
1.6	1.6	1.52	16.0	60	32	15	4	10 x DC	0.10	2
1.8	1.8	1.72	5.5	50	22	15	4	3,1 x DC	0.10	2
1.8	1.8	1.72	9.0	50	22	15	4	5 x DC	0.10	2
1.8	1.8	1.72	14.5	55	27	15	4	8,1 x DC	0.10	2
1.8	1.8	1.72	18.0	60	32	15	4	10 x DC	0.10	2
2.0	2.0	1.92	6.0	50	22	15	4	3 x DC	0.10	2
2.0	2.0	1.92	6.0	45	17	15	3	3 x DC	0.10	2
2.0	2.0	1.92	10.0	50	22	15	4	5 x DC	0.10	2
2.0	2.0	1.92	10.0	50	22	15	3	5 x DC	0.10	2
2.0	2.0	1.92	14.0	55	27	15	3	7 x DC	0.10	2
2.0	2.0	1.92	14.0	55	27	15	4	7 x DC	0.10	2
2.0	2.0	1.92	16.0	55	27	15	3	8 x DC	0.10	2
2.0	2.0	1.92	16.0	60	32	15	4	8 x DC	0.10	2
2.0	2.0	1.92	20.0	60	32	15	3	10 x DC	0.10	2
2.0	2.0	1.92	20.0	60	32	15	4	10 x DC	0.10	2
2.3	2.3	2.22	7.0	50	22	15	4	3 x DC	0.10	2
2.3	2.3	2.22	11.5	55	27	15	4	5 x DC	0.10	2
2.3	2.3	2.22	18.5	60	32	15	4	8 x DC	0.10	2
2.3	2.3	2.22	20.0	60	32	15	4	8,7 x DC	0.10	2
2.3	2.3	2.22	23.0	65	37	15	4	10 x DC	0.10	2
3.0	3.0	2.90	9.0	50	22	15	4	3 x DC	0.10	2
3.0	3.0	2.90	15.0	55	27	15	4	5 x DC	0.10	2
3.0	3.0	2.90	24.0	65	37	15	4	8 x DC	0.10	2
3.0	3.0	2.90	30.0	70	42	15	4	10 x DC	0.10	2

53 900 ...	53 900 ...	53 900 ...
£	£	£
V1/5B	V1/5B	V1/5B
78.20		
	80.40	
	87.00	
	92.60	
67.40		
67.40		
67.40		
67.40		
	70.90	
	70.90	
	70.90	
	70.90	
80.40		
80.40		
	87.00	
	92.60	
67.40		
67.40		
	67.40	
	70.90	
67.40		
67.40		
	70.90	
	70.90	
	70.90	
	70.90	
	70.90	
74.30		
74.30		
	82.60	
	74.30	
	74.30	
74.30		
74.30		
	74.30	
	87.40	

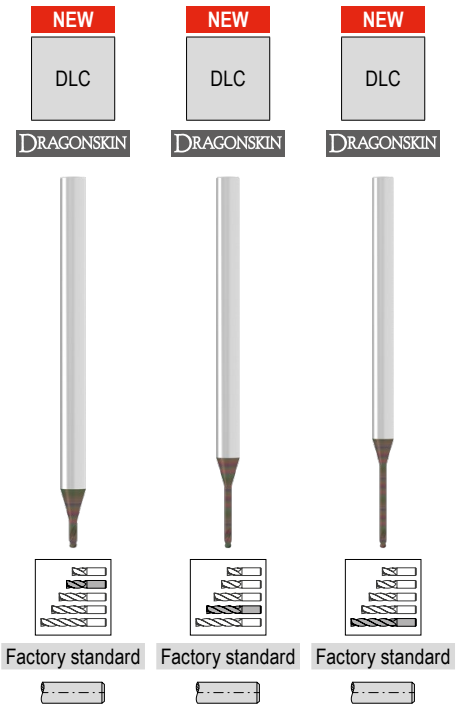
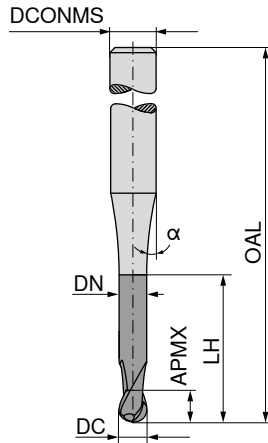
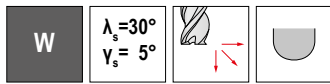


AluLine – Micro-ball nosed cutter

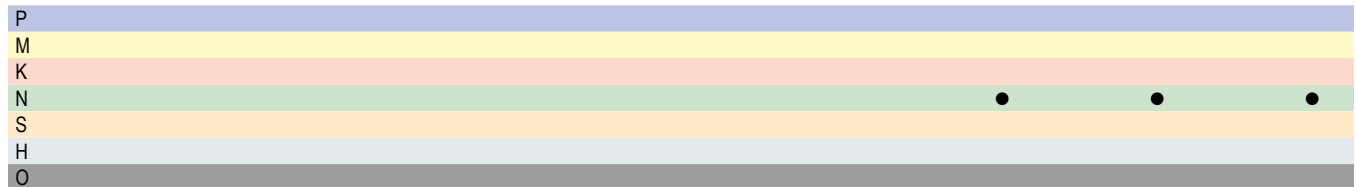
The specialist for machining non-ferrous metals

▲ Radius accuracy: ± 0,01 mm

▲ T_x = maximum engagement depth



DC _{±0,01}	APMX	DN	LH	OAL	LPR	α°	DCONMS _{±5}	T _x	ZEFP	53 903 ...	53 903 ...	53 903 ...
mm	mm	mm	mm	mm	mm		mm			£	£	£
0.2	0.2	0.18	0.6	45	17	15	4	3 x DC	2	97.30 V1/5B 02101		
0.2	0.2	0.18	1.0	45	17	15	4	5 x DC	2	96.80 02201		
0.2	0.2	0.18	1.6	45	17	15	4	8 x DC	2		97.30 02301	
0.2	0.2	0.18	2.0	50	22	15	4	10 x DC	2		96.80 02401	
0.3	0.3	0.28	0.9	45	17	15	4	3 x DC	2	94.30 03101		
0.3	0.3	0.28	1.5	45	17	15	4	5 x DC	2	96.50 03201		
0.3	0.3	0.28	2.4	50	22	15	4	8 x DC	2		94.30 03301	
0.3	0.3	0.28	3.0	50	22	15	4	10 x DC	2		94.30 03401	
0.4	0.4	0.37	1.2	45	17	15	4	3 x DC	2	87.40 04101		
0.4	0.4	0.37	2.0	45	17	15	4	5 x DC	2	87.40 04201		
0.4	0.4	0.37	3.2	50	22	15	4	8 x DC	2		87.40 04301	
0.4	0.4	0.37	4.0	50	22	15	4	10 x DC	2		87.40 04401	
0.5	0.5	0.45	1.5	45	17	15	4	3 x DC	2	70.90 05101		
0.5	0.5	0.45	1.5	45	17	15	3	3 x DC	2	70.90 05100		
0.5	0.5	0.45	2.5	45	17	15	4	5 x DC	2	70.90 05201		
0.5	0.5	0.45	2.5	45	17	15	3	5 x DC	2	70.90 05200		
0.5	0.5	0.45	4.0	45	17	15	3	8 x DC	2		70.90 05300	
0.5	0.5	0.45	4.0	50	22	15	4	8 x DC	2		70.90 05301	
0.5	0.5	0.45	5.0	50	22	15	3	10 x DC	2		70.90 05400	
0.5	0.5	0.45	5.0	50	22	15	4	10 x DC	2		70.90 05401	
0.6	0.6	0.58	2.0	45	17	15	4	3,3 x DC	2	70.90 06101		
0.6	0.6	0.58	3.0	50	22	15	4	5 x DC	2	70.90 06201		
0.6	0.6	0.58	5.0	50	22	15	4	8,3 x DC	2		85.30 06301	
0.6	0.6	0.58	6.0	50	22	15	4	10 x DC	2		70.90 06401	
0.8	0.8	0.77	2.5	45	17	15	4	3,1 x DC	2	70.90 08101		
0.8	0.8	0.77	4.0	50	22	15	4	5 x DC	2	70.90 08201		
0.8	0.8	0.77	6.5	50	22	15	4	8,1 x DC	2		70.90 08301	
0.8	0.8	0.77	8.0	50	22	15	4	10 x DC	2		70.90 08401	
1.0	1.0	0.95	3.0	45	17	15	4	3 x DC	2	67.40 10101		
1.0	1.0	0.95	3.0	45	17	15	3	3 x DC	2	67.40 10100		
1.0	1.0	0.95	5.0	45	17	15	3	5 x DC	2	67.40 10200		
1.0	1.0	0.95	5.0	50	22	15	4	5 x DC	2	67.40 10201		
1.0	1.0	0.95	8.0	50	22	15	3	8 x DC	2		67.40 10300	
1.0	1.0	0.95	8.0	50	22	15	4	8 x DC	2		67.40 10301	
1.0	1.0	0.95	10.0	50	22	15	3	10 x DC	2		67.40 10400	
1.0	1.0	0.95	10.0	55	27	15	4	10 x DC	2		67.40 10401	
1.0	1.0	0.95	12.0	55	27	15	3	12 x DC	2			74.30 10500
1.0	1.0	0.95	12.0	55	27	15	4	12 x DC	2			74.30 10501
1.2	1.2	1.15	3.0	45	17	15	4	2,5 x DC	2	70.90 12101		
1.2	1.2	1.15	6.0	50	22	15	4	5 x DC	2	70.90 12201		
1.2	1.2	1.15	10.0	55	27	15	4	8,3 x DC	2		70.90 12301	

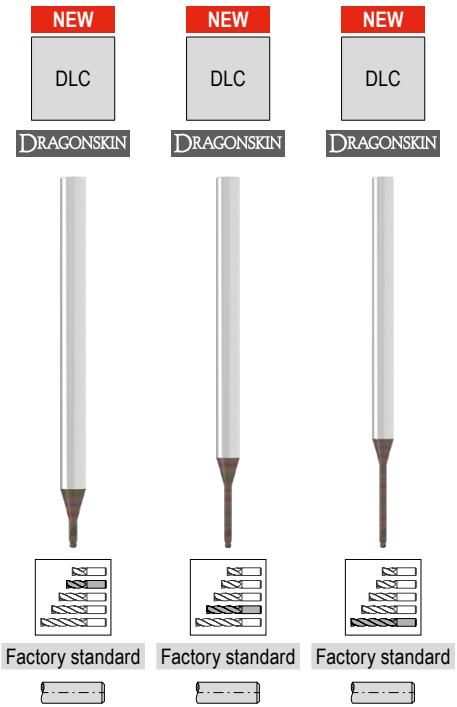
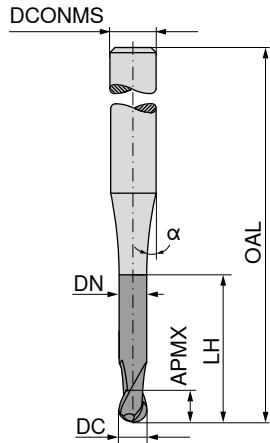
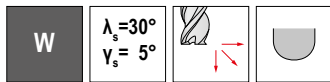


AluLine – Micro-ball nosed cutter

The specialist for machining non-ferrous metals

▲ Radius accuracy: ± 0,01 mm

▲ T_x = maximum engagement depth



DC _{±0.01}	APMX	DN	LH	OAL	LPR	α°	DCONMS _{±0.05}	T _x	ZEFP
mm	mm	mm	mm	mm	mm		mm		
1.2	1.2	1.15	12.0	55	27	15	4	10 x DC	2
1.3	1.3	1.25	4.0	45	17	15	4	3,1 x DC	2
1.3	1.3	1.25	7.0	50	22	15	4	5,4 x DC	2
1.3	1.3	1.25	11.0	55	27	15	4	8,5 x DC	2
1.3	1.3	1.25	13.0	55	27	15	4	10 x DC	2
1.5	1.5	1.44	5.0	50	22	15	4	3,3 x DC	2
1.5	1.5	1.44	5.0	45	17	15	3	3,3 x DC	2
1.5	1.5	1.44	7.5	50	22	15	3	5 x DC	2
1.5	1.5	1.44	7.5	50	22	15	4	5 x DC	2
1.5	1.5	1.44	12.0	55	27	15	3	8 x DC	2
1.5	1.5	1.44	12.0	55	27	15	4	8 x DC	2
1.5	1.5	1.44	15.0	55	27	15	3	10 x DC	2
1.5	1.5	1.44	15.0	60	32	15	4	10 x DC	2
1.6	1.6	1.52	5.0	50	22	15	4	3,1 x DC	2
1.6	1.6	1.52	8.0	50	22	15	4	5 x DC	2
1.6	1.6	1.52	13.0	55	27	15	4	8,1 x DC	2
1.6	1.6	1.52	16.0	60	32	15	4	10 x DC	2
1.8	1.8	1.72	5.5	50	22	15	4	3,1 x DC	2
1.8	1.8	1.72	9.0	50	22	15	4	5 x DC	2
1.8	1.8	1.72	14.5	55	27	15	4	8,1 x DC	2
1.8	1.8	1.72	18.0	60	32	15	4	10 x DC	2
2.0	2.0	1.92	6.0	50	22	15	4	3 x DC	2
2.0	2.0	1.92	6.0	45	17	15	3	3 x DC	2
2.0	2.0	1.92	10.0	50	22	15	4	5 x DC	2
2.0	2.0	1.92	10.0	50	22	15	3	5 x DC	2
2.0	2.0	1.92	14.0	55	27	15	3	7 x DC	2
2.0	2.0	1.92	14.0	55	27	15	4	7 x DC	2
2.0	2.0	1.92	16.0	55	27	15	3	8 x DC	2
2.0	2.0	1.92	16.0	60	32	15	4	8 x DC	2
2.0	2.0	1.92	20.0	60	32	15	3	10 x DC	2
2.0	2.0	1.92	20.0	60	32	15	4	10 x DC	2
2.3	2.3	2.22	7.0	50	22	15	4	3 x DC	2
2.3	2.3	2.22	11.5	55	27	15	4	5 x DC	2
2.3	2.3	2.22	18.5	60	32	15	4	8 x DC	2
2.3	2.3	2.22	20.0	60	32	15	4	8,7 x DC	2
2.3	2.3	2.22	23.0	65	37	15	4	10 x DC	2
3.0	3.0	2.90	9.0	50	22	15	4	3 x DC	2
3.0	3.0	2.90	15.0	55	27	15	4	5 x DC	2
3.0	3.0	2.90	24.0	65	37	15	4	8 x DC	2
3.0	3.0	2.90	30.0	70	42	15	4	10 x DC	2

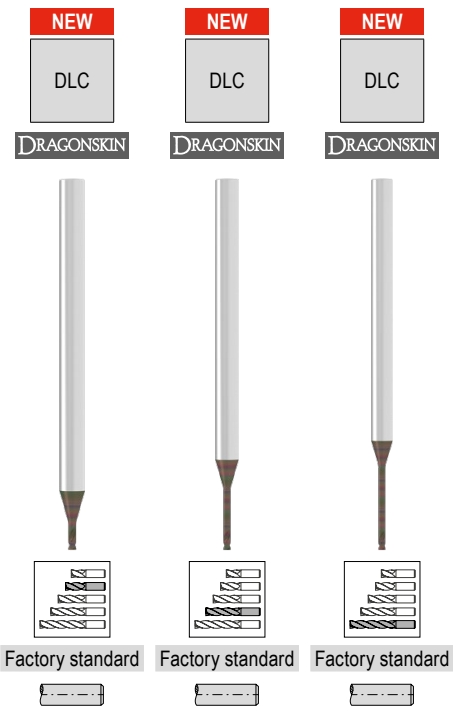
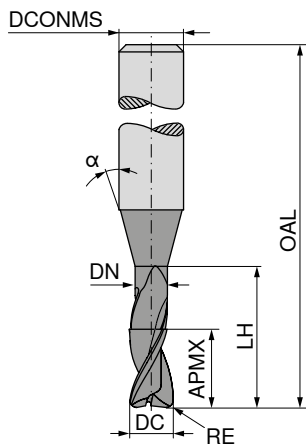
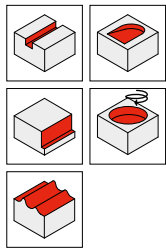
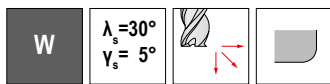
53 903 ...	53 903 ...	53 903 ...
£	£	£
V1/5B	V1/5B	V1/5B
	74.30	12401
78.20	78.20	13201
	87.00	13301
	90.50	13401
70.90		
70.90		
70.90		
70.90		
	74.30	15400
	74.30	15401
	74.30	15300
	74.30	15301
80.40		
80.40		
	87.00	16301
	92.60	16401
78.20		
70.90		
	74.30	18301
	74.30	18401
70.90		
70.90		
70.90		
70.90		
	74.30	20300
	74.30	20301
	74.30	20400
	74.30	20401
	74.30	20500
	74.30	20501
78.20		
80.30		
	82.60	23301
	80.30	23401
	80.30	23501
80.30		
80.30		
	80.30	30301
	87.40	30401

P			
M			
K			
N	•	•	•
S			
H			
O			

AluLine – Micro-torus cutter

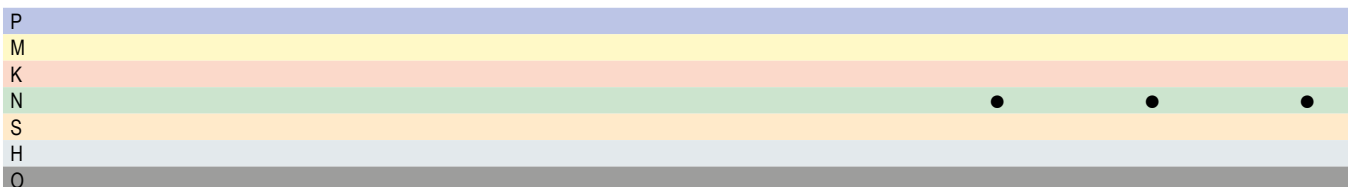
The specialist for machining non-ferrous metals

▲ T_x = maximum engagement depth



DC _{-0.01}	RE _{±0.01}	APMX	DN	LH	OAL	LPR	α°	DCONMS _{h5}	T _x	ZEFP
mm	mm	mm	mm	mm	mm	mm		mm		
0.2	0.02	0.2	0.18	0.6	45	17	15	4	3 x DC	2
0.2	0.02	0.2	0.18	1.0	45	17	15	4	5 x DC	2
0.2	0.02	0.2	0.18	1.6	45	17	15	4	8 x DC	2
0.2	0.02	0.2	0.18	2.0	50	22	15	4	10 x DC	2
0.3	0.03	0.3	0.28	0.9	45	17	15	4	3 x DC	2
0.3	0.03	0.3	0.28	1.5	45	17	15	4	5 x DC	2
0.3	0.03	0.3	0.28	2.4	50	22	15	4	8 x DC	2
0.3	0.03	0.3	0.28	3.0	50	22	15	4	10 x DC	2
0.4	0.04	0.4	0.37	1.2	45	17	15	4	3 x DC	2
0.4	0.04	0.4	0.37	2.0	45	17	15	4	5 x DC	2
0.4	0.04	0.4	0.37	3.2	50	22	15	4	8 x DC	2
0.4	0.04	0.4	0.37	4.0	50	22	15	4	10 x DC	2
0.5	0.05	0.5	0.45	1.5	45	17	15	4	3 x DC	2
0.5	0.05	0.5	0.45	1.5	45	17	15	3	3 x DC	2
0.5	0.05	0.5	0.45	2.5	45	17	15	4	5 x DC	2
0.5	0.05	0.5	0.45	2.5	45	17	15	3	5 x DC	2
0.5	0.05	0.5	0.45	4.0	45	17	15	3	8 x DC	2
0.5	0.05	0.5	0.45	4.0	50	22	15	4	8 x DC	2
0.5	0.05	0.5	0.45	5.0	50	22	15	3	10 x DC	2
0.5	0.05	0.5	0.45	5.0	50	22	15	4	10 x DC	2
0.6	0.06	0.6	0.58	2.0	45	17	15	4	3,3 x DC	2
0.6	0.06	0.6	0.58	3.0	50	22	15	4	5 x DC	2
0.6	0.06	0.6	0.58	4.2	50	22	15	4	7 x DC	2
0.6	0.06	0.6	0.58	5.0	50	22	15	4	8,3 x DC	2
0.6	0.06	0.6	0.58	6.0	50	22	15	4	10 x DC	2
0.8	0.08	0.8	0.77	2.5	45	17	15	4	3,1 x DC	2
0.8	0.08	0.8	0.77	4.0	50	22	15	4	5 x DC	2
0.8	0.08	0.8	0.77	6.5	50	22	15	4	8,1 x DC	2
0.8	0.08	0.8	0.77	8.0	50	22	15	4	10 x DC	2
1.0	0.10	1.0	0.95	3.0	45	17	15	4	3 x DC	2
1.0	0.10	1.0	0.95	3.0	45	17	15	3	3 x DC	2
1.0	0.10	1.0	0.95	5.0	45	17	15	3	5 x DC	2
1.0	0.10	1.0	0.95	5.0	50	22	15	4	5 x DC	2
1.0	0.10	1.0	0.95	8.0	50	22	15	3	8 x DC	2
1.0	0.10	1.0	0.95	8.0	50	22	15	4	8 x DC	2
1.0	0.10	1.0	0.95	10.0	50	22	15	3	10 x DC	2
1.0	0.10	1.0	0.95	10.0	55	27	15	4	10 x DC	2
1.0	0.10	1.0	0.95	12.0	55	27	15	3	12 x DC	2
1.0	0.10	1.0	0.95	12.0	55	27	15	4	12 x DC	2
1.2	0.12	1.2	1.15	3.0	45	17	15	4	2,5 x DC	2
1.2	0.12	1.2	1.15	6.0	50	22	15	4	5 x DC	2
1.2	0.12	1.2	1.15	10.0	55	27	15	4	8,3 x DC	2

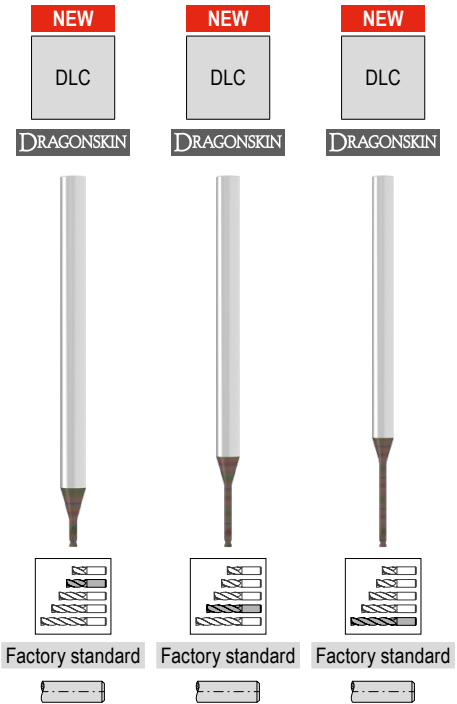
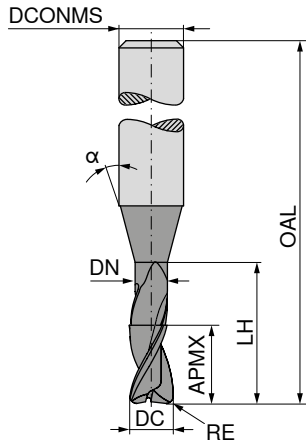
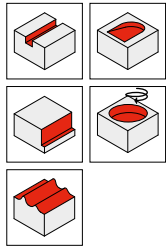
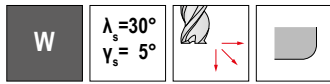
53 901 ...	53 901 ...	53 901 ...
£	£	£
V1/5B	V1/5B	V1/5B
96.80	02101	
96.80	02201	
		97.30 02301
		96.80 02401
94.30	03101	
94.30	03201	
		97.30 03301
		94.30 03401
87.40	04101	
87.40	04201	
		87.40 04301
		87.40 04401
70.90	05101	
70.90	05100	
70.90	05201	
70.90	05200	
		70.90 05300
		70.90 05301
		70.90 05400
		70.90 05401
80.40	06101	
70.90	06201	
		70.90 06301
		92.60 06401
		70.90 06501
70.90	08101	
70.90	08201	
		70.90 08301
		70.90 08401
67.40	10101	
67.40	10100	
67.40	10200	
67.40	10201	
		67.40 10300
		67.40 10301
		67.40 10400
		67.40 10401
		74.30 10500
		74.30 10501
78.20	12101	
70.90	12201	
		70.90 12301



AluLine – Micro-torus cutter

The specialist for machining non-ferrous metals

▲ T_x = maximum engagement depth



DC _{-0.01}	RE _{±0.01}	APMX	DN	LH	OAL	LPR	α°	DCONMS _{h5}	T _x	ZEPF
mm	mm	mm	mm	mm	mm	mm	mm	mm		
1.2	0.12	1.2	1.15	12.0	55	27	15	4	10 x DC	2
1.3	0.13	1.3	1.25	4.0	45	17	15	4	3,1 x DC	2
1.3	0.13	1.3	1.25	7.0	50	22	15	4	5,4 x DC	2
1.3	0.13	1.3	1.25	11.0	55	27	15	4	8,5 x DC	2
1.3	0.13	1.3	1.25	13.0	55	27	15	4	10 x DC	2
1.5	0.15	1.5	1.44	5.0	50	22	15	4	3,3 x DC	2
1.5	0.15	1.5	1.44	5.0	45	17	15	3	3,3 x DC	2
1.5	0.15	1.5	1.44	7.5	50	22	15	3	5 x DC	2
1.5	0.15	1.5	1.44	7.5	50	22	15	4	5 x DC	2
1.5	0.15	1.5	1.44	12.0	55	27	15	3	8 x DC	2
1.5	0.15	1.5	1.44	12.0	55	27	15	4	8 x DC	2
1.5	0.15	1.5	1.44	15.0	55	27	15	3	10 x DC	2
1.5	0.15	1.5	1.44	15.0	60	32	15	4	10 x DC	2
1.6	0.16	1.6	1.52	5.0	50	22	15	4	3,1 x DC	2
1.6	0.16	1.6	1.52	8.0	50	22	15	4	5 x DC	2
1.6	0.16	1.6	1.52	13.0	55	27	15	4	8,1 x DC	2
1.6	0.16	1.6	1.52	16.0	60	32	15	4	10 x DC	2
1.8	0.18	1.8	1.72	5.5	50	22	15	4	3,1 x DC	2
1.8	0.18	1.8	1.72	9.0	50	22	15	4	5 x DC	2
1.8	0.18	1.8	1.72	14.5	55	27	15	4	8,1 x DC	2
1.8	0.18	1.8	1.72	18.0	60	32	15	4	10 x DC	2
2.0	0.20	2.0	1.92	6.0	50	22	15	4	3 x DC	2
2.0	0.20	2.0	1.92	6.0	45	17	15	3	3 x DC	2
2.0	0.20	2.0	1.92	10.0	50	22	15	4	5 x DC	2
2.0	0.20	2.0	1.92	10.0	50	22	15	3	5 x DC	2
2.0	0.20	2.0	1.92	14.0	55	27	15	3	7 x DC	2
2.0	0.20	2.0	1.92	14.0	55	27	15	4	7 x DC	2
2.0	0.20	2.0	1.92	16.0	55	27	15	3	8 x DC	2
2.0	0.20	2.0	1.92	16.0	60	32	15	4	8 x DC	2
2.0	0.20	2.0	1.92	20.0	60	32	15	3	10 x DC	2
2.0	0.20	2.0	1.92	20.0	60	32	15	4	10 x DC	2
2.3	0.23	2.3	2.22	7.0	50	22	15	4	3 x DC	2
2.3	0.23	2.3	2.22	11.5	55	27	15	4	5 x DC	2
2.3	0.23	2.3	2.22	14.0	55	27	15	4	6,1 x DC	2
2.3	0.23	2.3	2.22	18.5	60	32	15	4	8 x DC	2
2.3	0.23	2.3	2.22	20.0	60	32	15	4	8,7 x DC	2
2.3	0.23	2.3	2.22	23.0	65	37	15	4	10 x DC	2
3.0	0.30	3.0	2.90	9.0	50	22	15	4	3 x DC	2
3.0	0.30	3.0	2.90	15.0	55	27	15	4	5 x DC	2
3.0	0.30	3.0	2.90	24.0	65	37	15	4	8 x DC	2
3.0	0.30	3.0	2.90	30.0	70	42	15	4	10 x DC	2

53 901 ...	53 901 ...	53 901 ...
£	£	£
V1/5B	V1/5B	V1/5B
	12401	
78.20	13201	
	13301	
	13401	
70.90	15101	
70.90	15100	
70.90	15200	
70.90	15201	
	15300	
	15301	
	15400	
	15401	
80.40	16101	
80.40	16201	
	16301	
	16401	
78.20	18101	
70.90	18201	
	18301	
	18401	
70.90	20101	
70.90	20100	
70.90	20201	
70.90	20200	
	20300	
	20301	
	20400	
	20401	
	20500	
	20501	
78.20	23101	
80.40	23201	
	23301	
	23401	
	23501	
	23601	
80.30	30101	
80.30	30201	
	30301	
	30401	

P			
M			
K			
N	•	•	•
S			
H			
O			

Material examples for cutting data tables

	Material sub-group	Index	Composition / Structure / Heat treatment	Tensile strength N/mm ² / HB / HRC	Material number	Material designation	Material number	Material designation
P	Unalloyed steel	P.1.1	< 0,15 % C Annealed	420 N/mm ² / 125 HB	1.0401	C15	1.1141	Ck15
		P.1.2	< 0,45 % C Annealed	640 N/mm ² / 190 HB	1.1191	C45E	1.0718	9SMnPb28
		P.1.3	< 0,45 % C Tempered	840 N/mm ² / 250 HB	1.1191	C45E	1.0535	C55
		P.1.4	< 0,75 % C Annealed	910 N/mm ² / 270 HB	1.1223	C60R	1.0535	C55
		P.1.5	< 0,75 % C Tempered	1010 N/mm ² / 300 HB	1.1223	C60R	1.0727	45S20
	Low-alloy steel	P.2.1	Annealed	610 N/mm ² / 180 HB	1.7131	16MnCr5	1.6587	17CrNiMo6
		P.2.2	Tempered	930 N/mm ² / 275 HB	1.7131	16MnCr5	1.6587	17CrNiMo6
		P.2.3	Tempered	1010 N/mm ² / 300 HB	1.7225	42CrMo4	1.3505	100Cr6
		P.2.4	Tempered	1200 N/mm ² / 375 HB	1.7225	42CrMo4	1.3505	100Cr6
	High-alloy steel and high-alloy tool steel	P.3.1	Annealed	680 N/mm ² / 200 HB	1.4021	X20Cr13	1.4034	X46Cr13
		P.3.2	Hardened and tempered	1100 N/mm ² / 300 HB	1.2343	X38CrMoV5-1	1.4034	X46Cr13
		P.3.3	Hardened and tempered	1300 N/mm ² / 400 HB	1.2343	X38CrMoV5-1	1.4034	X46Cr13
	Stainless steel	P.4.1	Ferritic / martensitic Annealed	680 N/mm ² / 200 HB	1.4016	X6Cr17	1.2316	X36CrMo16
		P.4.2	Martensitic Tempered	1010 N/mm ² / 300 HB	1.4112	X90CrMoV18	1.2316	X36CrMo16
M	Stainless steel	M.1.1	Austenitic / austenitic-ferritic Quenched	610 N/mm ² / 180 HB	1.4301	X5CrNi18-10	1.4571	X6CrNiMoTi17-12-2
		M.2.1	Austenitic Tempered	300 HB	1.4841	X15CrNiSi25-21	1.4539	X1NiCrMoCu25-20-5
		M.3.1	Austenitic / ferritic (Duplex)	780 N/mm ² / 230 HB	1.4462	X2CrNiMoN22-5-3	1.4501	X2CrNiMoCuWN25-7-4
K	Grey cast iron	K.1.1	Pearlitic / ferritic	350 N/mm ² / 180 HB	0.6010	GG-10	0.6025	GG-25
		K.1.2	Pearlitic (martensitic)	500 N/mm ² / 260 HB	0.6030	GG-30	0.6045	GG-45
	Spherulitic graphite cast iron	K.2.1	Ferritic	540 N/mm ² / 160 HB	0.7040	GGG-40	0.7060	GGG-60
		K.2.2	Pearlitic	845 N/mm ² / 250 HB	0.7070	GGG-70	0.7080	GGG-80
	Malleable iron	K.3.1	Ferritic	440 N/mm ² / 130 HB	0.8035	GTW-35-04	0.8045	GTW-45
		K.3.2	Pearlitic	780 N/mm ² / 230 HB	0.8165	GTS-65-02	0.8170	GTS-70-02
N	Aluminium wrought alloy	N.1.1	Non-hardenable	60 HB	3.0255	Al99,5	3.3315	AlMg1
		N.1.2	Hardenable Age-hardened	340 N/mm ² / 100 HB	3.1355	AlCuMg2	3.2315	AlMgSi1
	Cast aluminium alloy	N.2.1	≤ 12 % Si, non-hardenable	250 N/mm ² / 75 HB	3.2581	G-AlSi12	3.2163	G-AlSi9Cu3
		N.2.2	≤ 12 % Si, hardenable Age-hardened	300 N/mm ² / 90 HB	3.2134	G-AlSi5Cu1Mg	3.2373	G-AlSi9Mg
		N.2.3	> 12 % Si, non-hardenable	440 N/mm ² / 130 HB		G-AlSi17Cu4Mg		G-AlSi18CuNiMg
	Copper and copper alloys (bronze/brass)	N.3.1	Free-machining alloys, PB > 1 %	375 N/mm ² / 110 HB	2.0380	CuZn39Pb2 (Ms58)	2.0410	CuZn44Pb2
		N.3.2	CuZn, CuSnZn	300 N/mm ² / 90 HB	2.0331	CuZn15	2.4070	CuZn28Sn1As
		N.3.3	CuSn, lead-free copper and electrolytic copper	340 N/mm ² / 100 HB	2.0060	E-Cu57	2.0590	CuZn40Fe
	Magnesium alloys	N.4.1	Magnesium and magnesium alloys	70 HB	3.5612	MgAl6Zn	3.5312	MgAl3Zn
	S	Heat-resistant alloys	S.1.1	Fe - basis Annealed	680 N/mm ² / 200 HB	1.4864	X12NiCrSi 36-16	1.4865
S.1.2			Fe - basis Age-hardened	950 N/mm ² / 280 HB	1.4980	X6NiCrTiMoVB25-15-2	1.4876	X10NiCrAlTi32-20
S.2.1			Ni or Co basis Annealed	840 N/mm ² / 250 HB	2.4631	NiCr20TiAl (Nimonic80A)	3.4856	NiCr22Mo9Nb
S.2.2			Ni or Co basis Age-hardened	1180 N/mm ² / 350 HB	2.4668	NiCr19Nb5Mo3 (Inconel 718)	2.4955	NiFe25Cr20NbTi
S.2.3			Ni or Co basis Cast	1080 N/mm ² / 320 HB	2.4765	CoCr20W15Ni	1.3401	G-X120Mn12
Titanium alloys		S.3.1	Pure titanium	400 N/mm ²	3.7025	Ti99,8	3.7034	Ti99,7
		S.3.2	Alpha + beta alloys Age-hardened	1050 N/mm ² / 320 HB	3.7165	TiAl6V4	Ti-6246	Ti-6Al-2Sn-4Zr-6Mo
S.3.3	Beta alloys	1400 N/mm ² / 410 HB	Ti555.3	Ti-5Al-5V-5Mo-3Cr	R56410	Ti-10V-2Fe-3Al		
H	Hardened steel	H.1.1	Hardened and tempered	46–55 HRC				
		H.1.2	Hardened and tempered	56–60 HRC				
		H.1.3	Hardened and tempered	61–65 HRC				
		H.1.4	Hardened and tempered	66–70 HRC				
	Chilled iron	H.2.1	Cast	400 HB				
Hardened cast iron	H.3.1	Hardened and tempered	55 HRC					
O	Non-metal materials	O.1.1	Plastics, duroplastic	≤ 150 N/mm ²				
		O.1.2	Plastics, thermoplastic	≤ 100 N/mm ²				
		O.2.1	Aramid fibre-reinforced	≤ 1000 N/mm ²				
		O.2.2	Glass/carbon-fibre reinforced	≤ 1000 N/mm ²				
		O.3.1	Graphite					

* Tensile strength

Cutting data standard values – AluLine – micro cutter

Index	T _x ≤ 3xDC			53 900 ... / 53 901 ... / 53 903 ...									● 1st choice ○ suitable		
	v _c (mm)	a _{p,max} x DC	a _{e,max} x DC	Ø DC (mm) =									Emulsion	Compressed air	MQL
				0,2	> Ø 0,2 ≤ Ø 0,4	> Ø 0,4 ≤ Ø 0,6	> Ø 0,6 ≤ Ø 0,8	> Ø 0,8 ≤ Ø 1,0	> Ø 1,0 ≤ Ø 1,2	> Ø 1,2 ≤ Ø 1,5	> Ø 1,5 ≤ Ø 2,0	> Ø 2,0 ≤ Ø 3,0			
				f _z (mm)											
N.1.1	400	0,15	1,0	0,0085	0,0115	0,0140	0,0170	0,0200	0,0230	0,0280	0,0350	0,0500	●	○	○
N.1.2	400	0,15	1,0	0,0085	0,0115	0,0140	0,0170	0,0200	0,0230	0,0280	0,0350	0,0500	●	○	○
N.2.1	400	0,15	1,0	0,0085	0,0115	0,0140	0,0170	0,0200	0,0230	0,0280	0,0350	0,0500	●	○	○
N.2.2	300	0,15	1,0	0,0085	0,0115	0,0140	0,0170	0,0200	0,0230	0,0280	0,0350	0,0500	●	○	○
N.2.3	200	0,15	1,0	0,0085	0,0115	0,0140	0,0170	0,0200	0,0230	0,0280	0,0350	0,0500	●	○	○
N.3.1	140	0,08	1,0	0,0050	0,0065	0,0080	0,0100	0,0115	0,0130	0,0160	0,0210	0,0300	●	○	○
N.3.2	100	0,08	1,0	0,0050	0,0065	0,0080	0,0100	0,0115	0,0130	0,0160	0,0210	0,0300	●	○	○
N.3.3	150	0,08	1,0	0,0050	0,0065	0,0080	0,0100	0,0115	0,0130	0,0160	0,0210	0,0300	●	○	○
N.4.1															



Plunging angle for ramping and helical milling: 3°

Index	T _x > 3xDC – 5xDC			53 900 ... / 53 901 ... / 53 903 ...									● 1st choice ○ suitable		
	v _c (mm)	a _{p,max} x DC	a _{e,max} x DC	Ø DC (mm) =									Emulsion	Compressed air	MQL
				0,2	> Ø 0,2 ≤ Ø 0,4	> Ø 0,4 ≤ Ø 0,6	> Ø 0,6 ≤ Ø 0,8	> Ø 0,8 ≤ Ø 1,0	> Ø 1,0 ≤ Ø 1,2	> Ø 1,2 ≤ Ø 1,5	> Ø 1,5 ≤ Ø 2,0	> Ø 2,0 ≤ Ø 3,0			
				f _z (mm)											
N.1.1	320	0,12	1,0	0,0085	0,0115	0,0140	0,0170	0,0200	0,0230	0,0280	0,0350	0,0500	●	○	○
N.1.2	320	0,12	1,0	0,0085	0,0115	0,0140	0,0170	0,0200	0,0230	0,0280	0,0350	0,0500	●	○	○
N.2.1	320	0,12	1,0	0,0085	0,0115	0,0140	0,0170	0,0200	0,0230	0,0280	0,0350	0,0500	●	○	○
N.2.2	240	0,12	1,0	0,0085	0,0115	0,0140	0,0170	0,0200	0,0230	0,0280	0,0350	0,0500	●	○	○
N.2.3	160	0,12	1,0	0,0085	0,0115	0,0140	0,0170	0,0200	0,0230	0,0280	0,0350	0,0500	●	○	○
N.3.1	110	0,064	1,0	0,0050	0,0065	0,0080	0,0100	0,0115	0,0130	0,0160	0,0210	0,0300	●	○	○
N.3.2	80	0,064	1,0	0,0050	0,0065	0,0080	0,0100	0,0115	0,0130	0,0160	0,0210	0,0300	●	○	○
N.3.3	120	0,064	1,0	0,0050	0,0065	0,0080	0,0100	0,0115	0,0130	0,0160	0,0210	0,0300	●	○	○
N.4.1															



Plunging angle for ramping and helical milling: 2°

Index	T _x > 5xDC – 7xDC			53 900 ... / 53 901 ... / 53 903 ...									● 1st choice ○ suitable		
	v _c (mm)	a _{p,max} x DC	a _{e,max} x DC	Ø DC (mm) =									Emulsion	Compressed air	MQL
				0,2	> Ø 0,2 ≤ Ø 0,4	> Ø 0,4 ≤ Ø 0,6	> Ø 0,6 ≤ Ø 0,8	> Ø 0,8 ≤ Ø 1,0	> Ø 1,0 ≤ Ø 1,2	> Ø 1,2 ≤ Ø 1,5	> Ø 1,5 ≤ Ø 2,0	> Ø 2,0 ≤ Ø 3,0			
				f _z (mm)											
N.1.1	240	0,105	1,0	0,0085	0,0115	0,0140	0,0170	0,0200	0,0230	0,0280	0,0350	0,0500	●	○	○
N.1.2	240	0,105	1,0	0,0085	0,0115	0,0140	0,0170	0,0200	0,0230	0,0280	0,0350	0,0500	●	○	○
N.2.1	240	0,105	1,0	0,0085	0,0115	0,0140	0,0170	0,0200	0,0230	0,0280	0,0350	0,0500	●	○	○
N.2.2	180	0,105	1,0	0,0085	0,0115	0,0140	0,0170	0,0200	0,0230	0,0280	0,0350	0,0500	●	○	○
N.2.3	120	0,105	1,0	0,0085	0,0115	0,0140	0,0170	0,0200	0,0230	0,0280	0,0350	0,0500	●	○	○
N.3.1	85	0,056	1,0	0,0050	0,0065	0,0080	0,0100	0,0115	0,0130	0,0160	0,0210	0,0300	●	○	○
N.3.2	60	0,056	1,0	0,0050	0,0065	0,0080	0,0100	0,0115	0,0130	0,0160	0,0210	0,0300	●	○	○
N.3.3	90	0,056	1,0	0,0050	0,0065	0,0080	0,0100	0,0115	0,0130	0,0160	0,0210	0,0300	●	○	○
N.4.1															



Plunging angle for ramping and helical milling: 2°

Cutting data standard values – AluLine – micro cutter

Index	T _r > 7xDC – 9xDC			53 900 ... / 53 901 ... / 53 903 ...									● 1st choice ○ suitable		
	v _c (mm)	a _{p,max} x DC	a _{e,max} x DC	Ø DC (mm) =									Emulsion	Compressed air	MQL
				0,2	> Ø 0,2 ≤ Ø 0,4	> Ø 0,4 ≤ Ø 0,6	> Ø 0,6 ≤ Ø 0,8	> Ø 0,8 ≤ Ø 1,0	> Ø 1,0 ≤ Ø 1,2	> Ø 1,2 ≤ Ø 1,5	> Ø 1,5 ≤ Ø 2,0	> Ø 2,0 ≤ Ø 3,0			
				f _z (mm)											
N.1.1	160	0,09	1,0	0,0085	0,0115	0,0140	0,0170	0,0200	0,0230	0,0280	0,0350	0,0500	●	○	○
N.1.2	160	0,09	1,0	0,0085	0,0115	0,0140	0,0170	0,0200	0,0230	0,0280	0,0350	0,0500	●	○	○
N.2.1	160	0,09	1,0	0,0085	0,0115	0,0140	0,0170	0,0200	0,0230	0,0280	0,0350	0,0500	●	○	○
N.2.2	120	0,09	1,0	0,0085	0,0115	0,0140	0,0170	0,0200	0,0230	0,0280	0,0350	0,0500	●	○	○
N.2.3	80	0,09	1,0	0,0085	0,0115	0,0140	0,0170	0,0200	0,0230	0,0280	0,0350	0,0500	●	○	○
N.3.1	55	0,048	1,0	0,0050	0,0065	0,0080	0,0100	0,0115	0,0130	0,0160	0,0210	0,0300	●	○	○
N.3.2	40	0,048	1,0	0,0050	0,0065	0,0080	0,0100	0,0115	0,0130	0,0160	0,0210	0,0300	●	○	○
N.3.3	60	0,048	1,0	0,0050	0,0065	0,0080	0,0100	0,0115	0,0130	0,0160	0,0210	0,0300	●	○	○
N.4.1															

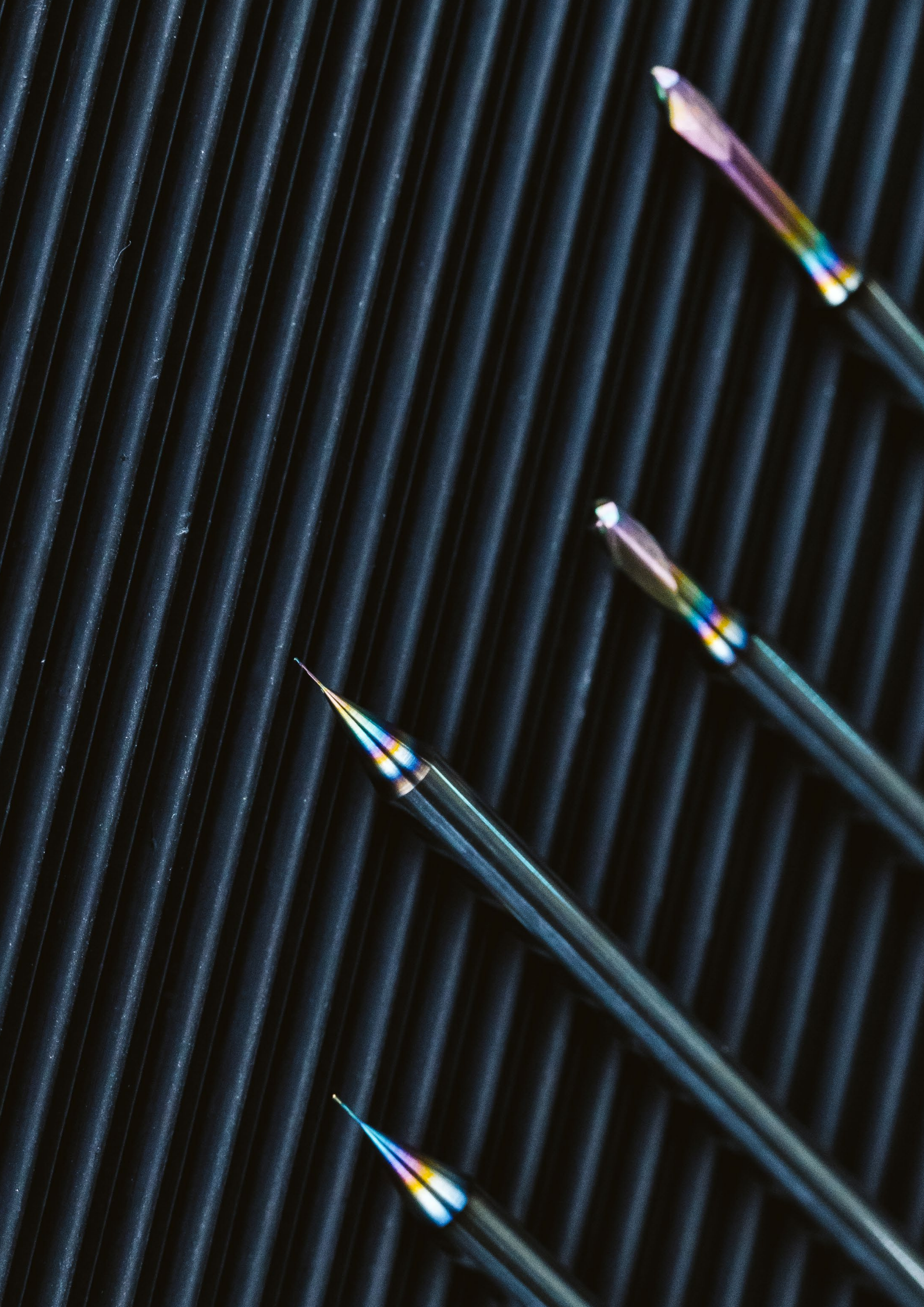


Plunging angle for ramping and helical milling = 1°

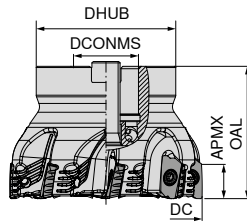
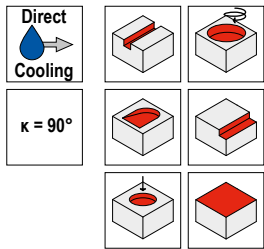
Index	T _r > 9xDC – 12xDC			53 900 ... / 53 901 ... / 53 903 ...									● 1st choice ○ suitable		
	v _c (mm)	a _{p,max} x DC	a _{e,max} x DC	Ø DC (mm) =									Emulsion	Compressed air	MQL
				0,2	> Ø 0,2 ≤ Ø 0,4	> Ø 0,4 ≤ Ø 0,6	> Ø 0,6 ≤ Ø 0,8	> Ø 0,8 ≤ Ø 1,0	> Ø 1,0 ≤ Ø 1,2	> Ø 1,2 ≤ Ø 1,5	> Ø 1,5 ≤ Ø 2,0	> Ø 2,0 ≤ Ø 3,0			
				f _z (mm)											
N.1.1	120	0,075	1,0	0,0085	0,0115	0,0140	0,0170	0,0200	0,0230	0,0280	0,0350	0,0500	●	○	○
N.1.2	120	0,075	1,0	0,0085	0,0115	0,0140	0,0170	0,0200	0,0230	0,0280	0,0350	0,0500	●	○	○
N.2.1	120	0,075	1,0	0,0085	0,0115	0,0140	0,0170	0,0200	0,0230	0,0280	0,0350	0,0500	●	○	○
N.2.2	90	0,075	1,0	0,0085	0,0115	0,0140	0,0170	0,0200	0,0230	0,0280	0,0350	0,0500	●	○	○
N.2.3	60	0,075	1,0	0,0085	0,0115	0,0140	0,0170	0,0200	0,0230	0,0280	0,0350	0,0500	●	○	○
N.3.1	40	0,04	1,0	0,0050	0,0065	0,0080	0,0100	0,0115	0,0130	0,0160	0,0210	0,0300	●	○	○
N.3.2	30	0,04	1,0	0,0050	0,0065	0,0080	0,0100	0,0115	0,0130	0,0160	0,0210	0,0300	●	○	○
N.3.3	45	0,04	1,0	0,0050	0,0065	0,0080	0,0100	0,0115	0,0130	0,0160	0,0210	0,0300	●	○	○
N.4.1															



Plunging angle for ramping and helical milling = 1°



MaxiMill – 211-15-DC Shell mill



NEW

50 798 ...

Designation	DC mm	ZNF	APMX mm	OAL mm	DCONMS _{H6} mm	DHUB mm	RPMX 1/min.	torque moment Nm	Insert	£	
										2B/40	
A211.40.R.04-15-DCA R08	40	4	14	45	16	38	18000	3,2	XDKT 1505..	771.33	04004
A211.40.R.04-15-DCA R40	40	4	14	45	16	38	18000	3,2	XDKT 1505..	771.33	24004
A211.50.R.05-15-DCA R40	50	5	14	45	22	45	15000	3,2	XDKT 1505..	986.58	25005
A211.50.R.05-15-DCA R08	50	5	14	45	22	45	15000	3,2	XDKT 1505..	986.58	05005
A211.63.R.06-15-DCA R40	63	6	14	50	22	48	14000	3,2	XDKT 1505..	1,335.38	26306
A211.63.R.06-15-DCA R08	63	6	14	50	22	48	14000	3,2	XDKT 1505..	1,335.38	06306
A211.80.R.08-15-DCA R08	80	8	14	55	27	58	12000	3,2	XDKT 1505..	1,763.89	08008
A211.80.R.08-15-DCA R40	80	8	14	55	27	58	12000	3,2	XDKT 1505..	1,763.89	28008

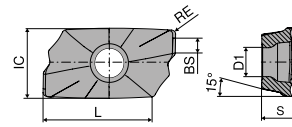
Spare parts
DC

40 - 80

TORX® blade	Key D	Molykote	Clamping screw	Torque screwdriver
80 950 ...	80 950 ...	70 950 ...	70 950 ...	80 950 ...
£ Y7	£ Y7	£ 2A/28	£ 2A/28	£ Y7
8.91 054	21.01 128	5.31 303	3.85 839	244.07 193



XDKT

Designation	IC mm	D1 mm	L mm	BS mm	S mm
XDKT 150508..	9.3	4.4	14.8	1.6	5.56
XDKT 150532..	9.3	4.4	14.8	1.9	5.56
XDKT 150540..	9.3	4.4	14.8	1.2	5.56



XDKT





XDKT

NEW	NEW
-F40 CTCS245	-F40 CTC5240
DRAGONSKIN	DRAGONSKIN
	
F XDKT	F XDKT
51 165 ...	51 165 ...
£ 1H/17	£ 1H/17
29.60 50801	29.60 10801
29.60 53201	29.60 13201
29.60 54001	29.60 14001

ISO	RE mm
150508ER	0.8
150532ER	3.2
150540ER	4.0

P
M
K
N
S
H
O

Cutting data standard values

			CTC5240		CTCS245		
			DRAGONSKIN		DRAGONSKIN		
							
			Cutting Material hard (v _c ↑) → tough (v _c ↓)				
			v _c (m/min)				
Material sub-group	Index	Tensile strength N/mm ² * / HB / HRC					
P	Unalloyed steel	P.1.1	420 N/mm ² / 125 HB				
		P.1.2	640 N/mm ² / 190 HB				
		P.1.3	840 N/mm ² / 250 HB				
		P.1.4	910 N/mm ² / 270 HB				
		P.1.5	1010 N/mm ² / 300 HB				
	Low-alloy steel	P.2.1	610 N/mm ² / 180 HB				
		P.2.2	930 N/mm ² / 275 HB				
		P.2.3	1010 N/mm ² / 300 HB				
		P.2.4	1200 N/mm ² / 375 HB				
	High-alloy steel and high-alloy tool steel	P.3.1	680 N/mm ² / 200 HB				
		P.3.2	1100 N/mm ² / 300 HB				
		P.3.3	1300 N/mm ² / 400 HB				
	Stainless steel	P.4.1	680 N/mm ² / 200 HB				
		P.4.2	1010 N/mm ² / 300 HB				
M	Stainless steel	M.1.1	610 N/mm ² / 180 HB				
		M.2.1	300 HB				
		M.3.1	780 N/mm ² / 230 HB				
K	Grey cast iron	K.1.1	350 N/mm ² / 180 HB				
		K.1.2	500 N/mm ² / 260 HB				
	Spherulitic graphite cast iron	K.2.1	540 N/mm ² / 160 HB				
		K.2.2	845 N/mm ² / 250 HB				
	Malleable iron	K.3.1	440 N/mm ² / 130 HB				
		K.3.2	780 N/mm ² / 230 HB				
N	Aluminium wrought alloy	N.1.1	60 HB				
		N.1.2	340 N/mm ² / 100 HB				
	Cast aluminium alloy	N.2.1	250 N/mm ² / 75 HB				
		N.2.2	300 N/mm ² / 90 HB				
		N.2.3	440 N/mm ² / 130 HB				
	Copper and copper alloys (bronze/brass)	N.3.1	375 N/mm ² / 110 HB				
		N.3.2	300 N/mm ² / 90 HB				
		N.3.3	340 N/mm ² / 100 HB				
	Magnesium alloys	N.4.1	70 HB				
S	Heat-resistant alloys	S.1.1	680 N/mm ² / 200 HB	80	64		
		S.1.2	950 N/mm ² / 280 HB	70	56		
		S.2.1	840 N/mm ² / 250 HB	35	28		
		S.2.2	1180 N/mm ² / 350 HB	25	20		
		S.2.3	1080 N/mm ² / 320 HB	30	24		
	Titanium alloys	S.3.1	400 N/mm ²	80	64		
		S.3.2	1050 N/mm ² / 320 HB	50	40		
		S.3.3	1400 N/mm ² / 410 HB	40	32		
H	Hardened steel	H.1.1	46–55 HRC				
		H.1.2	56–60 HRC				
		H.1.3	61–65 HRC				
		H.1.4	66–70 HRC				
	Chilled iron	H.2.1	400 HB				
	Hardened cast iron	H.3.1	55 HRC				
O	Non-metal materials	O.1.1	≤ 150 N/mm ²				
		O.1.2	≤ 100 N/mm ²				
		O.2.1	≤ 1000 N/mm ²				
		O.2.2	≤ 1000 N/mm ²				
		O.3.1					

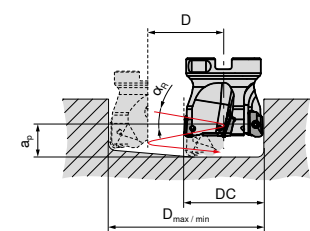
* Tensile strength



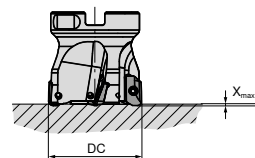
The cutting data is strongly influenced by external conditions, such as the stability of the tool and workpiece clamping, material and type of machine. The specified values represent guideline cutting data that can be adjusted by approx. ±20% according to the usage conditions.

System MaxiMill 211-15

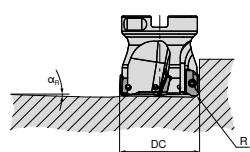
Machining strategy



① Helical plunging



② Axial ramping



③ Angled ramping



DC mm	Maximum speed related to projection length		
	$l_a = 2 \times \varnothing$ mm	$l_a = 3 \times \varnothing$ mm	$l_a = 5 \times \varnothing$ mm
25	26560	19520	13320
32	24160	16720	9520
40	22160	14400	7200
50	20320	12320	4880
63	18640	10320	2960
80	17040	8480	
100	15680	6720	
125	14320		
160	13200		

DC mm	① Helical plunging		② Axial ramping	③ Angled ramping
		RE = 0,8 mm	X_{max}	α_R
25	α_R	7,5 °		
	$D_{max.}$	48 mm	2,7 mm	9,5 °
	$D_{min.}$	37 mm		
32	α_R	5 °		
	$D_{max.}$	62 mm	2,5 mm	6,8 °
	$D_{min.}$	47 mm		
40	α_R	3,2 °		
	$D_{max.}$	78 mm	2,5 mm	5,1 °
	$D_{min.}$	63 mm		
50	α_R	2,5 °		
	$D_{max.}$	98 mm	2,5 mm	2,5 °
	$D_{min.}$	86 mm		
63	α_R	1,5 °		
	$D_{max.}$	124 mm	2,5 mm	2,5 °
	$D_{min.}$	111 mm		
80	α_R	1,3 °		
	$D_{max.}$	158 mm	2,5 mm	2,0 °
	$D_{min.}$	147 mm		
100	α_R	1,1 °		
	$D_{max.}$	198 mm	2,5 mm	1,5 °
	$D_{min.}$	190 mm		
125	α_R	0,9 °		
	$D_{max.}$	248 mm	2,5 mm	0,9 °
	$D_{min.}$	240 mm		
160	α_R	0,6 °		
	$D_{max.}$	318 mm	2,5 mm	0,7 °
	$D_{min.}$	310 mm		

$D_{max.}$ in mm = largest diameter for flat bottom hole

$D_{min.}$ in mm = Smallest diameter for flat bottom surface

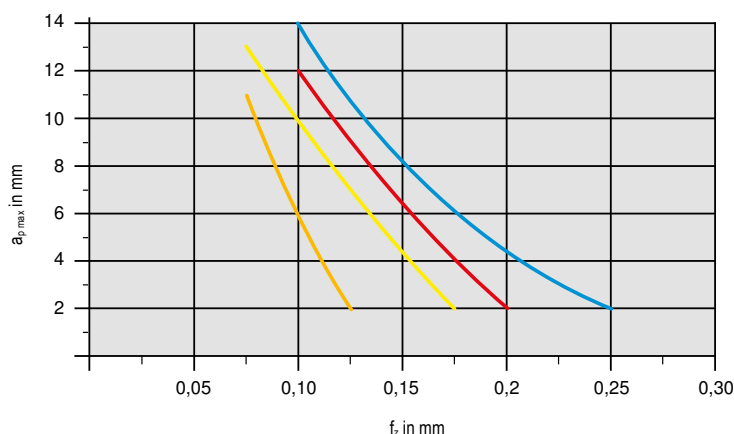
a_p in mm = $D \times \pi \times \tan(\alpha_R) =$ Pitch

l_a in mm = Overhang length

Starting Parameter



XDKT 15



Material	Inserts		v_c in m/min	Cooling		
Steel	P.2.2	40CrMnMoS 8-6	XDKT150508SR-M50	CTCP230	200	Dry
Stainless steel	M.1.1	X6CrNiMoTi 1712 2	XDKT150508SR-F50	CTPM240	180	Dry
Cast iron	K.1.1	EN-GJL-250 (GG25)	XDKT150508SR-R50	CTCK215	250	Dry
Heat-resistant	S.2.2	Inconel 718	XDKT150508ER-F40	CTC5240	35	Emulsion

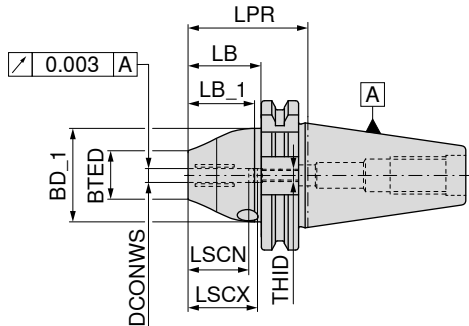
① Detailed information on cutting speed for each grade can be found on → page 46
From $v_c > 400$ m/min, the tool must be balanced!

HyPower – Rough

- ▲ High pressure chuck – especially for milling
- ▲ Ideal for HSC and HPC applications
- ▲ High temperature resistance
- ▲ Also available with Balluff chip on request

Scope of supply:

Base body with backstop screw and pressure screw



NEW



AD/B
G 2,5 n_{max} 25000

84 254 ...

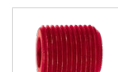
£
Y8

651.52 12579
651.52 13279

Adapter	DCONWS mm	LPR mm	BTED mm	BD_1 mm	LB_1 mm	LB mm	LSCX mm	LSCN mm	THID
SK 40	25	110	38	57.0	65.3	90.9	57	47	M10X1
SK 40	32	115	38	62.5	65.5	95.9	61	51	M12X1



Clamping key – T



Pressure screw



Stop screw IK

80 397 ...

83 950 ...

83 950 ...

Spare parts

DCONWS		£ Y7		£ Y8		£ Y7
25	SW5	8.11	050	M10x12	13.60 55000	M10x1x13,5 - SW5 25.16 421
32	SW5	8.11	050	M10x12	13.60 55000	M12x1x13,5 - SW5 25.16 422

Accessories



→ 282



→ 58, 60



→ 284

Reduction sleeve

Pull stud

Others

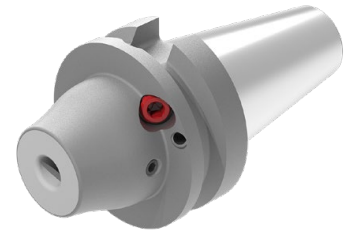
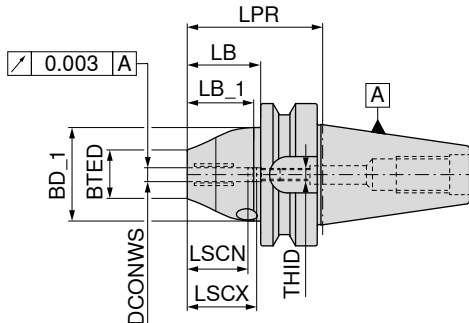
Accessories can be found in the clamping technology catalogue → **Chapter 16, Adapters and accessories**

HyPower – Rough

- ▲ High pressure chuck – especially for milling
- ▲ Ideal for HSC and HPC applications
- ▲ High temperature resistance
- ▲ Also available with Balluff chip on request

Scope of supply:

Base body with backstop screw and pressure screw



AD
G 2,5 n_{max} 25000

84 254 ...

£
Y8



AD/B
G 2,5 n_{max} 25000

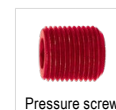
84 254 ...

£
Y8

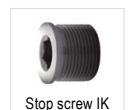
Adapter	DCONWS mm	LPR mm	BTED mm	BD_1 mm	LB_1 mm	LB mm	LSCX mm	LSCN mm	THID		
BT 30	6	54	26	46	29.0	34	37	27	M5		
BT 30	8	54	28	46	29.0	34	37	27	M6		
BT 30	10	54	30	50	23.5	34	41	31	M8X1		
BT 30	12	54	32	50	23.5	34	46	36	M10X1		
BT 30	16	69	38	55	38.5	49	49	39	M12X1		
BT 30	20	69	38	58	38.5	49	51	41	M12X1		
BT 40	25	100	38	57	44.6	75	57	47	M16X1		
BT 40	32	105	38	62	50.0	80	61	51	M16X1		



Clamping key – T



Pressure screw



Stop screw IK

Spare parts	DCONWS	80 397 ...		83 950 ...		83 950 ...	
		£ Y7		£ Y8		£ Y7	
6		8.11	050	13.60	55000	25.16	418
8		8.11	050	13.60	55000	25.16	419
10		8.11	050	13.60	55000	25.16	420
12		8.11	050	13.60	55000	25.16	421
16		8.11	050	13.60	55000	25.16	422
20		8.11	050	13.60	55000	25.16	422
25		8.11	050	13.60	55000	29.02	424
32		8.11	050	13.60	55000	29.02	424

Accessories

 → 282	 → 110+111	 → 284
Reduction sleeve	Pull stud	Others

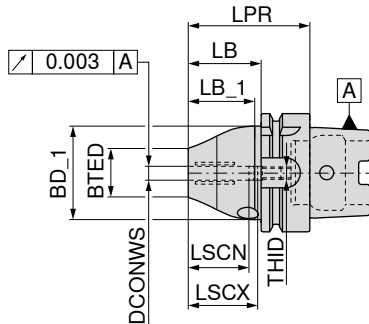
Accessories can be found in the clamping technology catalogue → Chapter 16, Adaptors and accessories

HyPower – Rough

- ▲ High pressure chuck – especially for milling
- ▲ Ideal for HSC and HPC applications
- ▲ High temperature resistance
- ▲ Also available with Balluff chip on request

Scope of supply:

Base body with backstop screw and pressure screw



AD
G 2,5 n_{max} 25000

84 254 ...

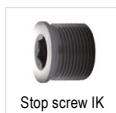
Adapter	DCONWS mm	LPR mm	BTED mm	BD_1 mm	LB_1 mm	LB mm	LSCX mm	LSCN mm	THID	
HSK-A 63	25	95	38	57.0	45.0	69	57	47	M10X1	£ Y8 658.40 12557
HSK-A 63	32	110	38	62.5	56.6	84	61	51	M10X1	£ Y8 658.40 13257
HSK-A 100	25	95	38	70.0	62.2	66	57	47	M10X1	£ Y8 898.56 12555
HSK-A 100	32	100	38	75.0	67.2	71	61	51	M10X1	£ Y8 898.56 13255



Clamping key – T



Pressure screw



Stop screw IK

80 397 ...




83 950 ...

83 950 ...

Spare parts

DCONWS		£ Y7		£ Y8		£ Y7
25	SW5	8.11	050	13.60	55000	25.16
32	SW5	8.11	050	13.60	55000	25.16

Accessories

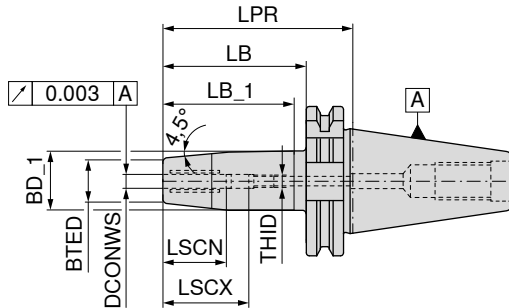
 → 282	 → 156	 → 284
Reduction sleeve	Coolant transfer pipe	Others
Accessories can be found in the clamping technology catalogue → Chapter 16, Adapters and accessories		

HyPower – Access 4.5°

- ▲ High pressure chuck with slim contour, original dimensions of a 4.5° shrink contour
- ▲ Especially for reaming and drilling applications
- ▲ Ideal for tool and die production
- ▲ Also available with Balluff chip on request

Scope of supply:

Base body with backstop screw and pressure screw



NEW

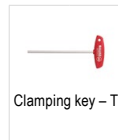


AD/B
G 2,5 n_{max} 25000

84 255 ...

£
Y8

Adapter	DCONWS mm	LPR mm	BTED mm	BD_1 mm	LB_1 mm	LB mm	LSCX mm	LSCN mm	THID	
SK 40	6	120	21	27	48.9	100.9	37	27	M5	1,009.12 20679
SK 40	8	120	21	27	48.9	100.9	37	27	M6	1,009.12 20879
SK 40	10	120	24	32	61.6	100.9	41	31	M8X1	1,009.12 21079
SK 40	12	120	24	32	61.6	100.9	46	36	M10X1	1,009.12 21279
SK 40	16	120	34	56.2	100.9	49	39		M12X1	1,009.12 21679
SK 40	20	120	33	42	68.9	100.9	51	41	M16X1	1,009.12 22079



Clamping key – T



Pressure screw



Stop screw IK

80 397 ...

83 950 ...

83 950 ...

Spare parts

DCONWS		£ Y7		£ Y8		£ Y7			
6	SW5	8.11	050	M10x12	13.60	55000	M5x12,5 - SW2,5	25.16	418
8	SW5	8.11	050	M10x12	13.60	55000	M6x12,5 - SW3	25.16	419
10	SW5	8.11	050	M10x12	13.60	55000	M8x1x13,5 - SW3	25.16	420
12	SW5	8.11	050	M10x12	13.60	55000	M10x1x13,5 - SW5	25.16	421
16	SW5	8.11	050	M10x12	13.60	55000	M12x1x13,5 - SW5	25.16	422
20	SW5	8.11	050	M10x12	13.60	55000	M16x1x13,5 - SW8	29.02	424

Accessories



→ 282



→ 58, 60



→ 284

Reduction sleeve

Pull stud

Others

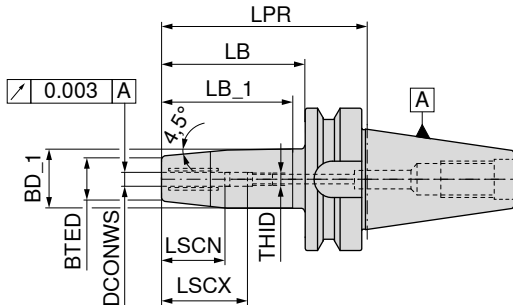
Accessories can be found in the clamping technology catalogue → Chapter 16, Adaptors and accessories

HyPower – Access 4.5°

- ▲ High pressure chuck with slim contour, original dimensions of a 4.5° shrink contour
- ▲ Especially for reaming and drilling applications
- ▲ Ideal for tool and die production
- ▲ Also available with Balluff chip on request

Scope of supply:

Base body with backstop screw and pressure screw



AD
G 2,5 n_{max} 25000

84 255 ...

£
Y8
739.52 10670
739.52 10870
739.52 11070
739.52 11270
739.52 11670
739.52 12070

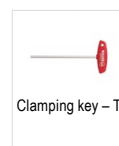


AD/B
G 2,5 n_{max} 25000

84 255 ...

£
Y8
1,009.12 20669
1,009.12 20869
1,009.12 21069
1,009.12 21269
1,009.12 21669
1,009.12 22069

Adapter	DCONWS	LPR	BTED	BD_1	LB_1	LB	LSCX	LSCN	THID
	mm	mm	mm	mm	mm	mm	mm	mm	
BT 30	6	85	21	27	57.7	65	37	27	M5
BT 30	8	85	21	27	57.7	65	37	27	M6
BT 30	10	85	24	32	57.7	65	41	31	M8X1
BT 30	12	85	24	32	57.7	65	46	36	M10X1
BT 30	16	85	27	34	57.2	65	49	39	M10X1
BT 30	20	85	33	42	57.5	65	51	41	M10X1
BT 40	6	120	21	27	48.9	95	37	27	M5
BT 40	8	120	21	27	48.9	95	37	27	M6
BT 40	10	120	24	32	61.6	95	41	31	M8X1
BT 40	12	120	24	32	61.6	95	46	36	M10X1
BT 40	16	120	27	34	56.2	95	49	39	M12X1
BT 40	20	120	33	42	68.9	95	51	41	M16X1



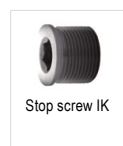
80 397 ...

£
Y7



83 950 ...

£
Y8






83 950 ...

£
Y7

Spare parts
DCONWS

DCONWS	SW5	050	M10x12	13.60	55000	M5x12,5 - SW2,5	25.16	418
6	SW5	050	M10x12	13.60	55000			
6	SW5	050	M10x12	13.60	55000	M5x12,5 - SW2,5	25.16	418
8	SW5	050	M10x12	13.60	55000			
8	SW5	050	M10x12	13.60	55000	M6x12,5 - SW3	25.16	419
10	SW5	050	M10x12	13.60	55000	M8x1x13,5 - SW3	25.16	420
10	SW5	050	M10x12	13.60	55000			
12	SW5	050	M10x12	13.60	55000	M10x1x13,5 - SW5	25.16	421
12	SW5	050	M10x12	13.60	55000			
16	SW5	050	M10x12	13.60	55000	M10x1x13,5 - SW5	25.16	421
16	SW5	050	M10x12	13.60	55000			
20	SW5	050	M10x12	13.60	55000			
20	SW5	050	M10x12	13.60	55000	M10x1x13,5 - SW5	25.16	421

Accessories

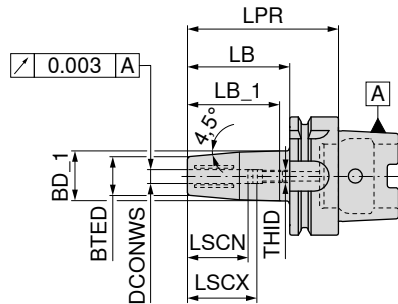
 → 282	 → 110+111	 → 284
Reduction sleeve	Pull stud	Others
Accessories can be found in the clamping technology catalogue → Chapter 16, Adaptors and accessories		

HyPower – Access 4.5°

- ▲ High pressure chuck with slim contour, original dimensions of a 4.5° shrink contour
- ▲ Especially for reaming and drilling applications
- ▲ Ideal for tool and die production
- ▲ Also available with Balluff chip on request

Scope of supply:

Base body with backstop screw and pressure screw



AD
G 2,5 n_{max} 25000

84 255 ...

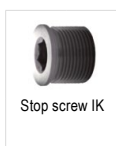
Adapter	DCONWS	LPR	BTED	BD_1	LB_1	LB	LSCX	LSCN	THID	£	
	mm	mm	mm	mm	mm	mm	mm	mm		Y8	
HSK-A 63	6	120	21	27	48.9	94	37	27	M5	1,041.92	20657
HSK-A 63	8	120	21	27	48.9	94	37	27	M6	1,041.92	20857
HSK-A 63	10	120	24	32	61.6	94	41	31	M8X1	1,041.92	21057
HSK-A 63	12	120	24	32	61.6	94	46	36	M10X1	1,041.92	21257
HSK-A 63	16	120	27	34	56.2	94	49	39	M12X1	1,041.92	21657
HSK-A 63	20	120	33	42	68.9	94	51	41	M16X1	1,041.92	22057
HSK-A 100	6	120	21	27	48.9	91	37	27	M5	1,344.48	20655
HSK-A 100	8	120	21	27	48.9	91	37	27	M6	1,344.48	20855
HSK-A 100	10	120	24	32	61.6	91	41	31	M8X1	1,344.48	21055
HSK-A 100	12	120	24	32	61.6	91	46	36	M10X1	1,344.48	21255
HSK-A 100	16	120	27	34	56.2	91	49	39	M12X1	1,344.48	21655
HSK-A 100	20	120	33	42	68.9	91	51	41	M16X1	1,344.48	22055



Clamping key – T



Pressure screw



Stop screw IK

80 397 ...

83 950 ...

83 950 ...

Spare parts for Article no.

	£		£		£			
	Y7		Y8		Y7			
84 255 20657	8.11	050	M10x10	11.05	55100	M5x12,5 - SW2,5	25.16	418
84 255 20857	8.11	050	M10x10	11.05	55100	M6x12,5 - SW3	25.16	419
84 255 21057	8.11	050	M10x10	11.05	55100	M8x1x13,5 - SW3	25.16	420
84 255 21257	8.11	050	M10x10	11.05	55100	M10x1x13,5 - SW5	25.16	421
84 255 21657	8.11	050	M10x10	11.05	55100	M12x1x13,5 - SW5	25.16	422
84 255 22057	8.11	050	M10x10	11.05	55100	M16x1x13,5 - SW8	29.02	424
84 255 20655	8.11	050	M10x12	13.60	55000	M5x12,5 - SW2,5	25.16	418
84 255 20855	8.11	050	M10x12	13.60	55000	M6x12,5 - SW3	25.16	419
84 255 21055	8.11	050	M10x12	13.60	55000	M8x1x13,5 - SW3	25.16	420
84 255 21255	8.11	050	M10x12	13.60	55000	M10x1x13,5 - SW5	25.16	421
84 255 21655	8.11	050	M10x12	13.60	55000	M12x1x13,5 - SW5	25.16	422
84 255 22055	8.11	050	M10x12	13.60	55000	M16x1x13,5 - SW8	29.02	424

Accessories

 → 282	 → 156	 → 284
Reduction sleeve	Coolant transfer pipe	Others

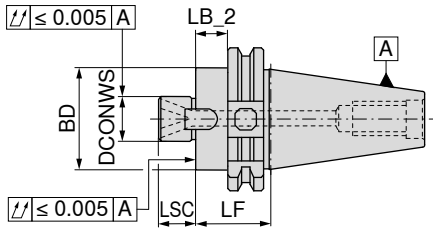
Accessories can be found in the clamping technology catalogue → Chapter 16, Adaptors and accessories

Shell mill adapter with reduced flange diameter

- ▲ Screwed drive dogs
- ▲ also available with Balluff chip on request

Scope of supply:

Base body with retaining screw and drive dog



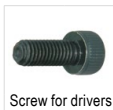
AD
G 2,5 n_{max} 25000

82 315 ...

£
Y8/3B
178.50 22279
197.70 22779

	Adapter	DCONWS mm	LB_2 mm	LF mm	BD mm	LSC mm		
medium length	SK 40	22	81	100	38	19		
	SK 40	27	81	100	48	21		
	SK 50	22	81	100	38	19		244.20 22278
	SK 50	27	81	100	48	21		267.60 22778
long	SK 40	22	111	130	38	19		187.65 32279
	SK 40	27	111	130	48	21		203.85 32779
	SK 50	22	111	130	38	19		257.55 32278
	SK 50	27	111	130	48	21		280.65 32778

i These shell mill adapters have been specially developed for MaxiMill 211-KN porcupine cutters. Now they can be clamped perfectly, thanks to the adapted flange diameters.



Screw for drivers



Driver



clamping screw

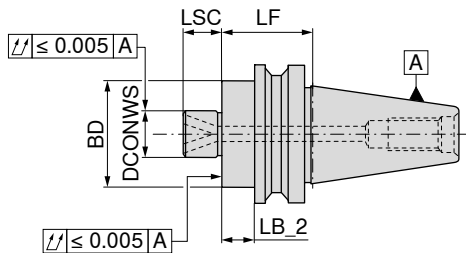
Spare parts DCONWS	83 950 ...		83 950 ...		83 950 ...	
	£	Y8/3B	£	Y8/3B	£	Y8/3B
22	M4x8	0.80 51700	10x7x20,5	11.26 51500	M10x25	8.50 124
27	M5x8	0.98 51800	12x9x24,3	12.83 51600	M12x30	9.39 125

Shell mill adapter with reduced flange diameter

- ▲ Screwed drive dogs
- ▲ also available with Balluff chip on request

Scope of supply:

Base body with retaining screw and drive dog



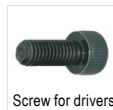
AD
G 2,5 n_{max} 25000

82 315 ...

£
Y8/3B
168.90 22269
184.95 22769

	Adapter	DCONWS mm	BD mm	LB_2 mm	LF mm	LSC mm		
medium length	BT 40	22	38	73	100	19		
	BT 40	27	48	73	100	21		
	BT 50	22	38	62	100	19		237.15 22268
	BT 50	27	48	62	100	21		258.45 22768
long	BT 40	22	38	103	130	19		182.40 32269
	BT 40	27	48	103	130	21		194.25 32769
	BT 50	22	38	92	130	19		255.45 32268
	BT 50	27	48	92	130	21		271.65 32768

1 These shell mill adapters have been specially developed for MaxiMill 211-KN porcupine cutters. Now they can be clamped perfectly, thanks to the adapted flange diameters.



Screw for drivers



Driver



clamping screw

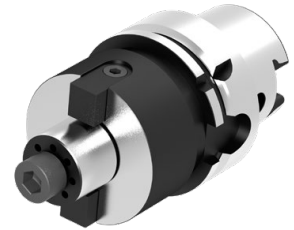
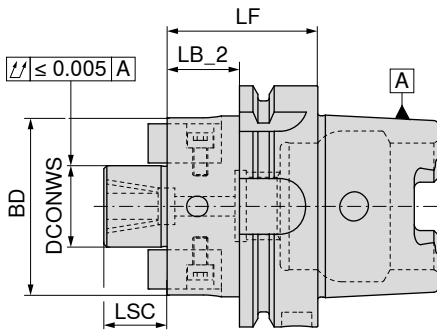
Spare parts DCONWS	83 950 ...		83 950 ...		83 950 ...	
	£		£		£	
22	0.80	51700	11.26	51500	8.50	124
27	0.98	51800	12.83	51600	9.39	125

Shell mill adapter with reduced flange diameter

- ▲ Screwed drive dogs
- ▲ also available with Balluff chip on request

Scope of supply:

Base body with retaining screw and drive dog



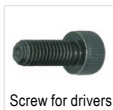
G 2,5 n_{max} 25000

82 315 ...

£
Y8/3B
379.95 22257
379.95 22757

	Adapter	DCONWS mm	LB_2 mm	LF mm	BD mm	LSC mm		
medium length	HSK-A 63	22	74	100	38	19		
	HSK-A 63	27	74	100	48	21		
	HSK-A 100	22	71	100	38	19		
	HSK-A 100	27	71	100	48	21		
long	HSK-A 63	22	104	130	38	19		
	HSK-A 63	27	104	130	48	21		
	HSK-A 100	22	101	130	38	19		
	HSK-A 100	27	101	130	48	21		

1 These shell mill adapters have been specially developed for MaxiMill 211-KN porcupine cutters. Now they can be clamped perfectly, thanks to the adapted flange diameters.



Screw for drivers



Driver

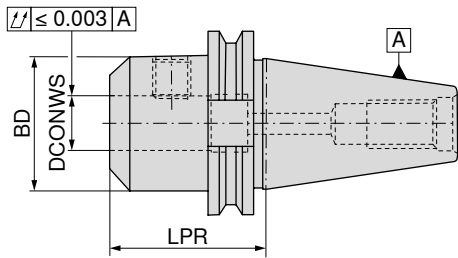


clamping screw

Spare parts DCONWS	83 950 ...		83 950 ...		83 950 ...	
	£		£		£	
22	0.80	51700	11.26	51500	8.50	124
27	0.98	51800	12.83	51600	9.39	125

Cylindrical shank adapter (Weldon)

- ▲ For shanks according to DIN 6535 HB / 1835 B with lateral clamping flat
- ▲ also available with Balluff chip **on request**



NEW



AD/Be
G 2,5 n_{max} 25000

82 404 ...

£
Y8/3B

	Adapter	DCONWS _{H4} mm	LPR mm	BD mm		
short	SK 40	6	50	25	160.02	106
	SK 40	8	50	28	160.02	108
	SK 40	10	50	35	160.02	110
	SK 40	12	50	42	160.02	112
	SK 40	14	50	44	160.02	114
	SK 40	16	63	48	160.02	116
	SK 40	18	63	50	160.02	118
	SK 40	20	63	52	160.02	120
	SK 40	25	100	65	160.02	125 ¹⁾
	SK 40	32	100	72	160.02	13200 ¹⁾
	SK 50	6	63	25	241.46	30600
	SK 50	8	63	28	241.46	30800
	SK 50	10	63	35	222.38	31000
	SK 50	12	63	42	222.38	31200
	SK 50	14	63	44	222.38	31400
	SK 50	16	63	48	243.48	31600
	SK 50	18	63	50	243.48	31800
	SK 50	20	63	52	243.48	32000
	SK 50	25	80	65	260.90	32500 ¹⁾
	SK 50	32	100	72	274.69	33200 ¹⁾
SK 50	40	120	90	263.16	34000	
medium length	SK 40	40	120	80	353.91	54000 ¹⁾

1) Version with two grub screws

Accessories



→ 58, 60



→ 284

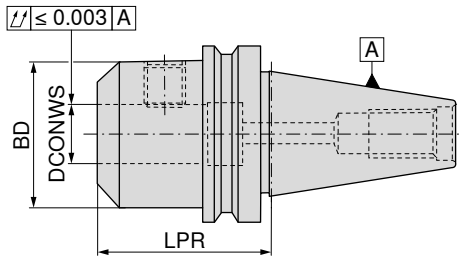
Pull stud

Others

Accessories can be found in the clamping technology catalogue
→ **Chapter 16, Adapters and accessories**

Cylindrical shank adapter (Weldon)

- ▲ For shanks according to DIN 6535 HB / 1835 B with lateral clamping flat
- ▲ also available with Balluff chip **on request**



AD/Be
G 2,5 n_{max} 25000

82 504 ...

£	
Y8/3B	
160.02	106
160.02	108
160.02	110
160.02	112
160.02	114
160.02	116
160.02	118
160.02	120
160.02	125 ¹⁾
160.02	13200 ¹⁾
212.22	14000
241.46	30600
241.46	30800
222.38	31000
222.38	31200
222.38	31400
243.48	31600
243.48	31800
243.48	32000
260.90	32500 ¹⁾
274.69	33200 ¹⁾
268.74	34000

Adapter	DCONWS _{H4}	LPR	BD
	mm	mm	mm
BT 40	6	50	25
BT 40	8	50	28
BT 40	10	63	35
BT 40	12	63	42
BT 40	14	63	44
BT 40	16	63	48
BT 40	18	63	50
BT 40	20	63	52
BT 40	25	100	65
BT 40	32	100	72
BT 40	40	120	90
short			
BT 50	6	63	25
BT 50	8	63	28
BT 50	10	80	35
BT 50	12	80	42
BT 50	14	80	44
BT 50	16	80	48
BT 50	18	80	50
BT 50	20	80	52
BT 50	25	100	65
BT 50	32	105	72
BT 50	40	120	90

1) Version with two grub screws

Accessories



→ 58, 60



→ 284

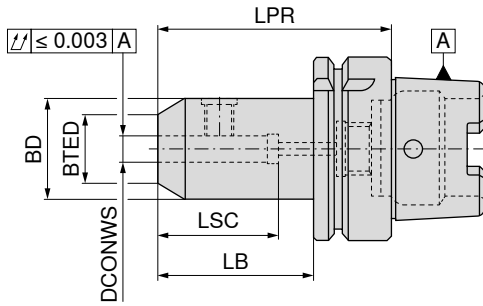
Pull stud

Others

Accessories can be found in the clamping technology catalogue
→ **Chapter 16, Adapters and accessories**

Cylindrical shank adapter (Weldon)

- ▲ For shanks according to DIN 6535 HB / 1835 B with lateral clamping flat
- ▲ also available with Balluff chip **on request**



G 2,5 n_{max} 25000

82 404 ...

£	
Y8/3B	
253.08	10657
253.08	10857
253.08	11057
253.08	11257
253.08	11457
253.08	11657
253.08	11857
253.08	12057
253.08	12557
253.08	13257
253.08	14057

	Adapter	DCONWS _{H4}		LPR	BD	BTED	LB	LSC			
		mm	mm								mm
short	HSK-A 63	6	65	25	15	39	34				
	HSK-A 63	8	65	28	20	39	34				
	HSK-A 63	10	65	35	25	39	39				
	HSK-A 63	12	80	42	30	54	44				
	HSK-A 63	14	80	44	32	54	44				
	HSK-A 63	16	80	48	36	54	47				
	HSK-A 63	18	80	50	38	54	47				
	HSK-A 63	20	80	52	40	54	49				
	HSK-A 63	25	110	65	45	84	54				
	HSK-A 63	32	110	72	52	84	58				
	HSK-A 63	40	125	80	60	99	71				
	HSK-A 100	6	80	25	15	51	34			339.30	10655
	HSK-A 100	8	80	28	20	51	34			339.30	10855
	HSK-A 100	10	80	35	25	51	39			339.30	11055
	HSK-A 100	12	80	42	30	51	44			339.30	11255
	HSK-A 100	14	80	44	32	51	44			339.30	11455
	HSK-A 100	16	100	48	36	71	47			339.30	11655
	HSK-A 100	18	100	50	38	71	47			339.30	11855
	HSK-A 100	20	100	52	40	71	49			339.30	12055
	HSK-A 100	25	100	65	45	71	54			339.30	12555
HSK-A 100	32	100	72	52	71	58			339.30	13255	
HSK-A 100	40	110	80	60	81	68			339.30	14055	



Grubscrew

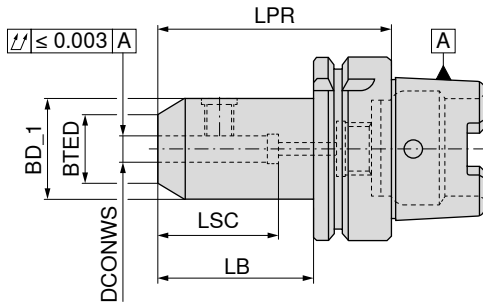
62 950 ...

Spare parts
DCONWS

	£	
6	1.16	006
8	1.16	008
10	2.22	010
12	1.76	012
14	1.76	012
16	2.18	016
18	2.18	016
20	2.32	020
25	4.48	025
32	4.68	032
40	4.68	032

Cylindrical shank adapter (Weldon)

- ▲ For shanks according to DIN 6535 HB / 1835 B with lateral clamping flat
- ▲ also available with Balluff chip **on request**



NEW



NEW



G 2,5 n_{max} 25000

G 2,5 n_{max} 25000

	Adapter	DCONWS _{H5}	LPR	BTED	BD_1	LB	LSC
		mm	mm	mm	mm	mm	mm
short	HSK-A 63	40	120	60	80	94	68
	HSK-A 63	40	120	60	80	94	68

82 740 ...

£
Y8/3B
253.08

14057

82 741 ...

£
Y8/3B
239.58

14057



The M3 screws with WAF 1.5 mm supplied can be used to seal the two additional coolant holes.

Accessories



→ 156



→ 284

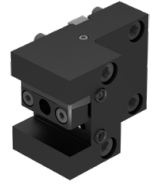
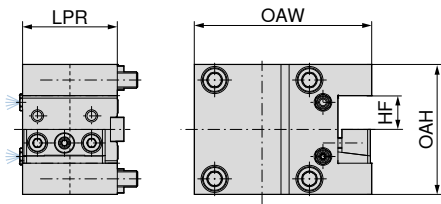
Coolant transfer pipe

Others

Accessories can be found in the clamping technology catalogue
→ Chapter 16, Adaptors and accessories

HAAS/Doosan – BMT 65 – Axial square section tool holder

▲ directly screwed version



NEW

Left-hand

82 483 ...

£
Y7

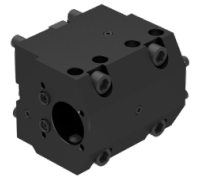
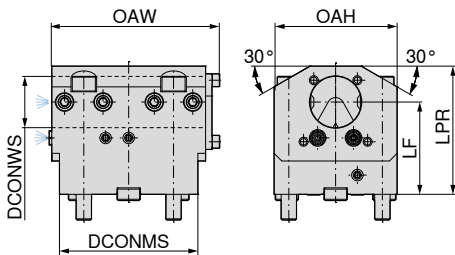
1,058.73 00008

Adapter	Hole pattern	HF mm	LPR mm	OAH mm	OAW mm
BMT 65	70 x 73	25	75	97	131

HAAS/Doosan – BMT 65 – Combi tool holder

▲ directly screwed version

▲ double-sided version



NEW



IC

82 483 ...

£
Y7

867.40 03009

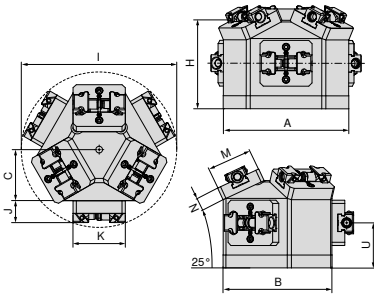
Adapter	Hole pattern	DCONWS mm	LF mm	OAH mm	LPR mm	OAW mm	DCONMS mm
BMT 65	70 x 73	40	72	96	106	132	103

CentriClamp – ZSG mini – 6-sided clamping tower

Scope of supply:

6-sided clamping tower incl. ZSG mini L-80 mm without system jaws

**ZSG
mini**



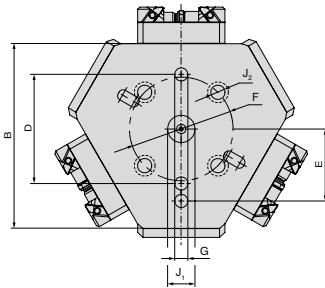
NEW

80 912 ...

£
Y4
4,557.00 55000

A	B	C	H	I	J	K	M	N	U	WT
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
193,24	169,40	78	135,7	236	33,7	80	70,4	20	70	13.5

Underside dimensions of ZSG mini – 6-sided clamping tower

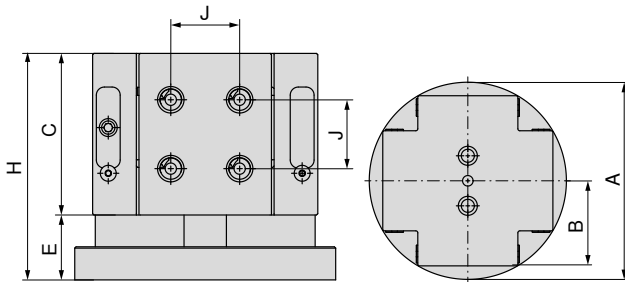


B	D ±0.015	E ±0.015	Ø F	G H7	J ₁ H7	Ø J ₂
mm	mm	mm	mm	mm	mm	mm
169,40	100	66	95	12	25	13

MNG mini – 4-sided clamping tower

- ▲ Incl. 4 x MNG mini zero point clamping systems
- ▲ Order mounting bolts separately
- ▲ Material: hard-anodised aluminium

**MNG
mini**




NEW

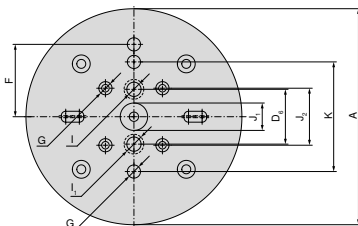
80 915 ...

£
Y4
1,920.80 54000

A	B	C	E	H	J ± 0.015	WT
mm	mm	mm	mm	mm	mm	kg
197	85	122	49	171	52	12

 Suitable for: ESG 5 – 80 L-130 / ZSG 4 – 80 L-130 / ZSG mini – 70 L-80 / ZSG mini – 70 L-100

Underside dimensions of MNG mini – 4-sided clamping tower



A	D ₆	F ± 0.015	G $H7$	I $H7$	I ₁ $H7$	J ₁ $H7$	J ₂ ± 0.015	K ± 0.015
mm	mm	mm	mm	mm	mm	mm	mm	mm
197	50	66	12	13	19	25	52	100

System accessories overview

Protection plugs

- ▲ Protective cover to shield changeover interface
- ▲ Price per piece

**MNG
mini**



NEW

80 915 ...

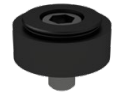
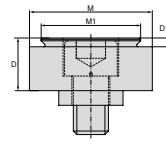
£
Y4
13.03 51900

D ₁
mm
16

System jaws overview

Insert jaws, round, grip 3 mm

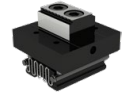
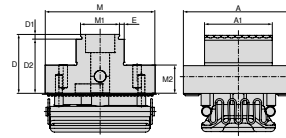
- ▲ Price per piece
- ▲ For adapter jaws 80 914 34000



For vice width	A	A ₁	D	D ₁	D ₂	E	M	M ₁	M ₂	£	NEW	Y4	NCG	H5G / -S / -Z	X5G-Z / -S	ESG 4	ESG 5	HDG 2	ZSG 4	ZSG mini	DSG 4	Verso	HSG	
			18	3			42	34		43.12														

Indexable jaw, fixed VS, grip 3 mm

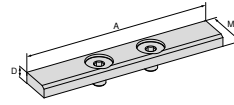
- ▲ Price per piece
- ▲ VS = Larger clamping range



For vice width	A	A ₁	D	D ₁	D ₂	E	M	M ₁	M ₂	£	NEW	Y4	NCG	H5G / -S / -Z	X5G-Z / -S	ESG 4	ESG 5	HDG 2	ZSG 4	ZSG mini	DSG 4	Verso	HSG	
90	65	40	35	3	32	2,6	64	28	17	384.16														
90	90		35	3	32	2,6	64	28	17	384.16														

Support, hard for milling over

- ▲ Price per piece



For vice width	A	A ₁	D	D ₁	D ₂	E	M	M ₁	M ₂	£	NEW	Y4	NCG	H5G / -S / -Z	X5G-Z / -S	ESG 4	ESG 5	HDG 2	ZSG 4	ZSG mini	DSG 4	Verso	HSG	
90	40		5,4				15			49.00														
90	90		5,4				15			54.88														

Sustainability is not a goal, it's a mission.

We have an ambitious sustainability mission that will affect and change the entire supply chain. But we can only achieve true sustainability together. That's why our mission goes beyond our own scope:

We want to enable our customers to produce more sustainably with our products and services. With our ambitious mission, we want to make an important contribution to tackling the climate crisis.



Mission #1:
Climate neutral by 2025



Mission #2:
Minimise the use of
virgin raw materials



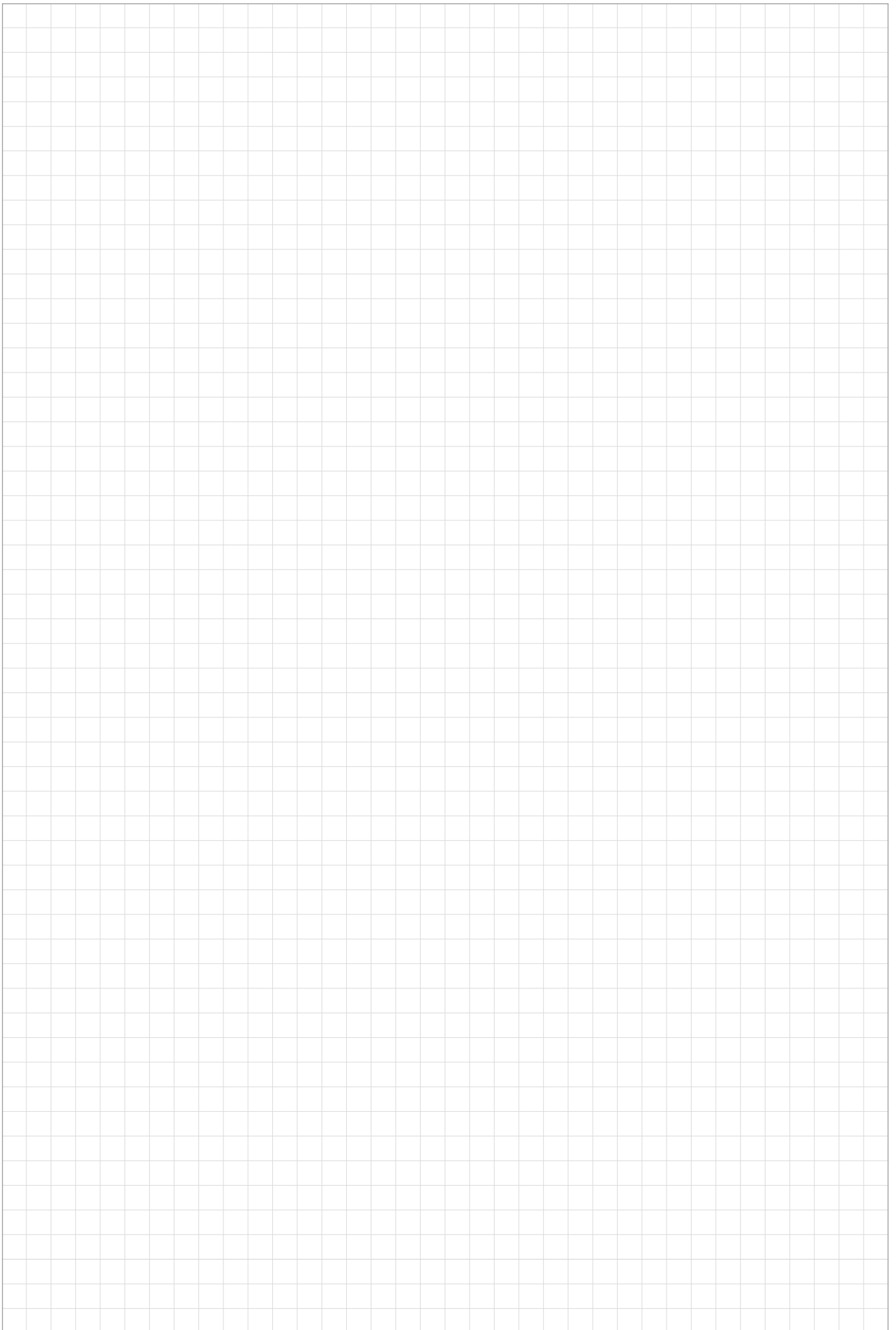
cutting.tools/gb/en/sustainability

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